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NAME

Exporter - Implements default import method for modules

SYNOPSIS

In module YourModule.pm:

```
package YourModule;
require Exporter;
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

or

```
package YourModule;
use Exporter 'import'; # gives you Exporter's import() method directly
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

In other files which wish to use "YourModule":

```
use YourModule qw(frobnicate); # import listed symbols
frobnicate ($left, $right) # calls YourModule::frobnicate
```

Take a look at "Good Practices" for some variants you will like to use in modern Perl code.

## DESCRIPTION

The Exporter module implements an "import" method which allows a module to export functions and variables to its users' namespaces. Many modules use Exporter rather than implementing their own "import" method because Exporter provides a highly flexible interface, with an implementation optimised for the common case.

Perl automatically calls the "import" method when processing a "use" statement for a module. Modules and "use" are documented in perlfunc and perlmod. Understanding the concept of modules and how the "use" statement operates is important to understanding the Exporter.

## How to Export

The arrays @EXPORT and @EXPORT\_OK in a module hold lists of symbols that are going to be exported into the users name space by default, or which they can request to be exported, respectively. The symbols can represent functions, scalars, arrays, hashes, or typeglobs. The symbols must be given by full name with the exception that the ampersand in front of a function is optional, e.g.

```
@EXPORT = qw(afunc $scalar @array); # afunc is a function
@EXPORT_OK = qw(&bfunc %hash *typeglob); # explicit prefix on &bfunc
```

If you are only exporting function names it is recommended to omit the ampersand, as the implementation is faster this way.

## Selecting What To Export

Do not export method names!

Do not export anything else by default without a good reason!

Exports pollute the namespace of the module user. If you must export try to use `@EXPORT_OK` in preference to `@EXPORT` and avoid short or common symbol names to reduce the risk of name clashes.

Generally anything not exported is still accessible from outside the module using the `"YourModule::item_name"` (or `"$blessed_ref->method"`) syntax. By convention you can use a leading underscore on names to informally indicate that they are 'internal' and not for public use.

(It is actually possible to get private functions by saying:

```
my $subref = sub { ... };
$subref->(@args);      # Call it as a function
$obj->$subref(@args);  # Use it as a method
```

However if you use them for methods it is up to you to figure out how to make inheritance work.)

As a general rule, if the module is trying to be object oriented then export nothing. If it's just a collection of functions then `@EXPORT_OK` anything but use `@EXPORT` with caution. For function and method names use barewords in preference to names prefixed with ampersands for the export lists.

Other module design guidelines can be found in `perlmod`.

## How to Import

In other files which wish to use your module there are three basic ways for them to load your module and import its symbols:

```
"use YourModule;"
```

This imports all the symbols from `YourModule`'s `@EXPORT` into the namespace of the `"use"` statement.

```
"use YourModule ();"
```

This causes perl to load your module but does not import any symbols.

```
"use YourModule qw(...);"
```

This imports only the symbols listed by the caller into their namespace. All listed symbols must be in your `@EXPORT` or `@EXPORT_OK`, else an error occurs. The advanced export features of `Exporter` are accessed like this, but with list entries that are syntactically distinct from symbol names.



Unless you want to use its advanced features, this is probably all you need to know to use Exporter.

#### Advanced features

##### Specialised Import Lists

If any of the entries in an import list begins with `!`, `:` or `/` then the list is treated as a series of specifications which either add to or delete from the list of names to import. They are processed left to right. Specifications are in the form:

```
[!]name      This name only
[!]:DEFAULT  All names in @EXPORT
[!]:tag      All names in $EXPORT_TAGS{tag} anonymous list
[!]/pattern/ All names in @EXPORT and @EXPORT_OK which match
```

A leading `!` indicates that matching names should be deleted from the list of names to import. If the first specification is a deletion it is treated as though preceded by `:DEFAULT`. If you just want to import extra names in addition to the default set you will still need to include `:DEFAULT` explicitly.

e.g., `Module.pm` defines:

```
@EXPORT      = qw(A1 A2 A3 A4 A5);
@EXPORT_OK   = qw(B1 B2 B3 B4 B5);
%EXPORT_TAGS = (T1 => [qw(A1 A2 B1 B2)], T2 => [qw(A1 A2 B3 B4)]);
```

Note that you cannot use tags in `@EXPORT` or `@EXPORT_OK`.

Names in `EXPORT_TAGS` must also appear in `@EXPORT` or `@EXPORT_OK`.

An application using `Module` can say something like:

```
use Module qw(:DEFAULT :T2 !B3 A3);
```

Other examples include:

```
use Socket qw(!/[AP]F_/ !SOMAXCONN !SOL_SOCKET);
use POSIX qw(:errno_h :termios_h !TCSADRAIN !/^EXIT/);
```

Remember that most patterns (using `//`) will need to be anchored with a leading `^`, e.g., `"/^EXIT/"` rather than `"/EXIT/"`.

You can say `"BEGIN { $Exporter::Verbose=1 }"` to see how the specifications are being processed and what is actually being imported into modules.

Exporting without using `Exporter`'s `import` method

Exporter has a special method, 'export\_to\_level' which is used in situations where you can't directly call Exporter's import method. The export\_to\_level method looks like:

```
MyPackage->export_to_level($where_to_export, $package, @what_to_export);
```

where \$where\_to\_export is an integer telling how far up the calling stack to export your symbols, and @what\_to\_export is an array telling what symbols \*to\* export (usually this is @\_). The \$package argument is currently unused.

For example, suppose that you have a module, A, which already has an import function:

```
package A;

@ISA = qw(Exporter);
@EXPORT_OK = qw ($b);

sub import
{
    $A::b = 1;  # not a very useful import method
}
```

and you want to Export symbol \$A::b back to the module that called package A. Since Exporter relies on the import method to work, via inheritance, as it stands Exporter::import() will never get called. Instead, say the following:

```
package A;
@ISA = qw(Exporter);
@EXPORT_OK = qw ($b);

sub import
{
    $A::b = 1;
    A->export_to_level(1, @_);
}
```

This will export the symbols one level 'above' the current package - ie: to the program or module that used package A.

Note: Be careful not to modify @\_ at all before you call export\_to\_level - or people using your package will get very unexplained results!

Exporting without inheriting from Exporter

By including Exporter in your @ISA you inherit an Exporter's import() method but you also inherit several other helper methods which you

probably don't want. To avoid this you can do

```
package YourModule;
use Exporter qw( import );
```

which will export Exporter's own import() method into YourModule. Everything will work as before but you won't need to include Exporter in @YourModule::ISA.

Note: This feature was introduced in version 5.57 of Exporter, released with perl 5.8.3.

### Module Version Checking

The Exporter module will convert an attempt to import a number from a module into a call to "\$module\_name->require\_version(\$value)". This can be used to validate that the version of the module being used is greater than or equal to the required version.

The Exporter module supplies a default "require\_version" method which checks the value of \$VERSION in the exporting module.

Since the default "require\_version" method treats the \$VERSION number as a simple numeric value it will regard version 1.10 as lower than 1.9.

For this reason it is strongly recommended that you use numbers with at least two decimal places, e.g., 1.09.

### Managing Unknown Symbols

In some situations you may want to prevent certain symbols from being exported. Typically this applies to extensions which have functions or constants that may not exist on some systems.

The names of any symbols that cannot be exported should be listed in the @EXPORT\_FAIL array.

If a module attempts to import any of these symbols the Exporter will give the module an opportunity to handle the situation before generating an error. The Exporter will call an export\_fail method with a list of the failed symbols:

```
@failed_symbols = $module_name->export_fail(@failed_symbols);
```

If the "export\_fail" method returns an empty list then no error is recorded and all the requested symbols are exported. If the returned list is not empty then an error is generated for each symbol and the export fails. The Exporter provides a default "export\_fail" method which simply returns the list unchanged.

Uses for the "export\_fail" method include giving better error messages

for some symbols and performing lazy architectural checks (put more symbols into @EXPORT\_FAIL by default and then take them out if someone actually tries to use them and an expensive check shows that they are usable on that platform).

#### Tag Handling Utility Functions

Since the symbols listed within %EXPORT\_TAGS must also appear in either @EXPORT or @EXPORT\_OK, two utility functions are provided which allow you to easily add tagged sets of symbols to @EXPORT or @EXPORT\_OK:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);
```

```
Exporter::export_tags('foo'); # add aa, bb and cc to @EXPORT
Exporter::export_ok_tags('bar'); # add aa, cc and dd to @EXPORT_OK
```

Any names which are not tags are added to @EXPORT or @EXPORT\_OK unchanged but will trigger a warning (with "-w") to avoid misspelt tags names being silently added to @EXPORT or @EXPORT\_OK. Future versions may make this a fatal error.

#### Generating combined tags

If several symbol categories exist in %EXPORT\_TAGS, it's usually useful to create the utility ":all" to simplify "use" statements.

The simplest way to do this is:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);

# add all the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_} } @{$EXPORT_TAGS{$_}} foreach keys %EXPORT_TAGS;
}
```

CGI.pm creates an ":all" tag which contains some (but not really all) of its categories. That could be done with one small change:

```
# add some of the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_} } @{$EXPORT_TAGS{$_}}
            foreach qw/html2 html3 netscape form cgi internal/;
```

```
}
```

Note that the tag names in %EXPORT\_TAGS don't have the leading '!'.

#### "AUTOLOAD"ed Constants

Many modules make use of "AUTOLOAD"ing for constant subroutines to avoid having to compile and waste memory on rarely used values (see perlsub for details on constant subroutines). Calls to such constant subroutines are not optimized away at compile time because they can't be checked at compile time for constancy.

Even if a prototype is available at compile time, the body of the subroutine is not (it hasn't been "AUTOLOAD"ed yet). perl needs to examine both the "()" prototype and the body of a subroutine at compile time to detect that it can safely replace calls to that subroutine with the constant value.

A workaround for this is to call the constants once in a "BEGIN" block:

```
package My ;

use Socket ;

foo( SO_LINGER );  ## SO_LINGER NOT optimized away; called at runtime
BEGIN { SO_LINGER }
foo( SO_LINGER );  ## SO_LINGER optimized away at compile time.
```

This forces the "AUTOLOAD" for "SO\_LINGER" to take place before SO\_LINGER is encountered later in "My" package.

If you are writing a package that "AUTOLOAD"s, consider forcing an "AUTOLOAD" for any constants explicitly imported by other packages or which are usually used when your package is "use"d.

#### Good Practices

##### Declaring @EXPORT\_OK and Friends

When using "Exporter" with the standard "strict" and "warnings" pragmas, the "our" keyword is needed to declare the package variables @EXPORT\_OK, @EXPORT, @ISA, etc.

```
our @ISA = qw(Exporter);
our @EXPORT_OK = qw(munge frobnicate);
```

If backward compatibility for Perls under 5.6 is important, one must write instead a "use vars" statement.

```
use vars qw(@ISA @EXPORT_OK);
@ISA = qw(Exporter);
```

```
@EXPORT_OK = qw(munge frobnicate);
```

### Playing Safe

There are some caveats with the use of runtime statements like "require Exporter" and the assignment to package variables, which can very subtle for the unaware programmer. This may happen for instance with mutually recursive modules, which are affected by the time the relevant constructions are executed.

The ideal (but a bit ugly) way to never have to think about that is to use "BEGIN" blocks. So the first part of the "SYNOPSIS" code could be rewritten as:

```
package YourModule;

use strict;
use warnings;

our (@ISA, @EXPORT_OK);
BEGIN {
    require Exporter;
    @ISA = qw(Exporter);
    @EXPORT_OK = qw(munge frobnicate); # symbols to export on request
}
```

The "BEGIN" will assure that the loading of Exporter.pm and the assignments to @ISA and @EXPORT\_OK happen immediately, leaving no room for something to get awry or just plain wrong.

With respect to loading "Exporter" and inheriting, there are alternatives with the use of modules like "base" and "parent".

```
use base qw( Exporter );
# or
use parent qw( Exporter );
```

Any of these statements are nice replacements for "BEGIN { require Exporter; @ISA = qw(Exporter); }" with the same compile-time effect. The basic difference is that "base" code interacts with declared "fields" while "parent" is a streamlined version of the older "base" code to just establish the IS-A relationship.

For more details, see the documentation and code of base and parent.

Another thorough remedy to that runtime vs. compile-time trap is to use Exporter::Easy, which is a wrapper of Exporter that allows all boilerplate code at a single gulp in the use statement.

```
use Exporter::Easy (
    OK => [ qw(munge frobnicate) ],
);
# @ISA setup is automatic
# all assignments happen at compile time
```

#### What not to Export

You have been warned already in "Selecting What To Export" to not export:

- \* method names (because you don't need to and that's likely to not do what you want),
- \* anything by default (because you don't want to surprise your users... badly)
- \* anything you don't need to (because less is more)

There's one more item to add to this list. Do not export variable names. Just because "Exporter" lets you do that, it does not mean you should.

```
@EXPORT_OK = qw( $svar @avar %hvar ); # DON'T!
```

Exporting variables is not a good idea. They can change under the hood, provoking horrible effects at-a-distance, that are too hard to track and to fix. Trust me: they are not worth it.

To provide the capability to set/get class-wide settings, it is best instead to provide accessors as subroutines or class methods instead.

#### SEE ALSO

"Exporter" is definitely not the only module with symbol exporter capabilities. At CPAN, you may find a bunch of them. Some are lighter. Some provide improved APIs and features. Peek the one that fits your needs. The following is a sample list of such modules.

```
Exporter::Easy
Exporter::Lite
Exporter::Renaming
Exporter::Tidy
Sub::Exporter / Sub::Installer
Perl6::Export / Perl6::Export::Attrs
```

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Found in path(s):

\* /opt/cola/permits/1000848977\_1646171513.14/0/perl-Exporter-5.68-3.el7.src.rpm-cosi-expand-archive-h9fGsLBf/Exporter-5.68.tar.gz-cosi-expand-archive-xpaCzeyx/Exporter-5.68/README

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848977\_1646171513.14/0/perl-Exporter-5.68-3.el7.src.rpm-cosi-expand-archive-h9fGsLBf/perl-Exporter.spec

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

---

abstract: 'Implements default import method for modules'

author:

- unknown

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Exporter

no\_index:

directory:

- t

- inc

recommends:

Test::Pod: 1.18

Test::Pod::Coverage: 1.04

requires:

Carp: 1.05

resources:

bugtracker: <http://rt.perl.org/perlbug/>

license: <http://dev.perl.org/licenses/>

repository: <http://perl5.git.perl.org/perl.git/tree/HEAD:/lib>

x\_MailingList: <http://lists.perl.org/list/perl5-porters.html>

version: 5.68

Found in path(s):

\* /opt/cola/permits/1000848977\_1646171513.14/0/perl-Exporter-5.68-3.el7.src.rpm-cosi-expand-archive-h9fGsLBf/Exporter-5.68.tar.gz-cosi-expand-archive-xpaCzeyx/Exporter-5.68/META.yml

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

=head1 NAME



Exporter - Implements default import method for modules

## =head1 SYNOPSIS

In module F<YourModule.pm>:

```
package YourModule;
require Exporter;
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

or

```
package YourModule;
use Exporter 'import'; # gives you Exporter's import() method directly
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

In other files which wish to use C<YourModule>:

```
use YourModule qw(frobnicate); # import listed symbols
frobnicate($left, $right) # calls YourModule::frobnicate
```

Take a look at L</Good Practices> for some variants  
you will like to use in modern Perl code.

## =head1 DESCRIPTION

The Exporter module implements an C<import> method which allows a module to export functions and variables to its users' namespaces. Many modules use Exporter rather than implementing their own C<import> method because Exporter provides a highly flexible interface, with an implementation optimised for the common case.

Perl automatically calls the C<import> method when processing a C<use> statement for a module. Modules and C<use> are documented in L<perlfunc> and L<perlmod>. Understanding the concept of modules and how the C<use> statement operates is important to understanding the Exporter.

## =head2 How to Export

The arrays C<@EXPORT> and C<@EXPORT\_OK> in a module hold lists of symbols that are going to be exported into the users name space by default, or which they can request to be exported, respectively. The symbols can represent functions, scalars, arrays, hashes, or typeglobs. The symbols must be given by full name with the exception that the ampersand in front of a function is optional, e.g.

```
@EXPORT = qw(afunc $scalar @array); # afunc is a function
@EXPORT_OK = qw(&bfunc %hash *typeglob); # explicit prefix on &bfunc
```

If you are only exporting function names it is recommended to omit the ampersand, as the implementation is faster this way.

## =head2 Selecting What to Export

Do B<not> export method names!

Do B<not> export anything else by default without a good reason!

Exports pollute the namespace of the module user. If you must export try to use C<@EXPORT\_OK> in preference to C<@EXPORT> and avoid short or common symbol names to reduce the risk of name clashes.

Generally anything not exported is still accessible from outside the module using the C<YourModule::item\_name> (or C<< \$blessed\_ref->method >>) syntax. By convention you can use a leading underscore on names to informally indicate that they are 'internal' and not for public use.

(It is actually possible to get private functions by saying:

```
my $subref = sub { ... };
$subref->(@args);      # Call it as a function
$obj->$subref(@args);  # Use it as a method
```

However if you use them for methods it is up to you to figure out how to make inheritance work.)

As a general rule, if the module is trying to be object oriented then export nothing. If it's just a collection of functions then C<@EXPORT\_OK> anything but use C<@EXPORT> with caution. For function and method names use barewords in preference to names prefixed with ampersands for the export lists.

Other module design guidelines can be found in L<perlmod>.

## =head2 How to Import

In other files which wish to use your module there are three basic ways for them to load your module and import its symbols:

=over 4

=item C<use YourModule;>

This imports all the symbols from YourModule's C<@EXPORT> into the namespace of the C<use> statement.

```
=item C<use YourModule ();>
```

This causes perl to load your module but does not import any symbols.

```
=item C<use YourModule qw(...);>
```

This imports only the symbols listed by the caller into their namespace. All listed symbols must be in your C<@EXPORT> or C<@EXPORT\_OK>, else an error occurs. The advanced export features of Exporter are accessed like this, but with list entries that are syntactically distinct from symbol names.

```
=back
```

Unless you want to use its advanced features, this is probably all you need to know to use Exporter.

```
=head1 Advanced Features
```

```
=head2 Specialised Import Lists
```

If any of the entries in an import list begins with !, : or / then the list is treated as a series of specifications which either add to or delete from the list of names to import. They are processed left to right. Specifications are in the form:

```
[!]name      This name only  
[:DEFAULT]   All names in @EXPORT  
[:tag]       All names in $EXPORT_TAGS{tag} anonymous list  
[!]/pattern/ All names in @EXPORT and @EXPORT_OK which match
```

A leading ! indicates that matching names should be deleted from the list of names to import. If the first specification is a deletion it is treated as though preceded by :DEFAULT. If you just want to import extra names in addition to the default set you will still need to include :DEFAULT explicitly.

e.g., F<Module.pm> defines:

```
@EXPORT      = qw(A1 A2 A3 A4 A5);  
@EXPORT_OK   = qw(B1 B2 B3 B4 B5);  
%EXPORT_TAGS = (T1 => [qw(A1 A2 B1 B2)], T2 => [qw(A1 A2 B3 B4)]);
```

Note that you cannot use tags in @EXPORT or @EXPORT\_OK.

Names in EXPORT\_TAGS must also appear in @EXPORT or @EXPORT\_OK.

An application using Module can say something like:

```
use Module qw(:DEFAULT :T2 !B3 A3);
```

Other examples include:

```
use Socket qw(!^[AP]F/ !SOMAXCONN !SOL_SOCKET);
use POSIX qw(:errno_h :termios_h !TCSADRAIN !^EXIT/);
```

Remember that most patterns (using //) will need to be anchored with a leading ^, e.g., C<^EXIT/> rather than C</EXIT/>.

You can say C<BEGIN { \$Exporter::Verbose=1 }> to see how the specifications are being processed and what is actually being imported into modules.

=head2 Exporting Without Using Exporter's import Method

Exporter has a special method, 'export\_to\_level' which is used in situations where you can't directly call Exporter's import method. The export\_to\_level method looks like:

```
MyPackage->export_to_level(
$where_to_export, $package, @what_to_export
);
```

where C<\$where\_to\_export> is an integer telling how far up the calling stack to export your symbols, and C<@what\_to\_export> is an array telling what symbols \*to\* export (usually this is C<@\_>). The C<\$package> argument is currently unused.

For example, suppose that you have a module, A, which already has an import function:

```
package A;

@ISA = qw(Exporter);
@EXPORT_OK = qw ($b);

sub import
{
$A::b = 1; # not a very useful import method
}
```

and you want to Export symbol C<\$A::b> back to the module that called package A. Since Exporter relies on the import method to work, via

inheritance, as it stands `Exporter::import()` will never get called.

Instead, say the following:

```
package A;
@ISA = qw(Exporter);
@EXPORT_OK = qw($b);

sub import
{
$A::b = 1;
A->export_to_level(1, @_);
}
```

This will export the symbols one level 'above' the current package - ie: to the program or module that used package A.

Note: Be careful not to modify `C<@_>` at all before you call `export_to_level` - or people using your package will get very unexplained results!

## =head2 Exporting Without Inheriting from Exporter

By including `Exporter` in your `C<@ISA>` you inherit an `Exporter`'s `import()` method but you also inherit several other helper methods which you probably don't want. To avoid this you can do

```
package YourModule;
use Exporter qw( import );
```

which will export `Exporter`'s own `import()` method into `YourModule`. Everything will work as before but you won't need to include `Exporter` in `C<@YourModule::ISA>`.

Note: This feature was introduced in version 5.57 of `Exporter`, released with perl 5.8.3.

## =head2 Module Version Checking

The `Exporter` module will convert an attempt to import a number from a module into a call to `C<< $module_name->VERSION($value) >>`. This can be used to validate that the version of the module being used is greater than or equal to the required version.

For historical reasons, `Exporter` supplies a `C<require_version>` method that simply delegates to `C<VERSION>`. Originally, before `C<UNIVERSAL::VERSION>` existed, `Exporter` would call `C<require_version>`.

Since the `C<UNIVERSAL::VERSION>` method treats the `C<$VERSION>` number as a simple numeric value it will regard version 1.10 as lower than

1.9. For this reason it is strongly recommended that you use numbers with at least two decimal places, e.g., 1.09.

## =head2 Managing Unknown Symbols

In some situations you may want to prevent certain symbols from being exported. Typically this applies to extensions which have functions or constants that may not exist on some systems.

The names of any symbols that cannot be exported should be listed in the C<@EXPORT\_FAIL> array.

If a module attempts to import any of these symbols the Exporter will give the module an opportunity to handle the situation before generating an error. The Exporter will call an `export_fail` method with a list of the failed symbols:

```
@failed_symbols = $module_name->export_fail(@failed_symbols);
```

If the C<`export_fail`> method returns an empty list then no error is recorded and all the requested symbols are exported. If the returned list is not empty then an error is generated for each symbol and the export fails. The Exporter provides a default C<`export_fail`> method which simply returns the list unchanged.

Uses for the C<`export_fail`> method include giving better error messages for some symbols and performing lazy architectural checks (put more symbols into C<@EXPORT\_FAIL> by default and then take them out if someone actually tries to use them and an expensive check shows that they are usable on that platform).

## =head2 Tag Handling Utility Functions

Since the symbols listed within C<%EXPORT\_TAGS> must also appear in either C<@EXPORT> or C<@EXPORT\_OK>, two utility functions are provided which allow you to easily add tagged sets of symbols to C<@EXPORT> or C<@EXPORT\_OK>:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);
```

```
Exporter::export_tags('foo'); # add aa, bb and cc to @EXPORT  
Exporter::export_ok_tags('bar'); # add aa, cc and dd to @EXPORT_OK
```

Any names which are not tags are added to C<@EXPORT> or C<@EXPORT\_OK> unchanged but will trigger a warning (with C<-w>) to avoid misspelt tags names being silently added to C<@EXPORT> or C<@EXPORT\_OK>. Future versions may make this a fatal error.

## =head2 Generating Combined Tags

If several symbol categories exist in C<%EXPORT\_TAGS>, it's usually useful to create the utility ":all" to simplify "use" statements.

The simplest way to do this is:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);

# add all the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}} foreach keys %EXPORT_TAGS;
}
```

F<CGI.pm> creates an ":all" tag which contains some (but not really all) of its categories. That could be done with one small change:

```
# add some of the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}}
        foreach qw/html2 html3 netscape form cgi internal/;
}
```

Note that the tag names in C<%EXPORT\_TAGS> don't have the leading '!'.

=head2 C<AUTOLOAD>ed Constants

Many modules make use of C<AUTOLOAD>ing for constant subroutines to avoid having to compile and waste memory on rarely used values (see L<perlsub> for details on constant subroutines). Calls to such constant subroutines are not optimized away at compile time because they can't be checked at compile time for constancy.

Even if a prototype is available at compile time, the body of the subroutine is not (it hasn't been C<AUTOLOAD>ed yet). perl needs to examine both the C<()> prototype and the body of a subroutine at compile time to detect that it can safely replace calls to that subroutine with the constant value.

A workaround for this is to call the constants once in a C<BEGIN> block:

```

package My ;

use Socket ;

foo( SO_LINGER ); ## SO_LINGER NOT optimized away; called at runtime
BEGIN { SO_LINGER }
foo( SO_LINGER ); ## SO_LINGER optimized away at compile time.

```

This forces the C<AUTOLOAD> for C<SO\_LINGER> to take place before SO\_LINGER is encountered later in C<My> package.

If you are writing a package that C<AUTOLOAD>s, consider forcing an C<AUTOLOAD> for any constants explicitly imported by other packages or which are usually used when your package is C<use>d.

=head1 Good Practices

=head2 Declaring C<@EXPORT\_OK> and Friends

When using C<Exporter> with the standard C<strict> and C<warnings> pragmas, the C<our> keyword is needed to declare the package variables C<@EXPORT\_OK>, C<@EXPORT>, C<@ISA>, etc.

```

our @ISA = qw(Exporter);
our @EXPORT_OK = qw(munge frobnicate);

```

If backward compatibility for Perls under 5.6 is important, one must write instead a C<use vars> statement.

```

use vars qw(@ISA @EXPORT_OK);
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate);

```

=head2 Playing Safe

There are some caveats with the use of runtime statements like C<require Exporter> and the assignment to package variables, which can very subtle for the unaware programmer. This may happen for instance with mutually recursive modules, which are affected by the time the relevant constructions are executed.

The ideal (but a bit ugly) way to never have to think about that is to use C<BEGIN> blocks. So the first part of the L</SYNOPSIS> code could be rewritten as:

```

package YourModule;

```



```

use strict;
use warnings;

our (@ISA, @EXPORT_OK);
BEGIN {
    require Exporter;
    @ISA = qw(Exporter);
    @EXPORT_OK = qw(munge frobnicate); # symbols to export on request
}

```

The C<BEGIN> will assure that the loading of F<Exporter.pm> and the assignments to C<@ISA> and C<@EXPORT\_OK> happen immediately, leaving no room for something to get awry or just plain wrong.

With respect to loading C<Exporter> and inheriting, there are alternatives with the use of modules like C<base> and C<parent>.

```

use base qw( Exporter );
# or
use parent qw( Exporter );

```

Any of these statements are nice replacements for C<BEGIN { require Exporter; @ISA = qw(Exporter); }> with the same compile-time effect. The basic difference is that C<base> code interacts with declared C<fields> while C<parent> is a streamlined version of the older C<base> code to just establish the IS-A relationship.

For more details, see the documentation and code of L<base> and L<parent>.

Another thorough remedy to that runtime vs. compile-time trap is to use L<Exporter::Easy>, which is a wrapper of Exporter that allows all boilerplate code at a single gulp in the use statement.

```

use Exporter::Easy (
    OK => [ qw(munge frobnicate) ],
);
# @ISA setup is automatic
# all assignments happen at compile time

```

=head2 What Not to Export

You have been warned already in L</Selecting What to Export>

to not export:

=over 4

=item \*

method names (because you don't need to  
and that's likely to not do what you want),

=item \*

anything by default (because you don't want to surprise your users...  
badly)

=item \*

anything you don't need to (because less is more)

=back

There's one more item to add to this list. Do B<not>  
export variable names. Just because C<Exporter> lets you  
do that, it does not mean you should.

```
@EXPORT_OK = qw( $svar @avar %hvar ); # DON'T!
```

Exporting variables is not a good idea. They can  
change under the hood, provoking horrible  
effects at-a-distance, that are too hard to track  
and to fix. Trust me: they are not worth it.

To provide the capability to set/get class-wide  
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=head1 SEE ALSO

C<Exporter> is definitely not the only module with  
symbol exporter capabilities. At CPAN, you may find  
a bunch of them. Some are lighter. Some  
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a sample list of such modules.

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## 1.2 spring-boot 2.0.4

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## 1.4 zlib 2.27 41.base.el7

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

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## 1.6 centos-release-qemu-ev 1.0-4.el7.centos

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## 1.9 aop-alliance 5.0.8

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## 1.10 springfox-swagger-common 2.8.0

### 1.11 lapack 5.3.7

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## 1.12 libcap-ng 0.7.5 4.e17

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## 1.13 xalan 1.8

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@c End:
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If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts, replace the ``with@dots{ }Texts." line with this:

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with the Invariant Sections being @var{list their titles}, with the Front-Cover Texts being @var{list}, and with the Back-Cover Texts being @var{list}.

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If your document contains nontrivial examples of program code, we recommend releasing these examples in parallel under your choice of free software license, such as the GNU General Public License, to permit their use in free software.

@c Local Variables:

@c ispell-local-pdict: "ispell-dict"

@c End:

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Version 2, June 1991

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[This is the first released version of the library GPL. It is  
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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

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it. And you must show them these terms so they know their rights.

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For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this

case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not

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

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

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

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

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

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

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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

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

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

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

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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@appendixsubsec Preamble

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Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the @dfn{Lesser} General Public License because it does @emph{Less} to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library" and a ``work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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@appendixsubsec TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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@ifinfo

@center GNU LESSER GENERAL PUBLIC LICENSE

@center TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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The modified work must itself be a software library.

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Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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

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

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

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

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

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You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

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

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

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

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@iftex
@heading END OF TERMS AND CONDITIONS
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@center END OF TERMS AND CONDITIONS
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@page
@appendixsubsec How to Apply These Terms to Your New Libraries
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```
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```

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```
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```

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'Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990

Ty Coon, President of Vice

@end smallexample

That's all there is to it!

(This file is under construction.) -\*- text -\*-

If you've contributed to gas and your name isn't listed here, it is  
not meant as a slight. I just don't know about it. Email me,  
nickc@redhat.com and I'll correct the situation.

This file will eventually be deleted: The general info will go into  
the documentation, and info on specific files will go into an AUTHORS  
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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for  
gdb-specific debug information and the 68k series machines, most of  
the preprocessing pass, and extensive changes in messages.c,  
input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various  
enhancements and many bug fixes, including merging support for several  
processors, breaking gas up to handle multiple object file format  
backends (including heavy rewrite, testing, an integration of the coff  
and b.out backends), adding configuration including heavy testing and  
verification of cross assemblers and file splits and renaming,  
converted gas to strictly ansi C including full prototypes, added  
support for m680[34]0 & cpu32, considerable work on i960 including a  
coff port (including considerable amounts of reverse engineering), a  
sparc opcode file rewrite, decstation, rs6000, and hp300hpux host  
ports, updated "know" assertions and made them work, much other  
reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of  
the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan.  
Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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## 1.17 mpfr 3.1.1 4.e17

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## 1.18 e2fsprogs 1.42.9 16.el7

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\*/

Index: tdbsa/tdb.c

=====  
--- tdbsa.orig/tdb.c

+++ tdbsa/tdb.c

@@ -4,11 +4,11 @@ Rev: 23371

Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)

\*/

/\*

- Unix SMB/CIFS implementation.  
+ trivial database library - standalone version

- trivial database library - private includes

-

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This package was added to the e2fsprogs debian source package by  
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

<http://sourceforge.net/projects/e2fsprogs>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

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This is the Debian GNU/Linux prepackaged version of the static EXT2 file system consistency checker (e2fsck.static). The EXT2 utilities were written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

Sources were obtained from <http://sourceforge.net/projects/e2fsprogs>

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This is the Debian GNU/Linux prepackaged version of the Common Error  
Description library. It is currently distributed together with the EXT2 file  
system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>,  
from sources obtained from a mirror of:  
`tsx-11.mit.edu:/pub/linux/packages/ext2fs/`

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#

# This is a Makefile stub which handles the creation of BSD shared  
# libraries.

#

# In order to use this stub, the following makefile variables must be defined.

#

# BSDLIB\_VERSION = 1.0

# BSDLIB\_IMAGE = libce

# BSDLIB\_MYDIR = et

# BSDLIB\_INSTALL\_DIR = \$(SHLIBDIR)

#

all:: image

real-subdirs:: Makefile

@echo " MKDIR pic"

@mkdir -p pic

BSD\_LIB = \$(BSDLIB\_IMAGE).so.\$(BSDLIB\_VERSION)

```
BSDLIB_PIC_FLAG = -fpic
```

```
image: $(BSD_LIB)
```

```
$(BSD_LIB): $(OBJS)
(cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS) $(OBJS))
$(MV) pic/$(BSD_LIB) .
$(RM) -f ../$(BSD_LIB)
(cd ..; $(LN) $(LINK_BUILD_FLAGS) \
`echo $(my_dir) | sed -e 's;lib/;;'/'$(BSD_LIB) $(BSD_LIB))
```

```
install-shlibs install: $(BSD_LIB)
@echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
@$(INSTALL_PROGRAM) $(BSD_LIB) \
$(DESTDIR)$$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
@-$(LDCONFIG)
```

```
install-strip: install
```

```
install-shlibs-strip: install-shlibs
```

```
uninstall-shlibs uninstall:
$(RM) -f $(DESTDIR)$$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
```

```
clean:
$(RM) -rf pic
$(RM) -f $(BSD_LIB)
$(RM) -f ../$(BSD_LIB)
```

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Theodore Ts'o  
23-June-2007

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FIRST NOTE:

This file contains some details about the copyright history of contributions to the UnZip project.

Additionally, it summarises some exceptions to the general BSD-like copyright found in LICENSE that covers our generic code and most of the system specific ports.

Please read LICENSE first to find out what is allowed to do with Info-ZIP's UnZip code.

-----

There are currently two explicit copyrights on portions of UnZip code (at least, of which Info-ZIP is aware):

Jim Luther's Mac OS File Manager interface code; and Christopher Evans' MacBinaryIII coding code (for the MacOS port).. These copyrights are discussed in more detail below.

All remaining code is now (starting with UnZip version 5.41) covered by the new Info-ZIP license. For details, please read the accompanying file LICENSE. The terms and conditions in this license supersede the copyright conditions of the contributions by Igor Mandrichenko (vms/vms.c), Greg Roelofs (zipinfo.c, new version of unshrink.c), Mike White (Windows DLL code in "windll/\*"), Steve P. Miller (Pocket UnZip GUI "wince/\*"), and Mark Adler (inflate/explode decompression)

core routines, previously put into the public domain). All these Info-ZIP contributors (or "primary" authors) have permitted us to replace their copyright notes by the Info-ZIP License.

Frequently Asked Questions regarding (re)distribution of Zip and UnZip are near the end of this file.

There are no known patents on any of the code in UnZip. Unisys claims a patent on LZW encoding and on LZW decoding in an apparatus that performs LZW encoding, but the patent appears to exempt a stand-alone decoder (as in UnZip's unshrink.c). Unisys has publicly claimed otherwise, but the issue has never been tested in court. Since this point is unclear, unshrinking is not enabled by default. It is the responsibility of the user to make his or her peace with Unisys and its licensing requirements. (unshrink.c may be removed from future releases altogether.)

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The original unzip source code has been extensively modified and almost entirely rewritten (changes include random zipfile access rather than sequential; replacement of unimplode() with explode(); replacement of old unshrink() with new (unrelated) unshrink(); replacement of output routines; addition of inflate(), wildcards, filename-mapping, text translation, ...; etc.). As far as we can tell, only the core code of the unreduce method remained substantially similar to Mr. Smith's original source. As of UnZip 5.42, the complete core code is now covered by the Info-ZIP Licence. Therefore, support for the reduce method has been removed.

The drop of the reduce method should only affect some test archives, reducing was never used in any publically distributed Zip program. For pathologic cases where support for reduced archive entries is needed, the unreduce code copyrighted by Samuel H. Smith is available as a separate distribution (the restricted copyright of this code is cited below in the "historical" section).

The following copyright applies to the Mac OS File Manager interface code (macos/source/macstuff.[ch]), distributed with UnZip 5.4 and later:

- \* MoreFiles
- \*
- \* A collection of File Manager and related routines
- \*
- \* by Jim Luther (Apple Macintosh Developer Technical Support Emeritus)
- \* with significant code contributions by Nitin Ganatra
- \* (Apple Macintosh Developer Technical Support Emeritus)
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 (extra field compatibility with ZipIt):

\* MacBinaryIII.h  
 \*  
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 \*  
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 \* MacBinary III spec.  
 \* -----  
 \* This source is copyrighted by Christopher Evans (cevens@poppybank.com)  
 \* (available at ftp://ftp.lazerware.com/MacBinaryIII\_src\_C.sit  
 \* homepage of Leonard Rosenthol leonardr@netcom.com)

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-----  
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Regarding the first stipulation, Mr. Smith was tracked down in southern California some years back [Samuel H. Smith, The Tool Shop; as of mid-May 1994, (213) 851-9969 (voice), (213) 887-2127(?) (subscription BBS), 71150.2731@compuserve.com]:

"He says that he thought that whoever contacted him understood that he has no objection to the Info-ZIP group's inclusion of his code. His primary concern is that it remain freely distributable, he said."

Despite the fact that our "normal" code has been entirely rewritten and by default no longer contains any of Mr. Smith's code, Info-ZIP remains indebted and grateful to him. We hope he finds our contributions as useful as we have his.

Note that the third and fourth stipulations still apply to any company that wishes to incorporate the unreduce code into its products; if you wish to do so, you must contact Mr. Smith directly regarding licensing.

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- \* from Steve P. Miller.

-----

The remaining code was written by many people associated with the Info-ZIP group, with large contributions from (but not limited to): Greg Roelofs (overall program logic, ZipInfo, unshrink, filename mapping/portability, etc.), Mark Adler (inflate, explode, funzip), Kai Uwe Rommel (OS/2), John Bush and Paul Kienitz (Amiga), Antoine Verheijen (Macintosh), Hunter Goatley (more VMS), Mike White (Windows DLLs), Christian Spieler (overall logic, optimization, VMS, etc.) and others. See the file CONTRIBS in the source distribution for a much more complete list of contributors.

The decompression core code for the deflate method (inflate.[ch], explode.c) was originally written by Mark Adler who submitted it as public domain code.

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## 1.20 atk 2.28.1 1.e17

### 1.20.1 Available under license :

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# 1.23 perl-filter 1.49-3.el7

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abstract: 'Source Filters'

author:

- 'Paul Marquess <[pmqs@cpan.org](mailto:pmqs@cpan.org)>'

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:  
ExtUtils::MakeMaker: 0  
dynamic\_config: 1  
generated\_by: 'ExtUtils::MakeMaker version 6.64, CPAN::Meta::Converter version 2.120630'  
license: perl  
meta-spec:  
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>  
version: 1.4  
name: Filter  
no\_index:  
directory:  
- t  
- inc  
recommends:  
Filter::Simple: 0.88  
Filter::Simple::Compile: 0.02  
requires: {}  
resources:  
license: <http://dev.perl.org/licenses/>  
repository: <https://github.com/rurban/Filter>  
version: 1.49

Found in path(s):

\* /opt/cola/permits/1000849030\_1646171520.04/0/perl-Filter-1.49-3.el7.src.rpm-cosi-expand-archive-ZTmD2BdE/Filter-1.49.tar.gz-cosi-expand-archive-iNJ8NX82/Filter-1.49/META.yml

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=head1 NAME

perlfiter - Source Filters

=head1 DESCRIPTION

This article is about a little-known feature of Perl called I<source filters>. Source filters alter the program text of a module before Perl sees it, much as a C preprocessor alters the source text of a C program before the compiler sees it. This article tells you more about what source filters are, how they work, and how to write your own.

The original purpose of source filters was to let you encrypt your program source to prevent casual piracy. This isn't all they can do, as you'll soon learn. But first, the basics.

## =head1 CONCEPTS

Before the Perl interpreter can execute a Perl script, it must first read it from a file into memory for parsing and compilation. If that script itself includes other scripts with a C<use> or C<require> statement, then each of those scripts will have to be read from their respective files as well.

Now think of each logical connection between the Perl parser and an individual file as a I<source stream>. A source stream is created when the Perl parser opens a file, it continues to exist as the source code is read into memory, and it is destroyed when Perl is finished parsing the file. If the parser encounters a C<require> or C<use> statement in a source stream, a new and distinct stream is created just for that file.

The diagram below represents a single source stream, with the flow of source from a Perl script file on the left into the Perl parser on the right. This is how Perl normally operates.

file -----> parser

There are two important points to remember:

=over 5

=item 1.

Although there can be any number of source streams in existence at any given time, only one will be active.

=item 2.

Every source stream is associated with only one file.

=back

A source filter is a special kind of Perl module that intercepts and modifies a source stream before it reaches the parser. A source filter changes our diagram like this:

```
file ----> filter ----> parser
```

If that doesn't make much sense, consider the analogy of a command pipeline. Say you have a shell script stored in the compressed file `I<trial.gz>`. The simple pipeline command below runs the script without needing to create a temporary file to hold the uncompressed file.

```
gunzip -c trial.gz | sh
```

In this case, the data flow from the pipeline can be represented as follows:

```
trial.gz ----> gunzip ----> sh
```

With source filters, you can store the text of your script compressed and use a source filter to uncompress it for Perl's parser:

```
compressed      gunzip  
Perl program ---> source filter ---> parser
```

=head1 USING FILTERS

So how do you use a source filter in a Perl script? Above, I said that a source filter is just a special kind of module. Like all Perl modules, a source filter is invoked with a `use` statement.

Say you want to pass your Perl source through the C preprocessor before execution. As it happens, the source filters distribution comes with a C preprocessor filter module called `Filter::cpp`.

Below is an example program, `C<cpp_test>`, which makes use of this filter. Line numbers have been added to allow specific lines to be referenced easily.

```
1: use Filter::cpp;  
2: #define TRUE 1  
3: $a = TRUE;  
4: print "a = $a\n";
```

When you execute this script, Perl creates a source stream for the file. Before the parser processes any of the lines from the file, the source stream looks like this:

```
cpp_test -----> parser
```

Line 1, C<use Filter::cpp>, includes and installs the C<cpp> filter module. All source filters work this way. The use statement is compiled and executed at compile time, before any more of the file is read, and it attaches the cpp filter to the source stream behind the scenes. Now the data flow looks like this:

```
cpp_test ----> cpp filter ----> parser
```

As the parser reads the second and subsequent lines from the source stream, it feeds those lines through the C<cpp> source filter before processing them. The C<cpp> filter simply passes each line through the real C preprocessor. The output from the C preprocessor is then inserted back into the source stream by the filter.

```

      .-> cpp --.
      |      |
      |      |
      |      <-'
cpp_test ----> cpp filter ----> parser

```

The parser then sees the following code:

```
use Filter::cpp;
$a = 1;
print "a = $a\n";
```

Let's consider what happens when the filtered code includes another module with use:

```
1: use Filter::cpp;
2: #define TRUE 1
3: use Fred;
4: $a = TRUE;
5: print "a = $a\n";
```

The C<cpp> filter does not apply to the text of the Fred module, only to the text of the file that used it (C<cpp\_test>). Although the use statement on line 3 will pass through the cpp filter, the module that gets included (C<Fred>) will not. The source streams look like this after line 3 has been parsed and before line 4 is parsed:

```
cpp_test ----> cpp filter ---> parser (INACTIVE)

Fred.pm ----> parser
```

As you can see, a new stream has been created for reading the source from C<Fred.pm>. This stream will remain active until all of C<Fred.pm>

has been parsed. The source stream for C<cpp\_test> will still exist, but is inactive. Once the parser has finished reading Fred.pm, the source stream associated with it will be destroyed. The source stream for C<cpp\_test> then becomes active again and the parser reads line 4 and subsequent lines from C<cpp\_test>.

You can use more than one source filter on a single file. Similarly, you can reuse the same filter in as many files as you like.

For example, if you have a uuencoded and compressed source file, it is possible to stack a uuencode filter and an uncompression filter like this:

```
use Filter::uuencode; use Filter::uncompress;
M'XL("H<US4"V9I;F%L)Q;>7/;1I;_>_I3=&E=%:F*I"T?22Q/
M6]9*<IQCO*XFT"0[PL%%'Y+IG?WN^ZYN-$J.[.JE$,20/?K=_[>
...
```

Once the first line has been processed, the flow will look like this:

```
file ---> uuencode ---> uncompress ---> parser
      filter      filter
```

Data flows through filters in the same order they appear in the source file. The uuencode filter appeared before the uncompress filter, so the source file will be uuencoded before it's uncompressed.

## =head1 WRITING A SOURCE FILTER

There are three ways to write your own source filter. You can write it in C, use an external program as a filter, or write the filter in Perl. I won't cover the first two in any great detail, so I'll get them out of the way first. Writing the filter in Perl is most convenient, so I'll devote the most space to it.

## =head1 WRITING A SOURCE FILTER IN C

The first of the three available techniques is to write the filter completely in C. The external module you create interfaces directly with the source filter hooks provided by Perl.

The advantage of this technique is that you have complete control over the implementation of your filter. The big disadvantage is the increased complexity required to write the filter - not only do you need to understand the source filter hooks, but you also need a reasonable knowledge of Perl guts. One of the few times it is worth going to this trouble is when writing a source scrambler. The C<decrypt> filter (which unscrambles the source before Perl parses it)

included with the source filter distribution is an example of a C source filter (see Decryption Filters, below).

=over 5

=item B<Decryption Filters>

All decryption filters work on the principle of "security through obscurity." Regardless of how well you write a decryption filter and how strong your encryption algorithm is, anyone determined enough can retrieve the original source code. The reason is quite simple - once the decryption filter has decrypted the source back to its original form, fragments of it will be stored in the computer's memory as Perl parses it. The source might only be in memory for a short period of time, but anyone possessing a debugger, skill, and lots of patience can eventually reconstruct your program.

That said, there are a number of steps that can be taken to make life difficult for the potential cracker. The most important: Write your decryption filter in C and statically link the decryption module into the Perl binary. For further tips to make life difficult for the potential cracker, see the file `I<decrypt.pm>` in the source filters distribution.

=back

=head1 CREATING A SOURCE FILTER AS A SEPARATE EXECUTABLE

An alternative to writing the filter in C is to create a separate executable in the language of your choice. The separate executable reads from standard input, does whatever processing is necessary, and writes the filtered data to standard output. `C<Filter::cpp>` is an example of a source filter implemented as a separate executable - the executable is the C preprocessor bundled with your C compiler.

The source filter distribution includes two modules that simplify this task: `C<Filter::exec>` and `C<Filter::sh>`. Both allow you to run any external executable. Both use a coprocess to control the flow of data into and out of the external executable. (For details on coprocesses, see Stephens, W.R., "Advanced Programming in the UNIX Environment." Addison-Wesley, ISBN 0-210-56317-7, pages 441-445.) The difference between them is that `C<Filter::exec>` spawns the external command directly, while `C<Filter::sh>` spawns a shell to execute the external command. (Unix uses the Bourne shell; NT uses the cmd shell.) Spawning a shell allows you to make use of the shell metacharacters and redirection facilities.

Here is an example script that uses C<Filter::sh>:

```
use Filter::sh 'tr XYZ PQR';
$a = 1;
print "XYZ a = $a\n";
```

The output you'll get when the script is executed:

```
PQR a = 1
```

Writing a source filter as a separate executable works fine, but a small performance penalty is incurred. For example, if you execute the small example above, a separate subprocess will be created to run the Unix C<tr> command. Each use of the filter requires its own subprocess. If creating subprocesses is expensive on your system, you might want to consider one of the other options for creating source filters.

#### =head1 WRITING A SOURCE FILTER IN PERL

The easiest and most portable option available for creating your own source filter is to write it completely in Perl. To distinguish this from the previous two techniques, I'll call it a Perl source filter.

To help understand how to write a Perl source filter we need an example to study. Here is a complete source filter that performs rot13 decoding. (Rot13 is a very simple encryption scheme used in Usenet postings to hide the contents of offensive posts. It moves every letter forward thirteen places, so that A becomes N, B becomes O, and Z becomes M.)

```
package Rot13;

use Filter::Util::Call;

sub import {
    my ($type) = @_ ;
    my ($ref) = [];
    filter_add(bless $ref);
}

sub filter {
    my ($self) = @_ ;
    my ($status);

    tr/n-za-mN-ZA-M/a-zA-Z/
    if ($status = filter_read()) > 0;
    $status;
}
```



```
}
```

```
1;
```

All Perl source filters are implemented as Perl classes and have the same basic structure as the example above.

First, we include the `C<Filter::Util::Call>` module, which exports a number of functions into your filter's namespace. The filter shown above uses two of these functions, `C<filter_add()>` and `C<filter_read()>`.

Next, we create the filter object and associate it with the source stream by defining the `C<import>` function. If you know Perl well enough, you know that `C<import>` is called automatically every time a module is included with a use statement. This makes `C<import>` the ideal place to both create and install a filter object.

In the example filter, the object (`C<$ref>`) is blessed just like any other Perl object. Our example uses an anonymous array, but this isn't a requirement. Because this example doesn't need to store any context information, we could have used a scalar or hash reference just as well. The next section demonstrates context data.

The association between the filter object and the source stream is made with the `C<filter_add()>` function. This takes a filter object as a parameter (`C<$ref>` in this case) and installs it in the source stream.

Finally, there is the code that actually does the filtering. For this type of Perl source filter, all the filtering is done in a method called `C<filter()>`. (It is also possible to write a Perl source filter using a closure. See the `C<Filter::Util::Call>` manual page for more details.) It's called every time the Perl parser needs another line of source to process. The `C<filter()>` method, in turn, reads lines from the source stream using the `C<filter_read()>` function.

If a line was available from the source stream, `C<filter_read()>` returns a status value greater than zero and appends the line to `C<$_>`. A status value of zero indicates end-of-file, less than zero means an error. The filter function itself is expected to return its status in the same way, and put the filtered line it wants written to the source stream in `C<$_>`. The use of `C<$_>` accounts for the brevity of most Perl source filters.

In order to make use of the rot13 filter we need some way of encoding the source file in rot13 format. The script below, `C<mkrot13>`, does just that.

```
die "usage mkrot13 filename\n" unless @ARGV;
my $in = $ARGV[0];
my $out = "$in.tmp";
open(IN, "<$in") or die "Cannot open file $in: $!\n";
open(OUT, ">$out") or die "Cannot open file $out: $!\n";
```

```
print OUT "use Rot13;\n";
while (<IN>) {
    tr/a-zA-Z/n-za-mN-ZA-M/;
    print OUT;
}
```

```
close IN;
close OUT;
unlink $in;
rename $out, $in;
```

If we encrypt this with C<mkrot13>:

```
print " hello fred \n";
```

the result will be this:

```
use Rot13;
cevag "uryyb serq\`a";
```

Running it produces this output:

```
hello fred
```

=head1 USING CONTEXT: THE DEBUG FILTER

The rot13 example was a trivial example. Here's another demonstration that shows off a few more features.

Say you wanted to include a lot of debugging code in your Perl script during development, but you didn't want it available in the released product. Source filters offer a solution. In order to keep the example simple, let's say you wanted the debugging output to be controlled by an environment variable, C<DEBUG>. Debugging code is enabled if the variable exists, otherwise it is disabled.

Two special marker lines will bracket debugging code, like this:

```
## DEBUG_BEGIN
if ($year > 1999) {
    warn "Debug: millennium bug in year $year\n";
}
```

```
## DEBUG_END
```

The filter ensures that Perl parses the code between the <DEBUG\_BEGIN> and C<DEBUG\_END> markers only when the C<DEBUG> environment variable exists. That means that when C<DEBUG> does exist, the code above should be passed through the filter unchanged. The marker lines can also be passed through as-is, because the Perl parser will see them as comment lines. When C<DEBUG> isn't set, we need a way to disable the debug code. A simple way to achieve that is to convert the lines between the two markers into comments:

```
## DEBUG_BEGIN
#if ($year > 1999) {
#   warn "Debug: millennium bug in year $year\n";
#}
## DEBUG_END
```

Here is the complete Debug filter:

```
package Debug;

use strict;
use warnings;
use Filter::Util::Call;

use constant TRUE => 1;
use constant FALSE => 0;

sub import {
    my ($type) = @_ ;
    my (%context) = (
        Enabled => defined $ENV{DEBUG},
        InTraceBlock => FALSE,
        Filename => (caller)[1],
        LineNo => 0,
        LastBegin => 0,
    );
    filter_add(bless \%context);
}

sub Die {
    my ($self) = shift;
    my ($message) = shift;
    my ($line_no) = shift || $self->{LastBegin};
    die "$message at $self->{Filename} line $line_no.\n"
}

sub filter {
```

```

my ($self) = @_;
my ($status);
$status = filter_read();
++ $self->{LineNo};

# deal with EOF/error first
if ($status <= 0) {
    $self->Die("DEBUG_BEGIN has no DEBUG_END")
    if $self->{InTraceBlock};
    return $status;
}

if ($self->{InTraceBlock}) {
    if (/^\s*##\s*DEBUG_BEGIN/) {
        $self->Die("Nested DEBUG_BEGIN", $self->{LineNo})
    } elsif (/^\s*##\s*DEBUG_END/) {
        $self->{InTraceBlock} = FALSE;
    }

    # comment out the debug lines when the filter is disabled
    s/^\s*##\s*DEBUG_BEGIN/ if ! $self->{Enabled};
} elsif (/^\s*##\s*DEBUG_BEGIN/) {
    $self->{InTraceBlock} = TRUE;
    $self->{LastBegin} = $self->{LineNo};
} elsif (/^\s*##\s*DEBUG_END/) {
    $self->Die("DEBUG_END has no DEBUG_BEGIN", $self->{LineNo});
}
return $status;
}

1;

```

The big difference between this filter and the previous example is the use of context data in the filter object. The filter object is based on a hash reference, and is used to keep various pieces of context information between calls to the filter function. All but two of the hash fields are used for error reporting. The first of those two, Enabled, is used by the filter to determine whether the debugging code should be given to the Perl parser. The second, InTraceBlock, is true when the filter has encountered a C<DEBUG\_BEGIN> line, but has not yet encountered the following C<DEBUG\_END> line.

If you ignore all the error checking that most of the code does, the essence of the filter is as follows:

```

sub filter {
    my ($self) = @_;
    my ($status);

```

```

$status = filter_read();

# deal with EOF/error first
return $status if $status <= 0;
if ($self->{InTraceBlock}) {
    if (/^\s*##\s*DEBUG_END/) {
        $self->{InTraceBlock} = FALSE
    }

    # comment out debug lines when the filter is disabled
    s/^\#/ if ! $self->{Enabled};
} elsif ( /^\s*##\s*DEBUG_BEGIN/ ) {
    $self->{InTraceBlock} = TRUE;
}
return $status;
}

```

Be warned: just as the C-preprocessor doesn't know C, the Debug filter doesn't know Perl. It can be fooled quite easily:

```

print <<EOM;
##DEBUG_BEGIN
EOM

```

Such things aside, you can see that a lot can be achieved with a modest amount of code.

=head1 CONCLUSION

You now have better understanding of what a source filter is, and you might even have a possible use for them. If you feel like playing with source filters but need a bit of inspiration, here are some extra features you could add to the Debug filter.

First, an easy one. Rather than having debugging code that is all-or-nothing, it would be much more useful to be able to control which specific blocks of debugging code get included. Try extending the syntax for debug blocks to allow each to be identified. The contents of the C<DEBUG> environment variable can then be used to control which blocks get included.

Once you can identify individual blocks, try allowing them to be nested. That isn't difficult either.

Here is an interesting idea that doesn't involve the Debug filter. Currently Perl subroutines have fairly limited support for formal parameter lists. You can specify the number of parameters and their type, but you still have to manually take them out of the C<@\_> array

yourself. Write a source filter that allows you to have a named parameter list. Such a filter would turn this:

```
sub MySub ($first, $second, @rest) { ... }
```

into this:

```
sub MySub($$@) {  
  my ($first) = shift;  
  my ($second) = shift;  
  my (@rest) = @_;  
  ...  
}
```

Finally, if you feel like a real challenge, have a go at writing a full-blown Perl macro preprocessor as a source filter. Borrow the useful features from the C preprocessor and any other macro processors you know. The tricky bit will be choosing how much knowledge of Perl's syntax you want your filter to have.

=head1 THINGS TO LOOK OUT FOR

=over 5

=item Some Filters Clobber the C<DATA> Handle

Some source filters use the C<DATA> handle to read the calling program. When using these source filters you cannot rely on this handle, nor expect any particular kind of behavior when operating on it. Filters based on `Filter::Util::Call` (and therefore `Filter::Simple`) do not alter the C<DATA> filehandle.

=back

=head1 REQUIREMENTS

The Source Filters distribution is available on CPAN, in

`CPAN/modules/by-module/Filter`

Starting from Perl 5.8 `Filter::Util::Call` (the core part of the Source Filters distribution) is part of the standard Perl distribution. Also included is a friendlier interface called `Filter::Simple`, by Damian Conway.

=head1 AUTHOR

Paul Marquess E<lt>Paul.Marquess@btinternet.comE<gt>

=head1 Copyrights

This article originally appeared in The Perl Journal #11, and is copyright 1998 The Perl Journal. It appears courtesy of Jon Orwant and The Perl Journal. This document may be distributed under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1000849030_1646171520.04/0/perl-Filter-1.49-3.el7.src.rpm-cosi-expand-archive-ZTmD2BdE/Filter-1.49.tar.gz-cosi-expand-archive-iNJ8NX82/Filter-1.49/perlfiler.pod
```

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

```
/*
```

```
* Filename : Call.xs
```

```
*
```

```
* Author  : Paul Marquess
```

```
* Date   : 2013-03-29 09:04:42 rurban
```

```
* Version : 1.49
```

```
*
```

```
* Copyright (c) 1995-2011 Paul Marquess. All rights reserved.
```

```
* This program is free software; you can redistribute it and/or
```

```
* modify it under the same terms as Perl itself.
```

```
*
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1000849030_1646171520.04/0/perl-Filter-1.49-3.el7.src.rpm-cosi-expand-archive-ZTmD2BdE/Filter-1.49.tar.gz-cosi-expand-archive-iNJ8NX82/Filter-1.49/Call/Call.xs
```

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

```
/*
```

```
-----
```

ppport.h -- Perl/Pollution/Portability Version 3.16

Automatically created by Devel::PPPport running under perl 5.011000.

Do NOT edit this file directly! -- Edit PPPport\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

```
-----
```

SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.16

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help	show short help
--version	show version
--patch=file	write one patch file with changes
--copy=suffix	write changed copies with suffix
--diff=program	use diff program and options
--compat-version=version	provide compatibility with Perl version
--cplusplus	accept C++ comments
--quiet	don't output anything except fatal errors
--nodiag	don't show diagnostics
--nohints	don't show hints
--nochanges	don't suggest changes
--nofilter	don't filter input files
--strip	strip all script and doc functionality from ppport.h
--list-provided	list provided API
--list-unsupported	list unsupported API
--api-info=name	show Perl API portability information

=head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.10.0.

=head1 OPTIONS

=head2 --help

Display a brief usage summary.

=head2 --version



Display the version of F<ppport.h>.

```
=head2 --patch=I<file>
```

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

```
=head2 --copy=I<suffix>
```

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does not require any external programs. Note that this does not automatically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither C<--patch> or C<--copy> are given, the default is to simply print the diffs for each file. This requires either C<Text::Diff> or a C<diff> program to be installed.

```
=head2 --diff=I<program>
```

Manually set the diff program and options to use. The default is to use C<Text::Diff>, when installed, and output unified context diffs.

```
=head2 --compat-version=I<version>
```

Tell F<ppport.h> to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of F<ppport.h> if you intend to be backward compatible only down to a certain Perl version.

```
=head2 --cplusplus
```

Usually, F<ppport.h> will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs F<ppport.h> to leave C++ comments untouched.

```
=head2 --quiet
```

Be quiet. Don't print anything except fatal errors.

```
=head2 --nodiag
```

Don't output any diagnostic messages. Only portability alerts will be printed.

```
=head2 --nohints
```

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

```
=head2 --nochanges
```

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

```
=head2 --nofilter
```

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

```
=head2 --strip
```

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort> module is installed.

```
=head2 --list-provided
```

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

```
=head2 --list-unsupported
```

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

```
=head2 --api-info=I<name>
```

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

```
=head1 DESCRIPTION
```

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more C<#define>s in your source code before the inclusion of F<ppport.h>.

These functions or variables will be marked C<explicit> in the list shown by C<--list-provided>.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either C<static> or global variants.

For a C<static> function or variable (used only in a single source file), use:

```
#define NEED_function  
#define NEED_variable
```

For a global function or variable (used in multiple source files), use:

```
#define NEED_function_GLOBAL
```

```
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_parser	NEED_PL_parser	NEED_PL_parser_GLOBAL
PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL
grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_sprintf()	NEED_my_sprintf	NEED_my_sprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSVpv_n_flags()	NEED_newSVpv_n_flags	NEED_newSVpv_n_flags_GLOBAL
newSVpv_n_share()	NEED_newSVpv_n_share	NEED_newSVpv_n_share_GLOBAL
pv_display()	NEED_pv_display	NEED_pv_display_GLOBAL
pv_escape()	NEED_pv_escape	NEED_pv_escape_GLOBAL
pv_pretty()	NEED_pv_pretty	NEED_pv_pretty_GLOBAL
sv_2pv_n_flags()	NEED_sv_2pv_n_flags	NEED_sv_2pv_n_flags_GLOBAL
sv_2pvbyte()	NEED_sv_2pvbyte	NEED_sv_2pvbyte_GLOBAL
sv_catpvf_mg()	NEED_sv_catpvf_mg	NEED_sv_catpvf_mg_GLOBAL
sv_catpvf_mg_nocontext()	NEED_sv_catpvf_mg_nocontext	NEED_sv_catpvf_mg_nocontext_GLOBAL
sv_pvn_force_n_flags()	NEED_sv_pvn_force_n_flags	NEED_sv_pvn_force_n_flags_GLOBAL
sv_setpvf_mg()	NEED_sv_setpvf_mg	NEED_sv_setpvf_mg_GLOBAL
sv_setpvf_mg_nocontext()	NEED_sv_setpvf_mg_nocontext	NEED_sv_setpvf_mg_nocontext_GLOBAL
vload_module()	NEED_vload_module	NEED_vload_module_GLOBAL
vnewSVpvf()	NEED_vnewSVpvf	NEED_vnewSVpvf_GLOBAL
warn()	NEED_warner	NEED_warner_GLOBAL

To avoid namespace conflicts, you can change the namespace of the explicitly exported functions / variables using the C<DPPP\_NAMESPACE> macro. Just C<#define> the macro before including C<ppport.h>:

```
#define DPPP_NAMESPACE MyOwnNamespace_  
#include "ppport.h"
```

The default namespace is C<DPPP\_>.

=back

The good thing is that most of the above can be checked by running `F<ppport.h>` on your source code. See the next section for details.

## =head1 EXAMPLES

To verify whether `F<ppport.h>` is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, `F<ppport.h>` can be run as a Perl script to check your source code. Simply say:

```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different `C<diff>` program or options, using the `C<--diff>` option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the `C<newSVpv<n>` function, use:

```
perl ppport.h --api-info=newSVpv<n>
```

Since the argument to `C<--api-info>` can be a regular expression, you can use

```
perl pport.h --api-info=/_nomg$/
```

to display portability information for all C<\_nomg> functions or

```
perl pport.h --api-info=/.//
```

to display information for all known API elements.

=head1 BUGS

If this version of F<pport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPP> are available on CPAN before sending a bug report.

If F<pport.h> was generated using the latest version of C<Devel::PPP> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPP> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2009, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPP>.

=cut

use strict;

# Disable broken TRIE-optimization

BEGIN { eval '\${^RE\_TRIE\_MAXBUF} = -1' if \$] >= 5.009004 && \$] <= 5.009005 }

my \$VERSION = 3.16;

```
my %opt = (
  quiet => 0,
  diag  => 1,
  hints => 1,
  changes => 1,
  cplusplus => 0,
  filter => 1,
  strip  => 0,
  version => 0,
);
```

```
my($ppport) = $0 =~ /([\w.]+)$/;
my $LF = '(?:\r\n|[\r\n])'; # line feed
my $HS = "[\t]";          # horizontal whitespace
```

# Never use C comments in this file!

```
my $ccs = '/.*';
my $cce = '.*.'/;
my $rcs = quotemeta $ccs;
my $rce = quotemeta $cce;
```

```
eval {
  require Getopt::Long;
```

```

Getopt::Long::GetOptions(\%opt, qw(
    help quiet diag! filter! hints! changes! cplusplus strip version
    patch=s copy=s diff=s compat-version=s
    list-provided list-unsupported api-info=s
)) or usage();
};

if ($@ and grep /^-/, @ARGV) {
    usage() if "@ARGV" =~ /^--?h(?::elp)?$/;
    die "Getopt::Long not found. Please don't use any options.\n";
}

if ($opt{version}) {
    print "This is $0 $VERSION.\n";
    exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
    my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
    if ($@) {
        die "Invalid version number format: '$opt{'compat-version'}'\n";
    }
    die "Only Perl 5 is supported\n" if $r != 5;
    die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
    $opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
    $opt{'compat-version'} = 5;
}

my %API = map { /^(\w+)(\[^\]*)(\[^\]*)(\w*)$/
    ? ( $1 => {
        ($2      ? ( base  => $2 ) : ()),
        ($3      ? ( todo  => $3 ) : ()),
        (index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
        (index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
        (index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
    } )
    : die "invalid spec: $_" } qw(
AvFILLp|5.004050|p
AvFILL|||
CLASS|||n
CPERLscope|||p
CX_CURPAD_SAVE|||
CX_CURPAD_SV|||

```



CopFILEAV|5.006000||p  
CopFILEGV\_set|5.006000||p  
CopFILEGV|5.006000||p  
CopFILESV|5.006000||p  
CopFILE\_set|5.006000||p  
CopFILE|5.006000||p  
CopSTASHPV\_set|5.006000||p  
CopSTASHPV|5.006000||p  
CopSTASH\_eq|5.006000||p  
CopSTASH\_set|5.006000||p  
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);

if (exists $opt{'list-unsupported'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", '.'x(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

# Scan for possible replacement candidates

my(%replace, %need, %hints, %warnings, %depends);

```

```

my $replace = 0;
my($hint, $define, $function);

sub find_api
{
my $code = shift;
$code =~ s{
 /(?: \*[^*]*\*+(?:[^\$ccs][^*]*\*+)* /|/^\r\n*)
 |"[^"\\]*(?:\\.["\\])*"
 |'[^']*'(?:\\.['\\])*' }{}egsx;
grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

while (<DATA>) {
if ($hint) {
my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
if (m{^\s*\s(.*)\s*$}) {
for (@{$hint->[1]}) {
$h->{$_} ||= "; # suppress warning with older perls
$h->{$_} .= "$1\n";
}
}
else { undef $hint }
}

$hint = [$1, [split /,?\s+/, $2]]
if m{^\s*$rccs\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

if ($define) {
if ($define->[1] =~ /\$/) {
$define->[1] .= $_;
}
else {
if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
my @n = find_api($define->[1]);
push @{$depends{$define->[0]}}, @n if @n
}
undef $define;
}
}

$define = [$1, $2] if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

if ($function) {
if (/^/) {
if (exists $API{$function->[0]}) {
my @n = find_api($function->[1]);
push @{$depends{$function->[0]}}, @n if @n
}
}
}
}

```

```

    }
    undef $function;
}
else {
    $function->[1] .= $_;
}
}

$function = [$1, " if m{^DPPP_(my_(\w+))};

$replace = $1 if m{^s*$rcce\s+Replace:\s+(\d+)\s+$rcce\s*$};
$replace{$2} = $1 if $replace and m{^s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+)};
$replace{$2} = $1 if m{^s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+).*rcce\s+Replace\s+$rcce};
$replace{$1} = $2 if m{^s*$rcce\s+Replace (\w+) with (\w+)\s+$rcce\s*$};

if (m{^s*$rcce\s+(\w+(\s*,\s*\w+*))\s+depends\s+on\s+(\w+(\s*,\s*\w+*))\s+$rcce\s*$}) {
    my @deps = map { s/\s+//g; $_ } split /\s/, $3;
    my $d;
    for $d (map { s/\s+//g; $_ } split /\s/, $1) {
        push @{$depends{$d}}, @deps;
    }
}

$need{$1} = 1 if m{^#\s+defined\(\NEED_(\w+)(?:_GLOBAL)?\)};
}

for (values %depends) {
    my %s;
    $_ = [sort grep !${$_}++, @$_];
}

if (exists $opt{'api-info'}) {
    my $f;
    my $count = 0;
    my $match = $opt{'api-info'} =~ m!^(.*)/#! ? $1 : "\Q$opt{'api-info'}\E$";
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $f =~ /$match/;
        print "\n=== $f ===\n\n";
        my $info = 0;
        if ($API{$f}{base} || $API{$f}{todo}) {
            my $base = format_version($API{$f}{base} || $API{$f}{todo});
            print "Supported at least starting from perl-$base.\n";
            $info++;
        }
        if ($API{$f}{provided}) {
            my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
            print "Support by $ppport provided back to perl-$todo.\n";
            print "Support needs to be explicitly requested by NEED_$.f.\n" if exists $need{$f};
        }
    }
}

```

```

print "Depends on: ", join(', ', @{$depends{$f}}), ".\n" if exists $depends{$f};
print "\n$hints{$f}" if exists $hints{$f};
print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
$info++;
}
print "No portability information available.\n" unless $info;
$count++;
}
$count or print "Found no API matching '$opt{api-info}'.";
print "\n";
exit 0;
}

```

```

if (exists $opt{'list-provided'}) {
my $f;
for $f (sort { lc $a cmp lc $b } keys %API) {
next unless $API{$f}{provided};
my @flags;
push @flags, 'explicit' if exists $need{$f};
push @flags, 'depend' if exists $depends{$f};
push @flags, 'hint' if exists $hints{$f};
push @flags, 'warning' if exists $warnings{$f};
my $flags = @flags ? ' [' . join(', ', @flags) . '] : ";
print "$f$flags\n";
}
exit 0;
}

```

```

my @files;
my @srcext = qw(.xs .c .h .cc .cpp -c.inc -xs.inc);
my $srcext = join '|', map { quotemeta $_ } @srcext;

```

```

if (@ARGV) {
my %seen;
for (@ARGV) {
if (-e) {
if (-f) {
push @files, $_ unless $seen{$_}++;
}
else { warn "'$_' is not a file.\n" }
}
else {
my @new = grep { -f } glob $_
or warn "'$_' does not exist.\n";
push @files, grep { !$seen{$_}++ } @new;
}
}
}
}

```

```

else {
eval {
require File::Find;
File::Find::find(sub {
$File::Find::name =~ /($srcext)$/i
and push @files, $File::Find::name;
}, '.');
};
if ($@) {
@files = map { glob "*$_" } @srcext;
}
}

if (!@ARGV || $opt{filter}) {
my(@in, @out);
my %xsc = map { /\.(*)\.xs$/ ? ("$.c" => 1, "$.cc" => 1) : () } @files;
for (@files) {
my $out = exists $xsc{$_} || /\bQ$ppport\E$/i || !/($srcext)$/i;
push @ { $out ? \@out : \@in }, $_;
}
if (@ARGV && @out) {
warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
}
@files = @in;
}

die "No input files given!\n" unless @files;

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

for $filename (@files) {
unless (open IN, "<$filename") {
warn "Unable to read from $filename: $!\n";
next;
}

info("Scanning $filename ...");

my $c = do { local $/; <IN> };
close IN;

my %file = (orig => $c, changes => 0);

# Temporarily remove C/XS comments and strings from the code
my @ccom;

```

```

$C =~ s{
  (^$HS*#$HS*include\b[^\r\n]+\b(?:Q$ppport\E\XSUB\.h)\b[^\r\n]*
  | ^$HS*#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )
| (^$HS*#[^\r\n]*
  | "[^"\\]*(?:\\.[^"\\])*"
  | '[^'\\]*(?:\\.[^'\\])*'
  | /(?:\[^\[\*\]\*\+|(?:\[^\[\*\]\*\+)*\/|/[\r\n]*))
}{ defined $2 and push @ccom, $2;
  defined $1 ? $1 : "$ccs$#ccom$ce" }mgsex;

$file{ccom} = \@ccom;
$file{code} = $C;
$file{has_inc_ppport} = $C =~ /^$HS*#$HS*include[^\r\n]+\bQ$ppport\E\b/m;

my $func;

for $func (keys %API) {
  my $match = $func;
  $match = "$$revreplace{$func}" if exists $revreplace{$func};
  if ($C =~ /\b(?:Perl_)?($match)\b/) {
    $file{uses_replace}{$func}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
    $file{uses_Perl}{$func}++ if $C =~ /\bPerl_$func\b/;
    if (exists $API{$func}{provided}) {
      $file{uses_provided}{$func}++;
      if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
        $file{uses}{$func}++;
        my @deps = rec_depend($func);
        if (@deps) {
          $file{uses_deps}{$func} = \@deps;
          for (@deps) {
            $file{uses}{$_} = 0 unless exists $file{uses}{$_};
          }
        }
        for ($func, @deps) {
          $file{needs}{$_} = 'static' if exists $need{$_};
        }
      }
    }
  }
  if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
    if ($C =~ /\b$func\b/) {
      $file{uses_todo}{$func}++;
    }
  }
}

while ($C =~ /^$HS*#$HS*define$HS+(NEED_(\w+)?)(_GLOBAL?)\b/mg) {

```

```

if (exists $need{$2}) {
    $file{defined $3 ? 'needed_global' : 'needed_static'}{$2}++;
}
else { warning("Possibly wrong #define $1 in $filename") }
}

for (qw(uses needs uses_todo needed_global needed_static)) {
    for $func (keys % {$file{$_}}) {
        push @{$global{$_}{$func}}, $filename;
    }
}

$files{$filename} = \%file;
}

# Globally resolve NEED_'s
my $need;
for $need (keys % {$global{needs}}) {
    if (@{$global{needs}{$need}} > 1) {
        my @targets = @{$global{needs}{$need}};
        my @t = grep $files{$_}{needed_global}{$need}, @targets;
        @targets = @t if @t;
        @t = grep /\.xs$/i, @targets;
        @targets = @t if @t;
        my $target = shift @targets;
        $files{$target}{needs}{$need} = 'global';
        for (@{$global{needs}{$need}}) {
            $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
        }
    }
}

for $filename (@files) {
    exists $files{$filename} or next;

    info("=== Analyzing $filename ===");

    my %file = % {$files{$filename}};
    my $func;
    my $c = $file{code};
    my $warnings = 0;

    for $func (sort keys % {$file{uses_Perl}}) {
        if ($API{$func}{varargs}) {
            unless ($API{$func}{nothxarg}) {
                my $changes = ($c =~ s{\b(Perl_ $func\s*(\s*)(?!aTHX_?)(\s*)}($1 . ($2 eq ') ? 'aTHX' : 'aTHX_') . $2 }ge);
                if ($changes) {

```

```

        warning("Doesn't pass interpreter argument aTHX to Perl_$func");
        $file{changes} += $changes;
    }
}
else {
    warning("Uses Perl_$func instead of $func");
    $file{changes} += ($c =~ s{\bPerl_$func(s*)((\s*aTHX_?)?\s*}
        {$func$1}g);
}
}

for $func (sort keys %{$file{uses_replace}}) {
    warning("Uses $func instead of $replace{$func}");
    $file{changes} += ($c =~ s/\b$func\b/$replace{$func}/g);
}

for $func (sort keys %{$file{uses_provided}}) {
    if ($file{uses}{$func}) {
        if (exists $file{uses_deps}{$func}) {
            diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
        }
        else {
            diag("Uses $func");
        }
    }
    $warnings += hint($func);
}

unless ($opt{quiet}) {
    for $func (sort keys %{$file{uses_todo}}) {
        print "*** WARNING: Uses $func, which may not be portable below perl ",
            format_version($API{$func}{todo}), ", even with '$ppport'\n";
        $warnings++;
    }
}

for $func (sort keys %{$file{needed_static}}) {
    my $message = "";
    if (not exists $file{uses}{$func}) {
        $message = "No need to define NEED_$func if $func is never used";
    }
    elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
        $message = "No need to define NEED_$func when already needed globally";
    }
    if ($message) {
        diag($message);
        $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_$func\b.*$LF//mg);
    }
}

```



```

}
}

for $func (sort keys %{$file{needed_global}}) {
  my $message = "";
  if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_${func}_GLOBAL if $func is never used";
  }
  elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
      $message = "No need to define NEED_${func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
      $message = "No need to define NEED_${func}_GLOBAL when only used in this file";
    }
  }
}
if ($message) {
  diag($message);
  $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_${func}_GLOBAL\b.*$LF//mg);
}
}

```

```

$file{needs_inc_ppport} = keys %{$file{uses}};

```

```

if ($file{needs_inc_ppport}) {
  my $pp = "";

  for $func (sort keys %{$file{needs}}) {
    my $type = $file{needs}{$func};
    next if $type eq 'extern';
    my $suffix = $type eq 'global' ? '_GLOBAL' : "";
    unless (exists $file{"needed_$type"}{$func}) {
      if ($type eq 'global') {
        diag("Files [@$global{needs}{$func}] need $func, adding global request");
      }
      else {
        diag("File needs $func, adding static request");
      }
      $pp .= "#define NEED_${func}$suffix\n";
    }
  }
}

```

```

if ($pp && ($c =~ s/^(?=$HS*#\$HS*define\$HS+NEED_(w+)/$pp/m)) {
  $pp = "";
  $file{changes}++;
}

```

```

unless ($file{has_inc_ppport}) {

```

```

diag("Needs to include '$ppport'");
$pp .= qq(#include "$ppport"\n)
}

if ($pp) {
    $file{changes} += ($c =~ s/^(($HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms)
        || ($c =~ s/^(?=$HS*#$HS*include.*\Q$ppport\E)/$pp/m)
        || ($c =~ s/^(($HS*#$HS*include.*XSUB.*\s*?)/$1$pp/m)
        || ($c =~ s/^\$pp/);
}
}
else {
    if ($file{has_inc_ppport}) {
        diag("No need to include '$ppport'");
        $file{changes} += ($c =~ s/^(($HS*?#$HS*include.*\Q$ppport\E.*?$LF//m);
    }
}

# put back in our C comments
my $ix;
my $cpc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
    if (!$opt{cplusplus} && $ccom[$ix] =~ s!^/!!) {
        $cpc++;
        $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
    }
    else {
        $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
    }
}

if ($cpc) {
    my $s = $cpc != 1 ? 's' : '';
    warning("Uses $cpc C++ style comment$s, which is not portable");
}

my $s = $warnings != 1 ? 's' : '';
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("$newfile' already exists, refusing to write copy of '$filename'");
        }
    }
    else {

```

```

local *F;
if (open F, ">$newfile") {
    info("Writing copy of '$filename' with changes to '$newfile'");
    print F $c;
    close F;
}
else {
    error("Cannot open '$newfile' for writing: $!");
}
}
}
elseif (exists $opt{patch} || $opt{changes}) {
    if (exists $opt{patch}) {
        unless ($patch_opened) {
            if (open PATCH, ">$opt{patch}") {
                $patch_opened = 1;
            }
            else {
                error("Cannot open '$opt{patch}' for writing: $!");
                delete $opt{patch};
                $opt{changes} = 1;
                goto fallback;
            }
        }
        mydiff(\*PATCH, $filename, $c);
    }
    else {
fallback:
        info("Suggested changes:");
        mydiff(\*STDOUT, $filename, $c);
    }
    }
    else {
        my $s = $file{changes} == 1 ? " : 's'";
        info("$file{changes} potentially required change$s detected");
    }
    }
    else {
        info("Looks good");
    }
}
}

close PATCH if $patch_opened;

exit 0;

sub try_use { eval "use @_;" ; return $@ eq " }

```

```

sub mydiff
{
  local *F = shift;
  my($file, $str) = @_;
  my $diff;

  if (exists $opt{diff}) {
    $diff = run_diff($opt{diff}, $file, $str);
  }

  if (!defined $diff and try_use("Text::Diff")) {
    $diff = Text::Diff::diff($file, \$str, { STYLE => 'Unified' });
    $diff = <<HEADER . $diff;
    --- $file
    +++ $file.patched
    HEADER
  }

  if (!defined $diff) {
    $diff = run_diff('diff -u', $file, $str);
  }

  if (!defined $diff) {
    $diff = run_diff('diff', $file, $str);
  }

  if (!defined $diff) {
    error("Cannot generate a diff. Please install Text::Diff or use --copy.");
    return;
  }

  print F $diff;
}

sub run_diff
{
  my($prog, $file, $str) = @_;
  my $tmp = 'dppptemp';
  my $suf = 'aaa';
  my $diff = "";
  local *F;

  while (-e "$tmp.$suf") { $suf++ }
  $tmp = "$tmp.$suf";

  if (open F, ">$tmp") {
    print F $str;
  }
}

```

```

close F;

if (open F, "$prog $file $tmp |") {
  while (<F>) {
    s/Q$tmp\E/$file.patched/;
    $diff .= $_;
  }
  close F;
  unlink $tmp;
  return $diff;
}

unlink $tmp;
}
else {
  error("Cannot open '$tmp' for writing: $!");
}

return undef;
}

sub rec_depend
{
  my($func, $seen) = @_ ;
  return () unless exists $depends{$func};
  $seen = {% {$seen||{}}};
  return () if $seen->{$func}++;
  my %s;
  grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{
  my $ver = shift;

  if ($ver =~ /^(\d+)\.(\d+)\.(\d+)$/) {
    return ($1, $2, $3);
  }
  elsif ($ver !~ /^(\d+)\.([d_]+)$/) {
    die "cannot parse version '$ver'\n";
  }

  $ver =~ s/_//g;
  $ver =~ s/$/000000/;

  my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

  $v = int $v;

```

```

$s = int $s;

if ($r < 5 || ($r == 5 && $v < 6)) {
    if ($s % 10) {
        die "cannot parse version '$ver'\n";
    }
}

return ($r, $v, $s);
}

sub format_version
{
    my $ver = shift;

    $ver =~ s/000000/;
    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {
        if ($s % 10) {
            die "invalid version '$ver'\n";
        }
        $s /= 10;

        $ver = sprintf "%d.%03d", $r, $v;
        $s > 0 and $ver .= sprintf "_%02d", $s;

        return $ver;
    }

    return sprintf "%d.%d.%d", $r, $v, $s;
}

sub info
{
    $opt{quiet} and return;
    print @_, "\n";
}

sub diag
{
    $opt{quiet} and return;
    $opt{diag} and print @_, "\n";
}

```

```

sub warning
{
    $opt{quiet} and return;
    print "*** ", @_, "\n";
}

sub error
{
    print "*** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint
{
    $opt{quiet} and return;
    my $func = shift;
    my $rv = 0;
    if (exists $warnings{$func} && !$given_warnings{$func}++) {
        my $warn = $warnings{$func};
        $warn =~ s/^\!*** !mg;
        print "*** WARNING: $func\n", $warn;
        $rv++;
    }
    if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
        my $hint = $hints{$func};
        $hint =~ s/^\s+ /mg;
        print " --- hint for $func ---\n", $hint;
    }
    $rv;
}

sub usage
{
    my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s*^(.*?)\s*^=/ms;
    my %M = ( 'T' => '*' );
    $usage =~ s/^\s*perl\s+\S+/$^X $0/;
    $usage =~ s/([A-Z])<([^>]+)>/M{$1} $2M{$1}/g;

    print <<ENDUSAGE;

Usage: $usage

See perldoc $0 for details.

ENDUSAGE

exit 2;

```

```

}

sub strip
{
my $self = do { local(@ARGV,$/)=($0); <> };
my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)^\s*=\w+\/ms;
$copy =~ s/^(?=\S+)/ /gms;
$self =~ s/^\$HS+Do NOT edit.*?(?=-)/$copy/ms;
$self =~ s/^\$SKIP.*(?=^__DATA__)/SKIP
if (\@ARGV && \$ARGV[0] eq '--unstrip') {
eval { require Devel::PPPport };
\$_@ and die "Cannot require Devel::PPPport, please install.\n";
if (eval \$Devel::PPPport::VERSION < $VERSION) {
die "$0 was originally generated with Devel::PPPport $VERSION.\n"
. "Your Devel::PPPport is only version \$Devel::PPPport::VERSION.\n"
. "Please install a newer version, or --unstrip will not work.\n";
}
Devel::PPPport::WriteFile(\$0);
exit 0;
}
print <<END;

```

Sorry, but this is a stripped version of \\$.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X \$0 --unstrip
```

```

END
/ms;
my($pl, $c) = $self =~ /(.*^__DATA__)(.*)/ms;
$c =~ s{
 / (?= \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* / | /[\r\n]*
 | ( "[^\\"]*?(?:\\.[^\\"\\"])*"
 | '[^\']*?(?:\\.[^\'\\']*)*' )
 | (\$HS+) }{ defined $2 ? '' : ($1 || " ) }gsex;
$c =~ s!\s+#!mg;
$c =~ s!^\$LF!mg;
$c =~ s!\s*#\s*#!mg;
$c =~ s!\s+!mg;

open OUT, ">$0" or die "cannot strip $0: $!\n";
print OUT "$pl$c\n";

exit 0;
}

```



\_\_DATA\_\_

\*/

Found in path(s):

\* /opt/cola/permits/1000849030\_1646171520.04/0/perl-Filter-1.49-3.el7.src.rpm-cosi-expand-archive-ZTmD2BdE/Filter-1.49.tar.gz-cosi-expand-archive-iNJ8NX82/Filter-1.49/Call/ppport.h

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

Source Filters

Version 1.49

2013-04-01 rurban

Copyright (c) 1995-2011 Paul Marquess. All rights reserved.

This program is free software; you can redistribute it and/or  
modify it under the same terms as Perl itself.

DESCRIPTION

-----

This distribution consists of a number of Source Filters.

For more details see the pod documentation embedded in the .pm files.

If you intend using the Filter::Util::Call functionality, I would strongly recommend that you check out Damian Conway's excellent Filter::Simple module. Damian's module provides a much cleaner interface than Filter::Util::Call. Although it doesn't allow the fine control that Filter::Util::Call does, it should be adequate for the majority of applications. It's available at

<http://search.cpan.org/dist/Filter-Simple/>

PREREQUISITES

-----

Before you can build the Source Filters you need to have the following installed on your system:

\* Perl 5.005 or better. 5.6.0 or better is recommended for Win32.

If your Perl is less than version 5.004\_55, the "order" test harness will be skipped.

## BUILDING THE MODULES

-----

Assuming you have met all the prerequisites, building the modules should be relatively straightforward.

The modules can now be built using this sequence of commands:

```
perl Makefile.PL
make
make test
```

The filters have been successfully built and tested on the following systems (at least):

```
linux (gcc or clang)
cygwin 1.7
mingw strawberry 5.14
SunOS 4.1.3 (Sun C compiler & gcc 2.7.2.3)
Solaris 2.3 (Sun C Compiler)
irix 5.3
irix 6.x
Windows XP (Visual C++ 6.0)
```

On Windows tr.exe and cpp.exe should be really the gnu/mingw tools in the path for the testsuite to pass successfully.

## INSTALLATION

-----

```
make install
```

## UPDATES

-----

The most recent version of the Filters is always available at

```
http://www.cpan.org/modules/by-module/Filter
```

Found in path(s):

```
* /opt/cola/permits/1000849030_1646171520.04/0/perl-Filter-1.49-3.el7.src.rpm-cosi-expand-archive-ZTmD2BdE/Filter-1.49.tar.gz-cosi-expand-archive-iNJ8NX82/Filter-1.49/README
```

# 1.24 jackson 2.9.6

## 1.24.1 Available under license :

ISE uses the Oracle Database server under commercial license.

Cisco does not have a source code license thus it is impossible to upload any source code.

Mon Aug 17 10:11:49 PDT 2020 Martin Fujitani <martinf@cisco.com>

## 1.25 perl-parent 0.225-244.el7

### 1.25.1 Available under license :

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

license: unknown

Found in path(s):

```
* /opt/cola/permits/1000848985_1646171584.8/0/perl-parent-0.225-244.el7.src.rpm-cosi-expand-archive-5cmcz1u3/parent-0.225.tar.gz-cosi-expand-archive-o1p3mWTW/parent-0.225/META.yml
```

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

=encoding utf8

=head1 NAME

parent - Establish an ISA relationship with base classes at compile time

=head1 SYNOPSIS

```
package Baz;
use parent qw(Foo Bar);
```

=head1 DESCRIPTION

Allows you to both load one or more modules, while setting up inheritance from those modules at the same time. Mostly similar in effect to

```
package Baz;
BEGIN {
    require Foo;
    require Bar;
    push @ISA, qw(Foo Bar);
}
```

By default, every base class needs to live in a file of its own.

If you want to have a subclass and its parent class in the same file, you can tell C<parent> not to load any modules by using the C<-norequire> switch:

```
package Foo;
sub exclaim { "I CAN HAS PERL" }

package DoesNotLoadFooBar;
use parent -norequire, 'Foo', 'Bar';
# will not go looking for Foo.pm or Bar.pm
```

This is equivalent to the following code:

```
package Foo;
sub exclaim { "I CAN HAS PERL" }

package DoesNotLoadFooBar;
push @DoesNotLoadFooBar::ISA, 'Foo', 'Bar';
```

This is also helpful for the case where a package lives within a differently named file:

```
package MyHash;
use Tie::Hash;
use parent -norequire, 'Tie::StdHash';
```

This is equivalent to the following code:

```
package MyHash;
require Tie::Hash;
push @ISA, 'Tie::StdHash';
```

If you want to load a subclass from a file that C<require> would not consider an eligible filename (that is, it does not end in either C<.pm> or C<.pmc>), use the following code:

```
package MySecondPlugin;
require './plugins/custom.plugin'; # contains Plugin::Custom
use parent -norequire, 'Plugin::Custom';
```

```
=head1 DIAGNOSTICS
```

```
=over 4
```

```
=item Class 'Foo' tried to inherit from itself
```

Attempting to inherit from yourself generates a warning.

```
package Foo;
use parent 'Foo';
```

```
=back
```

=head1 HISTORY

This module was forked from L<base> to remove the cruft that had accumulated in it.

=head1 CAVEATS

=head1 SEE ALSO

L<base>

=head1 AUTHORS AND CONTRIBUTORS

Rafaël Garcia-Suarez, Bart Lateur, Max Maischein, Anno Siegel, Michael Schwern

=head1 MAINTAINER

Max Maischein C< corion@cpan.org >

Copyright (c) 2007-10 Max Maischein C<< <corion@cpan.org> >>

Based on the idea of C<base.pm>, which was introduced with Perl 5.004\_04.

=head1 LICENSE

This module is released under the same terms as Perl itself.

=cut

Found in path(s):

\* /opt/cola/permits/1000848985\_1646171584.8/0/perl-parent-0.225-244.el7.src.rpm-cosi-expand-archive-5cmcz1u3/parent-0.225.tar.gz-cosi-expand-archive-01p3mWTW/parent-0.225/lib/parent.pm

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848985\_1646171584.8/0/perl-parent-0.225-244.el7.src.rpm-cosi-expand-archive-5cmcz1u3/perl-parent.spec

## 1.26 perl-pod-simple 3.28-4.el7

### 1.26.1 Available under license :

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

=head1 NAME

Pod::Simple - framework for parsing Pod

=head1 SYNOPSIS

TODO

=head1 DESCRIPTION

Pod::Simple is a Perl library for parsing text in the Pod ("plain old documentation") markup language that is typically used for writing documentation for Perl and for Perl modules. The Pod format is explained L<perlpod>; the most common formatter is called C<perldoc>.

Be sure to read L</ENCODING> if your Pod contains non-ASCII characters.

Pod formatters can use Pod::Simple to parse Pod documents and render them into plain text, HTML, or any number of other formats. Typically, such formatters will be subclasses of Pod::Simple, and so they will inherit its methods, like C<parse\_file>.

If you're reading this document just because you have a Pod-processing subclass that you want to use, this document (plus the documentation for the subclass) is probably all you need to read.

If you're reading this document because you want to write a formatter subclass, continue reading it and then read L<Pod::Simple::Subclassing>, and then possibly even read L<perlpodspec> (some of which is for parser-writers, but much of which is notes to formatter-writers).

=head1 MAIN METHODS

=over

=item C<< \$parser = I<SomeClass>->new(); >>

This returns a new parser object, where I<C<SomeClass>> is a subclass of Pod::Simple.

=item C<< \$parser->output\_fh( \*OUT ); >>

This sets the filehandle that C<\$parser>'s output will be written to. You can pass C<\*STDOUT>, otherwise you should probably do something like this:

```
my $outfile = "output.txt";
open TXTOUT, ">$outfile" or die "Can't write to $outfile: $!";
$parser->output_fh(*TXTOUT);
```

...before you call one of the `C<< $parser->parse_I<whatever> >>` methods.

```
=item C<< $parser->output_string( \somestring ); >>
```

This sets the string that `C<$parser>`'s output will be sent to, instead of any filehandle.

```
=item C<< $parser->parse_file( I<$some_filename> ); >>
```

```
=item C<< $parser->parse_file( *INPUT_FH ); >>
```

This reads the Pod content of the file (or filehandle) that you specify, and processes it with that `C<$parser>` object, according to however `C<$parser>`'s class works, and according to whatever parser options you have set up for this `C<$parser>` object.

```
=item C<< $parser->parse_string_document( I<$all_content> ); >>
```

This works just like `C<parse_file>` except that it reads the Pod content not from a file, but from a string that you have already in memory.

```
=item C<< $parser->parse_lines( I<...@lines...>, undef ); >>
```

This processes the lines in `C<@lines>` (where each list item must be a defined value, and must contain exactly one line of content -- so no items like `C<"foo\nbar">` are allowed). The final `C<undef>` is used to indicate the end of document being parsed.

The other `C<parser_I<whatever>>` methods are meant to be called only once per `C<$parser>` object; but `C<parse_lines>` can be called as many times per `C<$parser>` object as you want, as long as the last call (and only the last call) ends with an `C<undef>` value.

```
=item C<< $parser->content_seen >>
```

This returns true only if there has been any real content seen for this document. Returns false in cases where the document contains content, but does not make use of any Pod markup.

```
=item C<< I<SomeClass>->filter( I<$filename> ); >>
```

```
=item C<< I<SomeClass>->filter( I<*INPUT_FH> ); >>
```

```
=item C<< I<SomeClass>->filter( I<\$document_content> ); >>
```

This is a shortcut method for creating a new parser object, setting the output handle to STDOUT, and then processing the specified file (or filehandle, or in-memory document). This is handy for one-liners like this:

```
perl -MPod::Simple::Text -e "Pod::Simple::Text->filter('thingy.pod')"
```

=back

=head1 SECONDARY METHODS

Some of these methods might be of interest to general users, as well as of interest to formatter-writers.

Note that the general pattern here is that the accessor-methods read the attribute's value with `C<< $value = $parser->I<attribute> >>` and set the attribute's value with `C<< $parser->I<attribute>(I<newvalue>) >>`. For each accessor, I typically only mention one syntax or another, based on which I think you are actually most likely to use.

=over

```
=item C<< $parser->parse_characters( I<SOMEVALUE> ) >>
```

The Pod parser normally expects to read octets and to convert those octets to characters based on the `C<=<encoding>` declaration in the Pod source. Set this option to a true value to indicate that the Pod source is already a Perl character stream. This tells the parser to ignore any `C<=<encoding>` command and to skip all the code paths involving decoding octets.

```
=item C<< $parser->no_whining( I<SOMEVALUE> ) >>
```

If you set this attribute to a true value, you will suppress the parser's complaints about irregularities in the Pod coding. By default, this attribute's value is false, meaning that irregularities will be reported.

Note that turning this attribute to true won't suppress one or two kinds of complaints about rarely occurring unrecoverable errors.

```
=item C<< $parser->no_errata_section( I<SOMEVALUE> ) >>
```

If you set this attribute to a true value, you will stop the parser from



generating a "POD ERRORS" section at the end of the document. By default, this attribute's value is false, meaning that an errata section will be generated, as necessary.

```
=item C<< $parser->complain_stderr( I<SOMEVALUE> ) >>
```

If you set this attribute to a true value, it will send reports of parsing errors to `STDERR`. By default, this attribute's value is false, meaning that no output is sent to `STDERR`.

Setting `C<complain_stderr>` also sets `C<no_errata_section>`.

```
=item C<< $parser->source_filename >>
```

This returns the filename that this parser object was set to read from.

```
=item C<< $parser->doc_has_started >>
```

This returns true if `C<$parser>` has read from a source, and has seen Pod content in it.

```
=item C<< $parser->source_dead >>
```

This returns true if `C<$parser>` has read from a source, and come to the end of that source.

```
=item C<< $parser->strip_verbatim_indent( I<SOMEVALUE> ) >>
```

The perlpod spec for a Verbatim paragraph is "It should be reproduced exactly...", which means that the whitespace you've used to indent your verbatim blocks will be preserved in the output. This can be annoying for outputs such as HTML, where that whitespace will remain in front of every line. It's an unfortunate case where syntax is turned into semantics.

If the POD your parsing adheres to a consistent indentation policy, you can have such indentation stripped from the beginning of every line of your verbatim blocks. This method tells `Pod::Simple` what to strip. For two-space indents, you'd use:

```
$parser->strip_verbatim_indent(' ');
```

For tab indents, you'd use a tab character:

```
$parser->strip_verbatim_indent("\t");
```

If the POD is inconsistent about the indentation of verbatim blocks, but you have figured out a heuristic to determine how much a particular verbatim block is indented, you can pass a code reference instead. The code reference will be executed with one argument, an array reference of all the lines in the verbatim block, and should return the value to be stripped from each line. For example, if you decide that you're fine to use the first line of the verbatim block to set the standard for indentation of the rest of the block, you can look at the first line and return the appropriate value, like so:

```
$new->strip_verbatim_indent(sub {
    my $lines = shift;
    (my $indent = $lines->[0]) =~ s/^\s.*//;
    return $indent;
});
```

If you'd rather treat each line individually, you can do that, too, by just transforming them in-place in the code reference and returning C<undef>. Say that you don't want I<any> lines indented. You can do something like this:

```
$new->strip_verbatim_indent(sub {
    my $lines = shift;
    sub { s/^\s+// for @{$lines }},
    return undef;
});
```

=back

=head1 TERTIARY METHODS

=over

=item C<< \$parser->abandon\_output\_fh() >>X<abandon\_output\_fh>

Cancel output to the file handle. Any POD read by the C<\$parser> is not effected.

=item C<< \$parser->abandon\_output\_string() >>X<abandon\_output\_string>

Cancel output to the output string. Any POD read by the C<\$parser> is not effected.

=item C<< \$parser->accept\_code( @codes ) >>X<accept\_code>

Alias for L<< accept\_codes >>.

=item C<< \$parser->accept\_codes( @codes ) >>X<accept\_codes>

Allows C<\$parser> to accept a list of L<perlpod/Formatting Codes>. This can be used to implement user-defined codes.

```
=item C<< $parser->accept_directive_as_data( @directives ) >>X<accept_directive_as_data>
```

Allows C<\$parser> to accept a list of directives for data paragraphs. A directive is the label of a L<perlpod/Command Paragraph>. A data paragraph is one delimited by C<< =begin/=for/=end >> directives. This can be used to implement user-defined directives.

```
=item C<< $parser->accept_directive_as_processed( @directives ) >>X<accept_directive_as_processed>
```

Allows C<\$parser> to accept a list of directives for processed paragraphs. A directive is the label of a L<perlpod/Command Paragraph>. A processed paragraph is also known as L<perlpod/Ordinary Paragraph>. This can be used to implement user-defined directives.

```
=item C<< $parser->accept_directive_as_verbatim( @directives ) >>X<accept_directive_as_verbatim>
```

Allows C<\$parser> to accept a list of directives for L<perlpod/Verbatim Paragraph>. A directive is the label of a L<perlpod/Command Paragraph>. This can be used to implement user-defined directives.

```
=item C<< $parser->accept_target( @targets ) >>X<accept_target>
```

Alias for L<< accept\_targets >>.

```
=item C<< $parser->accept_target_as_text( @targets ) >>X<accept_target_as_text>
```

Alias for L<< accept\_targets\_as\_text >>.

```
=item C<< $parser->accept_targets( @targets ) >>X<accept_targets>
```

Accepts targets for C<< =begin/=for/=end >> sections of the POD.

```
=item C<< $parser->accept_targets_as_text( @targets ) >>X<accept_targets_as_text>
```

Accepts targets for C<< =begin/=for/=end >> sections that should be parsed as POD. For details, see L<< perlpodspec/About Data Paragraphs >>.

```
=item C<< $parser->any_errata_seen() >>X<any_errata_seen>
```

Used to check if any errata was seen.

I<Example:>

```
die "too many errors\n" if $parser->any_errata_seen();
```

=item C<< \$parser->detected\_encoding() >>X<detected\_encoding>

Return the encoding corresponding to C<< =encoding >>, but only if the encoding was recognized and handled.

=item C<< \$parser->encoding() >>X<encoding>

Return encoding of the document, even if the encoding is not correctly handled.

=item C<< \$parser->parse\_from\_file( \$source, \$to ) >>X<parse\_from\_file>

Parses from C<\$source> file to C<\$to> file. Similar to L<< Pod::Parser/parse\_from\_file >>.

=item C<< \$parser->scream( @error\_messages ) >>X<scream>

Log an error that can't be ignored.

=item C<< \$parser->unaccept\_code( @codes ) >>X<unaccept\_code>

Alias for L<< unaccept\_codes >>.

=item C<< \$parser->unaccept\_codes( @codes ) >>X<unaccept\_codes>

Removes C<< @codes >> as valid codes for the parse.

=item C<< \$parser->unaccept\_directive( @directives ) >>X<unaccept\_directive>

Alias for L<< unaccept\_directives >>.

=item C<< \$parser->unaccept\_directives( @directives ) >>X<unaccept\_directives>

Removes C<< @directives >> as valid directives for the parse.

=item C<< \$parser->unaccept\_target( @targets ) >>X<unaccept\_target>

Alias for L<< unaccept\_targets >>.

=item C<< \$parser->unaccept\_targets( @targets ) >>X<unaccept\_targets>

Removes C<< @targets >> as valid targets for the parse.

=item C<< \$parser->version\_report() >>X<version\_report>

Returns a string describing the version.

=item C<< \$parser->whine( @error\_messages ) >>X<whine>

Log an error unless `C<< $parser->no_whining( TRUE ); >>`.

=back

=head1 ENCODING

The `Pod::Simple` parser expects to read `B<octets>`. The parser will decode the octets into Perl's internal character string representation using the value of the `C<=encoding>` declaration in the POD source.

If the POD source does not include an `C<=encoding>` declaration, the parser will attempt to guess the encoding (selecting one of UTF-8 or Latin-1) by examining the first non-ASCII bytes and applying the heuristic described in [L<perlpodspec>](#).

If you set the `C<parse_characters>` option to a true value the parser will expect characters rather than octets; will ignore any `C<=encoding>`; and will make no attempt to decode the input.

=head1 CAVEATS

This is just a beta release -- there are a good number of things still left to do. Notably, support for EBCDIC platforms is still half-done, an untested.

=head1 SEE ALSO

[L<Pod::Simple::Subclassing>](#)

[L<perlpod|perlpod>](#)

[L<perlpodspec|perlpodspec>](#)

[L<Pod::Escapes|Pod::Escapes>](#)

[L<perldoc>](#)

=head1 SUPPORT

Questions or discussion about POD and `Pod::Simple` should be sent to the `pod-people@perl.org` mail list. Send an empty email to `pod-people-subscribe@perl.org` to subscribe.

This module is managed in an open GitHub repository, [L<https://github.com/theory/pod-simple/>](https://github.com/theory/pod-simple/). Feel free to fork and contribute, or to clone [L<git://github.com/theory/pod-simple.git>](https://github.com/theory/pod-simple.git) and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

## =head1 COPYRIGHT AND DISCLAIMERS

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This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

## =head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>. But don't bother him, he's retired.

Pod::Simple is maintained by:

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Documentation has been contributed by:

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=cut

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\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple.pod

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=head1 NAME

Pod::Simple::HTMLBatch - convert several Pod files to several HTML files

=head1 SYNOPSIS

```
perl -MPod::Simple::HTMLBatch -e 'Pod::Simple::HTMLBatch::go' in out
```

=head1 DESCRIPTION

This module is used for running batch-conversions of a lot of HTML documents

This class is NOT a subclass of Pod::Simple::HTML (nor of bad old Pod::Html) -- although it uses Pod::Simple::HTML for doing the conversion of each document.

The normal use of this class is like so:

```
use Pod::Simple::HTMLBatch;
my $batchconv = Pod::Simple::HTMLBatch->new;
$batchconv->some_option( some_value );
$batchconv->some_other_option( some_other_value );
$batchconv->batch_convert( \@search_dirs, $output_dir );
```

=head2 FROM THE COMMAND LINE

Note that this class also provides (but does not export) the function Pod::Simple::HTMLBatch::go. This is basically just a shortcut for C<<< Pod::Simple::HTMLBatch->batch\_convert(@ARGV) >>. It's meant to be handy for calling from the command line.

However, the shortcut requires that you specify exactly two command-line arguments, C<indirs> and C<outdir>.

Example:

```
% mkdir out_html
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go @INC out_html
  (to convert the pod from Perl's @INC
   files under the directory ./out_html)
```

(Note that the command line there contains a literal atsign-I-N-C. This is handled as a special case by batch\_convert, in order to save you having

to enter the odd-looking "" as the first command-line parameter when you mean "just use whatever's in @INC".)

Example:

```
% mkdir ../seekrut
% chmod og-rx ../seekrut
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go . ../seekrut
  (to convert the pod under the current dir into HTML
   files under the directory ../seekrut)
```

Example:

```
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go happydocs .
  (to convert all pod from happydocs into the current directory)
```

=head1 MAIN METHODS

=over

```
=item $batchconv = Pod::Simple::HTMLBatch->new;
```

This TODO

```
=item $batchconv->batch_convert( I<indirs>, I<outdir> );
```

this TODO

```
=item $batchconv->batch_convert( undef , ...);
```

```
=item $batchconv->batch_convert( q{ @INC }, ...);
```

These two values for I<indirs> specify that the normal Perl @INC

```
=item $batchconv->batch_convert( \@dirs , ...);
```

This specifies that the input directories are the items in the arrayref C<\@dirs>.

```
=item $batchconv->batch_convert( "somedir" , ...);
```

This specifies that the director "somedir" is the input. (This can be an absolute or relative path, it doesn't matter.)

A common value you might want would be just "." for the current



directory:

```
$batchconv->batch_convert( ".", ...);
```

```
=item $batchconv->batch_convert( 'somedir:someother:also' , ...);
```

This specifies that you want the dirs "somedir", "someother", and "also" scanned, just as if you'd passed the arrayref `C<[qw( somedir someother also)]>`. Note that a ":"-separator is normal under Unix, but Under MSWin, you'll need `C<'somedir;someother;also'>` instead, since the pathsep on MSWin is ";" instead of ":". (And I<that> is because ":" often comes up in paths, like `C<"c:/perl/lib">`.)

(Exactly what separator character should be used, is gotten from `C<$Config::Config{'path_sep'}>`, via the L<Config> module.)

```
=item $batchconv->batch_convert( ... , undef );
```

This specifies that you want the HTML output to go into the current directory.

(Note that a missing or undefined value means a different thing in the first slot than in the second. That's so that `C<batch_convert()>` with no arguments (or undef arguments) means "go from @INC, into the current directory.")

```
=item $batchconv->batch_convert( ... , 'somedir' );
```

This specifies that you want the HTML output to go into the directory 'somedir'.

(This can be an absolute or relative path, it doesn't matter.)

```
=back
```

Note that you can also call `C<batch_convert>` as a class method, like so:

```
Pod::Simple::HTMLBatch->batch_convert( ... );
```

That is just short for this:

```
Pod::Simple::HTMLBatch->new-> batch_convert(...);
```

That is, it runs a conversion with default options, for whatever inputdirs and output dir you specify.

## =head2 ACCESSOR METHODS

The following are all accessor methods -- that is, they don't do anything on their own, but just alter the contents of the conversion object, which comprises the options for this particular batch conversion.

We show the "put" form of the accessors below (i.e., the syntax you use for setting the accessor to a specific value). But you can also call each method with no parameters to get its current value. For example, `C<< $self->contents_file() >>` returns the current value of the `contents_file` attribute.

=over

=item `$batchconv->verbose( I<nonnegative_integer> );`

This controls how verbose to be during batch conversion, as far as notes to STDOUT (or whatever is `C<select>'d`) about how the conversion is going. If 0, no progress information is printed.

If 1 (the default value), some progress information is printed.

Higher values print more information.

=item `$batchconv->index( I<true-or-false> );`

This controls whether or not each HTML page is liable to have a little table of contents at the top (which we call an "index" for historical reasons). This is true by default.

=item `$batchconv->contents_file( I<filename> );`

If set, should be the name of a file (in the output directory) to write the HTML index to. The default value is "index.html".

If you set this to a false value, no contents file will be written.

=item `$batchconv->contents_page_start( I<HTML_string> );`

This specifies what string should be put at the beginning of the contents page.

The default is a string more or less like this:

```
<html>
<head><title>Perl Documentation</title></head>
<body class='contentspage'>
```

<h1>Perl Documentation</h1>

```
=item $batchconv->contents_page_end( I<HTML_string> );
```

This specifies what string should be put at the end of the contents page.  
The default is a string more or less like this:

```
<p class='contentsfooty'>Generated by  
Pod::Simple::HTMLBatch v3.01 under Perl v5.008  
<br >At Fri May 14 22:26:42 2004 GMT,  
which is Fri May 14 14:26:42 2004 local time.</p>
```

```
=item $batchconv->add_css( $url );
```

TODO

```
=item $batchconv->add_javascript( $url );
```

TODO

```
=item $batchconv->css_flurry( I<true-or-false> );
```

If true (the default value), we autogenerate some CSS files in the  
output directory, and set our HTML files to use those.

TODO: continue

```
=item $batchconv->javascript_flurry( I<true-or-false> );
```

If true (the default value), we autogenerate a JavaScript in the  
output directory, and set our HTML files to use it. Currently,  
the JavaScript is used only to get the browser to remember what  
stylesheet it prefers.

TODO: continue

```
=item $batchconv->no_contents_links( I<true-or-false> );
```

TODO

```
=item $batchconv->html_render_class( I<classname> );
```

This sets what class is used for rendering the files.

The default is "Pod::Simple::HTML". If you set it to something else,  
it should probably be a subclass of Pod::Simple::HTML, and you should  
C<require> or C<use> that class so that it's loaded before  
Pod::Simple::HTMLBatch tries loading it.

```
=item $batchconv->search_class( I<classname> );
```

This sets what class is used for searching for the files.

The default is "Pod::Simple::Search". If you set it to something else, it should probably be a subclass of Pod::Simple::Search, and you should C<require> or C<use> that class so that it's loaded before Pod::Simple::HTMLBatch tries loading it.

```
=back
```

```
=head1 NOTES ON CUSTOMIZATION
```

TODO

```
call add_css($someurl) to add stylesheet as alternate
call add_css($someurl,1) to add as primary stylesheet
```

```
call add_javascript
```

```
subclass Pod::Simple::HTML and set $batchconv->html_render_class to
that classname
and maybe override
```

```
$page->batch_mode_page_object_init($self, $module, $infile, $outfile, $depth)
or maybe override
```

```
$batchconv->batch_mode_page_object_init($page, $module, $infile, $outfile, $depth)
```

```
subclass Pod::Simple::Search and set $batchconv->search_class to
that classname
```

```
=head1 ASK ME!
```

If you want to do some kind of big pod-to-HTML version with some particular kind of option that you don't see how to achieve using this module, email me (C<sburke@cpan.org>) and I'll probably have a good idea how to do it. For reasons of concision and energetic laziness, some methods and options in this module (and the dozen modules it depends on) are undocumented; but one of those undocumented bits might be just what you're looking for.

```
=head1 SEE ALSO
```

```
L<Pod::Simple>, L<Pod::Simple::HTMLBatch>, L<perlpod>, L<perlpodspec>
```

## =head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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Patches against Pod::Simple are welcome. Please send bug reports to <[bug-pod-simple@rt.cpan.org](mailto:bug-pod-simple@rt.cpan.org)>.

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This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

## =head1 AUTHOR

Pod::Simple was created by Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>. But don't bother him, he's retired.

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=item \* David E. Wheeler C<[dwheeler@cpan.org](mailto:dwheeler@cpan.org)>

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=cut

Found in path(s):

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=head1 NAME

Pod::Simple::SimpleTree -- parse Pod into a simple parse tree

=head1 SYNOPSIS

```
% cat ptest.pod
```

=head1 PIE

```
I like B<pie>!
```

```
% perl -MPod::Simple::SimpleTree -MData::Dumper -e \  
  "print Dumper(Pod::Simple::SimpleTree->new->parse_file(shift)->root)" \  
  ptest.pod
```

```
$VAR1 = [  
    'Document',  
    { 'start_line' => 1 },  
    [  
        'head1',  
        { 'start_line' => 1 },  
        'PIE'  
    ],  
    [  
        'Para',  
        { 'start_line' => 3 },  
        'I like ',  
        [  
            'B',  
            {},  
            'pie'  
        ],  
        '!'  
    ]  
];
```

=head1 DESCRIPTION

This class is of interest to people writing a Pod processor/formatter.

This class takes Pod and parses it, returning a parse tree made just of arrayrefs, and hashrefs, and strings.

This is a subclass of L<Pod::Simple> and inherits all its methods.

This class is inspired by XML::Parser's "Tree" parsing-style, although it doesn't use exactly the same LoL format.

## =head1 METHODS

At the end of the parse, call `C<< $parser->root >>` to get the tree's top node.

## =head1 Tree Contents

Every element node in the parse tree is represented by an arrayref of the form: `C<[ I<elementname>, \%attributes, I<...subnodes...> ]>`. See the example tree dump in the Synopsis, above.

Every text node in the tree is represented by a simple (non-ref) string scalar. So you can test `C<ref($node)>` to see whether you have an element node or just a text node.

The top node in the tree is `C<[ 'Document', \%attributes, I<...subnodes...> ]>`

## =head1 SEE ALSO

L<Pod::Simple>

L<perllo!>

L<The "Tree" subsection in XML::Parser|XML::Parser/"Tree">

## =head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the `pod-people@perl.org` mail list. Send an empty email to `pod-people-subscribe@perl.org` to subscribe.

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Pod::Simple is maintained by:

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=item \* Allison Randal C<allison@perl.org>

=item \* Hans Dieter Pearcey C<hdp@cpan.org>

=item \* David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/SimpleTree.pm

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=head1 NAME

Pod::Simple::TextContent -- get the text content of Pod

=head1 SYNOPSIS

TODO

```
perl -MPod::Simple::TextContent -e \  
"exit Pod::Simple::TextContent->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is that parses Pod and dumps just the text content. It is mainly meant for use by the Pod::Simple test suite, but you may find some other use for it.



This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

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=head1 NAME

Pod::Simple::Debug -- put Pod::Simple into trace/debug mode

=head1 SYNOPSIS

use Pod::Simple::Debug (5); # or some integer

Or:

```
my $debuglevel;
use Pod::Simple::Debug ($debuglevel, 0);
...some stuff that uses Pod::Simple to do stuff, but which
you don't want debug output from...
```

```
$debug_level = 4;
...some stuff that uses Pod::Simple to do stuff, but which
you DO want debug output from...
```

```
$debug_level = 0;
```

=head1 DESCRIPTION

This is an internal module for controlling the debug level (a.k.a. trace level) of Pod::Simple. This is of interest only to Pod::Simple developers.

=head1 CAVEATS

Note that you should load this module I<before> loading Pod::Simple (or any Pod::Simple-based class). If you try loading Pod::Simple::Debug after &Pod::Simple::DEBUG is already defined, Pod::Simple::Debug will throw a fatal error to the effect that "it's s too late to call Pod::Simple::Debug".

Note that the C<use Pod::Simple::Debug (\$x, I<somenum>>> mode will make Pod::Simple (et al) run rather slower, since &Pod::Simple::DEBUG won't be a constant sub anymore, and so Pod::Simple (et al) won't compile with constant-folding.

=head1 GUTS

Doing this:

```
use Pod::Simple::Debug (5); # or some integer
```

is basically equivalent to:

```
BEGIN { sub Pod::Simple::DEBUG () {5} } # or some integer
use Pod::Simple ();
```

And this:

```
use Pod::Simple::Debug (\$debug_level,0); # or some integer
```

is basically equivalent to this:

```
my $debug_level;
BEGIN { $debug_level = 0 }
BEGIN { sub Pod::Simple::DEBUG () { $debug_level }
use Pod::Simple ();
```

=head1 SEE ALSO

L<Pod::Simple>

The article "Constants in Perl", in I<The Perl Journal> issue 21. See L<<http://interglacial.com/tpj/21/>>

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=head1 NAME

Pod::Simple::HTML - convert Pod to HTML

=head1 SYNOPSIS

```
perl -MPod::Simple::HTML -e Pod::Simple::HTML::go thingy.pod
```

=head1 DESCRIPTION

This class is for making an HTML rendering of a Pod document.

This is a subclass of L<Pod::Simple::PullParser> and inherits all its methods (and options).

Note that if you want to do a batch conversion of a lot of Pod

documents to HTML, you should see the module L<Pod::Simple::HTMLBatch>.

=head1 CALLING FROM THE COMMAND LINE

TODO

```
perl -MPod::Simple::HTML -e Pod::Simple::HTML::go Thing.pod Thing.html
```

=head1 CALLING FROM PERL

=head2 Minimal code

```
use Pod::Simple::HTML;
my $p = Pod::Simple::HTML->new;
$p->output_string(\my $html);
$p->parse_file('path/to/Module/Name.pm');
open my $out, '>', 'out.html' or die "Cannot open 'out.html': $!\n";
print $out $html;
```

=head2 More detailed example

```
use Pod::Simple::HTML;
```

Set the content type:

```
$Pod::Simple::HTML::Content_decl = q{<meta http-equiv="Content-Type" content="text/html; charset=UTF-8"
>};
```

```
my $p = Pod::Simple::HTML->new;
```

Include a single javascript source:

```
$p->html_javascript('http://abc.com/a.js');
```

Or insert multiple javascript source in the header

(or for that matter include anything, though this is not recommended)

```
$p->html_javascript('
<script type="text/javascript" src="http://abc.com/b.js"></script>
<script type="text/javascript" src="http://abc.com/c.js"></script>');
```

Include a single css source in the header:

```
$p->html_css('/style.css');
```

or insert multiple css sources:

```
$p->html_css('
  <link rel="stylesheet" type="text/css" title="pod_stylesheet" href="http://remote.server.com/jquery.css">
  <link rel="stylesheet" type="text/css" title="pod_stylesheet" href="/style.css">');
```

Tell the parser where should the output go. In this case it will be placed in the \$html variable:

```
my $html;
$p->output_string(\$html);
```

Parse and process a file with pod in it:

```
$p->parse_file('path/to/Module/Name.pm');
```

```
=head1 METHODS
```

```
TODO
```

```
all (most?) accessorized methods
```

The following variables need to be set B<before> the call to the ->new constructor.

Set the string that is included before the opening <html> tag:

```
$Pod::Simple::HTML::Doctype_decl = qq{<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">\n};
```

Set the content-type in the HTML head: (defaults to ISO-8859-1)

```
$Pod::Simple::HTML::Content_decl = q{<meta http-equiv="Content-Type" content="text/html; charset=UTF-8"
>};
```

Set the value that will be ebedded in the opening tags of F, C tags and verbatim text.

F maps to <em>, C maps to <code>, Verbatim text maps to <pre> (Computerese defaults to "")

```
$Pod::Simple::HTML::Computerese = ' class="some_class_name";
```

```
=head2 html_css
```

```
=head2 html_javascript
```

```
=head2 title_prefix
```

```
=head2 title_postfix
```

```
=head2 html_header_before_title
```

This includes everything before the <title> opening tag including the Document type and including the opening <title> tag. The following call will set it to be a simple HTML file:

```
$p->html_header_before_title('<html><head><title>');
```

```
=head2 html_h_level
```

Normally =head1 will become <h1>, =head2 will become <h2> etc.

Using the html\_h\_level method will change these levels setting the h level of =head1 tags:

```
$p->html_h_level(3);
```

Will make sure that =head1 will become <h3> and =head2 will become <h4> etc...

```
=head2 index
```

Set it to some true value if you want to have an index (in reality a table of contents) to be added at the top of the generated HTML.

```
$p->index(1);
```

```
=head2 html_header_after_title
```

Includes the closing tag of </title> and through the rest of the head till the opening of the body

```
$p->html_header_after_title('</title>...</head><body id="my_id">');
```

```
=head2 html_footer
```

The very end of the document:

```
$p->html_footer( qq[\n<!-- end doc -->\n\n</body></html>\n] );
```

```
=head1 SUBCLASSING
```

Can use any of the methods described above but for further customization one needs to override some of the methods:

```
package My::Pod;
use strict;
use warnings;

use base 'Pod::Simple::HTML';
```

```

# needs to return a URL string such
# http://some.other.com/page.html
# #anchor_in_the_same_file
# /internal/ref.html
sub do_pod_link {
    # My::Pod object and Pod::Simple::PullParserStartToken object
    my ($self, $link) = @_ ;

    say $link->tagname;      # will be L for links
    say $link->attr('to');   #
    say $link->attr('type'); # will be 'pod' always
    say $link->attr('section');

    # Links local to our web site
    if ($link->tagname eq 'L' and $link->attr('type') eq 'pod') {
        my $to = $link->attr('to');
        if ($to =~ /^Padre::/) {
            $to =~ s{::}{/}g;
            return "/docs/Padre/$to.html";
        }
    }

    # all other links are generated by the parent class
    my $ret = $self->SUPER::do_pod_link($link);
    return $ret;
}

1;

```

Meanwhile in script.pl:

```

use My::Pod;

my $p = My::Pod->new;

my $html;
$p->output_string(\ $html);
$p->parse_file('path/to/Module/Name.pm');
open my $out, '>', 'out.html' or die;
print $out $html;

```

TODO

maybe override do\_beginning do\_end

=head1 SEE ALSO



L<Pod::Simple>, L<Pod::Simple::HTMLBatch>

TODO: a corpus of sample Pod input and HTML output? Or common idioms?

=head1 SUPPORT

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=head1 ACKNOWLEDGEMENTS

Thanks to L<Hurricane Electric|<http://he.net/>> for permission to use its L<Linux man pages online|<http://man.he.net/>> site for man page links.

Thanks to L<[search.cpan.org](http://search.cpan.org/)|<http://search.cpan.org/>> for permission to use the site for Perl module links.

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=head1 NAME

Pod::Simple::PullParserStartToken -- start-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser> object, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item `$token->tagname`

This returns the tagname for this start-token object.  
For example, parsing a "`=head1 ...`" line will give you a start-token with the tagname of "head1", token(s) for its content, and then an end-token with the tagname of "head1".

=item `$token->tagname(I<somestring>)`

This changes the tagname for this start-token object.  
You probably won't need to do this.

=item `$token->tag(...)`

A shortcut for `$token->tagname(...)`

=item \$token->is\_tag(I<somestring>) or \$token->is\_tagname(I<somestring>)

These are shortcuts for C<< \$token->tag() eq I<somestring> >>

=item \$token->attr(I<attrname>)

This returns the value of the I<attrname> attribute for this start-token object, or undef.

For example, parsing a LZ<<<Foo/"Bar"> link will produce a start-token with a "to" attribute with the value "Foo", a "type" attribute with the value "pod", and a "section" attribute with the value "Bar".

=item \$token->attr(I<attrname>, I<newvalue>)

This sets the I<attrname> attribute for this start-token object to I<newvalue>. You probably won't need to do this.

=item \$token->attr\_hash

This returns the hashref that is the attribute set for this start-token. This is useful if (for example) you want to ask what all the attributes are -- you can just do C<< keys %{\$token->attr\_hash} >>

=back

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

```
C<<<
Pod::Simple::PullParserStartToken->new( I<tagname>, I<attrhash> )
>>
```

=head1 SEE ALSO

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

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L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

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## =head1 NAME

Pod::Simple::Search - find POD documents in directory trees

## =head1 SYNOPSIS

```

use Pod::Simple::Search;
my $name2path = Pod::Simple::Search->new->limit_glob('LWP::*')->survey;
print "Looky see what I found: ",
  join(' ', sort keys %$name2path), "\n";

print "LWPUA docs = ",
  Pod::Simple::Search->new->find('LWP::UserAgent') || "?",
  "\n";

```

#### =head1 DESCRIPTION

B<Pod::Simple::Search> is a class that you use for running searches for Pod files. An object of this class has several attributes (mostly options for controlling search options), and some methods for searching based on those attributes.

The way to use this class is to make a new object of this class, set any options, and then call one of the search options (probably C<survey> or C<find>). The sections below discuss the syntaxes for doing all that.

#### =head1 CONSTRUCTOR

This class provides the one constructor, called C<new>. It takes no parameters:

```

use Pod::Simple::Search;
my $search = Pod::Simple::Search->new;

```

#### =head1 ACCESSORS

This class defines several methods for setting (and, occasionally, reading) the contents of an object. With two exceptions (discussed at the end of this section), these attributes are just for controlling the way searches are carried out.

Note that each of these return C<\$self> when you call them as C<< \$self->I<whatever(value)>>>. That's so that you can chain together set-attribute calls like this:

```

my $name2path =
  Pod::Simple::Search->new
  -> inc(0) -> verbose(1) -> callback(\&blab)
  -> survey(@there);

```

...which works exactly as if you'd done this:

```
my $search = Pod::Simple::Search->new;
$search->inc(0);
$search->verbose(1);
$search->callback(\&blab);
my $name2path = $search->survey(@there);
```

=over

```
=item $search->inc( I<true-or-false> );
```

This attribute, if set to a true value, means that searches should implicitly add perl's I<@INC> paths. This automatically considers paths specified in the C<PERL5LIB> environment as this is prepended to I<@INC> by the Perl interpreter itself. This attribute's default value is B<TRUE>. If you want to search only specific directories, set \$self->inc(0) before calling \$inc->survey or \$inc->find.

```
=item $search->verbose( I<nonnegative-number> );
```

This attribute, if set to a nonzero positive value, will make searches output (via C<warn>) notes about what they're doing as they do it. This option may be useful for debugging a pod-related module. This attribute's default value is zero, meaning that no C<warn> messages are produced. (Setting verbose to 1 turns on some messages, and setting it to 2 turns on even more messages, i.e., makes the following search(es) even more verbose than 1 would make them.)

```
=item $search->limit_glob( I<some-glob-string> );
```

This option means that you want to limit the results just to items whose podnames match the given glob/wildcard expression. For example, you might limit your search to just "LWP::\*", to search only for modules starting with "LWP::\*" (but not including the module "LWP" itself); or you might limit your search to "LW\*" to see only modules whose (full) names begin with "LW"; or you might search for "\*Find\*" to search for all modules with "Find" somewhere in their full name. (You can also use "?" in a glob expression; so "DB?" will match "DBI" and "DBD".)

```
=item $search->callback( I<\&some_routine> );
```

This attribute means that every time this search sees a matching Pod file, it should call this callback routine. The routine is called with two parameters: the current file's filespec, and its pod name. (For example: C<("/etc/perljunk/File/Crunk.pm", "File::Crunk")> would

be in C<@\_>.)

The callback routine's return value is not used for anything.

This attribute's default value is false, meaning that no callback is called.

```
=item $search->laborious( I<true-or-false> );
```

Unless you set this attribute to a true value, Pod::Search will apply Perl-specific heuristics to find the correct module PODs quickly. This attribute's default value is false. You won't normally need to set this to true.

Specifically: Turning on this option will disable the heuristics for seeing only files with Perl-like extensions, omitting subdirectories that are numeric but do I<not> match the current Perl interpreter's version ID, suppressing F<site\_perl> as a module hierarchy name, etc.

```
=item $search->shadows( I<true-or-false> );
```

Unless you set this attribute to a true value, Pod::Simple::Search will consider only the first file of a given modulename as it looks thru the specified directories; that is, with this option off, if Pod::Simple::Search has seen a C<somepathdir/Foo/Bar.pm> already in this search, then it won't bother looking at a C<somelaterpathdir/Foo/Bar.pm> later on in that search, because that file is merely a "shadow". But if you turn on C<< \$self->shadows(1) >>, then these "shadow" files are inspected too, and are noted in the pathname2podname return hash.

This attribute's default value is false; and normally you won't need to turn it on.

```
=item $search->limit_re( I<some-regexp> );
```

Setting this attribute (to a value that's a regexp) means that you want to limit the results just to items whose podnames match the given regexp. Normally this option is not needed, and the more efficient C<limit\_glob> attribute is used instead.

```
=item $search->dir_prefix( I<some-string-value> );
```

Setting this attribute to a string value means that the searches should begin in the specified subdirectory name (like "Pod" or "File::Find", also expressible as "File/Find"). For example, the search option

```
C<< $search->limit_glob("File::Find::R*") >>  
is the same as the combination of the search options  
C<< $search->limit_re("^File::Find::R") -> dir_prefix("File::Find") >>.
```

Normally you don't need to know about the C<dir\_prefix> option, but I include it in case it might prove useful for someone somewhere.

(Implementationally, searching with limit\_glob ends up setting limit\_re and usually dir\_prefix.)

```
=item $search->progress( I<some-progress-object> );
```

If you set a value for this attribute, the value is expected to be an object (probably of a class that you define) that has a C<reach> method and a C<done> method. This is meant for reporting progress during the search, if you don't want to use a simple callback.

Normally you don't need to know about the C<progress> option, but I include it in case it might prove useful for someone somewhere.

While a search is in progress, the progress object's C<reach> and C<done> methods are called like this:

```
# Every time a file is being scanned for pod:  
$progress->reach($count, "Scanning $file"); ++$count;
```

```
# And then at the end of the search:  
$progress->done("Noted $count Pod files total");
```

Internally, we often set this to an object of class Pod::Simple::Progress. That class is probably undocumented, but you may wish to look at its source.

```
=item $name2path = $self->name2path;
```

This attribute is not a search parameter, but is used to report the result of C<survey> method, as discussed in the next section.

```
=item $path2name = $self->path2name;
```

This attribute is not a search parameter, but is used to report the result of C<survey> method, as discussed in the next section.

```
=back
```



## =head1 MAIN SEARCH METHODS

Once you've actually set any options you want (if any), you can go ahead and use the following methods to search for Pod files in particular ways.

=head2 C<< \$search->survey( @directories ) >>

The method C<survey> searches for POD documents in a given set of files and/or directories. This runs the search according to the various options set by the accessors above. (For example, if the C<inc> attribute is on, as it is by default, then the perl @INC directories are implicitly added to the list of directories (if any) that you specify.)

The return value of C<survey> is two hashes:

=over

=item C<name2path>

A hash that maps from each pod-name to the filespec (like "Stuff::Thing" => "/whatever/plib/Stuff/Thing.pm")

=item C<path2name>

A hash that maps from each Pod filespec to its pod-name (like "/whatever/plib/Stuff/Thing.pm" => "Stuff::Thing")

=back

Besides saving these hashes as the hashref attributes C<name2path> and C<path2name>, calling this function also returns these hashrefs. In list context, the return value of C<< \$search->survey >> is the list C<(\%name2path, \%path2name)>. In scalar context, the return value is C<\%name2path>. Or you can just call this in void context.

Regardless of calling context, calling C<survey> saves its results in its C<name2path> and C<path2name> attributes.

E.g., when searching in F<\$HOME/perl5lib>, the file F<\$HOME/perl5lib/MyModule.pm> would get the POD name I<MyModule>, whereas F<\$HOME/perl5lib/Myclass/Subclass.pm> would be I<Myclass::Subclass>. The name information can be used for POD translators.

Only text files containing at least one valid POD command are found.

In verbose mode, a warning is printed if shadows are found (i.e., more than one POD file with the same POD name is found, e.g. F<CPAN.pm> in different directories). This usually indicates duplicate occurrences of modules in the I<@INC> search path, which is occasionally inadvertent (but is often simply a case of a user's path dir having a more recent version than the system's general path dirs in general.)

The options to this argument is a list of either directories that are searched recursively, or files. (Usually you wouldn't specify files, but just dirs.) Or you can just specify an empty-list, as in \$name2path; with the C<inc> option on, as it is by default, teh

The POD names of files are the plain basenames with any Perl-like extension (.pm, .pl, .pod) stripped, and path separators replaced by C<::>'s.

Calling Pod::Simple::Search->search(...) is short for Pod::Simple::Search->new->search(...). That is, a throwaway object with default attribute values is used.

```
=head2 C<< $search->simplify_name( $str ) >>
```

The method B<simplify\_name> is equivalent to B<basename>, but also strips Perl-like extensions (.pm, .pl, .pod) and extensions like F<.bat>, F<.cmd> on Win32 and OS/2, or F<.com> on VMS, respectively.

```
=head2 C<< $search->find( $pod ) >>
```

```
=head2 C<< $search->find( $pod, @search_dirs ) >>
```

Returns the location of a Pod file, given a Pod/module/script name (like "Foo::Bar" or "perlvar" or "perldoc"), and an idea of what files/directories to look in.

It searches according to the various options set by the accessors above. (For example, if the C<inc> attribute is on, as it is by default, then the perl @INC directories are implicitly added to the list of directories (if any) that you specify.)

This returns the full path of the first occurrence to the file.

Package names (eg 'A::B') are automatically converted to directory names in the selected directory. Additionally, '.pm', '.pl' and '.pod' are automatically appended to the search as required.

(So, for example, under Unix, "A::B" is converted to "somedir/A/B.pm", "somedir/A/B.pod", or "somedir/A/B.pl", as appropriate.)

If no such Pod file is found, this method returns undef.

If any of the given search directories contains a F<pod/> subdirectory, then it is searched. (That's how we manage to find F<perlfunc>, for example, which is usually in F<pod/perlfunc> in most Perl dists.)

The C<verbose> and C<inc> attributes influence the behavior of this search; notably, C<inc>, if true, adds @INC I<and also \$Config::Config{'scriptdir'}> to the list of directories to search.

It is common to simply say C<< \$filename = Pod::Simple::Search-> new ->find("perlvar") >> so that just the @INC (well, and scriptdir) directories are searched. (This happens because the C<inc> attribute is true by default.)

Calling Pod::Simple::Search->find(...) is short for Pod::Simple::Search->new->find(...). That is, a throwaway object with default attribute values is used.

```
=head2 C<< $self->contains_pod( $file ) >>
```

Returns true if the supplied filename (not POD module) contains some Pod documentation.

```
=head1 SUPPORT
```

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <[bug-pod-simple@rt.cpan.org](mailto:bug-pod-simple@rt.cpan.org)>.

```
=head1 COPYRIGHT AND DISCLAIMERS
```

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org> with code borrowed from Marek Rouchal's L<Pod::Find>, which in turn heavily borrowed code from Nick Ing-Simmons' C<PodToHtml>.

But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item \* Allison Randal C<allison@perl.org>

=item \* Hans Dieter Pearcey C<hdp@cpan.org>

=item \* David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/Search.pm

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

---

abstract: 'framework for parsing Pod'

author:

- 'Allison Randal <allison@perl.org>'

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.6302, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Pod-Simple

no\_index:

directory:

- t

- inc

requires:

Carp: 0  
Config: 0  
Cwd: 0  
File::Basename: 0  
File::Find: 0  
File::Spec: 0  
Pod::Escapes: 1.04  
Symbol: 0  
Test: 1.25  
Test::More: 0  
Text::Wrap: 98.112902  
constant: 0  
integer: 0  
overload: 0  
strict: 0  
resources:  
homepage: <http://search.cpan.org/dist/Pod-Simple/>  
license: <http://dev.perl.org/licenses/>  
repository: <git://github.com/theory/pod-simple.git>  
version: 3.28

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/META.yml

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

=head1 NAME

Pod::Simple::Subclassing -- write a formatter as a Pod::Simple subclass

=head1 SYNOPSIS

```
package Pod::SomeFormatter;
use Pod::Simple;
@ISA = qw(Pod::Simple);
$VERSION = '1.01';
use strict;

sub _handle_element_start {
    my($parser, $element_name, $attr_hash_r) = @_;
    ...
}

sub _handle_element_end {
    my($parser, $element_name, $attr_hash_r) = @_;
    # NOTE: $attr_hash_r is only present when $element_name is "over" or "begin"
    # The remaining code excerpts will mostly ignore this $attr_hash_r, as it is
    # mostly useless. It is documented where "over-*" and "begin" events are
```

```
# documented.
...
}

sub _handle_text {
my($parser, $text) = @_ ;
...
}
1;
```

=head1 DESCRIPTION

This document is about using Pod::Simple to write a Pod processor, generally a Pod formatter. If you just want to know about using an existing Pod formatter, instead see its documentation and see also the docs in L<Pod::Simple>.

The zeroeth step in writing a Pod formatter is to make sure that there isn't already a decent one in CPAN. See L<<http://search.cpan.org/>>, and run a search on the name of the format you want to render to. Also consider joining the Pod People list L<<http://lists.perl.org/showlist.cgi?name=pod-people>> and asking whether anyone has a formatter for that format -- maybe someone cobbled one together but just hasn't released it.

The first step in writing a Pod processor is to read L<[perlpodspec](#)>, which contains notes information on writing a Pod parser (which has been largely taken care of by Pod::Simple), but also a lot of requirements and recommendations for writing a formatter.

The second step is to actually learn the format you're planning to format to -- or at least as much as you need to know to represent Pod, which probably isn't much.

The third step is to pick which of Pod::Simple's interfaces you want to use -- the basic interface via Pod::Simple or L<Pod::Simple::Methody> is event-based, sort of like L<HTML::Parser>'s interface, or sort of like L<XML::Parser>'s "Handlers" interface), but L<Pod::Simple::PullParser> provides a token-stream interface, sort of like L<HTML::TokeParser>'s interface; L<Pod::Simple::SimpleTree> provides a simple tree interface, rather like XML::Parser's "Tree" interface. Users familiar with XML-handling will find one of these styles relatively familiar; but if you would be even more at home with XML, there are classes that produce an XML representation of the Pod stream, notably L<Pod::Simple::XMLOutputStream>; you can feed the output of such a class to whatever XML parsing system you are most at home with.

The last step is to write your code based on how the events (or tokens,

or tree-nodes, or the XML, or however you're parsing) will map to constructs in the output format. Also sure to consider how to escape text nodes containing arbitrary text, and also what to do with text nodes that represent preformatted text (from verbatim sections).

=head1 Events

TODO intro... mention that events are supplied for implicits, like for missing >'s

In the following section, we use XML to represent the event structure associated with a particular construct. That is, TODO

=over

=item C<< \$parser->\_handle\_element\_start( I<element\_name>, I<attr\_hashref> ) >>

=item C<< \$parser->\_handle\_element\_end( I<element\_name> ) >>

=item C<< \$parser->\_handle\_text( I<text\_string> ) >>

=back

TODO describe

=over

=item events with an element\_name of Document

Parsing a document produces this event structure:

```
<Document start_line="543">
...all events...
</Document>
```

The value of the I<start\_line> attribute will be the line number of the first Pod directive in the document.

If there is no Pod in the given document, then the event structure will be this:

```
<Document contentless="1" start_line="543">
</Document>
```

In that case, the value of the `I<start_line>` attribute will not be meaningful; under current implementations, it will probably be the line number of the last line in the file.

=item events with an `element_name` of `Para`

Parsing a plain (non-verbatim, non-directive, non-data) paragraph in a Pod document produces this event structure:

```
<Para start_line="543">
  ...all events in this paragraph...
</Para>
```

The value of the `I<start_line>` attribute will be the line number of the start of the paragraph.

For example, parsing this paragraph of Pod:

The value of the `I<start_line>` attribute will be the line number of the start of the paragraph.

produces this event structure:

```
<Para start_line="129">
  The value of the
  <I>
  start_line
  </I>
  attribute will be the line number of the first Pod directive
  in the document.
</Para>
```

=item events with an `element_name` of `B`, `C`, `F`, or `I`.

Parsing a `BE<lt>...E<gt>` formatting code (or of course any of its semantically identical syntactic variants

`S<BE<lt>E<lt> ... E<gt>E<gt>>`,

or `S<BE<lt>E<lt>E<lt>E<lt> ... E<gt>E<gt>E<gt>E<gt>>`, etc.)

produces this event structure:

```
<B>
...stuff...
</B>
```

Currently, there are no attributes conveyed.

Parsing `C`, `F`, or `I` codes produce the same structure, with only a different element name.



If your parser object has been set to accept other formatting codes, then they will be presented like these B/C/F/I codes -- i.e., without any attributes.

=item events with an element\_name of S

Normally, parsing an SE<lt>...E<gt> sequence produces this event structure, just as if it were a B/C/F/I code:

```
<S>
...stuff...
</S>
```

However, Pod::Simple (and presumably all derived parsers) offers the C<nbsp\_for\_S> option which, if enabled, will suppress all S events, and instead change all spaces in the content to non-breaking spaces. This is intended for formatters that output to a format that has no code that means the same as SE<lt>...E<gt>, but which has a code/character that means non-breaking space.

=item events with an element\_name of X

Normally, parsing an XE<lt>...E<gt> sequence produces this event structure, just as if it were a B/C/F/I code:

```
<X>
...stuff...
</X>
```

However, Pod::Simple (and presumably all derived parsers) offers the C<nix\_X\_codes> option which, if enabled, will suppress all X events and ignore their content. For formatters/processors that don't use X events, this is presumably quite useful.

=item events with an element\_name of L

Because the LE<lt>...E<gt> is the most complex construct in the language, it should not surprise you that the events it generates are the most complex in the language. Most of complexity is hidden away in the attribute values, so for those of you writing a Pod formatter that produces a non-hypertextual format, you can just ignore the attributes and treat an L event structure like a formatting element that (presumably) doesn't actually produce a change in formatting. That is, the content of the L event structure (as opposed to its attributes) is always what text should be displayed.

There are, at first glance, three kinds of L links: URL, man, and pod.

When a `LE<lt>I<some_url>E<gt>` code is parsed, it produces this event structure:

```
<L content-implicit="yes" raw="that_url" to="that_url" type="url">
that_url
</L>
```

The `C<type="url">` attribute is always specified for this type of L code.

For example, this Pod source:

```
L<http://www.perl.com/CPAN/authors/>
```

produces this event structure:

```
<L content-implicit="yes" raw="http://www.perl.com/CPAN/authors/" to="http://www.perl.com/CPAN/authors/"
type="url">
http://www.perl.com/CPAN/authors/
</L>
```

When a `LE<lt>I<manpage(section)>E<gt>` code is parsed (and these are fairly rare and not terribly useful), it produces this event structure:

```
<L content-implicit="yes" raw="manpage(section)" to="manpage(section)" type="man">
manpage(section)
</L>
```

The `C<type="man">` attribute is always specified for this type of L code.

For example, this Pod source:

```
L<crontab(5)>
```

produces this event structure:

```
<L content-implicit="yes" raw="crontab(5)" to="crontab(5)" type="man">
crontab(5)
</L>
```

In the rare cases where a man page link has a specified, that text appears in a `I<section>` attribute. For example, this Pod source:

```
L<crontab(5)/"ENVIRONMENT">
```

will produce this event structure:

```
<L content-implicit="yes" raw="crontab(5)/&quot;ENVIRONMENT&quot;" section="ENVIRONMENT"
to="crontab(5)" type="man">
"ENVIRONMENT" in crontab(5)
</L>
```

In the rare case where the Pod document has code like `LE<lt>I<sometext>|I<manpage(section)>E<gt>`, then the `I<sometext>` will appear as the content of the element, the `I<manpage(section)>` text will appear only as the value of the `I<to>` attribute, and there will be no `C<content-implicit="yes">` attribute (whose presence means that the Pod parser had to infer what text should appear as the link text -- as opposed to cases where that attribute is absent, which means that the Pod parser did `I<not>` have to infer the link text, because that `L` code explicitly specified some link text.)

For example, this Pod source:

```
L<hell itself!|crontab(5)>
```

will produce this event structure:

```
<L raw="hell itself!|crontab(5)" to="crontab(5)" type="man">
hell itself!
</L>
```

The last type of `L` structure is for links to/within Pod documents. It is the most complex because it can have a `I<to>` attribute, `I<or>` a `I<section>` attribute, or both. The `C<type="pod">` attribute is always specified for this type of `L` code.

In the most common case, the simple case of a `LE<lt>podpageE<gt>` code produces this event structure:

```
<L content-implicit="yes" raw="podpage" to="podpage" type="pod">
podpage
</L>
```

For example, this Pod source:

```
L<Net::Ping>
```

produces this event structure:

```
<L content-implicit="yes" raw="Net::Ping" to="Net::Ping" type="pod">
Net::Ping
</L>
```

In cases where there is link-text explicitly specified, it is to be found in the content of the element (and not the attributes), just as with the `L<I<I>I<some text>|I<manpage(section)>E<gt>` case discussed above. For example, this Pod source:

```
L<Perl Error Messages|perldiag>
```

produces this event structure:

```
<L raw="Perl Error Messages|perldiag" to="perldiag" type="pod">
Perl Error Messages
</L>
```

In cases of links to a section in the current Pod document, there is a `I<section>` attribute instead of a `I<to>` attribute. For example, this Pod source:

```
L</"Member Data">
```

produces this event structure:

```
<L content-implicit="yes" raw="/"Member Data"" section="Member Data" type="pod">
"Member Data"
</L>
```

As another example, this Pod source:

```
L<the various attributes/"Member Data">
```

produces this event structure:

```
<L raw="the various attributes/"Member Data"" section="Member Data" type="pod">
the various attributes
</L>
```

In cases of links to a section in a different Pod document, there are both a `I<section>` attribute and a `L<to>` attribute. For example, this Pod source:

```
L<perlsyn/"Basic BLOCKs and Switch Statements">
```

produces this event structure:

```
<L content-implicit="yes" raw="perlsyn/"Basic BLOCKs and Switch Statements"" section="Basic
BLOCKs and Switch Statements" to="perlsyn" type="pod">
"Basic BLOCKs and Switch Statements" in perlsyn
</L>
```

As another example, this Pod source:

```
L<SWITCH statements|perlsyn/"Basic BLOCKs and Switch Statements">
```

produces this event structure:

```
<L raw="SWITCH statements|perlsyn/&quot;Basic BLOCKs and Switch Statements&quot;" section="Basic
BLOCKs and Switch Statements" to="perlsyn" type="pod">
SWITCH statements
</L>
```

Incidentally, note that we do not distinguish between these syntaxes:

```
L</"Member Data">
L<"Member Data">
L</Member Data>
L<Member Data> [deprecated syntax]
```

That is, they all produce the same event structure (for the most part), namely:

```
<L content-implicit="yes" raw="$depends_on_syntax" section="Member Data" type="pod">
&#34;Member Data&#34;
</L>
```

The `I<raw>` attribute depends on what the raw content of the `C<LE<lt>E<gt>>` is, so that is why the event structure is the same "for the most part".

If you have not guessed it yet, the `I<raw>` attribute contains the raw, original, unescaped content of the `C<LE<lt>E<gt>>` formatting code. In addition to the examples above, take notice of the following event structure produced by the following `C<LE<lt>E<gt>>` formatting code.

```
L<click B<here>|page/About the C<-M> switch>
```

```
<L raw="click B<here>|page/About the C<-M> switch" section="About the -M switch" to="page" type="pod">
click B<here>
</L>
```

Specifically, notice that the formatting codes are present and unescaped in `I<raw>`.

There is a known bug in the `I<raw>` attribute where any surrounding whitespace is condensed into a single ' '. For example, given `LE<60> linkE<62>`, `I<raw>` will be " link".

=item events with an `element_name` of E or Z

While there are Pod codes `EE<lt>...E<gt>` and `ZE<lt>E<gt>`, these `I<do not>` produce any E or Z events -- that is, there are no such events as E or Z.

=item events with an `element_name` of `Verbatim`

When a Pod verbatim paragraph (AKA "codeblock") is parsed, it produces this event structure:

```
<Verbatim start_line="543" xml:space="preserve">
...text...
</Verbatim>
```

The value of the `I<start_line>` attribute will be the line number of the first line of this verbatim block. The `I<xml:space>` attribute is always present, and always has the value "preserve".

The text content will have tabs already expanded.

=item events with an `element_name` of `head1 .. head4`

When a `"=head1 ..."` directive is parsed, it produces this event structure:

```
<head1>
...stuff...
</head1>
```

For example, a directive consisting of this:

```
=head1 Options to C<new> et al.
```

will produce this event structure:

```
<head1 start_line="543">
Options to
<C>
  new
</C>
et al.
</head1>
```

`"=head2"` thru `"=head4"` directives are the same, except for the element names in the event structure.

=item events with an `element_name` of `encoding`

In the default case, the events corresponding to C<=<encoding> directives are not emitted. They are emitted if C<keep\_encoding\_directive> is true. In that case they produce event structures like L</"events with an element\_name of head1 .. head4"> above.

=item events with an element\_name of over-bullet

When an "=over ... Z<>=back" block is parsed where the items are a bulleted list, it will produce this event structure:

```
<over-bullet indent="4" start_line="543">
<item-bullet start_line="545">
  ...Stuff...
</item-bullet>
...more item-bullets...
</over-bullet fake-closer="1">
```

The attribute I<fake-closer> is only present if it is a true value; it is not present if it is a false value. It is shown in the above example to illustrate where the attribute is (in the B<closing> tag). It signifies that the C<=<over> did not have a matching C<=<back>, and thus Pod::Simple had to create a fake closer.

For example, this Pod source:

```
=over

=item *

Something

=back
```

Would produce an event structure that does B<not> have the I<fake-closer> attribute, whereas this Pod source:

```
=over

=item *
```

Gasp! An unclosed =over block!

would. The rest of the over-\* examples will not demonstrate this attribute, but they all can have it. See L<Pod::Checker>'s source for an example of this attribute being used.

The value of the I<indent> attribute is whatever value is after the "=over" directive, as in "=over 8". If no such value is specified

in the directive, then the `I<indent>` attribute has the value "4".

For example, this Pod source:

```
=over  
  
=item *  
  
Stuff  
  
=item *  
  
Bar I<baz>!  
  
=back
```

produces this event structure:

```
<over-bullet indent="4" start_line="10">  
<item-bullet start_line="12">  
  Stuff  
</item-bullet>  
<item-bullet start_line="14">  
  Bar <I>baz</I>!  
</item-bullet>  
</over-bullet>
```

=item events with an `element_name` of `over-number`

When an `"=over ... Z<>=back"` block is parsed where the items are a numbered list, it will produce this event structure:

```
<over-number indent="4" start_line="543">  
<item-number number="1" start_line="545">  
  ...Stuff...  
</item-number>  
  ...more item-number...  
</over-bullet>
```

This is like the "over-bullet" event structure; but note that the contents are "item-number" instead of "item-bullet", and note that they will have a "number" attribute, which some formatters/processors may ignore (since, for example, there's no need for it in HTML when producing an "`<UL><LI>...</LI>...</UL>`" structure), but which any processor may use.

Note that the values for the `I<number>` attributes of "item-number" elements in a given "over-number" area `I<will>` start at 1 and go up by one each time. If the Pod source doesn't follow that order (even though



it really should should!), whatever numbers it has will be ignored (with the correct values being put in the I<number> attributes), and an error message might be issued to the user.

=item events with an element\_name of over-text

These events are somewhat unlike the other over-\* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where the items are a list of text "subheadings", it will produce this event structure:

```
<over-text indent="4" start_line="543">
<item-text>
  ...stuff...
</item-text>
...stuff (generally Para or Verbatim elements)...
<item-text>
  ...more item-text and/or stuff...
</over-text>
```

The I<indent> and I<fake-closer> attributes are as with the other over-\* events.

For example, this Pod source:

```
=over

=item Foo

Stuff

=item Bar I<baz>!

Quux

=back
```

produces this event structure:

```
<over-text indent="4" start_line="20">
<item-text start_line="22">
  Foo
</item-text>
<Para start_line="24">
  Stuff
</Para>
<item-text start_line="26">
  Bar
<I>
```

```
    baz
  </I>
  !
</item-text>
<Para start_line="28">
  Quux
</Para>
</over-text>
```

=item events with an element\_name of over-block

These events are somewhat unlike the other over-\* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where there are no items, it will produce this event structure:

```
<over-block indent="4" start_line="543">
...stuff (generally Para or Verbatim elements)...
</over-block>
```

The I<indent> and I<fake-closer> attributes are as with the other over-\* events.

For example, this Pod source:

```
=over
```

```
For cutting off our trade with all parts of the world
```

```
For transporting us beyond seas to be tried for pretended offenses
```

```
He is at this time transporting large armies of foreign mercenaries to
complete the works of death, desolation and tyranny, already begun with
circumstances of cruelty and perfidy scarcely paralleled in the most
barbarous ages, and totally unworthy the head of a civilized nation.
```

```
=back
```

will produce this event structure:

```
<over-block indent="4" start_line="2">
<Para start_line="4">
  For cutting off our trade with all parts of the world
</Para>
<Para start_line="6">
  For transporting us beyond seas to be tried for pretended offenses
</Para>
```

```
<Para start_line="8">
  He is at this time transporting large armies of [...more text...]
</Para>
</over-block>
```

=item events with an element\_name of over-empty

B<Note: These events are only triggered if C<parse\_empty\_lists()> is set to a true value.>

These events are somewhat unlike the other over-\* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where there is no content, it will produce this event structure:

```
<over-empty indent="4" start_line="543">
</over-empty>
```

The I<indent> and I<fake-closer> attributes are as with the other over-\* events.

For example, this Pod source:

```
=over

=over

=back

=back
```

will produce this event structure:

```
<over-block indent="4" start_line="1">
<over-empty indent="4" start_line="3">
</over-empty>
</over-block>
```

Note that the outer C<=over> is a block because it has no C<=item>s but still has content: the inner C<=over>. The inner C<=over>, in turn, is completely empty, and is treated as such.

=item events with an element\_name of item-bullet

See L</"events with an element\_name of over-bullet">, above.

=item events with an element\_name of item-number

See L</"events with an element\_name of over-number">, above.

=item events with an element\_name of item-text

See L</"events with an element\_name of over-text">, above.

=item events with an element\_name of for

TODO...

=item events with an element\_name of Data

TODO...

=back

=head1 More Pod::Simple Methods

Pod::Simple provides a lot of methods that aren't generally interesting to the end user of an existing Pod formatter, but some of which you might find useful in writing a Pod formatter. They are listed below. The first several methods (the accept\_\* methods) are for declaring the capabilities of your parser, notably what C<=for I<targetname>> sections it's interested in, what extra NE<lt>...E<gt> codes it accepts beyond the ones described in the I<perlpod>.

=over

=item C<< \$parser->accept\_targets( I<SOMEVALUE> ) >>

As the parser sees sections like:

```
=for html 
```

or

```
=begin html
```

```

```

```
=end html
```

...the parser will ignore these sections unless your subclass has specified that it wants to see sections targeted to "html" (or whatever the formatter name is).

If you want to process all sections, even if they're not targeted for you, call this before you start parsing:

```
$parser->accept_targets('*');
```

```
=item C<< $parser->accept_targets_as_text( I<SOMEVALUE> ) >>
```

This is like `accept_targets`, except that it specifies also that the content of sections for this target should be treated as Pod text even if the target name in `"=for I<targetname>"` doesn't start with a ":".

At time of writing, I don't think you'll need to use this.

```
=item C<< $parser->accept_codes( I<Codename>, I<Codename>... ) >>
```

This tells the parser that you accept additional formatting codes, beyond just the standard ones (I B C L F S X, plus the two weird ones you don't actually see in the parse tree, Z and E). For example, to also accept codes "N", "R", and "W":

```
$parser->accept_codes( qw( N R W ) );
```

B<TODO: document how this interacts with `=extend`, and long element names>

```
=item C<< $parser->accept_directive_as_data( I<directive_name> ) >>
```

```
=item C<< $parser->accept_directive_as_verbatim( I<directive_name> ) >>
```

```
=item C<< $parser->accept_directive_as_processed( I<directive_name> ) >>
```

In the unlikely situation that you need to tell the parser that you will accept additional directives ("`=foo`" things), you need to first set the parser to treat its content as data (i.e., not really processed at all), or as verbatim (mostly just expanding tabs), or as processed text (parsing formatting codes like `BE<lt>...E<gt>`).

For example, to accept a new directive "`=method`", you'd presumably use:

```
$parser->accept_directive_as_processed("method");
```

so that you could have Pod lines like:

```
=method I<$whatever> thing B<um>
```

Making up your own directives breaks compatibility with other Pod formatters, in a way that using `"=for I<target> ..."` lines doesn't; however, you may find this useful if you're making a Pod superset

format where you don't need to worry about compatibility.

```
=item C<< $parser->nbsp_for_S( I<BOOLEAN> ); >>
```

Setting this attribute to a true value (and by default it is false) will turn "SE<lt>...E<gt>" sequences into sequences of words separated by C<\xA0> (non-breaking space) characters. For example, it will take this:

```
I like S<Dutch apple pie>, don't you?
```

and treat it as if it were:

```
I like DutchE<nbsp>appleE<nbsp>pie, don't you?
```

This is handy for output formats that don't have anything quite like an "SE<lt>...E<gt>" code, but which do have a code for non-breaking space.

There is currently no method for going the other way; but I can probably provide one upon request.

```
=item C<< $parser->version_report() >>
```

This returns a string reporting the \$VERSION value from your module (and its classname) as well as the \$VERSION value of Pod::Simple. Note that L<perlpodspec> requires output formats (wherever possible) to note this detail in a comment in the output format. For example, for some kind of SGML output format:

```
print OUT "<!-- \n", $parser->version_report, "\n -->";
```

```
=item C<< $parser->pod_para_count() >>
```

This returns the count of Pod paragraphs seen so far.

```
=item C<< $parser->line_count() >>
```

This is the current line number being parsed. But you might find the "line\_number" event attribute more accurate, when it is present.

```
=item C<< $parser->nix_X_codes( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (and it is false by default) ignores any "XE<lt>...E<gt>" sequences in the document being parsed.

Many formats don't actually use the content of these codes, so have no reason to process them.

```
=item C<< $parser->keep_encoding_directive( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (it is false by default) will keep C<=encoding> and its content in the event structure. Most formats don't actually need to process the content of an C<=encoding> directive, even when this directive sets the encoding and the processor makes use of the encoding information. Indeed, it is possible to know the encoding without processing the directive content.

```
=item C<< $parser->merge_text( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (and it is false by default) makes sure that only one event (or token, or node) will be created for any single contiguous sequence of text. For example, consider this somewhat contrived example:

```
I just LOVE Z<>hotE<32>apple pie!
```

When that is parsed and events are about to be called on it, it may actually seem to be four different text events, one right after another: one event for "I just LOVE ", one for "hot", one for " ", and one for "apple pie!". But if you have merge\_text on, then you're guaranteed that it will be fired as one text event: "I just LOVE hot apple pie!".

```
=item C<< $parser->code_handler( I<CODE_REF> ) >>
```

This specifies code that should be called when a code line is seen (i.e., a line outside of the Pod). Normally this is undef, meaning that no code should be called. If you provide a routine, it should start out like this:

```
sub get_code_line { # or whatever you'll call it
    my($line, $line_number, $parser) = @_ ;
    ...
}
```

Note, however, that sometimes the Pod events aren't processed in exactly the same order as the code lines are -- i.e., if you have a file with Pod, then code, then more Pod, sometimes the code will be processed (via whatever you have code\_handler call) before the all of the preceding Pod has been processed.

=item C<< \$parser->cut\_handler( I<CODE\_REF> ) >>

This is just like the `code_handler` attribute, except that it's for "`=cut`" lines, not code lines. The same caveats apply. "`=cut`" lines are unlikely to be interesting, but this is included for completeness.

=item C<< \$parser->pod\_handler( I<CODE\_REF> ) >>

This is just like the `code_handler` attribute, except that it's for "`=pod`" lines, not code lines. The same caveats apply. "`=pod`" lines are unlikely to be interesting, but this is included for completeness.

=item C<< \$parser->whiteline\_handler( I<CODE\_REF> ) >>

This is just like the `code_handler` attribute, except that it's for lines that are seemingly blank but have whitespace (" " and/or "\t") on them, not code lines. The same caveats apply. These lines are unlikely to be interesting, but this is included for completeness.

=item C<< \$parser->whine( I<linenumber>, I<complaint string> ) >>

This notes a problem in the Pod, which will be reported to in the "Pod Errors" section of the document and/or send to `STDERR`, depending on the values of the attributes `C<no_whining>`, `C<no_errata_section>`, and `C<complain_stderr>`.

=item C<< \$parser->scream( I<linenumber>, I<complaint string> ) >>

This notes an error like `C<whine>` does, except that it is not suppressible with `C<no_whining>`. This should be used only for very serious errors.

=item C<< \$parser->source\_dead(1) >>

This aborts parsing of the current document, by switching on the flag that indicates that EOF has been seen. In particularly drastic cases, you might want to do this. It's rather nicer than just calling `C<die>!`

=item C<< \$parser->hide\_line\_numbers( I<SOMEVALUE> ) >>

Some subclasses that indiscriminately dump event attributes (well, except for ones beginning with "~") can use this object attribute for refraining to dump the "`start_line`" attribute.



=item C<< \$parser->no\_whining( I<SOMEVALUE> ) >>

This attribute, if set to true, will suppress reports of non-fatal error messages. The default value is false, meaning that complaints I<are> reported. How they get reported depends on the values of the attributes C<no\_errata\_section> and C<complain\_stderr>.

=item C<< \$parser->no\_errata\_section( I<SOMEVALUE> ) >>

This attribute, if set to true, will suppress generation of an errata section. The default value is false -- i.e., an errata section will be generated.

=item C<< \$parser->complain\_stderr( I<SOMEVALUE> ) >>

This attribute, if set to true will send complaints to STDERR. The default value is false -- i.e., complaints do not go to STDERR.

=item C<< \$parser->bare\_output( I<SOMEVALUE> ) >>

Some formatter subclasses use this as a flag for whether output should have prologue and epilogue code omitted. For example, setting this to true for an HTML formatter class should omit the "<html><head><title>...</title><body>..." prologue and the "</body></html>" epilogue.

If you want to set this to true, you should probably also set C<no\_whining> or at least C<no\_errata\_section> to true.

=item C<< \$parser->preserve\_whitespace( I<SOMEVALUE> ) >>

If you set this attribute to a true value, the parser will try to preserve whitespace in the output. This means that such formatting conventions as two spaces after periods will be preserved by the parser. This is primarily useful for output formats that treat whitespace as significant (such as text or \*roff, but not HTML).

=item C<< \$parser->parse\_empty\_lists( I<SOMEVALUE> ) >>

If this attribute is set to true, the parser will not ignore empty C<=over>/C<=back> blocks. The type of C<=over> will be I<empty>, documented above, L<events with an element\_name of over-empty>.

=back

=head1 SEE ALSO

L<Pod::Simple> -- event-based Pod-parsing framework

L<Pod::Simple::Methody> -- like Pod::Simple, but each sort of event calls its own method (like C<start\_head3>)

L<Pod::Simple::PullParser> -- a Pod-parsing framework like Pod::Simple, but with a token-stream interface

L<Pod::Simple::SimpleTree> -- a Pod-parsing framework like Pod::Simple, but with a tree interface

L<Pod::Simple::Checker> -- a simple Pod::Simple subclass that reads documents, and then makes a plaintext report of any errors found in the document

L<Pod::Simple::DumpAsXML> -- for dumping Pod documents as tidily indented XML, showing each event on its own line

L<Pod::Simple::XMLOutputStream> -- dumps a Pod document as XML (without introducing extra whitespace as Pod::Simple::DumpAsXML does).

L<Pod::Simple::DumpAsText> -- for dumping Pod documents as tidily indented text, showing each event on its own line

L<Pod::Simple::LinkSection> -- class for objects representing the values of the TODO and TODO attributes of LE<lt>...E<gt> elements

L<Pod::Escapes> -- the module the Pod::Simple uses for evaluating EE<lt>...E<gt> content

L<Pod::Simple::Text> -- a simple plaintext formatter for Pod

L<Pod::Simple::TextContent> -- like Pod::Simple::Text, but makes no effort for indent or wrap the text being formatted

L<Pod::Simple::HTML> -- a simple HTML formatter for Pod

L<perlpod|perlpod>

L<perlpodspec|perlpodspec>

L<perldoc>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or  
to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to  
<[bug-pod-simple@rt.cpan.org](mailto:bug-pod-simple@rt.cpan.org)>.

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merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>.  
But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item \* Allison Randal C<[allison@perl.org](mailto:allison@perl.org)>

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=item \* David E. Wheeler C<[dwheeler@cpan.org](mailto:dwheeler@cpan.org)>

=back

=for notes

Hm, my old podchecker version (1.2) says:

\*\*\* WARNING: node 'http://search.cpan.org/' contains non-escaped | or / at line 38 in file Subclassing.pod

\*\*\* WARNING: node 'http://lists.perl.org/showlist.cgi?name=pod-people' contains non-escaped | or / at line 41 in  
file Subclassing.pod

Yes, L<...> is hard.

=cut

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-

8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/Subclassing.pod

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=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

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=head1 ACKNOWLEDGEMENTS

Thanks to L<[Hurricane Electric|http://he.net/](http://he.net/)> for permission to use its L<[Linux man pages online|http://man.he.net/](http://man.he.net/)> site for man page links.

Thanks to L<[search.cpan.org|http://search.cpan.org/](http://search.cpan.org/)> for permission to use the site for Perl module links.

=head1 AUTHOR

Pod::Simple::XHTML was created by Allison Randal <[allison@perl.org](mailto:allison@perl.org)>.

Pod::Simple was created by Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>. But don't bother him, he's retired.

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=item \* David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

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=head1 NAME

Pod::Simple::PullParserEndToken -- end-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser>, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item `$token->tagname`

This returns the tagname for this end-token object. For example, parsing a `"=head1 ..."` line will give you a start-token with the tagname of `"head1"`, token(s) for its content, and then an end-token with the tagname of `"head1"`.

=item `$token->tagname(I<somestring>)`

This changes the tagname for this end-token object. You probably won't need to do this.

=item \$token->tag(...)

A shortcut for \$token->tagname(...)

=item \$token->is\_tag(I<somestring>) or \$token->is\_tagname(I<somestring>)

These are shortcuts for C<< \$token->tag() eq I<somestring> >>

=back

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

```
C<<
Pod::Simple::PullParserEndToken->new( I<tagname> )
>>
```

=head1 SEE ALSO

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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=back

=cut

Found in path(s):

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=head1 NAME

perlfaq3 - Programming Tools (\$Revision: 1.38 \$, \$Date: 1999/05/23 16:08:30 \$)

=head1 DESCRIPTION

This section of the FAQ answers questions related to programmer tools and programming support.

=head2 How do I do (anything)?

Have you looked at CPAN (see L<perlfaq2>)? The chances are that someone has already written a module that can solve your problem.

Have you read the appropriate man pages? Here's a brief index:

Basics     perldata, perlvar, perlsyn, perlop, perlsub

Execution perlrun, perldebug

Functions perlfunc

Objects   perlref, perlmod, perlobj, perltie

Data Structures perlref, perllol, perldsc

Modules   perlmod, perlmodlib, perlsub

Regexes   perlre, perlfunc, perlop, perllocale

Moving to perl5 perltrap, perl

Linking w/C perlxs, perlcall, perlguts, perlembed

Various   <http://www.perl.com/CPAN/doc/FMTEYEWTK/index.html>

(not a man-page but still useful)

A crude table of contents for the Perl man page set is found in [L<perltoc>](#).

## =head2 How can I use Perl interactively?

The typical approach uses the Perl debugger, described in the [perldebug\(1\)](#) man page, on an "empty" program, like this:

```
perl -de 42
```

Now just type in any legal Perl code, and it will be immediately evaluated. You can also examine the symbol table, get stack backtraces, check variable values, set breakpoints, and other operations typically found in symbolic debuggers.

## =head2 Is there a Perl shell?

In general, no. The `Shell.pm` module (distributed with Perl) makes Perl try commands which aren't part of the Perl language as shell commands. `perlsh` from the source distribution is simplistic and uninteresting, but may still be what you want.

## =head2 How do I debug my Perl programs?

Have you tried `C<use warnings>` or used `C<-w>`? They enable warnings to detect dubious practices.

Have you tried `C<use strict>`? It prevents you from using symbolic references, makes you predeclare any subroutines that you call as bare words, and (probably most importantly) forces you to predeclare your variables with `C<my>`, `C<our>`, or `C<use vars>`.

Did you check the return values of each and every system call? The operating system (and thus Perl) tells you whether they worked, and if not why.

```
open(FH, "> /etc/cantwrite")
  or die "Couldn't write to /etc/cantwrite: $!\n";
```

Did you read [L<perltrap>](#)? It's full of gotchas for old and new Perl programmers and even has sections for those of you who are upgrading from languages like `I<awk>` and `I<C>`.

Have you tried the Perl debugger, described in [L<perldebug>](#)? You can step through your program and see what it's doing and thus work out why what it's doing isn't what it should be doing.

## =head2 How do I profile my Perl programs?



You should get the Devel::DProf module from the standard distribution (or separately on CPAN) and also use Benchmark.pm from the standard distribution. The Benchmark module lets you time specific portions of your code, while Devel::DProf gives detailed breakdowns of where your code spends its time.

Here's a sample use of Benchmark:

```
use Benchmark;

@junk = `cat /etc/motd`;
$count = 10_000;

timethese($count, {
    'map' => sub { my @a = @junk;
        map { s/a/b/ } @a;
        return @a
    },
    'for' => sub { my @a = @junk;
        local $_;
        for (@a) { s/a/b/ };
        return @a },
    });
```

This is what it prints (on one machine--your results will be dependent on your hardware, operating system, and the load on your machine):

```
Benchmark: timing 10000 iterations of for, map...
for: 4 secs ( 3.97 usr 0.01 sys = 3.98 cpu)
map: 6 secs ( 4.97 usr 0.00 sys = 4.97 cpu)
```

Be aware that a good benchmark is very hard to write. It only tests the data you give it and proves little about the differing complexities of contrasting algorithms.

=head2 How do I cross-reference my Perl programs?

The B::Xref module, shipped with the new, alpha-release Perl compiler (not the general distribution prior to the 5.005 release), can be used to generate cross-reference reports for Perl programs.

```
perl -MO=Xref[,OPTIONS] scriptname.plx
```

=head2 Is there a pretty-printer (formatter) for Perl?

There is no program that will reformat Perl as much as indent(1) does for C. The complex feedback between the scanner and the parser (this feedback is what confuses the vgrind and emacs programs) makes it

challenging at best to write a stand-alone Perl parser.

Of course, if you simply follow the guidelines in L<perlstyle>, you shouldn't need to reformat. The habit of formatting your code as you write it will help prevent bugs. Your editor can and should help you with this. The perl-mode or newer cperl-mode for emacs can provide remarkable amounts of help with most (but not all) code, and even less programmable editors can provide significant assistance. Tom swears by the following settings in vi and its clones:

```
set ai sw=4
map! ^O {^M}^[O^T
```

Now put that in your F<.exrc> file (replacing the caret characters with control characters) and away you go. In insert mode, ^T is for indenting, ^D is for unindenting, and ^O is for blockdenting--as it were. If you haven't used the last one, you're missing a lot. A more complete example, with comments, can be found at <http://www.perl.com/CPAN-local/authors/id/TOMC/scripts/toms.exrc.gz>

If you are used to using the I<vgrind> program for printing out nice code to a laser printer, you can take a stab at this using <http://www.perl.com/CPAN/doc/misc/tips/working.vgrind.entry>, but the results are not particularly satisfying for sophisticated code.

The a2ps at <http://www.infres.enst.fr/%7Edemaille/a2ps/> does lots of things related to generating nicely printed output of documents.

=head2 Is there a ctags for Perl?

There's a simple one at <http://www.perl.com/CPAN/authors/id/TOMC/scripts/ptags.gz> which may do the trick. And if not, it's easy to hack into what you want.

=head2 Is there an IDE or Windows Perl Editor?

Perl programs are just plain text, so any editor will do.

If you're on Unix, you already have an IDE--Unix itself. The UNIX philosophy is the philosophy of several small tools that each do one thing and do it well. It's like a carpenter's toolbox.

If you want a Windows IDE, check the following:

=over 4

=item CodeMagicCD

<http://www.codemagiccd.com/>

=item Komodo

ActiveState's cross-platform, multi-language IDE has Perl support, including a regular expression debugger and remote debugging (<http://www.ActiveState.com/Products/Komodo/index.html>). (Visual Perl, a Visual Studio.NET plug-in is currently (early 2001) in beta (<http://www.ActiveState.com/Products/VisualPerl/index.html>)).

=item The Object System

([http://www.castlelink.co.uk/object\\_system/](http://www.castlelink.co.uk/object_system/)) is a Perl web applications development IDE.

=item PerlBuilder

(<http://www.solutionsoft.com/perl.htm>) is an integrated development environment for Windows that supports Perl development.

=item Perl code magic

(<http://www.petes-place.com/codemagic.html>).

=item visiPerl+

<http://helpconsulting.net/visiperl/>, from Help Consulting.

=back

For editors: if you're on Unix you probably have vi or a vi clone already, and possibly an emacs too, so you may not need to download anything. In any emacs the cperl-mode (M-x cperl-mode) gives you perhaps the best available Perl editing mode in any editor.

For Windows editors: you can download an Emacs

=over 4

=item GNU Emacs

<http://www.gnu.org/software/emacs/windows/ntemacs.html>

=item MicroEMACS

<http://members.nbci.com/uemacs/>

=item XEmacs

<http://www.xemacs.org/Download/index.html>

=back

or a vi clone such as

=over 4

=item Elvis

<ftp://ftp.cs.pdx.edu/pub/elvis/> <http://www.fh-wedel.de/elvis/>

=item Vile

<http://vile.cx/>

=item Vim

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

win32: <http://www.cs.vu.nl/%7Etmgil/vi.html>

=back

For vi lovers in general, Windows or elsewhere:

<http://www.thomer.com/thomer/vi/vi.html>.

nvi (<http://www.bostic.com/vi/>, available from CPAN in `src/misc/`) is yet another vi clone, unfortunately not available for Windows, but in UNIX platforms you might be interested in trying it out, firstly because strictly speaking it is not a vi clone, it is the real vi, or the new incarnation of it, and secondly because you can embed Perl inside it to use Perl as the scripting language. nvi is not alone in this, though: at least also vim and vile offer an embedded Perl.

The following are Win32 multilanguage editor/IDESs that support Perl:

=over 4

=item Codewright

<http://www.starbase.com/>

=item MultiEdit

<http://www.MultiEdit.com/>

=item SlickEdit

<http://www.slickedit.com/>

=back

There is also a toyedit Text widget based editor written in Perl that is distributed with the Tk module on CPAN. The ptkdb (<http://world.std.com/~aep/ptkdb/>) is a Perl/tk based debugger that acts as a development environment of sorts. Perl Composer (<http://perlcomposer.sourceforge.net/vperl.html>) is an IDE for Perl/Tk GUI creation.

In addition to an editor/IDE you might be interested in a more powerful shell environment for Win32. Your options include

=over 4

=item Bash

from the Cygwin package (<http://sources.redhat.com/cygwin/>)

=item Ksh

from the MKS Toolkit (<http://www.mks.com/>), or the Bourne shell of the U/WIN environment (<http://www.research.att.com/sw/tools/uwin/>)

=item Tcsh

<ftp://ftp.astron.com/pub/tcsh/>, see also  
<http://www.primate.wisc.edu/software/csh-tcsh-book/>

=item Zsh

<ftp://ftp.blarg.net/users/amol/zsh/>, see also <http://www.zsh.org/>

=back

MKS and U/WIN are commercial (U/WIN is free for educational and research purposes), Cygwin is covered by the GNU Public License (but that shouldn't matter for Perl use). The Cygwin, MKS, and U/WIN all contain (in addition to the shells) a comprehensive set of standard UNIX toolkit utilities.

If you're transferring text files between Unix and Windows using FTP be sure to transfer them in ASCII mode so the ends of lines are appropriately converted.

On Mac OS the MacPerl Application comes with a simple 32k text editor that behaves like a rudimentary IDE. In contrast to the MacPerl Application the MPW Perl tool can make use of the MPW Shell itself as an editor (with no 32k limit).

=over 4

=item BBEdit and BBEdit Lite

are text editors for Mac OS that have a Perl sensitivity mode (<http://web.barebones.com/>).

=item Alpha

is an editor, written and extensible in Tcl, that nonetheless has built in support for several popular markup and programming languages including Perl and HTML (<http://alpha.olm.net/>).

=back

Pepper and Pe are programming language sensitive text editors for Mac OS X and BeOS respectively (<http://www.hekkelman.com/>).

=head2 Where can I get Perl macros for vi?

For a complete version of Tom Christiansen's vi configuration file, see [http://www.perl.com/CPAN/authors/Tom\\_Christiansen/scripts/toms.exrc.gz](http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/toms.exrc.gz), the standard benchmark file for vi emulators. The file runs best with nvi, the current version of vi out of Berkeley, which incidentally can be built with an embedded Perl interpreter--see <http://www.perl.com/CPAN/src/misc>.

=head2 Where can I get perl-mode for emacs?

Since Emacs version 19 patchlevel 22 or so, there have been both a perl-mode.el and support for the Perl debugger built in. These should come with the standard Emacs 19 distribution.

In the Perl source directory, you'll find a directory called "emacs", which contains a cperl-mode that color-codes keywords, provides context-sensitive help, and other nifty things.

Note that the perl-mode of emacs will have fits with C<"main'foo"> (single quote), and mess up the indentation and highlighting. You are probably using C<"main::foo"> in new Perl code anyway, so this shouldn't be an issue.

=head2 How can I use curses with Perl?

The Curses module from CPAN provides a dynamically loadable object module interface to a curses library. A small demo can be found at the directory [http://www.perl.com/CPAN/authors/Tom\\_Christiansen/scripts/rep](http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/rep); this program repeats a command and updates the screen as needed, rendering B<rep ps axu> similar to B<top>.

=head2 How can I use X or Tk with Perl?

Tk is a completely Perl-based, object-oriented interface to the Tk toolkit that doesn't force you to use Tcl just to get at Tk. Sx is an interface to the Athena Widget set. Both are available from CPAN. See the directory [http://www.perl.com/CPAN/modules/by-category/08\\_User\\_Interfaces/](http://www.perl.com/CPAN/modules/by-category/08_User_Interfaces/)

Invaluable for Perl/Tk programming are the Perl/Tk FAQ at <http://w4.lns.cornell.edu/%7Epvhp/ptk/ptkTOC.html> , the Perl/Tk Reference Guide available at [http://www.perl.com/CPAN-local/authors/Stephen\\_O\\_Lidie/](http://www.perl.com/CPAN-local/authors/Stephen_O_Lidie/) , and the online manpages at <http://www-users.cs.umn.edu/%7Eamundson/perl/perlTk/toc.html> .

=head2 How can I generate simple menus without using CGI or Tk?

The <http://www.perl.com/CPAN/authors/id/SKUNZ/perlmenu.v4.0.tar.gz> module, which is curses-based, can help with this.

=head2 What is undump?

See the next question on ``How can I make my Perl program run faster?''

=head2 How can I make my Perl program run faster?

The best way to do this is to come up with a better algorithm. This can often make a dramatic difference. Jon Bentley's book ``Programming Pearls" (that's not a misspelling!) has some good tips on optimization, too. Advice on benchmarking boils down to: benchmark and profile to make sure you're optimizing the right part, look for better algorithms instead of microtuning your code, and when all else fails consider just buying faster hardware.

A different approach is to autoload seldom-used Perl code. See the AutoSplit and AutoLoader modules in the standard distribution for that. Or you could locate the bottleneck and think about writing just that part in C, the way we used to take bottlenecks in C code and write them in assembler. Similar to rewriting in C, modules that have critical sections can be written in C (for instance, the PDL module from CPAN).

In some cases, it may be worth it to use the backend compiler to

produce byte code (saving compilation time) or compile into C, which will certainly save compilation time and sometimes a small amount (but not much) execution time. See the question about compiling your Perl programs for more on the compiler--the wins aren't as obvious as you'd hope.

If you're currently linking your perl executable to a shared `libc.so`, you can often gain a 10-25% performance benefit by rebuilding it to link with a static `libc.a` instead. This will make a bigger perl executable, but your Perl programs (and programmers) may thank you for it. See the `INSTALL` file in the source distribution for more information.

Unsubstantiated reports allege that Perl interpreters that use `sfio` outperform those that don't (for I/O intensive applications). To try this, see the `INSTALL` file in the source distribution, especially the "Selecting File I/O mechanisms" section.

The `undump` program was an old attempt to speed up your Perl program by storing the already-compiled form to disk. This is no longer a viable option, as it only worked on a few architectures, and wasn't a good solution anyway.

`=head2` How can I make my Perl program take less memory?

When it comes to time-space tradeoffs, Perl nearly always prefers to throw memory at a problem. Scalars in Perl use more memory than strings in C, arrays take more than that, and hashes use even more. While there's still a lot to be done, recent releases have been addressing these issues. For example, as of 5.004, duplicate hash keys are shared amongst all hashes using them, so require no reallocation.

In some cases, using `substr()` or `vec()` to simulate arrays can be highly beneficial. For example, an array of a thousand booleans will take at least 20,000 bytes of space, but it can be turned into one 125-byte bit vector--a considerable memory savings. The standard `Tie::SubstrHash` module can also help for certain types of data structure. If you're working with specialist data structures (matrices, for instance) modules that implement these in C may use less memory than equivalent Perl modules.

Another thing to try is learning whether your Perl was compiled with the system `malloc` or with Perl's builtin `malloc`. Whichever one it is, try using the other one and see whether this makes a difference. Information about `malloc` is in the `INSTALL` file in the source distribution. You can find out whether you are using perl's `malloc` by typing `C<perl -V:usemymalloc>`.



=head2 Is it unsafe to return a pointer to local data?

No, Perl's garbage collection system takes care of this.

```
sub makeone {
    my @a = ( 1 .. 10 );
    return \@a;
}

for $i ( 1 .. 10 ) {
    push @many, makeone();
}

print $many[4][5], "\n";

print "@many\n";
```

=head2 How can I free an array or hash so my program shrinks?

You can't. On most operating systems, memory allocated to a program can never be returned to the system. That's why long-running programs sometimes re-exec themselves. Some operating systems (notably, FreeBSD and Linux) allegedly reclaim large chunks of memory that is no longer used, but it doesn't appear to happen with Perl (yet). The Mac appears to be the only platform that will reliably (albeit, slowly) return memory to the OS.

We've had reports that on Linux (Redhat 5.1) on Intel, C<undef \$scalar> will return memory to the system, while on Solaris 2.6 it won't. In general, try it yourself and see.

However, judicious use of my() on your variables will help make sure that they go out of scope so that Perl can free up that space for use in other parts of your program. A global variable, of course, never goes out of scope, so you can't get its space automatically reclaimed, although undef()ing and/or delete()ing it will achieve the same effect. In general, memory allocation and de-allocation isn't something you can or should be worrying about much in Perl, but even this capability (preallocation of data types) is in the works.

=head2 How can I make my CGI script more efficient?

Beyond the normal measures described to make general Perl programs faster or smaller, a CGI program has additional issues. It may be run several times per second. Given that each time it runs it will need to be re-compiled and will often allocate a megabyte or more of system memory, this can be a killer. Compiling into C B<isn't going to help you> because the process start-up overhead is where the bottleneck is.

There are two popular ways to avoid this overhead. One solution involves running the Apache HTTP server (available from <http://www.apache.org/>) with either of the `mod_perl` or `mod_fastcgi` plugin modules.

With `mod_perl` and the `Apache::Registry` module (distributed with `mod_perl`), `httpd` will run with an embedded Perl interpreter which pre-compiles your script and then executes it within the same address space without forking. The Apache extension also gives Perl access to the internal server API, so modules written in Perl can do just about anything a module written in C can. For more on `mod_perl`, see <http://perl.apache.org/>

With the `FCGI` module (from CPAN) and the `mod_fastcgi` module (available from <http://www.fastcgi.com/>) each of your Perl programs becomes a permanent CGI daemon process.

Both of these solutions can have far-reaching effects on your system and on the way you write your CGI programs, so investigate them with care.

See [http://www.perl.com/CPAN/modules/by-category/15\\_World\\_Wide\\_Web\\_HTML\\_HTTP\\_CGI/](http://www.perl.com/CPAN/modules/by-category/15_World_Wide_Web_HTML_HTTP_CGI/).

A non-free, commercial product, ``The Velocity Engine for Perl'', (<http://www.binevolve.com/> or <http://www.binevolve.com/velocigen/>) might also be worth looking at. It will allow you to increase the performance of your Perl programs, running programs up to 25 times faster than normal CGI Perl when running in persistent Perl mode or 4 to 5 times faster without any modification to your existing CGI programs. Fully functional evaluation copies are available from the web site.

=head2 How can I hide the source for my Perl program?

Delete it. :-) Seriously, there are a number of (mostly unsatisfactory) solutions with varying levels of ``security''.

First of all, however, you I<can't> take away read permission, because the source code has to be readable in order to be compiled and interpreted. (That doesn't mean that a CGI script's source is readable by people on the web, though--only by people with access to the filesystem.) So you have to leave the permissions at the socially friendly 0755 level.

Some people regard this as a security problem. If your program does insecure things and relies on people not knowing how to exploit those insecurities, it is not secure. It is often possible for someone to

determine the insecure things and exploit them without viewing the source. Security through obscurity, the name for hiding your bugs instead of fixing them, is little security indeed.

You can try using encryption via source filters (Filter::\* from CPAN), but any decent programmer will be able to decrypt it. You can try using the byte code compiler and interpreter described below, but the curious might still be able to de-compile it. You can try using the native-code compiler described below, but crackers might be able to disassemble it. These pose varying degrees of difficulty to people wanting to get at your code, but none can definitively conceal it (true of every language, not just Perl).

If you're concerned about people profiting from your code, then the bottom line is that nothing but a restrictive license will give you legal security. License your software and pepper it with threatening statements like ``This is unpublished proprietary software of XYZ Corp. Your access to it does not give you permission to use it blah blah blah." We are not lawyers, of course, so you should see a lawyer if you want to be sure your license's wording will stand up in court.

=head2 How can I compile my Perl program into byte code or C?

Malcolm Beattie has written a multifunction backend compiler, available from CPAN, that can do both these things. It is included in the perl5.005 release, but is still considered experimental. This means it's fun to play with if you're a programmer but not really for people looking for turn-key solutions.

Merely compiling into C does not in and of itself guarantee that your code will run very much faster. That's because except for lucky cases where a lot of native type inferencing is possible, the normal Perl run-time system is still present and so your program will take just as long to run and be just as big. Most programs save little more than compilation time, leaving execution no more than 10-30% faster. A few rare programs actually benefit significantly (even running several times faster), but this takes some tweaking of your code.

You'll probably be astonished to learn that the current version of the compiler generates a compiled form of your script whose executable is just as big as the original perl executable, and then some. That's because as currently written, all programs are prepared for a full eval() statement. You can tremendously reduce this cost by building a shared I<libperl.so> library and linking against that. See the F<INSTALL> podfile in the Perl source distribution for details. If you link your main perl binary with this, it will make it minuscule. For example, on one author's system, F</usr/bin/perl> is only 11k in size!

In general, the compiler will do nothing to make a Perl program smaller, faster, more portable, or more secure. In fact, it can make your situation worse. The executable will be bigger, your VM system may take longer to load the whole thing, the binary is fragile and hard to fix, and compilation never stopped software piracy in the form of crackers, viruses, or bootleggers. The real advantage of the compiler is merely packaging, and once you see the size of what it makes (well, unless you use a shared `libperl.so`), you'll probably want a complete Perl install anyway.

=head2 How can I compile Perl into Java?

You can also integrate Java and Perl with the Perl Resource Kit from O'Reilly and Associates. See <http://www.oreilly.com/catalog/prkunix/>.

Perl 5.6 comes with Java Perl Lingo, or JPL. JPL, still in development, allows Perl code to be called from Java. See `jpl/README` in the Perl source tree.

=head2 How can I get `C<#!perl>` to work on [MS-DOS,NT,...]?

For OS/2 just use

```
extproc perl -S -your_switches
```

as the first line in `C<*.cmd>` file (`C<-S>` due to a bug in `cmd.exe`'s ``extproc'` handling). For DOS one should first invent a corresponding batch file and codify it in `C<ALTERNATIVE_SHEBANG>` (see the `F<INSTALL>` file in the source distribution for more information).

The Win95/NT installation, when using the ActiveState port of Perl, will modify the Registry to associate the `C<.pl>` extension with the perl interpreter. If you install another port, perhaps even building your own Win95/NT Perl from the standard sources by using a Windows port of gcc (e.g., with cygwin or mingw32), then you'll have to modify the Registry yourself. In addition to associating `C<.pl>` with the interpreter, NT people can use: `C<SET PATHEXT=%PATHEXT%;.PL>` to let them run the program `C<install-linux.pl>` merely by typing `C<install-linux>`.

Macintosh Perl programs will have the appropriate Creator and Type, so that double-clicking them will invoke the Perl application.

**I<IMPORTANT!>**: Whatever you do, PLEASE don't get frustrated, and just throw the perl interpreter into your cgi-bin directory, in order to get your programs working for a web server. This is an EXTREMELY big security risk. Take the time to figure out how to do it correctly.

=head2 Can I write useful Perl programs on the command line?

Yes. Read L<perlrun> for more information. Some examples follow.  
(These assume standard Unix shell quoting rules.)

```
# sum first and last fields
perl -lane 'print $F[0] + $F[-1]' *

# identify text files
perl -le 'for(@ARGV) {print if -f && -T _}' *

# remove (most) comments from C program
perl -0777 -pe 's{/\*.*?*/}{}gs' foo.c

# make file a month younger than today, defeating reaper daemons
perl -e '$X=24*60*60; utime(time(),time() + 30 * $X,@ARGV)' *

# find first unused uid
perl -le '$i++ while getpwuid($i); print $i'

# display reasonable manpath
echo $PATH | perl -nl -072 -e '
s![^/+]*$!man!&&-d&&!$s{$_}++&&push@m,$_;END{print"@m"}'
```

OK, the last one was actually an Obfuscated Perl Contest entry. :-)

=head2 Why don't Perl one-liners work on my DOS/Mac/VMS system?

The problem is usually that the command interpreters on those systems have rather different ideas about quoting than the Unix shells under which the one-liners were created. On some systems, you may have to change single-quotes to double ones, which you must I<NOT> do on Unix or Plan9 systems. You might also have to change a single % to a %%.

For example:

```
# Unix
perl -e 'print "Hello world\n"'

# DOS, etc.
perl -e "print \"Hello world\n\""

# Mac
print "Hello world\n"
(then Run "Myscript" or Shift-Command-R)

# VMS
```

```
perl -e "print ""Hello world\n"""
```

The problem is that none of these examples are reliable: they depend on the command interpreter. Under Unix, the first two often work. Under DOS, it's entirely possible that neither works. If 4DOS was the command shell, you'd probably have better luck like this:

```
perl -e "print <Ctrl-x>"Hello world\n<Ctrl-x>"""
```

Under the Mac, it depends which environment you are using. The MacPerl shell, or MPW, is much like Unix shells in its support for several quoting variants, except that it makes free use of the Mac's non-ASCII characters as control characters.

Using qq(), q(), and qx(), instead of "double quotes", 'single quotes', and `backticks`, may make one-liners easier to write.

There is no general solution to all of this. It is a mess, pure and simple. Sucks to be away from Unix, huh? :-)

[Some of this answer was contributed by Kenneth Albanowski.]

=head2 Where can I learn about CGI or Web programming in Perl?

For modules, get the CGI or LWP modules from CPAN. For textbooks, see the two especially dedicated to web stuff in the question on books. For problems and questions related to the web, like ``Why do I get 500 Errors" or ``Why doesn't it run from the browser right when it runs fine on the command line", see these sources:

WWW Security FAQ

<http://www.w3.org/Security/Faq/>

Web FAQ

<http://www.boutell.com/faq/>

CGI FAQ

<http://www.webthing.com/tutorials/cgifaq.html>

HTTP Spec

<http://www.w3.org/pub/WWW/Protocols/HTTP/>

HTML Spec

<http://www.w3.org/TR/REC-html40/>

<http://www.w3.org/pub/WWW/MarkUp/>

CGI Spec

<http://www.w3.org/CGI/>

## CGI Security FAQ

<http://www.go2net.com/people/paulp/cgi-security/safe-cgi.txt>

=head2 Where can I learn about object-oriented Perl programming?

A good place to start is L<perltoot>, and you can use L<perlobj>, L<perlboot>, and L<perlbot> for reference. Perltoot didn't come out until the 5.004 release; you can get a copy (in pod, html, or postscript) from <http://www.perl.com/CPAN/doc/FMTEYEWTK/>.

=head2 Where can I learn about linking C with Perl? [h2xs, xsubpp]

If you want to call C from Perl, start with L<perlxstut>, moving on to L<perlxs>, L<xsubpp>, and L<perlguts>. If you want to call Perl from C, then read L<perlembed>, L<perlcall>, and L<perlguts>. Don't forget that you can learn a lot from looking at how the authors of existing extension modules wrote their code and solved their problems.

=head2 I've read perlembed, perlguts, etc., but I can't embed perl in my C program; what am I doing wrong?

Download the ExtUtils::Embed kit from CPAN and run `make test'. If the tests pass, read the pods again and again and again. If they fail, see L<perlbug> and send a bug report with the output of C<make test TEST\_VERBOSE=1> along with C<perl -V>.

=head2 When I tried to run my script, I got this message. What does it mean?

A complete list of Perl's error messages and warnings with explanatory text can be found in L<perldiag>. You can also use the splain program (distributed with Perl) to explain the error messages:

```
perl program 2>diag.out
splain [-v] [-p] diag.out
```

or change your program to explain the messages for you:

```
use diagnostics;
```

or

```
use diagnostics -verbose;
```

=head2 What's MakeMaker?

This module (part of the standard Perl distribution) is designed to write a Makefile for an extension module from a Makefile.PL. For more information, see L<ExtUtils::MakeMaker>.

## =head1 AUTHOR AND COPYRIGHT

Copyright (c) 1997-1999 Tom Christiansen and Nathan Torkington.  
All rights reserved.

When included as an integrated part of the Standard Distribution of Perl or of its documentation (printed or otherwise), this works is covered under Perl's Artistic License. For separate distributions of all or part of this FAQ outside of that, see L<perlfaq>.

Irrespective of its distribution, all code examples here are in the public domain. You are permitted and encouraged to use this code and any derivatives thereof in your own programs for fun or for profit as you see fit. A simple comment in the code giving credit to the FAQ would be courteous but is not required.

Found in path(s):

```
* /opt/cola/permits/1000849041_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/t/perlfaq.pod
```

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

## =head1 NAME

Pod::Simple::Checker -- check the Pod syntax of a document

## =head1 SYNOPSIS

```
perl -MPod::Simple::Checker -e \  
"exit Pod::Simple::Checker->filter(shift)->any_errata_seen" \  
thingy.pod
```

## =head1 DESCRIPTION

This class is for checking the syntactic validity of Pod.  
It works by basically acting like a simple-minded version of L<Pod::Simple::Text> that formats only the "Pod Errors" section (if Pod::Simple even generates one for the given document).

This is a subclass of L<Pod::Simple> and inherits all its methods.

## =head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Checker>



## =head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

## =head1 COPYRIGHT AND DISCLAIMERS

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This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

## =head1 AUTHOR

Pod::Simple was created by Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>. But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item \* Allison Randal C<[allison@perl.org](mailto:allison@perl.org)>

=item \* Hans Dieter Pearcey C<[hdp@cpan.org](mailto:hdp@cpan.org)>

=item \* David E. Wheeler C<[dwheeler@cpan.org](mailto:dwheeler@cpan.org)>

=back

=cut

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/Checker.pm

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

=head1 NAME

Pod::Simple::Methody -- turn Pod::Simple events into method calls

=head1 SYNOPSIS

```
require 5;
use strict;
package SomePodFormatter;
use base qw(Pod::Simple::Methody);

sub handle_text {
    my($self, $text) = @_;
    ...
}

sub start_head1 {
    my($self, $attrs) = @_;
    ...
}
sub end_head1 {
    my($self) = @_;
    ...
}
```

...and start\_/end\_ methods for whatever other events you want to catch.

=head1 DESCRIPTION

This class is of interest to people writing Pod formatters based on Pod::Simple.

This class (which is very small -- read the source) overrides Pod::Simple's `_handle_element_start`, `_handle_text`, and `_handle_element_end` methods so that parser events are turned into method calls. (Otherwise, this is a subclass of L<Pod::Simple> and inherits all its methods.)

You can use this class as the base class for a Pod formatter/processor.

=head1 METHOD CALLING

When Pod::Simple sees a "=head1 Hi there", for example, it basically does this:

```
$parser->_handle_element_start( "head1", \%attributes );
$parser->_handle_text( "Hi there" );
$parser->_handle_element_end( "head1" );
```

But if you subclass Pod::Simple::Methody, it will instead do this when it sees a "=head1 Hi there":

```
$parser->start_head1( \%attributes ) if $parser->can('start_head1');  
$parser->handle_text( "Hi there" ) if $parser->can('handle_text');  
$parser->end_head1()           if $parser->can('end_head1');
```

If Pod::Simple sends an event where the element name has a dash, period, or colon, the corresponding method name will have an underscore in its place. For example, "foo.bar:baz" becomes start\_foo\_bar\_baz and end\_foo\_bar\_baz.

See the source for Pod::Simple::Text for an example of using this class.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Subclassing>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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

=head1 NAME

Pod::Simple::XMLOutputStream -- turn Pod into XML

=head1 SYNOPSIS

```
perl -MPod::Simple::XMLOutputStream -e \  
"exit Pod::Simple::XMLOutputStream->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

Pod::Simple::XMLOutputStream is a subclass of L<Pod::Simple> that parses Pod and turns it into XML.

Pod::Simple::XMLOutputStream inherits methods from L<Pod::Simple>.

=head1 SEE ALSO

L<Pod::Simple::DumpAsXML> is rather like this class; see its documentation for a discussion of the differences.

L<Pod::Simple>, L<Pod::Simple::DumpAsXML>, L<Pod::SAX>

L<Pod::Simple::Subclassing>

The older (and possibly obsolete) libraries L<Pod::PXML>, L<Pod::XML>

## =head1 ABOUT EXTENDING POD

TODO: An example or two of =extend, then point to Pod::Simple::Subclassing

## =head1 ASK ME!

If you actually want to use Pod as a format that you want to render to XML (particularly if to an XML instance with more elements than normal Pod has), please email me (C<sburke@cpan.org>) and I'll probably have some recommendations.

For reasons of concision and energetic laziness, some methods and options in this module (and the dozen modules it depends on) are undocumented; but one of those undocumented bits might be just what you're looking for.

## =head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

## =head1 SUPPORT

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

=head1 NAME

Pod::Simple::PullParserTextToken -- text-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser>, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item `$token->text`

This returns the text that this token holds. For example, parsing `CZ<<foo>` will return a C start-token, a text-token, and a C end-token. And if you want to get the "foo" out of the text-token, call `C<< $token->text >>`

```
=item $token->text(I<somestring>)
```

This changes the string that this token holds. You probably won't need to do this.

```
=item $token->text_r()
```

This returns a scalar reference to the string that this token holds. This can be useful if you don't want to memory-copy the potentially large text value (well, as large as a paragraph or a verbatim block) as calling `$token->text` would do.

Or, if you want to alter the value, you can even do things like this:

```
for ( ${ $token->text_r } ) { # Aliases it with $_ !!

    s/ The / the /g; # just for example

    if( 'A' eq chr(65) ) { # (if in an ASCII world)
        tr/\xA0/ /;
        tr/\xAD//d;
    }

    ...or however you want to alter the value...
}
```

```
=back
```

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

```
C<<
Pod::Simple::PullParserTextToken->new( I<text> )
>>
```

```
=head1 SEE ALSO
```

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

```
=head1 SUPPORT
```

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Found in path(s):

```
* /opt/cola/permits/1000849041_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/PullParserTextToken.pm
```

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

```
sub dump { '[' . _esc( @ { $_[0] } ) . ']' }
```

# JUNK:

```
sub _esc {
    return " unless @_;
    my @out;
    foreach my $in (@_) {
        push @out, "' . $in . "'";
    }
}
```



```

$out[-1] =~ s/([^\s:.\|,|'|>|<|\"|'|=?|+|\\[\\]{}|_a-zA-Z0-9_\\`~|!|#|%|^&|*(|))|/
    sprintf( (ord($1) < 256) ? "\\x%02X" : "\\x{%X}", ord($1)
/eg;
}
return join ' ', @out;
}

```

\_\_END\_\_

=head1 NAME

Pod::Simple::PullParserToken -- tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

Given a \$parser that's an object of class Pod::Simple::PullParser  
(or a subclass)...

```

while(my $token = $parser->get_token) {
    $DEBUG and print "Token: ", $token->dump, "\n";
    if($token->is_start) {
        ...access $token->tagname, $token->attr, etc...
    }
    elsif($token->is_text) {
        ...access $token->text, $token->text_r, etc...
    }
    elsif($token->is_end) {
        ...access $token->tagname...
    }
}
}

```

(Also see L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do \$parser->get\_token on a L<Pod::Simple::PullParser>, you should  
get an object of a subclass of Pod::Simple::PullParserToken.

Subclasses will add methods, and will also inherit these methods:

=over

=item \$token->type

This returns the type of the token. This will be either the string  
"start", the string "text", or the string "end".

Once you know what the type of an object is, you then know what subclass it belongs to, and therefore what methods it supports.

Yes, you could probably do the same thing with code like `$token->isa('Pod::Simple::PullParserEndToken')`, but that's not so pretty as using just `$token->type`, or even the following shortcuts:

```
=item $token->is_start
```

This is a shortcut for `C<< $token->type() eq "start" >>`

```
=item $token->is_text
```

This is a shortcut for `C<< $token->type() eq "text" >>`

```
=item $token->is_end
```

This is a shortcut for `C<< $token->type() eq "end" >>`

```
=item $token->dump
```

This returns a handy stringified value of this object. This is useful for debugging, as in:

```
while(my $token = $parser->get_token) {  
    $DEBUG and print "Token: ", $token->dump, "\n";  
    ...  
}
```

```
=back
```

```
=head1 SEE ALSO
```

My subclasses:

`L<Pod::Simple::PullParserStartToken>`,  
`L<Pod::Simple::PullParserTextToken>`, and  
`L<Pod::Simple::PullParserEndToken>`.

`L<Pod::Simple::PullParser>` and `L<Pod::Simple>`

```
=head1 SUPPORT
```

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## =head1 NAME

Pod::Simple::RTF -- format Pod as RTF

## =head1 SYNOPSIS

```
perl -MPod::Simple::RTF -e \  
"exit Pod::Simple::RTF->filter(shift)->any_errata_seen" \  
thingy.pod > thingy.rtf
```

=head1 DESCRIPTION

This class is a formatter that takes Pod and renders it as RTF, good for viewing/printing in MSWord, WordPad/write.exe, TextEdit, etc.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 FORMAT CONTROL ATTRIBUTES

You can set these attributes on the parser object before you call C<parse\_file> (or a similar method) on it:

=over

=item \$parser->head1\_halfpoint\_size( I<halfpoint\_integer> );

=item \$parser->head2\_halfpoint\_size( I<halfpoint\_integer> );

=item \$parser->head3\_halfpoint\_size( I<halfpoint\_integer> );

=item \$parser->head4\_halfpoint\_size( I<halfpoint\_integer> );

These methods set the size (in half-points, like 52 for 26-point) that these heading levels will appear as.

=item \$parser->codeblock\_halfpoint\_size( I<halfpoint\_integer> );

This method sets the size (in half-points, like 21 for 10.5-point) that codeblocks ("verbatim sections") will appear as.

=item \$parser->header\_halfpoint\_size( I<halfpoint\_integer> );

This method sets the size (in half-points, like 15 for 7.5-point) that the header on each page will appear in. The header is usually just "I<modulename> p. I<pagenumber>".

=item \$parser->normal\_halfpoint\_size( I<halfpoint\_integer> );

This method sets the size (in half-points, like 26 for 13-point) that normal paragraphic text will appear in.

=item \$parser->no\_proofing\_exemptions( I<>true\_or\_false> );

Set this value to true if you don't want the formatter to try

putting a hidden code on all Perl symbols (as best as it can notice them) that labels them as being not in English, and so not worth spellchecking.

```
=item $parser->doc_lang( I<microsoft_decimal_language_code> )
```

This sets the language code to tag this document as being in. By default, it is currently the value of the environment variable C<RTFDEFLANG>, or if that's not set, then the value 1033 (for US English).

Setting this appropriately is useful if you want to use the RTF to spellcheck, and/or if you want it to hyphenate right.

Here are some notable values:

- 1033 US English
- 2057 UK English
- 3081 Australia English
- 4105 Canada English
- 1034 Spain Spanish
- 2058 Mexico Spanish
- 1031 Germany German
- 1036 France French
- 3084 Canada French
- 1035 Finnish
- 1044 Norwegian (Bokmal)
- 2068 Norwegian (Nynorsk)

```
=back
```

If you are particularly interested in customizing this module's output even more, see the source and/or write to me.

```
=head1 SEE ALSO
```

L<Pod::Simple>, L<RTF::Writer>, L<RTF::Cookbook>, L<RTF::Document>, L<RTF::Generator>

```
=head1 SUPPORT
```

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# ChangeLog for Pod::Simple dist

#-----

2013-05-04 David E. Wheeler <david@justatheory.org>

\* Release 3.28

Removed use of 'done\_testing' in t/white.t, which was added in v3.27. Thanks to Paul Howarth for the catch.

Fixed improperly calculated number of skipped tests in t/xhtmll01.t when HTML::Entities is not installed.

2013-05-03 David E. Wheeler <david@justatheory.org>  
\* Release 3.27

Added new warnings as defined by Pod::Checker, thanks to RJBS:  
+ "=over" without "=back"  
+ "L<>" starts or ends with whitespace  
+ raw "|" or "/" in "L<text|link>" text

Added ->keep\_encoding\_directive, which is false by default, to prevent formatters from emitting a document's '=encoding' directive in most cases. That they emitted the encoding was a bug introduced in v3.26 (RT #84093). Now, only the DumpAsText and DumpAsXML formats set it to true. Patch from Patrice Dumas.

2013-02-27 David E. Wheeler <david@justatheory.org>  
\* Release 3.26

Fixed another test script to skip all tests when Encode is not installed.

Added 'encoding()' and 'detected\_encoding()' to return the current encoding and the encoding actually to decode the input file. The value from "=encoding" is also now kept in the output tree. Patch from Patrice Dumas (RT #74390).

2013-02-16 David E. Wheeler <david@justatheory.org>  
\* Release 3.25

Improved the warning when "=item" types mismatch within one "=over"/"=back" block.

2013-02-14 David E. Wheeler <david@justatheory.org>  
\* Release 3.24

Fixed corner case bug for unlikely scenario in which non-UTF-8 text could be parsed as UTF-8. Grant McLean.

XHTML IDs can no longer end with punctuation. Thanks to Smylers for the patch.

Fixed test failure on Perl 5.6.2.

Changed the default installation location from "perl" to "site" on 5.12 and higher, since as of that version of Perl, dual-life modules no longer need to be installed in "perl" to replace

in-core versions. Patch from tzccinct.

Fixed hash order dependency test failures on Perl 5.17. Thanks to Yves Orton for the patch.

Inlined the code that tries to guess a Pod file's encoding. This reduces the time Pod::Simple takes to build the core Perl documentation by 15-20%. Thanks to Dagfinn Ilmari Mannsker for the patch!

Added a warning when "=item" types mismatch within one "=over"/"=back" block. Marc Green/Google Summer of Code, with assist from RJBS.

Fixed regression introduced in 3.22 in which "C<>" tags were incorrectly treated as verbatim text in table of contents items emitted by Pod::Simple::XHTML. Thanks to Randy Stauner for the report and to Thomas Sibley for the fix!

Loosened up the matching of "L<>" tags for man pages so that they allow names with dots, underscores, and any other characters other than "/", just so long as they end in '([[-a-zA-Z0-9]+)]'. Thanks to Dave Rolsky and Kevin Ryde for the reports (RT #82975 & RT #82972).

Fixed inverted mapping of "keyboard" to "kbd" in Pod::Simple::HTML. Thanks to Robert Boisvert for the bug report (RT #79201).

Added two new Tagmap entries to Pod::Simple::HTML: "preformat" maps to "pre", and "teletype" maps to "tt". Suggested by Robert Boisvert (RT #79201).

"X<>" tags are now ignored by the pull parser when it searches for titles, as is any trailing whitespace. Thanks to Patrice Dumas for the report (RT #74389).

2012-08-14 David E. Wheeler <david@justatheory.org>

\* Release 3.23

Eliminated nested elements in table of contents (index) items output of Pod::Simple::XHTML. This was especially problematic for headers that included links, as the TOC then got nested anchor elements, which simply would not work. Thanks to Ben Bullock for the report and test case (RT #77686).

Fixed semantically invalid nested XHTML generated by Pod::Simple::XHTML since v3.21. Gisle Aas.



Improved support for nested "C<>" tags in Pod::Simple::XHTML.  
Gisle Aas.

No longer tries to decode a string with the "utf8" flag set, as the double-decoding only triggered an error. Grant McLean.

Added documentation note that the API expects encoded text (octets). Grant McLean.

Added "parse\_characters()" option to specify that strings to are already decoded from octets into characters. Grant McLean.

2012-05-27 David E. Wheeler <david@justatheory.org>  
\* Release 3.22

Fix but where Pod::Simple would whine about non-ASCII bytes in code or comments. Now only does so for Pod (in the absence of an "=encoding" tag. Broken in 3.21. Grant McLean.

2012-05-23 David E. Wheeler <david@justatheory.org>  
\* Release 3.21

NOTE: COMPATABILITY CHANGE: The 'codes\_in\_verbatim' option in Pod::Simple::XHTML is no longer enabled by default. This brings it agreement with the other formatting classes, and eliminates unexpected behavior in XHTML-formatted Pod. Users who depended on this functionality can still get it by enabling 'codes\_in\_verbatim' in their code.

Fixed some typos in the documentation. Thanks to Jonathan Yu via the Debian packagers via Florian Ragwitz (RT #75532).

Now emit a warning the first time a non-ASCII byte is encountered when no "=encoding" has been seen. Grant McLean.

When a non-ASCII byte is encountered before an "=encoding" line has been seen, a heuristic (as described in perlpodspec) is applied to select UTF-8 encoding if the non-ASCII bytes form a valid UTF-8 byte sequence, or Latin-1 otherwise. Grant McLean.

Added 'handle\_code' method to Pod::Simple::XHTML. This allows subclasses to override the handling of verbatim blocks, and makes for a more cohesive interface, to boot. Gisle Aas.

Subsequent text segments are now joined together and passed as a single unit to text handling code. This makes it easier for custom handlers to process complete blocks of text in a single call to

'handle\_text', rather than in dribs and drabs. Gisle Aas.

Replaced naive text wrapping code in Pod::Simple::DumpAsXML with Text::Wrap, which was already used for similar purposes elsewhere in Pod::Simple. Gisle Aas.

2012-03-01 David E. Wheeler <david@justatheory.org>  
\* Release 3.20

Removed use of 'done\_testing' in t/xhtml15.t, which was added in v3.19. Thanks to Paul Howarth for the catch.

Fixed quoting of links in a regular expression Pod::Simple::Text.  
Reported by Father Chrysostomos.

Fix test failure on case-insensitive, non-case-preserving file systems (VMS I'm looking at \*you\*). Patch from Craig A. Berry.

Pod::Simple::HTML no longer emits "href=#\_\_top" if a TOC (index) is not output. Patch from Rick Myers.

Fixed links in the TOC of XHTML output to use IDs derived from encoded text, rather than raw Pod, so that it will link to the ID actually generated for the section. Thanks to Randy Stauner for the report (with test case!) (RT #72544).

PullParser now throws an exception on an attempt to set a source more than once. Necessary because data from the previous source will be cached, so the new source would be ignored anyway. Create a new PullParser, instead. Thanks to Paul Boldra for the report (RT #74265).

2011-08-23 David E. Wheeler <david@justatheory.org>  
\* Release 3.19

Fixed occasional test failure when tests are run in parallel (HARNESS\_OPTIONS=j6:c). Thanks to Alexei Znamensky for the report and Marc Green for the fix.

Added "pod\_handler" option. This is a callback that can be used to inspect the content on a "=pod" line. Marc Green/Google Summer of Code.

Added tests for proper line-ending parsing from the previous release. The tests were in the repository, but didn't make it into the MANIFEST or, therefore, the release. Reported by Marc Green.

Added the "parse\_empty\_lists" option. When enabled, Pod::Simple

will recognize empty lists (that is, a blocks with '=over' and '=back' but nothing in between). Disabled by default. Marc Green/Google Summer of Code.

Added the "whiteline\_handler" attribute. It's much like "code\_handler", "cut\_handler", and "pod\_handler", except it's triggered on lines that contain only whitespace characters. Marc Green/Google Summer of Code.

Added "raw" attribute to L<> treelet that contains the L<>'s raw contents. Marc Green/Google Summer of Code.

Pod directives autoclosed by Pod::Simple are now denoted as such by the new "fake\_closer" attribue. Marc Green/Google Summer of Code.

Fixed incompatibility with Pod::Simple::HTMLBatch in Pod::Simple::XHTML. Patch by Eric Johnson.

2011-07-16 David E. Wheeler <david@justatheory.org>  
\* Release 3.18

Pod::Simple now properly parses Pod files using Mac OS Classic line-endings (\r). Marc Green/Google Summer of Code.

Fixed test failure in 't/search50.t when the test finds a .pod but the module is in a .pm. Thanks to the cpan-testers who reported this when the test searched for Capture::Tiny.

2011-07-09 David E. Wheeler <david@justatheory.org>  
\* Release 3.17

Documented tertiary methods. Patch from Shawn H Corey.

Added "backlink" option to Pod::Simple::XHTML. Thanks to Marc Green/Google Summer of Code for the pull request.

Typos fixed in Pod::Simple::HTMLBatch. Reported by Shawn H Corey.

Fixed quoting of value returned by a "strip\_verbatim\_indent()" code reference so that regex meta characters are properly escaped.

Added "anchor\_items" option to Pod::Simple::XHTML. This allows text items (which are output as <dt> elements) to have IDs that can be referenced in the "#" part of a URL. Marc Green/Google Summer of Code.

Added "recurse" option to Pod::Simple::Search. It's enabled by

default; disable it to turn off recursion into subdirectories.

Marc Green/Google Summer of Code.

Added documentation to clarify the behavior of the "content\_seen" method. Thanks to Olaf Alders for the pull request.

2011-03-14 David E. Wheeler <david@justatheory.org>

\* Release 3.16

Fixed invalid HTML generated for nested lists by Pod::Simple::XHTML (Fitz Elliott).

Replaced the invalid "<nobr>" tag -- created for "S<>" -- with '<span style="white-space: nowrap;">' (Fitz Elliott).

Fixed some nerbles in our own Pod (Michael Stevens)

Improved the "Minimal code" example in Pod::Simple::HTML. The key is to use `pase_file()`, not `parse_from_file()` (which should otherwise be undocumented, and is just there for Pod::Parser compatibility. Thanks to prodding from var Arnfjr Bjarmason (RT #65428).

Added the `html_charset()` and `html_encode_chars()` attributes to Pod::Simple::XHTML. Inspired by a bug report from Agent Zhang () (RT #29587).

Added "Minimal code" example to the Pod::Simple::XHTML documentation.

Fixed misspelling of the "encoding" markup in the parser (it was spelled "encode"). Thanks to "TTY" for the patch. (RT #24820).

2010-11-11 David E. Wheeler <david@justatheory.org>

\* Release 3.15

Removed "perlpod.pod" and "perlpodspec.pod". These now just live in the Perl core.

Fixed stylesheet names output by HTMLBatch to match the names of the actual stylesheet files (broken in 3.09). Thanks to Kevin Ryde for the report (RT #56725).

Added missing closing slash to the CSS links in the XHTML output. Thanks to HarleyPig for the patch!

Added parens around bar "qw(...)" in t/xhtml05.t. Thanks to Jerry D. Hedden for the patch.

Improved the Pod::Simple::HTML docs. Thanks to Gabor Szabo for the patch.

Pod::Simple::XHTML now properly encodes entities in URLs in the anchor tag. Thanks to John McNamara for the report (RT-60249).

Pod::Simple::HTML and XHTML now strip whitespace from the end of section names that appear as anchor names for headers (in HTML) and IDs (in XHTML). Such whitespace appeared when "X<>" entities were stripped out but not the space between them (RT-56572).

Make test "t/search50.t" always pass on case-insensitive file systems rather than just skip VMS.

2009-04-27

\* Release 3.14

Removed explicit loading of UNIVERSAL. RJBS.

Reversed the change applied in release 3.09 to fix RT #12239. POD tag found inside a complex POD tag (e.g., "C<<< I<foo> >>>") is again parsed as a tag embedded in a tag instead of text and entities. The previous interpretation of `perldoc perlpod` was mistaken. (RT #55602 from Christopher J. Madsen).

2009-12-17 David E. Wheeler <david@justatheory.org>

\* Release 3.13

Removed deleted test file from MANIFEST.

2009-12-17 David E. Wheeler <david@justatheory.org>

\* Release 3.12

Removed "All rights reserved" from all files.

Added acknowledgements to man.he.net and search.cpan.org for permission to link man pages and Perl module links to their sites in the output of Pod::Simple::HTML and Pod::Simple::XHTML.

Add "html\_h\_level" option to Pod::Simple::XHTML and ::HTML to allow a =head1 to become an <h2> and so on. RJBS.

Add batch\_mode\_page\_object\_init() method to Pod::Simple::XHTML. This allows it to be used by Pod::Simple::HTMLBatch.

Fixed a regression in Pod::Simple::XHTML where '=begin html' blocks were incorrectly escaped rather than simply passed through unmolested. RJBS.

Removed the undocumented "fullstop\_space\_harden" attribute, which apparently was only used by Pod::Text a very long time ago.

2009-12-09 David E. Wheeler <david@justatheory.org>

\* Release 3.11

Restored code to HTMLBatch that allows the TOC (index) to be created in batch jobs (RT #52324 from Martin J. Evans).

Added resources to META.yml, including bug tracker, license, and repository.

Turned man page links into links to man.he.net in Pod::Simple::HTML and Pod::Simple::XHTML output. Subclass and override resolve\_man\_page\_link() to use a different URL.

Added the resolve\_pod\_page\_link() and resolve\_man\_page\_link() methods to Pod::Simple::XHTML to make it easier for subclasses to change the URLs created for POD and man page links.

Fixed the output of entities in L<> tags by Pod::Simple::XHTML.

Fixed the output of POD links from Pod::Simple::XHTML so that the section part (/foo) is turned into a proper fragment identifier (#foo) in the resulting search.cpan.org link.

Pod::Simple::Text now outputs URLs for links created in the L<text|URL> format. For example, L<Perl|http://perl.org> is now output as "Perl <http://perl.org>" rather than just as "Perl".

Updated perlpod.pod and perlpodspec.pod to sync up with Perl core (and to be released in Perl 5.12). Changes include:

- \* Removing the prohibition against L<text|href>
- \* Deprecation of L<section> and L<"section">
- \* Legalization of "=begin formatname parameter"

A couple of bug fixes in Pod::Simple::HTML from Graham Barr.

Added the do\_section() method to Pod::Simple::HTML. Graham Barr.

Word-smithed the "DESCRIPTION" a bit and wrote the README.

Synced up all module version numbers to 3.11 except for Pod::Simple::HTMLLegacy, which is at 5.01 and should not have its version number lowered.

2009-11-12 David E. Wheeler <david@justatheory.org>

\* Release 3.10

Converted test files that had DOS endings to have Unix endings (RT #50922 from Steve Hay).

Skip tests on VMS where the lack of filename case preservation can wreak havoc (RT #51184 from Craig A. Berry).

Fix nested definition list format in the XHTML output (RT #51187 from Lars D).

Added some files missing from the MANIFEST (and therefore the distribution) in the last two releases.

2009-10-27 Allison Randal <allison@perl.org>

\* Release 3.09

Add support for an index (TOC) in the XHTML output from David E. Wheeler.

Add `strip_verbatim_indent()` from David E. Wheeler.

Added the "nocase" option to PullParser's `get_title()`, `get_version()`, `get_description()`, and `get_author()` methods. This allows one to fetch the contents of those sections regardless of the case of the labels (e.g., "NAME" and "Name" and "name" are all valid). Graham Barr.

Added the `search_class()` accessor to `Pod::Simple::HTMLBatch`. David E. Wheeler.

XHTML output now properly encodes entities in all places, not just in verbatim blocks and code spans. David E. Wheeler.

Fixed XHTML to output definition lists when it should, rather than (broken) unordered lists. David E. Wheeler.

Fixed XHTML so that multiparagraph list items work correctly. David E. Wheeler.

Fixed XHTML ordered list output so that it does not include the number specified in the POD in the output. This is on a par with out the HTML output works. David E. Wheeler.

Applied URL patch from Leon Brocard for The Perl Journal archives.

Fixed test failures with older versions of `HTML::Entities` (RT #43903 from Salvador Tercia).

Changed CSS files generated by HTMLBatch to be no more than 8.3 characters long. (RT #40450 from Renee Baecker)

Added entity handling for E<sol> and E<verbar> to Pod::Simple::XHTML. (RT #49615 from Chas Owens.)

Fixed a bug in Pod::Simple::HTML where a definition term item with no corresponding definition item would be output with no closing </a></dt>. (RT # 37107 from Kevin Ryde).

Added entity handling for numeric entities to Pod::Simple::XHTML, following perlpod specification.

A POD tag found inside a complex POD tag (e.g., "C<<<< C<foo> >>>>") is now properly parsed as text and entities instead of a tag embedded in a tag. This is in compliance with `perldoc perlpod` (RT #12239 from Michael Schwern).

Thanks to David E. Wheeler for applying patches, resolving bugs, and generally getting ready for the release.

2009-07-16 Allison Randal <allison@perl.org>  
\* Release 3.08

Fix installdirs for Perl versions where Pod::Simple was core;  
RT#36446 & RT#39709, thanks to Jerry Hedden.

Fix encoding handling for code in paragraphs; RT#45829, thanks to David Wheeler.

2008-06-04 Allison Randal <allison@perl.org>  
\* Release 3.07

Fix module dependencies, make HTML::Entities optional and require Test::More.

2008-06-03 Allison Randal <allison@perl.org>  
\* Release 3.06

Fix bugs related to passing \$1 to File::Spec, reported by Andrew Hamlin and John McNamara.

Applied a suggested fix from Kevin Ryde to return a successful exit code when Pod::Simple::HTML is run from the command line.

Fix handling of complex L<URL> entries, thanks to tests supplied in RT#4896.



Fix incorrect handling of S<> entries made up of entirely whitespace, thanks to test case from Andreas Koenig.

Launch Pod::Simple::XHTML, an XHTML compliant, more easily extensible HTML formatter.

Add feature to parse additional text after =begin target as a block title, requested by Adam Kennedy.

Thanks to Hans Dieter Pearcey for applying patches, resolving bugs, and generally getting ready for the release.

2007-03-03 Allison Randal <allison@perl.org>  
\* Release 3.05

Standardized all test files on 8.3 naming scheme for Perl core.

Applied test patches from Jerry Hedden for Perl core when Encode not installed.

Applied test patch from Ken Williams for 5.005\_04 compatibility.

Applied a patch from Christopher Madsen to fix architecture directory searches on Gentoo.

Fixed a failing search test on Debian-based distributions caused by Debian stripping Pod documentation out of core modules. (Three cheers to the CPAN testers and James Ponza for sending enough reports that I could work out the pattern.)

2006-01-18 Allison Randal <allison@perl.org>  
\* Release 3.04

Applied test patches for Perl core integration from Steve Peters.

Added a 'reinit' method to Pod::Simple::BlackBox for Russ Allbery so Pod::Man can provide backward compatibility to existing users (such as Module::Build and ExtUtils::MakeMaker).

Applied patch for extracting case-preserved package names on VMS from Craig Berry.

2005-11-21 Allison Randal <allison@perl.org>  
\* Release 3.03

Applied whitespace patches for Pod::Man and Pod::Text from Russ Allbery.

Applied validation patches to Pod::Simple::HTML from Graham Barr.

2004-05-24 Sean M. Burke <sburke@cpan.org>  
\* Release 3.02

Just fixing some typos in the CSS generated by Pod::Simple::HTMLBatch.

2004-05-24 Sean M. Burke <sburke@cpan.org>  
\* Release 3.01

No big changes to the main modules, but there's many changes to the important Pod::Simple::HTML module.

Also, new modules:

Pod::Simple::HTMLBatch

Pod::Simple::HTMLLegacy

Pod::Simple::Progress

Pod::Simple::Search

and tests for these (well, most).

Some prettying up of the Makefile.PL.

The test 00about.t is a bit more careful and verbose now.

The docs are still incomplete, esp. for Pod::Simple::HTML and Pod::Simple::HTMLBatch, which I hope to improve quite soon.

2004-05-07 Sean M. Burke <sburke@cpan.org>  
\* Release 2.06

Allison Randal brilliantly refactors a huge monolithic sub in Blackbox.pm. Code is now actually sanely readable!

I add the new option-attributes fullstop\_space\_harden and codes\_in\_verbatim, and the two methods abandon\_output\_string and abandon\_output\_fh. Not yet documented.

New test fullstop\_spaces.t and new corpus document greek\_iso\_8859\_7.pod.

Another version should be forthcoming in a few days that has the new Pod::Simple::HTML stuff in it.

Note to self: document =extend and =encoding in perlpodspec ASAP!

2003-11-04 Sean M. Burke <sburke@cpan.org>

\* Release 2.05 -- bugfix version

In an attempt to stop Perl 5.6 versions from going completely crazy, I've tried to basically turn off all Unicode/utf8 support under 5.6. Under 5.8 and above, Unicode should work fine, and under 5.6, all Unicode characters should be replaced with a little "can't render" symbol, either a "" or a "?".

Many many thanks to Jarkko Hietaniemi for helping out.

(Works under 5.005 now too?)

2003-10-10 Sean M. Burke <sburke@cpan.org>

\* Release 2.04 -- minor bugfix version

\* Added some code to insulate Pod::Simple to runtime changes in the value of \$/. Thanks to Iain Truskett for catching this.

\* Added FILENO method to TiedOutFH.pm, to work quietly under some perls. Thanks to Jochen Stenzel for catching this.

\* Fixed some tests that erroneously failed under some 5.6's because of chdir()s in \*.t files messing up @INC Thanks to many who caught this, including Rocco Caputo.

2003-09-07 Sean M. Burke <sburke@cpan.org>

\* Release 2.03 -- minor upgrade

\* A =head[1234] command now closes any currently open =over, and warns.

\* Fixing a few obscure bugs, including one to do with the Makefile.

\* Added some tests for those bugs.

2003-09-02 Sean M. Burke <sburke@cpan.org>

\* Release 2.02 -- fixing a testing bug

\* Autrijus Tang found a silly bug of mine in corpustest.t's testing of corpus/t/nonesuch.txt. Fixed,

\* I add encoding\_nonesuch.t to test corpus/t/nonesuch.txt better.

2003-09-01 Sean M. Burke <sburke@cpan.org>

\* Release 2.01

\* Moved all version numbers up to 2.01 for reasons of Tibetan numerology.

\* Implemented =encoding. Thanks a million to Jarkko, Autrijus, Dan Kogai, and many others for their help, patience, and encouragement.

It's not yet documented, but see ./t/corpus/\*.txt for examples at

least.

\* Added 'use utf8' to all the modules. Byebye perl-5.005 compatibility, hello decent perl-5.6 compatibility.

-----  
2003-09-01 Sean M. Burke <sburke@cpan.org>

\* Release 0.98

\* At Michael Schwern's suggestion, a list that begins with a "=item [number]" line where number isn't a 1, is no longer treated as an error, but instead is silently coerced into being a text-item list, just as if it were "=item wubble" or whatever.

2003-08-12 Sean M. Burke <sburke@cpan.org>

\* Release 0.97

\* Looking goooooood. Not smelling so much like beta anymore!

\* I think this might be the last version before I go putting "use utf8" all over the place.

\* Added placeholders for "=encoding" support. If you use "=encoding", you'll get an error about "not yet implemented" instead of "unknown directive".

\* Rewrote Pod::Simple::PullParser's get\_title, and added get\_version, get\_author, and get\_description. Documented them. Thanks to Graham Barr for contributing an initial get\_title and then being patient while I seemed to do nothing with it for months on end!

\* More tests.

Otherwise just minor changes since last version:

\* Fixed error in Pod::Simple::RTF.

\* Added new but undocumented methods to Pod::Simple:

    unaccept\_directive(s) unaccept\_target(s) unaccept\_code(s)

\* Corrected '=back without =open' error to '=back without =over'

\* A little tweaking to the \_verbatim\_format code.

\* Dump routines may use \x{NN} instead of \xNN format.

\* Pod::Simple::HTML now uses VerbatimFormatted

\* A few changes of DEBUG messages -- nothing you'd normally see.

2002-11-19 Sean M. Burke <sburke@cpan.org>

\* Release 0.96

\* Still kinda sorta beta.

\* Much much more docs in this version. Only a few feature changes:

- \* Added `any_errata_seen` to `Pod::Simple`. Should've been in there ages ago. Oops!
- \* Fixed some errors in the experimental `VerbatimFormatted` code.
- \* Added `is_tagname / is_tag` to `Pod::Simple::PullParserStartToken` and `Pod::Simple::PullParserEndToken`
- \* Added RTFDEFLANG stuff to `Pod::Simple::RTF`.

2002-11-10 Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>

- \* Release 0.95
- \* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.
- \* Now including `perlpod` and `perlpodspec` in the dist.
- \* `Pod::Simple` -- added `parse_from_file`
- \* `Pod::Simple::RTF` -- minor style changes, and minor change to the RTF-wrapping logic.
- \* `Pod::Simple::BlackBox` -- a `=cut` opening a block is no longer a fatal(ish) error.
- \* `Pod::Simple::BlackBox` -- added experimental new `VerbatimFormatted` stuff.

2002-10-16 Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>

- \* Release 0.94
- \* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.
- \* `Pod::Simple::RTF` -- minor style tweaks
- \* `Pod::Simple::PullParserEndToken` and `::PullParserStartToken` -- added `->tag` as an alias for `->tagname`.
- \* `Pod::Simple` and `Pod::Simple::BlackBox` -- added tolerance for `"=item * Foo"` as a variant syntax for `"=item *\n\nFoo"`. Tests added/changed accordingly.
- \* `Pod::Simple::HTML` -- added `<a name="...">` stuff, and a hack at doing something with `X<...>'s`.

2002-09-29 Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>

- \* Release 0.93
- \* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.
- \* `Pod::Simple` -- added `errors_seen` attribute
- \* `Pod::Simple::HTML` -- added support for `=for HTML ...` directives, and `=extend` directives.
- \* Oh, and I added `Pod::Simple::RTF` in 0.92 but forgot to note it

until now.

2002-09-29 Sean M. Burke <sburke@cpan.org>

\* Release 0.92

\* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

\* Fixing bungled distribution.

2002-09-29 Sean M. Burke <sburke@cpan.org>

\* Release 0.91

\* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

\* Pod::Simple::PullParserTextToken -- added 'text\_r'

\* Pod::Simple::PullParser -- added 'get\_title' and 'get\_title\_short' to

\* Pod::Simple -- corrected wording of "Format for second =extend parameter" error message.

\* Pod::PullParser -- made its filter() run as intended, like Pod::Simple's filter.

\* Pod::Subclassing -- more docs

2002-09-11 Sean M. Burke <sburke@cpan.org>

\* Release 0.90

\* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/ChangeLog

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

=head1 NAME

Pod::Simple::Text -- format Pod as plaintext

=head1 SYNOPSIS

```
perl -MPod::Simple::Text -e \  
"exit Pod::Simple::Text->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is a formatter that takes Pod and renders it as wrapped plaintext.

Its wrapping is done by L<Text::Wrap>, so you can change C<\$Text::Wrap::columns> as you like.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::TextContent>, L<Pod::Text>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <[sburke@cpan.org](mailto:sburke@cpan.org)>. But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item \* Allison Randal C<[allison@perl.org](mailto:allison@perl.org)>

=item \* Hans Dieter Pearcey C<hdp@cpan.org>

=item \* David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

\* /opt/cola/permits/1000849041\_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/Text.pm

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

NAME

perlfac3 - Programming Tools (\$Revision: 1.38 \$, \$Date: 1999/05/23 16:08:30 \$)

DESCRIPTION

This section of the FAQ answers questions related to programmer tools and programming support.

How do I do (anything)?

Have you looked at CPAN (see perlfac2)? The chances are that someone has already written a module that can solve your problem. Have you read the appropriate man pages? Here's a brief index:

- Basics      perldata, perlvar, perlsyn, perlop, perlsub
- Execution    perlrun, perldebug
- Functions    perlfunc
- Objects      perlref, perlmod, perlobj, perltie
- Data Structures perlref, perllo, perldsc
- Modules      perlmod, perlmodlib, perlsub
- Regexes     perlre, perlfunc, perlop, perllocale
- Moving to perl5 perltrap, perl
- Linking w/C   perlxstut, perlxs, perlcalls, perlguts, perlembed
- Various      <http://www.perl.com/CPAN/doc/FMTEYEWTK/index.html>  
(not a man-page but still useful)

A crude table of contents for the Perl man page set is found in perltoc.

How can I use Perl interactively?

The typical approach uses the Perl debugger, described in the perldebug(1) man page, on an "empty" program, like this:

```
perl -de 42
```

Now just type in any legal Perl code, and it will be immediately evaluated. You can also examine the symbol table, get stack backtraces, check variable values, set breakpoints, and other operations typically found in symbolic debuggers.

Is there a Perl shell?

In general, no. The Shell.pm module (distributed with Perl) makes Perl try commands which aren't part of the Perl language as shell commands. perlsh from the source distribution is simplistic and uninteresting, but may still be what you want.

How do I debug my Perl programs?

Have you tried use warnings or used -w? They enable warnings to detect dubious practices.

Have you tried use strict? It prevents you from using symbolic references, makes you predeclare any subroutines that you call as bare words, and (probably most importantly) forces you to predeclare your variables with my, our, or use vars.



Did you check the return values of each and every system call? The operating system (and thus Perl) tells you whether they worked, and if not why.

```
open(FH, "> /etc/cantwrite")
    or die "Couldn't write to /etc/cantwrite: $!\n";
```

Did you read `perltrap`? It's full of gotchas for old and new Perl programmers and even has sections for those of you who are upgrading from languages like `awk` and `C`.

Have you tried the Perl debugger, described in `perldebug`? You can step through your program and see what it's doing and thus work out why what it's doing isn't what it should be doing.

How do I profile my Perl programs?

You should get the `Devel::DProf` module from the standard distribution (or separately on CPAN) and also use `Benchmark.pm` from the standard distribution. The `Benchmark` module lets you time specific portions of your code, while `Devel::DProf` gives detailed breakdowns of where your code spends its time.

Here's a sample use of `Benchmark`:

```
use Benchmark;
@junk = `cat /etc/motd`;
$count = 10_000;
timethese($count, {
    'map' => sub { my @a = @junk;
                  map { s/a/b/ } @a;
                  return @a
                },
    'for' => sub { my @a = @junk;
                  local $_;
                  for (@a) { s/a/b/ };
                  return @a },
});
```

This is what it prints (on one machine--your results will be dependent on your hardware, operating system, and the load on your machine):

```
Benchmark: timing 10000 iterations of for, map...
for: 4 secs ( 3.97 usr 0.01 sys = 3.98 cpu)
map: 6 secs ( 4.97 usr 0.00 sys = 4.97 cpu)
```

Be aware that a good benchmark is very hard to write. It only tests the data you give it and proves little about the differing complexities of contrasting algorithms.

How do I cross-reference my Perl programs?

The `B::Xref` module, shipped with the new, alpha-release Perl compiler (not the general distribution prior to the 5.005 release), can be used to generate cross-reference reports for Perl programs.

```
perl -MO=Xref[,OPTIONS] scriptname.plx
```

Is there a pretty-printer (formatter) for Perl?

There is no program that will reformat Perl as much as `indent(1)` does for `C`. The complex feedback between the scanner and the parser (this feedback is what confuses the `vgrind` and `emacs` programs) makes it challenging at best to write a stand-alone Perl parser.

Of course, if you simply follow the guidelines in `perlstyle`, you shouldn't need to reformat. The habit of formatting your code as you write it will help prevent bugs. Your editor can and should help you with this. The `perl-mode` or newer `cperl-mode` for `emacs` can provide remarkable amounts of help with most (but not all) code, and even less programmable editors can provide significant assistance. Tom swears by the following settings in `vi` and its clones:

```
set ai sw=4
map! ^O {^M}^[O^T
```

Now put that in your `.exrc` file (replacing the caret characters with control characters) and away you go. In insert

mode, ^T is for indenting, ^D is for unindenting, and ^O is for blockindenting-- as it were. If you haven't used the last one, you're missing a lot. A more complete example, with comments, can be found at <http://www.perl.com/CPAN-local/authors/id/TOMC/scripts/toms.exrc.gz>

If you are used to using the vgrind program for printing out nice code to a laser printer, you can take a stab at this using <http://www.perl.com/CPAN/doc/misc/tips/working.vgrind.entry>, but the results are not particularly satisfying for sophisticated code.

The a2ps at <http://www.infres.enst.fr/%7Edemaille/a2ps/> does lots of things related to generating nicely printed output of documents.

Is there a ctags for Perl?

There's a simple one at <http://www.perl.com/CPAN/authors/id/TOMC/scripts/ptags.gz> which may do the trick. And if not, it's easy to hack into what you want.

Is there an IDE or Windows Perl Editor?

Perl programs are just plain text, so any editor will do.

If you're on Unix, you already have an IDE--Unix itself. The UNIX philosophy is the philosophy of several small tools that each do one thing and do it well. It's like a carpenter's toolbox.

If you want a Windows IDE, check the following:

CodeMagicCD

<http://www.codemagiccd.com/>

Komodo

ActiveState's cross-platform, multi-language IDE has Perl support, including a regular expression debugger and remote debugging (<http://www.ActiveState.com/Products/Komodo/index.html>). (Visual Perl, a Visual Studio.NET plug-in is currently (early 2001) in beta (<http://www.ActiveState.com/Products/VisualPerl/index.html>)).

The Object System

([http://www.castlelink.co.uk/object\\_system/](http://www.castlelink.co.uk/object_system/)) is a Perl web applications development IDE.

PerlBuilder

(<http://www.solutionsoft.com/perl.htm>) is an integrated development environment for Windows that supports Perl development.

Perl code magic

(<http://www.petes-place.com/codemagic.html>).

visiPerl+

<http://helpconsulting.net/visiperl/>, from Help Consulting.

For editors: if you're on Unix you probably have vi or a vi clone already, and possibly an emacs too, so you may not need to download anything. In any emacs the cperl-mode (M-x cperl-mode) gives you perhaps the best available Perl editing mode in any editor.

For Windows editors: you can download an Emacs

GNU Emacs

<http://www.gnu.org/software/emacs/windows/ntemacs.html>

MicroEMACS

<http://members.nbc.com/uemacs/>

XEmacs

<http://www.xemacs.org/Download/index.html>

or a vi clone such as

Elvis

<ftp://ftp.cs.pdx.edu/pub/elvis/> <http://www.fh-wedel.de/elvis/>

Vile

<http://vile.cx/>

Vim

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

win32: <http://www.cs.vu.nl/%7Etmgil/vi.html>

For vi lovers in general, Windows or elsewhere: <http://www.thomer.com/thomer/vi/vi.html>.

nvi (<http://www.bostic.com/vi/>, available from CPAN in `src/misc/`) is yet another vi clone, unfortunately not available for Windows, but in UNIX platforms you might be interested in trying it out, firstly because strictly speaking it is not a vi clone, it is the real vi, or the new incarnation of it, and secondly because you can embed Perl inside it to use Perl as the scripting language. nvi is not alone in this, though: at least also vim and vile offer an embedded Perl.

The following are Win32 multilanguage editor/IDEs that support Perl:

Codewright

<http://www.starbase.com/>

MultiEdit

<http://www.MultiEdit.com/>

SlickEdit

<http://www.slickedit.com/>

There is also a toyedit Text widget based editor written in Perl that is distributed with the Tk module on CPAN. The ptkdb (<http://world.std.com/~aep/ptkdb/>) is a Perl/tk based debugger that acts as a development environment of sorts. Perl Composer (<http://perlcomposer.sourceforge.net/vperl.html>) is an IDE for Perl/Tk GUI creation.

In addition to an editor/IDE you might be interested in a more powerful shell environment for Win32. Your options include

Bash

from the Cygwin package (<http://sources.redhat.com/cygwin/>)

Ksh

from the MKS Toolkit (<http://www.mks.com/>), or the Bourne shell of the U/WIN environment (<http://www.research.att.com/sw/tools/uwin/>)

Tcsh

<ftp://ftp.astron.com/pub/tcsh/>, see also <http://www.primat.wisc.edu/software/csh-tcsh-book/>

Zsh

<ftp://ftp.blarg.net/users/amol/zsh/>, see also <http://www.zsh.org/>

MKS and U/WIN are commercial (U/WIN is free for educational and research purposes), Cygwin is covered by the GNU Public License (but that shouldn't matter for Perl use). The Cygwin, MKS, and U/WIN all contain (in addition to the shells) a comprehensive set of standard UNIX toolkit utilities.

If you're transferring text files between Unix and Windows using FTP be sure to transfer them in ASCII mode so the ends of lines are appropriately converted.

On Mac OS the MacPerl Application comes with a simple 32k text editor that behaves like a rudimentary IDE. In contrast to the MacPerl Application the MPW Perl tool can make use of the MPW Shell itself as an editor (with no 32k limit).

BEdit and BEdit Lite

are text editors for Mac OS that have a Perl sensitivity mode (<http://web.barebones.com/>).

Alpha

is an editor, written and extensible in Tcl, that nonetheless has built in support for several popular markup and programming languages including Perl and HTML (<http://alpha.olm.net/>).

Pepper and Pe are programming language sensitive text editors for Mac OS X and BeOS respectively (<http://www.hekkelman.com/>).

Where can I get Perl macros for vi?

For a complete version of Tom Christiansen's vi configuration file, see

[http://www.perl.com/CPAN/authors/Tom\\_Christiansen/scripts/toms.exrc.gz](http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/toms.exrc.gz), the standard benchmark file for vi emulators. The file runs best with nvi, the current version of vi out of Berkeley, which incidentally can be built with an embedded Perl interpreter--see <http://www.perl.com/CPAN/src/misc>.

Where can I get perl-mode for emacs?

Since Emacs version 19 patchlevel 22 or so, there have been both a perl-mode.el and support for the Perl debugger built in. These should come with the standard Emacs 19 distribution.

In the Perl source directory, you'll find a directory called "emacs", which contains a cperl-mode that color-codes keywords, provides context-sensitive help, and other nifty things.

Note that the perl-mode of emacs will have fits with "main'foo" (single quote), and mess up the indentation and highlighting. You are probably using "main::foo" in new Perl code anyway, so this shouldn't be an issue.

How can I use curses with Perl?

The Curses module from CPAN provides a dynamically loadable object module interface to a curses library. A small demo can be found at the directory [http://www.perl.com/CPAN/authors/Tom\\_Christiansen/scripts/rep](http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/rep); this program repeats a command and updates the screen as needed, rendering `rep ps axu` similar to `top`.

How can I use X or Tk with Perl?

Tk is a completely Perl-based, object-oriented interface to the Tk toolkit that doesn't force you to use Tcl just to get at Tk. Sx is an interface to the Athena Widget set. Both are available from CPAN. See the directory

[http://www.perl.com/CPAN/modules/by-category/08\\_User\\_Interfaces/](http://www.perl.com/CPAN/modules/by-category/08_User_Interfaces/)

Invaluable for Perl/Tk programming are the Perl/Tk FAQ at <http://w4.lns.cornell.edu/%7Epvhp/ptk/ptkTOC.html> , the Perl/Tk Reference Guide available at [http://www.perl.com/CPAN-local/authors/Stephen\\_O\\_Lidie/](http://www.perl.com/CPAN-local/authors/Stephen_O_Lidie/) , and the online manpages at <http://www-users.cs.umn.edu/%7Eamundson/perl/perltk/toc.html> .

How can I generate simple menus without using CGI or Tk?

The <http://www.perl.com/CPAN/authors/id/SKUNZ/perlmenu.v4.0.tar.gz> module, which is curses-based, can help with this.

What is undump?

See the next question on "How can I make my Perl program run faster?"

How can I make my Perl program run faster?

The best way to do this is to come up with a better algorithm. This can often make a dramatic difference. Jon Bentley's book "Programming Pearls" (that's not a misspelling!) has some good tips on optimization, too. Advice on benchmarking boils down to: benchmark and profile to make sure you're optimizing the right part, look for better algorithms instead of microtuning your code, and when all else fails consider just buying faster hardware.

A different approach is to autoload seldom-used Perl code. See the AutoSplit and AutoLoader modules in the standard distribution for that. Or you could locate the bottleneck and think about writing just that part in C, the way we used to take bottlenecks in C code and write them in assembler. Similar to rewriting in C, modules that have critical sections can be written in C (for instance, the PDL module from CPAN).

In some cases, it may be worth it to use the backend compiler to produce byte code (saving compilation time) or compile into C, which will certainly save compilation time and sometimes a small amount (but not much) execution time. See the question about compiling your Perl programs for more on the compiler--the wins aren't as obvious as you'd hope.

If you're currently linking your perl executable to a shared `libc.so`, you can often gain a 10-25% performance benefit by rebuilding it to link with a static `libc.a` instead. This will make a bigger perl executable, but your Perl programs (and programmers) may thank you for it. See the INSTALL file in the source distribution for more information.

Unsubstantiated reports allege that Perl interpreters that use `sfio` outperform those that don't (for I/O intensive applications). To try this, see the INSTALL file in the source distribution, especially the "Selecting File I/O mechanisms" section.

The undump program was an old attempt to speed up your Perl program by storing the already-compiled form to disk. This is no longer a viable option, as it only worked on a few architectures, and wasn't a good solution anyway.

How can I make my Perl program take less memory?

When it comes to time-space tradeoffs, Perl nearly always prefers to throw memory at a problem. Scalars in Perl use more memory than strings in C, arrays take more than that, and hashes use even more. While there's still a lot to be done, recent releases have been addressing these issues. For example, as of 5.004, duplicate hash keys are shared

amongst all hashes using them, so require no reallocation.

In some cases, using `substr()` or `vec()` to simulate arrays can be highly beneficial. For example, an array of a thousand booleans will take at least 20,000 bytes of space, but it can be turned into one 125-byte bit vector--a considerable memory savings. The standard `Tie::SubstrHash` module can also help for certain types of data structure. If you're working with specialist data structures (matrices, for instance) modules that implement these in C may use less memory than equivalent Perl modules.

Another thing to try is learning whether your Perl was compiled with the system `malloc` or with Perl's builtin `malloc`. Whichever one it is, try using the other one and see whether this makes a difference. Information about `malloc` is in the `INSTALL` file in the source distribution. You can find out whether you are using perl's `malloc` by typing `perl -V:usemymalloc`.

Is it unsafe to return a pointer to local data?

No, Perl's garbage collection system takes care of this.

```
sub makeone {
    my @a = ( 1 .. 10 );
    return \@a;
}
for $i ( 1 .. 10 ) {
    push @many, makeone();
}
print $many[4][5], "\n";
print "@many\n";
```

How can I free an array or hash so my program shrinks?

You can't. On most operating systems, memory allocated to a program can never be returned to the system. That's why long-running programs sometimes re-exec themselves. Some operating systems (notably, FreeBSD and Linux) allegedly reclaim large chunks of memory that is no longer used, but it doesn't appear to happen with Perl (yet). The Mac appears to be the only platform that will reliably (albeit, slowly) return memory to the OS.

We've had reports that on Linux (Redhat 5.1) on Intel, `undef $scalar` will return memory to the system, while on Solaris 2.6 it won't. In general, try it yourself and see.

However, judicious use of `my()` on your variables will help make sure that they go out of scope so that Perl can free up that space for use in other parts of your program. A global variable, of course, never goes out of scope, so you can't get its space automatically reclaimed, although `undef()`ing and/or `delete()`ing it will achieve the same effect. In general, memory allocation and de-allocation isn't something you can or should be worrying about much in Perl, but even this capability (preallocation of data types) is in the works.

How can I make my CGI script more efficient?

Beyond the normal measures described to make general Perl programs faster or smaller, a CGI program has additional issues. It may be run several times per second. Given that each time it runs it will need to be re-compiled and will often allocate a megabyte or more of system memory, this can be a killer. Compiling into C isn't going to help you because the process start-up overhead is where the bottleneck is.

There are two popular ways to avoid this overhead. One solution involves running the Apache HTTP server (available from <http://www.apache.org/>) with either of the `mod_perl` or `mod_fastcgi` plugin modules.

With `mod_perl` and the `Apache::Registry` module (distributed with `mod_perl`), `httpd` will run with an embedded Perl interpreter which pre-compiles your script and then executes it within the same address space without forking. The Apache extension also gives Perl access to the internal server API, so modules written in Perl can do just about anything a module written in C can. For more on `mod_perl`, see <http://perl.apache.org/>

With the `FCGI` module (from CPAN) and the `mod_fastcgi` module (available from <http://www.fastcgi.com/>) each of your Perl programs becomes a permanent CGI daemon process.

Both of these solutions can have far-reaching effects on your system and on the way you write your CGI programs, so investigate them with care.

See [http://www.perl.com/CPAN/modules/by-category/15\\_World\\_Wide\\_Web\\_HTML\\_HTTP\\_CGI/](http://www.perl.com/CPAN/modules/by-category/15_World_Wide_Web_HTML_HTTP_CGI/) .

A non-free, commercial product, ``The Velocity Engine for Perl'', (<http://www.binevolve.com/> or <http://www.binevolve.com/velocigen/> ) might also be worth looking at. It will allow you to increase the performance of your Perl programs, running programs up to 25 times faster than normal CGI Perl when running in persistent Perl mode or 4 to 5 times faster without any modification to your existing CGI programs. Fully functional evaluation copies are available from the web site.

How can I hide the source for my Perl program?

Delete it. :-) Seriously, there are a number of (mostly unsatisfactory) solutions with varying levels of ``security''. First of all, however, you can't take away read permission, because the source code has to be readable in order to be compiled and interpreted. (That doesn't mean that a CGI script's source is readable by people on the web, though-- only by people with access to the filesystem.) So you have to leave the permissions at the socially friendly 0755 level.

Some people regard this as a security problem. If your program does insecure things and relies on people not knowing how to exploit those insecurities, it is not secure. It is often possible for someone to determine the insecure things and exploit them without viewing the source. Security through obscurity, the name for hiding your bugs instead of fixing them, is little security indeed.

You can try using encryption via source filters (Filter::\* from CPAN), but any decent programmer will be able to decrypt it. You can try using the byte code compiler and interpreter described below, but the curious might still be able to de-compile it. You can try using the native-code compiler described below, but crackers might be able to disassemble it. These pose varying degrees of difficulty to people wanting to get at your code, but none can definitively conceal it (true of every language, not just Perl).

If you're concerned about people profiting from your code, then the bottom line is that nothing but a restrictive license will give you legal security. License your software and pepper it with threatening statements like ``This is unpublished proprietary software of XYZ Corp. Your access to it does not give you permission to use it blah blah blah." We are not lawyers, of course, so you should see a lawyer if you want to be sure your license's wording will stand up in court.

How can I compile my Perl program into byte code or C?

Malcolm Beattie has written a multifunction backend compiler, available from CPAN, that can do both these things. It is included in the perl5.005 release, but is still considered experimental. This means it's fun to play with if you're a programmer but not really for people looking for turn-key solutions.

Merely compiling into C does not in and of itself guarantee that your code will run very much faster. That's because except for lucky cases where a lot of native type inferencing is possible, the normal Perl run-time system is still present and so your program will take just as long to run and be just as big. Most programs save little more than compilation time, leaving execution no more than 10-30% faster. A few rare programs actually benefit significantly (even running several times faster), but this takes some tweaking of your code.

You'll probably be astonished to learn that the current version of the compiler generates a compiled form of your script whose executable is just as big as the original perl executable, and then some. That's because as currently written, all programs are prepared for a full eval() statement. You can tremendously reduce this cost by building a shared libperl.so library and linking against that. See the INSTALL podfile in the Perl source distribution for details. If you link your main perl binary with this, it will make it minuscule. For example, on one author's system, /usr/bin/perl is only 11k in size!

In general, the compiler will do nothing to make a Perl program smaller, faster, more portable, or more secure. In fact, it can make your situation worse. The executable will be bigger, your VM system may take longer to load the whole thing, the binary is fragile and hard to fix, and compilation never stopped software piracy in the form of crackers, viruses, or bootleggers. The real advantage of the compiler is merely packaging, and once you see the size of what it makes (well, unless you use a shared libperl.so), you'll probably want a complete Perl install anyway.

How can I compile Perl into Java?

You can also integrate Java and Perl with the Perl Resource Kit from O'Reilly and Associates. See

<http://www.oreilly.com/catalog/prkunix/> .

Perl 5.6 comes with Java Perl Lingo, or JPL. JPL, still in development, allows Perl code to be called from Java. See [jpl/README](#) in the Perl source tree.

How can I get `#!perl` to work on [MS-DOS,NT,...]?

For OS/2 just use

```
extproc perl -S -your_switches
```

as the first line in \*.cmd file (-S due to a bug in cmd.exe's `extproc' handling). For DOS one should first invent a corresponding batch file and codify it in ALTERNATIVE\_SHEBANG (see the INSTALL file in the source distribution for more information).

The Win95/NT installation, when using the ActiveState port of Perl, will modify the Registry to associate the .pl extension with the perl interpreter. If you install another port, perhaps even building your own Win95/NT Perl from the standard sources by using a Windows port of gcc (e.g., with cygwin or mingw32), then you'll have to modify the Registry yourself. In addition to associating .pl with the interpreter, NT people can use: SET

```
PATHEXT=%PATHEXT%;PL
```

to let them run the program `install-linux.pl` merely by typing `install-linux`.

Macintosh Perl programs will have the appropriate Creator and Type, so that double-clicking them will invoke the Perl application.

**IMPORTANT!:** Whatever you do, PLEASE don't get frustrated, and just throw the perl interpreter into your cgi-bin directory, in order to get your programs working for a web server. This is an EXTREMELY big security risk. Take the time to figure out how to do it correctly.

Can I write useful Perl programs on the command line?

Yes. Read `perlrunc` for more information. Some examples follow. (These assume standard Unix shell quoting rules.)

```
# sum first and last fields
perl -lane 'print $F[0] + $F[-1]' *

# identify text files
perl -le 'for(@ARGV) {print if -f && -T _}' *

# remove (most) comments from C program
perl -0777 -pe 's{/\*.*?/*}/}gs' foo.c

# make file a month younger than today, defeating reaper daemons
perl -e '$X=24*60*60; utime(time(),time() + 30 * $X,@ARGV)' *

# find first unused uid
perl -le '$i++ while getpwuid($i); print $i'

# display reasonable manpath
echo $PATH | perl -nl -072 -e '
    s![^/+]!$!man!&&-d&&!$s{$_}++&&push@m,$_;&&END{print"@m"}'
```

OK, the last one was actually an Obfuscated Perl Contest entry. :-)

Why don't Perl one-liners work on my DOS/Mac/VMS system?

The problem is usually that the command interpreters on those systems have rather different ideas about quoting than the Unix shells under which the one-liners were created. On some systems, you may have to change single-quotes to double ones, which you must NOT do on Unix or Plan9 systems. You might also have to change a single % to a %%.

For example:

```
# Unix
perl -e 'print "Hello world\n"'

# DOS, etc.
perl -e "print \"Hello world\n\""

# Mac
print "Hello world\n"

(then Run "Myscript" or Shift-Command-R)
```

```
# VMS
perl -e "print ""Hello world\n"""
```

The problem is that none of these examples are reliable: they depend on the command interpreter. Under Unix, the first two often work. Under DOS, it's entirely possible that neither works. If 4DOS was the command shell, you'd probably have better luck like this:

```
perl -e "print <Ctrl-x>"Hello world\n<Ctrl-x>"
```

Under the Mac, it depends which environment you are using. The MacPerl shell, or MPW, is much like Unix shells in its support for several quoting variants, except that it makes free use of the Mac's non-ASCII characters as control characters.

Using qq(), q(), and qx(), instead of "double quotes", 'single quotes', and `backticks`, may make one-liners easier to write.

There is no general solution to all of this. It is a mess, pure and simple. Sucks to be away from Unix, huh? :-)

[Some of this answer was contributed by Kenneth Albanowski.]

Where can I learn about CGI or Web programming in Perl?

For modules, get the CGI or LWP modules from CPAN. For textbooks, see the two especially dedicated to web stuff in the question on books. For problems and questions related to the web, like ``Why do I get 500 Errors" or ``Why doesn't it run from the browser right when it runs fine on the command line", see these sources:

WWW Security FAQ

<http://www.w3.org/Security/Faq/>

Web FAQ

<http://www.boutell.com/faq/>

CGI FAQ

<http://www.webthing.com/tutorials/cgifaq.html>

HTTP Spec

<http://www.w3.org/pub/WWW/Protocols/HTTP/>

HTML Spec

<http://www.w3.org/TR/REC-html40/>

<http://www.w3.org/pub/WWW/MarkUp/>

CGI Spec

<http://www.w3.org/CGI/>

CGI Security FAQ

<http://www.go2net.com/people/paulp/cgi-security/safe-cgi.txt>

Where can I learn about object-oriented Perl programming?

A good place to start is perltoot, and you can use perlobj, perlboot, and perlbot for reference. Perltoot didn't come out until the 5.004 release; you can get a copy (in pod, html, or postscript) from

<http://www.perl.com/CPAN/doc/FMTEYEWTK/> .

Where can I learn about linking C with Perl? [h2xs, xsubpp]

If you want to call C from Perl, start with perlxsut, moving on to perlxs, xsubpp, and perlguits. If you want to call Perl from C, then read perlembed, perllcall, and perlguits. Don't forget that you can learn a lot from looking at how the authors of existing extension modules wrote their code and solved their problems.

I've read perlembed, perlguits, etc., but I can't embed perl in my C program; what am I doing wrong?

Download the ExtUtils::Embed kit from CPAN and run `make test'. If the tests pass, read the pods again and again and again. If they fail, see perlbug and send a bug report with the output of make test TEST\_VERBOSE=1 along with perl -V.

When I tried to run my script, I got this message. What does it mean?

A complete list of Perl's error messages and warnings with explanatory text can be found in perldiag. You can also use the splain program (distributed with Perl) to explain the error messages:

```
perl program 2>diag.out
```



splain [-v] [-p] diag.out  
or change your program to explain the messages for you:  
use diagnostics;  
or  
use diagnostics -verbose;

What's MakeMaker?

This module (part of the standard Perl distribution) is designed to write a Makefile for an extension module from a Makefile.PL. For more information, see ExtUtils::MakeMaker.

AUTHOR AND COPYRIGHT

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Irrespective of its distribution, all code examples here are in the public domain. You are permitted and encouraged to use this code and any derivatives thereof in your own programs for fun or for profit as you see fit. A simple comment in the code giving credit to the FAQ would be courteous but is not required.

Found in path(s):

```
* /opt/cola/permits/1000849041_1646171520.95/0/perl-Pod-Simple-3.28-4.e17.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/t/perlfaqo.txt
```

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

=head1 NAME

Pod::Simple::PullParser -- a pull-parser interface to parsing Pod

=head1 SYNOPSIS

```
my $parser = SomePodProcessor->new;  
$parser->set_source( "whatever.pod" );  
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( $some_filehandle_object );  
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( \%document_source );  
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( \@document_lines );
```

```
$parser->run;
```

And elsewhere:

```
require 5;
package SomePodProcessor;
use strict;
use base qw(Pod::Simple::PullParser);

sub run {
    my $self = shift;
    Token:
    while(my $token = $self->get_token) {
        ...process each token...
    }
}
```

=head1 DESCRIPTION

This class is for using Pod::Simple to build a Pod processor -- but one that uses an interface based on a stream of token objects, instead of based on events.

This is a subclass of L<Pod::Simple> and inherits all its methods.

A subclass of Pod::Simple::PullParser should define a C<run> method that calls C<< \$token = \$parser->get\_token >> to pull tokens.

See the source for Pod::Simple::RTF for an example of a formatter that uses Pod::Simple::PullParser.

=head1 METHODS

=over

=item my \$token = \$parser->get\_token

This returns the next token object (which will be of a subclass of L<Pod::Simple::PullParserToken>), or undef if the parser-stream has hit the end of the document.

=item \$parser->unget\_token( \$token )

=item \$parser->unget\_token( \$token1, \$token2, ... )

This restores the token object(s) to the front of the parser stream.

=back

The source has to be set before you can parse anything. The lowest-level way is to call `C<set_source>`:

=over

=item `$parser->set_source( $filename )`

=item `$parser->set_source( $filehandle_object )`

=item `$parser->set_source( \ $document_source )`

=item `$parser->set_source( \@document_lines )`

=back

Or you can call these methods, which `Pod::Simple::PullParser` has defined to work just like `Pod::Simple`'s same-named methods:

=over

=item `$parser->parse_file(...)`

=item `$parser->parse_string_document(...)`

=item `$parser->filter(...)`

=item `$parser->parse_from_file(...)`

=back

For those to work, the Pod-processing subclass of `Pod::Simple::PullParser` has to have defined a `$parser->run` method -- so it is advised that all `Pod::Simple::PullParser` subclasses do so. See the Synopsis above, or the source for `Pod::Simple::RTF`.

Authors of formatter subclasses might find these methods useful to call on a parser object that you haven't started pulling tokens from yet:

=over

=item `my $title_string = $parser->get_title`

This tries to get the title string out of `$parser`, by getting some tokens, and scanning them for the title, and then ungetting them so that you can process the token-stream from the beginning.

For example, suppose you have a document that starts out:

```
=head1 NAME
```

```
Hoo::Boy::Wowza -- Stuff B<wow> yeah!
```

\$parser->get\_title on that document will return "Hoo::Boy::Wowza -- Stuff wow yeah!". If the document starts with:

```
=head1 Name
```

```
Hoo::Boy::W00t -- Stuff B<w00t> yeah!
```

Then you'll need to pass the C<nocase> option in order to recognize "Name":

```
$parser->get_title(nocase => 1);
```

In cases where get\_title can't find the title, it will return empty-string ("").

```
=item my $title_string = $parser->get_short_title
```

This is just like get\_title, except that it returns just the modulename, if the title seems to be of the form "SomeModuleName -- description".

For example, suppose you have a document that starts out:

```
=head1 NAME
```

```
Hoo::Boy::Wowza -- Stuff B<wow> yeah!
```

then \$parser->get\_short\_title on that document will return "Hoo::Boy::Wowza".

But if the document starts out:

```
=head1 NAME
```

```
Hooboy, stuff B<wow> yeah!
```

then \$parser->get\_short\_title on that document will return "Hooboy, stuff wow yeah!". If the document starts with:

```
=head1 Name
```

```
Hoo::Boy::W00t -- Stuff B<w00t> yeah!
```

Then you'll need to pass the C<nocase> option in order to recognize "Name":

```
$parser->get_short_title(nocase => 1);
```

If the title can't be found, then `get_short_title` returns empty-string (`""`).

```
=item $author_name = $parser->get_author
```

This works like `get_title` except that it returns the contents of the `"=head1 AUTHOR\n\nParagraph...\n"` section, assuming that that section isn't terribly long. To recognize a `"=head1 Author\n\nParagraph\n"` section, pass the `C<nocase>` option:

```
$parser->get_author(nocase => 1);
```

(This method tolerates "AUTHORS" instead of "AUTHOR" too.)

```
=item $description_name = $parser->get_description
```

This works like `get_title` except that it returns the contents of the `"=head1 DESCRIPTION\n\nParagraph...\n"` section, assuming that that section isn't terribly long. To recognize a `"=head1 Description\n\nParagraph\n"` section, pass the `C<nocase>` option:

```
$parser->get_description(nocase => 1);
```

```
=item $version_block = $parser->get_version
```

This works like `get_title` except that it returns the contents of the `"=head1 VERSION\n\n[BIG BLOCK]\n"` block. Note that this does NOT return the module's `C<$VERSION>!!` To recognize a `"=head1 Version\n\n[BIG BLOCK]\n"` section, pass the `C<nocase>` option:

```
$parser->get_version(nocase => 1);
```

```
=back
```

```
=head1 NOTE
```

You don't actually *have* to define a `C<run>` method. If you're writing a Pod-formatter class, you should define a `C<run>` just so that users can call `C<parse_file>` etc, but you don't *have* to.

And if you're not writing a formatter class, but are instead just writing a program that does something simple with a `Pod::PullParser` object (and not an object of a subclass), then there's no reason to bother subclassing to add a `C<run>` method.

=head1 SEE ALSO

L<Pod::Simple>

L<Pod::Simple::PullParserToken> -- and its subclasses

L<Pod::Simple::PullParserStartToken>,

L<Pod::Simple::PullParserTextToken>, and

L<Pod::Simple::PullParserEndToken>.

L<HTML::TokeParser>, which inspired this.

=head1 SUPPORT

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=head1 AUTHOR

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Pod::Simple is maintained by:

=over

=item \* Allison Randal C<[allison@perl.org](mailto:allison@perl.org)>

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=back

=cut

JUNK:

```
sub _old_get_title { # some witchery in here
  my $self = $_[0];
  my $title;
  my @to_unget;

  while(1) {
    push @to_unget, $self->get_token;
    unless(defined $to_unget[-1]) { # whoops, short doc!
      pop @to_unget;
      last;
    }

    DEBUG and print "-Got token ", $to_unget[-1]->dump, "\n";

    (DEBUG and print "Too much in the buffer.\n"),
    last if @to_unget > 25; # sanity

    my $pattern = "";
    if( # $to_unget[-1]->type eq 'end'
        #and $to_unget[-1]->tagname eq 'Para'
        #and
        ($pattern = join("
",
          map { ;
            ($->type eq 'start') ? ("<" . $->tagname . ">")
            : ($->type eq 'end' ) ? ("</" . $->tagname . ">")
            : ($->type eq 'text' ) ? ($->text =~ m<^[A-Z]+>$>s ? $1 : 'X')
            : "BLORP"
          } @to_unget
        )) =~ m{<head1>NAME</head1><Para>(X|</?[BCIFLS]>)+</Para>}s
    ) {
      # Whee, it fits the pattern
      DEBUG and print "Seems to match =head1 NAME pattern.\n";
      $title = "";
      foreach my $t (reverse @to_unget) {
        last if $t->type eq 'start' and $t->tagname eq 'Para';
        $title = $t->text . $title if $t->type eq 'text';
      }
      undef $title if $title =~ m<^\s*$>; # make sure it's contentful!
      last;
    }
  }
}
```

```

} elsif ($pattern =~ m{<head(\d)>(.)</head\d>}
and !( $1 eq '1' and $2 eq 'NAME' )
) {
# Well, it fits a fallback pattern
DEBUG and print "Seems to match NAMEless pattern.\n";
$title = "";
foreach my $t (reverse @to_unget) {
last if $t->type eq 'start' and $t->tagname =~ m/^head\d$/s;
$title = $t->text . $title if $t->type eq 'text';
}
undef $title if $title =~ m<^\s*$>; # make sure it's contentful!
last;

} else {
DEBUG and $pattern and print "Leading pattern: $pattern\n";
}
}

# Put it all back:
$self->unget_token(@to_unget);

if(DEBUG) {
if(defined $title) { print " Returning title <$title>\n" }
else { print "Returning title <>\n" }
}

return " unless defined $title;
return $title;
}

```

Found in path(s):

```

* /opt/cola/permits/1000849041_1646171520.95/0/perl-Pod-Simple-3.28-4.el7.src.rpm-cosi-expand-archive-8bV9qtZC/Pod-Simple-3.28.tar.gz-cosi-expand-archive-TIm8aDDs/Pod-Simple-3.28/lib/Pod/Simple/PullParser.pm

```

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=head1 NAME

Pod::Simple::DumpAsXML -- turn Pod into XML

=head1 SYNOPSIS

```

perl -MPod::Simple::DumpAsXML -e \
"exit Pod::Simple::DumpAsXML->filter(shift)->any_errata_seen" \
thingy.pod

```

=head1 DESCRIPTION

Pod::Simple::DumpAsXML is a subclass of L<Pod::Simple> that parses Pod



and turns it into indented and wrapped XML. This class is of interest to people writing Pod formatters based on Pod::Simple.

Pod::Simple::DumpAsXML inherits methods from L<Pod::Simple>.

=head1 SEE ALSO

L<Pod::Simple::XMLOutStream> is rather like this class. Pod::Simple::XMLOutStream's output is space-padded in a way that's better for sending to an XML processor (that is, it has no ignorable whitespace). But Pod::Simple::DumpAsXML's output is much more human-readable, being (more-or-less) one token per line, with line-wrapping.

L<Pod::Simple::DumpAsText> is rather like this class, except that it doesn't dump with XML syntax. Try them and see which one you like best!

L<Pod::Simple>, L<Pod::Simple::DumpAsXML>

The older libraries L<Pod::PXML>, L<Pod::XML>, L<Pod::SAX>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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=item \* David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

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=head1 NAME

Pod::Simple::DumpAsText -- dump Pod-parsing events as text

=head1 SYNOPSIS

```
perl -MPod::Simple::DumpAsText -e \  
"exit Pod::Simple::DumpAsText->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is for dumping, as text, the events gotten from parsing a Pod document. This class is of interest to people writing Pod formatters based on Pod::Simple. It is useful for seeing exactly what events you get out of some Pod that you feed in.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple::DumpAsXML>

L<Pod::Simple>

=head1 SUPPORT

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=head1 Pod::Simple version 3.28

Pod::Simple is a Perl library for parsing text in the Pod ("plain old documentation") markup language that is typically used for writing documentation for Perl and for Perl modules. The Pod format is explained L<perlpod>; the most common formatter is called C<perldoc>.

Pod formatters can use Pod::Simple to parse Pod documents and render them into plain text, HTML, or any number of other formats.

=head2 Installation

To install this module, type the following:

```
perl Makefile.PL
make
make test
make install
```

=head2 Support

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# TODO: let it be an option whether a given subclass even wants little treelets?

\_\_END\_\_

=head1 NAME

Pod::Simple::LinkSection -- represent "section" attributes of L codes

=head1 SYNOPSIS

# a long story

=head1 DESCRIPTION

This class is not of interest to general users.

Pod::Simple uses this class for representing the value of the "section" attribute of "L" start-element events. Most applications

can just use the normal stringification of objects of this class; they stringify to just the text content of the section, such as "foo" for `C<< LZ<><Stuff/foo> >>`, and "bar" for `C<< LZ<><Stuff/bIZ<><ar>> >>`.

However, anyone particularly interested in getting the full value of the treelet, can just traverse the content of the treelet `@$treelet_object`. To wit:

```
% perl -MData::Dumper -e
"use base qw(Pod::Simple::Methody);
sub start_L { print Dumper($_[1]{'section'}) }
__PACKAGE__->new->parse_string_document('=head1 L<Foo/bI<ar>baz>>')
"
```

Output:

```
$VAR1 = bless( [
    ",
    {},
    'b',
    bless( [
        'T',
        {},
        'ar'
    ], 'Pod::Simple::LinkSection' ),
    'baz'
], 'Pod::Simple::LinkSection' );
```

But stringify it and you get just the text content:

```
% perl -MData::Dumper -e
"use base qw(Pod::Simple::Methody);
sub start_L { print Dumper(" . $_[1]{'section'}) }
__PACKAGE__->new->parse_string_document('=head1 L<Foo/bI<ar>baz>>')
"
```

Output:

```
$VAR1 = 'barbaz';
```

=head1 SEE ALSO

L<Pod::Simple>

=head1 SUPPORT

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## 1.27 tar 1.32-1.el7

## 1.27.1 Available under license :

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Version 3, 29 June 2007

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## 1.28 perl-pod-perldoc 3.20 4.e17

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## 1.29 hppc 0.7.1

## 1.30 spring-boot-starter-web 2.0.4

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## 1.31 jackson-dataformat-cbor 2.9.6

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## 1.32 perl-constant 1.27-2.el7

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=head1 NAME

constant - Perl pragma to declare constants

=head1 SYNOPSIS

```
use constant PI => 4 * atan2(1, 1);
```

```
use constant DEBUG => 0;
```

```
print "Pi equals ", PI, "\n" if DEBUG;
```

```

use constant {
    SEC => 0,
    MIN => 1,
    HOUR => 2,
    MDAY => 3,
    MON => 4,
    YEAR => 5,
    WDAY => 6,
    YDAY => 7,
    ISDST => 8,
};

use constant WEEKDAYS => qw(
    Sunday Monday Tuesday Wednesday Thursday Friday Saturday
);

print "Today is ", (WEEKDAYS)[ (localtime)[WDAY] ], ".\n";

```

=head1 DESCRIPTION

This pragma allows you to declare constants at compile-time.

When you declare a constant such as C<PI> using the method shown above, each machine your script runs upon can have as many digits of accuracy as it can use. Also, your program will be easier to read, more likely to be maintained (and maintained correctly), and far less likely to send a space probe to the wrong planet because nobody noticed the one equation in which you wrote C<3.14195>.

When a constant is used in an expression, Perl replaces it with its value at compile time, and may then optimize the expression further. In particular, any code in an C<if (CONSTANT)> block will be optimized away if the constant is false.

=head1 NOTES

As with all C<use> directives, defining a constant happens at compile time. Thus, it's probably not correct to put a constant declaration inside of a conditional statement (like C<if (\$foo) { use constant ... }>).

Constants defined using this module cannot be interpolated into strings like variables. However, concatenation works just fine:

```

print "Pi equals PI...\n";    # WRONG: does not expand "PI"
print "Pi equals ".PI."...\n"; # right

```

Even though a reference may be declared as a constant, the reference may point to data which may be changed, as this code shows.

```
use constant ARRAY => [ 1,2,3,4 ];
print ARRAY->[1];
ARRAY->[1] = " be changed";
print ARRAY->[1];
```

Dereferencing constant references incorrectly (such as using an array subscript on a constant hash reference, or vice versa) will be trapped at compile time.

Constants belong to the package they are defined in. To refer to a constant defined in another package, specify the full package name, as in `C<Some::Package::CONSTANT>`. Constants may be exported by modules, and may also be called as either class or instance methods, that is, as `C<< Some::Package->CONSTANT >>` or as `C<< $obj->CONSTANT >>` where `C<$obj>` is an instance of `C<Some::Package>`. Subclasses may define their own constants to override those in their base class.

The use of all caps for constant names is merely a convention, although it is recommended in order to make constants stand out and to help avoid collisions with other barewords, keywords, and subroutine names. Constant names must begin with a letter or underscore. Names beginning with a double underscore are reserved. Some poor choices for names will generate warnings, if warnings are enabled at compile time.

=head2 List constants

Constants may be lists of more (or less) than one value. A constant with no values evaluates to `C<undef>` in scalar context. Note that constants with more than one value do *not* return their last value in scalar context as one might expect. They currently return the number of values, but *B<this may change in the future>*. Do not use constants with multiple values in scalar context.

**B<NOTE:>** This implies that the expression defining the value of a constant is evaluated in list context. This may produce surprises:

```
use constant TIMESTAMP => localtime;          # WRONG!
use constant TIMESTAMP => scalar localtime;    # right
```

The first line above defines `C<TIMESTAMP>` as a 9-element list, as returned by `C<localtime()>` in list context. To set it to the string returned by `C<localtime()>` in scalar context, an explicit `C<scalar>` keyword is required.

List constants are lists, not arrays. To index or slice them, they must be placed in parentheses.

```
my @workdays = WEEKDAYS[1 .. 5];      # WRONG!
my @workdays = (WEEKDAYS)[1 .. 5];    # right
```

=head2 Defining multiple constants at once

Instead of writing multiple C<use constant> statements, you may define multiple constants in a single statement by giving, instead of the constant name, a reference to a hash where the keys are the names of the constants to be defined. Obviously, all constants defined using this method must have a single value.

```
use constant {
    FOO => "A single value",
    BAR => "This", "won't", "work!",    # Error!
};
```

This is a fundamental limitation of the way hashes are constructed in Perl. The error messages produced when this happens will often be quite cryptic -- in the worst case there may be none at all, and you'll only later find that something is broken.

When defining multiple constants, you cannot use the values of other constants defined in the same declaration. This is because the calling package doesn't know about any constant within that group until I<after> the C<use> statement is finished.

```
use constant {
    BITMASK => 0xAFBAEBA8,
    NEGMASK => ~BITMASK,      # Error!
};
```

=head2 Magic constants

Magical values and references can be made into constants at compile time, allowing for way cool stuff like this. (These error numbers aren't totally portable, alas.)

```
use constant E2BIG => ($! = 7);
print E2BIG, "\n";    # something like "Arg list too long"
print 0+E2BIG, "\n"; # "7"
```

You can't produce a tied constant by giving a tied scalar as the value. References to tied variables, however, can be used as constants without any problems.

## =head1 TECHNICAL NOTES

In the current implementation, scalar constants are actually inlinable subroutines. As of version 5.004 of Perl, the appropriate scalar constant is inserted directly in place of some subroutine calls, thereby saving the overhead of a subroutine call. See L<perlsub/"Constant Functions"> for details about how and when this happens.

In the rare case in which you need to discover at run time whether a particular constant has been declared via this module, you may use this function to examine the hash C<%constant::declared>. If the given constant name does not include a package name, the current package is used.

```
sub declared ($) {
    use constant 1.01;      # don't omit this!
    my $name = shift;
    $name =~ s/^\s*/main::/;
    my $pkg = caller;
    my $full_name = $name =~ /::/ ? $name : "${pkg}::$name";
    $constant::declared{$full_name};
}
```

## =head1 CAVEATS

In the current version of Perl, list constants are not inlined and some symbols may be redefined without generating a warning.

It is not possible to have a subroutine or a keyword with the same name as a constant in the same package. This is probably a Good Thing.

A constant with a name in the list C<STDIN STDOUT STDERR ARGV ARGVOUT ENV INC SIG> is not allowed anywhere but in package C<main::>, for technical reasons.

Unlike constants in some languages, these cannot be overridden on the command line or via environment variables.

You can get into trouble if you use constants in a context which automatically quotes barewords (as is true for any subroutine call). For example, you can't say C<\$hash{CONSTANT}> because C<CONSTANT> will be interpreted as a string. Use C<\$hash{CONSTANT()}> or C<\$hash{+CONSTANT}> to prevent the bareword quoting mechanism from kicking in. Similarly, since the C<<=>>> operator quotes a bareword immediately to its left, you have to say C<< CONSTANT() => 'value' >> (or simply use a comma in place of the big arrow) instead of C<< CONSTANT => 'value' >>.

=head1 SEE ALSO

L<Readonly> - Facility for creating read-only scalars, arrays, hashes.

L<Attribute::Constant> - Make read-only variables via attribute

L<Scalar::Readonly> - Perl extension to the C<SvREADONLY> scalar flag

L<Hash::Util> - A selection of general-utility hash subroutines (mostly to lock/unlock keys and values)

=head1 BUGS

Please report any bugs or feature requests via the `perlbug(1)` utility.

=head1 AUTHORS

Tom Phoenix, E<lt>F<rootbeer@redcat.com>E<gt>, with help from many other folks.

Multiple constant declarations at once added by Casey West, E<lt>F<casey@geeknest.com>E<gt>.

Documentation mostly rewritten by Ilmari Karonen, E<lt>F<perl@itz.pp.sci.fi>E<gt>.

This program is maintained by the Perl 5 Porters.

The CPAN distribution is maintained by SE<acute>bastien Aperghis-Tramoni E<lt>F<sebastien@aperghis.net>E<gt>.

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=cut

Found in path(s):

\* /opt/cola/permits/1000848929\_1646171587.67/0/perl-constant-1.27-2.el7.src.rpm-cosi-expand-archive-TwFsgXwu/constant-1.27.tar.gz-cosi-expand-archive-SqgHML5Z/constant-1.27/lib/constant.pm

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---

abstract: 'Perl pragma to declare constants'

author:

```
- 'SÃ©bastien Aperghis-Tramoni <sebastien@aperghis.net>'
build_requires:
  Test::More: 0
configure_requires:
  Module::Build: 0.2808
dynamic_config: 1
generated_by: 'Module::Build version 0.4003, CPAN::Meta::Converter version 2.120921'
license: perl
meta-spec:
  url: http://module-build.sourceforge.net/META-spec-v1.4.html
  version: 1.4
name: constant
provides:
  constant:
    file: lib/constant.pm
    version: 1.27
resources:
  license: http://dev.perl.org/licenses/
  version: 1.27
```

Found in path(s):

```
* /opt/cola/permits/1000848929_1646171587.67/0/perl-constant-1.27-2.el7.src.rpm-cosi-expand-archive-
TwFsgXwu/constant-1.27.tar.gz-cosi-expand-archive-SqgHML5Z/constant-1.27/META.yml
```

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## NAME

constant - Perl pragma to declare constants

## DESCRIPTION

This pragma allows you to declare constants at compile-time.

When a constant is used in an expression, Perl replaces it with its value at compile time, and may then optimize the expression further. In particular, any code in an "if (CONSTANT)" block will be optimized away if the constant is false.

## INSTALLATION

To install this module, run the following commands:

```
perl Makefile.PL
make
make test
make install
```



Alternatively, to install with Module::Build, you can use the following commands:

```
perl Build.PL
./Build
./Build test
./Build install
```

## SUPPORT AND DOCUMENTATION

After installing, you can find documentation for this module with the perldoc command.

```
perldoc constant
```

You can also look for information at:

Search CPAN

<http://search.cpan.org/dist/constant>

CPAN Request Tracker:

<http://rt.cpan.org/Dist/Display.html?Name=constant>

AnnoCPAN, annotated CPAN documentation:

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```
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```

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```
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```

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## Source Files

-----

. The file `src/libs/snprintf/snprintf.c', written by Mark Martinec

<mark.martinec@ijs.si>.

Please look into `sprintf.c` for the copyright message.

The complete `sprintf` package together with documentation is available from

<http://www.ijs.si/software/sprintf/> .

- . The ``gn'` preprocessor, written by Barry Roitblat <barry@rentonww.com> and David Slattengren <slatteng@Xinet.COM>. These files have been part of the original Berkeley ditroff distribution, without AT&T code, and are in the public domain.

The original package can be found at

<http://ftp.cs.wisc.edu/pub/misc/gn.tar.Z> .

```
src/preproc/gn/gprint.h
src/preproc/gn/hdb.cpp
src/preproc/gn/hgraph.cpp
src/preproc/gn/hpoint.cpp
src/preproc/gn/main.cpp
```

- . The ``gxditview'` output device. It is based on X11's ``xditview'` program and thus has the X license.

```
src/devices/xditview/DESC.in
src/devices/xditview/Dvi.c
src/devices/xditview/Dvi.h
src/devices/xditview/DviP.h
src/devices/xditview/FontMap
src/devices/xditview/GXditview.ad
src/devices/xditview/Menu.h
src/devices/xditview/ad2c
src/devices/xditview/device.c
src/devices/xditview/device.h
src/devices/xditview/draw.c
src/devices/xditview/font.c
src/devices/xditview/gray1.bm
src/devices/xditview/gray2.bm
src/devices/xditview/gray3.bm
src/devices/xditview/gray4.bm
src/devices/xditview/gray5.bm
src/devices/xditview/gray6.bm
src/devices/xditview/gray7.bm
src/devices/xditview/gray8.bm
src/devices/xditview/gxditview.man
src/devices/xditview/lex.c
```

src/devices/xditview/page.c  
src/devices/xditview/parse.c  
src/devices/xditview/xdit.bm  
src/devices/xditview/xdit\_mask.bm  
src/devices/xditview/xditview.c

src/include/DviChar.h  
src/include/XFontName.h

src/libs/libxutil/DviChar.c  
src/libs/libxutil/XFontName.c

## Macro Packages

-----

. The -mdoc macro set, using the BSD license.

tmac/doc.tmac  
tmac/doc-old.tmac  
tmac/doc-common  
tmac/doc-ditroff  
tmac/doc-nroff  
tmac/doc-syms  
tmac/groff\_mdoc.man

. The -me macro set, using the BSD license.

tmac/e.tmac  
tmac/groff\_me.man  
doc/meintro.me  
doc/meref.me

## Hyphenation Patterns

-----

. The file `tmac/hyphen.us' is identical to the file `hyphen.tex', part of the TeX system written by Donald E. Knuth; the master file can be found at

<ftp://labrea.stanford.edu/pub/tex/dist/lib/hyphen.tex> .

It has been renamed for consistency, i.e., to make patterns available under the filenames `hyphen.<language>', e.g. `hyphen.de' or `hyphen.uk'.

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. The file ``tmac/hyphen.fr'` contains the same patterns as the file ``frhyph.tex'` (for TeX), which can be found at

<http://dante.ctan.org/CTAN/language/hyphenation/frhyph.tex> .

The patterns have been converted to a format groff can understand.

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. The file ``tmac/hyphen.sv'` is identical to the file ``svhyph.tex'`, which can be found at

<http://dante.ctan.org/CTAN/language/hyphenation/svhyph.tex> .

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. The files ``tmac/hyphen.det'` and ``tmac/hyphen.den'` contain the same patterns as the files ``dehyphn.tex'` and ``dehypht.tex'` (for TeX), which can be found at

<http://dante.ctan.org/CTAN/language/hyphenation/dehyphn.tex>  
<http://dante.ctan.org/CTAN/language/hyphenation/dehypht.tex> .

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. The file ``tmac/hyphenex.det'` is identical to the file ``dehyphtex.tex'`, which can be found at

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. The file ``tmac/hyphen.cs'` contains the same patterns as the file ``czhyphen.tex'` (for TeX), which can be found in the archive

<http://dante.ctan.org/CTAN/macros/cstex/base/csplain.tar.gz> .

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"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="content-type" content="text/html; charset=iso-8859-1" />
    <title>SLF4J License</title>
    <link rel="stylesheet" type="text/css" media="screen" href="css/site.css" />
  </head>
  <body>
    <script type="text/javascript">prefix="";</script>

    <script src="templates/header.js" type="text/javascript"></script>
    <div id="left">
      <script src="templates/left.js" type="text/javascript"></script>
    </div>
    <div id="right">
      <script src="templates/right.js" type="text/javascript"></script>
    </div>

    <div id="content">
```

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<h1>Licensing terms for SLF4J</h1>
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 */
```

```
package java.security;
```

```
/**
 * Abstract class for representing access to a system resource.
 * All permissions have a name (whose interpretation depends on the subclass),
 * as well as abstract functions for defining the semantics of the
 * particular Permission subclass.
 *
 * <p>Most Permission objects also include an "actions" list that tells the actions
 * that are permitted for the object. For example,
 * for a { @code java.io.FilePermission } object, the permission name is
 * the pathname of a file (or directory), and the actions list
 * (such as "read, write") specifies which actions are granted for the
 * specified file (or for files in the specified directory).
 * The actions list is optional for Permission objects, such as
 * { @code java.lang.RuntimePermission },
 * that don't need such a list; you either have the named permission (such
 * as "system.exit") or you don't.
 *
 * <p>An important method that must be implemented by each subclass is
 * the { @code implies } method to compare Permissions. Basically,
 * "permission p1 implies permission p2" means that
 * if one is granted permission p1, one is naturally granted permission p2.
```



```

* Thus, this is not an equality test, but rather more of a
* subset test.
*
* <P> Permission objects are similar to String objects in that they
* are immutable once they have been created. Subclasses should not
* provide methods that can change the state of a permission
* once it has been created.
*
* @see Permissions
* @see PermissionCollection
*
*
* @author Marianne Mueller
* @author Roland Schemers
*/

```

```

public abstract class Permission implements Guard, java.io.Serializable {

```

```

    private static final long serialVersionUID = -5636570222231596674L;

```

```

    private String name;

```

```

    /**

```

```

     * Constructs a permission with the specified name.
     *
     * @param name name of the Permission object being created.
     *
     */

```

```

    public Permission(String name) {
        this.name = name;
    }

```

```

    /**

```

```

     * Implements the guard interface for a permission. The
     * {@code SecurityManager.checkPermission} method is called,
     * passing this permission object as the permission to check.
     * Returns silently if access is granted. Otherwise, throws
     * a SecurityException.
     *
     * @param object the object being guarded (currently ignored).
     *
     * @throws SecurityException
     *         if a security manager exists and its
     *         {@code checkPermission} method doesn't allow access.
     *
     * @see Guard
     * @see GuardedObject

```

```

* @see SecurityManager#checkPermission
*
*/
public void checkGuard(Object object) throws SecurityException {
    SecurityManager sm = System.getSecurityManager();
    if (sm != null) sm.checkPermission(this);
}

/**
 * Checks if the specified permission's actions are "implied by"
 * this object's actions.
 * <P>
 * This must be implemented by subclasses of Permission, as they are the
 * only ones that can impose semantics on a Permission object.
 *
 * <p>The { @code implies } method is used by the AccessController to determine
 * whether or not a requested permission is implied by another permission that
 * is known to be valid in the current execution context.
 *
 * @param permission the permission to check against.
 *
 * @return true if the specified permission is implied by this object,
 * false if not.
 */

public abstract boolean implies(Permission permission);

/**
 * Checks two Permission objects for equality.
 * <P>
 * Do not use the { @code equals } method for making access control
 * decisions; use the { @code implies } method.
 *
 * @param obj the object we are testing for equality with this object.
 *
 * @return true if both Permission objects are equivalent.
 */

public abstract boolean equals(Object obj);

/**
 * Returns the hash code value for this Permission object.
 * <P>
 * The required { @code hashCode } behavior for Permission Objects is
 * the following:
 * <ul>
 * <li>Whenever it is invoked on the same Permission object more than
 * once during an execution of a Java application, the

```

- \* { @code hashCode } method
- \* must consistently return the same integer. This integer need not
- \* remain consistent from one execution of an application to another
- \* execution of the same application.
- \* <li>If two Permission objects are equal according to the
- \* { @code equals }
- \* method, then calling the { @code hashCode } method on each of the
- \* two Permission objects must produce the same integer result.
- \* </li>
- </ul>
- \*  
- \* @return a hash code value for this object.
- \*/

```
public abstract int hashCode();
```

```
/**
 * Returns the name of this Permission.
 * For example, in the case of a { @code java.io.FilePermission },
 * the name will be a pathname.
 *
 * @return the name of this Permission.
 *
 */
```

```
public final String getName() {
    return name;
}
```

```
/**
 * Returns the actions as a String. This is abstract
 * so subclasses can defer creating a String representation until
 * one is needed. Subclasses should always return actions in what they
 * consider to be their
 * canonical form. For example, two FilePermission objects created via
 * the following:
 *
 * <pre>
 * perm1 = new FilePermission(p1,"read,write");
 * perm2 = new FilePermission(p2,"write,read");
 * </pre>
 *
 * both return
 * "read,write" when the { @code getActions } method is invoked.
 *
 * @return the actions of this Permission.
 *
 */
```

```

public abstract String getActions();

/**
 * Returns an empty PermissionCollection for a given Permission object, or null if
 * one is not defined. Subclasses of class Permission should
 * override this if they need to store their permissions in a particular
 * PermissionCollection object in order to provide the correct semantics
 * when the {@code PermissionCollection.implies} method is called.
 * If null is returned,
 * then the caller of this method is free to store permissions of this
 * type in any PermissionCollection they choose (one that uses a Hashtable,
 * one that uses a Vector, etc).
 *
 * @return a new PermissionCollection object for this type of Permission, or
 * null if one is not defined.
 */

public PermissionCollection newPermissionCollection() {
    return null;
}

/**
 * Returns a string describing this Permission. The convention is to
 * specify the class name, the permission name, and the actions in
 * the following format: ('ClassName" "name" "actions"), or
 * ('ClassName" "name")' if actions list is null or empty.
 *
 * @return information about this Permission.
 */

public String toString() {
    String actions = getActions();
    if ((actions == null) || (actions.length() == 0)) { // OPTIONAL
        return "(" + getClass().getName() + "\" \" + name + "\"";
    } else {
        return "(" + getClass().getName() + "\" \" + name +
            "\" \" + actions + "\"";
    }
}
}
}

```

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#
```

```
# Version
```

```
# Uses Fedora Core 6 fonts and file paths.
```

```
version=1
```

```
# Component Font Mappings
```

```
dialog.plain.latin-1=DejaVu LGC Sans
dialog.plain.japanese-x0208=Sazanami Gothic
dialog.plain.korean=Baekmuk Gulim
dialog.plain.chinese-big5=AR PL ShanHeiSun Uni
dialog.plain.chinese-gb18030=AR PL ShanHeiSun Uni
```

```
dialog.bold.latin-1=DejaVu LGC Sans Bold
dialog.bold.japanese-x0208=Sazanami Gothic
dialog.bold.korean=Baekmuk Gulim
dialog.bold.chinese-big5=AR PL ShanHeiSun Uni
dialog.bold.chinese-gb18030=AR PL ShanHeiSun Uni
```

```
dialog.italic.latin-1=DejaVu LGC Sans Oblique
dialog.italic.japanese-x0208=Sazanami Gothic
dialog.italic.korean=Baekmuk Gulim
dialog.italic.chinese-big5=AR PL ShanHeiSun Uni
dialog.italic.chinese-gb18030=AR PL ShanHeiSun Uni
```

```
dialog.bolditalic.latin-1=DejaVu LGC Sans Bold Oblique
dialog.bolditalic.japanese-x0208=Sazanami Gothic
```

dialog.bolditalic.korean=Baekmuk Gulim  
dialog.bolditalic.chinese-big5=AR PL ShanHeiSun Uni  
dialog.bolditalic.chinese-gb18030=AR PL ShanHeiSun Uni

sansserif.plain.latin-1=DejaVu LGC Sans  
sansserif.plain.japanese-x0208=Sazanami Gothic  
sansserif.plain.korean=Baekmuk Gulim  
sansserif.plain.chinese-big5=AR PL ShanHeiSun Uni  
sansserif.plain.chinese-gb18030=AR PL ShanHeiSun Uni

sansserif.bold.latin-1=DejaVu LGC Sans Bold  
sansserif.bold.japanese-x0208=Sazanami Gothic  
sansserif.bold.korean=Baekmuk Gulim  
sansserif.bold.chinese-big5=AR PL ShanHeiSun Uni  
sansserif.bold.chinese-gb18030=AR PL ShanHeiSun Uni

sansserif.italic.latin-1=DejaVu LGC Sans Oblique  
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sansserif.italic.korean=Baekmuk Gulim  
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sansserif.bolditalic.japanese-x0208=Sazanami Gothic  
sansserif.bolditalic.korean=Baekmuk Gulim  
sansserif.bolditalic.chinese-big5=AR PL ShanHeiSun Uni  
sansserif.bolditalic.chinese-gb18030=AR PL ShanHeiSun Uni

serif.plain.latin-1=DejaVu LGC Serif  
serif.plain.japanese-x0208=Sazanami Mincho  
serif.plain.korean=Baekmuk Batang  
serif.plain.chinese-big5=AR PL ZenKai Uni  
serif.plain.chinese-gb18030=AR PL ZenKai Uni

serif.bold.latin-1=DejaVu LGC Serif Bold  
serif.bold.japanese-x0208=Sazanami Mincho  
serif.bold.korean=Baekmuk Batang  
serif.bold.chinese-big5=AR PL ZenKai Uni  
serif.bold.chinese-gb18030=AR PL ZenKai Uni

serif.italic.latin-1=DejaVu LGC Serif Oblique  
serif.italic.japanese-x0208=Sazanami Mincho  
serif.italic.korean=Baekmuk Batang  
serif.italic.chinese-big5=AR PL ZenKai Uni  
serif.italic.chinese-gb18030=AR PL ZenKai Uni

serif.bolditalic.latin-1=DejaVu LGC Serif Bold Oblique  
serif.bolditalic.japanese-x0208=Sazanami Mincho  
serif.bolditalic.korean=Baekmuk Batang  
serif.bolditalic.chinese-big5=AR PL ZenKai Uni  
serif.bolditalic.chinese-gb18030=AR PL ZenKai Uni

monospaced.plain.latin-1=DejaVu LGC Sans Mono  
monospaced.plain.japanese-x0208=Sazanami Gothic  
monospaced.plain.korean=Baekmuk Gulim  
monospaced.plain.chinese-big5=AR PL ShanHeiSun Uni  
monospaced.plain.chinese-gb18030=AR PL ShanHeiSun Uni

monospaced.bold.latin-1=DejaVu LGC Sans Mono Bold  
monospaced.bold.japanese-x0208=Sazanami Gothic  
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monospaced.bold.chinese-gb18030=AR PL ShanHeiSun Uni

monospaced.italic.latin-1=DejaVu LGC Sans Mono Oblique  
monospaced.italic.japanese-x0208=Sazanami Gothic  
monospaced.italic.korean=Baekmuk Gulim  
monospaced.italic.chinese-big5=AR PL ShanHeiSun Uni  
monospaced.italic.chinese-gb18030=AR PL ShanHeiSun Uni

monospaced.bolditalic.latin-1=DejaVu LGC Sans Mono Bold Oblique  
monospaced.bolditalic.japanese-x0208=Sazanami Gothic  
monospaced.bolditalic.korean=Baekmuk Gulim  
monospaced.bolditalic.chinese-big5=AR PL ShanHeiSun Uni  
monospaced.bolditalic.chinese-gb18030=AR PL ShanHeiSun Uni

dialoginput.plain.latin-1=DejaVu LGC Sans Mono  
dialoginput.plain.japanese-x0208=Sazanami Gothic  
dialoginput.plain.korean=Baekmuk Gulim  
dialoginput.plain.chinese-big5=AR PL ShanHeiSun Uni  
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dialoginput.bolditalic.latin-1=DejaVu LGC Sans Mono Bold Oblique

dialoginput.bolditalic.japanese-x0208=Sazanami Gothic

dialoginput.bolditalic.korean=Baekmuk Gulim

dialoginput.bolditalic.chinese-big5=AR PL ShanHeiSun Uni

dialoginput.bolditalic.chinese-gb18030=AR PL ShanHeiSun Uni

#### # Search Sequences

sequence.allfonts=latin-1

sequence.allfonts.Big5=chinese-big5,latin-1

sequence.allfonts.x-euc-jp-bsd=japanese-x0208,latin-1

sequence.allfonts.EUC-KR=korean,latin-1

sequence.allfonts.GB18030=chinese-gb18030,latin-1

sequence.fallback=chinese-big5,chinese-gb18030,japanese-x0208,korean

#### # Font File Names

filename.DejaVu\_LGC\_Sans=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans.ttf

filename.DejaVu\_LGC\_Sans\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-Bold.ttf

filename.DejaVu\_LGC\_Sans\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-Oblique.ttf

filename.DejaVu\_LGC\_Sans\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-BoldOblique.ttf

filename.DejaVu\_LGC\_Sans\_Mono=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono.ttf

filename.DejaVu\_LGC\_Sans\_Mono\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-Bold.ttf

filename.DejaVu\_LGC\_Sans\_Mono\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-Oblique.ttf

filename.DejaVu\_LGC\_Sans\_Mono\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-BoldOblique.ttf

filename.DejaVu\_LGC\_Serif=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif.ttf

filename.DejaVu\_LGC\_Serif\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-Bold.ttf

filename.DejaVu\_LGC\_Serif\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-Oblique.ttf

filename.DejaVu\_LGC\_Serif\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-BoldOblique.ttf

filename.Sazanami\_Gothic=/usr/share/fonts/japanese/TrueType/sazanami-gothic.ttf

filename.Sazanami\_Mincho=/usr/share/fonts/japanese/TrueType/sazanami-mincho.ttf

filename.AR\_PL\_ShanHeiSun\_Uni=/usr/share/fonts/chinese/TrueType/uming.ttf

filename.AR\_PL\_ZenKai\_Uni=/usr/share/fonts/chinese/TrueType/ukai.ttf

filename.Baekmuk\_Gulim=/usr/share/fonts/korean/TrueType/gulim.ttf

filename.Baekmuk\_Batang=/usr/share/fonts/korean/TrueType/batang.ttf

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```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=us-ascii" />
  <title>W3C IPR SOFTWARE NOTICE</title>
<style type="text/css">
<!--
html, body { background: #fff; color: #000; } /* body for Windows IE3 */
-->
</style>
</head>
<body>
  <h1>
    W3C IPR SOFTWARE NOTICE
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  <h3>
    Copyright &copy; 2002 <a href="http://www.w3.org/">World Wide Web
    Consortium</a>, (<a href="http://www.lcs.mit.edu/">Massachusetts
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```

```
/**
```

```
* This interface represents a permission, such as that used to grant  
* a particular type of access to a resource.
```

```
*
```

```
* @author Satish Dharmaraj
```

```
*/
```

```
public interface Permission {
```

```
/**
```

```
* Returns true if the object passed matches the permission represented  
* in this interface.
```

```
*
```

```
* @param another the Permission object to compare with.
```

```
*
```

```
* @return true if the Permission objects are equal, false otherwise
```

```
*/
```

```
public boolean equals(Object another);
```

```
/**
```

```
* Prints a string representation of this permission.
```

```
*
```

```
* @return the string representation of the permission.
```

```
*/
```

```
public String toString();
```

```
}
```

```
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1998-05-11

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#
```

```
platform=bsd
```

```
/*
```

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```



```
import org.somewhere.ws.EchoRequest;
import org.somewhere.ws.EchoResponse;

public class CopyingResponse extends EchoResponse {

    public CopyingResponse() {}

    public CopyingResponse(EchoRequest request) {
        content = request.getContent();
    }
}
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```
package build.tools.cldrconverter;
```

```
import java.util.Calendar;  
import java.util.GregorianCalendar;  
import java.util.Locale;  
import java.util.TimeZone;
```

```
class CopyrightHeaders {  
    private static final String ORACLE2012 =  
        "/*\n" +  
        " * Copyright (c) %d, Oracle and/or its affiliates. All rights reserved.\n" +  
        " */\n";  
  
    private static final String ORACLE_AFTER2012 =  
        "/*\n" +  
        " * Copyright (c) 2012, %d, Oracle and/or its affiliates. All rights reserved.\n" +  
        " */\n";  
  
    private static final String UNICODE =  
        "/*\n" +  
        " * COPYRIGHT AND PERMISSION NOTICE\n" +  
        " */\n" +  
        " * Copyright (C) 1991-2012 Unicode, Inc. All rights reserved. Distributed under\n" +  
        " * the Terms of Use in http://www.unicode.org/copyright.html.\n" +  
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    " */\n";

```

```

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    " *\n" +
    " * Please contact Oracle, 500 Oracle Parkway, Redwood Shores, CA 94065 USA\n" +
    " * or visit www.oracle.com if you need additional information or have any\n" +
    " * questions.\n" +
    " */\n";

```

```

private static String OPENJDK_AFTER2012 =
    "/*\n" +
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```

```

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" *\n" +
" * Please contact Oracle, 500 Oracle Parkway, Redwood Shores, CA 94065 USA\n" +
" * or visit www.oracle.com if you need additional information or have any\n" +
" * questions.\n" +
" */\n";

static String getOracleCopyright() {
    int year = getYear();
    return String.format(year > 2012 ? ORACLE_AFTER2012 : ORACLE2012, year);
}

static String getUnicodeCopyright() {
    return UNICODE;
}

static String getOpenJDKCopyright() {
    int year = getYear();
    return String.format(year > 2012 ? OPENJDK_AFTER2012 : OPENJDK2012, year);
}

private static int getYear() {
    return new GregorianCalendar(TimeZone.getTimeZone("America/Los_Angeles"),
        Locale.US).get(Calendar.YEAR);
}

// no instantiation
private CopyrightHeaders() {
}
}
SAX IS FREE
-----

```

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David Megginson  
david@megginson.com  
2000-01-14

## 1.38 plexus-io 2.0.4

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## 1.39 perl-encode 2.51-7.el7

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=head1 NAME

Encode - character encodings in Perl

=head1 SYNOPSIS

```
use Encode qw(decode encode);
$characters = decode('UTF-8', $octets, Encode::FB_CROAK);
$octets     = encode('UTF-8', $characters, Encode::FB_CROAK);
```

=head2 Table of Contents

Encode consists of a collection of modules whose details are too extensive  
to fit in one document. This one itself explains the top-level APIs  
and general topics at a glance. For other topics and more details,  
see the documentation for these modules:

=over 2

=item L<Encode::Alias> - Alias definitions to encodings

=item L<Encode::Encoding> - Encode Implementation Base Class

=item L<Encode::Supported> - List of Supported Encodings

=item L<Encode::CN> - Simplified Chinese Encodings

=item L<Encode::JP> - Japanese Encodings

=item L<Encode::KR> - Korean Encodings

=item L<Encode::TW> - Traditional Chinese Encodings

=back

=head1 DESCRIPTION

The C<Encode> module provides the interface between Perl strings and the rest of the system. Perl strings are sequences of I<characters>.

The repertoire of characters that Perl can represent is a superset of those defined by the Unicode Consortium. On most platforms the ordinal values of a character as returned by C<ord(I<S>)> is the I<Unicode codepoint> for that character. The exceptions are platforms where the legacy encoding is some variant of EBCDIC rather than a superset of ASCII; see L<perlebcdic>.

During recent history, data is moved around a computer in 8-bit chunks, often called "bytes" but also known as "octets" in standards documents. Perl is widely used to manipulate data of many types: not only strings of characters representing human or computer languages, but also "binary" data, being the machine's representation of numbers, pixels in an image, or just about anything.

When Perl is processing "binary data", the programmer wants Perl to process "sequences of bytes". This is not a problem for Perl: because a byte has 256 possible values, it easily fits in Perl's much larger "logical character".

This document mostly explains the I<how>. L<perlunitut> and L<perlunifaq> explain the I<why>.

=head2 TERMINOLOGY

=head3 character

A character in the range 0 .. 2\*\*32-1 (or more);  
what Perl's strings are made of.

=head3 byte

A character in the range 0..255;  
a special case of a Perl character.

=head3 octet

8 bits of data, with ordinal values 0..255;

term for bytes passed to or from a non-Perl context, such as a disk file, standard I/O stream, database, command-line argument, environment variable, socket etc.

=head1 THE PERL ENCODING API

=head2 Basic methods

=head3 encode

```
$octets = encode(ENCODING, STRING[, CHECK])
```

Encodes the scalar value I<STRING> from Perl's internal form into I<ENCODING> and returns a sequence of octets. I<ENCODING> can be either a canonical name or an alias. For encoding names and aliases, see L</"Defining Aliases">. For CHECK, see L</"Handling Malformed Data">.

For example, to convert a string from Perl's internal format into ISO-8859-1, also known as Latin1:

```
$octets = encode("iso-8859-1", $string);
```

B<CAVEAT>: When you run C<\$octets = encode("utf8", \$string)>, then \$octets I<might not be equal to> \$string. Though both contain the same data, the UTF8 flag for \$octets is I<always> off. When you encode anything, the UTF8 flag on the result is always off, even when it contains a completely valid utf8 string. See L</"The UTF8 flag"> below.

If the \$string is C<undef>, then C<undef> is returned.

=head3 decode

```
$string = decode(ENCODING, OCTETS[, CHECK])
```

This function returns the string that results from decoding the scalar value I<OCTETS>, assumed to be a sequence of octets in I<ENCODING>, into Perl's internal form. The returns the resulting string. As with encode(), I<ENCODING> can be either a canonical name or an alias. For encoding names and aliases, see L</"Defining Aliases">; for I<CHECK>, see L</"Handling Malformed Data">.

For example, to convert ISO-8859-1 data into a string in Perl's internal format:

```
$string = decode("iso-8859-1", $octets);
```

**B<CAVEAT>**: When you run `C<$string = decode("utf8", $octets)>`, then `$string` *might not be equal to* `$octets`. Though both contain the same data, the UTF8 flag for `$string` is on unless `$octets` consists entirely of ASCII data on ASCII machines or EBCDIC on EBCDIC machines. See [L</"The UTF8 flag">](#) below.

If the `$string` is `C<undef>`, then `C<undef>` is returned.

```
=head3 find_encoding
```

```
[$obj =] find_encoding(ENCODING)
```

Returns the `I<encoding object>` corresponding to `I<ENCODING>`. Returns `C<undef>` if no matching `I<ENCODING>` is found. The returned object is what does the actual encoding or decoding.

```
$utf8 = decode($name, $bytes);
```

is in fact

```
$utf8 = do {
  $obj = find_encoding($name);
  croak qq(encoding "$name" not found) unless ref $obj;
  $obj->decode($bytes);
};
```

with more error checking.

You can therefore save time by reusing this object as follows;

```
my $enc = find_encoding("iso-8859-1");
while(<>) {
  my $utf8 = $enc->decode($_);
  ... # now do something with $utf8;
}
```

Besides `L</decode>` and `L</encode>`, other methods are available as well. For instance, `C<name()>` returns the canonical name of the encoding object.

```
find_encoding("latin1")->name; # iso-8859-1
```

See `L<Encode::Encoding>` for details.

```
=head3 from_to
```

```
[$length =] from_to($octets, FROM_ENC, TO_ENC [, CHECK])
```

Converts `I<in-place>` data between two encodings. The data in `$octets` must be encoded as octets and `I<not>` as characters in Perl's internal format. For example, to convert ISO-8859-1 data into Microsoft's CP1250 encoding:

```
from_to($octets, "iso-8859-1", "cp1250");
```

and to convert it back:

```
from_to($octets, "cp1250", "iso-8859-1");
```

Because the conversion happens in place, the data to be converted cannot be a string constant: it must be a scalar variable.

`C<from_to()>` returns the length of the converted string in octets on success, and `C<undef>` on error.

**B<CAVEAT>**: The following operations may look the same, but are not:

```
from_to($data, "iso-8859-1", "utf8"); #1
$data = decode("iso-8859-1", $data); #2
```

Both `#1` and `#2` make `$data` consist of a completely valid UTF-8 string, but only `#2` turns the UTF8 flag on. `#1` is equivalent to:

```
$data = encode("utf8", decode("iso-8859-1", $data));
```

See [L</"The UTF8 flag">](#) below.

Also note that:

```
from_to($octets, $from, $to, $check);
```

is equivalent to:

```
$octets = encode($to, decode($from, $octets), $check);
```

Yes, it does `I<not>` respect the `$check` during decoding. It is deliberately done that way. If you need minute control, use `C<decode>` followed by `C<encode>` as follows:

```
$octets = encode($to, decode($from, $octets, $check_from), $check_to);
```

```
=head3 encode_utf8
```

```
$octets = encode_utf8($string);
```

Equivalent to `C<$octets = encode("utf8", $string)>`. The characters in `$string` are encoded in Perl's internal format, and the result is returned as a sequence of octets. Because all possible characters in Perl have a (loose, not strict) UTF-8 representation, this function cannot fail.

```
=head3 decode_utf8
```

```
$string = decode_utf8($octets [, CHECK]);
```

Equivalent to `C<$string = decode("utf8", $octets [, CHECK])>`.

The sequence of octets represented by `$octets` is decoded from UTF-8 into a sequence of logical characters.

Because not all sequences of octets are valid UTF-8, it is quite possible for this function to fail.

For `CHECK`, see [L<"Handling Malformed Data">](#).

```
=head2 Listing available encodings
```

```
use Encode;
@list = Encode->encodings();
```

Returns a list of canonical names of available encodings that have already been loaded. To get a list of all available encodings including those that have not yet been loaded, say:

```
@all_encodings = Encode->encodings(":all");
```

Or you can give the name of a specific module:

```
@with_jp = Encode->encodings("Encode::JP");
```

When `"C<::>"` is not in the name, `"C<Encode::>"` is assumed.

```
@ebcdic = Encode->encodings("EBCDIC");
```

To find out in detail which encodings are supported by this package, see [L<Encode::Supported>](#).

```
=head2 Defining Aliases
```

To add a new alias to a given encoding, use:

```
use Encode;
use Encode::Alias;
define_alias(NEWNAME => ENCODING);
```

After that, `I<NEWNAME>` can be used as an alias for `I<ENCODING>`.

`I<ENCODING>` may be either the name of an encoding or an

I<encoding object>.

Before you do that, first make sure the alias is nonexistent using C<resolve\_alias()>, which returns the canonical name thereof.

For example:

```
Encode::resolve_alias("latin1") eq "iso-8859-1" # true
Encode::resolve_alias("iso-8859-12") # false; nonexistent
Encode::resolve_alias($name) eq $name # true if $name is canonical
```

C<resolve\_alias()> does not need C<use Encode::Alias>; it can be imported via C<use Encode qw(resolve\_alias)>.

See L<Encode::Alias> for details.

=head2 Finding IANA Character Set Registry names

The canonical name of a given encoding does not necessarily agree with IANA Character Set Registry, commonly seen as C<< Content-Type: text/plain; charset=I<WHATEVER> >>. For most cases, the canonical name works, but sometimes it does not, most notably with "utf-8-strict".

As of C<Encode> version 2.21, a new method C<mime\_name()> is therefore added.

```
use Encode;
my $enc = find_encoding("UTF-8");
warn $enc->name; # utf-8-strict
warn $enc->mime_name; # UTF-8
```

See also: L<Encode::Encoding>

=head1 Encoding via PerlIO

If your perl supports C<PerlIO> (which is the default), you can use a C<PerlIO> layer to decode and encode directly via a filehandle. The following two examples are fully identical in functionality:

```
### Version 1 via PerlIO
open(INPUT, "< :encoding(shiftjis)", $infile)
  || die "Can't open < $infile for reading: $!";
open(OUTPUT, "> :encoding(euc-jp)", $outfile)
  || die "Can't open > $output for writing: $!";
while (<INPUT>) { # auto decodes $_
  print OUTPUT; # auto encodes $_
}
close(INPUT) || die "can't close $infile: $!";
close(OUTPUT) || die "can't close $outfile: $!";
```



```

### Version 2 via from_to()
open(INPUT, "<:raw", $infile)
  || die "Can't open <$infile for reading: $!";
open(OUTPUT, ">:raw", $outfile)
  || die "Can't open >$output for writing: $!";

while (<INPUT>) {
  from_to($_, "shiftjis", "euc-jp", 1); # switch encoding
  print OUTPUT; # emit raw (but properly encoded) data
}
close(INPUT) || die "can't close $infile: $!";
close(OUTPUT) || die "can't close $outfile: $!";

```

In the first version above, you let the appropriate encoding layer handle the conversion. In the second, you explicitly translate from one encoding to the other.

Unfortunately, it may be that encodings are C<PerlIO>-savvy. You can check to see whether your encoding is supported by C<PerlIO> by invoking the C<perlio\_ok> method on it:

```

Encode::perlio_ok("hz");      # false
find_encoding("euc-cn")->perlio_ok; # true wherever PerlIO is available

use Encode qw(perlio_ok);      # imported upon request
perlio_ok("euc-jp")

```

Fortunately, all encodings that come with C<Encode> core are C<PerlIO>-savvy except for C<hz> and C<ISO-2022-kr>. For the gory details, see L<Encode::Encoding> and L<Encode::PerlIO>.

## =head1 Handling Malformed Data

The optional I<CHECK> argument tells C<Encode> what to do when encountering malformed data. Without I<CHECK>, C<Encode::FB\_DEFAULT> (== 0) is assumed.

As of version 2.12, C<Encode> supports coderef values for C<CHECK>; see below.

B<NOTE:> Not all encodings support this feature. Some encodings ignore the I<CHECK> argument. For example, L<Encode::Unicode> ignores I<CHECK> and it always croaks on error.

## =head2 List of I<CHECK> values

### =head3 FB\_DEFAULT

```
I<CHECK> = Encode::FB_DEFAULT ( == 0)
```

If I<CHECK> is 0, encoding and decoding replace any malformed character with a I<SUBCHAR>. When you encode, I<SUBCHAR> is used. When you decode, the Unicode REPLACEMENT CHARACTER, code point U+FFFD, is used. If the data is supposed to be UTF-8, an optional lexical warning of warning category C<"utf8"> is given.

```
=head3 FB_CROAK
```

```
I<CHECK> = Encode::FB_CROAK ( == 1)
```

If I<CHECK> is 1, methods immediately die with an error message. Therefore, when I<CHECK> is 1, you should trap exceptions with C<eval{}>, unless you really want to let it C<die>.

```
=head3 FB_QUIET
```

```
I<CHECK> = Encode::FB_QUIET
```

If I<CHECK> is set to C<Encode::FB\_QUIET>, encoding and decoding immediately return the portion of the data that has been processed so far when an error occurs. The data argument is overwritten with everything after that point; that is, the unprocessed portion of the data. This is handy when you have to call C<decode> repeatedly in the case where your source data may contain partial multi-byte character sequences, (that is, you are reading with a fixed-width buffer). Here's some sample code to do exactly that:

```
my($buffer, $string) = ("", "");
while (read($fh, $buffer, 256, length($buffer))) {
    $string .= decode($encoding, $buffer, Encode::FB_QUIET);
    # $buffer now contains the unprocessed partial character
}
```

```
=head3 FB_WARN
```

```
I<CHECK> = Encode::FB_WARN
```

This is the same as C<FB\_QUIET> above, except that instead of being silent on errors, it issues a warning. This is handy for when you are debugging.

```
=head3 FB_PERLQQ FB_HTMLCREF FB_XMLCREF
```

```
=over 2
```

```
=item perlqq mode (I<CHECK> = Encode::FB_PERLQQ)
```

=item HTML charref mode (I<CHECK> = Encode::FB\_HTMLCREF)

=item XML charref mode (I<CHECK> = Encode::FB\_XMLCREF)

=back

For encodings that are implemented by the C<Encode::XS> module, C<CHECK> C<==> C<Encode::FB\_PERLQQ> puts C<encode> and C<decode> into C<perlqq> fallback mode.

When you decode, C<\xI<HH>> is inserted for a malformed character, where I<HH> is the hex representation of the octet that could not be decoded to utf8. When you encode, C<\x{I<HHHH>}> will be inserted, where I<HHHH> is the Unicode code point (in any number of hex digits) of the character that cannot be found in the character repertoire of the encoding.

The HTML/XML character reference modes are about the same. In place of C<\x{I<HHHH>}>, HTML uses C<&#I<NNN>;> where I<NNN> is a decimal number, and XML uses C<&#xI<HHHH>;> where I<HHHH> is the hexadecimal number.

In C<Encode> 2.10 or later, C<LEAVE\_SRC> is also implied.

=head3 The bitmask

These modes are all actually set via a bitmask. Here is how the C<FB\_I<XXX>> constants are laid out. You can import the C<FB\_I<XXX>> constants via C<use Encode qw(:fallbacks)>, and you can import the generic bitmask constants via C<use Encode qw(:fallback\_all)>.

	FB_DEFAULT	FB_CROAK	FB_QUIET	FB_WARN	FB_PERLQQ
DIE_ON_ERR	0x0001	X			
WARN_ON_ERR	0x0002		X		
RETURN_ON_ERR	0x0004	X	X		
LEAVE_SRC	0x0008			X	
PERLQQ	0x0100		X		
HTMLCREF	0x0200				
XMLCREF	0x0400				

=head3 LEAVE\_SRC

Encode::LEAVE\_SRC

If the C<Encode::LEAVE\_SRC> bit is I<not> set but I<CHECK> is set, then the source string to encode() or decode() will be overwritten in place.

If you're not interested in this, then bitwise-OR it with the bitmask.

=head2 coderef for CHECK

As of C<Encode> 2.12, C<CHECK> can also be a code reference which takes the

ordinal value of the unmapped character as an argument and returns a string that represents the fallback character. For instance:

```
$ascii = encode("ascii", $utf8, sub{ sprintf "<U+%04X>", shift });
```

Acts like C<FB\_PERLQQ> but U+I<XXXX> is used instead of C<\x{I<XXXX>}>.

## =head1 Defining Encodings

To define a new encoding, use:

```
use Encode qw(define_encoding);
define_encoding($object, CANONICAL_NAME [, alias...]);
```

I<CANONICAL\_NAME> will be associated with I<\$object>. The object should provide the interface described in L<Encode::Encoding>.

If more than two arguments are provided, additional arguments are considered aliases for I<\$object>.

See L<Encode::Encoding> for details.

## =head1 The UTF8 flag

Before the introduction of Unicode support in Perl, The C<eq> operator just compared the strings represented by two scalars. Beginning with Perl 5.8, C<eq> compares two strings with simultaneous consideration of I<the UTF8 flag>. To explain why we made it so, I quote from page 402 of I<Programming Perl, 3rd ed.>

=over 2

=item Goal #1:

Old byte-oriented programs should not spontaneously break on the old byte-oriented data they used to work on.

=item Goal #2:

Old byte-oriented programs should magically start working on the new character-oriented data when appropriate.

=item Goal #3:

Programs should run just as fast in the new character-oriented mode as in the old byte-oriented mode.

=item Goal #4:

Perl should remain one language, rather than forking into a byte-oriented Perl and a character-oriented Perl.

=back

When I<Programming Perl, 3rd ed.> was written, not even Perl 5.6.0 had been born yet, many features documented in the book remained unimplemented for a long time. Perl 5.8 corrected much of this, and the introduction of the UTF8 flag is one of them. You can think of there being two fundamentally different kinds of strings and string-operations in Perl: one a byte-oriented mode for when the internal UTF8 flag is off, and the other a character-oriented mode for when the internal UTF8 flag is on.

Here is how C<Encode> handles the UTF8 flag.

=over 2

=item \*

When you I<encode>, the resulting UTF8 flag is always B<off>.

=item \*

When you I<decode>, the resulting UTF8 flag is B<on>--I<unless> you can unambiguously represent data. Here is what we mean by "unambiguously". After C<\$utf8 = decode("foo", \$octet)>,

When \$octet is... The UTF8 flag in \$utf8 is

```
-----  
In ASCII only (or EBCDIC only)      OFF  
In ISO-8859-1                       ON  
In any other Encoding                ON  
-----
```

As you see, there is one exception: in ASCII. That way you can assume Goal #1. And with C<Encode>, Goal #2 is assumed but you still have to be careful in the cases mentioned in the B<CAVEAT> paragraphs above.

This UTF8 flag is not visible in Perl scripts, exactly for the same reason you cannot (or rather, you I<don't have to>) see whether a scalar contains a string, an integer, or a floating-point number. But you can still peek and poke these if you will. See the next section.

=back

=head2 Messing with Perl's Internals

The following API uses parts of Perl's internals in the current

implementation. As such, they are efficient but may change in a future release.

=head3 is\_utf8

is\_utf8(STRING [, CHECK])

[INTERNAL] Tests whether the UTF8 flag is turned on in the I<STRING>. If I<CHECK> is true, also checks whether I<STRING> contains well-formed UTF-8. Returns true if successful, false otherwise.

As of Perl 5.8.1, L<utf8> also has the C<utf8::is\_utf8> function.

=head3 \_utf8\_on

\_utf8\_on(STRING)

[INTERNAL] Turns the I<STRING>'s internal UTF8 flag B<on>. The I<STRING> is I<not> checked for containing only well-formed UTF-8. Do not use this unless you I<know with absolute certainty> that the STRING holds only well-formed UTF-8. Returns the previous state of the UTF8 flag (so please don't treat the return value as indicating success or failure), or C<undef> if I<STRING> is not a string.

B<NOTE>: For security reasons, this function does not work on tainted values.

=head3 \_utf8\_off

\_utf8\_off(STRING)

[INTERNAL] Turns the I<STRING>'s internal UTF8 flag B<off>. Do not use frivolously. Returns the previous state of the UTF8 flag, or C<undef> if I<STRING> is not a string. Do not treat the return value as indicative of success or failure, because that isn't what it means: it is only the previous setting.

B<NOTE>: For security reasons, this function does not work on tainted values.

=head1 UTF-8 vs. utf8 vs. UTF8

...We now view strings not as sequences of bytes, but as sequences of numbers in the range 0 .. 2\*\*32-1 (or in the case of 64-bit computers, 0 .. 2\*\*64-1) -- Programming Perl, 3rd ed.

That has historically been Perl's notion of UTF-8, as that is how UTF-8 was first conceived by Ken Thompson when he invented it. However, thanks to later revisions to the applicable standards, official UTF-8 is now rather stricter than that. For example, its range is much narrower (0 .. 0x10\_FFFF

to cover only 21 bits instead of 32 or 64 bits) and some sequences are not allowed, like those used in surrogate pairs, the 31 non-character code points 0xFDD0 .. 0xFDEF, the last two code points in I<any> plane (0xI<XX>\_FFFE and 0xI<XX>\_FFFF), all non-shortest encodings, etc.

The former default in which Perl would always use a loose interpretation of UTF-8 has now been overruled:

From: Larry Wall <larry@wall.org>  
Date: December 04, 2004 11:51:58 JST  
To: perl-unicode@perl.org  
Subject: Re: Make Encode.pm support the real UTF-8  
Message-Id: <20041204025158.GA28754@wall.org>

On Fri, Dec 03, 2004 at 10:12:12PM +0000, Tim Bunce wrote:  
: I've no problem with 'utf8' being perl's unrestricted uft8 encoding,  
: but "UTF-8" is the name of the standard and should give the  
: corresponding behaviour.

For what it's worth, that's how I've always kept them straight in my head.

Also for what it's worth, Perl 6 will mostly default to strict but make it easy to switch back to lax.

Larry

Got that? As of Perl 5.8.7, B<"UTF-8"> means UTF-8 in its current sense, which is conservative and strict and security-conscious, whereas B<"utf8"> means UTF-8 in its former sense, which was liberal and loose and lax. C<Encode> version 2.10 or later thus groks this subtle but critically important distinction between C<"UTF-8"> and C<"utf8">.

```
encode("utf8", "\x{FFFF_FFFF}", 1); # okay
encode("UTF-8", "\x{FFFF_FFFF}", 1); # croaks
```

In the C<Encode> module, C<"UTF-8"> is actually a canonical name for C<"utf-8-strict">. That hyphen between the C<"UTF"> and the C<"8"> is critical; without it, C<Encode> goes "liberal" and (perhaps overly-)permissive:

```
find_encoding("UTF-8")->name # is 'utf-8-strict'
find_encoding("utf-8")->name # ditto. names are case insensitive
find_encoding("utf_8")->name # ditto. "_" are treated as "-"
find_encoding("UTF8")->name # is 'utf8'.
```

Perl's internal UTF8 flag is called "UTF8", without a hyphen. It indicates whether a string is internally encoded as "utf8", also without a hyphen.

=head1 SEE ALSO

L<Encode::Encoding>,  
L<Encode::Supported>,  
L<Encode::PerlIO>,  
L<encoding>,  
L<perlebcdic>,  
L<perlfunc/open>,  
L<perlunicode>, L<perluniintro>, L<perlunifac>, L<perlunitut>  
L<utf8>,  
the Perl Unicode Mailing List L<<http://lists.perl.org/list/perl-unicode.html>>

=head1 MAINTAINER

This project was originated by the late Nick Ing-Simmons and later maintained by Dan Kogai I<< <[dankogai@cpan.org](mailto:dankogai@cpan.org)> >>. See AUTHORS for a full list of people involved. For any questions, send mail to I<< <[perl-unicode@perl.org](mailto:perl-unicode@perl.org)> >> so that we can all share.

While Dan Kogai retains the copyright as a maintainer, credit should go to all those involved. See AUTHORS for a list of those who submitted code to the project.

=head1 COPYRIGHT

Copyright 2002-2013 Dan Kogai I<< <[dankogai@cpan.org](mailto:dankogai@cpan.org)> >>.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

\* /opt/cola/permits/1000848976\_1646171591.25/0/perl-Encode-2.51-7.el7.src.rpm-cosi-expand-archive-zE3mozfI/Encode-2.51.tar.gz-cosi-expand-archive-Fimf2xiA/Encode-2.51/Encode.pm

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848976\_1646171591.25/0/perl-Encode-2.51-7.el7.src.rpm-cosi-expand-archive-zE3mozfI/perl-Encode.spec

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

=head1 NAME

Encode::Supported -- Encodings supported by Encode



=head1 DESCRIPTION

=head2 Encoding Names

Encoding names are case insensitive. White space in names is ignored. In addition, an encoding may have aliases.

Each encoding has one "canonical" name. The "canonical" name is chosen from the names of the encoding by picking the first in the following sequence (with a few exceptions).

=over 2

=item \*

The name used by the Perl community. That includes 'utf8' and 'ascii'. Unlike aliases, canonical names directly reach the method so such frequently used words like 'utf8' don't need to do alias lookups.

=item \*

The MIME name as defined in IETF RFCs. This includes all "iso-"s.

=item \*

The name in the IANA registry.

=item \*

The name used by the organization that defined it.

=back

In case I<de jure> canonical names differ from that of the Encode module, they are always aliased if it ever be implemented. So you can safely tell if a given encoding is implemented or not just by passing the canonical name.

Because of all the alias issues, and because in the general case encodings have state, "Encode" uses an encoding object internally once an operation is in progress.

=head1 Supported Encodings

As of Perl 5.8.0, at least the following encodings are recognized. Note that unless otherwise specified, they are all case insensitive (via alias) and all occurrence of spaces are replaced with '-'. In other words, "ISO 8859 1" and "iso-8859-1" are identical.

Encodings are categorized and implemented in several different modules but you don't have to `C<use Encode::XX>` to make them available for most cases. `Encode.pm` will automatically load those modules on demand.

## =head2 Built-in Encodings

The following encodings are always available.

Canonical	Aliases	Comments & References
ascii	US-ascii ISO-646-US	[ECMA]
ascii-ctrl	Special Encoding	
iso-8859-1	latin1	[ISO]
null	Special Encoding	
utf8	UTF-8	[RFC2279]

`I<null>` and `I<ascii-ctrl>` are special. "null" fails for all character so when you set fallback mode to `PERLQQ`, `HTMLCREF` or `XMLCREF`, ALL CHARACTERS will fall back to character references. Ditto for "ascii-ctrl" except for control characters. For fallback modes, see `L<Encode>`.

## =head2 Encode::Unicode -- other Unicode encodings

Unicode coding schemes other than native utf8 are supported by `Encode::Unicode`, which will be autoloaded on demand.

UCS-2BE	UCS-2, iso-10646-1	[IANA, UC]
UCS-2LE		[UC]
UTF-16		[UC]
UTF-16BE		[UC]
UTF-16LE		[UC]
UTF-32		[UC]
UTF-32BE	UCS-4	[UC]
UTF-32LE		[UC]
UTF-7		[RFC2152]

To find how `(UCS-2|UTF-(16|32))(LE|BE)?` differ from one another, see `L<Encode::Unicode>`.

UTF-7 is a special encoding which "re-encodes" UTF-16BE into a 7-bit encoding. It is implemented separately by `Encode::Unicode::UTF7`.

## =head2 Encode::Byte -- Extended ASCII

Encode::Byte implements most single-byte encodings except for Symbols and EBCDIC. The following encodings are based on single-byte encodings implemented as extended ASCII. Most of them map \x80-\xff (upper half) to non-ASCII characters.

=over 2

=item ISO-8859 and corresponding vendor mappings

Since there are so many, they are presented in table format with languages and corresponding encoding names by vendors. Note that the table is sorted in order of ISO-8859 and the corresponding vendor mappings are slightly different from that of ISO. See [L<http://czyborra.com/charsets/iso8859.html>](http://czyborra.com/charsets/iso8859.html) for details.

Lang/Regions	ISO/Other Std.	DOS	Windows	Macintosh	Others
-----					
N. America	(ASCII)	cp437		AdobeStandardEncoding	
		cp863 (DOSCanadaF)			
W. Europe	iso-8859-1	cp850	cp1252	MacRoman	nextstep
			hp-roman8		
		cp860 (DOSPortuguese)			
Cntrl. Europe	iso-8859-2	cp852	cp1250	MacCentralEurRoman	
				MacCroatian	
				MacRomanian	
				MacRumanian	
Latin3[1]	iso-8859-3				
Latin4[2]	iso-8859-4				
Cyrillics	iso-8859-5	cp855	cp1251	MacCyrillic	
	(See also next section)	cp866		MacUkrainian	
Arabic	iso-8859-6	cp864	cp1256	MacArabic	
		cp1006		MacFarsi	
Greek	iso-8859-7	cp737	cp1253	MacGreek	
		cp869 (DOSGreek2)			
Hebrew	iso-8859-8	cp862	cp1255	MacHebrew	
Turkish	iso-8859-9	cp857	cp1254	MacTurkish	
Nordics	iso-8859-10	cp865			
		cp861		MacIcelandic	
				MacSami	
Thai	iso-8859-11[3]	cp874		MacThai	
	(iso-8859-12 is nonexistent. Reserved for Indics?)				
Baltics	iso-8859-13	cp775	cp1257		
Celtics	iso-8859-14				
Latin9 [4]	iso-8859-15				
Latin10	iso-8859-16				
Vietnamese	viscii		cp1258	MacVietnamese	
-----					

- [1] Esperanto, Maltese, and Turkish. Turkish is now on 8859-9.
- [2] Baltics. Now on 8859-10, except for Latvian.
- [3] TIS 620 + Non-Breaking Space (0xA0 / U+00A0)
- [4] Nicknamed Latin0; the Euro sign as well as French and Finnish letters that are missing from 8859-1 were added.

All cp\* are also available as ibm-\*, ms-\*, and windows-\*. See also L<<http://czyborra.com/charsets/codepages.html>>.

Macintosh encodings don't seem to be registered in such entities as IANA. "Canonical" names in Encode are based upon Apple's Tech Note 1150. See L<<http://developer.apple.com/technotes/tn/tn1150.html>> for details.

=item KOI8 - De Facto Standard for the Cyrillic world

Though ISO-8859 does have ISO-8859-5, the KOI8 series is far more popular in the Net. L<Encode> comes with the following KOI charsets. For gory details, see L<<http://czyborra.com/charsets/cyrillic.html>>

```
-----  
koi8-f  
koi8-r cp878                [RFC1489]  
koi8-u                      [RFC2319]  
-----
```

=back

=head2 gsm0338 - Hentai Latin 1

GSM0338 is for GSM handsets. Though it shares alphanumerals with ASCII, control character ranges and other parts are mapped very differently, mainly to store Greek characters. There are also escape sequences (starting with 0x1B) to cover e.g. the Euro sign.

This was once handled by L<Encode::Bytes> but because of all those unusual specifications, Encode 2.20 has relocated the support to L<Encode::GSM0338>. See L<Encode::GSM0338> for details.

=over 2

=item gsm0338 support before 2.19

Some special cases like a trailing 0x00 byte or a lone 0x1B byte are not well-defined and decode() will return an empty string for them.

One possible workaround is

```
$gsm =~ s/\x00\z/\x00\x00/;
```

```
$uni = decode("gsm0338", $gsm);
$uni .= "\xA0" if $gsm =~ /\x1B\z/;
```

Note that the Encode implementation of GSM0338 does not implement the reuse of Latin capital letters as Greek capital letters (for example, the 0x5A is U+005A (LATIN CAPITAL LETTER Z), not U+0396 (GREEK CAPITAL LETTER ZETA)).

The GSM0338 is also covered in Encode::Byte even though it is not an "extended ASCII" encoding.

=back

=head2 CJK: Chinese, Japanese, Korean (Multibyte)

Note that Vietnamese is listed above. Also read "Encoding vs Charset" below. Also note that these are implemented in distinct modules by countries, due to the size concerns (simplified Chinese is mapped to 'CN', continental China, while traditional Chinese is mapped to 'TW', Taiwan). Please refer to their respective documentation pages.

=over 2

=item Encode::CN -- Continental China

Standard	DOS/Win Macintosh	Comment/Reference
-----		
euc-cn [1]	MacChineseSimp	
(gbk)	cp936 [2]	
gb12345-raw		{ GB12345 without CES }
gb2312-raw		{ GB2312 without CES }
hz		
iso-ir-165		
-----		

[1] GB2312 is aliased to this. See L<Microsoft-related naming mess>

[2] gbk is aliased to this. See L<Microsoft-related naming mess>

=item Encode::JP -- Japan

Standard	DOS/Win Macintosh	Comment/Reference
-----		
euc-jp		
shiftjis	cp932 macJapanese	
7bit-jis		
iso-2022-jp		[RFC1468]
iso-2022-jp-1		[RFC2237]
jis0201-raw		{ JIS X 0201 (roman + halfwidth kana) without CES }

jis0208-raw { JIS X 0208 (Kanji + fullwidth kana) without CES }  
jis0212-raw { JIS X 0212 (Extended Kanji) without CES }

-----  
=item Encode::KR -- Korea

Standard	DOS/Win Macintosh	Comment/Reference
-----		
euc-kr	MacKorean	[RFC1557]
	cp949 [1]	
iso-2022-kr		[RFC1557]
johab		[KS X 1001:1998, Annex 3]
ksc5601-raw		{ KSC5601 without CES }

-----  
[1] ks\_c\_5601-1987, (x-)?windows-949, and uhc are aliased to this.  
See below.

=item Encode::TW -- Taiwan

Standard	DOS/Win Macintosh	Comment/Reference
-----		
big5-eten	cp950 MacChineseTrad	{ big5 aliased to big5-eten }
big5-hkscs		

-----  
=item Encode::HanExtra -- More Chinese via CPAN

Due to the size concerns, additional Chinese encodings below are distributed separately on CPAN, under the name Encode::HanExtra.

Standard	DOS/Win Macintosh	Comment/Reference
-----		
big5ext		CMEX's Big5e Extension
big5plus		CMEX's Big5+ Extension
cccii		Chinese Character Code for Information Interchange
euc-tw		EUC (Extended Unix Character)
gb18030		GBK with Traditional Characters

-----  
=item Encode::JIS2K -- JIS X 0213 encodings via CPAN

Due to size concerns, additional Japanese encodings below are distributed separately on CPAN, under the name Encode::JIS2K.

Standard	DOS/Win Macintosh	Comment/Reference
-----		
euc-jisx0213		

shiftjisx0123  
iso-2022-jp-3  
jis0213-1-raw  
jis0213-2-raw

-----  
  
=back

=head2 Miscellaneous encodings

=over 2

=item Encode::EBCDIC

See L<perlebcdic> for details.

-----  
cp37  
cp500  
cp875  
cp1026  
cp1047  
posix-bc

-----  
  
=item Encode::Symbols

For symbols and dingbats.

-----  
symbol  
dingbats  
MacDingbats  
AdobeZdingbat  
AdobeSymbol

-----  
  
=item Encode::MIME::Header

Strictly speaking, MIME header encoding documented in RFC 2047 is more of encapsulation than encoding. However, their support in modern world is imperative so they are supported.

-----  
MIME-Header [RFC2047]  
MIME-B [RFC2047]  
MIME-Q [RFC2047]

=item Encode::Guess

This one is not a name of encoding but a utility that lets you pick up the most appropriate encoding for a data out of given I<suspects>. See L<Encode::Guess> for details.

=back

=head1 Unsupported encodings

The following encodings are not supported as yet; some because they are rarely used, some because of technical difficulties. They may be supported by external modules via CPAN in the future, however.

=over 2

=item ISO-2022-JP-2 [RFC1554]

Not very popular yet. Needs Unicode Database or equivalent to implement encode() (because it includes JIS X 0208/0212, KSC5601, and GB2312 simultaneously, whose code points in Unicode overlap. So you need to lookup the database to determine to what character set a given Unicode character should belong).

=item ISO-2022-CN [RFC1922]

Not very popular. Needs CNS 11643-1 and -2 which are not available in this module. CNS 11643 is supported (via euc-tw) in Encode::HanExtra. Autrijus Tang may add support for this encoding in his module in future.

=item Various HP-UX encodings

The following are unsupported due to the lack of mapping data.

'8' - arabic8, greek8, hebrew8, kana8, thai8, and turkish8

'15' - japanese15, korean15, and roi15

=item Cyrillic encoding ISO-IR-111

Anton Tagunov doubts its usefulness.

=item ISO-8859-8-1 [Hebrew]

None of the Encode team knows Hebrew enough (ISO-8859-8, cp1255 and MacHebrew are supported because and just because there were mappings available at L<<http://www.unicode.org/>>). Contributions welcome.



=item ISIRI 3342, Iran System, ISIRI 2900 [Farsi]

Ditto.

=item Thai encoding TCVN

Ditto.

=item Vietnamese encodings VPS

Though Jungshik Shin has reported that Mozilla supports this encoding, it was too late before 5.8.0 for us to add it. In the future, it may be available via a separate module. See

L<<http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.uf>>  
and

L<<http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.ut>>  
if you are interested in helping us.

=item Various Mac encodings

The following are unsupported due to the lack of mapping data.

MacArmenian, MacBengali, MacBurmese, MacEthiopic  
MacExtArabic, MacGeorgian, MacKannada, MacKhmer  
MacLaotian, MacMalayalam, MacMongolian, MacOriya  
MacSinhalese, MacTamil, MacTelugu, MacTibetan  
MacVietnamese

The rest which are already available are based upon the vendor mappings at L<<http://www.unicode.org/Public/MAPPINGS/VENDORS/APPLE/>> .

=item (Mac) Indic encodings

The maps for the following are available at L<<http://www.unicode.org/>>  
but remain unsupported because those encodings need an algorithmical  
approach, currently unsupported by F<enc2xs>:

MacDevanagari  
MacGurmukhi  
MacGujarati

For details, please see C<Unicode mapping issues and notes:> at  
L<<http://www.unicode.org/Public/MAPPINGS/VENDORS/APPLE/DEVANAGA.TXT>> .

I believe this issue is prevalent not only for Mac Indics but also in  
other Indic encodings, but the above were the only Indic encodings  
maps that I could find at L<<http://www.unicode.org/>> .

=back

=head1 Encoding vs. Charset -- terminology

We are used to using the term (character) I<encoding> and I<character set> interchangeably. But just as confusing the terms byte and character is dangerous and the terms should be differentiated when needed, we need to differentiate I<encoding> and I<character set>.

To understand that, here is a description of how we make computers grok our characters.

=over 2

=item \*

First we start with which characters to include. We call this collection of characters I<character repertoire>.

=item \*

Then we have to give each character a unique ID so your computer can tell the difference between 'a' and 'A'. This itemized character repertoire is now a I<character set>.

=item \*

If your computer can grow the character set without further processing, you can go ahead and use it. This is called a I<coded character set> (CCS) or I<raw character encoding>. ASCII is used this way for most cases.

=item \*

But in many cases, especially multi-byte CJK encodings, you have to tweak a little more. Your network connection may not accept any data with the Most Significant Bit set, and your computer may not be able to tell if a given byte is a whole character or just half of it. So you have to I<encode> the character set to use it.

A I<character encoding scheme> (CES) determines how to encode a given character set, or a set of multiple character sets. 7bit ISO-2022 is an example of a CES. You switch between character sets via I<escape sequences>.

=back

Technically, or mathematically, speaking, a character set encoded in

such a CES that maps character by character may form a CCS. EUC is such an example. The CES of EUC is as follows:

=over 2

=item \*

Map ASCII unchanged.

=item \*

Map such a character set that consists of 94 or 96 powered by N members by adding 0x80 to each byte.

=item \*

You can also use 0x8e and 0x8f to indicate that the following sequence of characters belongs to yet another character set. To each following byte is added the value 0x80.

=back

By carefully looking at the encoded byte sequence, you can find that the byte sequence conforms a unique number. In that sense, EUC is a CCS generated by a CES above from up to four CCS (complicated?). UTF-8 falls into this category. See [L<perlUnicode/"UTF-8">](#) to find out how UTF-8 maps Unicode to a byte sequence.

You may also have found out by now why 7bit ISO-2022 cannot comprise a CCS. If you look at a byte sequence `\x21\x21`, you can't tell if it is two '!'s or IDEOGRAPHIC SPACE. EUC maps the latter to `\xA1\xA1` so you have no trouble differentiating between "!!". and S<" ">.

=head1 Encoding Classification (by Anton Tagunov and Dan Kogai)

This section tries to classify the supported encodings by their applicability for information exchange over the Internet and to choose the most suitable aliases to name them in the context of such communication.

=over 2

=item \*

To (en|de)code encodings marked by `C<(**)>`, you need `C<Encode::HanExtra>`, available from CPAN.

=back

## Encoding names

US-ASCII UTF-8 ISO-8859-\* KOI8-R  
Shift\_JIS EUC-JP ISO-2022-JP ISO-2022-JP-1  
EUC-KR Big5 GB2312

are registered with IANA as preferred MIME names and may be used over the Internet.

C<Shift\_JIS> has been officialized by JIS X 0208:1997.  
L<Microsoft-related naming mess> gives details.

C<GB2312> is the IANA name for C<EUC-CN>.  
See L<Microsoft-related naming mess> for details.

C<GB\_2312-80> I<raw> encoding is available as C<gb2312-raw> with Encode. See L<Encode::CN> for details.

EUC-CN  
KOI8-U [RFC2319]

have not been registered with IANA (as of March 2002) but seem to be supported by major web browsers.  
The IANA name for C<EUC-CN> is C<GB2312>.

KS\_C\_5601-1987

is heavily misused.  
See L<Microsoft-related naming mess> for details.

C<KS\_C\_5601-1987> I<raw> encoding is available as C<kcs5601-raw> with Encode. See L<Encode::KR> for details.

UTF-16 UTF-16BE UTF-16LE

are IANA-registered C<charset>s. See [RFC 2781] for details.  
Jungshik Shin reports that UTF-16 with a BOM is well accepted by MS IE 5/6 and NS 4/6. Beware however that

=over 2

=item \*

C<UTF-16> support in any software you're going to be using/interoperating with has probably been less tested than C<UTF-8> support

=item \*

C<UTF-8> coded data seamlessly passes traditional command piping (C<cat>, C<more>, etc.) while C<UTF-16> coded data is likely to cause confusion (with its zero bytes, for example)

=item \*

it is beyond the power of words to describe the way HTML browsers encode non-C<ASCII> form data. To get a general impression, visit [L<http://www.alanflavell.org.uk/charset/form-i18n.html>](http://www.alanflavell.org.uk/charset/form-i18n.html).

While encoding of form data has stabilized for C<UTF-8> encoded pages (at least IE 5/6, NS 6, and Opera 6 behave consistently), be sure to expect fun (and cross-browser discrepancies) with C<UTF-16> encoded pages!

=back

The rule of thumb is to use C<UTF-8> unless you know what you're doing and unless you really benefit from using C<UTF-16>.

ISO-IR-165 [RFC1345]

VISCII

GB 12345

GB 18030 (\*\*) (see links bellow)

EUC-TW (\*\*)

are totally valid encodings but not registered at IANA.

The names under which they are listed here are probably the most widely-known names for these encodings and are recommended names.

BIG5PLUS (\*\*)

is a proprietary name.

=head2 Microsoft-related naming mess

Microsoft products misuse the following names:

=over 2

=item KS\_C\_5601-1987

Microsoft extension to C<EUC-KR>.

Proper names: C<CP949>, C<UHC>, C<x-windows-949> (as used by Mozilla).

See L<<http://lists.w3.org/Archives/Public/ietf-charsets/2001AprJun/0033.html>> for details.

Encode aliases C<KS\_C\_5601-1987> to C<cp949> to reflect this common misusage. I<Raw> C<KS\_C\_5601-1987> encoding is available as C<kcs5601-raw>.

See L<Encode::KR> for details.

=item GB2312

Microsoft extension to C<EUC-CN>.

Proper names: C<CP936>, C<GBK>.

C<GB2312> has been registered in the C<EUC-CN> meaning at IANA. This has partially repaired the situation: Microsoft's C<GB2312> has become a superset of the official C<GB2312>.

Encode aliases C<GB2312> to C<euc-cn> in full agreement with IANA registration. C<cp936> is supported separately. I<Raw> C<GB\_2312-80> encoding is available as C<gb2312-raw>.

See L<Encode::CN> for details.

=item Big5

Microsoft extension to C<Big5>.

Proper name: C<CP950>.

Encode separately supports C<Big5> and C<cp950>.

=item Shift\_JIS

Microsoft's understanding of C<Shift\_JIS>.

JIS has not endorsed the full Microsoft standard however. The official C<Shift\_JIS> includes only JIS X 0201 and JIS X 0208 character sets, while Microsoft has always used C<Shift\_JIS> to encode a wider character repertoire. See C<IANA> registration for C<Windows-31J>.

As a historical predecessor, Microsoft's variant probably has more rights for the name, though it may be objected that Microsoft shouldn't have used JIS as part of the name in the first place.

Unambiguous name: C<CP932>. C<IANA> name (also used by Mozilla, and provided as an alias by Encode): C<Windows-31J>.

Encode separately supports C<Shift\_JIS> and C<cp932>.

=back

=head1 Glossary

=over 2

=item character repertoire

A collection of unique characters. A I<character> set in the strictest sense. At this stage, characters are not numbered.

=item coded character set (CCS)

A character set that is mapped in a way computers can use directly. Many character encodings, including EUC, fall in this category.

=item character encoding scheme (CES)

An algorithm to map a character set to a byte sequence. You don't have to be able to tell which character set a given byte sequence belongs to. 7-bit ISO-2022 is a CES but it cannot be a CCS. EUC is an example of being both a CCS and CES.

=item charset (in MIME context)

has long been used in the meaning of C<encoding>, CES.

While the word combination C<character set> has lost this meaning in MIME context since [RFC 2130], the C<charset> abbreviation has retained it. This is how [RFC 2277] and [RFC 2278] bless C<charset>:

This document uses the term "charset" to mean a set of rules for mapping from a sequence of octets to a sequence of characters, such as the combination of a coded character set and a character encoding scheme; this is also what is used as an identifier in MIME "charset=" parameters, and registered in the IANA charset registry ... (Note that this is NOT a term used by other standards bodies, such as ISO). [RFC 2277]

=item EUC

Extended Unix Character. See ISO-2022.

=item ISO-2022

A CES that was carefully designed to coexist with ASCII. There are a 7 bit version and an 8 bit version.

The 7 bit version switches character set via escape sequence so it cannot form a CCS. Since this is more difficult to handle in programs than the 8 bit version, the 7 bit version is not very popular except for iso-2022-jp, the I<de facto> standard CES for e-mails.

The 8 bit version can form a CCS. EUC and ISO-8859 are two examples thereof. Pre-5.6 perl could use them as string literals.

=item UCS

Short for I<Universal Character Set>. When you say just UCS, it means I<Unicode>.

=item UCS-2

ISO/IEC 10646 encoding form: Universal Character Set coded in two octets.

=item Unicode

A character set that aims to include all character repertoires of the world. Many character sets in various national as well as industrial standards have become, in a way, just subsets of Unicode.

=item UTF

Short for I<Unicode Transformation Format>. Determines how to map a Unicode character into a byte sequence.

=item UTF-16

A UTF in 16-bit encoding. Can either be in big endian or little endian. The big endian version is called UTF-16BE (equal to UCS-2 + surrogate support) and the little endian version is called UTF-16LE.

=back

=head1 See Also

L<Encode>,

L<Encode::Byte>,

L<Encode::CN>, L<Encode::JP>, L<Encode::KR>, L<Encode::TW>,



L<Encode::EBCDIC>, L<Encode::Symbol>  
L<Encode::MIME::Header>, L<Encode::Guess>

=head1 References

=over 2

=item ECMA

European Computer Manufacturers Association  
L<http://www.ecma.ch>

=over 2

=item ECMA-035 (eq C<ISO-2022>)

L<http://www.ecma.ch/ecma1/STAND/ECMA-035.HTM>

The specification of ISO-2022 is available from the link above.

=back

=item IANA

Internet Assigned Numbers Authority  
L<http://www.iana.org/>

=over 2

=item Assigned Charset Names by IANA

L<http://www.iana.org/assignments/character-sets>

Most of the C<canonical names> in Encode derive from this list  
so you can directly apply the string you have extracted from MIME  
header of mails and web pages.

=back

=item ISO

International Organization for Standardization  
L<http://www.iso.ch/>

=item RFC

Request For Comments -- need I say more?  
L<http://www.rfc-editor.org/>, L<http://www.ietf.org/rfc.html>,

L<<http://www.faqs.org/rfcs/>>

=item UC

Unicode Consortium

L<<http://www.unicode.org/>>

=over 2

=item Unicode Glossary

L<<http://www.unicode.org/glossary/>>

The glossary of this document is based upon this site.

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=head2 Other Notable Sites

=over 2

=item czyborra.com

L<<http://czyborra.com/>>

Contains a lot of useful information, especially gory details of ISO vs. vendor mappings.

=item CJK.inf

L<<http://examples.oreilly.com/cjkvinfo/doc/cjk.inf>>

Somewhat obsolete (last update in 1996), but still useful. Also try

L<[ftp://ftp.oreilly.com/pub/examples/nutshell/cjkv/pdf/GB18030\\_Summary.pdf](ftp://ftp.oreilly.com/pub/examples/nutshell/cjkv/pdf/GB18030_Summary.pdf)>

You will find brief info on C<EUC-CN>, C<GBK> and mostly on C<GB 18030>.

=item Jungshik Shin's Hangul FAQ

L<<http://jshin.net/faq>>

And especially its subject 8.

L<<http://jshin.net/faq/qa8.html>>

A comprehensive overview of the Korean (C<KS \*>) standards.

=item debian.org: "Introduction to i18n"

A brief description for most of the mentioned CJK encodings is contained in

L<<http://www.debian.org/doc/manuals/intro-i18n/ch-codes.en.html>>

=back

=head2 Offline sources

=over 2

=item C<CJKV Information Processing> by Ken Lunde

CJKV Information Processing

1999 O'Reilly & Associates, ISBN : 1-56592-224-7

The modern successor of C<CJK.inf>.

Features a comprehensive coverage of CJKV character sets and encodings along with many other issues faced by anyone trying to better support CJKV languages/scripts in all the areas of information processing.

To purchase this book, visit

L<<http://oreilly.com/catalog/9780596514471/>>

or your favourite bookstore.

=back

=cut

Found in path(s):

\* /opt/cola/permits/1000848976\_1646171591.25/0/perl-Encode-2.51-7.el7.src.rpm-cosi-expand-archive-zE3mozfI/Encode-2.51.tar.gz-cosi-expand-archive-Fimf2xiA/Encode-2.51/lib/Encode/Supported.pod

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

---

abstract: unknown

author:

- unknown

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.66, CPAN::Meta::Converter version 2.130880'  
license: perl  
meta-spec:  
url: http://module-build.sourceforge.net/META-spec-v1.4.html  
version: 1.4  
name: Encode  
no\_index:  
directory:  
- t  
- inc  
requires: {}  
version: 2.51

Found in path(s):

\* /opt/cola/permits/1000848976\_1646171591.25/0/perl-Encode-2.51-7.el7.src.rpm-cosi-expand-archive-zE3mozfI/Encode-2.51.tar.gz-cosi-expand-archive-Fimf2xiA/Encode-2.51/META.yml

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

Encode::\$\_Name\_ version 0.1

=====

## NAME

Encode::\$\_Name\_ - <describe encoding>

## SYNOPSIS

use Encode::\$\_Name\_;  
#<put more words here>

## ABSTRACT

<fill this in>

## INSTALLATION

To install this module type the following:

```
perl Makefile.PL  
make  
make test  
make install
```

## DEPENDENCIES

This module requires perl version 5.7.3 or later.

## COPYRIGHT AND LICENCE

Copyright (C) 2002 Your Name <your@address.domain>

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

\* /opt/cola/permits/1000848976\_1646171591.25/0/perl-Encode-2.51-7.el7.src.rpm-cosi-expand-archive-E3mozfI/Encode-2.51.tar.gz-cosi-expand-archive-Fimf2xiA/Encode-2.51/Encode/README.e2x

# 1.40 device-mapper-multipath 0.4.9-127.el7

## 1.40.1 Available under license :

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Version 2, June 1991

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[This is the first released version of the library GPL. It is  
numbered 2 because it goes with version 2 of the ordinary GPL.]

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## 1.44 perl-termreadkey 2.30-20.el7

### 1.44.1 Available under license :

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

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Found in path(s):

\* /opt/cola/permits/1000849028\_1646171588.15/0/perl-TermReadKey-2.30-20.el7.src.rpm-cosi-expand-archive-iU20G6cn/perl-TermReadKey.spec

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

```
/* ppport.h -- Perl/Pollution/Portability Version 2.003
*
* Automatically Created by Devel::PPPport on Tue Jan 11 21:00:54 2005
*
* Do NOT edit this file directly! -- Edit PPPort.pm instead.
*
* Version 2.x, Copyright (C) 2001, Paul Marquess.
* Version 1.x, Copyright (C) 1999, Kenneth Albanowski.
* This code may be used and distributed under the same license as any
* version of Perl.
*
* This version of ppport.h is designed to support operation with Perl
* installations back to 5.004, and has been tested up to 5.8.0.
*
* If this version of ppport.h is failing during the compilation of this
* module, please check if a newer version of Devel::PPPport is available
* on CPAN before sending a bug report.
*
* If you are using the latest version of Devel::PPPport and it is failing
* during compilation of this module, please send a report to perlbug@perl.com
*
* Include all following information:
*
* 1. The complete output from running "perl -V"
*
* 2. This file.
*
* 3. The name & version of the module you were trying to build.
*
* 4. A full log of the build that failed.
*
* 5. Any other information that you think could be relevant.
*
* For the latest version of this code, please retrieve the Devel::PPPport
* module from CPAN.
*/
```

Found in path(s):

```
*/opt/cola/permits/1000849028_1646171588.15/0/perl-TermReadKey-2.30-20.el7.src.rpm-cosi-expand-archive-
iU20G6cn/TermReadKey-2.30.tar.gz-cosi-expand-archive-Ik1wgZt7/TermReadKey-2.30/ppport.h
```

## 1.45 nss-pem 1.0.3-7.el7

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```
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<META http-equiv=Content-Type content="text/html; charset=iso-8859-1">
<META content="MSHTML 5.50.4916.2300" name=GENERATOR></HEAD>
```

<BODY text=#000000 vLink=#551a8b aLink=#ff0000 link=#0000ee bgColor=#ffffff>  
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<HR width="20%">

</CENTER>

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# 1.51 spring-framework 5.0.8

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- javaee\_5.xsd
- javaee\_web\_services\_1\_2.xsd
- javaee\_web\_services\_client\_1\_2.xsd
- javaee\_6.xsd

- javaee\_web\_services\_1\_3.xsd
- javaee\_web\_services\_client\_1\_3.xsd
- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd
- javaee\_7.xsd
- javaee\_web\_services\_1\_4.xsd
- javaee\_web\_services\_client\_1\_4.xsd
- jsp\_2\_3.xsd
- web-app\_3\_1.xsd
- web-common\_3\_1.xsd
- web-fragment\_3\_1.xsd
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- web-app\_3\_0.xsd
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c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This

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d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

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Version 2, June 1991

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any



application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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

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

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

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- b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
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```
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   version 1.2.11, January 15th, 2017
```

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```
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```
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```

```
<signature of Ty Coon>, 1 April 1989  
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Here is a list of the main contributors to lm-sensors version 3.

\* Frodo Looijaard

Original author of libsensors, sensors-detect, sensors and isadump.

\* Merlin Hughes

Original author of sensord.

\* Bob Schlaermann

Dynamic chip feature detection (a.k.a. generic chip support) in libsensors and sensors.

\* Mark M. Hoffman

Many improvements to the libsensors configuration file scanner.

\* Jean Delvare

New libsensors API, and migration of sensors and sensord thereto.

Many optimizations in libsensors and sensors.

Configuration file converter.

Rewrite of sensors-detect.

Support for multiple configuration files in libsensors.

## 1.70 args4j 2.33

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

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\* java.sun.security.ssl

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org.ow2.asm:asm-commons

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org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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org.eclipse.jetty.toolchain:jetty-schemas

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<?jelly escape-by-default='true'?>

<j:jelly xmlns:j="jelly:core" xmlns:st="jelly:stapler" xmlns:d="jelly:define" xmlns:l="/lib/layout" xmlns:t="/lib/hudson" xmlns:s="/lib/form">

<d:taglib uri="licenses">

<d:tag name="dependencies">

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<th class="pane-header">\${ %Maven ID }</th>

<th class="pane-header">\${ %License }</th>

</tr>

<d:invokeBody/>

</table>

</d:tag>

<d:tag name="dependency">

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<td>

<a href="\${ attrs.url }">\${ attrs.name }</a>

</td>

<td>

  \${ attrs.groupId }: \${ attrs.artifactId } : \${ attrs.version }

```
</td>
<td>
  <d:invokeBody />
</td>
</tr>
</d:tag>
<d:tag name="description"/>
<d:tag name="license">
  <a href="{attrs.url}">{attrs.name}</a><br/>
</d:tag>
</d:taglib>
<d:invokeBody/>
</j:jelly>
```

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JUnit

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`org.codehaus.groovy.jsr223.GroovyScriptEngineFactory`

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## 1.73 bash 4.2.46 33.e17

## 1.73.1 Available under license :

From friedman@cli.com Thu May 25 12:19:06 1995  
Flags: 10  
Return-Path: friedman@cli.com  
Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTP (8.6.10+cwru/CWRU-2.1-ins)  
id MAA08685; Thu, 25 May 1995 12:19:05 -0400 (from friedman@cli.com for <chet@odin.INS.CWRU.Edu>)  
Received: from cli.com (cli.com [192.31.85.1]) by po.cwru.edu with SMTP (8.6.10+cwru/CWRU-2.3)  
id MAA11299; Thu, 25 May 1995 12:19:00 -0400 (from friedman@cli.com for <chet@po.cwru.edu>)  
Received: from tepui.cli.com by cli.com (4.1/SMI-4.1)  
id AA27213; Thu, 25 May 95 11:18:25 CDT  
Received: by tepui.cli.com (4.1) id AA16031; Thu, 25 May 95 11:18:23 CDT  
Message-Id: <9505251618.AA16031@tepui.cli.com>  
From: friedman@gnu.ai.mit.edu (Noah Friedman)  
To: chet@po.cwru.edu  
Subject: Bash scripts  
Reply-To: friedman@gnu.ai.mit.edu  
In-Reply-To: <chet@odin.ins.cwru.edu> Thu, 25 May 1995 11:19:59 -0400  
References: <9505251519.AA06424.SM@odin.INS.CWRU.Edu>  
Date: Thu, 25 May 95 11:18:21 CST

>Hi. I snagged some of your bash functions from your home directory on  
>the FSF machines (naughty, I know), and I was wondering if you'd let  
>me distribute them with bash-2.0. Thanks.

Sure. I think there's a later copy in  
~ftp/friedman/shell-inits/init-4.89.tar.gz. There are also some elisp and  
es frobs in that file.

It should serve as a pretty good example of how to get carried away. :-)

From spcedt@armory.com Wed May 10 10:21:11 1995  
Flags: 10  
Return-Path: spcedt@armory.com  
Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTP (8.6.10+cwru/CWRU-2.1-ins)  
id KAA22876; Wed, 10 May 1995 10:21:10 -0400 (from spcedt@armory.com for <chet@odin.INS.CWRU.Edu>)  
Received: from deepthought.armory.com (mmdf@deepthought.armory.com [192.122.209.42]) by po.cwru.edu with SMTP (8.6.10+cwru/CWRU-2.3)  
id BAA16354; Wed, 10 May 1995 01:33:22 -0400 (from spcedt@armory.com for <chet@po.cwru.edu>)  
From: John DuBois <spcedt@armory.com>  
Date: Tue, 9 May 1995 22:33:12 -0700  
In-Reply-To: Chet Ramey <chet@odin.ins.cwru.edu>  
"ksh scripts" (May 9, 1:36pm)  
X-Www: <http://www.armory.com/~spcedt/>  
X-Mailer: Mail User's Shell (7.2.5 10/14/92)  
To: chet@po.cwru.edu  
Subject: Re: ksh scripts  
Message-ID: <9505092233.aa13001@deepthought.armory.com>

Sure. The canonical versions are available on ftp.armory.com; you might want to pick up the latest versions before modifying them.

John

On May 9, 1:36pm, Chet Ramey wrote:

```
} Subject: ksh scripts
} From odin.ins.cwru.edu!chet Tue May 9 10:39:51 1995
} Received: from odin.INS.CWRU.Edu by deepthought.armory.com id aa22336;
} 9 May 95 10:39 PDT
} Received: (chet@localhost) by odin.INS.CWRU.Edu (8.6.10+cwru/CWRU-2.1-ins)
} id NAA20487; Tue, 9 May 1995 13:39:24 -0400 (from chet)
} Date: Tue, 9 May 1995 13:36:54 -0400
} From: Chet Ramey <chet@odin.ins.cwru.edu>
} To: john@armory.com
} Subject: ksh scripts
} Cc: chet@odin.ins.cwru.edu
} Reply-To: chet@po.cwru.edu
} Message-ID: <9505091736.AA20411.SM@odin.INS.CWRU.Edu>
} Read-Receipt-To: chet@po.CWRU.Edu
} MIME-Version: 1.0
} Content-Type: text/plain; charset=us-ascii
} Status: OR
}
} Hi. I'm the maintainer of bash (the GNU `Bourne Again shell') for
} the FSF.
}
} I picked up a tar file of ksh scripts you wrote from an anon FTP site
} a while back. I'd like your permission to include modified versions
} of some of them in the next major bash distribution (with proper credit
} given, of course). Is it OK if I do that?
}
} Chet Ramey
}
} --
} ``The lyf so short, the craft so long to lerne." - Chaucer
}
} Chet Ramey, Case Western Reserve University Internet: chet@po.CWRU.Edu
}-- End of excerpt from Chet Ramey
```

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From mikel@ora.com Tue Aug 1 12:13:20 1995

Flags: 10

Return-Path: mikel@ora.com

Received: from ruby.ora.com (ruby.ora.com [198.112.208.25]) by odin.INS.CWRU.Edu with ESMTP

(8.6.12+cwru/CWRU-2.1-ins)

id MAA01565; Tue, 1 Aug 1995 12:13:18 -0400 (from mikel@ora.com for <chet@odin.INS.CWRU.Edu>)

Received: (from fax@localhost) by ruby.ora.com (8.6.12/8.6.11) with UUCP id MAA23251; Tue, 1 Aug 1995 12:07:51 -0400

Received: by los.ora.com (4.1/Spike-2.1)

id AA00672; Tue, 1 Aug 95 08:57:32 EDT

Date: Tue, 1 Aug 95 08:57:32 EDT

From: mikel@ora.com (Michael Loukides)

Message-Id: <9508011257.AA00672@los.ora.com>

Subject: Re: Ksh debugger from Rosenblatt's book [for bash]

To: Chet Ramey <chet@odin.INS.CWRU.Edu>

Cc: cmarie@ora.com, cam@iinet.com.au, brosenblatt@tm.com

In-Reply-To: Chet Ramey <chet@odin.INS.CWRU.Edu>, Mon, 31 Jul 1995 16:22:48 -0400

I've modified a (modified) version of Bill Rosenblatt's ksh debugger to work with bash-2.0. Does ORA have any problem with me distributing it with bash-2.0?

That's great!

Go ahead and circulate it; in fact, we should probably grab it and stick it in our ftp archive, and put a reference to it in the book. (Too late to actually discuss the thing, at least for this edition).

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## 1.74 pcre 8.32 17.el7

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Written by: Philip Hazel

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Mesa 3-D graphics library

Version: 7.0

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

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## 1.84 kerberos 1.15.1 37.el7\_7.2

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cmd/krb5/kadmin/server/ipropld_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
```

lib/libgss/g\_seal.c  
lib/libgss/g\_sign.c  
lib/libgss/g\_store\_cred.c  
lib/libgss/g\_unseal.c  
lib/libgss/g\_userok.c  
lib/libgss/g\_utils.c  
lib/libgss/g\_verify.c  
lib/libgss/gssd\_pname\_to\_uid.c  
uts/common/gssapi/include/gssapi\_err\_generic.h  
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/generic/gssapi\_err\_generic.et  
lib/gssapi/mechglue/g\_accept\_sec\_context.c  
lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c  
lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
lib/gssapi/mechglue/g\_seal.c  
lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

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include/iprop\_hdr.h  
kadmin/server/ipropd\_svc.c  
lib/kdb/iprop.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
kprop/kpropd\_rpc.c  
kprop/kproplog.c

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## 1.85 yum 3.4.3 163.el7.centos

### 1.85.1 Available under license :

```
diff --git a/yum/update_md.py b/yum/update_md.py
--- a/yum/update_md.py 2015-01-19 07:44:35.567107008 -0500
+++ b/yum/update_md.py 2015-01-19 08:57:31.576489424 -0500
@@ -398,6 +399,9 @@ class UpdateMetadata(object):
     except Errors.RepoMDError:
         continue # No metadata found for this repo

+     self.arch_storage = ArchStorage()
+     self.archlist = self.arch_storage.archlist
+
     def get_notices(self, name=None):
         """ Return all notices. """
         if name is None:
@@ -434,16 +438,29 @@ class UpdateMetadata(object):
         name = oldpkg tup[0]
         arch = oldpkg tup[1]
         ret = []
+
+     other_arch_list = []
+     notices = set()
     for notice in self.get_notices(name):
         for upkg in notice['pkglist']:
             for pkg in upkg['packages']:
```

```

+         other_arch = False
+         if pkg['name'] != name or pkg['arch'] != arch:
-             continue
+             if (notice not in notices and pkg['name'] == name and pkg['arch'] in self.archlist):
+                 other_arch = True
+             else:
+                 continue
+         pkg tup = (pkg['name'], pkg['arch'], pkg['epoch'] or '0',
+                   pkg['version'], pkg['release'])
+         if _rpm_tup_vercmp(pkg tup, oldpkg tup) <= 0:
+             continue
-         ret.append((pkg tup, notice))
+         if other_arch:
+             other_arch_list.append((pkg tup, notice))
+         else:
+             ret.append((pkg tup, notice))
+             notices.add(notice)
+         for pkg tup, notice in other_arch_list:
+             if notice not in notices:
+                 ret.append((pkg tup, notice))
+         ret.sort(cmp=_rpm_tup_vercmp, key=lambda x: x[0], reverse=True)
+         return ret

```

```

diff -up yum-3.4.3/yum/update_md.py.old yum-3.4.3/yum/update_md.py
--- yum-3.4.3/yum/update_md.py.old 2015-05-28 19:23:35.589691937 +0200
+++ yum-3.4.3/yum/update_md.py 2015-05-28 19:24:05.971806965 +0200
@@ -33,6 +33,7 @@ import Errors
import logginglevels

```

```

import rpmUtils.miscutils
+from rpmUtils.arch import ArchStorage

```

```

def safe_iterparse(filename, logger=None):
diff -up yum-3.4.3/yum/update_md.py.org yum-3.4.3/yum/update_md.py
--- yum-3.4.3/yum/update_md.py.org 2017-01-24 18:55:03.529842775 +0100
+++ yum-3.4.3/yum/update_md.py 2017-01-24 18:55:57.213511475 +0100
@@ -58,7 +58,7 @@ class UpdateNotice(object):
    A single update notice (for instance, a security fix).
    """

```

```

- def __init__(self, elem=None):
+ def __init__(self, elem=None, repoid=None, vlogger=None):
    self._md = {
        'from'      : "",
        'type'      : "",
@@ -83,6 +83,9 @@ class UpdateNotice(object):
    if elem:

```

```

        self._parse(elem)

+   self._repopid = repoid
+   self._vlogger = vlogger
+
def __getitem__(self, item):
    """ Allows scriptable metadata access (ie: un['update_id']). """
    if type(item) is int:
@@ -103,6 +106,24 @@ class UpdateNotice(object):
    # Tests to see if it's "the same data", which means that the
    # packages can be different (see add_notice).

+   def _rid(un):
+       if hasattr(un, '_repopid') and un._repopid is not None:
+           return un._repopid
+       else:
+           return '<unknown>'
+
+   def _log_failure(data):
+       """Log the mismatched data similarly to conflict markers in git."""
+       if self._vlogger is None:
+           return
+       msg = _('Duplicate of %s differs in some fields:\n')
+       msg %= other._md['update_id']
+       msg += '<<<<<<<< %s:%s\n' % (_rid(other), data)
+       msg += '%r\n=====\n%r\n' % (other._md[data], self._md[data])
+       msg += '>>>>>>> %s:%s' % (_rid(self), data)
+       # --verbose mode enables this
+       self._vlogger.log(logginglevels.DEBUG_3, msg)
+
    if not other or not hasattr(other, '_md'):
        return False

@@ -113,6 +134,7 @@ class UpdateNotice(object):
    if data == 'status': # FIXME: See below...
        continue
    if self._md[data] != other._md[data]:
+       _log_failure(data)
        return False

    # FIXME: Massive hack, Fedora is really broken and gives status=stable
    # and status=testing for updateinfo notices, just depending on which
@@ -120,8 +142,10 @@ class UpdateNotice(object):
    data = 'status'
    if self._md[data] != other._md[data]:
        if self._md[data] not in ('stable', 'testing'):
+           _log_failure(data)
            return False
        if other._md[data] not in ('stable', 'testing'):

```

```

+     _log_failure(data)
+     return False
+     # They are both really "stable" ...
+     self._md[data] = 'stable'
@@ -574,7 +598,7 @@ class UpdateMetadata(object):
+     for event, elem in safe_iterparse(infile, logger=self._logger):
+         if elem.tag == 'update':
+             try:
-                 un = UpdateNotice(elem)
+                 un = UpdateNotice(elem, repoid, self._vlogger)
+             except UpdateNoticeException, e:
+                 msg = _("An update notice%s is broken, skipping.") % _rid(repoid)
+                 if self._vlogger:
@@ -587,6 +611,8 @@ class UpdateMetadata(object):
+                 msg = _("Update notice %s%s is broken, or a bad duplicate, skipping.") % (un['update_id'],
+                 _rid(repoid))
+                 if not have_dup:
+                     msg += _("\nYou should report this problem to the owner of the %srepository.") % _rid(repoid, "%s ")
+                 msg += _("\nIf you are the owner, consider re-running the same command with --verbose to see the '
+                 'exact data that caused the conflict.')
+                 have_dup = True
+                 if self._vlogger:
+                     self._vlogger.warn("%s", msg)

```

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## 1.88 python-rpm-macros 3-32.el7

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```
/* lib/font/fontfile/gunzip.c
```

```
  written by Mark Eichin <eichin@kitten.gen.ma.us> September 1996.
```

```
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```

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## 1.90 ttmkfdir 3.0.9-42.el7

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```

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```
Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

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

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# 1.96 perl-threads-shared 1.43-6.el7

## 1.96.1 Available under license :

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Name: perl-threads-shared  
Version: 1.43  
Release: 6%{?dist}  
Summary: Perl extension for sharing data structures between threads  
License: GPL+ or Artistic  
Group: Development/Libraries  
URL: <http://search.cpan.org/dist/threads-shared/>  
Source0: <http://www.cpan.org/authors/id/J/JD/JDHEDDEN/threads-shared-%{version}.tar.gz>  
BuildRequires: perl  
BuildRequires: perl(Carp)  
BuildRequires: perl(Config)  
BuildRequires: perl(ExtUtils::MakeMaker)  
BuildRequires: perl(ExtUtils::testlib)  
BuildRequires: perl(File::Path)  
BuildRequires: perl(File::Spec)  
BuildRequires: perl(POSIX)  
BuildRequires: perl(Scalar::Util)  
BuildRequires: perl(strict)  
BuildRequires: perl(Test::More)  
BuildRequires: perl(threads) >= 1.73  
BuildRequires: perl(warnings)  
BuildRequires: perl(XSLoader)  
Requires: perl(:MODULE\_COMPAT\_%(eval "`perl -V:version`"; echo \$version))  
Requires: perl(Carp)  
Requires: perl(threads) >= 1.73  
Requires: perl(XSLoader)

%{?perl\_default\_filter}

%description

By default, variables are private to each thread, and each newly created thread gets a private copy of each existing variable. This module allows you to share variables across different threads (and pseudo-forks on Win32). It is used together with the threads module.

%prep

%setup -q -n threads-shared-%{version}

%build

perl Makefile.PL INSTALLDIRS=vendor OPTIMIZE="\$RPM\_OPT\_FLAGS"

```

make % {?_smp_mflags}

%install
make pure_install DESTDIR=$RPM_BUILD_ROOT
find $RPM_BUILD_ROOT -type f -name .packlist -exec rm -f {} \;
find $RPM_BUILD_ROOT -type f -name '*.bs' -size 0 -exec rm -f {} \;
% {_fixperms} $RPM_BUILD_ROOT/*

%check
make test

%files
%doc Changes README
% {perl_vendorarch}/auto/*
% {perl_vendorarch}/threads*
% {_mandir}/man3/*

%changelog
* Fri Jan 24 2014 Daniel Mach <dmach@redhat.com> - 1.43-6
- Mass rebuild 2014-01-24

* Fri Dec 27 2013 Daniel Mach <dmach@redhat.com> - 1.43-5
- Mass rebuild 2013-12-27

* Tue Jul 02 2013 Jitka Plesnikova <jplesnik@redhat.com> - 1.43-4
- Remove BR perl(Test)

* Tue Jul 02 2013 Jitka Plesnikova <jplesnik@redhat.com> - 1.43-3
- Specify all dependencies

* Thu Feb 14 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.43-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_19\_Mass\_Rebuild

* Tue Jan 15 2013 Petr Pizar <ppisar@redhat.com> - 1.43-1
- 1.43 bump

* Fri Nov 23 2012 Jitka Plesnikova <jplesnik@redhat.com> - 1.42-2
- Add BR perl(File::Spec)
- Replace PERL_INSTALL_ROOT with DESTDIR
- Remove deleting empty directories
- Remove defattr

* Wed Oct 03 2012 Petr Pizar <ppisar@redhat.com> - 1.42-1
- 1.42 bump

* Mon Sep 10 2012 Petr Pizar <ppisar@redhat.com> - 1.41-1
- 1.41 bump

```

- \* Mon Aug 13 2012 Marcela Malov <mmaslano@redhat.com> - 1.40-240
  - bump release to override sub-package from perl.spec
  
- \* Fri Jul 20 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.40-4
  - Rebuilt for [https://fedoraproject.org/wiki/Fedora\\_18\\_Mass\\_Rebuild](https://fedoraproject.org/wiki/Fedora_18_Mass_Rebuild)
  
- \* Wed Jun 06 2012 Petr Pizar <ppisar@redhat.com> - 1.40-3
  - Perl 5.16 rebuild
  
- \* Sat Jan 14 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.40-2
  - Rebuilt for [https://fedoraproject.org/wiki/Fedora\\_17\\_Mass\\_Rebuild](https://fedoraproject.org/wiki/Fedora_17_Mass_Rebuild)
  
- \* Mon Sep 12 2011 Petr Pizar <ppisar@redhat.com> - 1.40-1
  - 1.40 bump
  
- \* Tue Sep 06 2011 Petr Pizar <ppisar@redhat.com> - 1.39-1
  - 1.39 bump
  
- \* Wed Aug 17 2011 Marcela Malov <mmaslano@redhat.com> - 1.37-3
  - change path on vendor, so our debuginfo are not conflicting with perl core debuginfos
  
- \* Mon Jun 20 2011 Marcela Malov <mmaslano@redhat.com> - 1.37-2
  - Perl mass rebuild
  
- \* Tue Apr 26 2011 Petr Pizar <ppisar@redhat.com> - 1.37-1
  - 1.37 bump
  
- \* Wed Feb 09 2011 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.36-2
  - Rebuilt for [https://fedoraproject.org/wiki/Fedora\\_15\\_Mass\\_Rebuild](https://fedoraproject.org/wiki/Fedora_15_Mass_Rebuild)
  
- \* Mon Jan 03 2011 Petr Pizar <ppisar@redhat.com> - 1.36-1
  - 1.36 bump
  
- \* Mon Oct 11 2010 Petr Pizar <ppisar@redhat.com> - 1.34-1
  - 1.34 bump
  
- \* Thu Sep 23 2010 Petr Pizar <ppisar@redhat.com> 1.33-1
  - Specfile autogenerated by cpanspec 1.78.
  - Fix dependencies
  - Requires perl(Scalar::Util) is autodetected
  - Do not provide private library
  - Remove pre-F12 BuildRoot stuff

Found in path(s):

- \* /opt/cola/permits/1000848935\_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-XIsbALc3/perl-threads-shared.spec

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```
/* shared.xs
*
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*
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* License or the Artistic License, as specified in the README file.
*
* "Hand any two wizards a piece of rope and they would instinctively pull in
* opposite directions."
*
* --Sourcery
*
* Contributed by Artur Bergman <sky AT crucially DOT net>
* Pulled in the (an)other direction by Nick Ing-Simmons
* <nick AT ing-simmons DOT net>
* CPAN version produced by Jerry D. Hedden <jdhedden AT cpan DOT org>
*/
```

```
/*
* Shared variables are implemented by a scheme similar to tying.
* Each thread has a proxy SV with attached magic -- "private SVs" --
* which all point to a single SV in a separate shared interpreter
* (PL_sharesv_space) -- "shared SVs".
*
* The shared SV holds the variable's true values, and its state is
* copied between the shared and private SVs with the usual
* mg_get()/mg_set() arrangement.
*
* Aggregates (AVs and HVs) are implemented using tie magic, except that
* the vtable used is one defined in this file rather than the standard one.
* This means that where a tie function like FETCH is normally invoked by
* the tie magic's mg_get() function, we completely bypass the calling of a
* perl-level function, and directly call C-level code to handle it. On
* the other hand, calls to functions like PUSH are done directly by code
* in av.c, etc., which we can't bypass. So the best we can do is to provide
* XS versions of these functions. We also have to attach a tie object,
* blessed into the class threads::shared::tie, to keep the method-calling
* code happy.
*
* Access to aggregate elements is done the usual tied way by returning a
* proxy PVLV element with attached element magic.
*
* Pointers to the shared SV are squirreled away in the mg->mg_ptr field
* of magic (with mg_len == 0), and in the IV2PTR(SvIV(sv)) field of tied
* object SVs. These pointers have to be hidden like this because they
* cross interpreter boundaries, and we don't want sv_clear() and friends
* following them.
```

```

*
* The three basic shared types look like the following:
*
* -----
*
* Shared scalar (my $s : shared):
*
* SV = PVMG(0x7ba238) at 0x7387a8
* FLAGS = (PADMY,GMG,SMG)
* MAGIC = 0x824d88
* MG_TYPE = PERL_MAGIC_shared_scalar(n)
* MG_PTR = 0x810358 <<<< pointer to the shared SV
*
* -----
*
* Shared aggregate (my @a : shared; my %h : shared):
*
* SV = PVAV(0x7175d0) at 0x738708
* FLAGS = (PADMY,RMG)
* MAGIC = 0x824e48
* MG_TYPE = PERL_MAGIC_tied(P)
* MG_OBJ = 0x7136e0 <<<< ref to the tied object
* SV = RV(0x7136f0) at 0x7136e0
* RV = 0x738640
* SV = PVMG(0x7ba238) at 0x738640 <<<< the tied object
* FLAGS = (OBJECT,IOK,pIOK)
* IV = 8455000 <<<< pointer to the shared AV
* STASH = 0x80abf0 "threads::shared::tie"
* MG_PTR = 0x810358 "" <<<< another pointer to the shared AV
* ARRAY = 0x0
*
* -----
*
* Aggregate element (my @a : shared; $a[0])
*
* SV = PVLV(0x77f628) at 0x713550
* FLAGS = (GMG,SMG,RMG,pIOK)
* MAGIC = 0x72bd58
* MG_TYPE = PERL_MAGIC_shared_scalar(n)
* MG_PTR = 0x8103c0 "" <<<< pointer to the shared element
* MAGIC = 0x72bd18
* MG_TYPE = PERL_MAGIC_tiedelem(p)
* MG_OBJ = 0x7136e0 <<<< ref to the tied object
* SV = RV(0x7136f0) at 0x7136e0
* RV = 0x738660
* SV = PVMG(0x7ba278) at 0x738660 <<<< the tied object
* FLAGS = (OBJECT,IOK,pIOK)
* IV = 8455064 <<<< pointer to the shared AV

```

```

* STASH = 0x80ac30 "threads::shared::tie"
* TYPE = t
*
* Note that PERL_MAGIC_tiedelem(p) magic doesn't have a pointer to a
* shared SV in mg_ptr; instead this is used to store the hash key,
* if any, like normal tied elements. Note also that element SVs may have
* pointers to both the shared aggregate and the shared element.
*
*
* Userland locks:
*
* If a shared variable is used as a perl-level lock or condition
* variable, then PERL_MAGIC_ext magic is attached to the associated
* *shared* SV, whose mg_ptr field points to a malloc'ed structure
* containing the necessary mutexes and condition variables.
*
* Nomenclature:
*
* In this file, any variable name prefixed with 's' (e.g., ssv, stmp or sobj)
* usually represents a shared SV which corresponds to a private SV named
* without the prefix (e.g., sv, tmp or obj).
*/

#define PERL_NO_GET_CONTEXT
#include "EXTERN.h"
#include "perl.h"
#include "XSUB.h"
#ifdef HAS_PPPORT_H
# define NEED_sv_2pv_flags
# define NEED_vnewSVpvf
# define NEED_warner
# define NEED_newSVpvn_flags
# include "ppport.h"
# include "shared.h"
#endif

#ifdef USE_ITHREADS

/* Magic signature(s) for mg_private to make PERL_MAGIC_ext magic safer */
#define UL_MAGIC_SIG 0x554C /* UL = user lock */

/*
* The shared things need an interpreter to live in ...
*/
PerlInterpreter *PL_sharesv_space; /* The shared sv space */
/* To access shared space we fake aTHX in this scope and thread's context */

/* Bug #24255: We include ENTER+SAVETMPS/FREETMPS+LEAVE with

```

\* SHARED\_CONTEXT/CALLER\_CONTEXT macros, so that any mortals, etc. created

\* while in the shared interpreter context don't languish \*/

```
#define SHARED_CONTEXT
    \
    STMT_START {
        \
        PERL_SET_CONTEXT((aTHX = PL_sharesv_space)); \
        ENTER;
        \
        SAVETMPS;
        \
    } STMT_END
```

/\* So we need a way to switch back to the caller's context... \*/

/\* So we declare \_another\_ copy of the aTHX variable ... \*/

```
#define dTHXc PerlInterpreter *caller_perl = aTHX
```

/\* ... and use it to switch back \*/

```
#define CALLER_CONTEXT
    \
    STMT_START {
        \
        FREETMPS;
        \
        LEAVE;
        \
        PERL_SET_CONTEXT((aTHX = caller_perl)); \
    } STMT_END
```

/\*

\* Only one thread at a time is allowed to mess with shared space.

\*/

```
typedef struct {
    perl_mutex    mutex;
    PerlInterpreter *owner;
    I32           locks;
    perl_cond     cond;
#ifdef DEBUG_LOCKS
    char *        file;
    int           line;
#endif
} recursive_lock_t;
```

```
recursive_lock_t PL_sharesv_lock; /* Mutex protecting the shared sv space */
```

void

```
recursive_lock_init(pTHX_ recursive_lock_t *lock)
```

```
{
    Zero(lock, 1, recursive_lock_t);
    MUTEX_INIT(&lock->mutex);
    COND_INIT(&lock->cond);
}
```

void



```

recursive_lock_destroy(pTHX_ recursive_lock_t *lock)
{
    MUTEX_DESTROY(&lock->mutex);
    COND_DESTROY(&lock->cond);
}

void
recursive_lock_release(pTHX_ recursive_lock_t *lock)
{
    MUTEX_LOCK(&lock->mutex);
    if (lock->owner == aTHX) {
        if (--lock->locks == 0) {
            lock->owner = NULL;
            COND_SIGNAL(&lock->cond);
        }
    }
    MUTEX_UNLOCK(&lock->mutex);
}

void
recursive_lock_acquire(pTHX_ recursive_lock_t *lock, char *file, int line)
{
    PERL_UNUSED_ARG(file);
    PERL_UNUSED_ARG(line);
    assert(aTHX);
    MUTEX_LOCK(&lock->mutex);
    if (lock->owner == aTHX) {
        lock->locks++;
    } else {
        while (lock->owner) {
#ifdef DEBUG_LOCKS
            Perl_warn(aTHX_ " %p waiting - owned by %p %s:%d\n",
                    aTHX, lock->owner, lock->file, lock->line);
#endif
            COND_WAIT(&lock->cond,&lock->mutex);
        }
        lock->locks = 1;
        lock->owner = aTHX;
#ifdef DEBUG_LOCKS
        lock->file = file;
        lock->line = line;
#endif
    }
    MUTEX_UNLOCK(&lock->mutex);
    SAVEDESTRUCTOR_X(recursive_lock_release,lock);
}

#define ENTER_LOCK \

```

```

    STMT_START {
        ENTER;
        recursive_lock_acquire(aTHX_ &PL_sharesv_lock, __FILE__, __LINE__);
    } STMT_END

/* The unlocking is done automatically at scope exit */
#define LEAVE_LOCK    LEAVE

/* A common idiom is to acquire access and switch in ... */
#define SHARED_EDIT \
    STMT_START { \
        ENTER_LOCK; \
        SHARED_CONTEXT; \
    } STMT_END

/* ... then switch out and release access. */
#define SHARED_RELEASE \
    STMT_START { \
        CALLER_CONTEXT; \
        LEAVE_LOCK; \
    } STMT_END

/* User-level locks:
   This structure is attached (using ext magic) to any shared SV that
   is used by user-level locking or condition code
*/

typedef struct {
    recursive_lock_t lock;    /* For user-level locks */
    perl_cond_t user_cond;   /* For user-level conditions */
} user_lock;

/* Magic used for attaching user_lock structs to shared SVs

   The vtable used has just one entry - when the SV goes away
   we free the memory for the above.
*/

int
sharesv_userlock_free(pTHX_ SV *sv, MAGIC *mg)
{
    user_lock *ul = (user_lock *) mg->mg_ptr;
    PERL_UNUSED_ARG(sv);
    assert(aTHX == PL_sharesv_space);
    if (ul) {
        recursive_lock_destroy(aTHX_ &ul->lock);
    }
}

```

```

    COND_DESTROY(&ul->user_cond);
    PerlMemShared_free(ul);
    mg->mg_ptr = NULL;
}
return (0);
}

MGVTBL sharedsv_userlock_vtbl = {
    0,          /* get */
    0,          /* set */
    0,          /* len */
    0,          /* clear */
    sharedsv_userlock_free, /* free */
    0,          /* copy */
    0,          /* dup */
#ifdef MGf_LOCAL
    0,          /* local */
#endif
};

/* Support for dual-valued variables */
#ifdef SVf_IVisUV
# define DUALVAR_FLAGS(sv) \
    ((SvPOK(sv) \
     ? ((SvNOK(sv) || SvNOKp(sv)) ? SVf_NOK \
      : ((SvIsUV(sv)) ? (SVf_IOK | SVf_IVisUV) \
      : ((SvIOK(sv) || SvIOKp(sv)) ? SVf_IOK : 0))) \
     : 0)
#else
# define DUALVAR_FLAGS(sv) \
    ((SvPOK(sv) \
     ? ((SvNOK(sv) || SvNOKp(sv)) ? SVf_NOK \
      : ((SvIOK(sv) || SvIOKp(sv)) ? SVf_IOK : 0)) \
     : 0)
#endif

/*
 * Access to shared things is heavily based on MAGIC
 * - in mg.h/mg.c/sv.c sense
 */

/* In any thread that has access to a shared thing there is a "proxy"
   for it in its own space which has 'MAGIC' associated which accesses
   the shared thing.
 */

```

```

extern MGVTBL sharedsv_scalar_vtbl; /* Scalars have this vtable */
extern MGVTBL sharedsv_array_vtbl; /* Hashes and arrays have this
    - like 'tie' */
extern MGVTBL sharedsv_elem_vtbl; /* Elements of hashes and arrays have
    this _AS WELL AS_ the scalar magic:
    The sharedsv_elem_vtbl associates the element with the array/hash and
    the sharedsv_scalar_vtbl associates it with the value
*/

/* Get shared aggregate SV pointed to by threads::shared::tie magic object */

#define SHARED_SV_FROM_OBJ(sv) ((SvROK(sv)) ? INT2PTR(SV *, SvIV(SvRV(sv))) : NULL)

/* Return the user_lock structure (if any) associated with a shared SV.
* If create is true, create one if it doesn't exist
*/
STATIC user_lock *
S_get_userlock(pTHX_ SV* ssv, bool create)
{
    MAGIC *mg;
    user_lock *ul = NULL;

    assert(ssv);
    /* XXX Redesign the storage of user locks so we don't need a global
    * lock to access them ??? DAPM */
    ENTER_LOCK;

    /* Version of mg_find that also checks the private signature */
    for (mg = SvMAGIC(ssv); mg; mg = mg->mg_moremagic) {
        if ((mg->mg_type == PERL_MAGIC_ext) &&
            (mg->mg_private == UL_MAGIC_SIG))
        {
            break;
        }
    }

    if (mg) {
        ul = (user_lock*)(mg->mg_ptr);
    } else if (create) {
        dTHXc;
        SHARED_CONTEXT;
        ul = (user_lock *) PerlMemShared_malloc(sizeof(user_lock));
        Zero(ul, 1, user_lock);
        /* Attach to shared SV using ext magic */
        mg = sv_magicext(ssv, NULL, PERL_MAGIC_ext, &sharedsv_userlock_vtbl,
            (char *)ul, 0);
    }
}

```

```

mg->mg_private = UL_MAGIC_SIG; /* Set private signature */
recursive_lock_init(aTHX_ &ul->lock);
COND_INIT(&ul->user_cond);
CALLER_CONTEXT;
}
LEAVE_LOCK;
return (ul);
}

```

```

/* Given a private side SV tries to find if the SV has a shared backend,
* by looking for the magic.
*/

```

```
SV *
```

```

Perl_sharesv_find(pTHX_ SV *sv)
{
    MAGIC *mg;
    if (SvTYPE(sv) >= SVt_PVMG) {
        switch(SvTYPE(sv)) {
            case SVt_PVAV:
            case SVt_PVHV:
                if ((mg = mg_find(sv, PERL_MAGIC_tied))
                    && mg->mg_virtual == &sharesv_array_vtbl) {
                    return ((SV *)mg->mg_ptr);
                }
                break;
            default:
                /* This should work for elements as well as they
                 * have scalar magic as well as their element magic
                 */
                if ((mg = mg_find(sv, PERL_MAGIC_shared_scalar))
                    && mg->mg_virtual == &sharesv_scalar_vtbl) {
                    return ((SV *)mg->mg_ptr);
                }
                break;
        }
    }
    /* Just for tidyness of API also handle tie objects */
    if (SvROK(sv) && sv_derived_from(sv, "threads::shared::tie")) {
        return (SHAREDSV_FROM_OBJ(sv));
    }
    return (NULL);
}

```

```

/* Associate a private SV with a shared SV by pointing the appropriate
* magics at it.
* Assumes lock is held.

```

```

*/
void
Perl_sharesv_associate(pTHX_ SV *sv, SV *ssv)
{
    MAGIC *mg = 0;

    /* If we are asked for any private ops we need a thread */
    assert ( aTHX != PL_sharesv_space );

    /* To avoid need for recursive locks require caller to hold lock */
    assert ( PL_sharesv_lock.owner == aTHX );

    switch(SvTYPE(sv)) {
    case SVt_PVAV:
    case SVt_PVHV:
        if (!(mg = mg_find(sv, PERL_MAGIC_tied))
            || mg->mg_virtual != &sharesv_array_vtbl
            || (SV*) mg->mg_ptr != ssv)
        {
            SV *obj = newSV(0);
            sv_setref_iv(obj, "threads::shared::tie", PTR2IV(ssv));
            if (mg) {
                sv_unmagic(sv, PERL_MAGIC_tied);
            }
            mg = sv_magicext(sv, obj, PERL_MAGIC_tied, &sharesv_array_vtbl,
                (char *)ssv, 0);
            mg->mg_flags |= (MGf_COPY|MGf_DUP);
            SvREFCNT_inc_void(ssv);
            SvREFCNT_dec(obj);
        }
        break;

    default:
        if ((SvTYPE(sv) < SVt_PVMG)
            || !(mg = mg_find(sv, PERL_MAGIC_shared_scalar))
            || mg->mg_virtual != &sharesv_scalar_vtbl
            || (SV*) mg->mg_ptr != ssv)
        {
            if (mg) {
                sv_unmagic(sv, PERL_MAGIC_shared_scalar);
            }
            mg = sv_magicext(sv, Nullsv, PERL_MAGIC_shared_scalar,
                &sharesv_scalar_vtbl, (char *)ssv, 0);
            mg->mg_flags |= (MGf_DUP
#ifdef MGf_LOCAL
                |MGf_LOCAL
#endif
            );
        }
    }
}

```

```

        SvREFCNT_inc_void(ssv);
    }
    break;
}

assert ( Perl_sharesv_find(aTHX_ sv) == ssv );
}

/* Given a private SV, create and return an associated shared SV.
 * Assumes lock is held.
 */
STATIC SV *
S_sharesv_new_shared(pTHX_ SV *sv)
{
    dTHXc;
    SV *ssv;

    assert(PL_sharesv_lock.owner == aTHX);
    assert(aTHX != PL_sharesv_space);

    SHARED_CONTEXT;
    ssv = newSV(0);
    SvREFCNT(ssv) = 0; /* Will be upped to 1 by Perl_sharesv_associate */
    sv_upgrade(ssv, SvTYPE(sv));
    CALLER_CONTEXT;
    Perl_sharesv_associate(aTHX_ sv, ssv);
    return (ssv);
}

/* Given a shared SV, create and return an associated private SV.
 * Assumes lock is held.
 */
STATIC SV *
S_sharesv_new_private(pTHX_ SV *ssv)
{
    SV *sv;

    assert(PL_sharesv_lock.owner == aTHX);
    assert(aTHX != PL_sharesv_space);

    sv = newSV(0);
    sv_upgrade(sv, SvTYPE(ssv));
    Perl_sharesv_associate(aTHX_ sv, ssv);
    return (sv);
}

```

```

/* A threadsafe version of SvREFCNT_dec(ssv) */

STATIC void
S_sharesv_dec(pTHX_ SV* ssv)
{
    if (! ssv)
        return;
    ENTER_LOCK;
    if (SvREFCNT(ssv) > 1) {
        /* No side effects, so can do it lightweight */
        SvREFCNT_dec(ssv);
    } else {
        dTHXc;
        SHARED_CONTEXT;
        SvREFCNT_dec(ssv);
        CALLER_CONTEXT;
    }
    LEAVE_LOCK;
}

/* Implements Perl-level share() and :shared */

void
Perl_sharesv_share(pTHX_ SV *sv)
{
    switch(SvTYPE(sv)) {
    case SVt_PVGV:
        Perl_croak(aTHX_ "Cannot share globs yet");
        break;

    case SVt_PVCV:
        Perl_croak(aTHX_ "Cannot share subs yet");
        break;

    default:
        ENTER_LOCK;
        (void) S_sharesv_new_shared(aTHX_ sv);
        LEAVE_LOCK;
        SvSETMAGIC(sv);
        break;
    }
}

#ifdef WIN32
/* Number of milliseconds from 1/1/1601 to 1/1/1970 */

```



```

#define EPOCH_BIAS    11644473600000.

/* Returns relative time in milliseconds. (Adapted from Time::HiRes.) */
STATIC DWORD
S_abs_2_rel_milli(double abs)
{
    double rel;

    /* Get current time (in units of 100 nanoseconds since 1/1/1601) */
    union {
        FILETIME ft;
        __int64 i64; /* 'signed' to keep compilers happy */
    } now;

    GetSystemTimeAsFileTime(&now.ft);

    /* Relative time in milliseconds */
    rel = (abs * 1000.) - (((double)now.i64 / 10000.) - EPOCH_BIAS);
    if (rel <= 0.0) {
        return (0);
    }
    return (DWORD)rel;
}

#else
# if defined(OS2)
#  define ABS2RELMILLI(abs) \
do { \
    abs -= (double)time(NULL); \
    if (abs > 0) { abs *= 1000; } \
    else { abs = 0; } \
} while (0)
# endif /* OS2 */
#endif /* WIN32 */

/* Do OS-specific condition timed wait */

bool
Perl_sharesv_cond_timedwait(perl_cond *cond, perl_mutex *mut, double abs)
{
    #if defined(NETWARE) || defined(FAKE_THREADS) || defined(I_MACH_CTHREADS)
    Perl_croak_nocontext("cond_timedwait not supported on this platform");
    #else
    # ifdef WIN32
    int got_it = 0;

    cond->waiters++;
    MUTEX_UNLOCK(mut);
    #endif
    #endif
}

```

```

/* See comments in win32/win32thread.h COND_WAIT vis-a-vis race */
switch (WaitForSingleObject(cond->sem, S_abs_2_rel_milli(abs))) {
    case WAIT_OBJECT_0: got_it = 1; break;
    case WAIT_TIMEOUT: break;
    default:
        /* WAIT_FAILED? WAIT_ABANDONED? others? */
        Perl_croak_nocontext("panic: cond_timedwait (%ld)",GetLastError());
        break;
}
MUTEX_LOCK(mut);
cond->waiters--;
return (got_it);
# else
# ifdef OS2
int rc, got_it = 0;
STRLEN n_a;

ABS2RELMILLI(abs);

if ((rc = DosResetEventSem(*cond,&n_a)) && (rc != ERROR_ALREADY_RESET))
    Perl_rc = rc, croak_with_os2error("panic: cond_timedwait-reset");
MUTEX_UNLOCK(mut);
if (CheckOSError(DosWaitEventSem(*cond,abs))
    && (rc != ERROR_INTERRUPT))
    croak_with_os2error("panic: cond_timedwait");
if (rc == ERROR_INTERRUPT) errno = EINTR;
MUTEX_LOCK(mut);
return (got_it);
# else /* Hope you're I_PTHREAD! */
struct timespec ts;
int got_it = 0;

ts.tv_sec = (long)abs;
abs -= (NV)ts.tv_sec;
ts.tv_nsec = (long)(abs * 1000000000.0);

switch (pthread_cond_timedwait(cond, mut, &ts)) {
    case 0: got_it = 1; break;
    case ETIMEDOUT: break;
#ifdef OEMVS
    case -1:
        if (errno == ETIMEDOUT || errno == EAGAIN)
            break;
#endif
default:
    Perl_croak_nocontext("panic: cond_timedwait");
    break;
}

```

```

    return (got_it);
# endif /* OS2 */
# endif /* WIN32 */
#endif /* NETWARE || FAKE_THREADS || I_MACH_CTHREADS */
}

/* Given a thingy referenced by a shared RV, copy it's value to a private
 * RV, also copying the object status of the referent.
 * If the private side is already an appropriate RV->SV combination, keep
 * it if possible.
 */
STATIC void
S_get_RV(pTHX_ SV *sv, SV *sobj) {
    SV *obj;
    if (! (SvROK(sv) &&
          ((obj = SvRV(sv)) &&
           (Perl_sharesv_find(aTHX_ obj) == sobj) &&
           (SvTYPE(obj) == SvTYPE(sobj))))))
    {
        /* Can't reuse obj */
        if (SvROK(sv)) {
            SvREFCNT_dec(SvRV(sv));
        } else {
            assert(SvTYPE(sv) >= SVt_RV);
            sv_setsv_nomg(sv, &PL_sv_undef);
            SvROK_on(sv);
        }
        obj = S_sharesv_new_private(aTHX_ sobj);
        SvRV_set(sv, obj);
    }

    if (SvOBJECT(obj)) {
        /* Remove any old blessing */
        SvREFCNT_dec(SvSTASH(obj));
        SvOBJECT_off(obj);
    }
    if (SvOBJECT(sobj)) {
        /* Add any new old blessing */
        STRLEN len;
        char* stash_ptr = SvPV((SV*) SvSTASH(sobj), len);
        HV* stash = gv_stashpvn(stash_ptr, len, TRUE);
        SvOBJECT_on(obj);
        SvSTASH_set(obj, (HV*)SvREFCNT_inc(stash));
    }
}

/* Every caller of S_get_RV needs this incantation (which cannot go inside

```

```

    S_get_RV itself, as we do not want recursion beyond one level): */
#define get_RV(sv, sobj) \
    S_get_RV(aTHX_ sv, sobj); \
    /* Look ahead for refs of refs */ \
    if (SvROK(sobj)) { \
        SvROK_on(SvRV(sv)); \
        S_get_RV(aTHX_ SvRV(sv), SvRV(sobj)); \
    }

/* ----- PERL_MAGIC_shared_scalar(n) functions ----- */

/* Get magic for PERL_MAGIC_shared_scalar(n) */

int
sharingsv_scalar_mg_get(pTHX_ SV *sv, MAGIC *mg)
{
    SV *ssv = (SV *) mg->mg_ptr;
    assert(ssv);

    ENTER_LOCK;
    if (SvROK(ssv)) {
        get_RV(sv, SvRV(ssv));
    } else {
        sv_setsv_nomg(sv, ssv);
    }
    LEAVE_LOCK;
    return (0);
}

/* Copy the contents of a private SV to a shared SV.
 * Used by various mg_set()-type functions.
 * Assumes lock is held.
 */
void
sharingsv_scalar_store(pTHX_ SV *sv, SV *ssv)
{
    dTHXc;
    bool allowed = TRUE;

    assert(PL_sharingsv_lock.owner == aTHX);
    if (!PL_dirty && SvROK(ssv) && SvREFCNT(SvRV(ssv)) == 1) {
        SV *sv = sv_newmortal();
        sv_upgrade(sv, SVt_RV);
        get_RV(sv, SvRV(ssv));
    }
    if (SvROK(sv)) {
        SV *obj = SvRV(sv);

```

```

SV *sobj = Perl_sharesv_find(aTHX_ obj);
if (sobj) {
    SHARED_CONTEXT;
    (void)SvUPGRADE(ssv, SVt_RV);
    sv_setsv_nomg(ssv, &PL_sv_undef);

    SvRV_set(ssv, SvREFCNT_inc(sobj));
    SvROK_on(ssv);
    if (SvOBJECT(sobj)) {
        /* Remove any old blessing */
        SvREFCNT_dec(SvSTASH(sobj));
        SvOBJECT_off(sobj);
    }
    if (SvOBJECT(obj)) {
        SV* fake_stash = newSVpv(HvNAME_get(SvSTASH(obj)),0);
        SvOBJECT_on(sobj);
        SvSTASH_set(sobj, (HV*)fake_stash);
    }
    CALLER_CONTEXT;
} else {
    allowed = FALSE;
}
} else {
    SvTEMP_off(sv);
    SHARED_CONTEXT;
    sv_setsv_nomg(ssv, sv);
    if (SvOBJECT(ssv)) {
        /* Remove any old blessing */
        SvREFCNT_dec(SvSTASH(ssv));
        SvOBJECT_off(ssv);
    }
    if (SvOBJECT(sv)) {
        SV* fake_stash = newSVpv(HvNAME_get(SvSTASH(sv)),0);
        SvOBJECT_on(ssv);
        SvSTASH_set(ssv, (HV*)fake_stash);
    }
    CALLER_CONTEXT;
}
if (!allowed) {
    Perl_croak(aTHX_ "Invalid value for shared scalar");
}
}

/* Set magic for PERL_MAGIC_shared_scalar(n) */

int
sharesv_scalar_mg_set(pTHX_ SV *sv, MAGIC *mg)
{

```

```

SV *ssv = (SV*)(mg->mg_ptr);
assert(ssv);
ENTER_LOCK;
if (SvTYPE(ssv) < SvTYPE(sv)) {
    dTHXc;
    SHARED_CONTEXT;
    sv_upgrade(ssv, SvTYPE(sv));
    CALLER_CONTEXT;
}
shredsv_scalar_store(aTHX_ sv, ssv);
LEAVE_LOCK;
return (0);
}

/* Free magic for PERL_MAGIC_shared_scalar(n) */

int
shredsv_scalar_mg_free(pTHX_ SV *sv, MAGIC *mg)
{
    PERL_UNUSED_ARG(sv);
    ENTER_LOCK;
    if (!PL_dirty
        && SvROK((SV *)mg->mg_ptr) && SvREFCNT(SvRV((SV *)mg->mg_ptr)) == 1) {
        SV *sv = sv_newmortal();
        sv_upgrade(sv, SVt_RV);
        get_RV(sv, SvRV((SV *)mg->mg_ptr));
    }
    S_shredsv_dec(aTHX_ (SV*)mg->mg_ptr);
    LEAVE_LOCK;
    return (0);
}

/*
 * Called during cloning of PERL_MAGIC_shared_scalar(n) magic in new thread
 */
int
shredsv_scalar_mg_dup(pTHX_ MAGIC *mg, CLONE_PARAMS *param)
{
    PERL_UNUSED_ARG(param);
    SvREFCNT_inc_void(mg->mg_ptr);
    return (0);
}

#ifdef MGf_LOCAL
/*
 * Called during local $shared
 */
int

```

```

sharedsv_scalar_mg_local(pTHX_ SV* nsv, MAGIC *mg)
{
    MAGIC *nmg;
    SV *ssv = (SV *) mg->mg_ptr;
    if (ssv) {
        ENTER_LOCK;
        SvREFCNT_inc_void(ssv);
        LEAVE_LOCK;
    }
    nmg = sv_magicext(nsv, mg->mg_obj, mg->mg_type, mg->mg_virtual,
                     mg->mg_ptr, mg->mg_len);
    nmg->mg_flags = mg->mg_flags;
    nmg->mg_private = mg->mg_private;

    return (0);
}
#endif

```

```

MGVTBL sharedsv_scalar_vtbl = {
    sharedsv_scalar_mg_get, /* get */
    sharedsv_scalar_mg_set, /* set */
    0, /* len */
    0, /* clear */
    sharedsv_scalar_mg_free, /* free */
    0, /* copy */
    sharedsv_scalar_mg_dup, /* dup */
#ifdef MGf_LOCAL
    sharedsv_scalar_mg_local, /* local */
#endif
};

```

/\* ----- PERL\_MAGIC\_tiedelem(p) functions ----- \*/

/\* Get magic for PERL\_MAGIC\_tiedelem(p) \*/

```

int
sharedsv_elem_mg_FETCH(pTHX_ SV *sv, MAGIC *mg)
{
    dTHXc;
    SV *saggregate = SHARED_SV_FROM_OBJ(mg->mg_obj);
    SV** svp = NULL;

    ENTER_LOCK;
    if (saggregate) { /* During global destruction, underlying
                       aggregate may no longer exist */
        if (SvTYPE(saggregate) == SVt_PVAV) {
            assert ( mg->mg_ptr == 0 );
            SHARED_CONTEXT;

```

```

    svp = av_fetch((AV*) saggregate, mg->mg_len, 0);
} else {
    char *key = mg->mg_ptr;
    I32 len = mg->mg_len;
    assert ( mg->mg_ptr != 0 );
    if (mg->mg_len == HEf_SVKEY) {
        STRLEN slen;
        key = SvPV((SV *)mg->mg_ptr, slen);
        len = slen;
        if (SvUTF8((SV *)mg->mg_ptr)) {
            len = -len;
        }
    }
    SHARED_CONTEXT;
    svp = hv_fetch((HV*) saggregate, key, len, 0);
}
CALLER_CONTEXT;
}
if (svp) {
    /* Exists in the array */
    if (SvROK(*svp)) {
        get_RV(sv, SvRV(*svp));
    } else {
        /* $ary->[elem] or $ary->{elem} is a scalar */
        Perl_sharesv_associate(aTHX_ sv, *svp);
        sv_setsv(sv, *svp);
    }
} else {
    /* Not in the array */
    sv_setsv(sv, &PL_sv_undef);
}
LEAVE_LOCK;
return (0);
}

/* Set magic for PERL_MAGIC_tiedelem(p) */

int
sharesv_elem_mg_STORE(pTHX_ SV *sv, MAGIC *mg)
{
    dTHXc;
    SV *saggregate = SHARED_SV_FROM_OBJ(mg->mg_obj);
    SV **svp;
    U32 dualvar_flags = DUALVAR_FLAGS(sv);

    /* Theory - SV itself is magically shared - and we have ordered the
       magic such that by the time we get here it has been stored
       to its shared counterpart

```



```

*/
ENTER_LOCK;
assert(saggregate);
if (SvTYPE(saggregate) == SVt_PVAV) {
    assert ( mg->mg_ptr == 0 );
    SHARED_CONTEXT;
    svp = av_fetch((AV*) saggregate, mg->mg_len, 1);
} else {
    char *key = mg->mg_ptr;
    I32 len = mg->mg_len;
    assert ( mg->mg_ptr != 0 );
    if (mg->mg_len == HEf_SVKEY) {
        STRLEN slen;
        key = SvPV((SV *)mg->mg_ptr, slen);
        len = slen;
        if (SvUTF8((SV *)mg->mg_ptr)) {
            len = -len;
        }
    }
    SHARED_CONTEXT;
    svp = hv_fetch((HV*) saggregate, key, len, 1);
}
CALLER_CONTEXT;
Perl_sharesv_associate(aTHX_ sv, *svp);
sharesv_scalar_store(aTHX_ sv, *svp);
SvFLAGS(*svp) |= dualvar_flags;
LEAVE_LOCK;
return (0);
}

/* Clear magic for PERL_MAGIC_tiedelem(p) */

int
sharesv_elem_mg_DELETE(pTHX_ SV *sv, MAGIC *mg)
{
    dTHXc;
    MAGIC *shmg;
    SV *saggregate = SHARED_SV_FROM_OBJ(mg->mg_obj);

    /* Object may not exist during global destruction */
    if (!saggregate) {
        return (0);
    }

    ENTER_LOCK;
    sharesv_elem_mg_FETCH(aTHX_ sv, mg);
    if ((shmg = mg_find(sv, PERL_MAGIC_shared_scalar)))
        sharesv_scalar_mg_get(aTHX_ sv, shmg);

```

```

if (SvTYPE(saggregate) == SVt_PVAV) {
    SHARED_CONTEXT;
    av_delete((AV*) saggregate, mg->mg_len, G_DISCARD);
} else {
    char *key = mg->mg_ptr;
    I32 len = mg->mg_len;
    assert ( mg->mg_ptr != 0 );
    if (mg->mg_len == HEf_SVKEY) {
        STRLEN slen;
        key = SvPV((SV *)mg->mg_ptr, slen);
        len = slen;
        if (SvUTF8((SV *)mg->mg_ptr)) {
            len = -len;
        }
    }
    SHARED_CONTEXT;
    (void) hv_delete((HV*) saggregate, key, len, G_DISCARD);
}
CALLER_CONTEXT;
LEAVE_LOCK;
return (0);
}

/* Called during cloning of PERL_MAGIC_tiedelem(p) magic in new
 * thread */

int
sharedsv_elem_mg_dup(pTHX_ MAGIC *mg, CLONE_PARAMS *param)
{
    PERL_UNUSED_ARG(param);
    SvREFCNT_inc_void(SHAREDSV_FROM_OBJ(mg->mg_obj));
    assert(mg->mg_flags & MGf_DUP);
    return (0);
}

MGVTBL sharedsv_elem_vtbl = {
    sharedsv_elem_mg_FETCH, /* get */
    sharedsv_elem_mg_STORE, /* set */
    0, /* len */
    sharedsv_elem_mg_DELETE, /* clear */
    0, /* free */
    0, /* copy */
    sharedsv_elem_mg_dup, /* dup */
#ifdef MGf_LOCAL
    0, /* local */
#endif
};

```

```

/* ----- PERL_MAGIC_tied(P) functions ----- */

/* Len magic for PERL_MAGIC_tied(P) */

U32
sharedsv_array_mg_FETCHSIZE(pTHX_ SV *sv, MAGIC *mg)
{
    dTHXc;
    SV *ssv = (SV *) mg->mg_ptr;
    U32 val;
    PERL_UNUSED_ARG(sv);
    SHARED_EDIT;
    if (SvTYPE(ssv) == SVt_PVAV) {
        val = av_len((AV*) ssv);
    } else {
        /* Not actually defined by tie API but ... */
        val = HvUSEDKEYS((HV*) ssv);
    }
    SHARED_RELEASE;
    return (val);
}

/* Clear magic for PERL_MAGIC_tied(P) */

int
sharedsv_array_mg_CLEAR(pTHX_ SV *sv, MAGIC *mg)
{
    dTHXc;
    SV *ssv = (SV *) mg->mg_ptr;
    const bool isav = SvTYPE(ssv) == SVt_PVAV;
    PERL_UNUSED_ARG(sv);
    SHARED_EDIT;
    if (!PL_dirty) {
        SV **svp = isav ? AvARRAY((AV *)ssv) : NULL;
        I32 items = isav ? AvFILLp((AV *)ssv) + 1 : 0;
        HE *iter;
        if (!isav) hv_iterinit((HV *)ssv);
        while (isav ? items-- : !(iter = hv_iternext((HV *)ssv))) {
            SV *sv = isav ? *svp++ : HeVAL(iter);
            if (!sv) continue;
            if ( (SvOBJECT(sv) || (SvROK(sv) && (sv = SvRV(sv))))
                && SvREFCNT(sv) == 1 ) {
                SV *tmp = Perl_sv_newmortal(caller_perl);
                PERL_SET_CONTEXT((aTHX = caller_perl));
                sv_upgrade(tmp, SvT_RV);
                get_RV(tmp, sv);
                PERL_SET_CONTEXT((aTHX = PL_sharedsv_space));
            }
        }
    }
}

```

```

    }
}
if (isav) av_clear((AV*) ssv);
else hv_clear((HV*) ssv);
SHARED_RELEASE;
return (0);
}

/* Free magic for PERL_MAGIC_tied(P) */

int
sharedsv_array_mg_free(pTHX_ SV *sv, MAGIC *mg)
{
    PERL_UNUSED_ARG(sv);
    S_sharedsv_dec(aTHX_ (SV*)mg->mg_ptr);
    return (0);
}

/*
 * Copy magic for PERL_MAGIC_tied(P)
 * This is called when perl is about to access an element of
 * the array -
 */
#if PERL_VERSION >= 11
int
sharedsv_array_mg_copy(pTHX_ SV *sv, MAGIC* mg,
                      SV *nsv, const char *name, I32 namlen)
#else
int
sharedsv_array_mg_copy(pTHX_ SV *sv, MAGIC* mg,
                      SV *nsv, const char *name, int namlen)
#endif
{
    MAGIC *nmg = sv_magicext(nsv,mg->mg_obj,
                             toLOWER(mg->mg_type),&sharedsv_elem_vtbl,
                             name, namlen);
    PERL_UNUSED_ARG(sv);
    nmg->mg_flags |= MGf_DUP;
    return (1);
}

/* Called during cloning of PERL_MAGIC_tied(P) magic in new thread */

int
sharedsv_array_mg_dup(pTHX_ MAGIC *mg, CLONE_PARAMS *param)
{
    PERL_UNUSED_ARG(param);
    SvREFCNT_inc_void((SV*)mg->mg_ptr);
}

```

```

    assert(mg->mg_flags & MGf_DUP);
    return (0);
}

MGVTBL sharedsv_array_vtbl = {
    0,          /* get */
    0,          /* set */
    sharedsv_array_mg_FETCHSIZE, /* len */
    sharedsv_array_mg_CLEAR, /* clear */
    sharedsv_array_mg_free, /* free */
    sharedsv_array_mg_copy, /* copy */
    sharedsv_array_mg_dup, /* dup */
#ifdef MGf_LOCAL
    0,          /* local */
#endif
};

/* Recursively unlocks a shared sv. */

void
Perl_sharedsv_unlock(pTHX_ SV *ssv)
{
    user_lock *ul = S_get_userlock(aTHX_ ssv, 0);
    assert(ul);
    recursive_lock_release(aTHX_ &ul->lock);
}

/* Recursive locks on a sharedsv.
 * Locks are dynamically scoped at the level of the first lock.
 */
void
Perl_sharedsv_lock(pTHX_ SV *ssv)
{
    user_lock *ul;
    if (! ssv)
        return;
    ul = S_get_userlock(aTHX_ ssv, 1);
    recursive_lock_acquire(aTHX_ &ul->lock, __FILE__, __LINE__);
}

/* Handles calls from lock() builtin via PL_lockhook */

void
Perl_sharedsv_locksv(pTHX_ SV *sv)
{
    SV *ssv;

```

```

if (SvROK(sv))
    sv = SvRV(sv);
ssv = Perl_sharesv_find(aTHX_ sv);
if (!ssv)
    croak("lock can only be used on shared values");
Perl_sharesv_lock(aTHX_ ssv);
}

/* Can a shared object be destroyed?
 * True if not a shared,
 * or if destroying last proxy on a shared object
 */
#ifdef PL_destroyhook
bool
Perl_shared_object_destroy(pTHX_ SV *sv)
{
    SV *ssv;

    if (SvROK(sv))
        sv = SvRV(sv);
    ssv = Perl_sharesv_find(aTHX_ sv);
    return (!ssv || (SvREFCNT(ssv) <= 1));
}
#endif

/* veto signal dispatch if we have the lock */

#ifdef PL_signalhook

STATIC despatch_signals_proc_t prev_signal_hook = NULL;

STATIC void
S_shared_signal_hook(pTHX) {
    int us;
    MUTEX_LOCK(&PL_sharesv_lock.mutex);
    us = (PL_sharesv_lock.owner == aTHX);
    MUTEX_UNLOCK(&PL_sharesv_lock.mutex);
    if (us)
        return; /* try again later */
    prev_signal_hook(aTHX);
}
#endif

/* Saves a space for keeping SVs wider than an interpreter. */

void

```

```

Perl_sharesv_init(pTHX)
{
    dTHXc;
    /* This pair leaves us in shared context ... */
    PL_sharesv_space = perl_alloc();
    perl_construct(PL_sharesv_space);
    LEAVE; /* This balances the ENTER at the end of perl_construct. */
    PERL_SET_CONTEXT((aTHX = caller_perl));
    recursive_lock_init(aTHX_ &PL_sharesv_lock);
    PL_lockhook = &Perl_sharesv_locksv;
    PL_sharehook = &Perl_sharesv_share;
#ifdef PL_destroyhook
    PL_destroyhook = &Perl_shared_object_destroy;
#endif
#ifdef PL_signalhook
    if (!prev_signal_hook) {
        prev_signal_hook = PL_signalhook;
        PL_signalhook = &S_shared_signal_hook;
    }
#endif
}

#endif /* USE_ITHREADS */

```

```

MODULE = threads::shared    PACKAGE = threads::shared::tie

```

```

PROTOTYPES: DISABLE

```

```

#ifdef USE_ITHREADS

```

```

void
PUSH(SV *obj, ...)
CODE:
    dTHXc;
    SV *sobj = SHARED_FROM_OBJ(obj);
    int ii;
    for (ii = 1; ii < items; ii++) {
        SV* tmp = newSVsv(ST(ii));
        SV *stmp;
        U32 dualvar_flags = DUALVAR_FLAGS(tmp);
        ENTER_LOCK;
        stmp = S_sharesv_new_shared(aTHX_ tmp);
        sharesv_scalar_store(aTHX_ tmp, stmp);
        SvFLAGS(stmp) |= dualvar_flags;
        SHARED_CONTEXT;
        av_push((AV*) sobj, stmp);
        SvREFCNT_inc_void(stmp);
        SHARED_RELEASE;
    }

```

```

        SvREFCNT_dec(tmp);
    }

void
UNSHIFT(SV *obj, ...)
CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    int ii;
    ENTER_LOCK;
    SHARED_CONTEXT;
    av_unshift((AV*)sobj, items - 1);
    CALLER_CONTEXT;
    for (ii = 1; ii < items; ii++) {
        SV *tmp = newSVsv(ST(ii));
        U32 dualvar_flags = DUALVAR_FLAGS(tmp);
        SV *stmp = S_sharedsv_new_shared(aTHX_ tmp);
        sharedsv_scalar_store(aTHX_ tmp, stmp);
        SHARED_CONTEXT;
        SvFLAGS(stmp) |= dualvar_flags;
        av_store((AV*) sobj, ii - 1, stmp);
        SvREFCNT_inc_void(stmp);
        CALLER_CONTEXT;
        SvREFCNT_dec(tmp);
    }
    LEAVE_LOCK;

```

```

void
POP(SV *obj)
CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    SV* ssv;
    ENTER_LOCK;
    SHARED_CONTEXT;
    ssv = av_pop((AV*)sobj);
    CALLER_CONTEXT;
    ST(0) = sv_newmortal();
    Perl_sharedsv_associate(aTHX_ ST(0), ssv);
    SvREFCNT_dec(ssv);
    LEAVE_LOCK;
    /* XSRETURN(1); - implied */

```

```

void
SHIFT(SV *obj)

```



```

CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    SV* ssv;
    ENTER_LOCK;
    SHARED_CONTEXT;
    ssv = av_shift((AV*)sobj);
    CALLER_CONTEXT;
    ST(0) = sv_newmortal();
    Perl_sharesv_associate(aTHX_ ST(0), ssv);
    SvREFCNT_dec(ssv);
    LEAVE_LOCK;
    /* XSRETURN(1); - implied */

```

void

EXTEND(SV \*obj, IV count)

```

CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    SHARED_EDIT;
    av_extend((AV*)sobj, count);
    SHARED_RELEASE;

```

void

STORESIZE(SV \*obj, IV count)

```

CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    SHARED_EDIT;
    av_fill((AV*) sobj, count);
    SHARED_RELEASE;

```

void

EXISTS(SV \*obj, SV \*index)

```

CODE:
    dTHXc;
    SV *sobj = SHARED_SV_FROM_OBJ(obj);
    bool exists;
    if (SvTYPE(sobj) == SVt_PVAV) {
        SHARED_EDIT;
        exists = av_exists((AV*) sobj, SvIV(index));
    } else {
        I32 len;
        STRLEN slen;
        char *key = SvPVutf8(index, slen);

```

```

len = slen;
if (SvUTF8(index)) {
    len = -len;
}
SHARED_EDIT;
exists = hv_exists((HV*) sobj, key, len);
}
SHARED_RELEASE;
ST(0) = (exists) ? &PL_sv_yes : &PL_sv_no;
/* XSRETURN(1); - implied */

```

void

FIRSTKEY(SV \*obj)

CODE:

```

dTHXc;
SV *sobj = SHARED_SV_FROM_OBJ(obj);
char* key = NULL;
I32 len = 0;
HE* entry;
ENTER_LOCK;
SHARED_CONTEXT;
hv_iterinit((HV*) sobj);
entry = hv_iternext((HV*) sobj);
if (entry) {
    I32 utf8 = HeKUTF8(entry);
    key = hv_iterkey(entry, &len);
    CALLER_CONTEXT;
    ST(0) = newSVpvn_flags(key, len, SVs_TEMP | (utf8 ? SVf_UTF8 : 0));
} else {
    CALLER_CONTEXT;
    ST(0) = &PL_sv_undef;
}
LEAVE_LOCK;
/* XSRETURN(1); - implied */

```

void

NEXTKEY(SV \*obj, SV \*oldkey)

CODE:

```

dTHXc;
SV *sobj = SHARED_SV_FROM_OBJ(obj);
char* key = NULL;
I32 len = 0;
HE* entry;

PERL_UNUSED_VAR(oldkey);

```

```

ENTER_LOCK;
SHARED_CONTEXT;
entry = hv_iternext((HV*) sobj);
if (entry) {
    I32 utf8 = HeKUTF8(entry);
    key = hv_iterkey(entry,&len);
    CALLER_CONTEXT;
    ST(0) = newSVpvn_flags(key, len, SVs_TEMP | (utf8 ? SVf_UTF8 : 0));
} else {
    CALLER_CONTEXT;
    ST(0) = &PL_sv_undef;
}
LEAVE_LOCK;
/* XSRETURN(1); - implied */

```

MODULE = threads::shared      PACKAGE = threads::shared

PROTOTYPES: ENABLE

```

void
_id(SV *myref)
PROTOTYPE: \[$@%]
PREINIT:
    SV *ssv;
CODE:
    myref = SvRV(myref);
    if (SvMAGICAL(myref))
        mg_get(myref);
    if (SvROK(myref))
        myref = SvRV(myref);
    ssv = Perl_sharesv_find(aTHX_ myref);
    if (! ssv)
        XSRETURN_UNDEF;
    ST(0) = sv_2mortal(newSVuv(PTR2UV(ssv)));
/* XSRETURN(1); - implied */

```

```

void
_refcnt(SV *myref)
PROTOTYPE: \[$@%]
PREINIT:
    SV *ssv;
CODE:
    myref = SvRV(myref);
    if (SvROK(myref))
        myref = SvRV(myref);
    ssv = Perl_sharesv_find(aTHX_ myref);

```

```

if (! ssv) {
    if (ckWARN(WARN_THREADS)) {
        Perl_warner(aTHX_ packWARN(WARN_THREADS),
            "% SVf " is not shared", ST(0));
    }
    XSRETURN_UNDEF;
}
ST(0) = sv_2mortal(newSViv(SvREFCNT(ssv)));
/* XSRETURN(1); - implied */

```

void

share(SV \*myref)

PROTOTYPE: \[\$@%]

CODE:

```

if (! SvROK(myref))
    Perl_croak(aTHX_ "Argument to share needs to be passed as ref");
myref = SvRV(myref);
if (SvROK(myref))
    myref = SvRV(myref);
Perl_sharesv_share(aTHX_ myref);
ST(0) = sv_2mortal(newRV_inc(myref));
/* XSRETURN(1); - implied */

```

void

cond\_wait(SV \*ref\_cond, SV \*ref\_lock = 0)

PROTOTYPE: \[\$@%];\[\$@%]

PREINIT:

```

SV *ssv;
perl_cond* user_condition;
int locks;
user_lock *ul;

```

CODE:

```

if (!SvROK(ref_cond))
    Perl_croak(aTHX_ "Argument to cond_wait needs to be passed as ref");
ref_cond = SvRV(ref_cond);
if (SvROK(ref_cond))
    ref_cond = SvRV(ref_cond);
ssv = Perl_sharesv_find(aTHX_ ref_cond);
if (! ssv)
    Perl_croak(aTHX_ "cond_wait can only be used on shared values");
ul = S_get_userlock(aTHX_ ssv, 1);

user_condition = &ul->user_cond;
if (ref_lock && (ref_cond != ref_lock)) {
    if (!SvROK(ref_lock))
        Perl_croak(aTHX_ "cond_wait lock needs to be passed as ref");

```

```

    ref_lock = SvRV(ref_lock);
    if (SvROK(ref_lock)) ref_lock = SvRV(ref_lock);
    ssv = Perl_sharesv_find(aTHX_ ref_lock);
    if (! ssv)
        Perl_croak(aTHX_ "cond_wait lock must be a shared value");
    ul = S_get_userlock(aTHX_ ssv, 1);
}
if (ul->lock.owner != aTHX)
    croak("You need a lock before you can cond_wait");

/* Stealing the members of the lock object worries me - NI-S */
MUTEX_LOCK(&ul->lock.mutex);
ul->lock.owner = NULL;
locks = ul->lock.locks;
ul->lock.locks = 0;

/* Since we are releasing the lock here, we need to tell other
 * people that it is ok to go ahead and use it */
COND_SIGNAL(&ul->lock.cond);
COND_WAIT(user_condition, &ul->lock.mutex);
while (ul->lock.owner != NULL) {
    /* OK -- must reacquire the lock */
    COND_WAIT(&ul->lock.cond, &ul->lock.mutex);
}
ul->lock.owner = aTHX;
ul->lock.locks = locks;
MUTEX_UNLOCK(&ul->lock.mutex);

```

int

cond\_timedwait(SV \*ref\_cond, double abs, SV \*ref\_lock = 0)

PROTOTYPE: \[\$@%]\$\; \[\$@%]

PREINIT:

SV \*ssv;

perl\_cond\* user\_condition;

int locks;

user\_lock \*ul;

CODE:

if (! SvROK(ref\_cond))

Perl\_croak(aTHX\_ "Argument to cond\_timedwait needs to be passed as ref");

ref\_cond = SvRV(ref\_cond);

if (SvROK(ref\_cond))

ref\_cond = SvRV(ref\_cond);

ssv = Perl\_sharesv\_find(aTHX\_ ref\_cond);

if (! ssv)

Perl\_croak(aTHX\_ "cond\_timedwait can only be used on shared values");

ul = S\_get\_userlock(aTHX\_ ssv, 1);

```

user_condition = &ul->user_cond;
if (ref_lock && (ref_cond != ref_lock)) {
    if (! SvROK(ref_lock))
        Perl_croak(aTHX_ "cond_timedwait lock needs to be passed as ref");
    ref_lock = SvRV(ref_lock);
    if (SvROK(ref_lock)) ref_lock = SvRV(ref_lock);
    ssv = Perl_sharesv_find(aTHX_ ref_lock);
    if (! ssv)
        Perl_croak(aTHX_ "cond_timedwait lock must be a shared value");
    ul = S_get_userlock(aTHX_ ssv, 1);
}
if (ul->lock.owner != aTHX)
    Perl_croak(aTHX_ "You need a lock before you can cond_wait");

MUTEX_LOCK(&ul->lock.mutex);
ul->lock.owner = NULL;
locks = ul->lock.locks;
ul->lock.locks = 0;
/* Since we are releasing the lock here, we need to tell other
 * people that it is ok to go ahead and use it */
COND_SIGNAL(&ul->lock.cond);
RETVAL = Perl_sharesv_cond_timedwait(user_condition, &ul->lock.mutex, abs);
while (ul->lock.owner != NULL) {
    /* OK -- must reacquire the lock... */
    COND_WAIT(&ul->lock.cond, &ul->lock.mutex);
}
ul->lock.owner = aTHX;
ul->lock.locks = locks;
MUTEX_UNLOCK(&ul->lock.mutex);

if (RETVAL == 0)
    XSRETURN_UNDEF;
OUTPUT:
    RETVAL

```

```

void
cond_signal(SV *myref)
    PROTOTYPE: \[$@%]
    PREINIT:
        SV *ssv;
        user_lock *ul;
    CODE:
        if (! SvROK(myref))
            Perl_croak(aTHX_ "Argument to cond_signal needs to be passed as ref");
        myref = SvRV(myref);
        if (SvROK(myref))
            myref = SvRV(myref);

```

```

ssv = Perl_sharesv_find(aTHX_ myref);
if (! ssv)
    Perl_croak(aTHX_ "cond_signal can only be used on shared values");
ul = S_get_userlock(aTHX_ ssv, 1);
if (ckWARN(WARN_THREADS) && ul->lock.owner != aTHX) {
    Perl_warner(aTHX_ packWARN(WARN_THREADS),
                "cond_signal() called on unlocked variable");
}
COND_SIGNAL(&ul->user_cond);

```

void

cond\_broadcast(SV \*myref)

PROTOTYPE: \[\$@%]

PREINIT:

SV \*ssv;

user\_lock \*ul;

CODE:

```

if (! SvROK(myref))
    Perl_croak(aTHX_ "Argument to cond_broadcast needs to be passed as ref");
myref = SvRV(myref);
if (SvROK(myref))
    myref = SvRV(myref);
ssv = Perl_sharesv_find(aTHX_ myref);
if (! ssv)
    Perl_croak(aTHX_ "cond_broadcast can only be used on shared values");
ul = S_get_userlock(aTHX_ ssv, 1);
if (ckWARN(WARN_THREADS) && ul->lock.owner != aTHX) {
    Perl_warner(aTHX_ packWARN(WARN_THREADS),
                "cond_broadcast() called on unlocked variable");
}
COND_BROADCAST(&ul->user_cond);

```

void

bless(SV\* myref, ...)

PROTOTYPE: \$;\$

PREINIT:

HV\* stash;

SV \*ssv;

CODE:

```

if (items == 1) {
    stash = CopSTASH(PL_curcop);
} else {
    SV* classname = ST(1);
    STRLEN len;
    char *ptr;

```

```

if (classname &&
    ! SvGMAGICAL(classname) &&
    ! SvAMAGIC(classname) &&
    SvROK(classname))
{
    Perl_croak(aTHX_ "Attempt to bless into a reference");
}
ptr = SvPV(classname, len);
if (ckWARN(WARN_MISC) && len == 0) {
    Perl_warner(aTHX_ packWARN(WARN_MISC),
                "Explicit blessing to " (assuming package main));
}
stash = gv_stashpvn(ptr, len, TRUE);
}
SvREFCNT_inc_void(myref);
(void)sv_bless(myref, stash);
ST(0) = sv_2mortal(myref);
ssv = Perl_sharesv_find(aTHX_ myref);
if (ssv) {
    dTHXc;
    ENTER_LOCK;
    SHARED_CONTEXT;
    {
        SV* fake_stash = newSVpv(HvNAME_get(stash), 0);
        (void)sv_bless(ssv, (HV*)fake_stash);
    }
    CALLER_CONTEXT;
    LEAVE_LOCK;
}
/* XSRETURN(1); - implied */

```

```
#endif /* USE_ITHREADS */
```

BOOT:

```

{
#ifdef USE_ITHREADS
    Perl_sharesv_init(aTHX);
#endif /* USE_ITHREADS */
}

```

Found in path(s):

```

* /opt/cola/permits/1000848935_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-
XI5bALc3/threads-shared-1.43.tar.gz-cosi-expand-archive-dZnguN3v/threads-shared-1.43/shared.xs

```

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

=head1 NAME

threads::shared - Perl extension for sharing data structures between threads



=head1 VERSION

This document describes threads::shared version 1.43

=head1 SYNOPSIS

```
use threads;
use threads::shared;
```

```
my $var :shared;
my %hsh :shared;
my @ary :shared;
```

```
my ($scalar, @array, %hash);
share($scalar);
share(@array);
share(%hash);
```

```
$var = $scalar_value;
$var = $shared_ref_value;
$var = shared_clone($non_shared_ref_value);
$var = shared_clone({'foo' => [qw/foo bar baz/]});
```

```
$hsh{'foo'} = $scalar_value;
$hsh{'bar'} = $shared_ref_value;
$hsh{'baz'} = shared_clone($non_shared_ref_value);
$hsh{'quz'} = shared_clone([1..3]);
```

```
$ary[0] = $scalar_value;
$ary[1] = $shared_ref_value;
$ary[2] = shared_clone($non_shared_ref_value);
$ary[3] = shared_clone([ {}, [] ]);
```

```
{ lock(%hash); ... }
```

```
cond_wait($scalar);
cond_timedwait($scalar, time() + 30);
cond_broadcast(@array);
cond_signal(%hash);
```

```
my $lockvar :shared;
# condition var != lock var
cond_wait($var, $lockvar);
cond_timedwait($var, time()+30, $lockvar);
```

=head1 DESCRIPTION

By default, variables are private to each thread, and each newly created thread gets a private copy of each existing variable. This module allows you to share variables across different threads (and pseudo-forks on Win32). It is used together with the L<threads> module.

This module supports the sharing of the following data types only: scalars and scalar refs, arrays and array refs, and hashes and hash refs.

=head1 EXPORT

The following functions are exported by this module: C<share>, C<shared\_clone>, C<is\_shared>, C<cond\_wait>, C<cond\_timedwait>, C<cond\_signal> and C<cond\_broadcast>

Note that if this module is imported when L<threads> has not yet been loaded, then these functions all become no-ops. This makes it possible to write modules that will work in both threaded and non-threaded environments.

=head1 FUNCTIONS

=over 4

=item share VARIABLE

C<share> takes a variable and marks it as shared:

```
my ($scalar, @array, %hash);
share($scalar);
share(@array);
share(%hash);
```

C<share> will return the shared rvalue, but always as a reference.

Variables can also be marked as shared at compile time by using the C<:shared> attribute:

```
my ($var, %hash, @array) :shared;
```

Shared variables can only store scalars, refs of shared variables, or refs of shared data (discussed in next section):

```
my ($var, %hash, @array) :shared;
my $bork;
```

```
# Storing scalars
$var = 1;
$hash{'foo'} = 'bar';
$array[0] = 1.5;
```

```

# Storing shared refs
$var = \%hash;
$hash{'ary'} = \@array;
$array[1] = \$var;

# The following are errors:
# $var = \$bork;           # ref of non-shared variable
# $hash{'bork'} = [];     # non-shared array ref
# push(@array, { 'x' => 1 }); # non-shared hash ref

```

=item shared\_clone REF

C<shared\_clone> takes a reference, and returns a shared version of its argument, performing a deep copy on any non-shared elements. Any shared elements in the argument are used as is (i.e., they are not cloned).

```
my $cpy = shared_clone({'foo' => [qw/foo bar baz/]});
```

Object status (i.e., the class an object is blessed into) is also cloned.

```

my $obj = {'foo' => [qw/foo bar baz/]};
bless($obj, 'Foo');
my $cpy = shared_clone($obj);
print(ref($cpy), "\n"); # Outputs 'Foo'

```

For cloning empty array or hash refs, the following may also be used:

```

$var = &share([]); # Same as $var = shared_clone([]);
$var = &share({}); # Same as $var = shared_clone({});

```

Not all Perl data types can be cloned (e.g., globs, code refs). By default, C<shared\_clone> will L<croak|Carp> if it encounters such items. To change this behaviour to a warning, then set the following:

```
$threads::shared::clone_warn = 1;
```

In this case, C<undef> will be substituted for the item to be cloned. If set to zero:

```
$threads::shared::clone_warn = 0;
```

then the C<undef> substitution will be performed silently.

=item is\_shared VARIABLE

C<is\_shared> checks if the specified variable is shared or not. If shared, returns the variable's internal ID (similar to

L<refaddr>|Scalar::Util/"refaddr EXPR">). Otherwise, returns C<undef>.

```
if (is_shared($var)) {
    print("\$var is shared\n");
} else {
    print("\$var is not shared\n");
}
```

When used on an element of an array or hash, C<is\_shared> checks if the specified element belongs to a shared array or hash. (It does not check the contents of that element.)

```
my %hash :shared;
if (is_shared(%hash)) {
    print("\%hash is shared\n");
}
```

```
$hash{'elem'} = 1;
if (is_shared($hash{'elem'})) {
    print("\$hash{'elem'} is in a shared hash\n");
}
```

=item lock VARIABLE

C<lock> places a B<advisory> lock on a variable until the lock goes out of scope. If the variable is locked by another thread, the C<lock> call will block until it's available. Multiple calls to C<lock> by the same thread from within dynamically nested scopes are safe -- the variable will remain locked until the outermost lock on the variable goes out of scope.

C<lock> follows references exactly I<one> level:

```
my %hash :shared;
my $ref = \%hash;
lock($ref);      # This is equivalent to lock(%hash)
```

Note that you cannot explicitly unlock a variable; you can only wait for the lock to go out of scope. This is most easily accomplished by locking the variable inside a block.

```
my $var :shared;
{
    lock($var);
    # $var is locked from here to the end of the block
    ...
}
# $var is now unlocked
```

As locks are advisory, they do not prevent data access or modification by another thread that does not itself attempt to obtain a lock on the variable.

You cannot lock the individual elements of a container variable:

```
my %hash :shared;
$hash{'foo'} = 'bar';
#lock($hash{'foo'});      # Error
lock(%hash);              # Works
```

If you need more fine-grained control over shared variable access, see [L<Thread::Semaphore>](#).

=item cond\_wait VARIABLE

=item cond\_wait CONDVAR, LOCKVAR

The `C<cond_wait>` function takes a `B<locked>` variable as a parameter, unlocks the variable, and blocks until another thread does a `C<cond_signal>` or `C<cond_broadcast>` for that same locked variable. The variable that `C<cond_wait>` blocked on is re-locked after the `C<cond_wait>` is satisfied. If there are multiple threads `C<cond_wait>`ing on the same variable, all but one will re-block waiting to reacquire the lock on the variable. (So if you're only using `C<cond_wait>` for synchronization, give up the lock as soon as possible). The two actions of unlocking the variable and entering the blocked wait state are atomic, the two actions of exiting from the blocked wait state and re-locking the variable are not.

In its second form, `C<cond_wait>` takes a shared, `B<unlocked>` variable followed by a shared, `B<locked>` variable. The second variable is unlocked and thread execution suspended until another thread signals the first variable.

It is important to note that the variable can be notified even if no thread `C<cond_signal>` or `C<cond_broadcast>` on the variable. It is therefore important to check the value of the variable and go back to waiting if the requirement is not fulfilled. For example, to pause until a shared counter drops to zero:

```
{ lock($counter); cond_wait($counter) until $counter == 0; }
```

=item cond\_timedwait VARIABLE, ABS\_TIMEOUT

=item cond\_timedwait CONDVAR, ABS\_TIMEOUT, LOCKVAR

In its two-argument form, `C<cond_timedwait>` takes a `B<locked>` variable and an absolute timeout in `I<epoch>` seconds (see [L<time\(\) in perlfunc|perlfunc/time>](#) for more) as parameters, unlocks the variable, and blocks until the timeout is reached or another thread signals the variable. A false value is

returned if the timeout is reached, and a true value otherwise. In either case, the variable is re-locked upon return.

Like C<cond\_wait>, this function may take a shared, B<locked> variable as an additional parameter; in this case the first parameter is an B<unlocked> condition variable protected by a distinct lock variable.

Again like C<cond\_wait>, waking up and reacquiring the lock are not atomic, and you should always check your desired condition after this function returns. Since the timeout is an absolute value, however, it does not have to be recalculated with each pass:

```
lock($var);
my $abs = time() + 15;
until ($ok = desired_condition($var)) {
    last if !cond_timedwait($var, $abs);
}
# we got it if $ok, otherwise we timed out!
```

=item cond\_signal VARIABLE

The C<cond\_signal> function takes a B<locked> variable as a parameter and unblocks one thread that's C<cond\_wait>ing on that variable. If more than one thread is blocked in a C<cond\_wait> on that variable, only one (and which one is indeterminate) will be unblocked.

If there are no threads blocked in a C<cond\_wait> on the variable, the signal is discarded. By always locking before signaling, you can (with care), avoid signaling before another thread has entered cond\_wait().

C<cond\_signal> will normally generate a warning if you attempt to use it on an unlocked variable. On the rare occasions where doing this may be sensible, you can suppress the warning with:

```
{ no warnings 'threads'; cond_signal($foo); }
```

=item cond\_broadcast VARIABLE

The C<cond\_broadcast> function works similarly to C<cond\_signal>. C<cond\_broadcast>, though, will unblock B<all> the threads that are blocked in a C<cond\_wait> on the locked variable, rather than only one.

=back

=head1 OBJECTS

L<threads::shared> exports a version of L<bless()|perlfunc/"bless REF"> that works on shared objects such that I<blessings> propagate across threads.

```

# Create a shared 'Foo' object
my $foo :shared = shared_clone({});
bless($foo, 'Foo');

# Create a shared 'Bar' object
my $bar :shared = shared_clone({});
bless($bar, 'Bar');

# Put 'bar' inside 'foo'
$foo->{'bar'} = $bar;

# Rebless the objects via a thread
threads->create(sub {
    # Rebless the outer object
    bless($foo, 'Yin');

    # Cannot directly rebless the inner object
    #bless($foo->{'bar'}, 'Yang');

    # Retrieve and rebless the inner object
    my $obj = $foo->{'bar'};
    bless($obj, 'Yang');
    $foo->{'bar'} = $obj;

})->join();

print(ref($foo),      "\n"); # Prints 'Yin'
print(ref($foo->{'bar'}), "\n"); # Prints 'Yang'
print(ref($bar),      "\n"); # Also prints 'Yang'

```

## =head1 NOTES

L<threads::shared> is designed to disable itself silently if threads are not available. This allows you to write modules and packages that can be used in both threaded and non-threaded applications.

If you want access to threads, you must C<use threads> before you C<use threads::shared>. L<threads> will emit a warning if you use it after L<threads::shared>.

## =head1 BUGS AND LIMITATIONS

When C<share> is used on arrays, hashes, array refs or hash refs, any data they contain will be lost.

```

my @arr = qw(foo bar baz);
share(@arr);

```

```

# @arr is now empty (i.e., == ());

# Create a 'foo' object
my $foo = { 'data' => 99 };
bless($foo, 'foo');

# Share the object
share($foo);    # Contents are now wiped out
print("ERROR: \ $foo is empty\n")
    if (! exists($foo->{'data'}));

```

Therefore, populate such variables B<after> declaring them as shared. (Scalar and scalar refs are not affected by this problem.)

It is often not wise to share an object unless the class itself has been written to support sharing. For example, an object's destructor may get called multiple times, once for each thread's scope exit. Another danger is that the contents of hash-based objects will be lost due to the above mentioned limitation. See F<examples/class.pl> (in the CPAN distribution of this module) for how to create a class that supports object sharing.

Destructors may not be called on objects if those objects still exist at global destruction time. If the destructors must be called, make sure there are no circular references and that nothing is referencing the objects, before the program ends.

Does not support C<splice> on arrays. Does not support explicitly changing array lengths via \$#array -- use C<push> and C<pop> instead.

Taking references to the elements of shared arrays and hashes does not autovivify the elements, and neither does slicing a shared array/hash over non-existent indices/keys autovivify the elements.

C<share()> allows you to C<< share(\$hashref->{key}) >> and C<< share(\$arrayref->[idx]) >> without giving any error message. But the C<< \$hashref->{key} >> or C<< \$arrayref->[idx] >> is B<not> shared, causing the error "lock can only be used on shared values" to occur when you attempt to C<< lock(\$hashref->{key}) >> or C<< lock(\$arrayref->[idx]) >> in another thread.

Using L<refaddr()|Scalar::Util/"refaddr EXPR"> is unreliable for testing whether or not two shared references are equivalent (e.g., when testing for circular references). Use L<is\_shared()/"is\_shared VARIABLE">, instead:

```

use threads;
use threads::shared;
use Scalar::Util qw(refaddr);

```



```

# If ref is shared, use threads::shared's internal ID.
# Otherwise, use refaddr().
my $addr1 = is_shared($ref1) || refaddr($ref1);
my $addr2 = is_shared($ref2) || refaddr($ref2);

if ($addr1 == $addr2) {
    # The refs are equivalent
}

```

L<each()|perlfunc/"each HASH"> does not work properly on shared references embedded in shared structures. For example:

```

my %foo :shared;
$foo{'bar'} = shared_clone({'a'=>'x', 'b'=>'y', 'c'=>'z'});

while (my ($key, $val) = each(%{$foo{'bar'}})) {
    ...
}

```

Either of the following will work instead:

```

my $ref = $foo{'bar'};
while (my ($key, $val) = each(%{$ref})) {
    ...
}

foreach my $key (keys(%{$foo{'bar'}})) {
    my $val = $foo{'bar'}{$key};
    ...
}

```

This module supports dual-valued variables created using L<dualvar() from Scalar::Util|Scalar::Util/"dualvar NUM, STRING">. However, while C<\$!> acts like a dualvar, it is implemented as a tied SV. To propagate its value, use the follow construct, if needed:

```

my $errno :shared = dualvar($!, $!);

```

View existing bug reports at, and submit any new bugs, problems, patches, etc. to: L<<http://rt.cpan.org/Public/Dist/Display.html?Name=threads-shared>>

=head1 SEE ALSO

L<threads::shared> Discussion Forum on CPAN:  
L<<http://www.cpanforum.com/dist/threads-shared>>

L<threads>, L<perlthrtut>

L<<http://www.perl.com/pub/a/2002/06/11/threads.html>> and

L<<http://www.perl.com/pub/a/2002/09/04/threads.html>>

Perl threads mailing list:

L<<http://lists.perl.org/list/ithreads.html>>

=head1 AUTHOR

Artur Bergman E<lt>sky AT crucially DOT netE<gt>

Documentation borrowed from the old Thread.pm.

CPAN version produced by Jerry D. Hedden E<lt>jdhedden AT cpan DOT orgE<gt>.

=head1 LICENSE

threads::shared is released under the same license as Perl.

=cut

Found in path(s):

\* /opt/cola/permits/1000848935\_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-XIsbALc3/threads-shared-1.43.tar.gz-cosi-expand-archive-dZnguN3v/threads-shared-1.43/lib/threads/shared.pm

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

---

abstract: 'Perl extension for sharing data structures between threads'

author:

- 'Artur Bergman, Jerry D. Hedden <jdhedden AT cpan DOT org>'

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.64, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: threads-shared

no\_index:

directory:

- t

- inc

requires:

Carp: 0

Config: 0

ExtUtils::testlib: 0

Scalar::Util: 0  
Test: 0  
Test::More: 0  
XSLoader: 0  
strict: 0  
threads: 1.73  
warnings: 0  
version: 1.43

Found in path(s):

\* /opt/cola/permits/1000848935\_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-XIsbALc3/threads-shared-1.43.tar.gz-cosi-expand-archive-dZnguN3v/threads-shared-1.43/META.yml

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

Copyright 2006 - 2009 Jerry D. Hedden. All rights reserved.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

\* /opt/cola/permits/1000848935\_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-XIsbALc3/threads-shared-1.43.tar.gz-cosi-expand-archive-dZnguN3v/threads-shared-1.43/examples/class.pl

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

/\*

-----

ppport.h -- Perl/Pollution/Portability Version 3.19

Automatically created by Devel::PPPport running under perl 5.010000.

Do NOT edit this file directly! -- Edit PPPport\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

-----

SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.19

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help            show short help

--version        show version

--patch=file     write one patch file with changes

--copy=suffix    write changed copies with suffix

--diff=program   use diff program and options

--compat-version=version   provide compatibility with Perl version

--cplusplus      accept C++ comments

--quiet          don't output anything except fatal errors

--nodiag         don't show diagnostics

--nohints        don't show hints

--nochanges     don't suggest changes

--nofilter       don't filter input files

--strip          strip all script and doc functionality from  
                  ppport.h

--list-provided   list provided API

--list-unsupported   list unsupported API

--api-info=name    show Perl API portability information

## =head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.10.0.

## =head1 OPTIONS

### =head2 --help

Display a brief usage summary.

### =head2 --version

Display the version of F<ppport.h>.

### =head2 --patch=I<file>

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

=head2 --copy=I<suffix>

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does not require any external programs. Note that this does not automatically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither C<--patch> or C<--copy> are given, the default is to simply print the diffs for each file. This requires either C<Text::Diff> or a C<diff> program to be installed.

=head2 --diff=I<program>

Manually set the diff program and options to use. The default is to use C<Text::Diff>, when installed, and output unified context diffs.

=head2 --compat-version=I<version>

Tell F<ppport.h> to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of F<ppport.h> if you intend to be backward compatible only down to a certain Perl version.

=head2 --cplusplus

Usually, F<ppport.h> will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs F<ppport.h> to leave C++ comments untouched.

=head2 --quiet

Be quiet. Don't print anything except fatal errors.

=head2 --nodiag

Don't output any diagnostic messages. Only portability alerts will be printed.

=head2 --nohints

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

=head2 --nochanges

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

=head2 --nofilter

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

=head2 --strip

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort> module is installed.

=head2 --list-provided

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

=head2 --list-unsupported

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

=head2 --api-info=I<name>

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

=head1 DESCRIPTION

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more C<#define>s in your source code before the inclusion of F<ppport.h>.

These functions or variables will be marked C<explicit> in the list shown by C<--list-provided>.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either C<static> or global variants.

For a C<static> function or variable (used only in a single source file), use:

```
#define NEED_function
#define NEED_variable
```

For a global function or variable (used in multiple source files), use:

```
#define NEED_function_GLOBAL
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_parser	NEED_PL_parser	NEED_PL_parser_GLOBAL

PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL
grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_sprintf()	NEED_my_sprintf	NEED_my_sprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSV_type()	NEED_newSV_type	NEED_newSV_type_GLOBAL
newSVpvn_flags()	NEED_newSVpvn_flags	NEED_newSVpvn_flags_GLOBAL
newSVpvn_share()	NEED_newSVpvn_share	NEED_newSVpvn_share_GLOBAL
pv_display()	NEED_pv_display	NEED_pv_display_GLOBAL
pv_escape()	NEED_pv_escape	NEED_pv_escape_GLOBAL
pv_pretty()	NEED_pv_pretty	NEED_pv_pretty_GLOBAL
sv_2pv_flags()	NEED_sv_2pv_flags	NEED_sv_2pv_flags_GLOBAL
sv_2pvbyte()	NEED_sv_2pvbyte	NEED_sv_2pvbyte_GLOBAL
sv_catpvf_mg()	NEED_sv_catpvf_mg	NEED_sv_catpvf_mg_GLOBAL
sv_catpvf_mg_nocontext()	NEED_sv_catpvf_mg_nocontext	NEED_sv_catpvf_mg_nocontext_GLOBAL
sv_pvn_force_flags()	NEED_sv_pvn_force_flags	NEED_sv_pvn_force_flags_GLOBAL
sv_setpvf_mg()	NEED_sv_setpvf_mg	NEED_sv_setpvf_mg_GLOBAL
sv_setpvf_mg_nocontext()	NEED_sv_setpvf_mg_nocontext	NEED_sv_setpvf_mg_nocontext_GLOBAL
vload_module()	NEED_vload_module	NEED_vload_module_GLOBAL
vnewSVpvf()	NEED_vnewSVpvf	NEED_vnewSVpvf_GLOBAL
warn()	NEED_warner	NEED_warner_GLOBAL

To avoid namespace conflicts, you can change the namespace of the explicitly exported functions / variables using the C<DPPP\_NAMESPACE> macro. Just C<#define> the macro before including C<ppport.h>:

```
#define DPPP_NAMESPACE MyOwnNamespace_
#include "ppport.h"
```

The default namespace is C<DPPP\_>.

=back

The good thing is that most of the above can be checked by running F<ppport.h> on your source code. See the next section for details.

=head1 EXAMPLES



To verify whether `F<ppport.h>` is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, `F<ppport.h>` can be run as a Perl script to check your source code. Simply say:

```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different `C<diff>` program or options, using the `C<--diff>` option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the `C<newSVpv>` function, use:

```
perl ppport.h --api-info=newSVpv
```

Since the argument to `C<--api-info>` can be a regular expression, you can use

```
perl ppport.h --api-info=/_nomg$/
```

to display portability information for all `C<_nomg>` functions or

```
perl ppport.h --api-info=/.
```

to display information for all known API elements.

=head1 BUGS

If this version of F<ppport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPPort> are available on CPAN before sending a bug report.

If F<ppport.h> was generated using the latest version of C<Devel::PPPort> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPPort> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2009, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPPort>.

=cut

use strict;

# Disable broken TRIE-optimization

BEGIN { eval '\${^RE\_TRIE\_MAXBUF} = -1' if \$] >= 5.009004 && \$] <= 5.009005 }

my \$VERSION = 3.19;

```
my %opt = (  
  quiet => 0,  
  diag => 1,  
  hints => 1,  
  changes => 1,  
  cplusplus => 0,  
  filter => 1,  
  strip => 0,  
  version => 0,  
);
```

```
my($ppport) = $0 =~ /([\w.]+)$/;  
my $LF = '(?:\r\n|[\r\n])'; # line feed  
my $HS = "[\t]"; # horizontal whitespace
```

# Never use C comments in this file!

```
my $ccs = '!.*';  
my $cce = '*!./';  
my $rcs = quotemeta $ccs;  
my $rce = quotemeta $cce;
```

```
eval {  
  require Getopt::Long;  
  Getopt::Long::GetOptions(\%opt, qw(  
    help quiet diag! filter! hints! changes! cplusplus strip version  
    patch=s copy=s diff=s compat-version=s  
    list-provided list-unsupported api-info=s  
  )) or usage();  
};
```

```

if ($@ and grep /^-/, @ARGV) {
    usage() if "@ARGV" =~ /^--?h(?:elp)?$/;
    die "Getopt::Long not found. Please don't use any options.\n";
}

if ($opt{version}) {
    print "This is $0 $VERSION.\n";
    exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
    my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
    if ($@) {
        die "Invalid version number format: '$opt{'compat-version'}'\n";
    }
    die "Only Perl 5 is supported\n" if $r != 5;
    die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
    $opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
    $opt{'compat-version'} = 5;
}

my %API = map { /^(\w+)\|([^\|]*)\|([^\|]*)\|(\w*)$/
    ? ( $1 => {
        ($2      ? ( base   => $2 ) : ()),
        ($3      ? ( todo   => $3 ) : ()),
        (index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
        (index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
        (index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
    } )
    : die "invalid spec: $_" } qw(
AvFILLp|5.004050||p
AvFILL|||
CLASS|||n
CPERLscope|5.005000||p
CX_CURPAD_SAVE|||
CX_CURPAD_SV|||
CopFILEAV|5.006000||p
CopFILEGV_set|5.006000||p
CopFILEGV|5.006000||p
CopFILESV|5.006000||p
CopFILE_set|5.006000||p
CopFILE|5.006000||p
CopSTASHPV_set|5.006000||p

```

CopSTASHPV|5.006000||p  
CopSTASH\_eq|5.006000||p  
CopSTASH\_set|5.006000||p  
CopSTASH|5.006000||p  
CopyD|5.009002||p  
Copy|||  
CvPADLIST|||  
CvSTASH|||  
CvWEAKOUTSIDE|||  
DEFSV\_set|5.011000||p  
DEFSV|5.004050||p  
END\_EXTERN\_C|5.005000||p  
ENTER|||  
ERRSV|5.004050||p  
EXTEND|||  
EXTERN\_C|5.005000||p  
F0convert|||n  
FREEMPS|||  
GIMME\_V||5.004000|n  
GIMME|||n  
GROK\_NUMERIC\_RADIX|5.007002||p  
G\_ARRAY|||  
G\_DISCARD|||  
G\_EVAL|||  
G\_METHOD|5.006001||p  
G\_NOARGS|||  
G\_SCALAR|||  
G\_VOID||5.004000|  
GetVars|||  
GvSVn|5.009003||p  
GvSV|||  
Gv\_AMupdate|||  
HEf\_SVKEY||5.004000|  
HeHASH||5.004000|  
HeKEY||5.004000|  
HeKLEN||5.004000|  
HePV||5.004000|  
HeSVKEY\_force||5.004000|  
HeSVKEY\_set||5.004000|  
HeSVKEY||5.004000|  
HeUTF8||5.011000|  
HeVAL||5.004000|  
HvNAMELEN\_get|5.009003||p  
HvNAME\_get|5.009003||p  
HvNAME|||  
INT2PTR|5.006000||p  
IN\_LOCALE\_COMPILETIME|5.007002||p  
IN\_LOCALE\_RUNTIME|5.007002||p

IN\_LOCALE|5.007002||p  
IN\_PERL\_COMPILETIME|5.008001||p  
IS\_NUMBER\_GREATER\_THAN\_UV\_MAX|5.007002||p  
IS\_NUMBER\_INFINITY|5.007002||p  
IS\_NUMBER\_IN\_UV|5.007002||p  
IS\_NUMBER\_NAN|5.007003||p  
IS\_NUMBER\_NEG|5.007002||p  
IS\_NUMBER\_NOT\_INT|5.007002||p  
IVSIZE|5.006000||p  
IVTYPE|5.006000||p  
IVdf|5.006000||p  
LEAVE|||  
LVRET|||  
MARK|||  
MULTICALL||5.011000|  
MY\_CXT\_CLONE|5.009002||p  
MY\_CXT\_INIT|5.007003||p  
MY\_CXT|5.007003||p  
MoveD|5.009002||p  
Move|||  
NOOP|5.005000||p  
NUM2PTR|5.006000||p  
NVTYPE|5.006000||p  
NVef|5.006001||p  
NVff|5.006001||p  
NVgf|5.006001||p  
Newxc|5.009003||p  
Newxz|5.009003||p  
Newx|5.009003||p  
Nullav|||  
Nullch|||  
Nullcv|||  
Nullhv|||  
Nullsv|||  
ORIGMARK|||  
PAD\_BASE\_SV|||  
PAD\_CLONE\_VARS|||  
PAD\_COMPNAME\_FLAGS|||  
PAD\_COMPNAME\_GEN\_set|||  
PAD\_COMPNAME\_GEN|||  
PAD\_COMPNAME\_OURSTASH|||  
PAD\_COMPNAME\_PV|||  
PAD\_COMPNAME\_TYPE|||  
PAD\_DUP|||  
PAD\_RESTORE\_LOCAL|||  
PAD\_SAVE\_LOCAL|||  
PAD\_SAVE\_SETNULLPAD|||  
PAD\_SETSV|||

PAD\_SET\_CUR\_NOSAVE|||  
PAD\_SET\_CUR|||  
PAD\_SV1|||  
PAD\_SV|||  
PERLIO\_FUNCS\_CAST|5.009003||p  
PERLIO\_FUNCS\_DECL|5.009003||p  
PERL\_ABS|5.008001||p  
PERL\_BCDVERSION|5.011000||p  
PERL\_GCC\_BRACE\_GROUPS\_FORBIDDEN|5.008001||p  
PERL\_HASH|5.004000||p  
PERL\_INT\_MAX|5.004000||p  
PERL\_INT\_MIN|5.004000||p  
PERL\_LONG\_MAX|5.004000||p  
PERL\_LONG\_MIN|5.004000||p  
PERL\_MAGIC\_arylen|5.007002||p  
PERL\_MAGIC\_backref|5.007002||p  
PERL\_MAGIC\_bm|5.007002||p  
PERL\_MAGIC\_collxfrm|5.007002||p  
PERL\_MAGIC\_dbfile|5.007002||p  
PERL\_MAGIC\_dbline|5.007002||p  
PERL\_MAGIC\_defelem|5.007002||p  
PERL\_MAGIC\_envelem|5.007002||p  
PERL\_MAGIC\_env|5.007002||p  
PERL\_MAGIC\_ext|5.007002||p  
PERL\_MAGIC\_fm|5.007002||p  
PERL\_MAGIC\_glob|5.011000||p  
PERL\_MAGIC\_isaelem|5.007002||p  
PERL\_MAGIC\_isa|5.007002||p  
PERL\_MAGIC\_mutex|5.011000||p  
PERL\_MAGIC\_nkeys|5.007002||p  
PERL\_MAGIC\_overload\_elem|5.007002||p  
PERL\_MAGIC\_overload\_table|5.007002||p  
PERL\_MAGIC\_overload|5.007002||p  
PERL\_MAGIC\_pos|5.007002||p  
PERL\_MAGIC\_qr|5.007002||p  
PERL\_MAGIC\_regdata|5.007002||p  
PERL\_MAGIC\_regdatum|5.007002||p  
PERL\_MAGIC\_regex\_global|5.007002||p  
PERL\_MAGIC\_shared\_scalar|5.007003||p  
PERL\_MAGIC\_shared|5.007003||p  
PERL\_MAGIC\_sigelem|5.007002||p  
PERL\_MAGIC\_sig|5.007002||p  
PERL\_MAGIC\_substr|5.007002||p  
PERL\_MAGIC\_sv|5.007002||p  
PERL\_MAGIC\_taint|5.007002||p  
PERL\_MAGIC\_tiedelem|5.007002||p  
PERL\_MAGIC\_tiedscalar|5.007002||p  
PERL\_MAGIC\_tied|5.007002||p

PERL\_MAGIC\_utf8|5.008001||p  
PERL\_MAGIC\_uvar\_elem|5.007003||p  
PERL\_MAGIC\_uvar|5.007002||p  
PERL\_MAGIC\_vec|5.007002||p  
PERL\_MAGIC\_vstring|5.008001||p  
PERL\_PV\_ESCAPE\_ALL|5.009004||p  
PERL\_PV\_ESCAPE\_FIRSTCHAR|5.009004||p  
PERL\_PV\_ESCAPE\_NOBACKSLASH|5.009004||p  
PERL\_PV\_ESCAPE\_NOCLEAR|5.009004||p  
PERL\_PV\_ESCAPE\_QUOTE|5.009004||p  
PERL\_PV\_ESCAPE\_RE|5.009005||p  
PERL\_PV\_ESCAPE\_UNI\_DETECT|5.009004||p  
PERL\_PV\_ESCAPE\_UNI|5.009004||p  
PERL\_PV\_PRETTY\_DUMP|5.009004||p  
PERL\_PV\_PRETTY\_ELLIPSES|5.010000||p  
PERL\_PV\_PRETTY\_LTGT|5.009004||p  
PERL\_PV\_PRETTY\_NOCLEAR|5.010000||p  
PERL\_PV\_PRETTY\_QUOTE|5.009004||p  
PERL\_PV\_PRETTY\_REGPROP|5.009004||p  
PERL\_QUAD\_MAX|5.004000||p  
PERL\_QUAD\_MIN|5.004000||p  
PERL\_REVISION|5.006000||p  
PERL\_SCAN\_ALLOW\_UNDERSCORES|5.007003||p  
PERL\_SCAN\_DISALLOW\_PREFIX|5.007003||p  
PERL\_SCAN\_GREATER\_THAN\_UV\_MAX|5.007003||p  
PERL\_SCAN\_SILENT\_ILLDIGIT|5.008001||p  
PERL\_SHORT\_MAX|5.004000||p  
PERL\_SHORT\_MIN|5.004000||p  
PERL\_SIGNALS\_UNSAFE\_FLAG|5.008001||p  
PERL\_SUBVERSION|5.006000||p  
PERL\_SYS\_INIT3|5.006000|  
PERL\_SYS\_INIT||  
PERL\_SYS\_TERM||5.011000|  
PERL\_UCHAR\_MAX|5.004000||p  
PERL\_UCHAR\_MIN|5.004000||p  
PERL\_UINT\_MAX|5.004000||p  
PERL\_UINT\_MIN|5.004000||p  
PERL\_ULONG\_MAX|5.004000||p  
PERL\_ULONG\_MIN|5.004000||p  
PERL\_UNUSED\_ARG|5.009003||p  
PERL\_UNUSED\_CONTEXT|5.009004||p  
PERL\_UNUSED\_DECL|5.007002||p  
PERL\_UNUSED\_VAR|5.007002||p  
PERL\_UQUAD\_MAX|5.004000||p  
PERL\_UQUAD\_MIN|5.004000||p  
PERL\_USE\_GCC\_BRACE\_GROUPS|5.009004||p  
PERL\_USHORT\_MAX|5.004000||p  
PERL\_USHORT\_MIN|5.004000||p



PERL\_VERSION|5.006000|p  
PL\_DBsignal|5.005000|p  
PL\_DBsingle||pn  
PL\_DBsub||pn  
PL\_DBtrace||pn  
PL\_Sv|5.005000|p  
PL\_bufend|5.011000|p  
PL\_bufptr|5.011000|p  
PL\_compiling|5.004050|p  
PL\_copline|5.011000|p  
PL\_curcop|5.004050|p  
PL\_curstash|5.004050|p  
PL\_debstash|5.004050|p  
PL\_defgv|5.004050|p  
PL\_diehook|5.004050|p  
PL\_dirty|5.004050|p  
PL\_dowarn||pn  
PL\_errgv|5.004050|p  
PL\_error\_count|5.011000|p  
PL\_expect|5.011000|p  
PL\_hexdigit|5.005000|p  
PL\_hints|5.005000|p  
PL\_in\_my\_stash|5.011000|p  
PL\_in\_my|5.011000|p  
PL\_last\_in\_gv||n  
PL\_laststatval|5.005000|p  
PL\_lex\_state|5.011000|p  
PL\_lex\_stuff|5.011000|p  
PL\_linestr|5.011000|p  
PL\_modglobal||5.005000|n  
PL\_na|5.004050|pn  
PL\_no\_modify|5.006000|p  
PL\_ofsgv||n  
PL\_parser|5.009005|p  
PL\_perl\_destruct\_level|5.004050|p  
PL\_perldb|5.004050|p  
PL\_ppaddr|5.006000|p  
PL\_rsfilters|5.004050|p  
PL\_rsfilters|5.004050|p  
PL\_rs||n  
PL\_signals|5.008001|p  
PL\_stack\_base|5.004050|p  
PL\_stack\_sp|5.004050|p  
PL\_statcache|5.005000|p  
PL\_stdingv|5.004050|p  
PL\_sv\_arenaroot|5.004050|p  
PL\_sv\_no|5.004050|pn  
PL\_sv\_undef|5.004050|pn

PL\_sv\_yes|5.004050|pn  
PL\_tainted|5.004050|p  
PL\_tainting|5.004050|p  
PL\_tokenbuf|5.011000|p  
POP\_MULTICALL||5.011000|  
POPi||n  
POPi||n  
POPn||n  
POPpbytex||5.007001|n  
POPpx||5.005030|n  
POPp||n  
POPs||n  
PTR2IV|5.006000|p  
PTR2NV|5.006000|p  
PTR2UV|5.006000|p  
PTR2nat|5.009003|p  
PTR2ul|5.007001|p  
PTRV|5.006000|p  
PUSHMARK||  
PUSH\_MULTICALL||5.011000|  
PUSHi||  
PUSHmortal|5.009002|p  
PUSHn||  
PUSHp||  
PUSHs||  
PUSHu|5.004000|p  
PUTBACK||  
PerlIO\_clearerr||5.007003|  
PerlIO\_close||5.007003|  
PerlIO\_context\_layers||5.009004|  
PerlIO\_eof||5.007003|  
PerlIO\_error||5.007003|  
PerlIO\_fileno||5.007003|  
PerlIO\_fill||5.007003|  
PerlIO\_flush||5.007003|  
PerlIO\_get\_base||5.007003|  
PerlIO\_get\_bufsiz||5.007003|  
PerlIO\_get\_cnt||5.007003|  
PerlIO\_get\_ptr||5.007003|  
PerlIO\_read||5.007003|  
PerlIO\_seek||5.007003|  
PerlIO\_set\_cnt||5.007003|  
PerlIO\_set\_ptrcnt||5.007003|  
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sv\_magic\_portable|5.011000|5.004000|p  
sv\_magicext|5.007003|  
sv\_magic|||  
sv\_mortalcopy|||  
sv\_ncmp|||  
sv\_newmortal|||

sv\_newref|||  
sv\_nolocking|5.007003|  
sv\_nosharing|5.007003|  
sv\_nounlocking|||  
sv\_nv|5.005000|  
sv\_peek|5.005000|  
sv\_pos\_b2u\_midway|||  
sv\_pos\_b2u|5.006000|  
sv\_pos\_u2b\_cached|||  
sv\_pos\_u2b\_forwards||n  
sv\_pos\_u2b\_midway||n  
sv\_pos\_u2b|5.006000|  
sv\_pvbyten\_force|5.006000|  
sv\_pvbyten|5.006000|  
sv\_pvbyte|5.006000|  
sv\_pvn\_force\_flags|5.007002||p  
sv\_pvn\_force|||  
sv\_pvn\_nomg|5.007003|5.005000|p  
sv\_pvn|5.005000|  
sv\_pvutf8n\_force|5.006000|  
sv\_pvutf8n|5.006000|  
sv\_pvutf8|5.006000|  
sv\_pv|5.006000|  
sv\_recode\_to\_utf8|5.007003|  
sv\_reftype|||  
sv\_release\_COW|||  
sv\_replace|||  
sv\_report\_used|||  
sv\_reset|||  
sv\_rvweaken|5.006000|  
sv\_setiv\_mg|5.004050||p  
sv\_setiv|||  
sv\_setnv\_mg|5.006000||p  
sv\_setnv|||  
sv\_setpv\_mg|5.004050||p  
sv\_setpvf\_mg\_nocontext|||pvn  
sv\_setpvf\_mg|5.006000|5.004000|pv  
sv\_setpvf\_nocontext|||vn  
sv\_setpvf|5.004000|v  
sv\_setpviv\_mg|5.008001|  
sv\_setpviv|5.008001|  
sv\_setpvn\_mg|5.004050||p  
sv\_setpvn|||  
sv\_setpvs|5.009004||p  
sv\_setpv|||  
sv\_setref\_iv|||  
sv\_setref\_nv|||  
sv\_setref\_pvn|||

sv\_setref\_pv|||  
sv\_setref\_uv|5.007001|  
sv\_setsv\_cow|||  
sv\_setsv\_flags|5.007002|  
sv\_setsv\_mg|5.004050|p  
sv\_setsv\_nomg|5.007002||p  
sv\_setsv|||  
sv\_setuv\_mg|5.004050||p  
sv\_setuv|5.004000||p  
sv\_tainted|5.004000|  
sv\_taint|5.004000|  
sv\_true|5.005000|  
sv\_unglob|||  
sv\_uni\_display|5.007003|  
sv\_unmagic|||  
sv\_unref\_flags|5.007001|  
sv\_unref|||  
sv\_untaint|5.004000|  
sv\_upgrade|||  
sv\_usepvn\_flags|5.009004|  
sv\_usepvn\_mg|5.004050||p  
sv\_usepvn|||  
sv\_utf8\_decode|5.006000|  
sv\_utf8\_downgrade|5.006000|  
sv\_utf8\_encode|5.006000|  
sv\_utf8\_upgrade\_flags\_grow|5.011000|  
sv\_utf8\_upgrade\_flags|5.007002|  
sv\_utf8\_upgrade\_nomg|5.007002|  
sv\_utf8\_upgrade|5.007001|  
sv\_uv|5.005000||p  
sv\_vcatpvf\_mg|5.006000|5.004000|p  
sv\_vcatpvfn|5.004000|  
sv\_vcatpvf|5.006000|5.004000|p  
sv\_vsetpvf\_mg|5.006000|5.004000|p  
sv\_vsetpvfn|5.004000|  
sv\_vsetpvf|5.006000|5.004000|p  
sv\_xmlpeek|||  
svtype|||  
swallow\_bom|||  
swap\_match\_buff|||  
swash\_fetch|5.007002|  
swash\_get|||  
swash\_init|5.006000|  
sys\_init3|5.010000|n  
sys\_init|5.010000|n  
sys\_intern\_clear|||  
sys\_intern\_dup|||  
sys\_intern\_init|||

sys\_term||5.010000|n  
taint\_env|||  
taint\_proper|||  
tmpls\_grow||5.006000|  
toLOWER|||  
toUPPER|||  
to\_byte\_substr|||  
to\_uni\_fold||5.007003|  
to\_uni\_lower\_lc||5.006000|  
to\_uni\_lower||5.007003|  
to\_uni\_title\_lc||5.006000|  
to\_uni\_title||5.007003|  
to\_uni\_upper\_lc||5.006000|  
to\_uni\_upper||5.007003|  
to\_utf8\_case||5.007003|  
to\_utf8\_fold||5.007003|  
to\_utf8\_lower||5.007003|  
to\_utf8\_substr|||  
to\_utf8\_title||5.007003|  
to\_utf8\_upper||5.007003|  
token\_free|||  
token\_getmad|||  
tokenize\_use|||  
tokeq|||  
tokereport|||  
too\_few\_arguments|||  
too\_many\_arguments|||  
uiv\_2buf|||n  
unlnk|||  
unpack\_rec|||  
unpack\_str||5.007003|  
unpackstring||5.008001|  
unshare\_hek\_or\_pvn|||  
unshare\_hek|||  
unsharepvn||5.004000|  
unwind\_handler\_stack|||  
update\_debugger\_info|||  
upg\_version||5.009005|  
usage|||  
utf16\_to\_utf8\_reversed||5.006001|  
utf16\_to\_utf8||5.006001|  
utf8\_distance||5.006000|  
utf8\_hop||5.006000|  
utf8\_length||5.007001|  
utf8\_mg\_pos\_cache\_update|||  
utf8\_to\_bytes||5.006001|  
utf8\_to\_uvchr||5.007001|  
utf8\_to\_uvuni||5.007001|

utf8n\_to\_uvchr||  
utf8n\_to\_uvuni||5.007001|  
utilize||  
uvchr\_to\_utf8\_flags||5.007003|  
uvchr\_to\_utf8||  
uvuni\_to\_utf8\_flags||5.007003|  
uvuni\_to\_utf8||5.007001|  
validate\_suid||  
varname||  
vcmp||5.009000|  
vcroak||5.006000|  
vdeb||5.007003|  
vdie\_common||  
vdie\_croak\_common||  
vdie||  
vform||5.006000|  
visit||  
vivify\_defelem||  
vivify\_ref||  
vload\_module|5.006000|p  
vmess||5.006000|  
vnewSVpvf|5.006000|5.004000|p  
vnormal||5.009002|  
vnumify||5.009000|  
vstringify||5.009000|  
vverify||5.009003|  
vwarner||5.006000|  
vwarn||5.006000|  
wait4pid||  
warn\_nocontext||vn  
warner\_nocontext||vn  
warner|5.006000|5.004000|pv  
warn||v  
watch||  
whichsig||  
write\_no\_mem||  
write\_to\_stderr||  
xmldump\_all||  
xmldump\_attr||  
xmldump\_eval||  
xmldump\_form||  
xmldump\_indent||v  
xmldump\_packsubs||  
xmldump\_sub||  
xmldump\_vindent||  
yyerror||  
yylex||  
yyparse||

```

yywarn|||
);

if (exists $opt{'list-unsupported'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", 'x'(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

```

```

# Scan for possible replacement candidates

```

```

my(%replace, %need, %hints, %warnings, %depends);
my $replace = 0;
my($hint, $define, $function);

```

```

sub find_api
{
    my $code = shift;
    $code =~ s{
        /(?: \^[^*]*\*(?:\^[^$ccs][^*]*\*)* /| /(\r\n)*
        | "[^"\\]*(?:\\\[^\"])*"
        | '[^"\\]*(?:\\\[^\']*)*' }{ }egsx;
    grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

```

```

while (<DATA>) {
    if ($hint) {
        my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
        if (m{^\s*\s*(.*)\s*$}) {
            for (@{$hint->[1]}) {
                $h->{$_} ||= ""; # suppress warning with older perls
                $h->{$_} .= "$1\n";
            }
        }
        else { undef $hint }
    }
}

```

```

$hint = [$1, [split /,?\s+/, $2]]
    if m{^\s*$rcss\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

```

```

if ($define) {
    if ($define->[1] =~ /\$/) {
        $define->[1] .= $_;
    }
    else {

```

```

if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
  my @n = find_api($define->[1]);
  push @{$depends{$define->[0]}}, @n if @n
}
undef $define;
}
}

$define = [$1, $2] if m{^s*#s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

if ($function) {
  if (/^/) {
    if (exists $API{$function->[0]}) {
      my @n = find_api($function->[1]);
      push @{$depends{$function->[0]}}, @n if @n
    }
    undef $function;
  }
  else {
    $function->[1] .= $_;
  }
}

$function = [$1, ""] if m{^DPPP_\(my_\(\w+)\)};

$replace = $1 if m{^s*$rccs\s+Replace:\s+(\d+)\s+$rcces*s*$};
$replace{$2} = $1 if $replace and m{^s*#s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+)};
$replace{$2} = $1 if m{^s*#s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+).*rccs\s+Replace\s+$rcces};
$replace{$1} = $2 if m{^s*$rccs\s+Replace (\w+) with (\w+)\s+$rcces*s*$};

if (m{^s*$rccs\s+(\w+(\s*,\s*\w+)*)\s+depends\s+on\s+(\w+(\s*,\s*\w+)*)\s+$rcces*s*$}) {
  my @deps = map { s/\s+//g; $_ } split /,/, $3;
  my $d;
  for $d (map { s/\s+//g; $_ } split /,/, $1) {
    push @{$depends{$d}}, @deps;
  }
}

$need{$1} = 1 if m{^#if\s+defined\(\NEED_\(\w+)\(?:_GLOBAL\)?\)};
}

for (values %depends) {
  my %s;
  $_ = [sort grep !$s{$_}++, @$_];
}

if (exists $opt{'api-info'}) {
  my $f;

```

```

my $count = 0;
my $match = $opt{'api-info'} =~ m!^(.*)/$! ? $1 : "\Q$opt{'api-info'}\E\$";
for $f (sort { lc $a cmp lc $b } keys %API) {
    next unless $f =~ /$match/;
    print "\n=== $f ===\n\n";
    my $info = 0;
    if ($API{$f}{base} || $API{$f}{todo}) {
        my $base = format_version($API{$f}{base} || $API{$f}{todo});
        print "Supported at least starting from perl-$base.\n";
        $info++;
    }
    if ($API{$f}{provided}) {
        my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
        print "Support by $ppport provided back to perl-$todo.\n";
        print "Support needs to be explicitly requested by NEED_$f.\n" if exists $need{$f};
        print "Depends on: ", join(', ', @{$depends{$f}}), ".\n" if exists $depends{$f};
        print "\n$hints{$f}" if exists $hints{$f};
        print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
        $info++;
    }
    print "No portability information available.\n" unless $info;
    $count++;
}
$count or print "Found no API matching '$opt{'api-info'}'.";
print "\n";
exit 0;
}

if (exists $opt{'list-provided'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{provided};
        my @flags;
        push @flags, 'explicit' if exists $need{$f};
        push @flags, 'depend' if exists $depends{$f};
        push @flags, 'hint' if exists $hints{$f};
        push @flags, 'warning' if exists $warnings{$f};
        my $flags = @flags ? '['.join(', ', @flags).']' : '';
        print "$f$flags\n";
    }
    exit 0;
}

my @files;
my $srcext = qw( .xs .c .h .cc .cpp -c.inc -xs.inc );
my $srcext = join '|', map { quotemeta $_ } @srcext;

if (@ARGV) {

```



```

my %seen;
for (@ARGV) {
  if (-e) {
    if (-f) {
      push @files, $_ unless $seen{$_}++;
    }
    else { warn "'$_' is not a file.\n" }
  }
  else {
    my @new = grep { -f } glob $_
      or warn "'$_' does not exist.\n";
    push @files, grep { !$seen{$_}++ } @new;
  }
}
else {
  eval {
    require File::Find;
    File::Find::find(sub {
      $File::Find::name =~ /($srcext)$/i
      and push @files, $File::Find::name;
    }, '.');
  };
  if ($@) {
    @files = map { glob "$*" } @srcext;
  }
}

if (!@ARGV || $opt{filter}) {
  my(@in, @out);
  my %xsc = map { /(.*)\.xs$/ ? ("1.c" => 1, "1.cc" => 1) : () } @files;
  for (@files) {
    my $out = exists $xsc{$_} || /\bQ$ppport\E$/i || !/($srcext)$/i;
    push @ { $out ? \@out : \@in }, $_;
  }
  if (@ARGV && @out) {
    warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
  }
  @files = @in;
}

die "No input files given!\n" unless @files;

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

```

```

for $filename (@files) {
  unless (open IN, "<$filename") {
    warn "Unable to read from $filename: $!\n";
    next;
  }

  info("Scanning $filename ...");

  my $c = do { local $/; <IN> };
  close IN;

  my %file = (orig => $c, changes => 0);

  # Temporarily remove C/XS comments and strings from the code
  my @ccom;

  $c =~ s{
    ( ^$HS*#$HS*include\b[^\r\n]+\b(?:\Q$ppport\E|XSUB\.h)\b[^\r\n]*
    | ^$HS*#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )
  | ( ^$HS*\#[^\r\n]*
    | "[^\\]*(?:\\.[^\\])*"
    | '[^\\]*(?:\\.[^\\])*'
    | /(?: \*[^*]*\*+(?:[^\$ccs][^*]*\*+)* /|/[^\r\n]* ) )
  }{ defined $2 and push @ccom, $2;
    defined $1 ? $1 : "$ccs#$ccom$cc" }mgsex;

  $file{ccom} = \@ccom;
  $file{code} = $c;
  $file{has_inc_ppport} = $c =~ /^$HS*#$HS*include[^\r\n]+\b\Q$ppport\E\b/m;

  my $func;

  for $func (keys %API) {
    my $match = $func;
    $match .= "$$revreplace{$func}" if exists $revreplace{$func};
    if ($c =~ /\b(?:Perl_)?($match)\b/) {
      $file{uses_replace}{$1}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
      $file{uses_Perl}{$func}++ if $c =~ /\bPerl_$func\b/;
      if (exists $API{$func}{provided}) {
        $file{uses_provided}{$func}++;
        if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
          $file{uses}{$func}++;
          my @deps = rec_depend($func);
          if (@deps) {
            $file{uses_deps}{$func} = \@deps;
            for (@deps) {
              $file{uses}{$_} = 0 unless exists $file{uses}{$_};
            }
          }
        }
      }
    }
  }

```

```

    }
    for ($func, @deps) {
        $file{needs}{$_} = 'static' if exists $need{$_};
    }
}
}
if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
    if ($c =~ /\b$func\b/) {
        $file{uses_todo}{$func}++;
    }
}
}
}
}
}

```

```

while ($c =~ /^$HS*#$HS*define$HS+(NEED_(\w+?)(_GLOBAL)?)\b/mg) {
    if (exists $need{$2}) {
        $file{defined $3 ? 'needed_global' : 'needed_static'}{$2}++;
    }
    else { warning("Possibly wrong #define $1 in $filename") }
}

```

```

for (qw(uses needs uses_todo needed_global needed_static)) {
    for $func (keys %{$file{$_}}) {
        push @{$global{$_}{$func}}, $filename;
    }
}

```

```

$files{$filename} = \%file;
}

```

```

# Globally resolve NEED_'s
my $need;
for $need (keys %{$global{needs}}) {
    if (@{$global{needs}{$need}} > 1) {
        my @targets = @{$global{needs}{$need}};
        my @t = grep $files{$_}{needed_global}{$need}, @targets;
        @targets = @t if @t;
        @t = grep /\.xs$/i, @targets;
        @targets = @t if @t;
        my $target = shift @targets;
        $files{$target}{needs}{$need} = 'global';
        for (@{$global{needs}{$need}}) {
            $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
        }
    }
}
}
}

```

```

for $filename (@files) {

```

```

exists $files{$filename} or next;

info("=== Analyzing $filename ===");

my %file = %{$files{$filename}};
my $func;
my $c = $file{code};
my $warnings = 0;

for $func (sort keys %{$file{uses_Perl}}) {
    if ($API{$func}{varargs}) {
        unless ($API{$func}{nothxarg}) {
            my $changes = ($c =~ s{\b(Perl_?func\s*\s*(?!aTHX_?)(\s*)[\^\s]*\)}
                { $1 . ($2 eq ' ') ? 'aTHX' : 'aTHX_' } . $2 }ge);
            if ($changes) {
                warning("Doesn't pass interpreter argument aTHX to Perl_$func");
                $file{changes} += $changes;
            }
        }
    }
    else {
        warning("Uses Perl_$func instead of $func");
        $file{changes} += ($c =~ s{\bPerl_(s*)\s*(\s*aTHX_?)?\s*}
            {$func$1($g)});
    }
}

for $func (sort keys %{$file{uses_replace}}) {
    warning("Uses $func instead of $replace{$func}");
    $file{changes} += ($c =~ s/\b$func\b/$replace{$func}/g);
}

for $func (sort keys %{$file{uses_provided}}) {
    if ($file{uses}{$func}) {
        if (exists $file{uses_deps}{$func}) {
            diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
        }
        else {
            diag("Uses $func");
        }
    }
}
$warnings += hint($func);
}

unless ($opt{quiet}) {
    for $func (sort keys %{$file{uses_todo}}) {
        print "**** WARNING: Uses $func, which may not be portable below perl ",
            format_version($API{$func}{todo}), ", even with '$ppport\n';
    }
}

```

```

$warnings++;
}
}

for $func (sort keys %{$file{needed_static}}) {
  my $message = "";
  if (not exists $file{uses}{$func}) {
    $message = "No need to define NEED_$func if $func is never used";
  }
  elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
    $message = "No need to define NEED_$func when already needed globally";
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define$HS+NEED_$func\b.*$LF//mg);
  }
}

for $func (sort keys %{$file{needed_global}}) {
  my $message = "";
  if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_${func}_GLOBAL if $func is never used";
  }
  elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
      $message = "No need to define NEED_${func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
      $message = "No need to define NEED_${func}_GLOBAL when only used in this file";
    }
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define$HS+NEED_${func}_GLOBAL\b.*$LF//mg);
  }
}

$file{needs_inc_ppport} = keys %{$file{uses}};

if ($file{needs_inc_ppport}) {
  my $pp = "";

  for $func (sort keys %{$file{needs}}) {
    my $type = $file{needs}{$func};
    next if $type eq 'extern';
    my $suffix = $type eq 'global' ? '_GLOBAL' : "";
    unless (exists $file{"needed_$type"}{$func}) {
      if ($type eq 'global') {

```

```

    diag("Files [ @{$global{needs}}{$func} ] need $func, adding global request");
  }
  else {
    diag("File needs $func, adding static request");
  }
  $pp .= "#define NEED_ $func$suffix\n";
}
}

if ($pp && ($c =~ s/^(?=$HS*#$HS*define$HS+NEED_\w+)/$pp/m)) {
  $pp = ";
  $file{changes}++;
}

unless ($file{has_inc_ppport}) {
  diag("Needs to include '$ppport'");
  $pp .= qq(#include "$ppport"\n)
}

if ($pp) {
  $file{changes} += ($c =~ s/^(($HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms)
    || ($c =~ s/^(?=$HS*#$HS*include.*\Q$ppport\E)/$pp/m)
    || ($c =~ s/^(($HS*#$HS*include.*XSUB.*\s*?)/$1$pp/m)
    || ($c =~ s/^\$pp/);
}
}
else {
  if ($file{has_inc_ppport}) {
    diag("No need to include '$ppport'");
    $file{changes} += ($c =~ s/^(($HS*?#$HS*include.*\Q$ppport\E.*?)$LF//m);
  }
}

# put back in our C comments
my $ix;
my $cpc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
  if (!$opt{cplusplus} && $ccom[$ix] =~ s!^/!!) {
    $cpc++;
    $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
  }
  else {
    $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
  }
}

if ($cpc) {

```

```

my $s = $cppc != 1 ? 's' : "";
warning("Uses $cppc C++ style comment$s, which is not portable");
}

my $s = $warnings != 1 ? 's' : "";
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("$newfile' already exists, refusing to write copy of '$filename'");
        }
        else {
            local *F;
            if (open F, ">$newfile") {
                info("Writing copy of '$filename' with changes to '$newfile'");
                print F $c;
                close F;
            }
            else {
                error("Cannot open '$newfile' for writing: $!");
            }
        }
    }
    elsif (exists $opt{patch} || $opt{changes}) {
        if (exists $opt{patch}) {
            unless ($patch_opened) {
                if (open PATCH, ">$opt{patch}") {
                    $patch_opened = 1;
                }
            }
            else {
                error("Cannot open '$opt{patch}' for writing: $!");
                delete $opt{patch};
                $opt{changes} = 1;
                goto fallback;
            }
        }
        mydiff(\*PATCH, $filename, $c);
    }
    else {
        fallback:
        info("Suggested changes:");
        mydiff(\*STDOUT, $filename, $c);
    }
}
else {

```

```

    my $s = $file{changes} == 1 ? " : 's';
    info("$file{changes} potentially required change$s detected");
}
}
else {
    info("Looks good");
}
}

close PATCH if $patch_opened;

exit 0;

sub try_use { eval "use @_;"; return $@ eq " }

sub mydiff
{
    local *F = shift;
    my($file, $str) = @_;
    my $diff;

    if (exists $opt{diff}) {
        $diff = run_diff($opt{diff}, $file, $str);
    }

    if (!defined $diff and try_use("Text::Diff")) {
        $diff = Text::Diff::diff($file, \$str, { STYLE => 'Unified' });
        $diff = <<HEADER . $diff;
        --- $file
        +++ $file.patched
        HEADER
    }

    if (!defined $diff) {
        $diff = run_diff('diff -u', $file, $str);
    }

    if (!defined $diff) {
        $diff = run_diff('diff', $file, $str);
    }

    if (!defined $diff) {
        error("Cannot generate a diff. Please install Text::Diff or use --copy.");
        return;
    }

    print F $diff;

```



```

}

sub run_diff
{
my($prog, $file, $str) = @_;
my $tmp = 'dppptemp';
my $suf = 'aaa';
my $diff = "";
local *F;

while (-e "$tmp.$suf") { $suf++ }
$tmp = "$tmp.$suf";

if (open F, ">$tmp") {
print F $str;
close F;

if (open F, "$prog $file $tmp |") {
while (<F>) {
s/^Q$tmp\E/$file.patched/;
$diff .= $_;
}
close F;
unlink $tmp;
return $diff;
}

unlink $tmp;
}
else {
error("Cannot open '$tmp' for writing: $!");
}

return undef;
}

sub rec_depend
{
my($func, $seen) = @_;
return () unless exists $depends{$func};
$seen = {%{$seen||{}}};
return () if $seen->{$func}++;
my %s;
grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{

```

```

my $ver = shift;

if ($ver =~ /^(d+)\.(d+)\.(d+)$/) {
    return ($1, $2, $3);
}
elsif ($ver !~ /^(d+)\.[d_]+$/) {
    die "cannot parse version '$ver'\n";
}

$ver =~ s/_//g;
$ver =~ s/$/000000/;

my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

$v = int $v;
$s = int $s;

if ($r < 5 || ($r == 5 && $v < 6)) {
    if ($s % 10) {
        die "cannot parse version '$ver'\n";
    }
}

return ($r, $v, $s);
}

sub format_version
{
    my $ver = shift;

    $ver =~ s/$/000000/;
    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {
        if ($s % 10) {
            die "invalid version '$ver'\n";
        }
        $s /= 10;

        $ver = sprintf "%d.%03d", $r, $v;
        $s > 0 and $ver .= sprintf "_%02d", $s;

        return $ver;
    }
}

```

```

return sprintf "%d.%d.%d", $r, $v, $s;
}

sub info
{
  $opt{quiet} and return;
  print @_, "\n";
}

sub diag
{
  $opt{quiet} and return;
  $opt{diag} and print @_, "\n";
}

sub warning
{
  $opt{quiet} and return;
  print "*** ", @_, "\n";
}

sub error
{
  print "*** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint
{
  $opt{quiet} and return;
  my $func = shift;
  my $rv = 0;
  if (exists $warnings{$func} && !$given_warnings{$func}++) {
    my $warn = $warnings{$func};
    $warn =~ s/^\!*** !mg;
    print "*** WARNING: $func\n", $warn;
    $rv++;
  }
  if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
    my $hint = $hints{$func};
    $hint =~ s/^\! /mg;
    print " --- hint for $func ---\n", $hint;
  }
  $rv;
}

sub usage

```

```

{
my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s*^(.*?)\s*^=/ms;
my %M = ( 'T' => '*' );
$usage =~ s/^\s*perl\s+\S+/$^X $0/;
$usage =~ s/([A-Z])<([^>]+)>/M{$1}$2M{$1}/g;

```

```
print <<ENDUSAGE;
```

Usage: \$usage

See perldoc \$0 for details.

ENDUSAGE

```
exit 2;
```

```
}
```

```
sub strip
```

```
{
```

```
my $self = do { local(@ARGV,$/)=($0); <> };
```

```
my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)^=\w+/ms;
```

```
$copy =~ s/^(?=\S+)/ /gms;
```

```
$self =~ s/^\$HS+Do NOT edit.*?(?=\^)/$copy/ms;
```

```
$self =~ s/^\$SKIP.*(?:\^__DATA__)/SKIP
```

```
if (\@ARGV && $ARGV[0] eq '--unstrip') {
```

```
eval { require Devel::PPPport };
```

```
\$@ and die "Cannot require Devel::PPPport, please install.\n";
```

```
if (eval $Devel::PPPport::VERSION < $VERSION) {
```

```
die "$0 was originally generated with Devel::PPPport $VERSION.\n"
```

```
. "Your Devel::PPPport is only version $Devel::PPPport::VERSION.\n"
```

```
. "Please install a newer version, or --unstrip will not work.\n";
```

```
}
```

```
Devel::PPPport::WriteFile($0);
```

```
exit 0;
```

```
}
```

```
print <<END;
```

Sorry, but this is a stripped version of \$0.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X $0 --unstrip
```

```
END
```

```
/ms;
```

```
my($pl, $c) = $self =~ /(.*\^__DATA__)(.*)/ms;
```

```
$c =~ s{
```

```

/ (? : \*[^\*]*\*(?:[^\$cccs][^\*]*\*)* / | /[\r\n]*)
| ( "[^"\\]*(?:\\.["\\])*"
| '[^"\\]*(?:\\.["\\])*' )
| ($HS+) ){ defined $2 ? ' ' : ($1 || " ) }gsex;
$c =~ s!\s+$!!mg;
$c =~ s!^$LF!!mg;
$c =~ s!\s*#\s*#!mg;
$c =~ s!\s+!!mg;

open OUT, ">$0" or die "cannot strip $0: $!\n";
print OUT "$p!$c\n";

exit 0;
}

```

```

__DATA__
*/

```

Found in path(s):

```

* /opt/cola/permits/1000848935_1646171523.39/0/perl-threads-shared-1.43-6.el7.src.rpm-cosi-expand-archive-
XIsbALc3/threads-shared-1.43.tar.gz-cosi-expand-archive-dZnguN3v/threads-shared-1.43/ppport.h

```

## 1.97 libx11 1.6.7 2.el7

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`analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java`  
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### Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration

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<one line to give the library's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>

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Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

That's all there is to it!

# 1.104 perl-pathtools 3.40-5.el7

## 1.104.1 Available under license :

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

/\*

-----

ppport.h -- Perl/Pollution/Portability Version 3.20

Automatically created by Devel::PPPport running under perl 5.015005.

Do NOT edit this file directly! -- Edit PPPport\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

-----

SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.20

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help            show short help

--version            show version  
  
 --patch=file        write one patch file with changes  
 --copy=suffix       write changed copies with suffix  
 --diff=program      use diff program and options  
  
 --compat-version=version   provide compatibility with Perl version  
 --cplusplus        accept C++ comments  
  
 --quiet            don't output anything except fatal errors  
 --nodiag           don't show diagnostics  
 --nohints          don't show hints  
 --nochanges        don't suggest changes  
 --nofilter         don't filter input files  
  
 --strip            strip all script and doc functionality from  
                     ppport.h  
  
 --list-provided     list provided API  
 --list-unsupported   list unsupported API  
 --api-info=name     show Perl API portability information

## =head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.11.5.

## =head1 OPTIONS

### =head2 --help

Display a brief usage summary.

### =head2 --version

Display the version of F<ppport.h>.

### =head2 --patch=I<file>

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

### =head2 --copy=I<suffix>

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does

not require any external programs. Note that this does not automatically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither `C<--patch>` or `C<--copy>` are given, the default is to simply print the diffs for each file. This requires either `C<Text::Diff>` or a `C<diff>` program to be installed.

```
=head2 --diff=I<program>
```

Manually set the diff program and options to use. The default is to use `C<Text::Diff>`, when installed, and output unified context diffs.

```
=head2 --compat-version=I<version>
```

Tell `F<ppport.h>` to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of `F<ppport.h>` if you intend to be backward compatible only down to a certain Perl version.

```
=head2 --cplusplus
```

Usually, `F<ppport.h>` will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs `F<ppport.h>` to leave C++ comments untouched.

```
=head2 --quiet
```

Be quiet. Don't print anything except fatal errors.

```
=head2 --nodiag
```

Don't output any diagnostic messages. Only portability alerts will be printed.

```
=head2 --nohints
```

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

```
=head2 --nochanges
```

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

=head2 --nofilter

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

=head2 --strip

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort> module is installed.

=head2 --list-provided

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

=head2 --list-unsupported

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

=head2 --api-info=I<name>

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

=head1 DESCRIPTION

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more C<#define>s in your source code before the inclusion of F<ppport.h>.

These functions or variables will be marked C<explicit> in the list shown by C<--list-provided>.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either C<static> or global variants.

For a C<static> function or variable (used only in a single source file), use:

```
#define NEED_function  
#define NEED_variable
```

For a global function or variable (used in multiple source files), use:

```
#define NEED_function_GLOBAL  
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_parser	NEED_PL_parser	NEED_PL_parser_GLOBAL
PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL

grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_sprintf()	NEED_my_sprintf	NEED_my_sprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSV_type()	NEED_newSV_type	NEED_newSV_type_GLOBAL
newSVpvn_flags()	NEED_newSVpvn_flags	NEED_newSVpvn_flags_GLOBAL
newSVpvn_share()	NEED_newSVpvn_share	NEED_newSVpvn_share_GLOBAL
pv_display()	NEED_pv_display	NEED_pv_display_GLOBAL
pv_escape()	NEED_pv_escape	NEED_pv_escape_GLOBAL
pv_pretty()	NEED_pv_pretty	NEED_pv_pretty_GLOBAL
sv_2pv_flags()	NEED_sv_2pv_flags	NEED_sv_2pv_flags_GLOBAL
sv_2pvbyte()	NEED_sv_2pvbyte	NEED_sv_2pvbyte_GLOBAL
sv_catpvf_mg()	NEED_sv_catpvf_mg	NEED_sv_catpvf_mg_GLOBAL
sv_catpvf_mg_nocontext()	NEED_sv_catpvf_mg_nocontext	NEED_sv_catpvf_mg_nocontext_GLOBAL
sv_pvn_force_flags()	NEED_sv_pvn_force_flags	NEED_sv_pvn_force_flags_GLOBAL
sv_setpvf_mg()	NEED_sv_setpvf_mg	NEED_sv_setpvf_mg_GLOBAL
sv_setpvf_mg_nocontext()	NEED_sv_setpvf_mg_nocontext	NEED_sv_setpvf_mg_nocontext_GLOBAL
vload_module()	NEED_vload_module	NEED_vload_module_GLOBAL
vnewSVpvf()	NEED_vnewSVpvf	NEED_vnewSVpvf_GLOBAL
warnr()	NEED_warnr	NEED_warnr_GLOBAL

To avoid namespace conflicts, you can change the namespace of the explicitly exported functions / variables using the C<DPPP\_NAMESPACE> macro. Just C<#define> the macro before including C<ppport.h>:

```
#define DPPP_NAMESPACE MyOwnNamespace_
#include "ppport.h"
```

The default namespace is C<DPPP\_>.

=back

The good thing is that most of the above can be checked by running F<ppport.h> on your source code. See the next section for details.

=head1 EXAMPLES

To verify whether F<ppport.h> is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, F<ppport.h> can be run as a Perl script to check your source code. Simply say:



```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different C<diff> program or options, using the C<--diff> option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the C<newSVpvn> function, use:

```
perl ppport.h --api-info=newSVpvn
```

Since the argument to C<--api-info> can be a regular expression, you can use

```
perl ppport.h --api-info=/_nomg$/
```

to display portability information for all C<\_nomg> functions or

```
perl ppport.h --api-info=./
```

to display information for all known API elements.

```
=head1 BUGS
```

If this version of F<ppport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPPport> are available on CPAN before sending a bug report.

If F<ppport.h> was generated using the latest version of C<Devel::PPPport> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPPport> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2010, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPort>.

=cut

use strict;

# Disable broken TRIE-optimization

BEGIN { eval '\${^RE\_TRIE\_MAXBUF} = -1' if \$] >= 5.009004 && \$] <= 5.009005 }

my \$VERSION = 3.20;

my %opt = (

  quiet  => 0,

  diag   => 1,

  hints  => 1,

  changes => 1,

  cplusplus => 0,

  filter  => 1,

  strip   => 0,

  version => 0,

);

my(\$ppport) = \$0 =~ /([\w.]+)\$/;

my \$LF = '(?:\r\n|[\r\n])'; # line feed

my \$HS = "[\t]"; # horizontal whitespace

# Never use C comments in this file!

my \$ccs = '!.\*';

my \$cce = '\*!./';

my \$rcs = quotemeta \$ccs;

my \$rce = quotemeta \$cce;

eval {

  require Getopt::Long;

  Getopt::Long::GetOptions(\%opt, qw(

    help quiet diag! filter! hints! changes! cplusplus strip version

    patch=s copy=s diff=s compat-version=s

    list-provided list-unsupported api-info=s

  )) or usage();

};

if (\$@ and grep /^-/, @ARGV) {

  usage() if "@ARGV" =~ /^--?h(?:elp)?\$/;

  die "Getopt::Long not found. Please don't use any options.\n";

}

```

if ($opt{version}) {
    print "This is $0 $VERSION.\n";
    exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
    my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
    if ($@) {
        die "Invalid version number format: '$opt{'compat-version'}'\n";
    }
    die "Only Perl 5 is supported\n" if $r != 5;
    die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
    $opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
    $opt{'compat-version'} = 5;
}

my %API = map { /^(\w+)\|([^\|]*)\|([^\|]*)\|(\w*)$/
    ? ( $1 => {
        ($2          ? ( base    => $2 ) : ()),
        ($3          ? ( todo    => $3 ) : ()),
        (index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
        (index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
        (index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
    } )
    : die "invalid spec: $_" } qw(
AvFILLp|5.004050||p
AvFILL|||
BhkDISABLE||5.014000|
BhkENABLE||5.014000|
BhkENTRY_set||5.014000|
BhkENTRY|||
BhkFLAGS|||
CALL_BLOCK_HOOKS|||
CLASS|||n
CPERLscope|5.005000||p
CX_CURPAD_SAVE|||
CX_CURPAD_SV|||
CopFILEAV|5.006000||p
CopFILEGV_set|5.006000||p
CopFILEGV|5.006000||p
CopFILESV|5.006000||p
CopFILE_set|5.006000||p

```

CopFILE|5.006000|p  
CopSTASHPV\_set|5.006000|p  
CopSTASHPV|5.006000|p  
CopSTASH\_eq|5.006000|p  
CopSTASH\_set|5.006000|p  
CopSTASH|5.006000|p  
CopyD|5.009002|p  
Copy|||  
CvPADLIST|||  
CvSTASH|||  
CvWEAKOUTSIDE|||  
DEFSV\_set|5.010001|p  
DEFSV|5.004050|p  
END\_EXTERN\_C|5.005000|p  
ENTER|||  
ERRSV|5.004050|p  
EXTEND|||  
EXTERN\_C|5.005000|p  
F0convert|||n  
FREETMPS|||  
GIMME\_V||5.004000|n  
GIMME|||n  
GROK\_NUMERIC\_RADIX|5.007002|p  
G\_ARRAY|||  
G\_DISCARD|||  
G\_EVAL|||  
G\_METHOD|5.006001|p  
G\_NOARGS|||  
G\_SCALAR|||  
G\_VOID|5.004000|  
GetVars|||  
GvSVn|5.009003|p  
GvSV|||  
Gv\_AMupdate||5.011000|  
HEf\_SVKEY|5.004000|  
HeHASH|5.004000|  
HeKEY|5.004000|  
HeKLEN|5.004000|  
HePV|5.004000|  
HeSVKEY\_force||5.004000|  
HeSVKEY\_set||5.004000|  
HeSVKEY|5.004000|  
HeUTF8||5.010001|  
HeVAL||5.004000|  
HvENAME||5.013007|  
HvNAMELEN\_get|5.009003|p  
HvNAME\_get|5.009003|p  
HvNAME|||

INT2PTR|5.006000||p  
IN\_LOCALE\_COMPILETIME|5.007002||p  
IN\_LOCALE\_RUNTIME|5.007002||p  
IN\_LOCALE|5.007002||p  
IN\_PERL\_COMPILETIME|5.008001||p  
IS\_NUMBER\_GREATER\_THAN\_UV\_MAX|5.007002||p  
IS\_NUMBER\_INFINITY|5.007002||p  
IS\_NUMBER\_IN\_UV|5.007002||p  
IS\_NUMBER\_NAN|5.007003||p  
IS\_NUMBER\_NEG|5.007002||p  
IS\_NUMBER\_NOT\_INT|5.007002||p  
IVSIZE|5.006000||p  
IVTYPE|5.006000||p  
IVdf|5.006000||p  
LEAVE|||  
LINKLIST||5.013006|  
LVRET|||  
MARK|||  
MULTICALL||5.014000|  
MY\_CXT\_CLONE|5.009002||p  
MY\_CXT\_INIT|5.007003||p  
MY\_CXT|5.007003||p  
MoveD|5.009002||p  
Move|||  
NOOP|5.005000||p  
NUM2PTR|5.006000||p  
NVTYPE|5.006000||p  
NVef|5.006001||p  
NVff|5.006001||p  
NVgf|5.006001||p  
Newxc|5.009003||p  
Newxz|5.009003||p  
Newx|5.009003||p  
Nullav|||  
Nullch|||  
Nullcv|||  
Nullhv|||  
Nullsv|||  
OP\_CLASS||5.013007|  
OP\_DESC||5.007003|  
OP\_NAME||5.007003|  
ORIGMARK|||  
PAD\_BASE\_SV|||  
PAD\_CLONE\_VARS|||  
PAD\_COMPNAME\_FLAGS|||  
PAD\_COMPNAME\_GEN\_set|||  
PAD\_COMPNAME\_GEN|||  
PAD\_COMPNAME\_OURSTASH|||

PAD\_COMPNAME\_PV|||  
PAD\_COMPNAME\_TYPE|||  
PAD\_DUP|||  
PAD\_RESTORE\_LOCAL|||  
PAD\_SAVE\_LOCAL|||  
PAD\_SAVE\_SETNULLPAD|||  
PAD\_SETSV|||  
PAD\_SET\_CUR\_NOSAVE|||  
PAD\_SET\_CUR|||  
PAD\_SVI|||  
PAD\_SV|||  
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sv\_vcatpvf\_mg|5.006000|5.004000|p  
sv\_vcatpvfn|5.004000|  
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sys\_intern\_dup||  
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to\_uni\_title\_lc||5.006000|  
to\_uni\_title||5.007003|  
to\_uni\_upper\_lc||5.006000|  
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utf8\_hop|5.006000|  
utf8\_length|5.007001|  
utf8\_mg\_len\_cache\_update||  
utf8\_mg\_pos\_cache\_update||  
utf8\_to\_bytes|5.006001|  
utf8\_to\_uvchr|5.007001|  
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utf8n\_to\_uvchr||  
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uvchr\_to\_utf8||  
uvuni\_to\_utf8\_flags|5.007003|  
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vwarner|5.006000|  
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```

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xmldump_form|||
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xmldump_packsubs|||
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xmldump_sub|||
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xs_apiversion_bootcheck|||
xs_version_bootcheck|||
yyerror|||
yylex|||
yyparse|||
yyunlex|||
yywarn|||
);

if (exists $opt{'list-unsupported'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", '!x(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

# Scan for possible replacement candidates

my(%replace, %need, %hints, %warnings, %depends);
my $replace = 0;
my($hint, $define, $function);

sub find_api
{
    my $code = shift;
    $code =~ s{
        /(?: \*[^*]*\*+(?:[^\$ccs][^*]*\*+)* /|/[\r\n]*
        | "[^"]\]*(?:\.[^"]\]*)*"
        | '[^']**(?:\.[^']*)*' }{ }egsx;
    grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

while (<DATA>) {

```

```

if ($hint) {
    my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
    if (m{^\s*\*\s(?:)\s*$}) {
        for (@{$hint->[1]}) {
            $h->{$_} ||= ""; # suppress warning with older perls
            $h->{$_} .= "$1\n";
        }
    }
    else { undef $hint }
}

$hint = [$1, [split /,?\s+/, $2]]
    if m{^\s*$rcss\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

if ($define) {
    if ($define->[1] =~ /\$/) {
        $define->[1] .= $_;
    }
    else {
        if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
            my @n = find_api($define->[1]);
            push @{$depends{$define->[0]}}, @n if @n;
        }
        undef $define;
    }
}

$define = [$1, $2] if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

if ($function) {
    if (/^/) {
        if (exists $API{$function->[0]}) {
            my @n = find_api($function->[1]);
            push @{$depends{$function->[0]}}, @n if @n;
        }
        undef $function;
    }
    else {
        $function->[1] .= $_;
    }
}

$function = [$1, ""] if m{^DPPP_(my_(\w+))};

$replace = $1 if m{^\s*$rcss\s+Replace:\s+(\d+)\s+$rcce\s*$};
$replace{$2} = $1 if $replace and m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+)};
$replace{$2} = $1 if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+).*rcss\s+Replace\s+$rcce};
$replace{$1} = $2 if m{^\s*$rcss\s+Replace (\w+) with (\w+)\s+$rcce\s*$};

```

```

if (m{^\s*$rccs\s+(\w+(\s*,\s*\w+*)\s+depends\s+on\s+(\w+(\s*,\s*\w+*)\s+$rcces*)}) {
  my @deps = map { s/\s+//g; $_ } split /\s/, $3;
  my $d;
  for $d (map { s/\s+//g; $_ } split /\s/, $1) {
    push @{$depends{$d}}, @deps;
  }
}

```

```

$need{$1} = 1 if m{^#if\s+defined\(\NEED_\(\w+)(?:_GLOBAL)?\)};
}

```

```

for (values %depends) {
  my %s;
  $_ = [sort grep !${$_}++, @$_];
}

```

```

if (exists $opt{'api-info'}) {
  my $f;
  my $count = 0;
  my $match = $opt{'api-info'} =~ m!^(.*)/$! ? $1 : "\Q$opt{'api-info'}\E\$";
  for $f (sort { lc $a cmp lc $b } keys %API) {
    next unless $f =~ /$match/;
    print "\n=== $f ===\n\n";
    my $info = 0;
    if ($API{$f}{base} || $API{$f}{todo}) {
      my $base = format_version($API{$f}{base} || $API{$f}{todo});
      print "Supported at least starting from perl-$base.\n";
      $info++;
    }
    if ($API{$f}{provided}) {
      my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
      print "Support by $ppport provided back to perl-$todo.\n";
      print "Support needs to be explicitly requested by NEED_$.f.\n" if exists $need{$f};
      print "Depends on: ", join(', ', @{$depends{$f}}), ".\n" if exists $depends{$f};
      print "\n$hints{$f}" if exists $hints{$f};
      print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
      $info++;
    }
    print "No portability information available.\n" unless $info;
    $count++;
  }
  $count or print "Found no API matching '$opt{'api-info'}'.";
  print "\n";
  exit 0;
}

```

```

if (exists $opt{'list-provided'}) {

```

```

my $f;
for $f (sort { lc $a cmp lc $b } keys %API) {
  next unless $API{$f}{provided};
  my @flags;
  push @flags, 'explicit' if exists $need{$f};
  push @flags, 'depend' if exists $depends{$f};
  push @flags, 'hint' if exists $hints{$f};
  push @flags, 'warning' if exists $warnings{$f};
  my $flags = @flags ? ' [' . join(', ', @flags) . ']': '';
  print "$f$flags\n";
}
exit 0;
}

```

```

my @files;
my @srcext = qw( .xs .c .h .cc .cpp -c.inc -xs.inc );
my $srcext = join '|', map { quotemeta $_ } @srcext;

```

```

if (@ARGV) {
  my %seen;
  for (@ARGV) {
    if (-e) {
      if (-f) {
        push @files, $_ unless $seen{$_}++;
      }
      else { warn "'$_' is not a file.\n" }
    }
    else {
      my @new = grep { -f } glob $_
        or warn "'$_' does not exist.\n";
      push @files, grep { !$seen{$_}++ } @new;
    }
  }
}
else {
  eval {
    require File::Find;
    File::Find::find(sub {
      $File::Find::name =~ /($srcext)$/i
      and push @files, $File::Find::name;
    }, '.');
  };
  if ($?) {
    @files = map { glob ".*$_" } @srcext;
  }
}

```

```

if (!@ARGV || $opt{filter}) {

```

```

my(@in, @out);
my %xsc = map { /(.*)\.xs$/ ? ("$.c" => 1, "$.cc" => 1) : () } @files;
for (@files) {
    my $out = exists $xsc{$_} || ^\b\Q$pport\E$/i || !/($srcext)/i;
    push @ { $out ? \@out : \@in }, $_;
}
if (@ARGV && @out) {
    warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
}
@files = @in;
}

```

die "No input files given!\n" unless @files;

```

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

```

```

for $filename (@files) {
    unless (open IN, "<$filename") {
        warn "Unable to read from $filename: $!\n";
        next;
    }
}

```

info("Scanning \$filename ...");

```

my $c = do { local $/; <IN> };
close IN;

```

my %file = (orig => \$c, changes => 0);

```

# Temporarily remove C/XS comments and strings from the code
my @ccom;

```

```

$c =~ s{
    ( ^$HS*\#$HS*include\b[^\r\n]+\b(?:\Q$pport\E\XSUB\.h)\b[^\r\n]*
    | ^$HS*\#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )
    | ( ^$HS*\#[^\r\n]*
    | "[^"\\]*(?:\\.[^"\\])*"
    | '[^"\\]*(?:\\.[^"\\])*'
    | /(?: \*[^*]*\*+(?:[^\sccs][^*]*\*+)* /|/[^\r\n]* ) )
    ){ defined $2 and push @ccom, $2;
    defined $1 ? $1 : "$ccs#$ccom$cc" } mgsex;

```

\$file{ccom} = \@ccom;

\$file{code} = \$c;

\$file{has\_inc\_ppport} = \$c =~ /^\$HS\*\#\$HS\*include[^\r\n]+\b\Q\$pport\E\b/m;

```

my $func;

for $func (keys %API) {
    my $match = $func;
    $match .= "|$revreplace{$func}" if exists $revreplace{$func};
    if ($c =~ /\b(?:Perl_)?($match)\b/) {
        $file{uses_replace}{$1}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
        $file{uses_Perl}{$func}++ if $c =~ /\bPerl_{$func}\b/;
        if (exists $API{$func}{provided}) {
            $file{uses_provided}{$func}++;
            if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
                $file{uses}{$func}++;
                my @deps = rec_depend($func);
                if (@deps) {
                    $file{uses_deps}{$func} = \@deps;
                    for (@deps) {
                        $file{uses}{$_} = 0 unless exists $file{uses}{$_};
                    }
                }
                for ($func, @deps) {
                    $file{needs}{$_} = 'static' if exists $need{$_};
                }
            }
        }
        if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
            if ($c =~ /\b{$func}\b/) {
                $file{uses_todo}{$func}++;
            }
        }
    }
}

while ($c =~ /^$HS*#$HS*define$HS+(NEED_(\w+?)(_GLOBAL)?)\b/mg) {
    if (exists $need{$2}) {
        $file{defined $3 ? 'needed_global' : 'needed_static'}{$2}++;
    }
    else { warning("Possibly wrong #define $1 in $filename") }
}

for (qw(uses needs uses_todo needed_global needed_static)) {
    for $func (keys %{ $file{$_} }) {
        push @{$global{$_}{$func}}, $filename;
    }
}

$files{$filename} = \%file;
}

```

```

# Globally resolve NEED_'s
my $need;
for $need (keys %{$global{needs}}) {
  if (@{$global{needs}{$need}} > 1) {
    my @targets = @{$global{needs}{$need}};
    my @t = grep $files{$_}{needed_global}{$need}, @targets;
    @targets = @t if @t;
    @t = grep /\.xs$/i, @targets;
    @targets = @t if @t;
    my $target = shift @targets;
    $files{$target}{needs}{$need} = 'global';
    for (@{$global{needs}{$need}}) {
      $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
    }
  }
}

for $filename (@files) {
  exists $files{$filename} or next;

  info("=== Analyzing $filename ===");

  my %file = %{$files{$filename}};
  my $func;
  my $c = $file{code};
  my $warnings = 0;

  for $func (sort keys %{$file{uses_Perl}}) {
    if ($API{$func}{varargs}) {
      unless ($API{$func}{nothxarg}) {
        my $changes = ($c =~ s{\b(Perl_$func\s*(\s*)(?!aTHX_?)(\)[^\s]*)})
          { $1 . ($2 eq ') ? 'aTHX' : 'aTHX_' } . $2 }ge);
        if ($changes) {
          warning("Doesn't pass interpreter argument aTHX to Perl_$func");
          $file{changes} += $changes;
        }
      }
    }
  }
  else {
    warning("Uses Perl_$func instead of $func");
    $file{changes} += ($c =~ s{\bPerl_$func(\s*)((\s*aTHX_?)?\s*}
      {$func$1}{g});
  }
}

for $func (sort keys %{$file{uses_replace}}) {
  warning("Uses $func instead of $replace{$func}");
}

```

```

$file{changes} += ($c =~ s/\b$func\b/$replace{$func}/g);
}

for $func (sort keys %{$file{uses_provided}}) {
  if ($file{uses}{$func}) {
    if (exists $file{uses_deps}{$func}) {
      diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
    }
    else {
      diag("Uses $func");
    }
  }
  $warnings += hint($func);
}

unless ($opt{quiet}) {
  for $func (sort keys %{$file{uses_todo}}) {
    print "*** WARNING: Uses $func, which may not be portable below perl ",
      format_version($API{$func}{todo}), ", even with '$ppport'\n";
    $warnings++;
  }
}

for $func (sort keys %{$file{needed_static}}) {
  my $message = "";
  if (not exists $file{uses}{$func}) {
    $message = "No need to define NEED_$func if $func is never used";
  }
  elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
    $message = "No need to define NEED_$func when already needed globally";
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_$func\b.*$LF//mg);
  }
}

for $func (sort keys %{$file{needed_global}}) {
  my $message = "";
  if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_{$func}_GLOBAL if $func is never used";
  }
  elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
      $message = "No need to define NEED_{$func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
      $message = "No need to define NEED_{$func}_GLOBAL when only used in this file";
    }
  }
}

```



```

    }
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^(?=$HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms);
  }
}

$file{needs_inc_ppport} = keys %{$file{uses}};

if ($file{needs_inc_ppport}) {
  my $pp = "";

  for $func (sort keys %{$file{needs}}) {
    my $type = $file{needs}{$func};
    next if $type eq 'extern';
    my $suffix = $type eq 'global' ? '_GLOBAL' : "";
    unless (exists $file{"needed_$type"}{$func}) {
      if ($type eq 'global') {
        diag("Files [@$global{needs}{$func}] need $func, adding global request");
      }
      else {
        diag("File needs $func, adding static request");
      }
      $pp .= "#define NEED_$func$suffix\n";
    }
  }
}

if ($pp && ($c =~ s/^(?=$HS*#$HS*define$HS+NEED_\w+.*?)/$pp/m)) {
  $pp = "";
  $file{changes}++;
}

unless ($file{has_inc_ppport}) {
  diag("Needs to include '$ppport'");
  $pp .= qq(#include "$ppport"\n)
}

if ($pp) {
  $file{changes} += ($c =~ s/^(?=$HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms)
  || ($c =~ s/^(?=$HS*#$HS*include.*\Q$ppport\E)/$pp/m)
  || ($c =~ s/^(?=$HS*#$HS*include.*XSUB.*\s*?)/$1$pp/m)
  || ($c =~ s/^\s*$pp/);
}
}
else {
  if ($file{has_inc_ppport}) {
    diag("No need to include '$ppport'");
  }
}

```

```

$file{changes} += ($c =~ s/^\$HS*?#\$HS*include.*\Q$ppport\E.*?$LF//m);
}
}

# put back in our C comments
my $ix;
my $cpc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
    if (!$opt{cplusplus} && $ccom[$ix] =~ s!^/!!) {
        $cpc++;
        $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
    }
    else {
        $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
    }
}

if ($cpc) {
    my $s = $cpc != 1 ? 's' : '';
    warning("Uses $cpc C++ style comment$s, which is not portable");
}

my $s = $warnings != 1 ? 's' : '';
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("$newfile' already exists, refusing to write copy of '$filename'");
        }
        else {
            local *F;
            if (open F, ">$newfile") {
                info("Writing copy of '$filename' with changes to '$newfile'");
                print F $c;
                close F;
            }
            else {
                error("Cannot open '$newfile' for writing: $!");
            }
        }
    }
    elsif (exists $opt{patch} || $opt{changes}) {
        if (exists $opt{patch}) {
            unless ($patch_opened) {

```

```

if (open PATCH, ">$opt{patch}") {
    $patch_opened = 1;
}
else {
    error("Cannot open '$opt{patch}' for writing: $!");
    delete $opt{patch};
    $opt{changes} = 1;
    goto fallback;
}
}
mydiff(\*PATCH, $filename, $c);
}
else {
fallback:
    info("Suggested changes:");
    mydiff(\*STDOUT, $filename, $c);
}
}
else {
    my $s = $file{changes} == 1 ? " : 's'";
    info("$file{changes} potentially required change$s detected");
}
}
else {
    info("Looks good");
}
}

```

```
close PATCH if $patch_opened;
```

```
exit 0;
```

```
sub try_use { eval "use @_;"; return $@ eq " }
```

```
sub mydiff
```

```
{
    local *F = shift;
    my($file, $str) = @_ ;
    my $diff;
```

```
if (exists $opt{diff}) {
    $diff = run_diff($opt{diff}, $file, $str);
}

```

```
if (!defined $diff and try_use("Text::Diff")) {
    $diff = Text::Diff::diff($file, \ $str, { STYLE => 'Unified' });
    $diff = <<HEADER . $diff;
```

```

--- $file
+++ $file.patched
HEADER
}

if (!defined $diff) {
    $diff = run_diff('diff -u', $file, $str);
}

if (!defined $diff) {
    $diff = run_diff('diff', $file, $str);
}

if (!defined $diff) {
    error("Cannot generate a diff. Please install Text::Diff or use --copy.");
    return;
}

print F $diff;
}

sub run_diff
{
    my($prog, $file, $str) = @_ ;
    my $tmp = 'dppptemp';
    my $suf = 'aaa';
    my $diff = "";
    local *F;

    while (-e "$tmp.$suf") { $suf++ }
    $tmp = "$tmp.$suf";

    if (open F, ">$tmp") {
        print F $str;
        close F;

        if (open F, "$prog $file $tmp |") {
            while (<F>) {
                s/\Q$tmp\E/$file.patched/;
                $diff .= $_;
            }
            close F;
            unlink $tmp;
            return $diff;
        }

        unlink $tmp;
    }
}

```

```

else {
    error("Cannot open '$tmp' for writing: $!");
}

return undef;
}

sub rec_depend
{
    my($func, $seen) = @_ ;
    return () unless exists $depends{$func};
    $seen = {%{$seen||{}}};
    return () if $seen->{$func}++;
    my %s;
    grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{
    my $ver = shift;

    if ($ver =~ /^(d+)\.(d+)\.(d+)$/) {
        return ($1, $2, $3);
    }
    elsif ($ver !~ /^d+\.[d_]+$/) {
        die "cannot parse version '$ver'\n";
    }

    $ver =~ s/_//g;
    $ver =~ s/$/000000/;

    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {
        if ($s % 10) {
            die "cannot parse version '$ver'\n";
        }
    }

    return ($r, $v, $s);
}

sub format_version
{
    my $ver = shift;

```

```

$ver =~ s/$/000000/;
my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

$v = int $v;
$s = int $s;

if ($r < 5 || ($r == 5 && $v < 6)) {
    if ($s % 10) {
        die "invalid version '$ver'\n";
    }
    $s /= 10;

    $ver = sprintf "%d.%03d", $r, $v;
    $s > 0 and $ver .= sprintf "_%02d", $s;

    return $ver;
}

return sprintf "%d.%d.%d", $r, $v, $s;
}

sub info
{
    $opt{quiet} and return;
    print @_, "\n";
}

sub diag
{
    $opt{quiet} and return;
    $opt{diag} and print @_, "\n";
}

sub warning
{
    $opt{quiet} and return;
    print "*** ", @_, "\n";
}

sub error
{
    print "*** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint

```

```

{
  $opt{quiet} and return;
  my $func = shift;
  my $rv = 0;
  if (exists $warnings{$func} && !$given_warnings{$func}++) {
    my $swarn = $warnings{$func};
    $swarn =~ s/!*** !mg;
    print "*** WARNING: $func\n", $swarn;
    $rv++;
  }
  if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
    my $shint = $hints{$func};
    $shint =~ s/^/ /mg;
    print " --- hint for $func ---\n", $shint;
  }
  $rv;
}

```

sub usage

```

{
  my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s*^(.*?)\s*^=/ms;
  my %M = ( 'T' => '*' );
  $usage =~ s/^\s*perl\s+\S+/$^X $0/;
  $usage =~ s/([A-Z])<([>]+)>/M{$1}$2M{$1}/g;

  print <<ENDUSAGE;

```

Usage: \$usage

See perldoc \$0 for details.

ENDUSAGE

```

exit 2;
}

```

sub strip

```

{
  my $self = do { local(@ARGV,$/)=($0); <> };
  my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)^\s*\w+/ms;
  $copy =~ s/^(?=\S+)/ /gms;
  $self =~ s/^\$HS+Do NOT edit.*?(?=-)/$copy/ms;
  $self =~ s/^\$SKIP.*(?:=__DATA__)/SKIP
  if (\@ARGV && $ARGV[0] eq '--unstrip') {
    eval { require Devel::PPPport };
    \@ and die "Cannot require Devel::PPPport, please install.\n";
    if (eval $Devel::PPPport::VERSION < $VERSION) {
      die "$0 was originally generated with Devel::PPPport $VERSION.\n"
    }
  }
}

```

```

    . "Your Devel::PPPport is only version \${Devel::PPPport::VERSION}.\n"
    . "Please install a newer version, or --unstrip will not work.\n";
}
Devel::PPPport::WriteFile(\$0);
exit 0;
}
print <<END;

```

Sorry, but this is a stripped version of \\$0.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X \$0 --unstrip
```

```
END
```

```
/ms;
```

```
my($pl, $c) = $self =~ /(.*^__DATA__)(.*)/ms;
```

```
$c =~ s{
```

```
 / (? : \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* / | /[\r\n]*
```

```
 | ( "[^"\\]*(?:\\.["\\])*"
```

```
 | '[^'\\]*(?:\\.['\\])*'
```

```
 | ($HS+) ) } { defined $2 ? ' ' : ($1 || " ) }gsex;
```

```
$c =~ s!\s+!!mg;
```

```
$c =~ s!$LF!!mg;
```

```
$c =~ s!\s*#\s*!#!mg;
```

```
$c =~ s!\s+!!mg;
```

```
open OUT, ">$0" or die "cannot strip $0: $!\n";
```

```
print OUT "$pl$c\n";
```

```
exit 0;
```

```
}
```

```
__DATA__
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1000849036_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/ppport.h
```

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

=back

=head1 EXIT CODES

If all your tests passed, Test::Builder will exit with zero (which is



normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Builder will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

=head1 NOTES

Test::More is B<explicitly> tested all the way back to perl 5.004.

=head1 BUGS and CAVEATS

=over 4

=item Threads

Test::More will only be aware of threads if "use threads" has been done I<before> Test::More is loaded. This is ok:

```
use threads;
use Test::More;
```

This may cause problems:

```
use Test::More
use threads;
```

=item Making your own ok()

If you are trying to extend Test::More, don't. Use Test::Builder instead.

=item The eq\_\* family has some caveats.

=item Test::Harness upgrade

no\_plan and todo depend on new Test::Harness features and fixes. If you're going to distribute tests that use no\_plan or todo your

end-users will have to upgrade Test::Harness to the latest one on CPAN. If you avoid no\_plan and TODO tests, the stock Test::Harness will work fine.

Installing Test::More should also upgrade Test::Harness.

=back

=head1 HISTORY

This is a case of convergent evolution with Joshua Pritikin's Test module. I was largely unaware of its existence when I'd first written my own ok() routines. This module exists because I can't figure out how to easily wedge test names into Test's interface (along with a few other problems).

The goal here is to have a testing utility that's simple to learn, quick to use and difficult to trip yourself up with while still providing more flexibility than the existing Test.pm. As such, the names of the most common routines are kept tiny, special cases and magic side-effects are kept to a minimum. WYSIWYG.

=head1 SEE ALSO

L<Test::Simple> if all this confuses you and you just want to write some tests. You can upgrade to Test::More later (it's forward compatible).

L<Test> is the old testing module. Its main benefit is that it has been distributed with Perl since 5.004\_05.

L<Test::Harness> for details on how your test results are interpreted by Perl.

L<Test::Differences> for more ways to test complex data structures. And it plays well with Test::More.

L<Test::Class> is like XUnit but more perlish.

L<Test::Deep> gives you more powerful complex data structure testing.

L<Test::Unit> is XUnit style testing.

L<Test::Inline> shows the idea of embedded testing.

L<Bundle::Test> installs a whole bunch of useful test modules.

## =head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> with much inspiration from Joshua Pritikin's Test module and lots of help from Barrie Slaymaker, Tony Bowden, blackstar.co.uk, chromatic and the perl-qa gang.

## =head1 COPYRIGHT

Copyright 2001, 2002 by Michael G Schwern E<lt>schwern@pobox.comE<gt>.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/t/lib/Test/More.pm

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

## =head1 NAME

Test::Tutorial - A tutorial about writing really basic tests

## =head1 DESCRIPTION

I<AHHHHHHH!!!! NOT TESTING! Anything but testing!  
Beat me, whip me, send me to Detroit, but don't make  
me write tests!>

I<\*sob\*>

I<Besides, I don't know how to write the damned things.>

Is this you? Is writing tests right up there with writing  
documentation and having your fingernails pulled out? Did you open up  
a test and read

##### We start with some black magic

and decide that's quite enough for you?

It's ok. That's all gone now. We've done all the black magic for you. And here are the tricks...

=head2 Nuts and bolts of testing.

Here's the most basic test program.

```
#!/usr/bin/perl -w

print "1..1\n";

print 1 + 1 == 2 ? "ok 1\n" : "not ok 1\n";
```

since 1 + 1 is 2, it prints:

```
1..1
ok 1
```

What this says is: C<1..1> "I'm going to run one test." [1] C<ok 1> "The first test passed". And that's about all magic there is to testing. Your basic unit of testing is the I<ok>. For each thing you test, an C<ok> is printed. Simple. B<Test::Harness> interprets your test results to determine if you succeeded or failed (more on that later).

Writing all these print statements rapidly gets tedious. Fortunately, there's B<Test::Simple>. It has one function, C<ok()>.

```
#!/usr/bin/perl -w

use Test::Simple tests => 1;

ok( 1 + 1 == 2 );
```

and that does the same thing as the code above. C<ok()> is the backbone of Perl testing, and we'll be using it instead of roll-your-own from here on. If C<ok()> gets a true value, the test passes. False, it fails.

```
#!/usr/bin/perl -w

use Test::Simple tests => 2;
ok( 1 + 1 == 2 );
ok( 2 + 2 == 5 );
```

from that comes

```
1..2
ok 1
not ok 2
# Failed test (test.pl at line 5)
# Looks like you failed 1 tests of 2.
```

C<1..2> "I'm going to run two tests." This number is used to ensure your test program ran all the way through and didn't die or skip some tests. C<ok 1> "The first test passed." C<not ok 2> "The second test failed". Test::Simple helpfully prints out some extra commentary about your tests.

It's not scary. Come, hold my hand. We're going to give an example of testing a module. For our example, we'll be testing a date library, B<Date::ICal>. It's on CPAN, so download a copy and follow along. [2]

=head2 Where to start?

This is the hardest part of testing, where do you start? People often get overwhelmed at the apparent enormity of the task of testing a whole module. Best place to start is at the beginning. Date::ICal is an object-oriented module, and that means you start by making an object. So we test C<new()>.

```
#!/usr/bin/perl -w

use Test::Simple tests => 2;

use Date::ICal;

my $ical = Date::ICal->new;    # create an object
ok( defined $ical );          # check that we got something
ok( $ical->isa('Date::ICal') ); # and it's the right class
```

run that and you should get:

```
1..2
ok 1
ok 2
```

congratulations, you've written your first useful test.

=head2 Names

That output isn't terribly descriptive, is it? When you have two

tests you can figure out which one is #2, but what if you have 102?

Each test can be given a little descriptive name as the second argument to `C<ok()>`.

```
use Test::Simple tests => 2;

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
```

So now you'd see...

```
1..2
ok 1 - new() returned something
ok 2 - and it's the right class
```

=head2 Test the manual

Simplest way to build up a decent testing suite is to just test what the manual says it does. [3] Let's pull something out of the `L<Date::ICal/SYNOPSIS>` and test that all its bits work.

```
#!/usr/bin/perl -w

use Test::Simple tests => 8;

use Date::ICal;

$ical = Date::ICal->new( year => 1964, month => 10, day => 16,
                        hour => 16, min => 12, sec => 47,
                        tz => '0530' );

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
ok( $ical->sec == 47,    ' sec()' );
ok( $ical->min == 12,    ' min()' );
ok( $ical->hour == 16,   ' hour()' );
ok( $ical->day == 17,    ' day()' );
ok( $ical->month == 10,  ' month()' );
ok( $ical->year == 1964, ' year()' );
```

run that and you get:

```
1..8
ok 1 - new() returned something
ok 2 - and it's the right class
ok 3 - sec()
```

```

ok 4 - min()
ok 5 - hour()
not ok 6 - day()
# Failed test (- at line 16)
ok 7 - month()
ok 8 - year()
# Looks like you failed 1 tests of 8.

```

Whoops, a failure! [4] Test::Simple helpfully lets us know on what line the failure occurred, but not much else. We were supposed to get 17, but we didn't. What did we get?? Dunno. We'll have to re-run the test in the debugger or throw in some print statements to find out.

Instead, we'll switch from B<Test::Simple> to B<Test::More>. B<Test::More> does everything B<Test::Simple> does, and more! In fact, Test::More does things I<exactly> the way Test::Simple does. You can literally swap Test::Simple out and put Test::More in its place. That's just what we're going to do.

Test::More does more than Test::Simple. The most important difference at this point is it provides more informative ways to say "ok". Although you can write almost any test with a generic C<ok()>, it can't tell you what went wrong. Instead, we'll use the C<is()> function, which lets us declare that something is supposed to be the same as something else:

```

#!/usr/bin/perl -w

use Test::More tests => 8;

use Date::ICal;

$ical = Date::ICal->new( year => 1964, month => 10, day => 16,
                      hour => 16, min => 12, sec => 47,
                      tz => '0530' );

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
is( $ical->sec,  47,    ' sec()' );
is( $ical->min,  12,    ' min()' );
is( $ical->hour, 16,    ' hour()' );
is( $ical->day,  17,    ' day()' );
is( $ical->month, 10,   ' month()' );
is( $ical->year, 1964,  ' year()' );

"Is C<$ical-E<gt>sec> 47?" "Is C<$ical-E<gt>min> 12?" With C<is()> in place,
you get some more information

```

```

1..8
ok 1 - new() returned something
ok 2 - and it's the right class
ok 3 - sec()
ok 4 - min()
ok 5 - hour()
not ok 6 - day()
# Failed test (- at line 16)
#   got: '16'
# expected: '17'
ok 7 - month()
ok 8 - year()
# Looks like you failed 1 tests of 8.

```

letting us know that `C<$ical-E<gt;day>` returned 16, but we expected 17. A quick check shows that the code is working fine, we made a mistake when writing up the tests. Just change it to:

```
is( $ical->day, 16, ' day()' );
```

and everything works.

So any time you're doing a "this equals that" sort of test, use `C<is()>`. It even works on arrays. The test is always in scalar context, so you can test how many elements are in a list this way. [5]

```
is( @foo, 5, 'foo has 5 elements' );
```

=head2 Sometimes the tests are wrong

Which brings us to a very important lesson. Code has bugs. Tests are code. Ergo, tests have bugs. A failing test could mean a bug in the code, but don't discount the possibility that the test is wrong.

On the flip side, don't be tempted to prematurely declare a test incorrect just because you're having trouble finding the bug. Invalidating a test isn't something to be taken lightly, and don't use it as a cop out to avoid work.

=head2 Testing lots of values

We're going to be wanting to test a lot of dates here, trying to trick the code with lots of different edge cases. Does it work before 1970? After 2038? Before 1904? Do years after 10,000 give it trouble? Does it get leap years right? We could keep repeating the code above, or we could set up a little try/expect loop.



```

use Test::More tests => 32;
use Date::ICal;

my %ICal_Dates = (
    # An ICal string    And the year, month, date
    #                hour, minute and second we expect.
    '19971024T120000' => # from the docs.
        [ 1997, 10, 24, 12, 0, 0 ],
    '20390123T232832' => # after the Unix epoch
        [ 2039, 1, 23, 23, 28, 32 ],
    '19671225T000000' => # before the Unix epoch
        [ 1967, 12, 25, 0, 0, 0 ],
    '18990505T232323' => # before the MacOS epoch
        [ 1899, 5, 5, 23, 23, 23 ],
);

```

```

while( my($ical_str, $expect) = each %ICal_Dates ) {
    my $ical = Date::ICal->new( ical => $ical_str );

    ok( defined $ical,      "new(ical => '$ical_str')" );
    ok( $ical->isa('Date::ICal'), " and it's the right class" );

    is( $ical->year,  $expect->[0],  ' year()' );
    is( $ical->month, $expect->[1],  ' month()' );
    is( $ical->day,   $expect->[2],  ' day()' );
    is( $ical->hour,  $expect->[3],  ' hour()' );
    is( $ical->min,   $expect->[4],  ' min()' );
    is( $ical->sec,   $expect->[5],  ' sec()' );
}

```

So now we can test bunches of dates by just adding them to C<%ICal\_Dates>. Now that it's less work to test with more dates, you'll be inclined to just throw more in as you think of them.

Only problem is, every time we add to that we have to keep adjusting the C<use Test::More tests =E<gt> ##> line. That can rapidly get annoying. There's two ways to make this work better.

First, we can calculate the plan dynamically using the C<plan()> function.

```

use Test::More;
use Date::ICal;

my %ICal_Dates = (
    ...same as before...
);

```

```
# For each key in the hash we're running 8 tests.  
plan tests => keys %ICal_Dates * 8;
```

Or to be even more flexible, we use C<no\_plan>. This means we're just running some tests, don't know how many. [6]

```
use Test::More 'no_plan'; # instead of tests => 32
```

now we can just add tests and not have to do all sorts of math to figure out how many we're running.

```
=head2 Informative names
```

Take a look at this line here

```
ok( defined $ical,      "new(ical => '$ical_str')" );
```

we've added more detail about what we're testing and the ICal string itself we're trying out to the name. So you get results like:

```
ok 25 - new(ical => '19971024T120000')  
ok 26 - and it's the right class  
ok 27 - year()  
ok 28 - month()  
ok 29 - day()  
ok 30 - hour()  
ok 31 - min()  
ok 32 - sec()
```

if something in there fails, you'll know which one it was and that will make tracking down the problem easier. So try to put a bit of debugging information into the test names.

Describe what the tests test, to make debugging a failed test easier for you or for the next person who runs your test.

```
=head2 Skipping tests
```

Poking around in the existing Date::ICal tests, I found this in F<t/01sanity.t> [7]

```
#!/usr/bin/perl -w
```

```
use Test::More tests => 7;  
use Date::ICal;
```

```

# Make sure epoch time is being handled sanely.
my $t1 = Date::ICal->new( epoch => 0 );
is( $t1->epoch, 0,      "Epoch time of 0" );

# XXX This will only work on unix systems.
is( $t1->ical, '19700101Z', " epoch to ical" );

is( $t1->year, 1970,    " year()" );
is( $t1->month, 1,      " month()" );
is( $t1->day, 1,        " day()" );

# like the tests above, but starting with ical instead of epoch
my $t2 = Date::ICal->new( ical => '19700101Z' );
is( $t2->ical, '19700101Z', "Start of epoch in ICal notation" );

is( $t2->epoch, 0,      " and back to ICal" );

```

The beginning of the epoch is different on most non-Unix operating systems [8]. Even though Perl smooths out the differences for the most part, certain ports do it differently. MacPerl is one off the top of my head. [9] We I<know> this will never work on MacOS. So rather than just putting a comment in the test, we can explicitly say it's never going to work and skip the test.

```

use Test::More tests => 7;
use Date::ICal;

# Make sure epoch time is being handled sanely.
my $t1 = Date::ICal->new( epoch => 0 );
is( $t1->epoch, 0,      "Epoch time of 0" );

SKIP: {
    skip('epoch to ICal not working on MacOS', 6)
        if $^O eq 'MacOS';

    is( $t1->ical, '19700101Z', " epoch to ical" );

    is( $t1->year, 1970,    " year()" );
    is( $t1->month, 1,      " month()" );
    is( $t1->day, 1,        " day()" );

    # like the tests above, but starting with ical instead of epoch
    my $t2 = Date::ICal->new( ical => '19700101Z' );
    is( $t2->ical, '19700101Z', "Start of epoch in ICal notation" );

    is( $t2->epoch, 0,      " and back to ICal" );
}

```

A little bit of magic happens here. When running on anything but MacOS, all the tests run normally. But when on MacOS, `C<skip()>` causes the entire contents of the SKIP block to be jumped over. It's never run. Instead, it prints special output that tells `Test::Harness` that the tests have been skipped.

```
1..7
```

```
ok 1 - Epoch time of 0
```

```
ok 2 # skip epoch to ICal not working on MacOS
```

```
ok 3 # skip epoch to ICal not working on MacOS
```

```
ok 4 # skip epoch to ICal not working on MacOS
```

```
ok 5 # skip epoch to ICal not working on MacOS
```

```
ok 6 # skip epoch to ICal not working on MacOS
```

```
ok 7 # skip epoch to ICal not working on MacOS
```

This means your tests won't fail on MacOS. This means less emails from MacPerl users telling you about failing tests that you know will never work. You've got to be careful with skip tests. These are for tests which don't work and I<never will>. It is not for skipping genuine bugs (we'll get to that in a moment).

The tests are wholly and completely skipped. [10] This will work.

```
SKIP: {  
    skip("I don't wanna die!");  
  
    die, die, die, die, die;  
}
```

```
=head2 Todo tests
```

Thumbing through the `Date::ICal` man page, I came across this:

```
ical
```

```
    $ical_string = $ical->ical;
```

Retrieves, or sets, the date on the object, using any valid ICal date/time string.

"Retrieves or sets". Hmmmm, didn't see a test for using `C<ical()>` to set the date in the `Date::ICal` test suite. So I'll write one.

```
use Test::More tests => 1;  
use Date::ICal;
```

```
my $ical = Date::ICal->new;
$ical->ical('20201231Z');
is( $ical->ical, '20201231Z', 'Setting via ical()' );
```

run that and I get

```
1..1
not ok 1 - Setting via ical()
# Failed test (- at line 6)
# got: '20010814T233649Z'
# expected: '20201231Z'
# Looks like you failed 1 tests of 1.
```

Whoops! Looks like it's unimplemented. Let's assume we don't have the time to fix this. [11] Normally, you'd just comment out the test and put a note in a todo list somewhere. Instead, we're going to explicitly state "this test will fail" by wrapping it in a C<TODO> block.

```
use Test::More tests => 1;

TODO: {
    local $TODO = 'ical($ical) not yet implemented';

    my $ical = Date::ICal->new;
    $ical->ical('20201231Z');

    is( $ical->ical, '20201231Z', 'Setting via ical()' );
}
```

Now when you run, it's a little different:

```
1..1
not ok 1 - Setting via ical() # TODO ical($ical) not yet implemented
# got: '20010822T201551Z'
# expected: '20201231Z'
```

Test::More doesn't say "Looks like you failed 1 tests of 1". That '# TODO' tells Test::Harness "this is supposed to fail" and it treats a failure as a successful test. So you can write tests even before you've fixed the underlying code.

If a TODO test passes, Test::Harness will report it "UNEXPECTEDLY SUCCEEDED". When that happens, you simply remove the TODO block with C<local \$TODO> and turn it into a real test.

=head2 Testing with taint mode.

Taint mode is a funny thing. It's the globalest of all global features. Once you turn it on, it affects I<all> code in your program and I<all> modules used (and all the modules they use). If a single piece of code isn't taint clean, the whole thing explodes. With that in mind, it's very important to ensure your module works under taint mode.

It's very simple to have your tests run under taint mode. Just throw a C<-T> into the C<#!> line. Test::Harness will read the switches in C<#!> and use them to run your tests.

```
#!/usr/bin/perl -Tw
```

```
...test normally here...
```

So when you say C<make test> it will be run with taint mode and warnings on.

=head1 FOOTNOTES

=over 4

=item 1

The first number doesn't really mean anything, but it has to be 1. It's the second number that's important.

=item 2

For those following along at home, I'm using version 1.31. It has some bugs, which is good -- we'll uncover them with our tests.

=item 3

You can actually take this one step further and test the manual itself. Have a look at B<Test::Inline> (formerly B<Pod::Tests>).

=item 4

Yes, there's a mistake in the test suite. What! Me, contrived?

=item 5

We'll get to testing the contents of lists later.

=item 6

But what happens if your test program dies halfway through?! Since we didn't say how many tests we're going to run, how can we know it failed? No problem, Test::More employs some magic to catch that death and turn the test into a failure, even if every test passed up to that point.

=item 7

I cleaned it up a little.

=item 8

Most Operating Systems record time as the number of seconds since a certain date. This date is the beginning of the epoch. Unix's starts at midnight January 1st, 1970 GMT.

=item 9

MacOS's epoch is midnight January 1st, 1904. VMS's is midnight, November 17th, 1858, but vmsperl emulates the Unix epoch so it's not a problem.

=item 10

As long as the code inside the SKIP block at least compiles. Please don't ask how. No, it's not a filter.

=item 11

Do NOT be tempted to use TODO tests as a way to avoid fixing simple bugs!

=back

=head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> and the perl-qa dancers!

=head1 COPYRIGHT

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or for profit as you see fit. A simple comment in the code giving credit would be courteous but is not required.

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/t/lib/Test/Tutorial.pod

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

=head1 NAME

File::Spec::Functions - portably perform operations on file names

=head1 SYNOPSIS

```
use File::Spec::Functions;
```

```
$x = catfile('a','b');
```

=head1 DESCRIPTION

This module exports convenience functions for all of the class methods provided by File::Spec.

For a reference of available functions, please consult L<File::Spec::Unix>, which contains the entire set, and which is inherited by the modules for other platforms. For further information, please see L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, or L<File::Spec::VMS>.

=head2 Exports

The following functions are exported by default.

- canonpath
- catdir
- catfile
- curdir
- rootdir
- updir
- no\_upwards
- file\_name\_is\_absolute
- path

The following functions are exported only by request.

- devnull
- tmpdir



splitpath  
splitdir  
catpath  
abs2rel  
rel2abs  
case\_tolerant

All the functions may be imported using the C<:ALL> tag.

=head1 COPYRIGHT

Copyright (c) 2004 by the Perl 5 Porters. All rights reserved.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

File::Spec, File::Spec::Unix, File::Spec::Mac, File::Spec::OS2,  
File::Spec::Win32, File::Spec::VMS, ExtUtils::MakeMaker

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Functions.pm  
No license file was found, but licenses were detected in source scan.

=back

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=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Cygwin.pm  
No license file was found, but licenses were detected in source scan.

/\* See

\* <http://www.xray.mpe.mpg.de/mailling-lists/perl5-porters/2004-11/msg00979.html>

\* for the details of why the BSD license is compatible with the

\* AL/GPL standard perl license.

```
*/
/*
* Copyright (c) 2003 Constantin S. Svintsoff <kostik@iclub.nsu.ru>
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
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* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
```

Found in path(s):

```
*/opt/cola/permits/1000849036_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/Cwd.xs
```

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

License: (GPL+ or Artistic) and BSD

Found in path(s):

```
*/opt/cola/permits/1000849036_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/perl-PathTools.spec
```

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

---

abstract: unknown

author:

- unknown

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0  
dynamic\_config: 1  
generated\_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.112150'  
license: unknown  
meta-spec:  
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>  
version: 1.4  
name: PathTools  
no\_index:  
directory:  
- t  
- inc  
requires:  
Carp: 0  
File::Basename: 0  
Scalar::Util: 0  
Test: 0  
version: 3.40

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/META.yml

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

=head1 EXIT CODES

If all your tests passed, Test::Builder will exit with zero (which is normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Builder will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

=head1 THREADS

In perl 5.8.0 and later, Test::Builder is thread-safe. The test number is shared amongst all threads. This means if one thread sets the test number using `current_test()` they will all be effected.

Test::Builder is only thread-aware if threads.pm is loaded I<before>  
Test::Builder.

=head1 EXAMPLES

CPAN can provide the best examples. Test::Simple, Test::More,  
Test::Exception and Test::Differences all use Test::Builder.

=head1 SEE ALSO

Test::Simple, Test::More, Test::Harness

=head1 AUTHORS

Original code by chromatic, maintained by Michael G Schwern  
E<lt>schwern@pobox.comE<gt>

=head1 COPYRIGHT

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modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-  
1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/t/lib/Test/Builder.pm

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

=back

Test::Simple will start by printing number of tests run in the form  
"1..M" (so "1..5" means you're going to run 5 tests). This strange  
format lets Test::Harness know how many tests you plan on running in  
case something goes horribly wrong.

If all your tests passed, Test::Simple will exit with zero (which is  
normal). If anything failed it will exit with how many failed. If  
you run less (or more) tests than you planned, the missing (or extras)  
will be considered failures. If no tests were ever run Test::Simple  
will throw a warning and exit with 255. If the test died, even after  
having successfully completed all its tests, it will still be

considered a failure and will exit with 255.

So the exit codes are...

```
0          all tests successful
255        test died
any other number  how many failed (including missing or extras)
```

If you fail more than 254 tests, it will be reported as 254.

This module is by no means trying to be a complete testing system.  
It's just to get you started. Once you're off the ground its  
recommended you look at [L<Test::More>](#).

=head1 EXAMPLE

Here's an example of a simple .t file for the fictional Film module.

```
use Test::Simple tests => 5;

use Film; # What you're testing.

my $btaste = Film->new({ Title => 'Bad Taste',
                      Director => 'Peter Jackson',
                      Rating => 'R',
                      NumExplodingSheep => 1
                      });
ok( defined($btaste) and ref $btaste eq 'Film', 'new() works' );

ok( $btaste->Title eq 'Bad Taste', 'Title() get' );
ok( $btaste->Director eq 'Peter Jackson', 'Director() get' );
ok( $btaste->Rating eq 'R', 'Rating() get' );
ok( $btaste->NumExplodingSheep == 1, 'NumExplodingSheep() get' );
```

It will produce output like this:

```
1..5
ok 1 - new() works
ok 2 - Title() get
ok 3 - Director() get
not ok 4 - Rating() get
# Failed test (t/film.t at line 14)
ok 5 - NumExplodingSheep() get
# Looks like you failed 1 tests of 5
```

Indicating the `Film::Rating()` method is broken.

## =head1 CAVEATS

Test::Simple will only report a maximum of 254 failures in its exit code. If this is a problem, you probably have a huge test script. Split it into multiple files. (Otherwise blame the Unix folks for using an unsigned short integer as the exit status).

Because VMS's exit codes are much, much different than the rest of the universe, and perl does horrible mangling to them that gets in my way, it works like this on VMS.

```
0  SS$_NORMAL    all tests successful
4  SS$_ABORT     something went wrong
```

Unfortunately, I can't differentiate any further.

## =head1 NOTES

Test::Simple is B<explicitly> tested all the way back to perl 5.004.

Test::Simple is thread-safe in perl 5.8.0 and up.

## =head1 HISTORY

This module was conceived while talking with Tony Bowden in his kitchen one night about the problems I was having writing some really complicated feature into the new Testing module. He observed that the main problem is not dealing with these edge cases but that people hate to write tests B<at all>. What was needed was a dead simple module that took all the hard work out of testing and was really, really easy to learn. Paul Johnson simultaneously had this idea (unfortunately, he wasn't in Tony's kitchen). This is it.

## =head1 SEE ALSO

=over 4

=item L<Test::More>

More testing functions! Once you outgrow Test::Simple, look at Test::More. Test::Simple is 100% forward compatible with Test::More (i.e. you can just use Test::More instead of Test::Simple in your programs and things will still work).

=item L<Test>

The original Perl testing module.

=item L<Test::Unit>

Elaborate unit testing.

=item L<Test::Inline>, L<SelfTest>

Embed tests in your code!

=item L<Test::Harness>

Interprets the output of your test program.

=back

=head1 AUTHORS

Idea by Tony Bowden and Paul Johnson, code by Michael G Schwern  
E<lt>schwern@pobox.comE<gt>, wardrobe by Calvin Klein.

=head1 COPYRIGHT

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See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-  
1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/t/lib/Test/Simple.pm

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=head1 NAME

Cwd - get pathname of current working directory

=head1 SYNOPSIS

```
use Cwd;  
my $dir = getcwd;
```

```
use Cwd 'abs_path';
my $abs_path = abs_path($file);
```

=head1 DESCRIPTION

This module provides functions for determining the pathname of the current working directory. It is recommended that `getcwd` (or another `*cwd()` function) be used in I<all> code to ensure portability.

By default, it exports the functions `cwd()`, `getcwd()`, `fastcwd()`, and `fastgetcwd()` (and, on Win32, `getdcwd()`) into the caller's namespace.

=head2 `getcwd` and friends

Each of these functions are called without arguments and return the absolute path of the current working directory.

=over 4

=item `getcwd`

```
my $cwd = getcwd();
```

Returns the current working directory.

Exposes the POSIX function `getcwd(3)` or re-implements it if it's not available.

=item `cwd`

```
my $cwd = cwd();
```

The `cwd()` is the most natural form for the current architecture. For most systems it is identical to ``pwd`` (but without the trailing line terminator).

=item `fastcwd`

```
my $cwd = fastcwd();
```

A more dangerous version of `getcwd()`, but potentially faster.

It might conceivably `chdir()` you out of a directory that it can't `chdir()` you back into. If `fastcwd` encounters a problem it will return `undef` but will probably leave you in a different directory. For a measure of extra security, if everything appears to have worked, the



fastcwd() function will check that it leaves you in the same directory that it started in. If it has changed it will C<die> with the message "Unstable directory path, current directory changed unexpectedly". That should never happen.

=item fastgetcwd

```
my $cwd = fastgetcwd();
```

The fastgetcwd() function is provided as a synonym for cwd().

=item getdcwd

```
my $cwd = getdcwd();  
my $cwd = getdcwd('C:');
```

The getdcwd() function is also provided on Win32 to get the current working directory on the specified drive, since Windows maintains a separate current working directory for each drive. If no drive is specified then the current drive is assumed.

This function simply calls the Microsoft C library \_getdcwd() function.

=back

=head2 abs\_path and friends

These functions are exported only on request. They each take a single argument and return the absolute pathname for it. If no argument is given they'll use the current working directory.

=over 4

=item abs\_path

```
my $abs_path = abs_path($file);
```

Uses the same algorithm as getcwd(). Symbolic links and relative-path components ( "." and ".." ) are resolved to return the canonical pathname, just like realpath(3).

=item realpath

```
my $abs_path = realpath($file);
```

A synonym for abs\_path().

=item fast\_abs\_path

```
my $abs_path = fast_abs_path($file);
```

A more dangerous, but potentially faster version of abs\_path.

=back

=head2 \$ENV{PWD}

If you ask to override your chdir() built-in function,

```
use Cwd qw(chdir);
```

then your PWD environment variable will be kept up to date. Note that it will only be kept up to date if all packages which use chdir import it from Cwd.

=head1 NOTES

=over 4

=item \*

Since the path separators are different on some operating systems ('/' on Unix, ':' on MacPerl, etc...) we recommend you use the File::Spec modules wherever portability is a concern.

=item \*

Actually, on Mac OS, the C<getcwd()>, C<fastgetcwd()> and C<fastcwd()> functions are all aliases for the C<cwd()> function, which, on Mac OS, calls `pwd`. Likewise, the C<abs\_path()> function is an alias for C<fast\_abs\_path()>.

=back

=head1 AUTHOR

Originally by the perl5-porters.

Maintained by Ken Williams <KWILLIAMS@cpan.org>

=head1 COPYRIGHT

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Portions of the C code in this library are copyright (c) 1994 by the Regents of the University of California. All rights reserved. The license on this code is compatible with the licensing of the rest of the distribution - please see the source code in `F<Cwd.xs>` for the details.

=head1 SEE ALSO

L<File::chdir>

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/Cwd.pm

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

An explanation of VMS file specs can be found at

L<[http://h71000.www7.hp.com/doc/731FINAL/4506/4506pro\\_014.html#apps\\_locating\\_naming\\_files](http://h71000.www7.hp.com/doc/731FINAL/4506/4506pro_014.html#apps_locating_naming_files)>.

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/VMS.pm

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

=head1 NAME

File::Spec::OS2 - methods for OS/2 file specs

## =head1 SYNOPSIS

require File::Spec::OS2; # Done internally by File::Spec if needed

## =head1 DESCRIPTION

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

Amongst the changes made for OS/2 are...

=over 4

=item tmpdir

Modifies the list of places temp directory information is looked for.

\$ENV{TMPDIR}

\$ENV{TEMP}

\$ENV{TMP}

/tmp

/

=item splitpath

Volumes can be drive letters or UNC sharenames (\\server\share).

=back

## =head1 COPYRIGHT

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=cut

Found in path(s):

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=back

## =head2 Note For File::Spec::Win32 Maintainers

Novell NetWare inherits its File::Spec behaviour from File::Spec::Win32.

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Win32.pm  
No license file was found, but licenses were detected in source scan.

=pod

=head1 AUTHOR

o.flebbe@gmx.de

=head1 COPYRIGHT

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Epoc.pm  
No license file was found, but licenses were detected in source scan.

=back

=head1 AUTHORS

See the authors list in I<File::Spec>. Mac OS support by Paul Schinder <schinder@pobox.com> and Thomas Wegner <wegner\_thomas@yahoo.com>.

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Mac.pm  
No license file was found, but licenses were detected in source scan.

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Please submit bug reports and patches to perlbug@perl.org.

=head1 SEE ALSO

L<File::Spec>

=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec/Unix.pm  
No license file was found, but licenses were detected in source scan.

=head1 NAME

File::Spec - portably perform operations on file names

## =head1 SYNOPSIS

```
use File::Spec;
```

```
$x=File::Spec->catfile('a', 'b', 'c');
```

which returns 'a/b/c' under Unix. Or:

```
use File::Spec::Functions;
```

```
$x = catfile('a', 'b', 'c');
```

## =head1 DESCRIPTION

This module is designed to support operations commonly performed on file specifications (usually called "file names", but not to be confused with the contents of a file, or Perl's file handles), such as concatenating several directory and file names into a single path, or determining whether a path is rooted. It is based on code directly taken from MakeMaker 5.17, code written by Andreas KE<ouml>nig, Andy Dougherty, Charles Bailey, Ilya Zakharevich, Paul Schinder, and others.

Since these functions are different for most operating systems, each set of OS specific routines is available in a separate module, including:

```
File::Spec::Unix
```

```
File::Spec::Mac
```

```
File::Spec::OS2
```

```
File::Spec::Win32
```

```
File::Spec::VMS
```

The module appropriate for the current OS is automatically loaded by File::Spec. Since some modules (like VMS) make use of facilities available only under that OS, it may not be possible to load all modules under all operating systems.

Since File::Spec is object oriented, subroutines should not be called directly, as in:

```
File::Spec::catfile('a','b');
```

but rather as class methods:

```
File::Spec->catfile('a','b');
```

For simple uses, L<File::Spec::Functions> provides convenient functional forms of these methods.

=head1 METHODS

=over 2

=item canonpath

X<canonpath>

No physical check on the filesystem, but a logical cleanup of a path.

```
$cpath = File::Spec->canonpath( $path );
```

Note that this does *not* collapse F<x/./y> sections into F<y>. This is by design. If F</foo> on your system is a symlink to F</bar/baz>, then F</foo/./quux> is actually F</bar/quux>, not F</quux> as a naive F<./>-removal would give you. If you want to do this kind of processing, you probably want C<Cwd>'s C<realpath()> function to actually traverse the filesystem cleaning up paths like this.

=item catdir

X<catdir>

Concatenate two or more directory names to form a complete path ending with a directory. But remove the trailing slash from the resulting string, because it doesn't look good, isn't necessary and confuses OS/2. Of course, if this is the root directory, don't cut off the trailing slash :-)

```
$path = File::Spec->catdir( @directories );
```

=item catfile

X<catfile>

Concatenate one or more directory names and a filename to form a complete path ending with a filename

```
$path = File::Spec->catfile( @directories, $filename );
```

=item curdir

X<curdir>

Returns a string representation of the current directory.

```
$curdir = File::Spec->curdir();
```

=item devnull

X<devnull>



Returns a string representation of the null device.

```
$devnull = File::Spec->devnull();
```

=item rootdir

X<rootdir>

Returns a string representation of the root directory.

```
$rootdir = File::Spec->rootdir();
```

=item tmpdir

X<tmpdir>

Returns a string representation of the first writable directory from a list of possible temporary directories. Returns the current directory if no writable temporary directories are found. The list of directories checked depends on the platform; e.g. File::Spec::Unix checks C<\${ENV{TMPDIR}}> (unless taint is on) and F</tmp>.

```
$tmpdir = File::Spec->tmpdir();
```

=item updir

X<updir>

Returns a string representation of the parent directory.

```
$updir = File::Spec->updir();
```

=item no\_upwards

Given a list of file names, strip out those that refer to a parent directory. (Does not strip symlinks, only '.', '..', and equivalents.)

```
@paths = File::Spec->no_upwards( @paths );
```

=item case\_tolerant

Returns a true or false value indicating, respectively, that alphabetic case is not or is significant when comparing file specifications. Cygwin and Win32 accept an optional drive argument.

```
$is_case_tolerant = File::Spec->case_tolerant();
```

=item file\_name\_is\_absolute

Takes as its argument a path, and returns true if it is an absolute path.

```
$is_absolute = File::Spec->file_name_is_absolute( $path );
```

This does not consult the local filesystem on Unix, Win32, OS/2, or Mac OS (Classic). It does consult the working environment for VMS (see L<File::Spec::VMS/file\_name\_is\_absolute>).

=item path

X<path>

Takes no argument. Returns the environment variable C<PATH> (or the local platform's equivalent) as a list.

```
@PATH = File::Spec->path();
```

=item join

X<join, path>

join is the same as catfile.

=item splitpath

X<splitpath> X<split, path>

Splits a path in to volume, directory, and filename portions. On systems with no concept of volume, returns " for volume.

```
($volume,$directories,$file) =  
    File::Spec->splitpath( $path );  
($volume,$directories,$file) =  
    File::Spec->splitpath( $path, $no_file );
```

For systems with no syntax differentiating filenames from directories, assumes that the last file is a path unless C<\$no\_file> is true or a trailing separator or F</.> or F</.> is present. On Unix, this means that C<\$no\_file> true makes this return ( " , \$path, " ).

The directory portion may or may not be returned with a trailing '/'.

The results can be passed to L</catpath(> to get back a path equivalent to (usually identical to) the original path.

=item splitdir

X<splitdir> X<split, dir>

The opposite of L</catdir>.

```
@dirs = File::Spec->splitdir( $directories );
```

C<\$directories> must be only the directory portion of the path on systems that have the concept of a volume or that have path syntax that differentiates files from directories.

Unlike just splitting the directories on the separator, empty directory names (C<">) can be returned, because these are significant on some OSes.

=item catpath()

Takes volume, directory and file portions and returns an entire path. Under Unix, C<\$volume> is ignored, and directory and file are concatenated. A '/' is inserted if need be. On other OSes, C<\$volume> is significant.

```
$full_path = File::Spec->catpath( $volume, $directory, $file );
```

=item abs2rel

X<abs2rel> X<absolute, path> X<relative, path>

Takes a destination path and an optional base path returns a relative path from the base path to the destination path:

```
$rel_path = File::Spec->abs2rel( $path ) ;  
$rel_path = File::Spec->abs2rel( $path, $base ) ;
```

If C<\$base> is not present or "", then L<Cwd::cwd()|Cwd> is used. If C<\$base> is relative, then it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

On systems with the concept of volume, if C<\$path> and C<\$base> appear to be on two different volumes, we will not attempt to resolve the two paths, and we will instead simply return C<\$path>. Note that previous versions of this module ignored the volume of C<\$base>, which resulted in garbage results part of the time.

On systems that have a grammar that indicates filenames, this ignores the C<\$base> filename as well. Otherwise all path components are assumed to be directories.

If C<\$path> is relative, it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

No checks against the filesystem are made. On VMS, there is interaction with the working environment, as logicals and macros are expanded.

Based on code written by Shigio Yamaguchi.

```
=item rel2abs()  
X<rel2abs> X<absolute, path> X<relative, path>
```

Converts a relative path to an absolute path.

```
$abs_path = File::Spec->rel2abs( $path ) ;  
$abs_path = File::Spec->rel2abs( $path, $base ) ;
```

If C<\$base> is not present or "", then L<Cwd::cwd()|Cwd> is used. If C<\$base> is relative, then it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

On systems with the concept of volume, if C<\$path> and C<\$base> appear to be on two different volumes, we will not attempt to resolve the two paths, and we will instead simply return C<\$path>. Note that previous versions of this module ignored the volume of C<\$base>, which resulted in garbage results part of the time.

On systems that have a grammar that indicates filenames, this ignores the C<\$base> filename as well. Otherwise all path components are assumed to be directories.

If C<\$path> is absolute, it is cleaned up and returned using L</canonpath>.

No checks against the filesystem are made. On VMS, there is interaction with the working environment, as logicals and macros are expanded.

Based on code written by Shigio Yamaguchi.

=back

For further information, please see L<File::Spec::Unix>, L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, or L<File::Spec::VMS>.

=head1 SEE ALSO

L<File::Spec::Unix>, L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, L<File::Spec::VMS>, L<File::Spec::Functions>, L<ExtUtils::MakeMaker>

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Thomas Wegner C<<< <wegner\_thomas@yahoo.com> >>>.  
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modified by Barrie Slaymaker C<<< <barries@slaysys.com> >>>.  
splitpath(), splitdir(), catpath() and catdir() by Barrie Slaymaker.

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=cut

Found in path(s):

\* /opt/cola/permits/1000849036\_1646171516.26/0/perl-PathTools-3.40-5.el7.src.rpm-cosi-expand-archive-1Qw75xNn/PathTools-3.40.tar.gz-cosi-expand-archive-ailvvQyw/PathTools-3.40/lib/File/Spec.pm

## 1.105 mime-pull 1.8

## 1.106 giflib 4.1.6 9.el7

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## 1.107 safec 4.0.45-20190507155256.el7

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## 1.108 lz4 1.7.5

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Upstream-Contact: Yann Collet <[Cyan4973@github.com](mailto:Cyan4973@github.com)>

Source: <https://github.com/lz4/lz4>

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## 1.109 libssh 0.7.1-7.el7

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## 1.111 plexus-utils 3.0.7

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

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

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+-----+					
2.1.1	2.1+2.0.1	2001	PSF	yes	
+-----+					
2.1.2	2.1.1	2002	PSF	yes	
+-----+					
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#### Mersenne Twister

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The `:mod:`_random`` module includes code based on a download from <http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/MT2002/emt19937ar.html>. The following are the verbatim comments from the original code::

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

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

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<http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/emt.html>

email: m-mat @ math.sci.hiroshima-u.ac.jp (remove space)

Sockets

-----

The `:mod:`socket`` module uses the functions, `:func:`getaddrinfo``, and `:func:`getnameinfo``, which are coded in separate source files from the WIDE Project, <http://www.wide.ad.jp/>. ::

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Asynchronous socket services

-----

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Cookie management

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UUencode and UUdecode functions  
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Modified by Jack Jansen, CWI, July 1995:

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

XML Remote Procedure Calls  
-----

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Select kqueue

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SipHash24

-----

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Original location:

<https://github.com/majek/csiphash/>

Solution inspired by code from:

Samuel Neves (supercop/crypto\_auth/siphash24/little)

djb (supercop/crypto\_auth/siphash24/little2)

Jean-Philippe Aumasson (<https://131002.net/siphash/siphash24.c>)

strtod and dtoa

-----

The file :file:`Python/dtoa.c`, which supplies C functions dtoa and strtod for conversion of C doubles to and from strings, is derived from the file of the same name by David M. Gay, currently available from <http://www.netlib.org/fp/>. The original file, as retrieved on March 16, 2009, contains the following copyright and licensing notice::

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zlib

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cfuhash

-----

The implementation of the hash table used by the `:mod:`tracemalloc`` is based on the cfuhash project::

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libmpdec

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Python was created in the early 1990s by Guido van Rossum at Stichting

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

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

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

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0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
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2.2 and above	2.1.1	2001-now	PSF	yes

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```

JSZipUtils - A collection of cross-browser utilities to go along with JSZip.

<<http://stuk.github.io/jszip-utils>>

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) 19yy <name of author>
```

```
This program is free software; you can redistribute it and/or modify  
it under the terms of the GNU General Public License as published by  
the Free Software Foundation; either version 2 of the License, or  
(at your option) any later version.
```

```
This program is distributed in the hope that it will be useful,  
but WITHOUT ANY WARRANTY; without even the implied warranty of  
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the  
GNU General Public License for more details.
```

```
You should have received a copy of the GNU General Public License  
along with this program; if not, write to the Free Software  
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```

Also add information on how to contact you by electronic and paper mail.

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```
Gnomovision version 69, Copyright (C) 19yy name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

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

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

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy

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Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

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<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

That's all there is to it!

## 1.121 mesa 18.3.4 5.e17

### 1.121.1 Available under license :

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/* Legal characters in GLSL are:
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* Identifier characters:
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* Letters a-z
* Letters A-Z
* Underscore
* Numbers 0-9
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* Punctuation:
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* Period, plus, dash, slash, asterisk, percent, angled brackets,
* square brackets, parentheses, braces, caret, vertical bar,
* ampersand, tilde, equals, exclamation point, colon, semicolon,
* comma, and question mark
*
* Special:
*
* Number sign (as used in preprocessor)
*
* Backslash just before newline as line continuation
*
* White space:
*
* Space, horizontal tab, vertical tab, form feed, carriage-return,
* and line-feed.
*
* [GLSL Language Specification 4.30.6, section 3.1]
*
* In this file, we test each of these in turn as follows:
*
* Identifier characters: All pass through unchanged
* Punctuation: All pass through unchanged
* Special: Empty directive replaced with blank line
* Line continuation merges two lines, then a blank line
* Whitespace: 4 horizontal space characters each replaced with space
* 2 newline characters each replaced with a newline
*
*/
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ

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#

# Authors:

# Ian Romanick <idr@us.ibm.com>

bsd\_license\_template = """"%s

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Subject: RE: Question about Mesa MLAA license  
From: Jorge Jimenez <iryoku@gmail.com>  
Date: 01/08/2013 12:50 PM  
To: Tom Callaway <tcallawa@redhat.com>  
CC: "jorge@iryoku.com" <jorge@iryoku.com>

Yes to both questions.

Thanks,  
Jorge

From: Tom Callaway <tcallawa@redhat.com>  
Sent: January 8, 2013 6:49 PM  
To: Jorge Jimenez <iryoku@gmail.com>  
CC: jorge@iryoku.com  
Subject: Re: Question about Mesa MLAA license

On 01/08/2013 12:39 PM, Jorge Jimenez wrote:

> Hi Tom,  
>  
> What we meant with that is that we made an exception for clause 2.  
> Instead of clause 2, in the case of the Mesa project, you have to name  
> the technique Jimenez's MLAA in the config options of Mesa. We did that  
> just to allow them to solve license issues. This exception should be for  
> the Mesa project, and any project using Mesa, like Fedora.  
>  
> We want to widespread usage of our MLAA, so we want to avoid any kind of  
> license complications. Hope current one is good for Fedora, if not  
> please tell, and we'll see what we can do!

Okay, a few more questions:

\* If Fedora decides to simply reproduce the quoted statement:  
"Uses Jimenez's MLAA. Copyright (C) 2010 by Jorge Jimenez, Belen Masia,  
Jose I. Echevarria, Fernando Navarro and Diego Gutierrez."

Specifically, if this is done as part of documentation included with Mesa, is that sufficient to meet clause 2 even if the Mesa config option is not set as described in your exception?

\* Currently, the Mesa config option for MLAA says: "Morphological anti-aliasing based on Jimenez\' MLAA. 0 to disable, 8 for default quality". Is this in compliance with your exception?

Thanks again,

~tom

==

Fedora Project

Subject: RE: Question about Mesa MLAA license

From: Jorge Jimenez <iryoku@gmail.com>

Date: 01/08/2013 12:39 PM

To: "jorge@iryoku.com" <jorge@iryoku.com>, Tom Callaway <tcallawa@redhat.com>

Hi Tom,

What we meant with that is that we made an exception for clause 2. Instead of clause 2, in the case of the Mesa project, you have to name the technique Jimenez's MLAA in the config options of Mesa. We did that just to allow them to solve license issues. This exception should be for the Mesa project, and any project using Mesa, like Fedora.

We want to widespread usage of our MLAA, so we want to avoid any kind of license complications. Hope current one is good for Fedora, if not please tell, and we'll see what we can do!

Cheers,

Jorge

From: Tom Callaway <tcallawa@redhat.com>

Sent: January 8, 2013 6:30 PM

To: jorge@iryoku.com

Subject: Question about Mesa MLAA license

Jorge,

Thanks for all of your fantastic graphics work! I have been auditing Fedora (a popular distribution of Linux) for license compliance and I came across your MLAA code in Mesa.

The license says:

- \* 2. Redistributions in binary form must reproduce the following statement:
- \*
- \* "Uses Jimenez's MLAA. Copyright (C) 2010 by Jorge Jimenez, Belen Masia,

- \* Jose I. Echevarria, Fernando Navarro and Diego Gutierrez."
- \*
- \* Only for use in the Mesa project, this point 2 is filled by naming the
- \* technique Jimenez's MLAA in the Mesa config options.

That wording is unclear. When you say "Only for use in the Mesa project...", it seems like you could either be saying:

- This code may only be used as part of Mesa.

OR

- In Mesa, you can comply with clause 2 by simply selecting "Jimenez's MLAA" in the Mesa config options.

\*\*\*\*\*

If the first item is true, then we may have to remove the MLAA code from Fedora's copy of Mesa. However, looking at the license on your SMAA code, I do not believe it to be the case. Please let me know either way!

Thanks in advance,

Tom Callaway  
Fedora Legal

==

Fedora Project

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
"http://www.w3.org/TR/html4/loose.dtd">
```

```
<html lang="en">
```

```
<head>
```

```
<meta http-equiv="content-type" content="text/html; charset=utf-8">
```

```
<title>License / Copyright Information</title>
```

```
<link rel="stylesheet" type="text/css" href="mesa.css">
```

```
</head>
```

```
<body>
```

```
<div class="header">
```

```
<h1>The Mesa 3D Graphics Library</h1>
```

```
</div>
```

```
<iframe src="contents.html"></iframe>
```

```
<div class="content">
```

```
<h1>Disclaimer</h1>
```

```
<p>
```

Mesa is a 3-D graphics library with an API which is very similar to that of [OpenGL](https://www.opengl.org/).\*

To the extent that Mesa utilizes the OpenGL command syntax or state machine, it is being used with authorization from [Silicon Graphics, Inc.](https://www.sgi.com/)(SGI). However, the author does not possess an OpenGL license from SGI, and makes no claim that Mesa is in any way a compatible replacement for OpenGL or associated with SGI. Those who want a licensed implementation of OpenGL should contact a licensed vendor.

Please do not refer to the library as *MesaGL* (for legal reasons). It's just *Mesa* or *The Mesa 3-D graphics library*.

\* OpenGL is a trademark of [Silicon Graphics Incorporated](https://www.sgi.com/).

## License / Copyright Information

The Mesa distribution consists of several components. Different copyrights and licenses apply to different components. For example, the GLX client code uses the SGI Free Software License B, and some of the Mesa device drivers are copyrighted by their authors. See below for a list of Mesa's main components and the license for each.

The core Mesa library is licensed according to the terms of the MIT license. This allows integration with the XFree86, Xorg and DRI projects.

The default Mesa license is as follows:

```
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```

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</pre>

<h1>Attention, Contributors</h1>

<p>

When contributing to the Mesa project you must agree to the licensing terms of the component to which you're contributing.

The following section lists the primary components of the Mesa distribution and their respective licenses.

</p>

<h1>Mesa Component Licenses</h1>

<pre>

| Component            | Location                                       | License                     |
|----------------------|------------------------------------------------|-----------------------------|
| Main Mesa code       | src/ mesa/                                     | MIT                         |
| Device drivers       | src/ mesa/ drivers/ *                          | MIT, generally              |
| Gallium code         | src/ gallium/                                  | MIT                         |
| Ext headers          | include/ GL/ glxext.h<br>include/ GL/ glxext.h | Khronos                     |
| GLX client code      | src/ glx/                                      | SGI Free Software License B |
| C11 thread emulation | include/ c11/ threads*.h                       | Boost (permissive)          |

</pre>

<p>



In general, consult the source files for license terms.

</p>

</div>

</body>

</html>

# 1.122 diffutils 3.3 5.e17

## 1.122.1 Available under license :

/\* diff - compare files line by line

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along with this program. If not, see <<http://www.gnu.org/licenses/>>. \*/

```
#define GDIFF_MAIN
#include "diff.h"
#include <assert.h>
#include "paths.h"
#include <c-stack.h>
#include <dirname.h>
#include <error.h>
#include <exclude.h>
#include <exitfail.h>
#include <filenamecat.h>
#include <file-type.h>
#include <fnmatch.h>
#include <getopt.h>
#include <hard-locale.h>
#include <prepargs.h>
#include <progrname.h>
#include <sh-quote.h>
```

```

#include <stat-time.h>
#include <timespec.h>
#include <version-etc.h>
#include <xalloc.h>
#include <xreadlink.h>
#include <binary-io.h>

/* The official name of this program (e.g., no 'g' prefix). */
#define PROGRAM_NAME "diff"

#define AUTHORS \
proper_name ("Paul Eggert"), \
proper_name ("Mike Haertel"), \
proper_name ("David Hayes"), \
proper_name ("Richard Stallman"), \
proper_name ("Len Tower")

#ifndef GUTTER_WIDTH_MINIMUM
# define GUTTER_WIDTH_MINIMUM 3
#endif

struct regexp_list
{
char *regexps; /* chars representing disjunction of the regexps */
size_t len; /* chars used in 'regexps' */
size_t size; /* size malloc'ed for 'regexps'; 0 if not malloc'ed */
bool multiple_regexps; /* Does 'regexps' represent a disjunction? */
struct re_pattern_buffer *buf;
};

static int compare_files (struct comparison const *, char const *, char const *);
static void add_regexp (struct regexp_list *, char const *);
static void summarize_regexp_list (struct regexp_list *);
static void specify_style (enum output_style);
static void specify_value (char const **, char const *, char const *);
static void try_help (char const *, char const *) __attribute__((noreturn));
static void check_stdout (void);
static void usage (void);

/* If comparing directories, compare their common subdirectories
recursively. */
static bool recursive;

/* In context diffs, show previous lines that match these regexps. */
static struct regexp_list function_regexp_list;

/* Ignore changes affecting only lines that match these regexps. */
static struct regexp_list ignore_regexp_list;

```

```

#if O_BINARY
/* Use binary I/O when reading and writing data (--binary).
   On POSIX hosts, this has no effect. */
static bool binary;
#else
enum { binary = true };
#endif

/* If one file is missing, treat it as present but empty (-N). */
static bool new_file;

/* If the first file is missing, treat it as present but empty
   (--unidirectional-new-file). */
static bool unidirectional_new_file;

/* Report files compared that are the same (-s).
   Normally nothing is output when that happens. */
static bool report_identical_files;

static char const shortopts[] =
"0123456789abBcC:dD:eEfF:hHiI:lL:nNpPqrsS:tTuU:vwW:x:X:yZ";

/* Values for long options that do not have single-letter equivalents. */
enum
{
  BINARY_OPTION = CHAR_MAX + 1,
  FROM_FILE_OPTION,
  HELP_OPTION,
  HORIZON_LINES_OPTION,
  IGNORE_FILE_NAME_CASE_OPTION,
  INHIBIT_HUNK_MERGE_OPTION,
  LEFT_COLUMN_OPTION,
  LINE_FORMAT_OPTION,
  NO_DEREFERENCE_OPTION,
  NO_IGNORE_FILE_NAME_CASE_OPTION,
  NORMAL_OPTION,
  SDIFF_MERGE_ASSIST_OPTION,
  STRIP_TRAILING_CR_OPTION,
  SUPPRESS_BLANK_EMPTY_OPTION,
  SUPPRESS_COMMON_LINES_OPTION,
  TABSIZE_OPTION,
  TO_FILE_OPTION,

  /* These options must be in sequence. */
  UNCHANGED_LINE_FORMAT_OPTION,
  OLD_LINE_FORMAT_OPTION,
  NEW_LINE_FORMAT_OPTION,

```

```

/* These options must be in sequence. */
UNCHANGED_GROUP_FORMAT_OPTION,
OLD_GROUP_FORMAT_OPTION,
NEW_GROUP_FORMAT_OPTION,
CHANGED_GROUP_FORMAT_OPTION
};

static char const group_format_option[][sizeof "--unchanged-group-format"] =
{
    "--unchanged-group-format",
    "--old-group-format",
    "--new-group-format",
    "--changed-group-format"
};

static char const line_format_option[][sizeof "--unchanged-line-format"] =
{
    "--unchanged-line-format",
    "--old-line-format",
    "--new-line-format"
};

static struct option const longopts[] =
{
    {"binary", 0, 0, BINARY_OPTION},
    {"brief", 0, 0, 'q'},
    {"changed-group-format", 1, 0, CHANGED_GROUP_FORMAT_OPTION},
    {"context", 2, 0, 'C'},
    {"ed", 0, 0, 'e'},
    {"exclude", 1, 0, 'x'},
    {"exclude-from", 1, 0, 'X'},
    {"expand-tabs", 0, 0, 't'},
    {"forward-ed", 0, 0, 'f'},
    {"from-file", 1, 0, FROM_FILE_OPTION},
    {"help", 0, 0, HELP_OPTION},
    {"horizon-lines", 1, 0, HORIZON_LINES_OPTION},
    {"ifdef", 1, 0, 'D'},
    {"ignore-all-space", 0, 0, 'w'},
    {"ignore-blank-lines", 0, 0, 'B'},
    {"ignore-case", 0, 0, 'i'},
    {"ignore-file-name-case", 0, 0, IGNORE_FILE_NAME_CASE_OPTION},
    {"ignore-matching-lines", 1, 0, 'I'},
    {"ignore-space-change", 0, 0, 'b'},
    {"ignore-tab-expansion", 0, 0, 'E'},
    {"ignore-trailing-space", 0, 0, 'Z'},
    {"inhibit-hunk-merge", 0, 0, INHIBIT_HUNK_MERGE_OPTION},
    {"initial-tab", 0, 0, 'T'},

```

```

{"label", 1, 0, 'L'},
{"left-column", 0, 0, LEFT_COLUMN_OPTION},
{"line-format", 1, 0, LINE_FORMAT_OPTION},
{"minimal", 0, 0, 'd'},
{"new-file", 0, 0, 'N'},
{"new-group-format", 1, 0, NEW_GROUP_FORMAT_OPTION},
{"new-line-format", 1, 0, NEW_LINE_FORMAT_OPTION},
{"no-dereference", 0, 0, NO_DEREFERENCE_OPTION},
{"no-ignore-file-name-case", 0, 0, NO_IGNORE_FILE_NAME_CASE_OPTION},
{"normal", 0, 0, NORMAL_OPTION},
{"old-group-format", 1, 0, OLD_GROUP_FORMAT_OPTION},
{"old-line-format", 1, 0, OLD_LINE_FORMAT_OPTION},
{"paginate", 0, 0, 'l'},
{"rcs", 0, 0, 'n'},
{"recursive", 0, 0, 'r'},
{"report-identical-files", 0, 0, 's'},
{"sdiff-merge-assist", 0, 0, SDIFF_MERGE_ASSIST_OPTION},
{"show-c-function", 0, 0, 'p'},
{"show-function-line", 1, 0, 'F'},
{"side-by-side", 0, 0, 'y'},
{"speed-large-files", 0, 0, 'H'},
{"starting-file", 1, 0, 'S'},
{"strip-trailing-cr", 0, 0, STRIP_TRAILING_CR_OPTION},
{"suppress-blank-empty", 0, 0, SUPPRESS_BLANK_EMPTY_OPTION},
{"suppress-common-lines", 0, 0, SUPPRESS_COMMON_LINES_OPTION},
{"tabsize", 1, 0, TABSIZE_OPTION},
{"text", 0, 0, 'a'},
{"to-file", 1, 0, TO_FILE_OPTION},
{"unchanged-group-format", 1, 0, UNCHANGED_GROUP_FORMAT_OPTION},
{"unchanged-line-format", 1, 0, UNCHANGED_LINE_FORMAT_OPTION},
{"unidirectional-new-file", 0, 0, 'P'},
{"unified", 2, 0, 'U'},
{"version", 0, 0, 'v'},
{"width", 1, 0, 'W'},
{0, 0, 0, 0}
};

```

/\* Return a string containing the command options with which diff was invoked.

Spaces appear between what were separate ARGV-elements.

There is a space at the beginning but none at the end.

If there were no options, the result is an empty string.

Arguments: OPTIONVEC, a vector containing separate ARGV-elements, and COUNT, the length of that vector. \*/

```

static char *
option_list (char **optionvec, int count)
{

```

```

int i;
size_t size = 1;
char *result;
char *p;

for (i = 0; i < count; i++)
    size += 1 + shell_quote_length (optionvec[i]);

p = result = xmalloc (size);

for (i = 0; i < count; i++)
    {
        *p++ = ' ';
        p = shell_quote_copy (p, optionvec[i]);
    }

*p = '\0';
return result;
}

/* Return an option value suitable for add_exclude. */

static int
exclude_options (void)
{
    return EXCLUDE_WILDCARDS | (ignore_file_name_case ? FNM_CASEFOLD : 0);
}

int
main (int argc, char **argv)
{
    int exit_status = EXIT_SUCCESS;
    int c;
    int i;
    int prev = -1;
    int ocontext = -1;
    bool explicit_context = false;
    size_t width = 0;
    bool show_c_function = false;
    char const *from_file = NULL;
    char const *to_file = NULL;
    uintmax_t numval;
    char *numend;

    /* Do our initializations. */
    exit_failure = EXIT_TROUBLE;
    initialize_main (&argc, &argv);

```

```
set_program_name (argv[0]);
setlocale (LC_ALL, "");
bindtextdomain (PACKAGE, LOCALEDIR);
textdomain (PACKAGE);
c_stack_action (0);
function_regexp_list.buf = &function_regexp;
ignore_regexp_list.buf = &ignore_regexp;
re_set_syntax (RE_SYNTAX_GREP | RE_NO_POSIX_BACKTRACKING);
excluded = new_exclude ();
```

```
/* Decode the options. */
```

```
while ((c = getopt_long (argc, argv, shortopts, longopts, NULL)) != -1)
```

```
{
    switch (c)
    {
    case 0:
        break;

    case '0':
    case '1':
    case '2':
    case '3':
    case '4':
    case '5':
    case '6':
    case '7':
    case '8':
    case '9':
        if (! ISDIGIT (prev))
            ocontext = c - '0';
        else if (LIN_MAX / 10 < ocontext
            || ((ocontext = 10 * ocontext + c - '0') < 0))
            ocontext = LIN_MAX;
        break;

    case 'a':
        text = true;
        break;

    case 'b':
        if (ignore_white_space < IGNORE_SPACE_CHANGE)
            ignore_white_space = IGNORE_SPACE_CHANGE;
        break;

    case 'Z':
        if (ignore_white_space < IGNORE_SPACE_CHANGE)
            ignore_white_space |= IGNORE_TRAILING_SPACE;
```

```

break;

case 'B':
    ignore_blank_lines = true;
    break;

case 'C':
case 'U':
    {
        if (optarg)
            {
                numval = strtoumax (optarg, &numend, 10);
                if (*numend)
                    try_help ("invalid context length '%s'", optarg);
                if (LIN_MAX < numval)
                    numval = LIN_MAX;
            }
        else
            numval = 3;

        specify_style (c == 'U' ? OUTPUT_UNIFIED : OUTPUT_CONTEXT);
        if (context < numval)
            context = numval;
        explicit_context = true;
    }
    break;

case 'c':
    specify_style (OUTPUT_CONTEXT);
    if (context < 3)
        context = 3;
    break;

case 'd':
    minimal = true;
    break;

case 'D':
    specify_style (OUTPUT_IFDEF);
    {
        static char const C_ifdef_group_formats[] =
            "%s=%c#ifndef %s\n%>#endif /* ! %s *\n%c#ifndef %s\n%>#endif /* %s *\n%c#ifndef %s\n%>#else
/* %s *\n%>#endif /* %s *\n";
        char *b = xmalloc (sizeof C_ifdef_group_formats
            + 7 * strlen (optarg) - 14 /* 7*"%" */
            - 8 /* 5*"%" + 3*"%" */);
        sprintf (b, C_ifdef_group_formats,
            0,

```



```

    optarg, optarg, 0,
    optarg, optarg, 0,
    optarg, optarg, optarg);
for (i = 0; i < sizeof group_format / sizeof group_format[0]; i++)
    {
specify_value (&group_format[i], b, "-D");
b += strlen (b) + 1;
    }
}
break;

case 'e':
    specify_style (OUTPUT_ED);
    break;

case 'E':
    if (ignore_white_space < IGNORE_SPACE_CHANGE)
        ignore_white_space |= IGNORE_TAB_EXPANSION;
    break;

case 'f':
    specify_style (OUTPUT_FORWARD_ED);
    break;

case 'F':
    add_regexp (&function_regexp_list, optarg);
    break;

case 'h':
    /* Split the files into chunks for faster processing.
       Usually does not change the result.

       This currently has no effect. */
    break;

case 'H':
    speed_large_files = true;
    break;

case 'i':
    ignore_case = true;
    break;

case 'I':
    add_regexp (&ignore_regexp_list, optarg);
    break;

case 'l':

```

```

if (!pr_program[0])
    try_help ("pagination not supported on this host", NULL);
paginate = true;
#ifdef SIGCHLD
    /* Pagination requires forking and waiting, and
       System V fork+wait does not work if SIGCHLD is ignored. */
    signal (SIGCHLD, SIG_DFL);
#endif
break;

case 'L':
if (!file_label[0])
    file_label[0] = optarg;
else if (!file_label[1])
    file_label[1] = optarg;
else
    fatal ("too many file label options");
break;

case 'n':
    specify_style (OUTPUT_RCS);
break;

case 'N':
    new_file = true;
break;

case 'p':
    show_c_function = true;
    add_regexp (&function_regexp_list, "^[:alpha:]+$");
break;

case 'P':
    unidirectional_new_file = true;
break;

case 'q':
    brief = true;
break;

case 'r':
    recursive = true;
break;

case 's':
    report_identical_files = true;
break;

```

```

case 'S':
    specify_value (&starting_file, optarg, "-S");
    break;

case 't':
    expand_tabs = true;
    break;

case 'T':
    initial_tab = true;
    break;

case 'u':
    specify_style (OUTPUT_UNIFIED);
    if (context < 3)
        context = 3;
    break;

case 'v':
    version_etc (stdout, PROGRAM_NAME, PACKAGE_NAME, Version,
        AUTHORS, (char *) NULL);
    check_stdout ();
    return EXIT_SUCCESS;

case 'w':
    ignore_white_space = IGNORE_ALL_SPACE;
    break;

case 'x':
    add_exclude (excluded, optarg, exclude_options ());
    break;

case 'X':
    if (add_exclude_file (add_exclude, excluded, optarg,
        exclude_options (), '\n'))
        pfatal_with_name (optarg);
    break;

case 'y':
    specify_style (OUTPUT_SDIFF);
    break;

case 'W':
    numval = strtoumax (optarg, &numend, 10);
    if (! (0 < numval && numval <= SIZE_MAX) || *numend)
        try_help ("invalid width '%s'", optarg);
    if (width != numval)
        {

```

```

    if (width)
fatal ("conflicting width options");
    width = numval;
}
break;

case BINARY_OPTION:
#if O_BINARY
    binary = true;
    if (! isatty (STDOUT_FILENO))
        set_binary_mode (STDOUT_FILENO, O_BINARY);
#endif
break;

case FROM_FILE_OPTION:
    specify_value (&from_file, optarg, "--from-file");
break;

case HELP_OPTION:
    usage ();
    check_stdout ();
    return EXIT_SUCCESS;

case HORIZON_LINES_OPTION:
    numval = strtoumax (optarg, &numend, 10);
    if (*numend)
        try_help ("invalid horizon length '%s'", optarg);
    horizon_lines = MAX (horizon_lines, MIN (numval, LIN_MAX));
break;

case IGNORE_FILE_NAME_CASE_OPTION:
    ignore_file_name_case = true;
break;

case INHIBIT_HUNK_MERGE_OPTION:
    /* This option is obsolete, but accept it for backward
       compatibility. */
break;

case LEFT_COLUMN_OPTION:
    left_column = true;
break;

case LINE_FORMAT_OPTION:
    specify_style (OUTPUT_IFDEF);
    for (i = 0; i < sizeof line_format / sizeof line_format[0]; i++)
        specify_value (&line_format[i], optarg, "--line-format");
break;

```

```

case NO_DEREFERENCE_OPTION:
    no_dereference_symlinks = true;
    break;

case NO_IGNORE_FILE_NAME_CASE_OPTION:
    ignore_file_name_case = false;
    break;

case NORMAL_OPTION:
    specify_style (OUTPUT_NORMAL);
    break;

case SDIFF_MERGE_ASSIST_OPTION:
    specify_style (OUTPUT_SDIFF);
    sdiff_merge_assist = true;
    break;

case STRIP_TRAILING_CR_OPTION:
    strip_trailing_cr = true;
    break;

case SUPPRESS_BLANK_EMPTY_OPTION:
    suppress_blank_empty = true;
    break;

case SUPPRESS_COMMON_LINES_OPTION:
    suppress_common_lines = true;
    break;

case TABSIZE_OPTION:
    numval = strtoumax (optarg, &numend, 10);
    if (! (0 < numval && numval <= SIZE_MAX) || *numend)
        try_help ("invalid tabsize '%s'", optarg);
    if (tabsize != numval)
    {
        if (tabsize)
            fatal ("conflicting tabsize options");
        tabsize = numval;
    }
    break;

case TO_FILE_OPTION:
    specify_value (&to_file, optarg, "--to-file");
    break;

case UNCHANGED_LINE_FORMAT_OPTION:
case OLD_LINE_FORMAT_OPTION:

```

```

case NEW_LINE_FORMAT_OPTION:
    specify_style (OUTPUT_IFDEF);
    c -= UNCHANGED_LINE_FORMAT_OPTION;
    specify_value (&line_format[c], optarg, line_format_option[c]);
    break;

case UNCHANGED_GROUP_FORMAT_OPTION:
case OLD_GROUP_FORMAT_OPTION:
case NEW_GROUP_FORMAT_OPTION:
case CHANGED_GROUP_FORMAT_OPTION:
    specify_style (OUTPUT_IFDEF);
    c -= UNCHANGED_GROUP_FORMAT_OPTION;
    specify_value (&group_format[c], optarg, group_format_option[c]);
    break;

default:
    try_help (NULL, NULL);
}
    prev = c;
}

if (output_style == OUTPUT_UNSPECIFIED)
{
    if (show_c_function)
    {
        specify_style (OUTPUT_CONTEXT);
        if (ocontext < 0)
            context = 3;
    }
    else
        specify_style (OUTPUT_NORMAL);
}

if (output_style != OUTPUT_CONTEXT || hard_locale (LC_TIME))
{
    #if (defined STAT_TIMESPEC || defined STAT_TIMESPEC_NS \
        || defined HAVE_STRUCT_STAT_ST_SPARE1)
        time_format = "%Y-%m-%d %H:%M:%S.%N %z";
    #else
        time_format = "%Y-%m-%d %H:%M:%S %z";
    #endif
}
else
{
    /* See POSIX 1003.1-2001 for this format. */
    time_format = "%a %b %e %T %Y";
}

```

```

if (0 <= ocontext
    && (output_style == OUTPUT_CONTEXT
    || output_style == OUTPUT_UNIFIED)
    && (context < ocontext
    || (ocontext < context && ! explicit_context)))
    context = ocontext;

if (! tabsize)
    tabsize = 8;
if (! width)
    width = 130;

{
    /* Maximize first the half line width, and then the gutter width,
       according to the following constraints:

1. Two half lines plus a gutter must fit in a line.
2. If the half line width is nonzero:
    a. The gutter width is at least GUTTER_WIDTH_MINIMUM.
    b. If tabs are not expanded to spaces,
a half line plus a gutter is an integral number of tabs,
so that tabs in the right column line up. */

    intmax_t t = expand_tabs ? 1 : tabsize;
    intmax_t w = width;
    intmax_t off = (w + t + GUTTER_WIDTH_MINIMUM) / (2 * t) * t;
    sdiff_half_width = MAX (0, MIN (off - GUTTER_WIDTH_MINIMUM, w - off)),
    sdiff_column2_offset = sdiff_half_width ? off : w;
}

/* Make the horizon at least as large as the context, so that
   shift_boundaries has more freedom to shift the first and last hunks. */
if (horizon_lines < context)
    horizon_lines = context;

summarize_regexp_list (&function_regexp_list);
summarize_regexp_list (&ignore_regexp_list);

if (output_style == OUTPUT_IFDEF)
{
    for (i = 0; i < sizeof line_format / sizeof line_format[0]; i++)
if (!line_format[i])
    line_format[i] = "%\n";
    if (!group_format[OLD])
group_format[OLD]
= group_format[CHANGED] ? group_format[CHANGED] : "<";
    if (!group_format[NEW])
group_format[NEW]

```

```

= group_format[CHANGED] ? group_format[CHANGED] : "%>";
if (!group_format[UNCHANGED])
group_format[UNCHANGED] = "%=";
if (!group_format[CHANGED])
group_format[CHANGED] = concat (group_format[OLD],
group_format[NEW], "");
}

```

```

no_diff_means_no_output =
(output_style == OUTPUT_IFDEF ?
(*group_format[UNCHANGED]
|| (STREQ (group_format[UNCHANGED], "%=")
&& !*line_format[UNCHANGED]))
: (output_style != OUTPUT_SDIFF) | suppress_common_lines);

```

```

files_can_be_treated_as_binary =
(brief & binary
& ~ (ignore_blank_lines | ignore_case | strip_trailing_cr
| (ignore_regexp_list.regexprs || ignore_white_space)));

```

```

switch_string = option_list (argv + 1, optind - 1);

```

```

if (from_file)
{
if (to_file)
fatal ("--from-file and --to-file both specified");
else
for (; optind < argc; optind++)
{
int status = compare_files (NULL, from_file, argv[optind]);
if (exit_status < status)
exit_status = status;
}
}
else
{
if (to_file)
for (; optind < argc; optind++)
{
int status = compare_files (NULL, argv[optind], to_file);
if (exit_status < status)
exit_status = status;
}
else
{
if (argc - optind != 2)
{
if (argc - optind < 2)

```



```

try_help ("missing operand after '%s'", argv[argc - 1]);
    else
try_help ("extra operand '%s'", argv[optind + 2]);
    }

    exit_status = compare_files (NULL, argv[optind], argv[optind + 1]);
}
}

/* Print any messages that were saved up for last. */
print_message_queue ();

check_stdout ();
exit (exit_status);
return exit_status;
}

/* Append to REGLIST the regexp PATTERN. */

static void
add_regexp (struct regexp_list *reglist, char const *pattern)
{
    size_t patlen = strlen (pattern);
    char const *m = re_compile_pattern (pattern, patlen, reglist->buf);

    if (m != 0)
        error (0, 0, "%s: %s", pattern, m);
    else
        {
            char *regexps = reglist->regexps;
            size_t len = reglist->len;
            bool multiple_regexps = reglist->multiple_regexps = regexps != 0;
            size_t newlen = reglist->len = len + 2 * multiple_regexps + patlen;
            size_t size = reglist->size;

            if (size <= newlen)
            {
                if (!size)
                    size = 1;

                do size *= 2;
                while (size <= newlen);

                reglist->size = size;
                reglist->regexps = xrealloc (regexps, size);
            }
            if (multiple_regexps)
            {

```

```

    regexps[len++] = '\\';
    regexps[len++] = '|';
}
    memcpy (regexps + len, pattern, patlen + 1);
}
}

/* Ensure that REGLIST represents the disjunction of its regexps.
   This is done here, rather than earlier, to avoid O(N^2) behavior. */

static void
summarize_regexp_list (struct regexp_list *reglist)
{
    if (reglist->regexps)
    {
        /* At least one regexp was specified. Allocate a fastmap for it. */
        reglist->buf->fastmap = xmalloc (1 << CHAR_BIT);
        if (reglist->multiple_regexps)
        {
            /* Compile the disjunction of the regexps.
               (If just one regexp was specified, it is already compiled.) */
            char const *m = re_compile_pattern (reglist->regexps, reglist->len,
                reglist->buf);
            if (m)
                error (EXIT_TROUBLE, 0, "%s: %s", reglist->regexps, m);
        }
    }
}

static void
try_help (char const *reason_msgid, char const *operand)
{
    if (reason_msgid)
        error (0, 0, _(reason_msgid), operand);
    error (EXIT_TROUBLE, 0, _("Try '%s --help' for more information."),
        program_name);
    abort ();
}

static void
check_stdout (void)
{
    if (ferror (stdout))
        fatal ("write failed");
    else if (fclose (stdout) != 0)
        pfatal_with_name (_("standard output"));
}

```

```

static char const * const option_help_msgid[] = {
    N_(" --normal          output a normal diff (the default)"),
    N_("-q, --brief       report only when files differ"),
    N_("-s, --report-identical-files report when two files are the same"),
    N_("-c, -C NUM, --context[=NUM] output NUM (default 3) lines of copied context"),
    N_("-u, -U NUM, --unified[=NUM] output NUM (default 3) lines of unified context"),
    N_("-e, --ed           output an ed script"),
    N_("-n, --rcs         output an RCS format diff"),
    N_("-y, --side-by-side output in two columns"),
    N_("-W, --width=NUM    output at most NUM (default 130) print columns"),
    N_(" --left-column     output only the left column of common lines"),
    N_(" --suppress-common-lines do not output common lines"),
    "",
    N_("-p, --show-c-function show which C function each change is in"),
    N_("-F, --show-function-line=RE show the most recent line matching RE"),
    N_(" --label LABEL     use LABEL instead of file name\n"
    "                    (can be repeated)"),
    "",
    N_("-t, --expand-tabs   expand tabs to spaces in output"),
    N_("-T, --initial-tab   make tabs line up by prepending a tab"),
    N_(" --tabsize=NUM      tab stops every NUM (default 8) print columns"),
    N_(" --suppress-blank-empty suppress space or tab before empty output lines"),
    N_("-l, --paginate     pass output through 'pr' to paginate it"),
    "",
    N_("-r, --recursive     recursively compare any subdirectories found"),
    N_(" --no-dereference   don't follow symbolic links"),
    N_("-N, --new-file       treat absent files as empty"),
    N_(" --unidirectional-new-file treat absent first files as empty"),
    N_(" --ignore-file-name-case ignore case when comparing file names"),
    N_(" --no-ignore-file-name-case consider case when comparing file names"),
    N_("-x, --exclude=PAT    exclude files that match PAT"),
    N_("-X, --exclude-from=FILE exclude files that match any pattern in FILE"),
    N_("-S, --starting-file=FILE start with FILE when comparing directories"),
    N_(" --from-file=FILE1   compare FILE1 to all operands;\n"
    "                    FILE1 can be a directory"),
    N_(" --to-file=FILE2     compare all operands to FILE2;\n"
    "                    FILE2 can be a directory"),
    "",
    N_("-i, --ignore-case    ignore case differences in file contents"),
    N_("-E, --ignore-tab-expansion ignore changes due to tab expansion"),
    N_("-Z, --ignore-trailing-space ignore white space at line end"),
    N_("-b, --ignore-space-change ignore changes in the amount of white space"),
    N_("-w, --ignore-all-space ignore all white space"),
    N_("-B, --ignore-blank-lines ignore changes where lines are all blank"),
    N_("-I, --ignore-matching-lines=RE ignore changes where all lines match RE"),
    "",
    N_("-a, --text          treat all files as text"),
    N_(" --strip-trailing-cr strip trailing carriage return on input"),

```

```

#if O_BINARY
N_(" --binary          read and write data in binary mode"),
#endif
"",
N_("-D, --ifdef=NAME      output merged file with '#ifdef NAME' diffs"),
N_(" --GTYPE-group-format=GFMT  format GTYPE input groups with GFMT"),
N_(" --line-format=LFMT      format all input lines with LFMT"),
N_(" --LTYPE-line-format=LFMT  format LTYPE input lines with LFMT"),
N_(" These format options provide fine-grained control over the output\n"
  "  of diff, generalizing -D/--ifdef."),
N_(" LTYPE is 'old', 'new', or 'unchanged'.  GTYPE is LTYPE or 'changed'."),
N_(" GFMT (only) may contain:\n\
%< lines from FILE1\n\
%> lines from FILE2\n\
%= lines common to FILE1 and FILE2\n\
%[-][WIDTH][.PREC]]{doxX}LETTER printf-style spec for LETTER\n\
LETTERS are as follows for new group, lower case for old group:\n\
  F first line number\n\
  L last line number\n\
  N number of lines = L-F+1\n\
  E F-1\n\
  M L+1\n\
%(A=B?T:E) if A equals B then T else E"),
N_(" LFMT (only) may contain:\n\
%L contents of line\n\
%l contents of line, excluding any trailing newline\n\
%[-][WIDTH][.PREC]]{doxX}n printf-style spec for input line number"),
N_(" Both GFMT and LFMT may contain:\n\
%% %\n\
%c'C' the single character C\n\
%c'\000' the character with octal code 000\n\
C  the character C (other characters represent themselves)",
"",
N_("-d, --minimal      try hard to find a smaller set of changes"),
N_(" --horizon-lines=NUM keep NUM lines of the common prefix and suffix"),
N_(" --speed-large-files assume large files and many scattered small changes"),
"",
N_(" --help          display this help and exit"),
N_(" -v, --version    output version information and exit"),
"",
N_("FILES are 'FILE1 FILE2' or 'DIR1 DIR2' or 'DIR FILE...' or 'FILE... DIR.'"),
N_("If --from-file or --to-file is given, there are no restrictions on FILE(s)."),
N_("If a FILE is '-', read standard input."),
N_("Exit status is 0 if inputs are the same, 1 if different, 2 if trouble."),
0
};

```

```
static void
```

```

usage (void)
{
    char const * const *p;

    printf (_("Usage: %s [OPTION]... FILES\n"), program_name);
    printf ("%s\n\n", _("Compare FILES line by line.));

    fputs (_("\n
Mandatory arguments to long options are mandatory for short options too.\n
"), stdout);

    for (p = option_help_msgid; *p; p++)
    {
        if (!**p)
            putchar ('\n');
        else
        {
            char const *msg = _(*p);
            char const *nl;
            while ((nl = strchr (msg, '\n')))
            {
                int msglen = nl + 1 - msg;
                printf (" %.*s", msglen, msg);
                msg = nl + 1;
            }

            printf (" %s\n" + 2 * (*msg != ' ' && *msg != '-'), msg);
        }
    }
    emit_bug_reporting_address ();
}

/* Set VAR to VALUE, reporting an OPTION error if this is a
   conflict. */
static void
specify_value (char const **var, char const *value, char const *option)
{
    if (*var && !STREQ (*var, value))
    {
        error (0, 0, _("conflicting %s option value '%s'"), option, value);
        try_help (NULL, NULL);
    }
    *var = value;
}

/* Set the output style to STYLE, diagnosing conflicts. */
static void
specify_style (enum output_style style)

```

```

{
if (output_style != style)
{
if (output_style != OUTPUT_UNSPECIFIED)
try_help ("conflicting output style options", NULL);
output_style = style;
}
}

/* Set the last-modified time of *ST to be the current time. */

static void
set_mtime_to_now (struct stat *st)
{
#ifdef STAT_TIMESPEC
gettime (&STAT_TIMESPEC (st, st_mtim));
#else
struct timespec t;
gettime (&t);
st->st_mtime = t.tv_sec;
# if defined STAT_TIMESPEC_NS
STAT_TIMESPEC_NS (st, st_mtim) = t.tv_nsec;
# elif defined HAVE_STRUCT_STAT_ST_SPARE1
st->st_spare1 = t.tv_nsec / 1000;
# endif
#endif
}

/* Compare two files (or dirs) with parent comparison PARENT
and names NAME0 and NAME1.
(If PARENT is null, then the first name is just NAME0, etc.)
This is self-contained; it opens the files and closes them.

Value is EXIT_SUCCESS if files are the same, EXIT_FAILURE if
different, EXIT_TROUBLE if there is a problem opening them. */

static int
compare_files (struct comparison const *parent,
char const *name0,
char const *name1)
{
struct comparison cmp;
#define DIR_P(f) (S_ISDIR (cmp.file[f].stat.st_mode) != 0)
register int f;
int status = EXIT_SUCCESS;
bool same_files;
char *free0;
char *free1;

```

```

/* If this is directory comparison, perhaps we have a file
   that exists only in one of the directories.
   If so, just print a message to that effect. */

if (!(name0 && name1)
    || (unidirectional_new_file && name1)
    || new_file))
{
    char const *name = name0 ? name0 : name1;
    char const *dir = parent->file[!name0].name;

    /* See POSIX 1003.1-2001 for this format. */
    message ("Only in %s: %s\n", dir, name);

    /* Return EXIT_FAILURE so that diff_dirs will return
       EXIT_FAILURE ("some files differ"). */
    return EXIT_FAILURE;
}

memset (cmp.file, 0, sizeof cmp.file);
cmp.parent = parent;

/* cmp.file[f].desc markers */
#define NONEXISTENT (-1) /* nonexistent file */
#define UNOPENED (-2) /* unopened file (e.g. directory) */
#define ERRNO_ENCODE(errno) (-3 - (errno)) /* encoded errno value */

#define ERRNO_DECODE(desc) (-3 - (desc)) /* inverse of ERRNO_ENCODE */

cmp.file[0].desc = name0 ? UNOPENED : NONEXISTENT;
cmp.file[1].desc = name1 ? UNOPENED : NONEXISTENT;

/* Now record the full name of each file, including nonexistent ones. */

if (!name0)
    name0 = name1;
if (!name1)
    name1 = name0;

if (!parent)
{
    free0 = NULL;
    free1 = NULL;
    cmp.file[0].name = name0;
    cmp.file[1].name = name1;
}
else

```

```

    {
        cmp.file[0].name = free0
    = file_name_concat (parent->file[0].name, name0, NULL);
        cmp.file[1].name = free1
    = file_name_concat (parent->file[1].name, name1, NULL);
    }

/* Stat the files. */

for (f = 0; f < 2; f++)
    {
        if (cmp.file[f].desc != NONEXISTENT)
        {
            if (f && file_name_cmp (cmp.file[f].name, cmp.file[0].name) == 0)
            {
                cmp.file[f].desc = cmp.file[0].desc;
                cmp.file[f].stat = cmp.file[0].stat;
            }
            else if (STREQ (cmp.file[f].name, "-"))
            {
                cmp.file[f].desc = STDIN_FILENO;
                if (binary && ! isatty (STDIN_FILENO))
                    set_binary_mode (STDIN_FILENO, O_BINARY);
                if (fstat (STDIN_FILENO, &cmp.file[f].stat) != 0)
                    cmp.file[f].desc = ERRNO_ENCODE (errno);
                else
                {
                    if (S_ISREG (cmp.file[f].stat.st_mode))
                    {
                        off_t pos = lseek (STDIN_FILENO, 0, SEEK_CUR);
                        if (pos < 0)
                            cmp.file[f].desc = ERRNO_ENCODE (errno);
                        else
                            cmp.file[f].stat.st_size =
                                MAX (0, cmp.file[f].stat.st_size - pos);
                    }

                    /* POSIX 1003.1-2001 requires current time for
                       stdin. */
                    set_mtime_to_now (&cmp.file[f].stat);
                }
            }
            else if ((no_dereference_symlinks
                ? lstat (cmp.file[f].name, &cmp.file[f].stat)
                : stat (cmp.file[f].name, &cmp.file[f].stat))
                != 0)
                cmp.file[f].desc = ERRNO_ENCODE (errno);
        }
    }

```



```

}

/* Mark files as nonexistent as needed for -N and -P, if they are
   inaccessible empty regular files (the kind of files that 'patch'
   creates to indicate nonexistent backups), or if they are
   top-level files that do not exist but their counterparts do
   exist. */
for (f = 0; f < 2; f++)
  if ((new_file || (f == 0 && unidirectional_new_file))
      && (cmp.file[f].desc == UNOPENED
          ? (S_ISREG (cmp.file[f].stat.st_mode)
              && ! (cmp.file[f].stat.st_mode & (S_IRWXU | S_IRWXG | S_IRWXO))
              && cmp.file[f].stat.st_size == 0)
          : ((cmp.file[f].desc == ERRNO_ENCODE (ENOENT)
              || cmp.file[f].desc == ERRNO_ENCODE (EBADF))
              && ! parent
              && (cmp.file[1 - f].desc == UNOPENED
                  || cmp.file[1 - f].desc == STDIN_FILENO))))
      cmp.file[f].desc = NONEXISTENT;

for (f = 0; f < 2; f++)
  if (cmp.file[f].desc == NONEXISTENT)
    {
  memset (&cmp.file[f].stat, 0, sizeof cmp.file[f].stat);
  cmp.file[f].stat.st_mode = cmp.file[1 - f].stat.st_mode;
    }

for (f = 0; f < 2; f++)
  {
  int e = ERRNO_DECODE (cmp.file[f].desc);
  if (0 <= e)
    {
  errno = e;
  perror_with_name (cmp.file[f].name);
  status = EXIT_TROUBLE;
    }
  }

if (status == EXIT_SUCCESS && ! parent && DIR_P (0) != DIR_P (1))
  {
  /* If one is a directory, and it was specified in the command line,
     use the file in that dir with the other file's basename. */

  int fnm_arg = DIR_P (0);
  int dir_arg = 1 - fnm_arg;
  char const *fnm = cmp.file[fnm_arg].name;
  char const *dir = cmp.file[dir_arg].name;
  char const *filename = cmp.file[dir_arg].name = free0

```

```

= find_dir_file_pathname (dir, last_component (fnm));

    if (STREQ (fnm, "-"))
fatal ("cannot compare '-' to a directory");

    if ((no_dereference_symlinks
? lstat (filename, &cmp.file[dir_arg].stat)
: stat (filename, &cmp.file[dir_arg].stat))
!= 0)
{
    perror_with_name (filename);
    status = EXIT_TROUBLE;
}
}

if (status != EXIT_SUCCESS)
{
    /* One of the files should exist but does not. */
}
else if (cmp.file[0].desc == NONEXISTENT
&& cmp.file[1].desc == NONEXISTENT)
{
    /* Neither file "exists", so there's nothing to compare. */
}
else if ((same_files
= (cmp.file[0].desc != NONEXISTENT
&& cmp.file[1].desc != NONEXISTENT
&& 0 < same_file (&cmp.file[0].stat, &cmp.file[1].stat)
&& same_file_attributes (&cmp.file[0].stat,
&cmp.file[1].stat)))
&& no_diff_means_no_output)
{
    /* The two named files are actually the same physical file.
We know they are identical without actually reading them. */
}
else if (DIR_P (0) & DIR_P (1))
{
    if (output_style == OUTPUT_IFDEF)
fatal ("-D option not supported with directories");

    /* If both are directories, compare the files in them. */

    if (parent && !recursive)
{
    /* But don't compare dir contents one level down
unless -r was specified.
See POSIX 1003.1-2001 for this format. */
message ("Common subdirectories: %s and %s\n",

```

```

    cmp.file[0].name, cmp.file[1].name);
}
else
status = diff_dirs (&cmp, compare_files);
}
else if ((DIR_P (0) | DIR_P (1))
|| (parent
    && !(S_ISREG (cmp.file[0].stat.st_mode)
    || S_ISLNK (cmp.file[0].stat.st_mode))
    && (S_ISREG (cmp.file[1].stat.st_mode)
    || S_ISLNK (cmp.file[1].stat.st_mode))))))
{
    if (cmp.file[0].desc == NONEXISTENT || cmp.file[1].desc == NONEXISTENT)
{
    /* We have a subdirectory that exists only in one directory. */

    if ((DIR_P (0) | DIR_P (1))
        && recursive
        && (new_file
        || (unidirectional_new_file
            && cmp.file[0].desc == NONEXISTENT)))
        status = diff_dirs (&cmp, compare_files);
    else
    {
        char const *dir;

        /* PARENT must be non-NULL here. */
        assert (parent);
        dir = parent->file[cmp.file[0].desc == NONEXISTENT].name;

        /* See POSIX 1003.1-2001 for this format. */
        message ("Only in %s: %s\n", dir, name0);

        status = EXIT_FAILURE;
    }
}
else
{
    /* We have two files that are not to be compared. */

    /* See POSIX 1003.1-2001 for this format. */
    message5 ("File %s is a %s while file %s is a %s\n",
        file_label[0] ? file_label[0] : cmp.file[0].name,
        file_type (&cmp.file[0].stat),
        file_label[1] ? file_label[1] : cmp.file[1].name,
        file_type (&cmp.file[1].stat));

    /* This is a difference. */

```

```

status = EXIT_FAILURE;
}
}
else if (S_ISLNK (cmp.file[0].stat.st_mode)
|| S_ISLNK (cmp.file[1].stat.st_mode))
{
/* We get here only if we use lstat(), not stat(). */
assert (no_dereference_symlinks);

if (S_ISLNK (cmp.file[0].stat.st_mode)
&& S_ISLNK (cmp.file[1].stat.st_mode))
{
/* Compare the values of the symbolic links. */
char *link_value[2] = { NULL, NULL };

for (f = 0; f < 2; f++)
{
link_value[f] = xreadlink (cmp.file[f].name);
if (link_value[f] == NULL)
{
perror_with_name (cmp.file[f].name);
status = EXIT_TROUBLE;
break;
}
}
if (status == EXIT_SUCCESS)
{
if ( ! STREQ (link_value[0], link_value[1]))
{
message ("Symbolic links %s and %s differ\n",
cmp.file[0].name, cmp.file[1].name);
/* This is a difference. */
status = EXIT_FAILURE;
}
}
for (f = 0; f < 2; f++)
free (link_value[f]);
}
else
{
/* We have two files that are not to be compared, because
one of them is a symbolic link and the other one is not. */

message5 ("File %s is a %s while file %s is a %s\n",
file_label[0] ? file_label[0] : cmp.file[0].name,
file_type (&cmp.file[0].stat),
file_label[1] ? file_label[1] : cmp.file[1].name,
file_type (&cmp.file[1].stat));
}
}
}

```

```

/* This is a difference. */
status = EXIT_FAILURE;
}
}
else if (files_can_be_treated_as_binary
    && S_ISREG (cmp.file[0].stat.st_mode)
    && S_ISREG (cmp.file[1].stat.st_mode)
    && cmp.file[0].stat.st_size != cmp.file[1].stat.st_size)
{
    message ("Files %s and %s differ\n",
        file_label[0] ? file_label[0] : cmp.file[0].name,
        file_label[1] ? file_label[1] : cmp.file[1].name);
    status = EXIT_FAILURE;
}
else
{
    /* Both exist and neither is a directory. */

    /* Open the files and record their descriptors. */

    int oflags = O_RDONLY | (binary ? O_BINARY : 0);

    if (cmp.file[0].desc == UNOPENED)
if ((cmp.file[0].desc = open (cmp.file[0].name, oflags, 0)) < 0)
    {
        perror_with_name (cmp.file[0].name);
        status = EXIT_TROUBLE;
    }
    if (cmp.file[1].desc == UNOPENED)
    {
if (same_files)
        cmp.file[1].desc = cmp.file[0].desc;
else if ((cmp.file[1].desc = open (cmp.file[1].name, oflags, 0)) < 0)
        {
            perror_with_name (cmp.file[1].name);
            status = EXIT_TROUBLE;
        }
    }
}

    /* Compare the files, if no error was found. */

    if (status == EXIT_SUCCESS)
status = diff_2_files (&cmp);

    /* Close the file descriptors. */

    if (0 <= cmp.file[0].desc && close (cmp.file[0].desc) != 0)

```

```

{
  perror_with_name (cmp.file[0].name);
  status = EXIT_TROUBLE;
}
  if (0 <= cmp.file[1].desc && cmp.file[0].desc != cmp.file[1].desc
  && close (cmp.file[1].desc) != 0)
{
  perror_with_name (cmp.file[1].name);
  status = EXIT_TROUBLE;
}
}

/* Now the comparison has been done, if no error prevented it,
   and STATUS is the value this function will return. */

if (status == EXIT_SUCCESS)
{
  if (report_identical_files && !DIR_P (0))
message ("Files %s and %s are identical\n",
  file_label[0] ? file_label[0] : cmp.file[0].name,
  file_label[1] ? file_label[1] : cmp.file[1].name);
}
else
{
  /* Flush stdout so that the user sees differences immediately.
   This can hurt performance, unfortunately. */
  if (fflush (stdout) != 0)
pfatal_with_name (_("standard output"));
}

free (free0);
free (free1);

return status;
}

```

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When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not.

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

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a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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

the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

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

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

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

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

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Also add information on how to contact you by electronic and paper

mail.

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Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

That's all there is to it!  
This package was debianized by Jean Pierre LeJacq  
<jplejacq@quoininc.com> on Wed, 25 Feb 1998. Martin Pitt  
<martin@piware.de> was the package's maintainer up to version  
2.7.19-1. The current maintainer is Jan Dittberner  
<jandd@debian.org>.

It was downloaded from <http://sourceforge.net/projects/cracklib>

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Copyright (c) 2005-2009 Nathan Neulinger <nneul@umr.edu>,  
Copyright (c) 2008-2009 Jan Dittberner <jan@dittberner.info>

Modifications: Added cronjob, configuration file, and man pages.

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Copyright information:

CrackLib was originally licensed with a variant of the Artistic license. In the interests of wider acceptance and more modern licensing, it was switched with the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed as of 2007-10-01 with the following email from Alec Muffett. Cracklib's license was changed from the GPL to the LGPL after consensus of all previous developers in October 2008, effective with release 2.8.15 released on 2009-11-19. See the email discussion below for both license changes.

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EFFECTIVE OCT 2008, LICENSE IS BEING CHANGED TO LGPL-2.1 (though not reflected in released code until Nov 2009 - slow release cycle...)

-----

Discussion thread from mailing list archive, with approval from everyone actively involved or holding original licensing rights included.

[Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:16

Attachments: Message as HTML

looks like 2.8.11 is out and marked as "GPL-2" ... releasing libraries unde=  
r=20

GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists  
=2Dmike

Re: [Cracklib-devel] cracklib license

From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:18

I understand that, and you're welcome to bring it up with Alec directly and see if he wants to relicense his code as LGPL... but at this point, it was enough to just get it consistent and documented as to what it was released under. This wasn't actually a license change, just a clarification of the licensing that was already in place.=20

-- Nathan

=20

-----

Nathan Neulinger EMail: nneul@um...

University of Missouri - Rolla Phone: (573) 341-6679  
UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----

> From: cracklib-devel-bounces@li...  
> [mailto:cracklib-devel-bounces@li...] On Behalf Of  
> Mike Frysinger  
> Sent: Monday, October 01, 2007 8:15 PM  
> To: cracklib-devel@li...  
> Subject: [Cracklib-devel] cracklib license  
>=20  
> looks like 2.8.11 is out and marked as "GPL-2" ... releasing  
> libraries under  
> GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists  
> -mike

Re: [Cracklib-devel] cracklib license  
From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:33

Attachments: Message as HTML

On Monday 01 October 2007, Neulinger, Nathan wrote:

> I understand that, and you're welcome to bring it up with Alec directly  
> and see if he wants to relicense his code as LGPL... but at this point,  
> it was enough to just get it consistent and documented as to what it was  
> released under. This wasn't actually a license change, just a  
> clarification of the licensing that was already in place.

the original license (before moving to sourceforge -- aka, 2.7) was not=20  
GPL-2 ... it was a modified artistic license ... i didnt notice the license=  
=20  
change until it was mentioned in the latest notes.

unlike the old license, GPL-2 prevents people from using cracklib unless th=  
eir=20  
applications are also GPL-2 which imo is just wrong. it isnt the place of =  
a=20  
library to dictact to application writes what license they should be using.=  
=20  
thus LGPL-2.1 enters to fill this void.  
=20  
=20mike

Re: [Cracklib-devel] cracklib license  
From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:46  
Seems like the ideal thing here would be for you and the other distro  
maintainers to get together with Alec in a conversation and come to a  
decision as to what licensing scheme y'all want. I haven't really done

much other than cleaning up the packaging and patches and a small bit of additional code, so whatever licensing y'all come up with is fine by me.

-- Nathan

=20

-----  
Nathan Neulinger EMail: nneul@um...

University of Missouri - Rolla Phone: (573) 341-6679

UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----

> From: cracklib-devel-bounces@li...

> [mailto:cracklib-devel-bounces@li...] On Behalf Of

> Mike Frysinger

> Sent: Monday, October 01, 2007 8:33 PM

> To: Neulinger, Nathan

> Cc: cracklib-devel@li...; Alec Muffett

> Subject: Re: [Cracklib-devel] cracklib license

>=20

> On Monday 01 October 2007, Neulinger, Nathan wrote:

> > I understand that, and you're welcome to bring it up with Alec

> > directly

> > and see if he wants to relicense his code as LGPL... but at this

> > point,

> > it was enough to just get it consistent and documented as to what

> > it was

> > released under. This wasn't actually a license change, just a

> > clarification of the licensing that was already in place.

>=20

> the original license (before moving to sourceforge -- aka, 2.7) was

> not

> GPL-2 ... it was a modified artistic license ... i didnt notice the

> license

> change until it was mentioned in the latest notes.

>=20

> unlike the old license, GPL-2 prevents people from using cracklib

> unless their

> applications are also GPL-2 which imo is just wrong. it isnt the

> place of a

> library to dictact to application writes what license they should

> be using.

> thus LGPL-2.1 enters to fill this void.

> -mike

Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2007-10-02 08:57

> Seems like the ideal thing here would be for you and the other distro

> maintainers to get together with Alec in a conversation and come to a  
> decision as to what licensing scheme y'all want. I haven't really done  
> much other than cleaning up the packaging and patches and a small  
> bit of  
> additional code, so whatever licensing y'all come up with is fine  
> by me.

I am sympathetic. Guys, what do you reckon?

What I am hearing so far is that LGPL makes sense, since it can be  
linked with any code, not just GPL...

-a

Re: [Cracklib-devel] cracklib license

From: Devin Reade <gdr@gn...> - 2007-10-02 15:04

I would like to see it under LGPL as well. I think it is in everyone's  
best interests to have as secure systems as possible, and I think tainting  
it via GPL will just make it less likely that the library gets used, and  
will not usually cause companies/developers to GPL the dependent code  
(where it is not already GPL).

I like GPL, I use it when I can, but I don't think that it's the correct  
license in this situation.

Devin

--

If it's sinful, it's more fun.

Re: [Cracklib-devel] cracklib license

From: Nalin Dahyabhai <nalin@re...> - 2008-01-28 16:32

On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>> Seems like the ideal thing here would be for you and the other distro  
>> maintainers to get together with Alec in a conversation and come to a  
>> decision as to what licensing scheme y'all want. I haven't really done  
>> much other than cleaning up the packaging and patches and a small  
>> bit of  
>> additional code, so whatever licensing y'all come up with is fine  
>> by me.

>

> I am sympathetic. Guys, what do you reckon?

>

> What I am hearing so far is that LGPL makes sense, since it can be  
> linked with any code, not just GPL...

My apologies for not chiming in in anything resembling a reasonable



timeframe.

I'd also suggest the LGPL, for the reason you noted above. Alternately, GPLv2 with the option of using the library under a later version of the GPL would permit applications which were released under version 3 of the GPL to use the library, too, which would be sufficient for the packages which are included in Fedora. FWIW, I'd personally lean toward LGPL.

In any case, I thank you both for working on sorting this out.

Cheers,

Nalin

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-05 21:27

Attachments: Message as HTML

On Monday 28 January 2008, Nalin Dahyabhai wrote:

> On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>>> Seems like the ideal thing here would be for you and the other distro  
>>> maintainers to get together with Alec in a conversation and come to a  
>>> decision as to what licensing scheme y'all want. I haven't really done  
>>> much other than cleaning up the packaging and patches and a small  
>>> bit of  
>>> additional code, so whatever licensing y'all come up with is fine  
>>> by me.

>>

>> I am sympathetic. Guys, what do you reckon?

>>

>> What I am hearing so far is that LGPL makes sense, since it can be  
>> linked with any code, not just GPL...

>

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> timeframe.

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> GPL would permit applications which were released under version 3 of the  
> GPL to use the library, too, which would be sufficient for the packages  
> which are included in Fedora. FWIW, I'd personally lean toward LGPL.

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looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make the change now ?

-mike

Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2008-10-05 23:18

>> In any case, I thank you both for working on sorting this out.

>

> looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make  
> the change now ?

yes. go for it. thanks++

-a

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-25 22:34

Attachments: Message as HTML

On Sunday 05 October 2008, Alec Muffett wrote:

> >> In any case, I thank you both for working on sorting this out.

> >

> > looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we  
> > make the change now ?

>

> yes. go for it. thanks++

Nathan Neulinger is the only one who can actually make said change ...

-mike

-----  
BELOW IS ORIGINAL LICENSING DISCUSSION RE CHANGING TO GPL from Artistic.  
-----

CrackLib was originally licensed with a variant of the Artistic license. In the interests of wider acceptance and more modern licensing, it was switched with the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed as of 2007-10-01 with the following email from Alec Muffett.

The below email references nneul@umr.edu address, as that is the address that was used at the time. For any future emails regarding this, please use nneul@neulinger.org.

-----

From alecm@crypticide.com Mon Oct 1 12:26:03 2007  
Received: from umr-exproto2.cc.umsr.edu ([131.151.0.192]) by UMR-CMAIL1.umsr.edu with Microsoft SMTPSVC(6.0.3790.3959);  
Mon, 1 Oct 2007 12:26:03 -0500  
Received: from scansrv2.srv.mst.edu ([131.151.1.114]) by umr-exproto2.cc.umsr.edu with Microsoft SMTPSVC(6.0.3790.3959);  
Mon, 1 Oct 2007 12:26:02 -0500  
Received: (qmail 8022 invoked from network); 1 Oct 2007 16:59:55 -0000  
Received: from smtp1.srv.mst.edu (131.151.1.43)  
by scanin-ipvs.cc.umsr.edu with SMTP; 1 Oct 2007 16:59:55 -0000  
Received: from spunkymail-mx8.g.dreamhost.com (mx1.spunky.mail.dreamhost.com [208.97.132.47])  
by smtp1.srv.mst.edu (8.13.1/8.13.1) with ESMTP id 191Gxtpr020623  
for <nneul@umsr.edu>; Mon, 1 Oct 2007 11:59:55 -0500  
Received: from rutherford.zen.co.uk (rutherford.zen.co.uk [212.23.3.142])  
by spunkymail-mx8.g.dreamhost.com (Postfix) with ESMTP id 2C7734D311  
for <nneul@neulinger.org>; Mon, 1 Oct 2007 09:59:50 -0700 (PDT)  
Received: from [82.68.43.14] (helo=[192.168.1.3])  
by rutherford.zen.co.uk with esmtp (Exim 4.50)  
id 1IcOcX-0004Qt-6L  
for nneul@neulinger.org; Mon, 01 Oct 2007 16:59:49 +0000  
Mime-Version: 1.0 (Apple Message framework v752.2)  
In-Reply-To: <1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>  
References: <1190922867.3457.147.camel@localhost.localdomain>  
<EC90713277D2BE41B7110CCD74E235CEF44F38@UMR-CMAIL1.umsr.edu>  
<1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>  
Content-Type: text/plain; charset=US-ASCII; delsp=yes; format=flowed  
Message-Id: <117A1264-F6DC-4E25-B0DD-56FBFE6E9F@crypticide.com>  
Content-Transfer-Encoding: 7bit  
From: Alec Muffett <alecm@crypticide.com>  
Subject: Re: cracklib license  
Date: Mon, 1 Oct 2007 17:59:46 +0100  
To: Nathan Neulinger <nneul@neulinger.org>  
X-Mailer: Apple Mail (2.752.2)  
X-Originating-Rutherford-IP: [82.68.43.14]  
Return-Path: alecm@crypticide.com  
X-OriginalArrivalTime: 01 Oct 2007 17:26:03.0008 (UTC) FILETIME=[2420C000:01C80450]  
Status: RO  
Content-Length: 585  
Lines: 21

>  
> ----- Forwarded message -----  
> From: Neulinger, Nathan <nneul@umsr.edu>  
> Date: Sep 27, 2007 2:58 PM  
> Subject: RE: cracklib license  
> To: alecm@crypto.dircon.co.uk

- >
- > Any chance you could write me a self-contained email stating clearly
- > that the license is being changed to GPL, so I could include that
- > email
- > in the repository and clean up the repository/tarballs? I have all the
- > original discussion, but something succinct and self contained
- > would be
- > ideal.

The license for my code in the Cracklib distribution is henceforth GPL.

Happy now? :-)

-a

-----  
EFFECTIVE OCT 2008, LICENSE IS BEING CHANGED TO LGPL-2.1 (though not reflected  
in released code until Nov 2009 - slow release cycle...)

-----  
Discussion thread from mailing list archive, with approval from everyone actively  
involved or holding original licensing rights included.

[Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:16

Attachments: Message as HTML

looks like 2.8.11 is out and marked as "GPL-2" ... releasing libraries unde=  
r=20

GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists  
=2Dmike

Re: [Cracklib-devel] cracklib license

From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:18

I understand that, and you're welcome to bring it up with Alec directly  
and see if he wants to relicense his code as LGPL... but at this point,  
it was enough to just get it consistent and documented as to what it was  
released under. This wasn't actually a license change, just a  
clarification of the licensing that was already in place.=20

-- Nathan

=20

-----  
Nathan Neulinger EMail: nneul@um...

University of Missouri - Rolla Phone: (573) 341-6679

UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----  
> From: cracklib-devel-bounces@li...  
> [mailto:cracklib-devel-bounces@li...] On Behalf Of  
> Mike Frysinger  
> Sent: Monday, October 01, 2007 8:15 PM  
> To: cracklib-devel@li...  
> Subject: [Cracklib-devel] cracklib license  
>=20  
> looks like 2.8.11 is out and marked as "GPL-2" ... releasing  
> libraries under  
> GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists  
> -mike

Re: [Cracklib-devel] cracklib license  
From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:33

Attachments: Message as HTML  
On Monday 01 October 2007, Neulinger, Nathan wrote:  
> I understand that, and you're welcome to bring it up with Alec directly  
> and see if he wants to relicense his code as LGPL... but at this point,  
> it was enough to just get it consistent and documented as to what it was  
> released under. This wasn't actually a license change, just a  
> clarification of the licensing that was already in place.

the original license (before moving to sourceforge -- aka, 2.7) was not=20  
GPL-2 ... it was a modified artistic license ... i didnt notice the license=  
=20  
change until it was mentioned in the latest notes.

unlike the old license, GPL-2 prevents people from using cracklib unless th=  
eir=20  
applications are also GPL-2 which imo is just wrong. it isnt the place of =  
a=20  
library to dictact to application writes what license they should be using.=  
=20  
thus LGPL-2.1 enters to fill this void.  
=20  
=20mike

Re: [Cracklib-devel] cracklib license  
From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:46  
Seems like the ideal thing here would be for you and the other distro  
maintainers to get together with Alec in a conversation and come to a  
decision as to what licensing scheme y'all want. I haven't really done  
much other than cleaning up the packaging and patches and a small bit of  
additional code, so whatever licensing y'all come up with is fine by me.

-- Nathan

=20

-----  
Nathan Neulinger EMail: nneul@um...  
University of Missouri - Rolla Phone: (573) 341-6679  
UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----

> From: cracklib-devel-bounces@li...  
> [mailto:cracklib-devel-bounces@li...] On Behalf Of  
> Mike Frysinger  
> Sent: Monday, October 01, 2007 8:33 PM  
> To: Neulinger, Nathan  
> Cc: cracklib-devel@li...; Alec Muffett  
> Subject: Re: [Cracklib-devel] cracklib license

>=20

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> place of a  
> library to dictact to application writes what license they should  
> be using.  
> thus LGPL-2.1 enters to fill this void.  
> -mike

Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2007-10-02 08:57

> Seems like the ideal thing here would be for you and the other distro  
> maintainers to get together with Alec in a conversation and come to a  
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> much other than cleaning up the packaging and patches and a small  
> bit of  
> additional code, so whatever licensing y'all come up with is fine  
> by me.

I am sympathetic. Guys, what do you reckon?

What I am hearing so far is that LGPL makes sense, since it can be  
linked with any code, not just GPL...

-a

Re: [Cracklib-devel] cracklib license

From: Devin Reade <gdr@gn...> - 2007-10-02 15:04

I would like to see it under LGPL as well. I think it is in everyone's  
best interests to have as secure systems as possible, and I think tainting  
it via GPL will just make it less likely that the library gets used, and  
will not usually cause companies/developers to GPL the dependent code  
(where it is not already GPL).

I like GPL, I use it when I can, but I don't think that it's the correct  
license in this situation.

Devin

--

If it's sinful, it's more fun.

Re: [Cracklib-devel] cracklib license

From: Nalin Dahyabhai <nalin@re...> - 2008-01-28 16:32

On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>> Seems like the ideal thing here would be for you and the other distro  
>> maintainers to get together with Alec in a conversation and come to a  
>> decision as to what licensing scheme y'all want. I haven't really done  
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I'd also suggest the LGPL, for the reason you noted above. Alternately, GPLv2 with the option of using the library under a later version of the GPL would permit applications which were released under version 3 of the GPL to use the library, too, which would be sufficient for the packages which are included in Fedora. FWIW, I'd personally lean toward LGPL.

In any case, I thank you both for working on sorting this out.

Cheers,

Nalin

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-05 21:27

Attachments: Message as HTML

On Monday 28 January 2008, Nalin Dahyabhai wrote:

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Attachments: Message as HTML

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From alecm@crypticide.com Mon Oct 1 12:26:03 2007  
Received: from umr-exproto2.cc.umr.edu ([131.151.0.192]) by UMR-CMAIL1.umr.edu with Microsoft SMTPSVC(6.0.3790.3959);  
Mon, 1 Oct 2007 12:26:03 -0500  
Received: from scansrv2.srv.mst.edu ([131.151.1.114]) by umr-exproto2.cc.umr.edu with Microsoft SMTPSVC(6.0.3790.3959);  
Mon, 1 Oct 2007 12:26:02 -0500  
Received: (qmail 8022 invoked from network); 1 Oct 2007 16:59:55 -0000  
Received: from smtp1.srv.mst.edu (131.151.1.43)  
by scanin-ipvs.cc.umr.edu with SMTP; 1 Oct 2007 16:59:55 -0000  
Received: from spunkymail-mx8.g.dreamhost.com (mx1.spunky.mail.dreamhost.com [208.97.132.47])  
by smtp1.srv.mst.edu (8.13.1/8.13.1) with ESMTP id 191Gxtpr020623  
for <nneul@umr.edu>; Mon, 1 Oct 2007 11:59:55 -0500  
Received: from rutherford.zen.co.uk (rutherford.zen.co.uk [212.23.3.142])  
by spunkymail-mx8.g.dreamhost.com (Postfix) with ESMTP id 2C7734D311  
for <nneul@neulinger.org>; Mon, 1 Oct 2007 09:59:50 -0700 (PDT)  
Received: from [82.68.43.14] (helo=[192.168.1.3])  
by rutherford.zen.co.uk with esmtp (Exim 4.50)  
id 1IcOcX-0004Qt-6L  
for nneul@neulinger.org; Mon, 01 Oct 2007 16:59:49 +0000  
Mime-Version: 1.0 (Apple Message framework v752.2)  
In-Reply-To: <1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>  
References: <1190922867.3457.147.camel@localhost.localdomain>  
<EC90713277D2BE41B7110CCD74E235CEF44F38@UMR-CMAIL1.umr.edu>  
<1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>  
Content-Type: text/plain; charset=US-ASCII; delsp=yes; format=flowed  
Message-Id: <117A1264-F6DC-4E25-B0DD-56FBFE6E9F@crypticide.com>  
Content-Transfer-Encoding: 7bit  
From: Alec Muffett <alecm@crypticide.com>  
Subject: Re: cracklib license  
Date: Mon, 1 Oct 2007 17:59:46 +0100  
To: Nathan Neulinger <nneul@neulinger.org>  
X-Mailer: Apple Mail (2.752.2)  
X-Originating-Rutherford-IP: [82.68.43.14]  
Return-Path: alecm@crypticide.com  
X-OriginalArrivalTime: 01 Oct 2007 17:26:03.0008 (UTC) FILETIME=[2420C000:01C80450]  
Status: RO  
Content-Length: 585  
Lines: 21

>  
> ----- Forwarded message -----  
> From: Neulinger, Nathan <nneul@umr.edu>  
> Date: Sep 27, 2007 2:58 PM  
> Subject: RE: cracklib license  
> To: alecm@crypto.dircon.co.uk  
>  
> Any chance you could write me a self-contained email stating clearly

- > that the license is being changed to GPL, so I could include that
- > email
- > in the repository and clean up the repository/tarballs? I have all the
- > original discussion, but something succinct and self contained
- > would be
- > ideal.

The license for my code in the Cracklib distribution is henceforth GPL.

Happy now? :-)

-a

## 1.125 libdrm 2.4.97 2.el7

## 1.126 systemd 219 67.el7\_7.1

### 1.126.1 Available under license :

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Version 2, June 1991

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b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such

an offer, in accord with Subsection b above.)

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## 1.127 keyutils 1.5.8 3.el7

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## 1.129 geoipupdate 2.5.0 1.el7

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## 1.132 bean-validation-api 2.0.1

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## 1.133 jq 1.5-11.3

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Version 2, June 1991

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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## 1.137 lucene-suggest 7.7.2

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analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
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`WordBreakTestUnicode_*.java` (under `modules/analysis/common/src/test/`) is derived from Unicode data such as the Unicode Character Database.  
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The Morfologik analyzer (morfologik) includes BSD-licensed software developed by Dawid Weiss and Marcin Mikowski (<http://morfologik.blogspot.com/>).

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`Servlet-api.jar` and `javax.servlet-*.jar` are under the CDDL license, the original source code for this can be found at <http://www.eclipse.org/jetty/downloads.php>

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Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration

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This software includes a binary and/or source version of data from

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which can be obtained from

<http://atilika.com/releases/mecab-ipadic/mecab-ipadic-2.7.0-20070801.tar.gz>

or

<http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/mecab-ipadic-2.7.0-20070801.tar.gz>

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mecab-ipadic-2.7.0-20070801 Notice

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# 1.138 curvesapi 1.06

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```
* /opt/cola/permits/1003993495_1646171700.49/0/curvesapi-1-06-sources-
jar/com/graphbuilder/math/func/AcoshFunction.java
* /opt/cola/permits/1003993495_1646171700.49/0/curvesapi-1-06-sources-
jar/com/graphbuilder/math/ExpressionTree.java
* /opt/cola/permits/1003993495_1646171700.49/0/curvesapi-1-06-sources-
jar/com/graphbuilder/math/func/SqrtFunction.java
* /opt/cola/permits/1003993495_1646171700.49/0/curvesapi-1-06-sources-
jar/com/graphbuilder/math/func/FloorFunction.java
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jar/com/graphbuilder/math/func/CombinFunction.java
```

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/CubicBSpline.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/LagrangeCurve.java  
\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/FuncNode.java  
\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/TanFunction.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/VarNode.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/SignFunction.java

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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/CosFunction.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/MaxFunction.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/ExpressionParseException.java  
\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/RoundFunction.java  
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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/CeilFunction.java  
\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/SubNode.java



\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/CardinalSpline.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/FactFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/BinaryCurveApproximationAlgorithm.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/AcosFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/AtanhFunction.java

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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/geom/Point2d.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/ExpFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/MinFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/NaturalCubicSpline.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/AtanFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/OpNode.java

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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/RandFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/LogFunction.java

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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/geom/Point3d.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/math/func/SinhFunction.java

\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/curve/ValueVector.java

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\* /opt/cola/permits/1003993495\_1646171700.49/0/curvesapi-1-06-sources-jar/com/graphbuilder/org/apache/harmony/awt/gl/Crossing.java

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## 1.140 perl-text-parsewords 3.29-4.e17

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id D3030FA; Mon, 18 Nov 2013 08:06:08 -0800 (PST)  
Precedence: normal  
Subject: [rt.cpan.org #90483] missing license file  
From: "Alexandr Ciornii via RT" <bug-Text-ParseWords@rt.cpan.org>  
Reply-To: bug-Text-ParseWords@rt.cpan.org  
In-Reply-To: <rt-4.0.18-4704-1384789048-1647.90483-6-0@rt.cpan.org>  
References: <RT-Ticket-90483@rt.cpan.org>  
<rt-4.0.18-4704-1384789048-1647.90483-6-0@rt.cpan.org>  
Message-ID: <rt-4.0.18-2172-1384790768-1347.90483-6-0@rt.cpan.org>  
X-RT-Loop-Prevention: rt.cpan.org  
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On Mon Nov 18 10:37:28 2013, mmaslano@redhat.com wrote:

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Will do in next version.

> I found Perl license in Makefile.PL,  
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yes

--

Alexandr Ciornii, <http://chorny.net>

# 1.141 libxcursor 1.1.14-8apic1.el7.centos

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# 1.142 gettext 2.1.7

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@smallexample

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@smallexample

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@example

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



@var{signature of Ty Coon}, 1 April 1989

Ty Coon, President of Vice

@end example

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Version 3, 29 June 2007

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## 1.143 python 3.7.3-1.el7

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

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

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see

<https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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# 1.145 iptutils 20160308 10.el7

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*/
package com.sun.jna;

/** Tagging interface to indicate the library or callback uses an alternate
```

\* calling convention.

\* @author twall

\*/

public interface AltCallingConvention { }

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# 1.148 libsemanage 2.5 14.el7

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## 1.149 elasticsearch 6.8.5

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## 1.151 bind 9.11.4 9.P2.e17

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\* `configure.ac`, `Makefile.am`: The original versions were derived from the ones in the XML Catalog Manager project, version 2.2.

Author: Julio Merino <jmmv@users.sourceforge.net>

\* `atf-c/ui.c`: The `format_paragraph` and `format_text` functions were derived from the ones in the Monotone project, revision 3a0982da308228d796df35f98d787c5cff2bb5b6.

Author: Julio Merino <jmmv@NetBSD.org>

\* `atf-c++/detail/io.hpp`, `atf-c++/detail/io.cpp`, `atf-c++/detail/io_test.cpp`: These files were derived from the `file_handle`, `systembuf`, `pipe` and `pistream` classes and tests found in the Boost.Process library.

Author: Julio Merino <jmmv84@gmail.com>

\* `admin/check-style.sh`, `admin/check-style-common.awk`, `admin/check-style-cpp.awk`, `admin/check-style-shell.awk`: These files, except the first one, were first implemented in the Buildtool project. They were later adapted to be part of Boost.Process and, during that process, the shell script was created.

Author: Julio Merino <jmmv84@gmail.com>

=====  
vim: filetype=text:textwidth=75:expandtab:shiftwidth=2:softtabstop=2

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-->

<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

```
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:xi="http://www.w3.org/2001/XInclude"
xmlns:db="http://docbook.org/ns/docbook">

<xsl:template name="isc.copyright.format">
  <xsl:param name="text"/>
  <xsl:value-of select="$isc.copyright.leader"/>
  <xsl:value-of select="normalize-space(substring-before($text, '&#10;'))"/>
  <xsl:text>&#10;</xsl:text>
  <xsl:variable name="rest" select="substring-after($text, '&#10;')"/>
  <xsl:if test="translate($rest, '&#9;&#32;', '')">
    <xsl:call-template name="isc.copyright.format">
      <xsl:with-param name="text" select="$rest"/>
    </xsl:call-template>
  </xsl:if>
</xsl:template>

<xsl:variable name="isc.copyright.text">
  <xsl:text>
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    file, You can obtain one at http://mozilla.org/MPL/2.0/.
  </xsl:text>
</xsl:variable>

<xsl:variable name="isc.copyright">
  <xsl:call-template name="isc.copyright.format">
    <xsl:with-param name="text">
      <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
        <xsl:text>Copyright (C) </xsl:text>
        <xsl:call-template name="copyright.years">
          <xsl:with-param name="years" select="year"/>
        </xsl:call-template>
        <xsl:text> </xsl:text>
        <xsl:value-of select="holder"/>
        <xsl:value-of select="$isc.copyright.breakline"/>
        <xsl:text>&#10;</xsl:text>
      </xsl:for-each>
    </xsl:with-param>
  </xsl:call-template>
</xsl:variable>
```



</xsl:variable>

</xsl:stylesheet>

<!--

- Local variables:

- mode: sgml

- End:

-->

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## 1.152 also 1.1.8 1.e17

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object

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

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# 1.153 man-db 1.22.2 8.el7

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must

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a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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

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```
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Ty Coon, President of Vice

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## 1.159 zlib 3.1.2-6.el7\_6.1

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Version 3, 29 June 2007

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## Special Recognition ##

One of the key reasons we got delayed on the CentOS-6 release was lack of suitable build resources, especially when we had to repeatedly build large chunks of code. Norwood S came forward and worked with me to setup a large build machine, then tune the build process and help improve the overall build, test and validate process we were using. This build machine he donated to the project was about 5 times more capable than the entire buildsystem we had. And he did this out of his own pocket, from his own time, and has since upgraded the machine as well. It's now a 128GB, 48 core machine, with 4 SSD's and 4 sata disks : but the key metric is that it can build from source, the entire CentOS-7 distro in under 22 hrs.

Having this capability was key in our ability to build, test and deliver CentOS-7 as rapidly as we have been able to.

We'd like to dedicate the CentOS-7 Release to Mr Norwood S, of Phoenix, AZ, USA for his continued support for the project.

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The Red Hat developers, without whom CentOS would look very different

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# 1.163 coreutils 8.22 24.el7

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```
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```

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```
/* chown-core.c -- core functions for changing ownership.
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```

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```
/* Extracted from chown.c/chgrp.c and librarified by Jim Meyering. */
```

```
#include <config.h>
#include <stdio.h>
#include <sys/types.h>
#include <pwd.h>
#include <grp.h>
```

```
#include "system.h"
#include "chown-core.h"
#include "error.h"
#include "ignore-value.h"
#include "quote.h"
#include "root-dev-ino.h"
#include "xfts.h"
```

```
#define FTSENT_IS_DIRECTORY(E) \
((E)->fts_info == FTS_D \
 || (E)->fts_info == FTS_DC \
 || (E)->fts_info == FTS_DP \
 || (E)->fts_info == FTS_DNR)
```

```
enum RCH_status
{
  /* we called fchown and close, and both succeeded */

```

```

RC_ok = 2,

/* required_uid and/or required_gid are specified, but don't match */
RC_excluded,

/* SAME_INODE check failed */
RC_inode_changed,

/* open/fchown isn't needed, isn't safe, or doesn't work due to
permissions problems; fall back on chown */
RC_do_ordinary_chown,

/* open, fstat, fchown, or close failed */
RC_error
};

extern void
chopt_init (struct Chown_option *chopt)
{
    chopt->verbosity = V_off;
    chopt->root_dev_ino = NULL;
    chopt->affect_symlink_referent = true;
    chopt->recurse = false;
    chopt->force_silent = false;
    chopt->user_name = NULL;
    chopt->group_name = NULL;
}

extern void
chopt_free (struct Chown_option *chopt _GL_UNUSED)
{
    /* Deliberately do not free chopt->user_name or ->group_name.
They're not always allocated. */
}

/* Convert the numeric group-id, GID, to a string stored in xmalloc'd memory,
and return it. If there's no corresponding group name, use the decimal
representation of the ID. */

extern char *
gid_to_name (gid_t gid)
{
    char buf[INT_BUFSIZE_BOUND (intmax_t)];
    struct group *grp = getgrgid (gid);
    return xstrdup (grp ? grp->gr_name
                  : TYPE_SIGNED (gid_t) ? imaxtostr (gid, buf)
                  : umaxtostr (gid, buf));
}

```

```
/* Convert the numeric user-id, UID, to a string stored in xmalloc'd memory,
and return it. If there's no corresponding user name, use the decimal
representation of the ID. */
```

```
extern char *
uid_to_name (uid_t uid)
{
char buf[INT_BUFSIZE_BOUND (intmax_t)];
struct passwd *pwd = getpwuid (uid);
return xstrdup (pwd ? pwd->pw_name
                : TYPE_SIGNED (uid_t) ? imaxtostr (uid, buf)
                : umaxtostr (uid, buf));
}
```

```
/* Allocate a string representing USER and GROUP. */
```

```
static char *
user_group_str (char const *user, char const *group)
{
char *spec = NULL;

if (user)
{
if (group)
{
spec = xmalloc (strlen (user) + 1 + strlen (group) + 1);
stpcpy (stpcpy (stpcpy (spec, user), ":"), group);
}
else
{
spec = xstrdup (user);
}
}
else if (group)
{
spec = xstrdup (group);
}

return spec;
}
```

```
/* Tell the user how/if the user and group of FILE have been changed.
If USER is NULL, give the group-oriented messages.
CHANGED describes what (if anything) has happened. */
```

```
static void
describe_change (const char *file, enum Change_status changed,
```

```

        char const *old_user, char const *old_group,
        char const *user, char const *group)
{
const char *fmt;
char *old_spec;
char *spec;

if (changed == CH_NOT_APPLIED)
{
printf (_("neither symbolic link %s nor referent has been changed\n"),
quote (file));
return;
}

spec = user_group_str (user, group);
old_spec = user_group_str (user ? old_user : NULL, group ? old_group : NULL);

switch (changed)
{
case CH_SUCCEEDED:
fmt = (user ? _("changed ownership of %s from %s to %s\n")
: group ? _("changed group of %s from %s to %s\n")
: _("no change to ownership of %s\n"));
break;
case CH_FAILED:
if (old_spec)
{
fmt = (user ? _("failed to change ownership of %s from %s to %s\n")
: group ? _("failed to change group of %s from %s to %s\n")
: _("failed to change ownership of %s\n"));
}
else
{
fmt = (user ? _("failed to change ownership of %s to %s\n")
: group ? _("failed to change group of %s to %s\n")
: _("failed to change ownership of %s\n"));
free (old_spec);
old_spec = spec;
spec = NULL;
}
break;
case CH_NO_CHANGE_REQUESTED:
fmt = (user ? _("ownership of %s retained as %s\n")
: group ? _("group of %s retained as %s\n")
: _("ownership of %s retained\n"));
break;
default:
abort ();
}
}

```

```

    }

printf (fmt, quote (file), old_spec, spec);

free (old_spec);
free (spec);
}

/* Change the owner and/or group of the FILE to UID and/or GID (safely)
only if REQUIRED_UID and REQUIRED_GID match the owner and group IDs
of FILE. ORIG_ST must be the result of 'stat'ing FILE.

```

The 'safely' part above means that we can't simply use `chown(2)`, since `FILE` might be replaced with some other file between the time of the preceding `stat/lstat` and this `chown` call. So here we open `FILE` and do everything else via the resulting file descriptor. We first call `fstat` and verify that the `dev/inode` match those from the preceding `stat` call, and only then, if appropriate (given the `required_uid` and `required_gid` constraints) do we call `fchown`.

Return `RC_do_ordinary_chown` if we can't open `FILE`, or if `FILE` is a special file that might have undesirable side effects when opening. In this case the caller can use the less-safe ordinary `chown`.

Return one of the `RCH_status` values. \*/

```

static enum RCH_status
restricted_chown (int cwd_fd, char const *file,
                 struct stat const *orig_st,
                 uid_t uid, gid_t gid,
                 uid_t required_uid, gid_t required_gid)
{
    enum RCH_status status = RC_ok;
    struct stat st;
    int open_flags = O_NONBLOCK | O_NOCTTY;
    int fd;

    if (required_uid == (uid_t) -1 && required_gid == (gid_t) -1)
        return RC_do_ordinary_chown;

    if (! S_ISREG (orig_st->st_mode))
    {
        if (S_ISDIR (orig_st->st_mode))
            open_flags |= O_DIRECTORY;
        else
            return RC_do_ordinary_chown;
    }
}

```



```

fd = openat (cwd_fd, file, O_RDONLY | open_flags);
if (! (0 <= fd
    || (errno == EACCES && S_ISREG (orig_st->st_mode)
        && 0 <= (fd = openat (cwd_fd, file, O_WRONLY | open_flags))))))
return (errno == EACCES ? RC_do_ordinary_chown : RC_error);

if (fstat (fd, &st) != 0)
    status = RC_error;
else if (! SAME_INODE (*orig_st, st))
    status = RC_inode_changed;
else if ((required_uid == (uid_t) -1 || required_uid == st.st_uid)
    && (required_gid == (gid_t) -1 || required_gid == st.st_gid))
{
    if (fchown (fd, uid, gid) == 0)
    {
        status = (close (fd) == 0
            ? RC_ok : RC_error);
        return status;
    }
    else
    {
        status = RC_error;
    }
}

int saved_errno = errno;
close (fd);
errno = saved_errno;
return status;
}

```

/\* Change the owner and/or group of the file specified by FTS and ENT to UID and/or GID as appropriate.

If REQUIRED\_UID is not -1, then skip files with any other user ID.

If REQUIRED\_GID is not -1, then skip files with any other group ID.

CHOPT specifies additional options.

Return true if successful. \*/

```

static bool
change_file_owner (FTS *fts, FTSENT *ent,
    uid_t uid, gid_t gid,
    uid_t required_uid, gid_t required_gid,
    struct Chown_option const *chopt)
{
    char const *file_full_name = ent->fts_path;
    char const *file = ent->fts_accpath;
    struct stat const *file_stats;
    struct stat stat_buf;
    bool ok = true;

```

```

bool do_chown;
bool symlink_changed = true;

switch (ent->fts_info)
{
case FTS_D:
    if (chopt->recurse)
    {
        if (ROOT_DEV_INO_CHECK (chopt->root_dev_ino, ent->fts_statp))
        {
            /* This happens e.g., with "chown -R --preserve-root 0/"
               and with "chown -RH --preserve-root 0 symlink-to-root". */
            ROOT_DEV_INO_WARN (file_full_name);
            /* Tell fts not to traverse into this hierarchy. */
            fts_set (fts, ent, FTS_SKIP);
            /* Ensure that we do not process "/" on the second visit. */
            ignore_value (fts_read (fts));
            return false;
        }
        return true;
    }
    break;

case FTS_DP:
    if (!chopt->recurse)
        return true;
    break;

case FTS_NS:
    /* For a top-level file or directory, this FTS_NS (stat failed)
       indicator is determined at the time of the initial fts_open call.
       With programs like chmod, chown, and chgrp, that modify
       permissions, it is possible that the file in question is
       accessible when control reaches this point. So, if this is
       the first time we've seen the FTS_NS for this file, tell
       fts_read to stat it "again". */
    if (ent->fts_level == 0 && ent->fts_number == 0)
    {
        ent->fts_number = 1;
        fts_set (fts, ent, FTS_AGAIN);
        return true;
    }
    if (!chopt->force_silent)
        error (0, ent->fts_errno, _("cannot access %s"),
              quote (file_full_name));
    ok = false;
    break;
}

```

```

case FTS_ERR:
    if (! chopt->force_silent)
        error (0, ent->fts_errno, "%s", quote (file_full_name));
    ok = false;
    break;

case FTS_DNR:
    if (! chopt->force_silent)
        error (0, ent->fts_errno, _("cannot read directory %s"),
            quote (file_full_name));
    ok = false;
    break;

case FTS_DC: /* directory that causes cycles */
    if (cycle_warning_required (fts, ent))
    {
        emit_cycle_warning (file_full_name);
        return false;
    }
    break;

default:
    break;
}

if (!ok)
{
    do_chown = false;
    file_stats = NULL;
}
else if (required_uid == (uid_t) -1 && required_gid == (gid_t) -1
    && chopt->verbosity == V_off
    && ! chopt->root_dev_ino
    && ! chopt->affect_symlink_referent)
{
    do_chown = true;
    file_stats = ent->fts_statp;
}
else
{
    file_stats = ent->fts_statp;

    /* If this is a symlink and we're dereferencing them,
       stat it to get info on the referent. */
    if (chopt->affect_symlink_referent && S_ISLNK (file_stats->st_mode))
    {
        if (fstatat (fts->fts_cwd_fd, file, &stat_buf, 0) != 0)
        {

```

```

    if (! chopt->force_silent)
        error (0, errno, _("cannot dereference %s"),
            quote (file_full_name));
    ok = false;
}

file_stats = &stat_buf;
}

do_chown = (ok
    && (required_uid == (uid_t) -1
        || required_uid == file_stats->st_uid)
    && (required_gid == (gid_t) -1
        || required_gid == file_stats->st_gid));
}

/* This happens when chown -LR --preserve-root encounters a symlink-to-/. */
if (ok
    && FTSENT_IS_DIRECTORY (ent)
    && ROOT_DEV_INO_CHECK (chopt->root_dev_ino, file_stats))
{
    ROOT_DEV_INO_WARN (file_full_name);
    return false;
}

if (do_chown)
{
    if ( ! chopt->affect_symlink_referent)
    {
        ok = (lchownat (fts->fts_cwd_fd, file, uid, gid) == 0);

        /* Ignore any error due to lack of support; POSIX requires
           this behavior for top-level symbolic links with -h, and
           implies that it's required for all symbolic links. */
        if (!ok && errno == EOPNOTSUPP)
        {
            ok = true;
            symlink_changed = false;
        }
    }
    else
    {
        /* If possible, avoid a race condition with --from=O:G and without the
           (-h) --no-dereference option. If fts's stat call determined
           that the uid/gid of FILE matched the --from=O:G-selected
           owner and group IDs, blindly using chown(2) here could lead
           chown(1) or chgrp(1) mistakenly to dereference a *symlink*
           to an arbitrary file that an attacker had moved into the

```

place of FILE during the window between the stat and  
chown(2) calls. If FILE is a regular file or a directory  
that can be opened, this race condition can be avoided safely. \*/

```
enum RCH_status err
= restricted_chown (fts->fts_cwd_fd, file, file_stats, uid, gid,
                    required_uid, required_gid);
switch (err)
{
case RC_ok:
    break;

case RC_do_ordinary_chown:
    ok = (chownat (fts->fts_cwd_fd, file, uid, gid) == 0);
    break;

case RC_error:
    ok = false;
    break;

case RC_inode_changed:
    /* FIXME: give a diagnostic in this case? */
case RC_excluded:
    do_chown = false;
    ok = false;
    break;

default:
    abort ();
}
}
```

/\* On some systems (e.g., GNU/Linux 2.4.x),  
the chown function resets the 'special' permission bits.  
Do *not* restore those bits; doing so would open a window in  
which a malicious user, M, could subvert a chown command run  
by some other user and operating on files in a directory  
where M has write access. \*/

```
if (do_chown && !ok && !chopt->force_silent)
error (0, errno, (uid != (uid_t) -1
                ? _("changing ownership of %s")
                : _("changing group of %s")),
       quote (file_full_name));
}
```

```
if (chopt->verbosity != V_off)
{
```

```

bool changed =
    ((do_chown && ok && symlink_changed)
     && !((uid == (uid_t) -1 || uid == file_stats->st_uid)
         && (gid == (gid_t) -1 || gid == file_stats->st_gid)));

if (changed || chopt->verbosity == V_high)
{
    enum Change_status ch_status =
        (!ok ? CH_FAILED
         : !symlink_changed ? CH_NOT_APPLIED
         : !changed ? CH_NO_CHANGE_REQUESTED
         : CH_SUCCEEDED);
    char *old_usr = file_stats ? uid_to_name (file_stats->st_uid) : NULL;
    char *old_grp = file_stats ? gid_to_name (file_stats->st_gid) : NULL;
    describe_change (file_full_name, ch_status,
                    old_usr, old_grp,
                    chopt->user_name, chopt->group_name);
    free (old_usr);
    free (old_grp);
}
}

if (! chopt->recurse)
    fts_set (fts, ent, FTS_SKIP);

return ok;
}

/* Change the owner and/or group of the specified FILES.
   BIT_FLAGS specifies how to treat each symlink-to-directory
   that is encountered during a recursive traversal.
   CHOPT specifies additional options.
   If UID is not -1, then change the owner id of each file to UID.
   If GID is not -1, then change the group id of each file to GID.
   If REQUIRED_UID and/or REQUIRED_GID is not -1, then change only
   files with user ID and group ID that match the non-(-1) value(s).
   Return true if successful. */
extern bool
chown_files (char **files, int bit_flags,
            uid_t uid, gid_t gid,
            uid_t required_uid, gid_t required_gid,
            struct Chown_option const *chopt)
{
    bool ok = true;

    /* Use lstat and stat only if they're needed. */
    int stat_flags = ((required_uid != (uid_t) -1 || required_gid != (gid_t) -1
                     || chopt->affect_symlink_referent

```

```

        || chopt->verbosity != V_off)
        ? 0
        : FTS_NOSTAT);

FTS *fts = xfts_open (files, bit_flags | stat_flags, NULL);

while (1)
{
    FTSENT *ent;

    ent = fts_read (fts);
    if (ent == NULL)
    {
        if (errno != 0)
        {
            /* FIXME: try to give a better message */
            if (! chopt->force_silent)
                error (0, errno, _("fts_read failed"));
            ok = false;
        }
        break;
    }

    ok &= change_file_owner (fts, ent, uid, gid,
                            required_uid, required_gid, chopt);
}

if (fts_close (fts) != 0)
{
    error (0, errno, _("fts_close failed"));
    ok = false;
}

return ok;
}

```

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## 1.164 Iz4 1.7.5 3.eI7

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Upstream-Name: liblz4

Upstream-Contact: Yann Collet <Cyan4973@github.com>

Source: <https://github.com/lz4/lz4>

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## 1.166 libxft 2.3.2 2.e17



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## 1.167 busybox 1.21.1

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Julian Seward, Cambridge, UK.  
jseward@bzip.org  
bzip2/libbzip2 version 1.0.4 of 20 December 2006  
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Julian Seward, [jseward@bzip.org](mailto:jseward@bzip.org)  
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---  
abstract: 'Build and install Perl modules'  
author:  
- 'Ken Williams <[kwilliams@cpan.org](mailto:kwilliams@cpan.org)>'  
- "Development questions, bug reports, and patches should be sent to the\nModule-Build mailing list at <[module-build@perl.org](mailto:module-build@perl.org)>."  
build\_requires:  
File::Temp: 0.15  
Test::Harness: 3.16  
Test::More: 0.49  
generated\_by: 'Module::Build version 0.3608'  
license: gpl  
meta-spec:  
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>  
version: 1.4

name: Module-Build  
resources:  
MailingList: <mailto:module-build@perl.org>  
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repository: <http://github.com/dagolden/module-build/>  
version: 3

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This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

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```

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

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

```
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```

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

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The End  
#!perl

=head1 NAME

copyright.t

=head1 DESCRIPTION

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

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

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

=cut

```
use strict;
use Config;
```

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

```
if ( $Config{usecrosscompile} ) {
    skip_all( "Not all files are available during cross-compilation" );
}
```

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

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

```
# Check that both copyright dates are up-to-date, but only if requested, so
# that tests still pass for people intentionally working on older versions:
if ($opt eq '--now')
{
    my $current_year = (gmtime)[5] + 1900;
    is $v_year, $current_year, 'perl -v copyright includes current year';
    is $readme_year, $current_year, 'README copyright includes current year';
}
```

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

```
done_testing;
```

```

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

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

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

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

$year;
}

```

```

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

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

$year;
}

```

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## 1.169 cups 1.6.3 40.el7

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```
<HTML>
```

```
<!-- SECTION: Getting Started -->
```

```
<HEAD>
```

```
<TITLE>Software License Agreement</TITLE>
```

```
<LINK REL="STYLESHEET" TYPE="text/css" HREF=" ../cups-printable.css">
```

```
</HEAD>
```

```
<BODY>
```

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1 Infinite Loop<BR>

Cupertino, CA 95014 USA<BR>

<BR>

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<OL TYPE="a">

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```

```
</OL>
```

```
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```

```
<OL TYPE="a">
```

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```
</OL>
```

```
</OL>
```

```
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```

```
<H2 CLASS="title"><A NAME="KERBEROS">Kerberos Support Code</A></H2>
```

```
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```

```
<P>Sources files containing KSC have the following text at the top of each source file:</P>
```

```
<BLOCKQUOTE>This file contains Kerberos support code, copyright 2006 by Jelmer Vernooij.</BLOCKQUOTE>
```

```
<P>The KSC copyright and license apply <EM>only</EM> to Kerberos-related feature code in CUPS. Such code is typically conditionally compiled based on the present of the <TT>HAVE_GSSAPI</TT> preprocessor definition.</P>
```

```
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```

<OL>

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<P>Version 2, June 1991

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<OL START="0">

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<OL START="11">

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<PRE>

<VAR>one line to give the program's name and an idea of what it does.</VAR>  
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</PRE>

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<PRE>

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</PRE>

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```
<PRE>
```

```
Yoyodyne, Inc., hereby disclaims all copyright  
interest in the program `Gnomovision'  
(which makes passes at compilers) written  
by James Hacker.
```

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

```
<H2 CLASS="title"><A NAME="LGPL">GNU LIBRARY GENERAL PUBLIC LICENSE</A></H2>
```

```
<P>Version 2, June 1991
```

```
<PRE>
```

```
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```

```
[This is the first released version of the library GPL. It is  
numbered 2 because it goes with version 2 of the ordinary GPL.]
```

```
</PRE>
```

```
<H3>Preamble</H3>
```

```
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```
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```

```
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```

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<OL TYPE="a">

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<P>

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<P>

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</OL>

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<OL TYPE="a">

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<P>

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<P>

<LI>Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

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

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library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

That's all there is to it!

## 1.170 libtiff 4.0.3-1.el7

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# 1.172 perl-http-tiny 0.033-3.e17

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To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
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```

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```
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```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

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

That's all there is to it!

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## 1.177 libsepol 2.5 10.el7

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# 1.178 perl-socket 2.010-4.el7

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```
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```

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```
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```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the  
program 'Gnomovision' (a program to direct compilers to make passes
```



at assemblers) written by James Hacker.

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## 1.179 spring-web-mvc 5.0.8

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Version 3, 29 June 2007

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# 1.183 boot-starter 2.0.4

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## 1.184 schemas 0.0.6

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 */
```

Found in path(s):

```
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/FloatHistogram.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/AVLTreeDigest.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/MergingDigest.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/IntAVLTree.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/AVLGroupTree.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-jar/com/tdunning/math/stats/Simple64.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-jar/com/tdunning/math/stats/TDigest.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-jar/com/tdunning/math/stats/Histogram.java
```

```
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-jar/com/tdunning/math/stats/Sort.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-
jar/com/tdunning/math/stats/AbstractTDigest.java
* /opt/cola/permits/1000864524_1646171528.06/0/t-digest-3-2-sources-jar/com/tdunning/math/stats/Centroid.java
```

## 1.189 hardlink 1.0 19.el7

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## 1.192 swagger-annotations 1.5.14

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 */

package io.swagger.annotations;

import java.lang.annotation.ElementType;
import java.lang.annotation.Retention;
import java.lang.annotation.RetentionPolicy;
import java.lang.annotation.Target;

/**
 * License metadata available within the info section of a Swagger definition, see
 * https://github.com/OAI/OpenAPI-Specification/blob/master/versions/2.0.md#licenseObject
 *
 * @since 1.5.0
 */

@Target(ElementType.ANNOTATION_TYPE)
@Retention(RetentionPolicy.RUNTIME)
public @interface License {

    /**
     * The name of the license.
     *
     * @return the name of the license
     */
    String name();

    /**
     * An optional URL for the license.
     *
     * @return an optional URL for the license.
     */
    String url() default "";
}
```



}

# 1.193 shadow 4.6-1.el7.centos.atom

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## 1.209 jackson-module-parameter-names 2.9.6

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!include "license.sdf"; plain
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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>
```

```
This program is free software: you can redistribute it and/or modify  
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the Free Software Foundation, either version 3 of the License, or  
(at your option) any later version.
```

```
This program is distributed in the hope that it will be useful,  
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GNU General Public License for more details.
```

```
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```

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
<program> Copyright (C) <year> <name of author>  
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

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## 1.213 libxi 1.1.3 2.1.el7

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## 1.214 perl-podlators 2.5.1-3.el7

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=head1 NAME

perlpodstyle - Perl POD style guide

=head1 DESCRIPTION

These are general guidelines for how to write POD documentation for Perl scripts and modules, based on general guidelines for writing good UNIX man pages. All of these guidelines are, of course, optional, but following them will make your documentation more consistent with other documentation on the system.

The name of the program being documented is conventionally written in bold (using `BE<lt>E<gt>`) wherever it occurs, as are all program options. Arguments should be written in italics (`IE<lt>E<gt>`). Function names are traditionally written in italics; if you write a function as `function()`, `Pod::Man` will take care of this for you. Literal code or commands should be in `CE<lt>E<gt>`. References to other man pages should be in the form `C<manpage(section)>` or `C<LE<lt>manpage(section)E<gt>>`, and `Pod::Man` will automatically format those appropriately. The second form, with `LE<lt>E<gt>`, is used to request that a POD formatter make a link to the man page if possible. As an exception, one normally omits the section when referring to module documentation since it's not clear what section module documentation will be in; use `C<LE<lt>Module::NameE<gt>>` for module references instead.

References to other programs or functions are normally in the form of man page references so that cross-referencing tools can provide the user with links and the like. It's possible to overdo this, though, so be careful not

to clutter your documentation with too much markup. References to other programs that are not given as man page references should be enclosed in `BE<lt>E<gt>`.

The major headers should be set out using a `C<=head1>` directive, and are historically written in the rather startling ALL UPPER CASE format; this is not mandatory, but it's strongly recommended so that sections have consistent naming across different software packages. Minor headers may be included using `C<=head2>`, and are typically in mixed case.

The standard sections of a manual page are:

`=over 4`

`=item NAME`

Mandatory section; should be a comma-separated list of programs or functions documented by this POD page, such as:

foo, bar - programs to do something

Manual page indexers are often extremely picky about the format of this section, so don't put anything in it except this line. Every program or function documented by this POD page should be listed, separated by a comma and a space. For a Perl module, just give the module name. A single dash, and only a single dash, should separate the list of programs or functions from the description. Do not use any markup such as `CE<lt>E<gt>` or `BE<lt>E<gt>` anywhere in this line. Functions should not be qualified with `C<(>>` or the like. The description should ideally fit on a single line, even if a man program replaces the dash with a few tabs.

`=item SYNOPSIS`

A short usage summary for programs and functions. This section is mandatory for section 3 pages. For Perl module documentation, it's usually convenient to have the contents of this section be a verbatim block showing some (brief) examples of typical ways the module is used.

`=item DESCRIPTION`

Extended description and discussion of the program or functions, or the body of the documentation for man pages that document something else. If particularly long, it's a good idea to break this up into subsections `C<=head2>` directives like:

`=head2 Normal Usage`

`=head2 Advanced Features`

## =head2 Writing Configuration Files

or whatever is appropriate for your documentation.

For a module, this is generally where the documentation of the interfaces provided by the module goes, usually in the form of a list with an C<=item> for each interface. Depending on how many interfaces there are, you may want to put that documentation in separate METHODS, FUNCTIONS, CLASS METHODS, or INSTANCE METHODS sections instead and save the DESCRIPTION section for an overview.

### =item OPTIONS

Detailed description of each of the command-line options taken by the program. This should be separate from the description for the use of parsers like L<Pod::Usage>. This is normally presented as a list, with each option as a separate C<=item>. The specific option string should be enclosed in BE<lt>E<gt>. Any values that the option takes should be enclosed in IE<lt>E<gt>. For example, the section for the option B<--section>=I<manext> would be introduced with:

=item B<--section>=I<manext>

Synonymous options (like both the short and long forms) are separated by a comma and a space on the same C<=item> line, or optionally listed as their own item with a reference to the canonical name. For example, since B<--section> can also be written as B<-s>, the above would be:

=item B<-s> I<manext>, B<--section>=I<manext>

Writing the short option first is recommended because it's easier to read. The long option is long enough to draw the eye to it anyway and the short option can otherwise get lost in visual noise.

### =item RETURN VALUE

What the program or function returns, if successful. This section can be omitted for programs whose precise exit codes aren't important, provided they return 0 on success and non-zero on failure as is standard. It should always be present for functions. For modules, it may be useful to summarize return values from the module interface here, or it may be more useful to discuss return values separately in the documentation of each function or method the module provides.

### =item ERRORS

Exceptions, error return codes, exit statuses, and errno settings.

Typically used for function or module documentation; program documentation uses `DIAGNOSTICS` instead. The general rule of thumb is that errors printed to `C<STDOUT>` or `C<STDERR>` and intended for the end user are documented in `DIAGNOSTICS` while errors passed internal to the calling program and intended for other programmers are documented in `ERRORS`. When documenting a function that sets `errno`, a full list of the possible `errno` values should be given here.

#### =item `DIAGNOSTICS`

All possible messages the program can print out and what they mean. You may wish to follow the same documentation style as the Perl documentation; see `perldiag(1)` for more details (and look at the POD source as well).

If applicable, please include details on what the user should do to correct the error; documenting an error as indicating "the input buffer is too small" without telling the user how to increase the size of the input buffer (or at least telling them that it isn't possible) aren't very useful.

#### =item `EXAMPLES`

Give some example uses of the program or function. Don't skimp; users often find this the most useful part of the documentation. The examples are generally given as verbatim paragraphs.

Don't just present an example without explaining what it does. Adding a short paragraph saying what the example will do can increase the value of the example immensely.

#### =item `ENVIRONMENT`

Environment variables that the program cares about, normally presented as a list using `C<=over>`, `C<=item>`, and `C<=back>`. For example:

=over 6

=item `HOME`

Used to determine the user's home directory. `F<.foorc>` in this directory is read for configuration details, if it exists.

=back

Since environment variables are normally in all uppercase, no additional special formatting is generally needed; they're glaring enough as it is.

#### =item `FILES`

All files used by the program or function, normally presented as a list, and what it uses them for. File names should be enclosed in FE<lt>E<gt>. It's particularly important to document files that will be potentially modified.

=item CAVEATS

Things to take special care with, sometimes called WARNINGS.

=item BUGS

Things that are broken or just don't work quite right.

=item RESTRICTIONS

Bugs you don't plan to fix. :-)

=item NOTES

Miscellaneous commentary.

=item AUTHOR

Who wrote it (use AUTHORS for multiple people). It's a good idea to include your current e-mail address (or some e-mail address to which bug reports should be sent) or some other contact information so that users have a way of contacting you. Remember that program documentation tends to roam the wild for far longer than you expect and pick a contact method that's likely to last.

=item HISTORY

Programs derived from other sources sometimes have this. Some people keep a modification log here, but that usually gets long and is normally better maintained in a separate file.

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This makes it easy for people to use your module with Perl. Note that this licensing example is neither an endorsement or a requirement, you are of course free to choose any licensing.

=item SEE ALSO

Other man pages to check out, like man(1), man(7), makewhatis(8), or catman(8). Normally a simple list of man pages separated by commas, or a paragraph giving the name of a reference work. Man page references, if they use the standard C<name(section)> form, don't have to be enclosed in LE<lt>E<gt> (although it's recommended), but other things in this section probably should be when appropriate.

If the package has a mailing list, include a URL or subscription instructions here.

If the package has a web site, include a URL here.

=back

Documentation of object-oriented libraries or modules may want to use CONSTRUCTORS and METHODS sections, or CLASS METHODS and INSTANCE METHODS sections, for detailed documentation of the parts of the library and save the DESCRIPTION section for an overview. Large modules with a function interface may want to use FUNCTIONS for similar reasons. Some people use OVERVIEW to summarize the description if it's quite long.

Section ordering varies, although NAME must always be the first section (you'll break some man page systems otherwise), and NAME, SYNOPSIS, DESCRIPTION, and OPTIONS generally always occur first and in that order if present. In general, SEE ALSO, AUTHOR, and similar material should be left for last. Some systems also move WARNINGS and NOTES to last. The order given above should be reasonable for most purposes.

Some systems use CONFORMING TO to note conformance to relevant standards and MT-LEVEL to note safeness for use in threaded programs or signal handlers. These headings are primarily useful when documenting parts of a C library.

Finally, as a general note, try not to use an excessive amount of markup. As documented here and in L<Pod::Man>, you can safely leave Perl variables, function names, man page references, and the like unadorned by markup and the POD translators will figure it out for you. This makes it much easier to later edit the documentation. Note that many existing translators will do the wrong thing with e-mail addresses when wrapped in LE<lt>E<gt>, so don't do that.

=head1 SEE ALSO

For additional information that may be more accurate for your specific system, see either L<man(5)> or L<man(7)> depending on your system manual section numbering conventions.

This documentation is maintained as part of the podlators distribution.

The current version is always available from its web site at

<<http://www.eyrie.org/~eagle/software/podlators/>>.

=head1 AUTHOR

Russ Allbery <[rra@stanford.edu](mailto:rra@stanford.edu)>, with large portions of this documentation taken from the documentation of the original B<pod2man> implementation by Larry Wall and Tom Christiansen.

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=cut

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\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/pod/perlpodstyle.pod  
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\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/man-perlio.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-

Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/text-perlio.t  
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\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/pod-spelling.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/termcap.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/lib/Pod/Text/Color.pm  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/lib/Pod/Text.pm  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/man.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/man-utf8.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/man-options.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/filehandle.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/lib/Pod/Man.pm  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/overstrike.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/text-encoding.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/text-utf8.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/man-heading.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/color.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/pod.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/text.t  
\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/t/text-options.t  
No license file was found, but licenses were detected in source scan.

```
# This program is free software; you may redistribute it and/or modify it
# under the same terms as Perl itself.
# version.
```

Found in path(s):



```
* /opt/cola/permits/1000848966_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-
Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/lib/Pod/Text/Overstrike.pm
* /opt/cola/permits/1000848966_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-
Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/lib/Pod/Text/Termcap.pm
No license file was found, but licenses were detected in source scan.
```

---

```
abstract: 'Convert POD data to various other formats'
author:
- 'Russ Allbery <rra@stanford.edu>'
build_requires:
ExtUtils::MakeMaker: 0
configure_requires:
ExtUtils::MakeMaker: 0
distribution_type: module
dynamic_config: 0
generated_by: 'ExtUtils::MakeMaker version 6.57_05'
license: perl
meta-spec:
url: http://module-build.sourceforge.net/META-spec-v1.4.html
version: 1.4
name: podlators
no_index:
directory:
- t
- inc
requires:
Encode: 0
File::Spec: 0.8
Pod::Simple: 3.06
version: 2.5.1
```

Found in path(s):

```
* /opt/cola/permits/1000848966_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-
Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/MYMETA.yml
No license file was found, but licenses were detected in source scan.
```

```
#!perl
```

```
# pod2man -- Convert POD data to formatted *roff input.
#
# Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013
# Russ Allbery <rra@stanford.edu>
#
# This program is free software; you may redistribute it and/or modify it
# under the same terms as Perl itself.
```

```
require 5.004;
```

```

use Getopt::Long qw(GetOptions);
use Pod::Man ();
use Pod::Usage qw(pod2usage);

use strict;

# Clean up $0 for error reporting.
$0 =~ s%.*/%%;

# Insert -- into @ARGV before any single dash argument to hide it from
# Getopt::Long; we want to interpret it as meaning stdin.
my $stdin;
@ARGV = map { $_ eq '-' && !$stdin++ ? ('-', $_) : $_ } @ARGV;

# Parse our options, trying to retain backward compatibility with pod2man but
# allowing short forms as well. --lax is currently ignored.
my %options;
Getopt::Long::config ('bundling_override');
GetOptions (\%options, 'center|c=s', 'date|d=s', 'errors=s', 'fixed=s',
            'fixedbold=s', 'fixeditalic=s', 'fixedbolditalic=s', 'help|h',
            'lax|l', 'name|n=s', 'nourls', 'official|o', 'quotes|q=s',
            'release|r:s', 'section|s=s', 'stderr', 'verbose|v', 'utf8|u')
    or exit 1;
pod2usage (0) if $options{help};

# Official sets --center, but don't override things explicitly set.
if ($options{official} && !defined $options{center}) {
    $options{center} = 'Perl Programmers Reference Guide';
}

# Verbose is only our flag, not a Pod::Man flag.
my $verbose = $options{verbose};
delete $options{verbose};

# This isn't a valid Pod::Man option and is only accepted for backward
# compatibility.
delete $options{lax};

# If neither stderr nor errors is set, default to errors = die.
if (!defined $options{stderr} && !defined $options{errors}) {
    $options{errors} = 'die';
}

# Initialize and run the formatter, pulling a pair of input and output off at
# a time. For each file, we check whether the document was completely empty
# and, if so, will remove the created file and exit with a non-zero exit
# status.

```

```

my $parser = Pod::Man->new (%options);
my $status = 0;
my @files;
do {
    @files = splice (@ARGV, 0, 2);
    print " $files[1]\n" if $verbose;
    $parser->parse_from_file (@files);
    if ($parser->{CONTENTLESS}) {
        $status = 1;
        warn "$0: unable to format $files[0]\n";
        if (defined ($files[1]) and $files[1] ne '-') {
            unlink $files[1] unless (-s $files[1]);
        }
    }
} while (@ARGV);
exit $status;

```

\_\_END\_\_

=for stopwords

en em --stderr stderr --utf8 UTF-8 overdo markup MT-LEVEL Allbery Solaris  
URL troff troff-specific formatters uppercased Christiansen --nourls

=head1 NAME

pod2man - Convert POD data to formatted \*roff input

=head1 SYNOPSIS

```

pod2man [B<--center>=I<string>] [B<--date>=I<string>] [B<--errors>=I<style>]
[B<--fixed>=I<font>] [B<--fixedbold>=I<font>] [B<--fixeditalic>=I<font>]
[B<--fixedbolditalic>=I<font>] [B<--name>=I<name>] [B<--nourls>]
[B<--official>] [B<--quotes>=I<quotes>] [B<--release>=I<version>]
[B<--section>=I<manext>] [B<--stderr>] [B<--utf8>] [B<--verbose>]
[I<input> [I<output>] ...]

```

pod2man B<--help>

=head1 DESCRIPTION

B<pod2man> is a front-end for Pod::Man, using it to generate \*roff input from POD source. The resulting \*roff code is suitable for display on a terminal using nroff(1), normally via man(1), or printing using troff(1).

I<input> is the file to read for POD source (the POD can be embedded in code). If I<input> isn't given, it defaults to C<STDIN>. I<output>, if given, is the file to which to write the formatted output. If I<output> isn't given, the formatted output is written to C<STDOUT>. Several POD

files can be processed in the same `B<pod2man>` invocation (saving module load and compile times) by providing multiple pairs of `I<input>` and `I<output>` files on the command line.

`B<--section>`, `B<--release>`, `B<--center>`, `B<--date>`, and `B<--official>` can be used to set the headers and footers to use; if not given, `Pod::Man` will assume various defaults. See below or `L<Pod::Man>` for details.

`B<pod2man>` assumes that your `*roff` formatters have a fixed-width font named `C<CW>`. If yours is called something else (like `C<CR>`), use `B<--fixed>` to specify it. This generally only matters for `troff` output for printing. Similarly, you can set the fonts used for bold, italic, and bold italic fixed-width output.

Besides the obvious pod conversions, `Pod::Man`, and therefore `pod2man` also takes care of formatting `func()`, `func(n)`, and simple variable references like `$foo` or `@bar` so you don't have to use code escapes for them; complex expressions like `C<$fred{'stuff'}>` will still need to be escaped, though. It also translates dashes that aren't used as hyphens into en dashes, makes long dashes--like this--into proper em dashes, fixes "paired quotes," and takes care of several other `troff`-specific tweaks. See `L<Pod::Man>` for complete information.

=head1 OPTIONS

=over 4

=item `B<-c> I<string>`, `B<--center>=I<string>`

Sets the centered page header to `I<string>`. The default is "User Contributed Perl Documentation", but also see `B<--official>` below.

=item `B<-d> I<string>`, `B<--date>=I<string>`

Set the left-hand footer string to this value. By default, the modification date of the input file will be used, or the current date if input comes from `C<STDIN>`.

=item `B<-errors>=I<style>`

Set the error handling style. `C<die>` says to throw an exception on any POD formatting error. `C<stderr>` says to report errors on standard error, but not to throw an exception. `C<pod>` says to include a POD ERRORS section in the resulting documentation summarizing the errors. `C<none>` ignores POD errors entirely, as much as possible.

The default is `C<die>`.

=item B<--fixed>=I<font>

The fixed-width font to use for verbatim text and code. Defaults to C<CW>. Some systems may want C<CR> instead. Only matters for troff(1) output.

=item B<--fixedbold>=I<font>

Bold version of the fixed-width font. Defaults to C<CB>. Only matters for troff(1) output.

=item B<--fixeditalic>=I<font>

Italic version of the fixed-width font (actually, something of a misnomer, since most fixed-width fonts only have an oblique version, not an italic version). Defaults to C<CI>. Only matters for troff(1) output.

=item B<--fixedbolditalic>=I<font>

Bold italic (probably actually oblique) version of the fixed-width font. Pod::Man doesn't assume you have this, and defaults to C<CB>. Some systems (such as Solaris) have this font available as C<CX>. Only matters for troff(1) output.

=item B<-h>, B<--help>

Print out usage information.

=item B<-l>, B<--lax>

No longer used. B<pod2man> used to check its input for validity as a manual page, but this should now be done by L<podchecker(1)> instead. Accepted for backward compatibility; this option no longer does anything.

=item B<-n> I<name>, B<--name>=I<name>

Set the name of the manual page to I<name>. Without this option, the manual name is set to the uppcased base name of the file being converted unless the manual section is 3, in which case the path is parsed to see if it is a Perl module path. If it is, a path like C<.../lib/Pod/Man.pm> is converted into a name like C<Pod::Man>. This option, if given, overrides any automatic determination of the name.

Note that this option is probably not useful when converting multiple POD files at once. The convention for Unix man pages for commands is for the man page title to be in all-uppercase even if the command isn't.

=item B<--nourls>

Normally, LZ<>> formatting codes with a URL but anchor text are formatted to show both the anchor text and the URL. In other words:

```
L<foo|http://example.com/>
```

is formatted as:

```
foo <http://example.com/>
```

This flag, if given, suppresses the URL when anchor text is given, so this example would be formatted as just C<foo>. This can produce less cluttered output in cases where the URLs are not particularly important.

```
=item B<-o>, B<--official>
```

Set the default header to indicate that this page is part of the standard Perl release, if B<--center> is not also given.

```
=item B<-q> I<quotes>, B<--quotes>=I<quotes>
```

Sets the quote marks used to surround CE<lt>> text to I<quotes>. If I<quotes> is a single character, it is used as both the left and right quote; if I<quotes> is two characters, the first character is used as the left quote and the second as the right quoted; and if I<quotes> is four characters, the first two are used as the left quote and the second two as the right quote.

I<quotes> may also be set to the special value C<none>, in which case no quote marks are added around CE<lt>> text (but the font is still changed for troff output).

```
=item B<-r>, B<--release>
```

Set the centered footer. By default, this is the version of Perl you run B<pod2man> under. Note that some system an macro sets assume that the centered footer will be a modification date and will prepend something like "Last modified: "; if this is the case, you may want to set B<--release> to the last modified date and B<--date> to the version number.

```
=item B<-s>, B<--section>
```

Set the section for the C<.TH> macro. The standard section numbering convention is to use 1 for user commands, 2 for system calls, 3 for functions, 4 for devices, 5 for file formats, 6 for games, 7 for miscellaneous information, and 8 for administrator commands. There is a lot of variation here, however; some systems (like Solaris) use 4 for file formats, 5 for miscellaneous information, and 7 for devices. Still others

use 1m instead of 8, or some mix of both. About the only section numbers that are reliably consistent are 1, 2, and 3.

By default, section 1 will be used unless the file ends in C<.pm>, in which case section 3 will be selected.

=item B<--stderr>

By default, B<pod2man> dies if any errors are detected in the POD input. If B<--stderr> is given and no B<--errors> flag is present, errors are sent to standard error, but B<pod2man> does not abort. This is equivalent to C<--errors=stderr> and is supported for backward compatibility.

=item B<-u>, B<--utf8>

By default, B<pod2man> produces the most conservative possible \*roff output to try to ensure that it will work with as many different \*roff implementations as possible. Many \*roff implementations cannot handle non-ASCII characters, so this means all non-ASCII characters are converted either to a \*roff escape sequence that tries to create a properly accented character (at least for troff output) or to C<X>.

This option says to instead output literal UTF-8 characters. If your \*roff implementation can handle it, this is the best output format to use and avoids corruption of documents containing non-ASCII characters. However, be warned that \*roff source with literal UTF-8 characters is not supported by many implementations and may even result in segfaults and other bad behavior.

Be aware that, when using this option, the input encoding of your POD source must be properly declared unless it is US-ASCII or Latin-1. POD input without an C<=encoding> command will be assumed to be in Latin-1, and if it's actually in UTF-8, the output will be double-encoded. See L<perlpod(1)> for more information on the C<=encoding> command.

=item B<-v>, B<--verbose>

Print out the name of each output file as it is being generated.

=back

=head1 EXIT STATUS

As long as all documents processed result in some output, even if that output includes errata (a C<POD ERRORS> section generated with C<--errors=pod>), B<pod2man> will exit with status 0. If any of the documents being processed do not result in an output document, B<pod2man> will exit with status 1. If there are syntax errors in a POD document

being processed and the error handling style is set to the default of C<die>, B<pod2man> will abort immediately with exit status 255.

## =head1 DIAGNOSTICS

If B<pod2man> fails with errors, see L<Pod::Man> and L<Pod::Simple> for information about what those errors might mean.

## =head1 EXAMPLES

```
pod2man program > program.1
pod2man SomeModule.pm /usr/perl/man/man3/SomeModule.3
pod2man --section=7 note.pod > note.7
```

If you would like to print out a lot of man page continuously, you probably want to set the C and D registers to set contiguous page numbering and even/odd paging, at least on some versions of man(7).

```
troff -man -rC1 -rD1 perl.1 perldata.1 perlsyn.1 ...
```

To get index entries on C<STDERR>, turn on the F register, as in:

```
troff -man -rF1 perl.1
```

The indexing merely outputs messages via C<.tm> for each major page, section, subsection, item, and any C<XE<lt>E<gt>> directives. See L<Pod::Man> for more details.

## =head1 BUGS

Lots of this documentation is duplicated from L<Pod::Man>.

## =head1 SEE ALSO

L<Pod::Man>, L<Pod::Simple>, L<man(1)>, L<nroff(1)>, L<perlpod(1)>, L<podchecker(1)>, L<perlpodstyle(1)>, L<troff(1)>, L<man(7)>

The man page documenting the an macro set may be L<man(5)> instead of L<man(7)> on your system.

The current version of this script is always available from its web site at L<<http://www.eyrie.org/~eagle/software/podlators/>>. It is also part of the Perl core distribution as of 5.6.0.

## =head1 AUTHOR

Russ Allbery <[rra@stanford.edu](mailto:rra@stanford.edu)>, based I<very> heavily on the original B<pod2man> by Larry Wall and Tom Christiansen.



=head1 COPYRIGHT AND LICENSE

Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013 Russ Allbery <rra@stanford.edu>.

This program is free software; you may redistribute it and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/scripts/pod2man  
No license file was found, but licenses were detected in source scan.

#!/perl

# pod2text -- Convert POD data to formatted ASCII text.

#

# Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013

# Russ Allbery <rra@stanford.edu>

#

# This program is free software; you may redistribute it and/or modify it

# under the same terms as Perl itself.

#

# The driver script for Pod::Text, Pod::Text::Termcap, and Pod::Text::Color,

# invoked by perldoc -t among other things.

require 5.004;

use Getopt::Long qw(GetOptions);

use Pod::Text ();

use Pod::Usage qw(pod2usage);

use strict;

# Clean up \$0 for error reporting.

\$0 =~ s%.\*%%;

# Take an initial pass through our options, looking for one of the form

# -<number>. We turn that into -w <number> for compatibility with the

# original pod2text script.

for (my \$i = 0; \$i < @ARGV; \$i++) {

last if \$ARGV[\$i] =~ /^--\$/;

if (\$ARGV[\$i] =~ /^-(d+)\$/) {

splice (@ARGV, \$i++, 1, '-w', \$1);

}

```

}

# Insert -- into @ARGV before any single dash argument to hide it from
# Getopt::Long; we want to interpret it as meaning stdin (which Pod::Simple
# does correctly).
my $stdin;
@ARGV = map { $_ eq '-' && !$stdin++ ? ('-', $_) : $_ } @ARGV;

# Parse our options. Use the same names as Pod::Text for simplicity, and
# default to sentence boundaries turned off for compatibility.
my %options;
$options{sentence} = 0;
Getopt::Long::config ('bundling');
GetOptions (\%options, 'alt|a', 'code', 'color|c', 'errors=s', 'help|h',
            'indent|i=i', 'loose|l', 'margin|left-margin|m=i', 'nourls',
            'overstrike|o', 'quotes|q=s', 'sentence|s', 'stderr', 'termcap|t',
            'utf8|u', 'width|w=i')
    or exit 1;
pod2usage (1) if $options{help};

# Figure out what formatter we're going to use. -c overrides -t.
my $formatter = 'Pod::Text';
if ($options{color}) {
    $formatter = 'Pod::Text::Color';
    eval { require Term::ANSIColor };
    if ($?) { die "-c (--color) requires Term::ANSIColor be installed\n" }
    require Pod::Text::Color;
} elsif ($options{termcap}) {
    $formatter = 'Pod::Text::Termcap';
    require Pod::Text::Termcap;
} elsif ($options{overstrike}) {
    $formatter = 'Pod::Text::Overstrike';
    require Pod::Text::Overstrike;
}
delete @options{'color', 'termcap', 'overstrike'};

# If neither stderr nor errors is set, default to errors = die.
if (!defined $options{stderr} && !defined $options{errors}) {
    $options{errors} = 'die';
}

# Initialize and run the formatter.
my $parser = $formatter->new (%options);
my $status = 0;
do {
    my ($input, $output) = splice (@ARGV, 0, 2);
    $parser->parse_from_file ($input, $output);
    if ($parser->{CONTENTLESS}) {

```

```

$status = 1;
warn "$0: unable to format $input\n";
if (defined ($output) and $output ne '-') {
    unlink $output unless (-s $output);
}
}
} while (@ARGV);
exit $status;

```

\_\_END\_\_

=for stopwords

-aclostu --alt --stderr Allbery --overstrike overstrike --termcap --utf8  
 UTF-8 subclasses --nourls

=head1 NAME

pod2text - Convert POD data to formatted ASCII text

=head1 SYNOPSIS

```

pod2text [B<-aclostu>] [B<--code>] [B<--errors>=I<style>] [B<-i> I<indent>]
  S<[B<-q> I<quotes>]> [B<--nourls>] [B<--stderr>] S<[B<-w> I<width>]>
  [I<input> [I<output> ...]]

```

pod2text B<-h>

=head1 DESCRIPTION

B<pod2text> is a front-end for Pod::Text and its subclasses. It uses them to generate formatted ASCII text from POD source. It can optionally use either termcap sequences or ANSI color escape sequences to format the text.

I<input> is the file to read for POD source (the POD can be embedded in code). If I<input> isn't given, it defaults to C<STDIN>. I<output>, if given, is the file to which to write the formatted output. If I<output> isn't given, the formatted output is written to C<STDOUT>. Several POD files can be processed in the same B<pod2text> invocation (saving module load and compile times) by providing multiple pairs of I<input> and I<output> files on the command line.

=head1 OPTIONS

=over 4

=item B<-a>, B<--alt>

Use an alternate output format that, among other things, uses a different

heading style and marks C<=item> entries with a colon in the left margin.

=item B<--code>

Include any non-POD text from the input file in the output as well. Useful for viewing code documented with POD blocks with the POD rendered and the code left intact.

=item B<-c>, B<--color>

Format the output with ANSI color escape sequences. Using this option requires that Term::ANSIColor be installed on your system.

=item B<-i> I<indent>, B<--indent=>I<indent>

Set the number of spaces to indent regular text, and the default indentation for C<=over> blocks. Defaults to 4 spaces if this option isn't given.

=item B<-errors>=I<style>

Set the error handling style. C<die> says to throw an exception on any POD formatting error. C<stderr> says to report errors on standard error, but not to throw an exception. C<pod> says to include a POD ERRORS section in the resulting documentation summarizing the errors. C<none> ignores POD errors entirely, as much as possible.

The default is C<die>.

=item B<-h>, B<--help>

Print out usage information and exit.

=item B<-l>, B<--loose>

Print a blank line after a C<=head1> heading. Normally, no blank line is printed after C<=head1>, although one is still printed after C<=head2>, because this is the expected formatting for manual pages; if you're formatting arbitrary text documents, using this option is recommended.

=item B<-m> I<width>, B<--left-margin>=I<width>, B<--margin>=I<width>

The width of the left margin in spaces. Defaults to 0. This is the margin for all text, including headings, not the amount by which regular text is indented; for the latter, see B<-i> option.

=item B<--nourls>

Normally, LZ<><> formatting codes with a URL but anchor text are formatted

to show both the anchor text and the URL. In other words:

```
L<foo|http://example.com/>
```

is formatted as:

```
foo <http://example.com/>
```

This flag, if given, suppresses the URL when anchor text is given, so this example would be formatted as just C<foo>. This can produce less cluttered output in cases where the URLs are not particularly important.

```
=item B<-o>, B<--overstrike>
```

Format the output with overstrike printing. Bold text is rendered as character, backspace, character. Italics and file names are rendered as underscore, backspace, character. Many paggers, such as B<less>, know how to convert this to bold or underlined text.

```
=item B<-q> I<quotes>, B<--quotes>=I<quotes>
```

Sets the quote marks used to surround CE<lt>> text to I<quotes>. If I<quotes> is a single character, it is used as both the left and right quote; if I<quotes> is two characters, the first character is used as the left quote and the second as the right quoted; and if I<quotes> is four characters, the first two are used as the left quote and the second two as the right quote.

I<quotes> may also be set to the special value C<none>, in which case no quote marks are added around CE<lt>> text.

```
=item B<-s>, B<--sentence>
```

Assume each sentence ends with two spaces and try to preserve that spacing. Without this option, all consecutive whitespace in non-verbatim paragraphs is compressed into a single space.

```
=item B<--stderr>
```

By default, B<pod2text> dies if any errors are detected in the POD input. If B<--stderr> is given and no B<--errors> flag is present, errors are sent to standard error, but B<pod2text> does not abort. This is equivalent to C<--errors=stderr> and is supported for backward compatibility.

```
=item B<-t>, B<--termcap>
```

Try to determine the width of the screen and the bold and underline

sequences for the terminal from termcap, and use that information in formatting the output. Output will be wrapped at two columns less than the width of your terminal device. Using this option requires that your system have a termcap file somewhere where Term::Cap can find it and requires that your system support termios. With this option, the output of B<pod2text> will contain terminal control sequences for your current terminal type.

=item B<-u>, B<--utf8>

By default, B<pod2text> tries to use the same output encoding as its input encoding (to be backward-compatible with older versions). This option says to instead force the output encoding to UTF-8.

Be aware that, when using this option, the input encoding of your POD source must be properly declared unless it is US-ASCII or Latin-1. POD input without an C<=encoding> command will be assumed to be in Latin-1, and if it's actually in UTF-8, the output will be double-encoded. See L<perlpod(1)> for more information on the C<=encoding> command.

=item B<-w>, B<--width=>I<width>, B<->I<width>

The column at which to wrap text on the right-hand side. Defaults to 76, unless B<-t> is given, in which case it's two columns less than the width of your terminal device.

=back

=head1 EXIT STATUS

As long as all documents processed result in some output, even if that output includes errata (a C<POD ERRORS> section generated with C<--errors=pod>), B<pod2text> will exit with status 0. If any of the documents being processed do not result in an output document, B<pod2text> will exit with status 1. If there are syntax errors in a POD document being processed and the error handling style is set to the default of C<die>, B<pod2text> will abort immediately with exit status 255.

=head1 DIAGNOSTICS

If B<pod2text> fails with errors, see L<Pod::Text> and L<Pod::Simple> for information about what those errors might mean. Internally, it can also produce the following diagnostics:

=over 4

=item -c (--color) requires Term::ANSIColor be installed

(F) B<-c> or B<--color> were given, but Term::ANSIColor could not be

loaded.

=item Unknown option: %s

(F) An unknown command line option was given.

=back

In addition, other L<Getopt::Long> error messages may result from invalid command-line options.

=head1 ENVIRONMENT

=over 4

=item COLUMNS

If B<-t> is given, B<pod2text> will take the current width of your screen from this environment variable, if available. It overrides terminal width information in TERMCAP.

=item TERMCAP

If B<-t> is given, B<pod2text> will use the contents of this environment variable if available to determine the correct formatting sequences for your current terminal device.

=back

=head1 SEE ALSO

L<Pod::Text>, L<Pod::Text::Color>, L<Pod::Text::Overstrike>,  
L<Pod::Text::Termcap>, L<Pod::Simple>, L<perlpod(1)>

The current version of this script is always available from its web site at L<<http://www.eyrie.org/~eagle/software/podlators/>>. It is also part of the Perl core distribution as of 5.6.0.

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=cut

Found in path(s):

\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/scripts/pod2text

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

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Found in path(s):

\* /opt/cola/permits/1000848966\_1646171581.39/0/perl-podlators-2.5.1-3.el7.src.rpm-cosi-expand-archive-Z1NPhHxb/podlators-2.5.1.tar.gz-cosi-expand-archive-kyD8FKMM/podlators-2.5.1/META.yml

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## 1.216 spring-context 5.0.8

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## 1.217 libunistring 0.9.3 9.e17

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## 1.219 Lucene-queries 7.7.2

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## 1.223 grep 2.20 3.e17

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[1] <https://github.com/hunterhacker/jdom/blob/master/LICENSE.txt>

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<html><head>
```

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</head><body lang="EN-US" link="blue" vlink="purple">  
<h2>Eclipse Foundation Software User Agreement</h2>  
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<li>Features

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test data from <http://aspell.sourceforge.net/test/batch0.tab>.

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NekoHTML is written using the Xerces Native Interface (XNI) that is the foundation of the Xerces2 implementation. This enables you to use the NekoHTML parser with existing XNI tools without modification or rewriting code.

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```
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```
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## 1.226 classmate 1.3.4

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## 1.228 strace 4.12-9.el7

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## 1.230 lucene-grouping 7.7.2

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## 1.232 byte-buddy 1.7.11

### 1.232.1 Available under license :

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\*/

/\*\*

\* Constructs a new {[@link LocalVariableAnnotationNode](#)}. *<i>Subclasses must  
\* not use this constructor</i>. Instead, they must use the  
\* {[@link #LocalVariableAnnotationNode\(int, TypePath, LabelNode\[\], LabelNode\[\], int\[\], String\)](#)}  
\* version.  
\*  
\* [@param typeRef](#)  
\* a reference to the annotated type. See {[@link TypeReference](#)}.  
\* [@param typePath](#)  
\* the path to the annotated type argument, wildcard bound, array  
\* element type, or static inner type within 'typeRef'. May be  
\* `<tt>null</tt>` if the annotation targets 'typeRef' as a whole.  
\* [@param start](#)  
\* the first instructions corresponding to the continuous ranges  
\* that make the scope of this local variable (inclusive).  
\* [@param end](#)  
\* the last instructions corresponding to the continuous ranges*

```
*      that make the scope of this local variable (exclusive). This
*      array must have the same size as the 'start' array.
* @param index
*      the local variable's index in each range. This array must have
*      the same size as the 'start' array.
* @param desc
*      the class descriptor of the annotation class.
*/
```

Found in path(s):

```
* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/tree/LocalVariableAnnotationNode.java
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```

```
/**
```

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*/
/**
 * Creates a new { @link GeneratorAdapter}. Subclasses must not use this
 * constructor. Instead, they must use the
 * { @link #GeneratorAdapter(int, MethodVisitor, int, String, String)}
 * version.
```

```

*
* @param mv
*     the method visitor to which this adapter delegates calls.
* @param access
*     the method's access flags (see { @link Opcodes }).
* @param name
*     the method's name.
* @param desc
*     the method's descriptor (see { @link Type Type }).
* @throws IllegalStateException
*     If a subclass calls this constructor.
*/

```

Found in path(s):

```

* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
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```

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\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/analysis/package.html

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/package.html

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 jar/net/bytebuddy/jar/asm/commons/ModuleTargetAttribute.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
 jar/net/bytebuddy/jar/asm/ClassVisitor.java  
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 jar/net/bytebuddy/jar/asm/tree/InnerClassNode.java  
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 jar/net/bytebuddy/jar/asm/tree/LineNumberNode.java  
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 jar/net/bytebuddy/jar/asm/tree/analysis/Subroutine.java  
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 jar/net/bytebuddy/jar/asm/MethodWriter.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
 jar/net/bytebuddy/jar/asm/util/CheckSignatureAdapter.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/Edge.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
 jar/net/bytebuddy/jar/asm/commons/SimpleRemapper.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/Type.java  
 \* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
 jar/net/bytebuddy/jar/asm/tree/analysis/Value.java

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/RemappingSignatureAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/FieldWriter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/Opcodes.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/ModuleHashesAttribute.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/analysis/Interpreter.java  
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\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/AdviceAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/signature/SignatureVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/Method.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/analysis/BasicVerifier.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/InsnList.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/commons/TryCatchBlockSorter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/ClassReader.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/signature/SignatureWriter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/util/TraceFieldVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/TypeAnnotationNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/analysis/SimpleVerifier.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/AnnotationNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/util/TraceAnnotationVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/LocalVariableNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/analysis/Frame.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/FieldNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tools/Retrofitter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/util/ASMifier.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/ClassWriter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tree/JumpInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-jar/net/bytebuddy/jar/asm/tools/ModuleInfoBndPlugin.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-

jar/net/bytebuddy/jar/asm/util/CheckMethodAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/Printer.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/CheckFieldAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/MultiANewArrayInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/AnnotationWriter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/Handle.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/ModuleExportNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/TraceModuleVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/MethodVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/ModuleNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/analysis/SourceInterpreter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/FieldRemapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/MethodInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/TryCatchBlockNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/CurrentFrame.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/ParameterNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/analysis/BasicInterpreter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/AnnotationRemapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/CodeSizeEvaluator.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/TypeInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/SignatureRemapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/LocalVariablesSorter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/analysis/BasicValue.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/StaticInitMerger.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-



jar/net/bytebuddy/jar/asm/commons/ModuleRemapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/analysis/AnalyzerException.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/Remapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/FieldVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/LookupSwitchInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/FrameNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/ModuleRequireNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/TraceSignatureVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/MethodNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/AbstractInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/FieldInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/ByteVector.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/RemappingFieldAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/Handler.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/IntInsnNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/signature/SignatureReader.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/InstructionAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/tree/LabelNode.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/TableSwitchGenerator.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/ModuleResolutionAttribute.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/commons/ClassRemapper.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/TraceClassVisitor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/CheckModuleAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/Frame.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-

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jar/net/bytebuddy/jar/asm/commons/RemappingClassAdapter.java
* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/tree/LdcInsnNode.java
* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/commons/RemappingMethodAdapter.java
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```

```
/**
```

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```

```
*/
```

```
/**
```

```
* Creates a new JSRInliner. <i>Subclasses must not use this
* constructor</i>. Instead, they must use the
* {@link #JSRInlinerAdapter(int, MethodVisitor, int, String, String, String, String[])}
* version.
*
* @param mv
* the <code>MethodVisitor</code> to send the resulting inlined
* method code to (use <code>>null</code> for none).
* @param access
* the method's access flags (see { @link Opcodes}). This
* parameter also indicates if the method is synthetic and/or
```

```

*      deprecated.
* @param name
*      the method's name.
* @param desc
*      the method's descriptor (see { @link Type}).
* @param signature
*      the method's signature. May be <tt>null</tt>.
* @param exceptions
*      the internal names of the method's exception classes (see
*      { @link Type#getInternalName() getInternalName}). May be
*      <tt>null</tt>.
* @throws IllegalStateException
*      If a subclass calls this constructor.
*/

```

Found in path(s):

```

* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/commons/JSRInlinerAdapter.java

```

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```

```

*/
/**
 * Creates a new {@link AnalyzerAdapter}. Subclasses must not use this
 * constructor. Instead, they must use the
 * {@link #AnalyzerAdapter(int, String, int, String, String, MethodVisitor)}
 * version.
 *
 * @param owner
 *     the owner's class name.
 * @param access
 *     the method's access flags (see {@link Opcodes}).
 * @param name
 *     the method's name.
 * @param desc
 *     the method's descriptor (see {@link Type Type}).
 * @param mv
 *     the method visitor to which this adapter delegates calls. May
 *     be null.
 * @throws IllegalStateException
 *     If a subclass calls this constructor.
 */

```

Found in path(s):

```

* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/commons/AnalyzerAdapter.java

```

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\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXFieldAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/Processor.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXClassAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXAnnotationAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXCodeAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/SAXModuleAdapter.java  
\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/xml/ASMContentHandler.java

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\*/

/\*\*

\* Constructs a new {@link Textifier}. *Subclasses must not use this  
\* constructor*. Instead, they must use the {@link #Textifier(int)}  
\* version.

\*

\* @throws IllegalStateException

\* If a subclass calls this constructor.

\*/

Found in path(s):

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/Textifier.java

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jar/net/bytebuddy/jar/asm/TypeReference.java

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/TypePath.java

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\*/

Found in path(s):

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/ASMifiable.java

\* /opt/cola/permits/1002965612\_1646171675.84/0/byte-buddy-1-7-11-sources-  
jar/net/bytebuddy/jar/asm/util/Textifiable.java

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

```
/**
```

```
* ASM: a very small and fast Java bytecode manipulation framework
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```

```
*/
```

```
/**
```

```
* Constructs a new {@link ClassNode}. Subclasses must not use this
* constructor. Instead, they must use the {@link #ClassNode(int)}
* version.
*
* @throws IllegalStateException
*         If a subclass calls this constructor.
*/
```

Found in path(s):

```
* /opt/cola/permits/1002965612_1646171675.84/0/byte-buddy-1-7-11-sources-
jar/net/bytebuddy/jar/asm/tree/ClassNode.java
```

## 1.233 libxau 1.0.8-2.1.el7



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```

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## 1.236 bouncy-castle 1.58

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The following organisations and people have contributed to the Bouncy Castle Cryptography Package.

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Thanks, may your castles never deflate!

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<li>David M. Lee <dmlee&#064Crossroads.com> - code for add and remove secret key in the PGPSecretKeyRing class. Additions to S/MIME and CMS unit tests.</li>

<li>Mike Dillon <md5&#064embody.org> - additional checks for PGP secret and public key construction, patches to copyWithNewPassword.</li>

<li>tu-vi cung <t2cung&#064hotmail.com> - patch for out of bounds problem in getDecoderStream method.</li>

<li>Chris Schultz <cschultz&#064gmail.com> - fix for InputStream constructor for X509V2AttributeCertificate.</li>

<li>David M. Lee <dmlee&#064Crossroads.com> - implementation assistance with streaming CMS classes.</li>

<li>Joel Rees <rees&#064ddcom.co.jp> - fix to correct getOID methods from returning same set on X.509 attribute certificates.</li>

<li>Francesc Sau <francesc.sau&#064partners.netfocus.es> - micro fix for tsp Accuracy class.</li>

<li>Larry Bugbee <bugbee&#064mac.com> - initial ECNR implementation.</li>

<li>Remi Blancher <Remi.Blancher&#064keynectis.com> - Contributions to TSP implementation. Initial implementation of RFC 3739 and ICAO ASN.1 classes.</li>

<li>Brian O'Rourke <brianorourke&#064gmail.com> - patch for signature creation time override in OpenPGP.</li>

<li>Andreas Schwier <andreas.schwier&#064cardcontact.de> - initial implementation of ISO9797 MAC Algorithm 3, addition of DES-EDE 64 MAC to the provider, fix to EC point encoding, addition of EC and RSA-PSS OIDs to CMS, addition of AES-CMAC and DESede-CMAC to JCE provider.</li>

<li>David Josse <david.josse&#064transacttools.net> - Patch for trailer function in version 2 signature packets.</li>

<li>Kishimoto Kazuhiko <kazu-k&#064hi-ho.ne.jp> - RFC 3280 updates to policy processing in the CertPath validator. Additional test data not covered by NIST.</li>

<li>Lawrence Tan <lwrnctan&#064gmail.com&gt - Large field OID sample test data. Missing key types in JDKKeyFactory.</li>

<li>Carlos Valiente <superdupont&#064gmail.com> - Addition of CRL writing to the PEMWriter class.</li>

<li>Keyon AG, Martin Christinat, <a href="http://www.keyon.ch">http://www.keyon.ch</a> - fixing incorrect ASN.1 encoding of field elements in X9FieldElement class.</li>

<li>Olaf Keller, <olaf.keller.bc&#064bluewin.ch> - initial implementation of the elliptic curves over binary fields F2m. Additional tests and modifications to elliptic curve support for both F2m and Fp. Performance improvements to F2m multiplication. Initial implementation of WNAF/WTNAF point multiplication. Improvement to k value generation in ECDSA.</li>

<li>J&ouml;rg Eichhorn <eichhorn&#064ponton-consulting.de> - patch to fix EOF read on SharedFileInputStream, support for F2m compression.</li>

<li>Karsten Ohme <widerstand&#064t-online.de> - initial check against for out of range data on non byte aligned RSA keys. Addition of equals/hashCode on ECCurve.Fp. Additional curve type support for Fp, contributions to F2m compression. F2m decoding for ECPointUtil. Infinity fix and prime192v2 fix for Fp. Extra validation for RSA key creation. Fix to name typos for some OpenSSL key generators. RFC-1779 table, improved RFC 2253 compliance for X509Name. Additional constructor validation for X.509/ESS ASN.1 classes. Validation for Printable, IA5, and Numeric Strings.

Support for surrogate pairs in DERUTF8String, DER UTF8 test. Additional X.509 name attributes for ISIS-MTT, RFC 3039, addition of indirect CRL support, initial X509 LDAP CertStore implementation, CertificatePair class, and X509CertificatePair class. Contributions to X509Store/Parser infrastructure and design.

CertPath support for implicit DSA parameters and a range of NameConstraints. Addition of support for V1 attribute certificates and attribute certificate path validation. Initial classes for ASN.1 ISIS-MTT support. Enhancements for

improving compliance with the NIST CertPath tests.</li>  
<li>Carlos Lozano Ruiz <carlos@tradise.com> - patch for <ctrl><m> only handling in CRLFOutputStream.</li>  
<li>John Alfred Prufrock <j.a.prufrock@gmail.com> - mods to GOST-3411 and MD2 to support ExtendedDigest.</li>  
<li>Stefan Neusatz Guilhen <sneusatz@gmail.com> - initial version of RoleSyntax, improvements to AttributeCertificateHolder and AttributeCertificateIssuer.</li>  
<li>Marzio Lo Giudice <marzio.logiudice@gmail.com> - fix to endianness in KDF2BytesGenerator, additional KDF2 tests.</li>  
<li>Georg Lippold <georg.lippold@gmx.de> - initial implementation of NaccacheStern cipher.</li>  
<li>Chris Viles <chris\_viles@yahoo.com> - fix to SignatureSubpacket critical bit setting.</li>  
<li>Pasi Eronen <Pasi.Eronen@nokia.com> - extra toString() support for ASN.1 library. Initial patch for large OID components.</li>  
<li>Lijun Liao <lijun.liao@rub.de> - performance enhancements for SHA family of digests. Bug report and patch for blank line handling in ArmoredInputStream.</li>  
<li>Maria Ivanova <maria.ivanova@gmail.com> - support for tags > 30 in ASN.1 parsing.</li>  
<li>Armin H&auml;berling <arminha@student.ethz.ch> - first cut of internationalisation, initial PKIX validation classes.</li>  
<li>Marius Schilder <mschilder@google.com> - main set of test vectors for Bleichenbacher's forgery attack.</li>  
<li>Xavier Le Vouch <xavier@brittanysoftware.com> - general code clean ups.</li>  
<li>Erik Tews <e\_tews@cdc.informatik.tu-darmstadt.de> - initial threaded random seed generator, constant-time PKCS#1.5 decoding</li>  
<li>Thomas Dixon <reikomusha@gmail.com> - initial implementations of TEA/XTEA, Salsa20, ISAAC, and Noekeon. XTEA enhancements.</li>  
<li>Frank Cornelis <info@frankcornelis.be>- addition of crlAccessMethod in X509ObjectIdentifiers.</li>  
<li>Rui Joaquim <rjoaquim@cc.isel.ipl.pt> - initial implementation of RSA blinding for signatures.</li>  
<li>David Stacey <DStacey@allantgroup.com> - addition of trust packet checking on revocation signatures in PGPSecretKeyRing.</li>  
<li>Martijn Brinkers <list@mitm.nl> - better exception handling in CMS enveloping, "just in time" modifications for CRL and Sequence evaluation.</li>  
<li>Julius Davies <juliusdavies@gmail.com> - additional modes and algorithm support in PEMReader</li>  
<li>Matthias <g@rtner.de> - GnuPG compatibility changes for PBEFileProcessor.</li>  
<li>Olga K&auml;thler <olga.kaethler@hjp consulting.com> - initial implementation of TeleTrusT EC curves, additional ISO 9797 MACs, contributions to EAC OIDs, addition of EAC algorithms to CMS Signing.</li>  
<li>Germano Rizzo <germano.rizzo@gmail.com> - initial implementation of CMac, EAX, HC-128, and HC-256, optimisations for Salsa20.</li>  
<li>N&uacute;ria Mar&iacute;acute; <numaa@hotmail.com> - patch for alternate data type recognition in CMSSignedDataParser.</li>  
<li>Janis Schuller <js@tzi.de> - addition of NotationData packets for OpenPGP.</li>  
<li>Michael Samblanet <mike@samblanet.com> - patches towards improved Sun/default provider support in CMS.</li>  
<li>Mike StJohns <mstjohns@comcast.net> - patches for supporting empty subject in X.509 certificate generation, noneWithECDSA.</li>  
<li>Ramon Keller <ramon.keller@gmx.ch> - patch to deal with null revocations return from other CRL in X509V2CRLGenerator.</li>  
<li>Mark Nelson <mark@nbr.com> - correction to excluded DN in name constraints processing for PKIX processing.</li>



<li>Eugene Golushkov <eugene\_gff&#064ukr.net> - mask fix to single byte read in TlsInputStream.</li>  
<li>Julien Pasquier <julienpasquier&#064free.fr> - additional classes for supporting signature policy and signer certificates in the ASN.1 esf and ess libraries.</li>  
<li>Peter Knopp <pknopp&#064mtg.de> - fix for named curve recognition in ECGOST key generation.</li>  
<li>Jakub Gwozdz <gwozdziu&#064rpg.pl> - addition of getTsa() to TimeStampTokenInfo.</li>  
<li>Bartosz Malkowski <bmalkow&#064tigase.org> - initial implementation of VMPC cipher, VMPCRandomGenerator, VMPCMac.</li>  
<li>Tal Yacobi <tal.yacobi&#064octavian-tech.com> - fix for issue in OpenPGP examples [#BJA-55].</li>  
<li>Massimiliano Ziccardi <massimiliano.ziccardi&#064gmail.com> - support for counter signature reading in CMS API, update for multiple counter signature attributes.</li>  
<li>Andrey Pavlenko <andrey.a.pavlenko&#064gmail.com> - security manager patch for PKCS1Encoding property check.</li>  
<li>Mike StJohns <mstjohns&#064comcast.net> - updates to KeyPurposeId</li>  
<li>J Ross Nicoll <jrn&#064jrn.me.uk> - improved exception handling for getInstance() in ASN.1 library.</li>  
<li>Matthew Stevenson <mavricknz&#064yahoo.com> - patch to constructor for CRMF CertSequence.</li>  
<li>Gabriele Contini <gcontini&#064hotpop.com> - identified a bug in ASN.1 library with handling of unterminated NDEF's.</li>  
<li>Roelof Naude <roelof.naude&#064epiuse.com> - patch for TLS client to send empty client certs in response to HP\_CERTIFICATE\_REQUEST.</li>  
<li>Patrick Peck <peck&#064signaturen.at> - identified problem with DERApplicationSpecific and high tag numbers in ASN.1 library.</li>  
<li>Michael LeMay <lemaymd&#064lemaymd.com> - identified problem with EAX [#BJA-93].</li>  
<li>Alex Dupre <ale&#064FreeBSD.org> - fix to use of Signature rather than SignatureSpi in provider [#BJA-90]. Addition of null provider use to SignedPublicKeyAndChallenge and PKCS10CertificationRequest [#BJA-102]</li>  
<li>Michael Schoene <michael&#064sigrid-und-michael.de> - fix of improper handling of null in ExtendedPKIXParameters.setTrustedACIssuers(), check for V2 signingCertificate attribute in TimeStampResponse.validate().</li>  
<li>Ion Larra&ntilde;aga <ilarra&#064s21sec.com> fix to default partial packet generation in BCPGOutputStream.</li>  
<li>Bob Kerns <bob.kerns&#064positscience.com> fix to hashCode for X509CertificateObject.</li>  
<li>Stefan Meyer <stefan.meyer&#064ewe.de> backport for PKIXCertPathValidator and SMIMESignedMailReviewer.</li>  
<li>Robert J. Moore <Robert.J.Moore&#064allanbank.com> speedups for OpenPGPCFB mode, clean room JCE patches.</li>  
<li>Rui Hodai <rui&#064po.ntts.co.jp> speed ups for Camellia implementation, CamelliaLightEngine.</li>  
<li>Emir Bucalovic <emir.bucalovic&#064mail.com> initial implementation of Grain-v1 and Grain-128.</li>  
<li>Torbjorn Svensson <tobbe79&#064gmail.com> initial implementation of Grain-v1 and Grain-128.</li>  
<li>Paul FitzPatrick <bouncycastle\_pfitz&#064fitzpatrick.cc> error message fix to X509LDAPCertStoreSpi, comparison fix to BCStrictStyle.</li>  
<li>Henrik Andersson <k.henrik.andersson&#064gmail.com> addition of UniqueIssuerID to certificate generation.</li>  
<li>Cagdas Cirit <cagdasirit&#064gmail.com> subjectAlternativeName fix for x509CertStoreSelector.</li>  
<li>Harakiri <harakiri\_23&#064yahoo.com> datahandler patch for attached parts in SMIME signatures.</li>  
<li>Pedro Henriques <pmahenriques&#064gmail.com> explicit bounds checking for DESKeyGenerator, code simplification for OAPEncoding.</li>  
<li>Lothar Kimmeringer <jjob&#064kimmeringer.de> verbose mode for ASN1Dump, support for DERExternal.</li>  
<li>Richard Farr <rfarr.se&#064gmail.com> initial SRP-6a implementation.</li>

- <li>Thomas Castiglione <castiglione@au.ibm.com> patch to encoding for CRMF OptionalValidity.</li>
- <li>Elisabetta Romani <eromani@sogei.it> patch for recognising multiple counter signatures.</li>
- <li>Robin Lundgren <r737lundgren@gmail.com> CMPCertificate constructor from X509CertificateStructure fix.</li>
- <li>Petr Kadlec <mormegil@centrum.cz> fix to sign extension key and IV problem in HC-128, HC-256.</li>
- <li>Andreas Antener <antener\_a@gmx.ch> fix to buffer reset in AsymmetricBufferedBlockCipher.</li>
- <li>Harendra Rawat <hsrawat@yahoo.com> fix for BERConstructedOctetString.</li>
- <li>Rolf Lindemann <lindemann@trustcenter.de> patch for PKCS12 key store to support more flexible attribute specifications [#BMA-42].</li>
- <li>Alex Artamonov <alexart.home@gmail.com> name look up patch for GOST-2001 parameters.</li>
- <li>Mike Lyons <mlyons@layer7tech.com> work arounds for EC JDK bug 6738532 and JSSE EC naming conventions.</li>
- <li>Chris Cole <chris\_h\_cole@yahoo.com> identified a problem handling null passwords when loading a BKS keystore.</li>
- <li>Tomas Krivanek <tom@atack.cz> added checking of Sender header to SignedMailValidator.</li>
- <li>Michael <emfau@t-online.de> correction of field error in getResponse method in CertRepMessage.</li>
- <li>Trevor Perrin <trevor@cryptography.com> addition of constant time equals to avoid possible timing attacks.</li>
- <li>Markus Kil&aring;s <markus@primekey.se> several enhancements to TimeStampResponseGenerator.</li>
- <li>Dario Novakovic <darionis@yahoo.com> fix for NPE when checking revocation reason on CRL without extensions.</li>
- <li>Michael Smith <msmith@cbnco.com> bug fixes and enhancements to the CMP and CRMF classes, initial Master List classes.</li>
- <li>Andrea Zilio <andrea.zilio@gmail.com> fix for PEM password encryption of private keys.</li>
- <li>Alex Birkett <alex@birkett.co.uk> added support for EC cipher suites in TLS client (RFC 4492) [#BJA-291].</li>
- <li>Wayne Grant <waynedgrant@gmail.com> additional OIDs for PKCS10 and certificate generation support.</li>
- <li>Frank Cornelis <info@frankcornelis.be> additional support classes for CADES, enhancements to OCSP classes.</li>
- <li>Jan Dittberner <jan@dittberner.info> addHeader patch for SMIME generator.</li>
- <li>Bob McGowan <boab.mcgoo@btinternet.com> patch to support different content and mgf digests in PSS signing.</li>
- <li>Ivo Matheis <i.matheis@seeburger.de> fix to padding verification in ISO-9796-1.</li>
- <li>Marco Sandrini <nessche@gmail.com> patch to add IV to ISO9797Alg3Mac.</li>
- <li>Alf Malf <alfilmalf@hotmail.com> removal of unnecessary limit in CMSContentInfoParser.</li>
- <li>Alfonso Massa <alfonso.massa@insiel.it> contributions to CMS time stamp classes.</li>
- <li>Giacomo Boccardo <gboccardo@unimaticaspa.it> initial work on CMSTimeStampedDataParser.</li>
- <li>Arnis Tartu <arnis@ut.ee> patches for dealing with OIDs with specific key sizes associated in CMS.</li>
- <li>Janusz Sikocinski <J.Sikocinski@gdzie.pl> addition of Features subpacket support to OpenPGP API.</li>
- <li>Juri Hudolejev <jhudolejev@gmail.com> JavaDoc fix to CMSSignedDataParser.</li>
- <li>Liane Velten <liane.velten@hjp-consulting.com> fine tuning of code for DHPParameters validation.</li>
- <li>Shawn Willden <swillden@google.com> additional functionality to PGPKKeyRing.</li>
- <li>Atanas Krachev <akrachev@gmail.com> added support for revocation signatures in OpenPGP.</li>
- <li>Mickael Laiking <mickael.laiking@keynectis.com> initial cut of EAC classes.</li>
- <li>Tim Buktu <tbuktu@hotmail.com> Initial implementation of NTRU signing and encryption.</li>
- <li>Bernd <rbernd@gmail.com> Fix for open of PGP literal data stream with UTF-8 naming.</li>
- <li>Steing Inge Morisbak <stein.inge.morisbak@BEKK.no> Test code for lower case Hex data in PEM

headers.</li>

<li>Andreas Schmid <andreas.schmid@ngtech.com> Additional expiry time check in PGPPublicKeys.</li>

<li>Phil Steitz <phil.steitz@gmail.com> Final patch eliminating JCE dependencies in the OpenPGP BC classes.</li>

<li>Ignat Korchagin <ignat.korchagin@gmail.com> Initial implementation of DSTU-4145-2002, long hash fix for DSTU-4145-2002.</li>

<li>Petar Petrov <p.petrov@bers-soft.com> Testing and debugging of UTF-8 OpenPGP passwords.</li>

<li>Daniel Fitzpatrick <daniel.f.nwr@gmail.com> Initial implementation of ephemeral key support for IES, initial implementations of RSA-KEM and ECIES-KEM, initial implementation of homogeneous projective coordinates for EC.</li>

<li>Andy Neilson <Andy.Neilson@quest.com>a further patches to deal with multiple providers and PEMReader.</li>

<li>Ted Shaw <xiao.xj@gmail.com> patch to MiscPEMGenerator for handling new PKCS10CertificationRequests.</li>

<li>Eleriseth <Eleriseth@WPECGLtYbVi8Rl6Y7Vzl2Lvd2EUVW99v3yNV3IWROG8.fms> speed up for SIC/CTR mode. Provider compatibility generalisations for EC operations.</li>

<li>Kenny Root <kenny@the-b.org> patch for issuerAltName, subjectAltName support in X509CertificateObject, BaseBlockCipher.getIV() patch for AEAD.</li>

<li>Maarten Bodewes <maarten.bodewes@gmail.com> initial implementation of HKDF and NIST SP 800-108 MAC based KDF functions.</li>

<li>Philip Clay <pilf\_b@yahoo.com> Initial implementation of J-PAKE.</li>

<li>Brian Carlstrom <bdc@carlstrom.com> compliance patches for some JCA/JCE keystore and cipher classes, miscellaneous code quality improvements, initial provider PBKDF2WithHmacSHA1 SecretKeyFactory.</li>

<li>Samuel Lid&eacute;n Borell <samuel@primekey.se> patch to add DSTU-4145 to DefaultSignatureAlgorithmFinder</li>

<li>Sergio Demian Lerner <sergiolerner@certimix.com> pointing out isInfinity issue in ECDSASigner signature verification.</li>

<li>Tim Whittington <Tim.Whittington@orionhealth.com> patch to remove extra init call in CMac, additional of Memoable interface for Digest classes, initial implementation of GMAC, further correctness tests for IV and reset processing in OCB, CCM, and block cipher reset. Initial implementation of Skein, XSalsa20, ChaCha, reduced round Salsa20, Threefish, and the Poly1305 MAC. Documentation updates. Added OCB support to Noekeon and CAST6 in the provider, exception testing for CTS, optimisations for CCM, provider support for AAD cipher methods, safe CipherInput/OutputStream implementations for use with AAD and subsequent bug fixes, cleanup after IDEA patent expiry, work on JCE SipHash support, optimisations for AESFastEngine, further work on EncodableDigest for SHA-2 digests, contributions to BCrypt/OpenBSDBCrypt, PGP API documentation and code quality work.</li>

<li>Marcus Lundblad <marcus.lundblad@primekey.se> patch for working around JDK jarsigner TSP bug, optional setting of IssuerSerial in TimeStampTokenGenerator, additional extensions enhancement for time stamp token generation.</li>

<li>Andrey Zhozhin <zhozhin@xrm.ru> patch for override of TSP SignerInfo attributes.</li>

<li>Sergey Tiunov <t5555d@gmail.com> initial cut of DVCS classes.</li>

<li>Damian Kolasa <fatfredy@gmail.com> ASN1Sequence patch for class cast issue in X9Curve.</li>

<li>Ash Hughes <ashley.hughes@blueyonder.co.uk> patches for supporting PGPSecretKeyRing/PGPSecretKeys encodings with empty private keys, initial code for PGPSignatureSubpacketVector.getEmbeddedSignatures().</li>

<li>Daniel Hirscher <dev@daniel-hirscher.de> patch to support parsing of explicit EC parameters in PEM files.</li>

<li>Daniele Ricci <daniele.athome@gmail.com> initial implementation of EC keys for OpenPGP and

RFC6637 support.

- Matti Aarnio <matti.aarnio@methics.fi> tweaks to any build to remove dependence on shell scripts. Initial SM3 digest implementation, some EC related code cleanups, JavaDoc improvements for ASN.1 classes.
- Babak Najafi <bnajafi@akamai.com> fixes to OpenPGP NotationData to prevent truncation problems.
- Eric Mueller <eric.mueller@sage.de> additional standard algorithm name lookups in JcaPEMKeyConverter.
- Mathias Herberts <Mathias.Herberts@gmail.com> fix to inOff usage in RFC3394WrapEngine.
- Daniil Ivanov <daniil.ivanov@gmail.com> addition of provider support for GOST HMAC SecretKeyFactory.
- Daniele Grasso <daniele.grasso86@gmail.com> contributions to final Key calculation code for SRP6.
- Andrey Utkin <cindrhc@gmail.com> patch to reconstruction of ECGOST keys from PrivateKeyInfo objects in provider classes.
- Arnis Tartu <arnis@ut.ee> checker for generated key vs OID in JceCMSContentEncryptorBuilder.
- AxelVDB <axel-vdb@riseup.net> initial implementation of Shacal2.
- Roberto Tyley <> further work on completing gradle build.
- Waldemar Dick <wdick@devmue.de> code improvement in x500 ASN.1 package.
- Sid Steward <sid.steward@pdfabs.com> code improvements to ASN1Boolean.
- Alex Klyubin <klyubin@google.com> AlgorithmParameters check for EC key agreement.
- Jonathan Gillett <gsoc.student@gmail.com> Initial support for block cipher IVs in IESEngine, IES MAC length check bug fix.
- Andreas Reiter <andreas.reiter@iaik.tugraz.at> Reported incomplete status of CertificateVerify processing in (D)TLS server, and provided fix.
- Kieran Miller <kieran.miller@gmail.com> initial implementation for RFC 5649 key wrap with padding.
- Oliver Ehli <ehli@arago.de> Additional support for BSI plain ECDSA in the provider.
- Daniel Heldt <Daniel.Heldt@cryptovision.com> Initial support for encodable state message digests.
- Robert Bushman <bouncycastle@traxel.com> Clean up of DirectKeySignature example.
- Maurice Aarts <aarts@riscure.com> updated to KDF generator to follow NIST SP 800-108.
- Franziskus Kiefer <https://github.com/franziskuskiefer> initial implementation of Cramer-Shoup.
- KB Sriram <mail\_kb@yahoo.com> testing for odd encodings for PGP User Attribute Subpackets.
- Marco Schulze <marco@nightlabs.de> Reported verification bug in GenericSigner.
- Martin Schaefer <https://github.com/martinschaefer> contributed a code-cleanup patch.
- Lijun Liao <ljun.liao@gmail.com> addition of getSignatureAlgorithmID to BasicOCSPResp.
- dstutz <https://github.com/dstutz> added iteration count setters to PKCS#12 PBE mac/key generator builders.
- Tobias Wich <tobias.wich@ecsec.de> Provided patch for TLS to work around servers sending Supported Elliptic Curves extension unexpectedly.
- Hauke Mehrtens <hauke@hauke-m.de> TLS patch to add ECDHE\_ECDSA CCM ciphersuites from RFC 7251.
- Daniel Zimmerman <dmz@galois.com> Further key quality improvements to RSAKeyPairGenerator.
- Jens Kapitzka <tj.kapitzka@schwarze-allianz.de> Iterable support in OpenPGP API, code cleanup in OpenPGP API.
- Johan Eklund <johan@primekey.se> update to RFC 6960 for OCSPObjectIdentifiers.
- nikosn <https://github.com/nikosn> Fix to encoding of EC private keys to ensure encoding matches order length.
- Axel von dem Bruch <axel-vdb@riseup.net> Contributions to BCrypt/OpenBSDBCrypt, original version of Blake2bDigest.
- Derek Atkins <derek@ihftf.com> Documentation fixes to X9ObjectIdentifiers.

- <li>Peter Jr Halicky <peto@halicky.sk> Correction to notification/error message handling in SignedMailValidator.</li>
- <li>IartiguePierre<https://github.com/IartiguePierre> Fix for counter signature SID in CMSSignedData.</li>
- <li>Thomas Belot<thomas.belot+BC@gmail.com> initial CertPathLoopTest for demonstrating stack overflow issue.</li>
- <li>Rich DiCroce<https://github.com/rdicroce> Initial implementation of server-side TLS-SRP support. TLS API extension to support non-blocking usage.</li>
- <li>Björn Kautler<https://github.com/Vampire> Refinements to cert path validation (authority key addition, certificate order preservation).</li>
- <li>Dominik Schürmann<https://github.com/dschuermann> method for returning signatures/verifications without user IDs on PGPPublicKey, method for exposing S2K in PGPSecretKey, constants for GNU protection modes in S2K classes, optional version header for armored output.</li>
- <li>Michael <MSKnete@gmail.com> initial fix for bitStrength issue for OpenPGP EC keys.</li>
- <li>Tobias Wagner <tobias.wagner@n-design.de> Fix SecureRandom handling in BcAsymmetricKeyWrapper [#BJA-536].</li>
- <li>Sergio Giro <sgiro@gmail.com> Fixed adding of additional stores from CRL distribution point [#BJA-537]. Fixed missing null check for CRL certificate issuer [#BJA-538], removal of risky zeroisation code in PBE.java, check for salt in PBEKeys that require it.</li>
- <li>bschuetter<https://github.com/bschuetter> Fixed typo in DefaultSignatureAlgorithmIdentifierFinder, additional methods on CMSSignedDataParser.</li>
- <li>Leonard Dallot<https://github.com/dallotTazTag> Fix to S2K usage of none on changing passwords on keys without passwords originally.</li>
- <li>Jan Willem Janssen <j.w.janssen@bouncycastle.nl> Support for DSAParameters in lightweight SubjectPublicKeyInfoFactory, initial content signer verifier for BC lightweight EC.</li>
- <li>Sebastian Oerding <sebastian.oerding@robotron.de> Fixes to toString() in x509.CertificatePolicies.</li>
- <li>Kai Kramer <kai.kramer@gmail.com> Code to deal with orphaned chain certificates in the PKCS#12 KeyStore.</li>
- <li>Benoit Charles <benoit.charles@opentrust.com> Fix for IES data length check on decryption.</li>
- <li>Niko <nfink95@gmail.com> fix to cast issue in getOutputSize() for ECIES.</li>
- <li>akwizgran<https://github.com/akwizgran> Fixed clone of key in Blake2bDigest copy constructor, blake2b reset issue for variant keys.</li>
- <li>Matthias Edelhoff <Matthias.Edelhoff@cryptovision.com> BasicConstraintsValidation pathlen fix in PKIX certpath classes.</li>
- <li>Lukasz Deputat <lukasz.deputat@gmail.com> Fixed bugs in TlsUtils read methods [#BJA-592].</li>
- <li>Justin Ludwig <https://github.com/justinludwig> Iterator fix for PGPObjectFactory to handle stream packets at start of iterated data.</li>
- <li>André Berenguel <https://github.com/aberenguel> Fix to include ECNamedCurveSpec in EC AlgorithmParameterSpi</li>
- <li>Slawomir Jaranowski<https://github.com/slawekjaranowski> Patch to make cipher/hash/signature name methods in PGP internal API public.</li>
- <li>Andrey Vasilyev<https://github.com/andrey-vasilyev> Initial implementation of GOST R 34.11-2012.</li>
- <li>William Glanton <>wglanton77@gmail.com> Fixed bug in Poly1305 [#BJA-620].</li>
- <li>jdvorak001<https://github.com/jdvorak001> Speed improvements for ASN.1 ObjectIdentifier cache.</li>
- <li>Joseph Naegele <jnaegele@grierforensics.com> Patch for handling multiple certificates in a DANE SMIMEA entry.</li>
- <li>Andrew Bonventre<https://github.com/andybons> NullPointer patch for WNAfUtil.</li>
- <li>The Google Security Team (Project Wycheproof) <https://github.com/google/wycheproof> defect analysis and additional test cases for the provider.</li>

- <li>Gorka Irazoqui <girazoki@wpi.edu> from Intel Security Center of Excellence <https://security-center.intel.com/> detection of the issue with AESFastEngine (CVE-2016-1000339), additional suggestions for improvement to hardening of AESEngine.</li>
- <li>Joerg Senekowitsch <joerg.senekowitsch@veridos.com> patch to deal with hard coded boolean in EACECDSAPublicKey.</li>
- <li>Alexandr Krivoshta <wipe@ya.ru> N4 calculation fix to GOFB mode.</li>
- <li>Artem Storozhuk <storojs72@gmail.com> N4 calculation fix to GOFB mode.</li>
- <li>Na Yu <na.yu@samsung.com> Constructor patches to CMC PKIData.</li>
- <li>Evangelos Karatsiolis <ekaratsiolis@mtg.de> Corrected use of explicit tagging in X.509 PolicyConstraints class.</li>
- <li>VivleSoren <https://github.com/VivleSoren> additional constructor for McElieceCCA2PrivateKeyParameters.</li>
- <li>mtausig <https://github.com/mtausig> JavaDoc fix for MCSEncryptedDataGenerator.</li>
- <li>Anders Schack-Mulligen <https://github.com/aschackmull> code cleanups for CMSSignedDataParser, BrokenKDF2BytesGenerator.</li>
- <li>Sebastian Wolfgang Roland <sebastianwolfgang.roland@stud.tu-darmstadt.de> Initial XMSS/XMSS-MT implementation.</li>
- <li>didisoft <https://github.com/didisoft> test code for PGP signature removal involving user ids.</li>
- <li>Mike Safonov<https://github.com/MikeSafonov> initial implementation of GOST3410-2012 for light weight provider and JCA</li>
- <li>Artem Storozhuk <storojs72@gmail.com> initial implementation of DSTU7564 (digest) and DSTU7624 (cipher) and their associated modes.</li>
- <li>Andreas Glaser <andreas.glaser@gi-de.com> patch to recognise ANSSI curves for PKCS#10 requests.</li>

</ul>  
</body>  
</html>

# 1.237 libthai 0.1.14 9.e17

## 1.237.1 Available under license :

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# 1.238 libjpeg-turbo 1.2.90 8.el7

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README for release 6b of 27-Mar-1998

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DOCUMENTATION ROADMAP

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This file contains the following sections:

OVERVIEW        General description of JPEG and the IJG software.  
LEGAL ISSUES    Copyright, lack of warranty, terms of distribution.

REFERENCES      Where to learn more about JPEG.  
ARCHIVE LOCATIONS   Where to find newer versions of this software.  
RELATED SOFTWARE    Other stuff you should get.  
FILE FORMAT WARS    Software \*not\* to get.  
TO DO                Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

install.doc      How to configure and install the IJG software.  
usage.doc        Usage instructions for cjpeg, djpeg, jpegtran,  
                  rdjpgcom, and wrjpgcom.  
\*.1              Unix-style man pages for programs (same info as usage.doc).  
wizard.doc       Advanced usage instructions for JPEG wizards only.  
change.log       Version-to-version change highlights.

Programmer and internal documentation:

libjpeg.doc      How to use the JPEG library in your own programs.  
example.c        Sample code for calling the JPEG library.  
structure.doc    Overview of the JPEG library's internal structure.  
filelist.doc     Road map of IJG files.  
coderrules.doc   Coding style rules --- please read if you contribute code.

Please read at least the files install.doc and usage.doc. Useful information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

## OVERVIEW

=====

This package contains C software to implement JPEG image compression and decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images. JPEG is intended for compressing "real-world" scenes; line drawings, cartoons and other non-realistic images are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these

processes, although some uncommon parameter settings aren't implemented yet. For legal reasons, we are not distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.

In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application. We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

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The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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## REFERENCES

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We highly recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is Wallace, Gregory K. "The JPEG Still Picture Compression Standard", Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44. (Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is available at <ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look

at a full implementation, you've got one here...

The best full description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging \$95 for Part 1 and \$47 for Part 2, plus 7% shipping/handling. The standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

Literature Department  
C-Cube Microsystems, Inc.  
1778 McCarthy Blvd.  
Milpitas, CA 95035  
phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at <ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz>. There is also a plain text version at <ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz>, but it is missing the figures.

The TIFF 6.0 file format specification can be obtained by FTP from <ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 (Compression tag 7). Copies of this Note can be obtained from <ftp.sgi.com> or

from <ftp://ftp.uu.net/graphics/jpeg/>. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note. libtiff is available from <ftp://ftp.sgi.com/graphics/tiff/>.

## ARCHIVE LOCATIONS

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The "official" archive site for this software is <ftp.uu.net> (Internet address 192.48.96.9). The most recent released version can always be found there in directory [graphics/jpeg](ftp://ftp.uu.net/graphics/jpeg/). This particular version will be archived as <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact [help@uunet.uu.net](mailto:help@uunet.uu.net) for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only <ftp.uu.net> is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (<ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/>), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 "JPEG Tools". Again, these versions may sometimes lag behind the <ftp.uu.net> release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups <comp.graphics.misc>, <news.answers>, and other groups. It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/> and other <news.answers> archive sites, including the official <news.answers> archive at <rtfm.mit.edu>: <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>. If you don't have Web or FTP access, send e-mail to [mail-server@rtfm.mit.edu](mailto:mail-server@rtfm.mit.edu) with body

- send <usenet/news.answers/jpeg-faq/part1>
- send <usenet/news.answers/jpeg-faq/part2>

## RELATED SOFTWARE

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Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free

PBMPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites, notably <ftp://wuarchive.wustl.edu/graphics/packages/NetPBM/>. Unfortunately PBMPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from <ftp://havefun.stanford.edu/pub/jpeg/>. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

## FILE FORMAT WARS

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Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read. (For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation. We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF. SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an official standard rather than an informal one. At this point it is unclear whether SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, open format standards for JPEG files. Don't



use a proprietary file format!

TO DO

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The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to [jpeg-info@uunet.uu.net](mailto:jpeg-info@uunet.uu.net).

## 1.239 libxrandr 1.5.1 2.el7

### 1.239.1 Available under license :

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## 1.240 pycurl 7.19.0-19.el7

## 1.240.1 Available under license :

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Version 2.1, February 1999

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The Independent JPEG Group's JPEG software

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README for release 6b of 27-Mar-1998

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This distribution contains the sixth public release of the Independent JPEG  
Group's free JPEG software. You are welcome to redistribute this software and  
to use it for any purpose, subject to the conditions under LEGAL ISSUES, below.

Serious users of this software (particularly those incorporating it into  
larger programs) should contact IJG at jpeg-info@uunet.uu.net to be added to  
our electronic mailing list. Mailing list members are notified of updates  
and have a chance to participate in technical discussions, etc.

This software is the work of Tom Lane, Philip Gladstone, Jim Boucher,  
Lee Crocker, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi,

Guido Vollbeding, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the official ISO JPEG standards committee.

## DOCUMENTATION ROADMAP

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This file contains the following sections:

OVERVIEW        General description of JPEG and the IJG software.  
LEGAL ISSUES    Copyright, lack of warranty, terms of distribution.  
REFERENCES     Where to learn more about JPEG.  
ARCHIVE LOCATIONS Where to find newer versions of this software.  
RELATED SOFTWARE Other stuff you should get.  
FILE FORMAT WARS Software \*not\* to get.  
TO DO           Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

install.doc    How to configure and install the IJG software.  
usage.doc      Usage instructions for cjpeg, djpeg, jpegtran,  
                 rdjpgcom, and wrjpgcom.  
\*.1            Unix-style man pages for programs (same info as usage.doc).  
wizard.doc     Advanced usage instructions for JPEG wizards only.  
change.log     Version-to-version change highlights.

Programmer and internal documentation:

libjpeg.doc    How to use the JPEG library in your own programs.  
example.c      Sample code for calling the JPEG library.  
structure.doc   Overview of the JPEG library's internal structure.  
filelist.doc   Road map of IJG files.  
coderules.doc  Coding style rules --- please read if you contribute code.

Please read at least the files install.doc and usage.doc. Useful information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

## OVERVIEW

=====

This package contains C software to implement JPEG image compression and

decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images. JPEG is intended for compressing "real-world" scenes; line drawings, cartoons and other non-realistic images are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet. For legal reasons, we are not distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.

In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application. We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

We welcome the use of this software as a component of commercial products. No royalty is required, but we do ask for an acknowledgement in product documentation, as described under LEGAL ISSUES.

## LEGAL ISSUES

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In plain English:

1. We don't promise that this software works. (But if you find any bugs, please let us know!)
2. You can use this software for whatever you want. You don't have to pay us.
3. You may not pretend that you wrote this software. If you use it in a program, you must acknowledge somewhere in your documentation that you've used the IJG code.

In legalese:

The authors make NO WARRANTY or representation, either express or implied, with respect to this software, its quality, accuracy, merchantability, or fitness for a particular purpose. This software is provided "AS IS", and you, its user, assume the entire risk as to its quality and accuracy.

This software is copyright (C) 1991-1998, Thomas G. Lane.  
All Rights Reserved except as specified below.

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- (1) If any part of the source code for this software is distributed, then this README file must be included, with this copyright and no-warranty notice unaltered; and any additions, deletions, or changes to the original files must be clearly indicated in accompanying documentation.
- (2) If only executable code is distributed, then the accompanying documentation must state that "this software is based in part on the work of the Independent JPEG Group".
- (3) Permission for use of this software is granted only if the user accepts full responsibility for any undesirable consequences; the authors accept NO LIABILITY for damages of any kind.

These conditions apply to any software derived from or based on the IJG code, not just to the unmodified library. If you use our work, you ought to acknowledge us.

Permission is NOT granted for the use of any IJG author's name or company name in advertising or publicity relating to this software or products derived from it. This software may be referred to only as "the Independent JPEG Group's software".

We specifically permit and encourage the use of this software as the basis of commercial products, provided that all warranty or liability claims are assumed by the product vendor.

ansi2knr.c is included in this distribution by permission of L. Peter Deutsch,

sole proprietor of its copyright holder, Aladdin Enterprises of Menlo Park, CA. ansi2knr.c is NOT covered by the above copyright and conditions, but instead by the usual distribution terms of the Free Software Foundation; principally, that you must include source code if you redistribute it. (See the file ansi2knr.c for full details.) However, since ansi2knr.c is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

We are required to state that

"The Graphics Interchange Format(c) is the Copyright property of CompuServe Incorporated. GIF(sm) is a Service Mark property of CompuServe Incorporated."

## REFERENCES

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We highly recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is Wallace, Gregory K. "The JPEG Still Picture Compression Standard", Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44. (Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is

available at <ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

The best full description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging \$95 for Part 1 and \$47 for Part 2, plus 7% shipping/handling. The standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

Literature Department  
C-Cube Microsystems, Inc.  
1778 McCarthy Blvd.

Milpitas, CA 95035

phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at <ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz>. There is also a plain text version at <ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz>, but it is missing the figures.

The TIFF 6.0 file format specification can be obtained by FTP from <ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 (Compression tag 7). Copies of this Note can be obtained from <ftp.sgi.com> or from <ftp://ftp.uu.net/graphics/jpeg/>. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note. libtiff is available from <ftp://ftp.sgi.com/graphics/tiff/>.

#### ARCHIVE LOCATIONS

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The "official" archive site for this software is <ftp.uu.net> (Internet address 192.48.96.9). The most recent released version can always be found there in directory <graphics/jpeg>. This particular version will be archived as <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact [help@uunet.uu.net](mailto:help@uunet.uu.net) for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only <ftp.uu.net> is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (<ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/>), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 "JPEG Tools". Again, these versions may sometimes lag behind the <ftp.uu.net> release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups <comp.graphics.misc>, <news.answers>, and other groups. It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/> and other <news.answers> archive sites, including the official <news.answers> archive at <rtfm.mit.edu>: <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>. If you don't have Web or FTP access, send e-mail to [mail-server@rtfm.mit.edu](mailto:mail-server@rtfm.mit.edu) with body



send usenet/news.answers/jpeg-faq/part1

send usenet/news.answers/jpeg-faq/part2

## RELATED SOFTWARE

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Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free PBPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites, notably <ftp://wuarchive.wustl.edu/graphics/graphics/packages/NetPBM/>. Unfortunately PBPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from <ftp://havefun.stanford.edu/pub/jpeg/>. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

## FILE FORMAT WARS

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Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read. (For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation. We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF.

SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an official standard rather than an informal one. At this point it is unclear whether SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, open format standards for JPEG files. Don't use a proprietary file format!

TO DO

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The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to [jpeg-info@uunet.uu.net](mailto:jpeg-info@uunet.uu.net).

## 1.245 perl-time-hires 1.9725-3.e17

### 1.245.1 Available under license :

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

/\*

-----

ppport.h -- Perl/Pollution/Portability Version 3.13

Automatically created by Devel::PPPort running under perl 5.008008.

Do NOT edit this file directly! -- Edit PPPort\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

-----  
SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.13

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help            show short help

--version         show version

--patch=file       write one patch file with changes

--copy=suffix      write changed copies with suffix

--diff=program     use diff program and options

--compat-version=version   provide compatibility with Perl version

--cplusplus       accept C++ comments

--quiet           don't output anything except fatal errors

--nodiag           don't show diagnostics

--nohints          don't show hints

--nochanges        don't suggest changes

--nofilter         don't filter input files

--strip            strip all script and doc functionality from  
                    ppport.h

--list-provided     list provided API

--list-unsupported   list unsupported API

--api-info=name     show Perl API portability information

=head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.10.0.

=head1 OPTIONS

=head2 --help

Display a brief usage summary.

=head2 --version

Display the version of F<ppport.h>.

=head2 --patch=I<file>

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

=head2 --copy=I<suffix>

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does not require any external programs. Note that this does not automatically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither C<--patch> or C<--copy> are given, the default is to simply print the diffs for each file. This requires either C<Text::Diff> or a C<diff> program to be installed.

=head2 --diff=I<program>

Manually set the diff program and options to use. The default is to use C<Text::Diff>, when installed, and output unified context diffs.

=head2 --compat-version=I<version>

Tell F<ppport.h> to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of F<ppport.h> if you intend to be backward compatible only down to a certain Perl version.

=head2 --cplusplus

Usually, F<ppport.h> will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs F<ppport.h> to leave C++

comments untouched.

=head2 --quiet

Be quiet. Don't print anything except fatal errors.

=head2 --nodiag

Don't output any diagnostic messages. Only portability alerts will be printed.

=head2 --nohints

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

=head2 --nochanges

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

=head2 --nofilter

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

=head2 --strip

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort> module is installed.

=head2 --list-provided

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

=head2 --list-unsupported

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

=head2 --api-info=I<name>

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

=head1 DESCRIPTION

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more C<#define>s in your source code before the inclusion of F<ppport.h>.

These functions or variables will be marked C<explicit> in the list shown by C<--list-provided>.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either C<static> or global variants.

For a C<static> function or variable (used only in a single source file), use:

```
#define NEED_function
#define NEED_variable
```

For a global function or variable (used in multiple source files),  
use:

```
#define NEED_function_GLOBAL
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the  
same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL
grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSVpv_nshare()	NEED_newSVpv_nshare	NEED_newSVpv_nshare_GLOBAL
sv_2pv_flags()	NEED_sv_2pv_flags	NEED_sv_2pv_flags_GLOBAL
sv_2pvbyte()	NEED_sv_2pvbyte	NEED_sv_2pvbyte_GLOBAL
sv_catpvf_mg()	NEED_sv_catpvf_mg	NEED_sv_catpvf_mg_GLOBAL
sv_catpvf_mg_nocontext()	NEED_sv_catpvf_mg_nocontext	NEED_sv_catpvf_mg_nocontext_GLOBAL
sv_pvn_force_flags()	NEED_sv_pvn_force_flags	NEED_sv_pvn_force_flags_GLOBAL
sv_setpvf_mg()	NEED_sv_setpvf_mg	NEED_sv_setpvf_mg_GLOBAL
sv_setpvf_mg_nocontext()	NEED_sv_setpvf_mg_nocontext	NEED_sv_setpvf_mg_nocontext_GLOBAL
vload_module()	NEED_vload_module	NEED_vload_module_GLOBAL
vnewSVpvf()	NEED_vnewSVpvf	NEED_vnewSVpvf_GLOBAL
warnern()	NEED_warnern	NEED_warnern_GLOBAL

To avoid namespace conflicts, you can change the namespace of the  
explicitly exported functions / variables using the C<DPPP\_NAMESPACE>  
macro. Just C<#define> the macro before including C<ppport.h>:

```
#define DPPP_NAMESPACE MyOwnNamespace_
#include "ppport.h"
```

The default namespace is C<DPPP\_>.

=back

The good thing is that most of the above can be checked by running `F<ppport.h>` on your source code. See the next section for details.

## =head1 EXAMPLES

To verify whether `F<ppport.h>` is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, `F<ppport.h>` can be run as a Perl script to check your source code. Simply say:

```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different `C<diff>` program or options, using the `C<--diff>` option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the `C<newSVpv>` function, use:

```
perl ppport.h --api-info=newSVpv
```



Since the argument to C<--api-info> can be a regular expression, you can use

```
perl pport.h --api-info=/_nomg$/
```

to display portability information for all C<\_nomg> functions or

```
perl pport.h --api-info=./
```

to display information for all known API elements.

## =head1 BUGS

If this version of F<pport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPPort> are available on CPAN before sending a bug report.

If F<pport.h> was generated using the latest version of C<Devel::PPPort> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPort> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2007, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPort>.

=cut

use strict;

# Disable broken TRIE-optimization

BEGIN { eval '\${^RE\_TRIE\_MAXBUF} = -1' if \$] >= 5.009004 && \$] <= 5.009005 }

my \$VERSION = 3.13;

```
my %opt = (  
  quiet => 0,  
  diag  => 1,  
  hints => 1,  
  changes => 1,  
  cplusplus => 0,  
  filter => 1,  
  strip  => 0,  
  version => 0,  
);
```

```
my($ppport) = $0 =~ /([\w.]+)$/;  
my $LF = '(?:\r\n|[\r\n])'; # line feed  
my $HS = "[\t]";          # horizontal whitespace
```

# Never use C comments in this file!

```
my $ccs = '/.*';  
my $cce = '.*.'/;  
my $rcs = quotemeta $ccs;  
my $rce = quotemeta $cce;
```

```

eval {
require Getopt::Long;
Getopt::Long::GetOptions(\%opt, qw(
  help quiet diag! filter! hints! changes! cplusplus strip version
  patch=s copy=s diff=s compat-version=s
  list-provided list-unsupported api-info=s
)) or usage();
};

if ($@ and grep /^-/, @ARGV) {
  usage() if "@ARGV" =~ /^--?h(?:elp)?$/;
  die "Getopt::Long not found. Please don't use any options.\n";
}

if ($opt{version}) {
  print "This is $0 $VERSION.\n";
  exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
  my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
  if ($@) {
    die "Invalid version number format: '$opt{'compat-version'}'\n";
  }
  die "Only Perl 5 is supported\n" if $r != 5;
  die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
  $opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
  $opt{'compat-version'} = 5;
}

my %API = map { /^(\w+)\|([^\|]*)\|([^\|]*)\|(\w*)$/
  ? ( $1 => {
    ($2          ? ( base   => $2 ) : ()),
    ($3          ? ( todo   => $3 ) : ()),
    (index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
    (index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
    (index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
  } )
  : die "invalid spec: $_" } qw(
AvFILLp|5.004050||p
AvFILL|||
CLASS|||n
CX_CURPAD_SAVE|||

```

CX\_CURPAD\_SV|||  
CopFILEAV|5.006000||p  
CopFILEGV\_set|5.006000||p  
CopFILEGV|5.006000||p  
CopFILESV|5.006000||p  
CopFILE\_set|5.006000||p  
CopFILE|5.006000||p  
CopSTASHPV\_set|5.006000||p  
CopSTASHPV|5.006000||p  
CopSTASH\_eq|5.006000||p  
CopSTASH\_set|5.006000||p  
CopSTASH|5.006000||p  
CopyD|5.009002||p  
Copy|||  
CvPADLIST|||  
CvSTASH|||  
CvWEAKOUTSIDE|||  
DEFSV|5.004050||p  
END\_EXTERN\_C|5.005000||p  
ENTER|||  
ERRSV|5.004050||p  
EXTEND|||  
EXTERN\_C|5.005000||p  
F0convert|||n  
FREEMPS|||  
GIMME\_V||5.004000|n  
GIMME|||n  
GROK\_NUMERIC\_RADIX|5.007002||p  
G\_ARRAY|||  
G\_DISCARD|||  
G\_EVAL|||  
G\_NOARGS|||  
G\_SCALAR|||  
G\_VOID||5.004000|  
GetVars|||  
GvSV|||  
Gv\_AMupdate|||  
HEf\_SVKEY||5.004000|  
HeHASH||5.004000|  
HeKEY||5.004000|  
HeKLEN||5.004000|  
HePV||5.004000|  
HeSVKEY\_force||5.004000|  
HeSVKEY\_set||5.004000|  
HeSVKEY||5.004000|  
HeVAL||5.004000|  
HvNAME|||  
INT2PTR|5.006000||p

IN\_LOCALE\_COMPILETIME|5.007002||p  
IN\_LOCALE\_RUNTIME|5.007002||p  
IN\_LOCALE|5.007002||p  
IN\_PERL\_COMPILETIME|5.008001||p  
IS\_NUMBER\_GREATER\_THAN\_UV\_MAX|5.007002||p  
IS\_NUMBER\_INFINITY|5.007002||p  
IS\_NUMBER\_IN\_UV|5.007002||p  
IS\_NUMBER\_NAN|5.007003||p  
IS\_NUMBER\_NEG|5.007002||p  
IS\_NUMBER\_NOT\_INT|5.007002||p  
IVSIZE|5.006000||p  
IVTYPE|5.006000||p  
IVdf|5.006000||p  
LEAVE|||  
LVRET|||  
MARK|||  
MULTICALL||5.009005|  
MY\_CXT\_CLONE|5.009002||p  
MY\_CXT\_INIT|5.007003||p  
MY\_CXT|5.007003||p  
MoveD|5.009002||p  
Move|||  
NOOP|5.005000||p  
NUM2PTR|5.006000||p  
NVTYPE|5.006000||p  
NVef|5.006001||p  
NVff|5.006001||p  
NVgf|5.006001||p  
Newxc|5.009003||p  
Newxz|5.009003||p  
Newx|5.009003||p  
Nullav|||  
Nullch|||  
Nullcv|||  
Nullhv|||  
Nullsv|||  
ORIGMARK|||  
PAD\_BASE\_SV|||  
PAD\_CLONE\_VARS|||  
PAD\_COMPNAME\_FLAGS|||  
PAD\_COMPNAME\_GEN\_set|||  
PAD\_COMPNAME\_GEN|||  
PAD\_COMPNAME\_OURSTASH|||  
PAD\_COMPNAME\_PV|||  
PAD\_COMPNAME\_TYPE|||  
PAD\_RESTORE\_LOCAL|||  
PAD\_SAVE\_LOCAL|||  
PAD\_SAVE\_SETNULLPAD|||

PAD\_SETSV|||  
PAD\_SET\_CUR\_NOSAVE|||  
PAD\_SET\_CUR|||  
PAD\_SV|||  
PAD\_SV|||  
PERL\_ABS|5.008001||p  
PERL\_BCDVERSION|5.009005||p  
PERL\_GCC\_BRACE\_GROUPS\_FORBIDDEN|5.008001||p  
PERL\_HASH|5.004000||p  
PERL\_INT\_MAX|5.004000||p  
PERL\_INT\_MIN|5.004000||p  
PERL\_LONG\_MAX|5.004000||p  
PERL\_LONG\_MIN|5.004000||p  
PERL\_MAGIC\_arylen|5.007002||p  
PERL\_MAGIC\_backref|5.007002||p  
PERL\_MAGIC\_bm|5.007002||p  
PERL\_MAGIC\_collxfrm|5.007002||p  
PERL\_MAGIC\_dbfile|5.007002||p  
PERL\_MAGIC\_dbline|5.007002||p  
PERL\_MAGIC\_defelem|5.007002||p  
PERL\_MAGIC\_envelem|5.007002||p  
PERL\_MAGIC\_env|5.007002||p  
PERL\_MAGIC\_ext|5.007002||p  
PERL\_MAGIC\_fm|5.007002||p  
PERL\_MAGIC\_glob|5.009005||p  
PERL\_MAGIC\_isaelem|5.007002||p  
PERL\_MAGIC\_isa|5.007002||p  
PERL\_MAGIC\_mutex|5.009005||p  
PERL\_MAGIC\_nkeys|5.007002||p  
PERL\_MAGIC\_overload\_elem|5.007002||p  
PERL\_MAGIC\_overload\_table|5.007002||p  
PERL\_MAGIC\_overload|5.007002||p  
PERL\_MAGIC\_pos|5.007002||p  
PERL\_MAGIC\_qr|5.007002||p  
PERL\_MAGIC\_regdata|5.007002||p  
PERL\_MAGIC\_regdatum|5.007002||p  
PERL\_MAGIC\_regex\_global|5.007002||p  
PERL\_MAGIC\_shared\_scalar|5.007003||p  
PERL\_MAGIC\_shared|5.007003||p  
PERL\_MAGIC\_sigelem|5.007002||p  
PERL\_MAGIC\_sig|5.007002||p  
PERL\_MAGIC\_substr|5.007002||p  
PERL\_MAGIC\_sv|5.007002||p  
PERL\_MAGIC\_taint|5.007002||p  
PERL\_MAGIC\_tiedelem|5.007002||p  
PERL\_MAGIC\_tiedscalar|5.007002||p  
PERL\_MAGIC\_tied|5.007002||p  
PERL\_MAGIC\_utf8|5.008001||p

PERL\_MAGIC\_uvar\_elem|5.007003||p  
PERL\_MAGIC\_uvar|5.007002||p  
PERL\_MAGIC\_vec|5.007002||p  
PERL\_MAGIC\_vstring|5.008001||p  
PERL\_QUAD\_MAX|5.004000||p  
PERL\_QUAD\_MIN|5.004000||p  
PERL\_REVISION|5.006000||p  
PERL\_SCAN\_ALLOW\_UNDERSCORES|5.007003||p  
PERL\_SCAN\_DISALLOW\_PREFIX|5.007003||p  
PERL\_SCAN\_GREATER\_THAN\_UV\_MAX|5.007003||p  
PERL\_SCAN\_SILENT\_ILLDIGIT|5.008001||p  
PERL\_SHORT\_MAX|5.004000||p  
PERL\_SHORT\_MIN|5.004000||p  
PERL\_SIGNALS\_UNSAFE\_FLAG|5.008001||p  
PERL\_SUBVERSION|5.006000||p  
PERL\_UCHAR\_MAX|5.004000||p  
PERL\_UCHAR\_MIN|5.004000||p  
PERL\_UINT\_MAX|5.004000||p  
PERL\_UINT\_MIN|5.004000||p  
PERL\_ULONG\_MAX|5.004000||p  
PERL\_ULONG\_MIN|5.004000||p  
PERL\_UNUSED\_ARG|5.009003||p  
PERL\_UNUSED\_CONTEXT|5.009004||p  
PERL\_UNUSED\_DECL|5.007002||p  
PERL\_UNUSED\_VAR|5.007002||p  
PERL\_UQUAD\_MAX|5.004000||p  
PERL\_UQUAD\_MIN|5.004000||p  
PERL\_USE\_GCC\_BRACE\_GROUPS|5.009004||p  
PERL\_USHORT\_MAX|5.004000||p  
PERL\_USHORT\_MIN|5.004000||p  
PERL\_VERSION|5.006000||p  
PL\_DBsignal|5.005000||p  
PL\_DBsingle|||pn  
PL\_DBsub|||pn  
PL\_DBtrace|||pn  
PL\_Sv|5.005000||p  
PL\_compiling|5.004050||p  
PL\_copline|5.009005||p  
PL\_curcop|5.004050||p  
PL\_curstash|5.004050||p  
PL\_debstash|5.004050||p  
PL\_defgv|5.004050||p  
PL\_diehook|5.004050||p  
PL\_dirty|5.004050||p  
PL\_dowarn|||pn  
PL\_errgv|5.004050||p  
PL\_expect|5.009005||p  
PL\_hexdigit|5.005000||p

PL\_hints|5.005000||p  
PL\_last\_in\_gv|||n  
PL\_laststatval|5.005000||p  
PL\_modglobal||5.005000|n  
PL\_na|5.004050||pn  
PL\_no\_modify|5.006000||p  
PL\_ofs\_sv|||n  
PL\_perl\_destruct\_level|5.004050||p  
PL\_perldb|5.004050||p  
PL\_ppaddr|5.006000||p  
PL\_rsfilters|5.004050||p  
PL\_rsfpl|5.004050||p  
PL\_rs|||n  
PL\_signals|5.008001||p  
PL\_stack\_base|5.004050||p  
PL\_stack\_sp|5.004050||p  
PL\_statcache|5.005000||p  
PL\_stdingv|5.004050||p  
PL\_sv\_arenaroot|5.004050||p  
PL\_sv\_no|5.004050||pn  
PL\_sv\_undef|5.004050||pn  
PL\_sv\_yes|5.004050||pn  
PL\_tainted|5.004050||p  
PL\_tainting|5.004050||p  
POP\_MULTICALL||5.009005|  
POPi|||n  
POPi|||n  
POPn|||n  
POPpbytex||5.007001|n  
POPpx||5.005030|n  
POPp|||n  
POPs|||n  
PTR2IV|5.006000||p  
PTR2NV|5.006000||p  
PTR2UV|5.006000||p  
PTR2ul|5.007001||p  
PTRV|5.006000||p  
PUSHMARK|||  
PUSH\_MULTICALL||5.009005|  
PUSHi|||  
PUSHmortal|5.009002||p  
PUSHn|||  
PUSHp|||  
PUSHs|||  
PUSHu|5.004000||p  
PUTBACK|||  
PerlIO\_clearerr||5.007003|  
PerlIO\_close||5.007003|



PerlIO\_context\_layers|5.009004|  
PerlIO\_eof|5.007003|  
PerlIO\_error|5.007003|  
PerlIO\_fileno|5.007003|  
PerlIO\_fill|5.007003|  
PerlIO\_flush|5.007003|  
PerlIO\_get\_base|5.007003|  
PerlIO\_get\_bufsiz|5.007003|  
PerlIO\_get\_cnt|5.007003|  
PerlIO\_get\_ptr|5.007003|  
PerlIO\_read|5.007003|  
PerlIO\_seek|5.007003|  
PerlIO\_set\_cnt|5.007003|  
PerlIO\_set\_ptrcnt|5.007003|  
PerlIO\_setlinebuf|5.007003|  
PerlIO\_stderr|5.007003|  
PerlIO\_stdin|5.007003|  
PerlIO\_stdout|5.007003|  
PerlIO\_tell|5.007003|  
PerlIO\_unread|5.007003|  
PerlIO\_write|5.007003|  
Perl\_signbit|5.009005|n  
PoisonFree|5.009004|p  
PoisonNew|5.009004|p  
PoisonWith|5.009004|p  
Poison|5.008000|p  
RETVL||n  
Renewc||  
Renew||  
SAVECLEARSV||  
SAVECOMPPAD||  
SAVEPADSV||  
SAVETMPS||  
SAVE\_DEFSV|5.004050|p  
SPAGAIN||  
SP||  
START\_EXTERN\_C|5.005000|p  
START\_MY\_CXT|5.007003|p  
STMT\_END||p  
STMT\_START||p  
STR\_WITH\_LEN|5.009003|p  
ST||  
SV\_CONST\_RETURN|5.009003|p  
SV\_COW\_DROP\_PV|5.008001|p  
SV\_COW\_SHARED\_HASH\_KEYS|5.009005|p  
SV\_GMAGIC|5.007002|p  
SV\_HAS\_TRAILING\_NUL|5.009004|p  
SV\_IMMEDIATE\_UNREF|5.007001|p

SV\_MUTABLE\_RETURN|5.009003||p  
SV\_NOSTEAL|5.009002||p  
SV\_SMAGIC|5.009003||p  
SV\_UTF8\_NO\_ENCODING|5.008001||p  
Svf|5.006000||p  
SVt\_IV|||  
SVt\_NV|||  
SVt\_PVAV|||  
SVt\_PVCV|||  
SVt\_PVHV|||  
SVt\_PVMG|||  
SVt\_PV|||  
Safefree|||  
Slab\_Alloc|||  
Slab\_Free|||  
Slab\_to\_rw|||  
StructCopy|||  
SvCUR\_set|||  
SvCUR|||  
SvEND|||  
SvGAMAGIC||5.006001|  
SvGETMAGIC|5.004050||p  
SvGROW|||  
SvIOK\_UV||5.006000|  
SvIOK\_notUV||5.006000|  
SvIOK\_off|||  
SvIOK\_only\_UV||5.006000|  
SvIOK\_only|||  
SvIOK\_on|||  
SvIOKp|||  
SvIOK|||  
SvIVX|||  
SvIV\_nomg|5.009001||p  
SvIV\_set|||  
SvIVx|||  
SvIV|||  
SvIsCOW\_shared\_hash||5.008003|  
SvIsCOW||5.008003|  
SvLEN\_set|||  
SvLEN|||  
SvLOCK||5.007003|  
SvMAGIC\_set|5.009003||p  
SvNIOK\_off|||  
SvNIOKp|||  
SvNIOK|||  
SvNOK\_off|||  
SvNOK\_only|||  
SvNOK\_on|||

SvNOKp|||  
SvNOK|||  
SvNVX|||  
SvNV\_set|||  
SvNVx|||  
SvNV|||  
SvOK|||  
SvOOK|||  
SvPOK\_off|||  
SvPOK\_only\_UTF8|5.006000|  
SvPOK\_only|||  
SvPOK\_on|||  
SvPOKp|||  
SvPOK|||  
SvPVX\_const|5.009003|p  
SvPVX\_mutable|5.009003|p  
SvPVX|||  
SvPV\_const|5.009003|p  
SvPV\_flags\_const\_nolen|5.009003|p  
SvPV\_flags\_const|5.009003|p  
SvPV\_flags\_mutable|5.009003|p  
SvPV\_flags|5.007002|p  
SvPV\_force\_flags\_mutable|5.009003|p  
SvPV\_force\_flags\_nolen|5.009003|p  
SvPV\_force\_flags|5.007002|p  
SvPV\_force\_mutable|5.009003|p  
SvPV\_force\_nolen|5.009003|p  
SvPV\_force\_nomg\_nolen|5.009003|p  
SvPV\_force\_nomg|5.007002|p  
SvPV\_force||p  
SvPV\_mutable|5.009003|p  
SvPV\_nolen\_const|5.009003|p  
SvPV\_nolen|5.006000|p  
SvPV\_nomg\_const\_nolen|5.009003|p  
SvPV\_nomg\_const|5.009003|p  
SvPV\_nomg|5.007002|p  
SvPV\_set|||  
SvPVbyte\_force||5.009002|  
SvPVbyte\_nolen||5.006000|  
SvPVbytex\_force||5.006000|  
SvPVbytex||5.006000|  
SvPVbyte|5.006000|p  
SvPVutf8\_force||5.006000|  
SvPVutf8\_nolen||5.006000|  
SvPVutf8x\_force||5.006000|  
SvPVutf8x||5.006000|  
SvPVutf8||5.006000|  
SvPVx|||

SvPV|||  
SvREFCNT\_dec|||  
SvREFCNT\_inc\_NN|5.009004|p  
SvREFCNT\_inc\_simple\_NN|5.009004|p  
SvREFCNT\_inc\_simple\_void\_NN|5.009004|p  
SvREFCNT\_inc\_simple\_void|5.009004|p  
SvREFCNT\_inc\_simple|5.009004|p  
SvREFCNT\_inc\_void\_NN|5.009004|p  
SvREFCNT\_inc\_void|5.009004|p  
SvREFCNT\_inc||p  
SvREFCNT|||  
SvROK\_off|||  
SvROK\_on|||  
SvROK|||  
SvRV\_set|5.009003|p  
SvRV|||  
SvRXOK||5.009005|  
SvRX||5.009005|  
SvSETMAGIC|||  
SvSHARED\_HASH|5.009003|p  
SvSHARE||5.007003|  
SvSTASH\_set|5.009003|p  
SvSTASH|||  
SvSetMagicSV\_nosteal||5.004000|  
SvSetMagicSV||5.004000|  
SvSetSV\_nosteal||5.004000|  
SvSetSV|||  
SvTAINTED\_off||5.004000|  
SvTAINTED\_on||5.004000|  
SvTAINTED||5.004000|  
SvTAINT|||  
SvTRUE|||  
SvTYPE|||  
SvUNLOCK||5.007003|  
SvUOK|5.007001|5.006000|p  
SvUPGRADE|||  
SvUTF8\_off||5.006000|  
SvUTF8\_on||5.006000|  
SvUTF8||5.006000|  
SvUVXx|5.004000|p  
SvUVX|5.004000|p  
SvUV\_nomg|5.009001|p  
SvUV\_set|5.009003|p  
SvUVx|5.004000|p  
SvUV|5.004000|p  
SvVOK||5.008001|  
SvVSTRING\_mg|5.009004|p  
THIS|||n

UNDERBAR|5.009002||p  
UTF8\_MAXBYTES|5.009002||p  
UVSIZE|5.006000||p  
UVTYPE|5.006000||p  
UVXf|5.007001||p  
UVof|5.006000||p  
UVuf|5.006000||p  
UVxf|5.006000||p  
WARN\_ALL|5.006000||p  
WARN\_AMBIGUOUS|5.006000||p  
WARN\_ASSERTIONS|5.009005||p  
WARN\_BAREWORD|5.006000||p  
WARN\_CLOSED|5.006000||p  
WARN\_CLOSURE|5.006000||p  
WARN\_DEBUGGING|5.006000||p  
WARN\_DEPRECATED|5.006000||p  
WARN\_DIGIT|5.006000||p  
WARN\_EXEC|5.006000||p  
WARN\_EXITING|5.006000||p  
WARN\_GLOB|5.006000||p  
WARN\_INPLACE|5.006000||p  
WARN\_INTERNAL|5.006000||p  
WARN\_IO|5.006000||p  
WARN\_LAYER|5.008000||p  
WARN\_MALLOC|5.006000||p  
WARN\_MISC|5.006000||p  
WARN\_NEWLINE|5.006000||p  
WARN\_NUMERIC|5.006000||p  
WARN\_ONCE|5.006000||p  
WARN\_OVERFLOW|5.006000||p  
WARN\_PACK|5.006000||p  
WARN\_PARENTHESES|5.006000||p  
WARN\_PIPE|5.006000||p  
WARN\_PORTABLE|5.006000||p  
WARN\_PRECEDENCE|5.006000||p  
WARN\_PRINTF|5.006000||p  
WARN\_PROTOTYPE|5.006000||p  
WARN\_QW|5.006000||p  
WARN\_RECURSION|5.006000||p  
WARN\_REDEFINE|5.006000||p  
WARN\_REGEXP|5.006000||p  
WARN\_RESERVED|5.006000||p  
WARN\_SEMICOLON|5.006000||p  
WARN\_SEVERE|5.006000||p  
WARN\_SIGNAL|5.006000||p  
WARN\_SUBSTR|5.006000||p  
WARN\_SYNTAX|5.006000||p  
WARN\_TAINT|5.006000||p

WARN\_THREADS|5.008000||p  
WARN\_UNINITIALIZED|5.006000||p  
WARN\_UNOPENED|5.006000||p  
WARN\_UNPACK|5.006000||p  
WARN\_UNTIE|5.006000||p  
WARN\_UTF8|5.006000||p  
WARN\_VOID|5.006000||p  
XCPT\_CATCH|5.009002||p  
XCPT\_RETHROW|5.009002||p  
XCPT\_TRY\_END|5.009002||p  
XCPT\_TRY\_START|5.009002||p  
XPUSHi|||  
XPUSHmortal|5.009002||p  
XPUSHn|||  
XPUSHp|||  
XPUSHs|||  
XPUSHu|5.004000||p  
XSRETURN\_EMPTY|||  
XSRETURN\_IV|||  
XSRETURN\_NO|||  
XSRETURN\_NV|||  
XSRETURN\_PV|||  
XSRETURN\_UNDEF|||  
XSRETURN\_UV|5.008001||p  
XSRETURN\_YES|||  
XSRETURN|||p  
XST\_mIV|||  
XST\_mNO|||  
XST\_mNV|||  
XST\_mPV|||  
XST\_mUNDEF|||  
XST\_mUV|5.008001||p  
XST\_mYES|||  
XS\_VERSION\_BOOTCHECK|||  
XS\_VERSION|||  
XSprePUSH|5.006000||p  
XS|||  
ZeroD|5.009002||p  
Zero|||  
\_aMY\_CXT|5.007003||p  
\_pMY\_CXT|5.007003||p  
aMY\_CXT\_|5.007003||p  
aMY\_CXT|5.007003||p  
aTHXR\_|5.009005||p  
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aTHX\_|5.006000||p  
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yywarn||
);

if (exists $opt{'list-unsupported'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", 'x'(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

# Scan for possible replacement candidates

```

```

my(%replace, %need, %hints, %warnings, %depends);
my $replace = 0;
my($hint, $define, $function);

sub find_api
{
  my $code = shift;
  $code =~ s{
    /(?: \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* /|/^\r\n)*
    | "[^"\\]*(?:\\.["\\])*"
    | '[^\\]*(?:\\.["\\])*' }{ }egsx;
  grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

while (<DATA>) {
  if ($hint) {
    my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
    if (m{^\s*\s(.*)\s*$}) {
      for (@{$hint->[1]}) {
        $h->{$_} ||= ""; # suppress warning with older perls
        $h->{$_} .= "$1\n";
      }
    }
    else { undef $hint }
  }

  $hint = [$1, [split /,?\s+/, $2]]
    if m{^\s*$rccs\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

  if ($define) {
    if ($define->[1] =~ /\$/) {
      $define->[1] .= $_;
    }
    else {
      if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
        my @n = find_api($define->[1]);
        push @{$depends{$define->[0]}}, @n if @n;
      }
      undef $define;
    }
  }

  $define = [$1, $2] if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

  if ($function) {
    if (/^/) {
      if (exists $API{$function->[0]}) {
        my @n = find_api($function->[1]);
      }
    }
  }
}

```

```

    push @{$depends}{$function->[0]}, @n if @n
  }
  undef $define;
}
else {
  $function->[1] .= $_;
}
}

$function = [$1, " ] if m{^DPPP_(my_(\w+))};

$replace = $1 if m{^\s*$rccs\s+Replace:\s+(\d+)\s+$rcces*$};
$replace{$2} = $1 if $replace and m{^\s*#\s*define\s+(\w+)(?:\s+(\w+))};
$replace{$2} = $1 if m{^\s*#\s*define\s+(\w+)(?:\s+(\w+))\s+(\w+).*rccs\s+Replace\s+$rcces*};
$replace{$1} = $2 if m{^\s*$rccs\s+Replace (\w+) with (\w+)\s+$rcces*$};

if (m{^\s*$rccs\s+(\w+)\s+depends\s+on\s+(\w+(\s*,\s*\w+*))\s+$rcces*$}) {
  push @{$depends}{$1}, map { s/\s+//g; $_ } split /,/, $2;
}

$need{$1} = 1 if m{^#\s+defined\(\NEED_(\w+)(?:_GLOBAL)?\)};
}

for (values %depends) {
  my %s;
  $_ = [sort grep !$_, @$_];
}

if (exists $opt{'api-info'}) {
  my $f;
  my $count = 0;
  my $match = $opt{'api-info'} =~ m!^(.*)/! ? $1 : "\Q$opt{'api-info'}\E\$";
  for $f (sort { lc $a cmp lc $b } keys %API) {
    next unless $f =~ /$match/;
    print "\n=== $f ===\n\n";
    my $info = 0;
    if ($API{$f}{base} || $API{$f}{todo}) {
      my $base = format_version($API{$f}{base} || $API{$f}{todo});
      print "Supported at least starting from perl-$base.\n";
      $info++;
    }
    if ($API{$f}{provided}) {
      my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
      print "Support by $ppport provided back to perl-$todo.\n";
      print "Support needs to be explicitly requested by NEED_$f.\n" if exists $need{$f};
      print "Depends on: ", join(', ', @{$depends}{$f}), ".\n" if exists $depends{$f};
      print "\n$hints{$f}" if exists $hints{$f};
      print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
    }
  }
}

```

```

    $info++;
  }
  print "No portability information available.\n" unless $info;
  $count++;
}
$count or print "Found no API matching '$opt{ 'api-info' }'.";
print "\n";
exit 0;
}

```

```

if (exists $opt{ 'list-provided' }) {
  my $f;
  for $f (sort { lc $a cmp lc $b } keys %API) {
    next unless $API{$f}{provided};
    my @flags;
    push @flags, 'explicit' if exists $need{$f};
    push @flags, 'depend' if exists $depends{$f};
    push @flags, 'hint' if exists $hints{$f};
    push @flags, 'warning' if exists $warnings{$f};
    my $flags = @flags ? ' [' .join(', ', @flags).'] : ";
    print "$f$flags\n";
  }
  exit 0;
}

```

```

my @files;
my @srcext = qw( .xs .c .h .cc .cpp -c.inc -xs.inc );
my $srcext = join '|', map { quotemeta $_ } @srcext;

```

```

if (@ARGV) {
  my %seen;
  for (@ARGV) {
    if (-e) {
      if (-f) {
        push @files, $_ unless $seen{$_}++;
      }
      else { warn "'$_' is not a file.\n" }
    }
    else {
      my @new = grep { -f } glob $_
        or warn "'$_' does not exist.\n";
      push @files, grep { !$seen{$_}++ } @new;
    }
  }
}
else {
  eval {
    require File::Find;

```

```

File::Find::find(sub {
    $File::Find::name =~ /($srcext)$/i
    and push @files, $File::Find::name;
}, '.');
};
if ($@) {
    @files = map { glob "*$_" } @srcext;
}
}

if (!@ARGV || $opt{filter}) {
    my(@in, @out);
    my %xsc = map { /(.*)\.xs$/ ? ("1.c" => 1, "1.cc" => 1) : () } @files;
    for (@files) {
        my $out = exists $xsc{$_} || ^b\Q$ppport\E$/i || !/($srcext)$/i;
        push @ { $out ? \@out : \@in }, $_;
    }
    if (@ARGV && @out) {
        warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
    }
    @files = @in;
}

die "No input files given!\n" unless @files;

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

for $filename (@files) {
    unless (open IN, "<$filename") {
        warn "Unable to read from $filename: $!\n";
        next;
    }

    info("Scanning $filename ...");

    my $c = do { local $/; <IN> };
    close IN;

    my %file = (orig => $c, changes => 0);

    # Temporarily remove C/XS comments and strings from the code
    my @ccom;

    $c =~ s{
        (^\$HS*\#$HS*include\b[^\r\n]+\b(?:\Q$ppport\E|XSUB\.h)\b[^\r\n]*

```

```

| ^$HS*#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )
| ( ^$HS*\#[^\r\n]*
| "[^"\\]*(?:\\.\\.["\\])*"
| '[^'\\]*(?:\\.\\.'\\)*'
| /(?: \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* /| [^\r\n]* ) )
}{ defined $2 and push @ccom, $2;
  defined $1 ? $1 : "$ccs$#ccom$cce" }mgsex;

$file{ccom} = \@ccom;
$file{code} = $c;
$file{has_inc_ppport} = $c =~ /^$HS*#$HS*include[^\r\n]+\b\Q$ppport\E\b/m;

my $func;

for $func (keys %API) {
  my $match = $func;
  $match .= "$$revreplace{$func}" if exists $revreplace{$func};
  if ($c =~ /\b(?:Perl)?($match)\b/) {
    $file{uses_replace}{$func}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
    $file{uses_Perl}{$func}++ if $c =~ /\bPerl_{$func}\b/;
    if (exists $API{$func}{provided}) {
      $file{uses_provided}{$func}++;
      if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
        $file{uses}{$func}++;
        my @deps = rec_depend($func);
        if (@deps) {
          $file{uses_deps}{$func} = \@deps;
          for (@deps) {
            $file{uses}{$_} = 0 unless exists $file{uses}{$_};
          }
        }
        for ($func, @deps) {
          $file{needs}{$_} = 'static' if exists $need{$_};
        }
      }
    }
    if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
      if ($c =~ /\b{$func}\b/) {
        $file{uses_todo}{$func}++;
      }
    }
  }
}

while ($c =~ /^$HS*#$HS*define$HS+(NEED_(\w+?)(_GLOBAL)?)\b/mg) {
  if (exists $need{$2}) {
    $file{defined $3 ? 'needed_global' : 'needed_static'}{$2}++;
  }
}

```



```

else { warning("Possibly wrong #define $1 in $filename") }
}

for (qw(uses needs uses_todo needed_global needed_static)) {
  for $func (keys %{$file{$_}}) {
    push @{$global{$_}{$func}}, $filename;
  }
}

$files{$filename} = \%file;
}

# Globally resolve NEED_'s
my $need;
for $need (keys %{$global{needs}}) {
  if (@{$global{needs}{$need}} > 1) {
    my @targets = @{$global{needs}{$need}};
    my @t = grep $files{$_}{needed_global}{$need}, @targets;
    @targets = @t if @t;
    @t = grep /\.xs$/i, @targets;
    @targets = @t if @t;
    my $target = shift @targets;
    $files{$target}{needs}{$need} = 'global';
    for (@{$global{needs}{$need}}) {
      $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
    }
  }
}

for $filename (@files) {
  exists $files{$filename} or next;

  info("=== Analyzing $filename ===");

  my %file = %{$files{$filename}};
  my $func;
  my $c = $file{code};
  my $warnings = 0;

  for $func (sort keys %{$file{uses_Perl}}) {
    if ($API{$func}{varargs}) {
      unless ($API{$func}{nothxarg}) {
        my $changes = ($c =~ s{\b(Perl_?func\s*(\s*)(?!aTHX_?)(\)|[\^s])*\)}
          { $1 . ($2 eq '|') ? 'aTHX' : 'aTHX_' } . $2 }ge);
        if ($changes) {
          warning("Doesn't pass interpreter argument aTHX to Perl_$func");
          $file{changes} += $changes;
        }
      }
    }
  }
}

```

```

    }
  }
  else {
    warning("Uses Perl_$func instead of $func");
    $file{changes} += ($c =~ s{\bPerl_$func(\s*)((\s*aTHX_?)?\s*}
      {$func$1()g);
  }
}

for $func (sort keys %{$file{uses_replace}}) {
  warning("Uses $func instead of $replace{$func}");
  $file{changes} += ($c =~ s/\b$func\b/$replace{$func}/g);
}

for $func (sort keys %{$file{uses_provided}}) {
  if ($file{uses}{$func}) {
    if (exists $file{uses_deps}{$func}) {
      diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
    }
    else {
      diag("Uses $func");
    }
  }
  $warnings += hint($func);
}

unless ($opt{quiet}) {
  for $func (sort keys %{$file{uses_todo}}) {
    print "**** WARNING: Uses $func, which may not be portable below perl ",
      format_version($API{$func}{todo}), ", even with '$ppport\n";
    $warnings++;
  }
}

for $func (sort keys %{$file{needed_static}}) {
  my $message = "";
  if (not exists $file{uses}{$func}) {
    $message = "No need to define NEED_$func if $func is never used";
  }
  elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
    $message = "No need to define NEED_$func when already needed globally";
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define$HS+NEED_$func\b.*$LF//mg);
  }
}

```

```

for $func (sort keys %{$file{needed_global}}) {
  my $message = "";
  if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_${func}_GLOBAL if $func is never used";
  }
  elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
      $message = "No need to define NEED_${func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
      $message = "No need to define NEED_${func}_GLOBAL when only used in this file";
    }
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_${func}_GLOBAL\b.*$LF//mg);
  }
}

```

```

$file{needs_inc_ppport} = keys %{$file{uses}};

```

```

if ($file{needs_inc_ppport}) {
  my $pp = "";

```

```

  for $func (sort keys %{$file{needs}}) {
    my $type = $file{needs}{$func};
    next if $type eq 'extern';
    my $suffix = $type eq 'global' ? '_GLOBAL' : "";
    unless (exists $file{"needed_$type"}{$func}) {
      if ($type eq 'global') {
        diag("Files [@$global{needs}{$func}] need $func, adding global request");
      }
      else {
        diag("File needs $func, adding static request");
      }
      $pp .= "#define NEED_${func}$suffix\n";
    }
  }
}

```

```

if ($pp && ($c =~ s/^(?=$HS*#\$HS*define\$HS+NEED_\w+)/$pp/m)) {
  $pp = "";
  $file{changes}++;
}

```

```

unless ($file{has_inc_ppport}) {
  diag("Needs to include '$ppport'");
  $pp .= qq(#include "$ppport"\n)
}

```

```

if ($pp) {
    $file{changes} += ($c =~ s/^(($HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms)
        || ($c =~ s/^(?=$HS*#$HS*include.*\Q$ppport\E)/$pp/m)
        || ($c =~ s/^(($HS*#$HS*include.*XSUB.*\s*?)/$1$pp/m)
        || ($c =~ s/^\$/pp/);
}
}
else {
    if ($file{has_inc_ppport}) {
        diag("No need to include '$ppport'");
        $file{changes} += ($c =~ s/^(HS*?#HS*include.*\Q$ppport\E.*?$LF//m);
    }
}

# put back in our C comments
my $ix;
my $cpc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
    if (!$opt{cplusplus} && $ccom[$ix] =~ s!^/!!) {
        $cpc++;
        $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
    }
    else {
        $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
    }
}

if ($cpc) {
    my $s = $cpc != 1 ? 's' : '';
    warning("Uses $cpc C++ style comment$s, which is not portable");
}

my $s = $warnings != 1 ? 's' : '';
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("'newfile' already exists, refusing to write copy of '$filename'");
        }
        else {
            local *F;
            if (open F, ">$newfile") {
                info("Writing copy of '$filename' with changes to '$newfile'");
            }
        }
    }
}

```

```

    print F $c;
    close F;
}
else {
    error("Cannot open '$newfile' for writing: $!");
}
}
}
elseif (exists $opt{patch} || $opt{changes}) {
    if (exists $opt{patch}) {
        unless ($patch_opened) {
            if (open PATCH, ">$opt{patch}") {
                $patch_opened = 1;
            }
            else {
                error("Cannot open '$opt{patch}' for writing: $!");
                delete $opt{patch};
                $opt{changes} = 1;
                goto fallback;
            }
        }
        mydiff(\*PATCH, $filename, $c);
    }
    else {
fallback:
        info("Suggested changes:");
        mydiff(\*STDOUT, $filename, $c);
    }
    else {
        my $s = $file{changes} == 1 ? " : 's'";
        info("$file{changes} potentially required change$s detected");
    }
}
else {
    info("Looks good");
}
}

close PATCH if $patch_opened;

exit 0;

sub try_use { eval "use @_;"; return $@ eq " }

sub mydiff
{

```

```

local *F = shift;
my($file, $str) = @_ ;
my $diff;

if (exists $opt{diff}) {
    $diff = run_diff($opt{diff}, $file, $str);
}

if (!defined $diff and try_use("Text::Diff")) {
    $diff = Text::Diff::diff($file, \$str, { STYLE => 'Unified' });
    $diff = <<HEADER . $diff;
--- $file
+++ $file.patched
HEADER
}

if (!defined $diff) {
    $diff = run_diff('diff -u', $file, $str);
}

if (!defined $diff) {
    $diff = run_diff('diff', $file, $str);
}

if (!defined $diff) {
    error("Cannot generate a diff. Please install Text::Diff or use --copy.");
    return;
}

print F $diff;
}

sub run_diff
{
    my($prog, $file, $str) = @_ ;
    my $tmp = 'dppptemp';
    my $suf = 'aaa';
    my $diff = "";
    local *F;

    while (-e "$tmp.$suf") { $suf++ }
    $tmp = "$tmp.$suf";

    if (open F, ">$tmp") {
        print F $str;
        close F;

        if (open F, "$prog $file $tmp |") {

```

```

while (<F>) {
    s/Q$tmp\E/$file.patched/;
    $diff .= $_;
}
close F;
unlink $tmp;
return $diff;
}

unlink $tmp;
}
else {
    error("Cannot open '$tmp' for writing: $!");
}

return undef;
}

sub rec_depend
{
    my($func, $seen) = @_;
    return () unless exists $depends{$func};
    $seen = {%{$seen||{}}};
    return () if $seen->{$func}++;
    my %s;
    grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{
    my $ver = shift;

    if ($ver =~ /^(d+)\.(d+)\.(d+)$/) {
        return ($1, $2, $3);
    }
    elsif ($ver !~ /\d+\.[d_]+$/) {
        die "cannot parse version '$ver'\n";
    }

    $ver =~ s/_//g;
    $ver =~ s/000000/;

    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {

```

```

    if ($s % 10) {
        die "cannot parse version '$ver'\n";
    }
}

return ($r, $v, $s);
}

sub format_version
{
    my $ver = shift;

    $ver =~ s/$/000000/;
    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {
        if ($s % 10) {
            die "invalid version '$ver'\n";
        }
        $s /= 10;

        $ver = sprintf "%d.%03d", $r, $v;
        $s > 0 and $ver .= sprintf "_%02d", $s;

        return $ver;
    }

    return sprintf "%d.%d.%d", $r, $v, $s;
}

sub info
{
    $opt{quiet} and return;
    print @_, "\n";
}

sub diag
{
    $opt{quiet} and return;
    $opt{diag} and print @_, "\n";
}

sub warning
{
    $opt{quiet} and return;
}

```



```

print "*** ", @_, "\n";
}

sub error
{
print "*** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint
{
$opt{quiet} and return;
my $func = shift;
my $rv = 0;
if (exists $warnings{$func} && !$given_warnings{$func}++) {
my $warn = $warnings{$func};
$warn =~ s/!*** !mg;
print "*** WARNING: $func\n", $warn;
$rv++;
}
if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
my $hint = $hints{$func};
$hint =~ s/^/ /mg;
print " --- hint for $func ---\n", $hint;
}
$rv;
}

sub usage
{
my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s*^(.*?)\s*^=/ms;
my %M = ( 'T' => '*' );
$usage =~ s/^\s*perl\s+\S+/$^X $0/;
$usage =~ s/([A-Z])<([>]+)>/M{$1}$2M{$1}/g;

print <<ENDUSAGE;

Usage: $usage

See perldoc $0 for details.

ENDUSAGE

exit 2;
}

sub strip

```

```

{
my $self = do { local(@ARGV,$/)=($0); <> };
my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)^\s+w+/ms;
$copy =~ s/^(?=\S+)/ /gms;
$self =~ s/^\$HS+Do NOT edit.*?(?=-^)/$copy/ms;
$self =~ s/^\$SKIP.*?(?=-^__DATA__)/SKIP
if (\@ARGV && \$ARGV[0] eq '--unstrip') {
eval { require Devel::PPPport };
\$_@ and die "Cannot require Devel::PPPport, please install.\n";
if (\$Devel::PPPport::VERSION < $VERSION) {
die "$0 was originally generated with Devel::PPPport $VERSION.\n"
. "Your Devel::PPPport is only version \$Devel::PPPport::VERSION.\n"
. "Please install a newer version, or --unstrip will not work.\n";
}
Devel::PPPport::WriteFile(\$0);
exit 0;
}
print <<END;

```

Sorry, but this is a stripped version of \\$0.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X \$0 --unstrip
```

```
END
```

```
/ms;
```

```
my($pl, $c) = $self =~ /(.*__DATA__)(.*)/ms;
```

```
$c =~ s{
```

```
 / (? : \*[^\*]*\*(?:[^\$ccs][^\*]*\*+)* / | /[\r\n]*
```

```
 | ( "[^\\"]*(?:\\\[^\\"\\])*"
```

```
 | '[^\']*?(?:\\\[^\']*)*')
```

```
 | ($HS+) }{ defined $2 ? '' : ($1 || '') }gsex;
```

```
$c =~ s!\s+#!mg;
```

```
$c =~ s!$LF#!mg;
```

```
$c =~ s!\s*#\s*#!mg;
```

```
$c =~ s!\s+#!mg;
```

```
open OUT, ">$0" or die "cannot strip $0: $!\n";
```

```
print OUT "$pl$c\n";
```

```
exit 0;
```

```
}
```

```
__DATA__
```

```
*/
```

Found in path(s):

\* /opt/cola/permits/1000848959\_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-jECbbpLO/Time-HiRes-1.9725/ppport.h

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

---

abstract: 'High resolution alarm, sleep, gettimeofday, interval timers'

author:

- 'Jarkko Hietaniemi <jhi@iki.fi>'

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.112621'

license: unknown

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Time-HiRes

no\_index:

directory:

- t

- inc

requires:

Carp: 0

Config: 0

DynaLoader: 0

Exporter: 0

ExtUtils::MakeMaker: 0

Test::More: 0.82

strict: 0

version: 1.9725

Found in path(s):

\* /opt/cola/permits/1000848959\_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-jECbbpLO/Time-HiRes-1.9725/META.yml

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848959\_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/perl-Time-HiRes.spec

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

=head1 NAME

Time::HiRes - High resolution alarm, sleep, gettimeofday, interval timers

=head1 SYNOPSIS

```
use Time::HiRes qw( usleep ualarm gettimeofday tv_interval nanosleep
    clock_gettime clock_getres clock_nanosleep clock
        stat );

usleep ($microseconds);
nanosleep ($nanoseconds);

ualarm ($microseconds);
ualarm ($microseconds, $interval_microseconds);

$t0 = [gettimeofday];
($seconds, $microseconds) = gettimeofday;

$elapsed = tv_interval ( $t0, [$seconds, $microseconds]);
$elapsed = tv_interval ( $t0, [gettimeofday]);
$elapsed = tv_interval ( $t0 );

use Time::HiRes qw ( time alarm sleep );

$now_fractions = time;
sleep ($floating_seconds);
alarm ($floating_seconds);
alarm ($floating_seconds, $floating_interval);

use Time::HiRes qw( setitimer getitimer );

setitimer ($which, $floating_seconds, $floating_interval );
getitimer ($which);

use Time::HiRes qw( clock_gettime clock_getres clock_nanosleep
    ITIMER_REAL ITIMER_VIRTUAL ITIMER_PROF ITIMER_REALPROF );

$realtime = clock_gettime(CLOCK_REALTIME);
$resolution = clock_getres(CLOCK_REALTIME);

clock_nanosleep(CLOCK_REALTIME, 1.5e9);
clock_nanosleep(CLOCK_REALTIME, time()*1e9 + 10e9, TIMER_ABSTIME);

my $ticktock = clock();

use Time::HiRes qw( stat );

my @stat = stat("file");
my @stat = stat(FH);
```

## =head1 DESCRIPTION

The `C<Time::HiRes>` module implements a Perl interface to the `C<usleep>`, `C<nanosleep>`, `C<ualarm>`, `C<gettimeofday>`, and `C<setitimer>/C<getitimer>` system calls, in other words, high resolution time and timers. See the `L</EXAMPLES>` section below and the test scripts for usage; see your system documentation for the description of the underlying `C<nanosleep>` or `C<usleep>`, `C<ualarm>`, `C<gettimeofday>`, and `C<setitimer>/C<getitimer>` calls.

If your system lacks `C<gettimeofday()>` or an emulation of it you don't get `C<gettimeofday()>` or the one-argument form of `C<tv_interval()>`.

If your system lacks all of `C<nanosleep()>`, `C<usleep()>`, `C<select()>`, and `C<poll>`, you don't get `C<Time::HiRes::usleep()>`, `C<Time::HiRes::nanosleep()>`, or `C<Time::HiRes::sleep()>`.

If your system lacks both `C<ualarm()>` and `C<setitimer()>` you don't get `C<Time::HiRes::ualarm()>` or `C<Time::HiRes::alarm()>`.

If you try to import an unimplemented function in the `C<use>` statement it will fail at compile time.

If your subsecond sleeping is implemented with `C<nanosleep()>` instead of `C<usleep()>`, you can mix subsecond sleeping with signals since `C<nanosleep()>` does not use signals. This, however, is not portable, and you should first check for the truth value of `C<&Time::HiRes::d_nanosleep>` to see whether you have nanosleep, and then carefully read your `C<nanosleep()>` C API documentation for any peculiarities.

If you are using `C<nanosleep>` for something else than mixing sleeping with signals, give some thought to whether Perl is the tool you should be using for work requiring nanosecond accuracies.

Remember that unless you are working on a `I<hard realtime>` system, any clocks and timers will be imprecise, especially so if you are working in a pre-emptive multiuser system. Understand the difference between `I<wallclock time>` and process time (in UNIX-like systems the sum of `I<user>` and `I<system>` times). Any attempt to sleep for `X` seconds will most probably end up sleeping `B<more>` than that, but don't be surprised if you end up sleeping slightly `B<less>`.

The following functions can be imported from this module.

No functions are exported by default.

=over 4

=item gettimeofday ()

In array context returns a two-element array with the seconds and microseconds since the epoch. In scalar context returns floating seconds like `C<Time::HiRes::time()>` (see below).

`=item usleep ( $useconds )`

Sleeps for the number of microseconds (millionths of a second) specified. Returns the number of microseconds actually slept. Can sleep for more than one second, unlike the `C<usleep>` system call. Can also sleep for zero seconds, which often works like a `I<thread yield>`. See also `C<Time::HiRes::usleep()>`, `C<Time::HiRes::sleep()>`, and `C<Time::HiRes::clock_nanosleep()>`.

Do not expect `usleep()` to be exact down to one microsecond.

`=item nanosleep ( $nanoseconds )`

Sleeps for the number of nanoseconds (1e9ths of a second) specified. Returns the number of nanoseconds actually slept (accurate only to microseconds, the nearest thousand of them). Can sleep for more than one second. Can also sleep for zero seconds, which often works like a `I<thread yield>`. See also `C<Time::HiRes::sleep()>`, `C<Time::HiRes::usleep()>`, and `C<Time::HiRes::clock_nanosleep()>`.

Do not expect `nanosleep()` to be exact down to one nanosecond. Getting even accuracy of one thousand nanoseconds is good.

`=item ualarm ( $useconds [, $interval_useconds ] )`

Issues a `C<ualarm>` call; the `C<$interval_useconds>` is optional and will be zero if unspecified, resulting in `C<alarm>`-like behaviour.

Returns the remaining time in the alarm in microseconds, or `C<undef>` if an error occurred.

`ualarm(0)` will cancel an outstanding `ualarm()`.

Note that the interaction between alarms and sleeps is unspecified.

`=item tv_interval`

`tv_interval ( $ref_to_gettimeofday [, $ref_to_later_gettimeofday ] )`

Returns the floating seconds between the two times, which should have been returned by `C<gettimeofday()>`. If the second argument is omitted, then the current time is used.

=item time ( )

Returns a floating seconds since the epoch. This function can be imported, resulting in a nice drop-in replacement for the C<time> provided with core Perl; see the L</EXAMPLES> below.

B<NOTE 1>: This higher resolution timer can return values either less or more than the core C<time()>, depending on whether your platform rounds the higher resolution timer values up, down, or to the nearest second to get the core C<time()>, but naturally the difference should be never more than half a second. See also L</clock\_getres>, if available in your system.

B<NOTE 2>: Since Sunday, September 9th, 2001 at 01:46:40 AM GMT, when the C<time()> seconds since epoch rolled over to 1\_000\_000\_000, the default floating point format of Perl and the seconds since epoch have conspired to produce an apparent bug: if you print the value of C<Time::HiRes::time()> you seem to be getting only five decimals, not six as promised (microseconds). Not to worry, the microseconds are there (assuming your platform supports such granularity in the first place). What is going on is that the default floating point format of Perl only outputs 15 digits. In this case that means ten digits before the decimal separator and five after. To see the microseconds you can use either C<printf>/C<sprintf> with C<"%.6f">, or the C<gettimeofday()> function in list context, which will give you the seconds and microseconds as two separate values.

=item sleep ( \$floating\_seconds )

Sleeps for the specified amount of seconds. Returns the number of seconds actually slept (a floating point value). This function can be imported, resulting in a nice drop-in replacement for the C<sleep> provided with perl, see the L</EXAMPLES> below.

Note that the interaction between alarms and sleeps is unspecified.

=item alarm ( \$floating\_seconds [, \$interval\_floating\_seconds ] )

The C<SIGALRM> signal is sent after the specified number of seconds. Implemented using C<setitimer()> if available, C<ualarm()> if not. The C<\$interval\_floating\_seconds> argument is optional and will be zero if unspecified, resulting in C<alarm()>-like behaviour. This function can be imported, resulting in a nice drop-in replacement for the C<alarm> provided with perl, see the L</EXAMPLES> below.

Returns the remaining time in the alarm in seconds, or C<undef> if an error occurred.

B<NOTE 1>: With some combinations of operating systems and Perl releases C<SIGALRM> restarts C<select()>, instead of interrupting it. This means that an C<alarm()> followed by a C<select()> may together take the sum of the times specified for the C<alarm()> and the C<select()>, not just the time of the C<alarm()>.

Note that the interaction between alarms and sleeps is unspecified.

```
=item setitimer ( $which, $floating_seconds [, $interval_floating_seconds ] )
```

Start up an interval timer: after a certain time, a signal (\$which) arrives, and more signals may keep arriving at certain intervals. To disable an "itimer", use C<\$floating\_seconds> of zero. If the C<\$interval\_floating\_seconds> is set to zero (or unspecified), the timer is disabled B<after> the next delivered signal.

Use of interval timers may interfere with C<alarm()>, C<sleep()>, and C<usleep()>. In standard-speak the "interaction is unspecified", which means that I<anything> may happen: it may work, it may not.

In scalar context, the remaining time in the timer is returned.

In list context, both the remaining time and the interval are returned.

There are usually three or four interval timers (signals) available: the C<\$which> can be C<ITIMER\_REAL>, C<ITIMER\_VIRTUAL>, C<ITIMER\_PROF>, or C<ITIMER\_REALPROF>. Note that which ones are available depends: true UNIX platforms usually have the first three, but only Solaris seems to have C<ITIMER\_REALPROF> (which is used to profile multithreaded programs). Win32 unfortunately does not have interval timers.

C<ITIMER\_REAL> results in C<alarm()>-like behaviour. Time is counted in I<real time>; that is, wallclock time. C<SIGALRM> is delivered when the timer expires.

C<ITIMER\_VIRTUAL> counts time in (process) I<virtual time>; that is, only when the process is running. In multiprocessor/user/CPU systems this may be more or less than real or wallclock time. (This time is also known as the I<user time>.) C<SIGVTALRM> is delivered when the timer expires.

C<ITIMER\_PROF> counts time when either the process virtual time or when the operating system is running on behalf of the process (such as I/O). (This time is also known as the I<system time>.) (The sum of user time and system time is known as the I<CPU time>.) C<SIGPROF> is delivered when the timer expires. C<SIGPROF> can interrupt system calls.

The semantics of interval timers for multithreaded programs are



system-specific, and some systems may support additional interval timers. For example, it is unspecified which thread gets the signals. See your C<setitimer()> documentation.

=item getitimer ( \$which )

Return the remaining time in the interval timer specified by C<\$which>.

In scalar context, the remaining time is returned.

In list context, both the remaining time and the interval are returned.

The interval is always what you put in using C<setitimer()>.

=item clock\_gettime ( \$which )

Return as seconds the current value of the POSIX high resolution timer specified by C<\$which>. All implementations that support POSIX high resolution timers are supposed to support at least the C<\$which> value of C<CLOCK\_REALTIME>, which is supposed to return results close to the results of C<gettimeofday>, or the number of seconds since 00:00:00:00 January 1, 1970 Greenwich Mean Time (GMT). Do not assume that CLOCK\_REALTIME is zero, it might be one, or something else. Another potentially useful (but not available everywhere) value is C<CLOCK\_MONOTONIC>, which guarantees a monotonically increasing time value (unlike time() or gettimeofday(), which can be adjusted). See your system documentation for other possibly supported values.

=item clock\_getres ( \$which )

Return as seconds the resolution of the POSIX high resolution timer specified by C<\$which>. All implementations that support POSIX high resolution timers are supposed to support at least the C<\$which> value of C<CLOCK\_REALTIME>, see L</clock\_gettime>.

=item clock\_nanosleep ( \$which, \$nanoseconds, \$flags = 0)

Sleeps for the number of nanoseconds (1e9ths of a second) specified. Returns the number of nanoseconds actually slept. The \$which is the "clock id", as with clock\_gettime() and clock\_getres(). The flags default to zero but C<TIMER\_ABSTIME> can specified (must be exported explicitly) which means that C<\$nanoseconds> is not a time interval (as is the default) but instead an absolute time. Can sleep for more than one second. Can also sleep for zero seconds, which often works like a I<thread yield>. See also C<Time::HiRes::sleep()>, C<Time::HiRes::usleep()>, and C<Time::HiRes::nanosleep()>.

Do not expect clock\_nanosleep() to be exact down to one nanosecond.

Getting even accuracy of one thousand nanoseconds is good.

=item clock()

Return as seconds the I<process time> (user + system time) spent by the process since the first call to clock() (the definition is B<not> "since the start of the process", though if you are lucky these times may be quite close to each other, depending on the system). What this means is that you probably need to store the result of your first call to clock(), and subtract that value from the following results of clock().

The time returned also includes the process times of the terminated child processes for which wait() has been executed. This value is somewhat like the second value returned by the times() of core Perl, but not necessarily identical. Note that due to backward compatibility limitations the returned value may wrap around at about 2147 seconds or at about 36 minutes.

=item stat

=item stat FH

=item stat EXPR

As L<perlfunc/stat> but with the access/modify/change file timestamps in subsecond resolution, if the operating system and the filesystem both support such timestamps. To override the standard stat():

```
use Time::HiRes qw(stat);
```

Test for the value of &Time::HiRes::d\_hires\_stat to find out whether the operating system supports subsecond file timestamps: a value larger than zero means yes. There are unfortunately no easy ways to find out whether the filesystem supports such timestamps. UNIX filesystems often do; NTFS does; FAT doesn't (FAT timestamp granularity is B<two> seconds).

A zero return value of &Time::HiRes::d\_hires\_stat means that Time::HiRes::stat is a no-op passthrough for CORE::stat(), and therefore the timestamps will stay integers. The same thing will happen if the filesystem does not do subsecond timestamps, even if the &Time::HiRes::d\_hires\_stat is non-zero.

In any case do not expect nanosecond resolution, or even a microsecond resolution. Also note that the modify/access timestamps might have different resolutions, and that they need not be synchronized, e.g. if the operations are

write

```
stat # t1
read
stat # t2
```

the access time stamp from t2 need not be greater-than the modify time stamp from t1: it may be equal or I<less>.

=back

=head1 EXAMPLES

```
use Time::HiRes qw(usleep ualarm gettimeofday tv_interval);
```

```
$microseconds = 750_000;
usleep($microseconds);
```

```
# signal alarm in 2.5s & every .1s thereafter
ualarm(2_500_000, 100_000);
# cancel that ualarm
ualarm(0);
```

```
# get seconds and microseconds since the epoch
($s, $usec) = gettimeofday();
```

```
# measure elapsed time
# (could also do by subtracting 2 gettimeofday return values)
$t0 = [gettimeofday];
# do bunch of stuff here
$t1 = [gettimeofday];
# do more stuff here
$t0_t1 = tv_interval $t0, $t1;
```

```
$elapsed = tv_interval ($t0, [gettimeofday]);
$elapsed = tv_interval ($t0); # equivalent code
```

```
#
# replacements for time, alarm and sleep that know about
# floating seconds
#
```

```
use Time::HiRes;
$now_fractions = Time::HiRes::time;
Time::HiRes::sleep (2.5);
Time::HiRes::alarm (10.6666666);
```

```
use Time::HiRes qw ( time alarm sleep );
$now_fractions = time;
sleep (2.5);
alarm (10.6666666);
```

```

# Arm an interval timer to go off first at 10 seconds and
# after that every 2.5 seconds, in process virtual time

use Time::HiRes qw ( setitimer ITIMER_VIRTUAL time );

$SIG{VTALRM} = sub { print time, "\n" };
setitimer(ITIMER_VIRTUAL, 10, 2.5);

use Time::HiRes qw( clock_gettime clock_getres CLOCK_REALTIME );
# Read the POSIX high resolution timer.
my $high = clock_getres(CLOCK_REALTIME);
# But how accurate we can be, really?
my $reso = clock_getres(CLOCK_REALTIME);

use Time::HiRes qw( clock_nanosleep TIMER_ABSTIME );
clock_nanosleep(CLOCK_REALTIME, 1e6);
clock_nanosleep(CLOCK_REALTIME, 2e9, TIMER_ABSTIME);

use Time::HiRes qw( clock );
my $clock0 = clock();
... # Do something.
my $clock1 = clock();
my $clockd = $clock1 - $clock0;

use Time::HiRes qw( stat );
my ($atime, $mtime, $ctime) = (stat("istics"))[8, 9, 10];

=head1 C API

```

In addition to the perl API described above, a C API is available for extension writers. The following C functions are available in the modglobal hash:

name	C prototype
Time::NVtime	double (*)()
Time::U2time	void (*)(pTHX_ UV ret[2])

Both functions return equivalent information (like C<gettimeofday>) but with different representations. The names C<NVtime> and C<U2time> were selected mainly because they are operating system independent. (C<gettimeofday> is Unix-centric, though some platforms like Win32 and VMS have emulations for it.)

Here is an example of using C<NVtime> from C:

```
double (*myNVtime)(); /* Returns -1 on failure. */
```

```
SV **svp = hv_fetch(PL_modglobal, "Time::NVtime", 12, 0);
if (!svp) croak("Time::HiRes is required");
if (!SvIOK(*svp)) croak("Time::NVtime isn't a function pointer");
myNVtime = INT2PTR(double(*)(), SvIV(*svp));
printf("The current time is: %f\n", (*myNVtime)());
```

=head1 DIAGNOSTICS

=head2 useconds or interval more than ...

In `ualarm()` you tried to use number of microseconds or interval (also in microseconds) more than `1_000_000` and `setitimer()` is not available in your system to emulate that case.

=head2 negative time not invented yet

You tried to use a negative time argument.

=head2 internal error: useconds < 0 (unsigned ... signed ...)

Something went horribly wrong-- the number of microseconds that cannot become negative just became negative. Maybe your compiler is broken?

=head2 useconds or uinterval equal to or more than 1000000

In some platforms it is not possible to get an alarm with subsecond resolution and later than one second.

=head2 unimplemented in this platform

Some calls simply aren't available, real or emulated, on every platform.

=head1 CAVEATS

Notice that the core `C<time()>` maybe rounding rather than truncating. What this means is that the core `C<time()>` may be reporting the time as one second later than `C<gettimeofday()>` and `C<Time::HiRes::time()>`.

Adjusting the system clock (either manually or by services like `ntp`) may cause problems, especially for long running programs that assume a monotonously increasing time (note that all platforms do not adjust time as gracefully as UNIX `ntp` does). For example in Win32 (and derived platforms like Cygwin and MinGW) the `Time::HiRes::time()` may temporarily drift off from the system clock (and the original `time()`) by up to 0.5 seconds. `Time::HiRes` will notice this eventually and recalibrate.

Note that since `Time::HiRes 1.77` the `clock_gettime(CLOCK_MONOTONIC)` might help in this (in case your system supports `CLOCK_MONOTONIC`).

Some systems have APIs but not implementations: for example QNX and Haiku have the interval timer APIs but not the functionality.

=head1 SEE ALSO

Perl modules L<BSD::Resource>, L<Time::TAI64>.

Your system documentation for C<clock>, C<clock\_gettime>, C<clock\_getres>, C<clock\_nanosleep>, C<clock\_settime>, C<getitimer>, C<gettimeofday>, C<setitimer>, C<sleep>, C<stat>, C<ualarm>.

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=cut

Found in path(s):

\* /opt/cola/permits/1000848959\_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-jECbbpLO/Time-HiRes-1.9725/HiRes.pm

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

Time::HiRes module: High resolution time, sleep, and alarm.

Implement usleep, ualarm, and gettimeofday for Perl, as well as wrappers to implement time, sleep, and alarm that know about non-integral seconds.

Note: the tests of this module are by definition time sensitive: under heavy loads the tests may fail. Reasonable relaxed criteria are being used for the tests but sometimes you may still see transient failures. Rerun the tests (make test) a couple of times, preferably with less load on the testing machine.

Also, older versions of Perl do not support '-nolinenumbers' on the XSUBPP command, however, 5.004\_03 requires it (on my box, anyway) since the #line generating code in XSUBPP appears to have problems with #ifdef'd .xs code. If xsubpp complains about usage when you do a make, look at the top of the Makefile.PL and comment out the "\$XSOPT=" line. Or upgrade to a newer version of Perl.

POD documentation is embedded.

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Found in path(s):

```
* /opt/cola/permits/1000848959_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-jECbbpLO/Time-HiRes-1.9725/README
No license file was found, but licenses were detected in source scan.
```

```
/*
```

```
*
```

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```

```
*
```

```
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```

```
* it under the same terms as Perl itself.
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1000848959_1646171515.33/0/perl-Time-HiRes-1.9725-3.el7.src.rpm-cosi-expand-archive-BZgHOcfH/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-jECbbpLO/Time-HiRes-1.9725/HiRes.xs
```

# 1.246 guava 20.0

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## 1.249 cronie 1.4.11 23.e17

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  - \*
    - \* @(#)bitstring.h 8.1 (Berkeley) 7/19/93
    - \*/

# 1.250 blas 5.3.7

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\* Optimize BLAS3 on ICT Loongson 3A.

\* Optimize BLAS3 on Intel Sandy Bridge.

\* Werner Saar <wernsaar@googlemail.com>

\* [2013-03-04] Optimize AVX and FMA4 DGEMM on AMD Bulldozer

\* [2013-04-27] Optimize AVX and FMA4 TRSM on AMD Bulldozer

\* [2013-06-09] Optimize AVX and FMA4 SGEMM on AMD Bulldozer

\* [2013-06-11] Optimize AVX and FMA4 ZGEMM on AMD Bulldozer

\* [2013-06-12] Optimize AVX and FMA4 CGEMM on AMD Bulldozer

\* [2013-06-16] Optimize dgemv\_n kernel on AMD Bulldozer

\* [2013-06-20] Optimize ddot, daxpy kernel on AMD Bulldozer

- \* [2013-06-21] Optimize dcopy kernel on AMD Bulldozer
- \* Porting and Optimization on ARM Cortex-A9
- \* Optimization on AMD Piledriver
- \* Optimization on Intel Haswell

## ## Previous Developers

- \* Zaheer Chothia <zaheer.chothia@gmail.com>
- \* Improve the compatibility about complex number
- \* Build LAPACKE: C interface to LAPACK
- \* Improve the windows build.

- \* Chen Shaohu <huhumartinwar@gmail.com>
- \* Optimize GEMV on the Loongson 3A processor.

- \* Luo Wen
- \* Intern. Test Level-2 BLAS.

## ## Contributors

In chronological order:

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- \* [2011-06-11] Make USE\_OPENMP=0 disable openmp.
- \* Stefan Karpinski <stefan@karpinski.org>
- \* [2011-12-28] Fix a bug about SystemStubs on Mac OS X.
- \* Alexander Eberspcher <<https://github.com/aegerspaecher>>
- \* [2012-05-02] Add note on patch for segfaults on Linux kernel 2.6.32.
- \* Mike Nolta <mike@nolta.net>
- \* [2012-05-19] Fix building bug on FreeBSD and NetBSD.
- \* Sylvestre Ledru <<https://github.com/sylvestre>>
- \* [2012-07-01] Improve the detection of sparc. Fix building bug under Hurd and kfreebsd.
- \* Jameson Nash <<https://github.com/vtjnash>>
- \* [2012-08-20] Provide support for passing CFLAGS, FFLAGS, PFLAGS, FPFLAGS to make on the command line.
- \* Alexander Nasonov <alnsn@yandex.ru>
- \* [2012-11-10] Fix NetBSD build.
- \* Sbastien Villemot <sebastien@debian.org>
- \* [2012-11-14] Fix compilation with TARGET=GENERIC. Patch applied to Debian package.
- \* [2013-08-28] Avoid failure on qemu guests declaring an Athlon CPU without 3dnow!

- \* Kang-Che Sung <Explorer09@gmail.com>
- \* [2013-05-17] Fix typo in the document. Re-order the architecture list in getarch.c.
  
- \* Kenneth Hoste <kenneth.hoste@gmail.com>
- \* [2013-05-22] Adjust Makefile about downloading LAPACK source files.
  
- \* Lei WANG <https://github.com/wlbksy>
- \* [2013-05-22] Fix a bug about wget.
  
- \* Dan Luu <http://www.linkedin.com/in/danluu>
- \* [2013-06-30] Add Intel Haswell support (using sandybridge optimizations).
  
- \* grisuthedragon <https://github.com/grisuthedragon>
- \* [2013-07-11] create openblas\_get\_parallel to retrieve information which parallelization model is used by OpenBLAS.
  
- \* Elliot Saba <staticfloat@gmail.com>
- \* [2013-07-22] Add in return value for `interface/trtri.c`
  
- \* Sbastien Fabbro <bicatali@gentoo.org>
- \* [2013-07-24] Modify makefile to respect user's LDFLAGS
- \* [2013-07-24] Add stack markings for GNU as arch-independent for assembler files
  
- \* Viral B. Shah <viral@mayin.org>
- \* [2013-08-21] Patch LAPACK XLASD4.f as discussed in JuliaLang/julia#2340
  
- \* Lars Buitinck <https://github.com/larsmans>
- \* [2013-08-28] get rid of the generated cblas\_noconst.h file
- \* [2013-08-28] Missing threshold in gemm.c
- \* [2013-08-28] fix default prefix handling in makefiles
  
- \* yieldthought <https://github.com/yieldthought>
- \* [2013-10-08] Remove -Wl,--retain-symbols-file from dynamic link line to fix tool support
  
- \* Keno Fischer <https://github.com/loladiro>
- \* [2013-10-23] Use FC instead of CC to link the dynamic library on OS X
  
- \* Christopher Meng <cickumqt@gmail.com>
- \* [2013-12-09] Add DESTDIR support for easier building on RPM based distros.  
Use install command instead of cp to install files with permissions control.
  
- \* Lucas Beyer <lucasb.eyer.be@gmail.com>
- \* [2013-12-10] Added support for NO\_SHARED in make install.
  
- \* carlkl <https://github.com/carlkl>
- \* [2013-12-13] Fixed LAPACKE building bug on Windows

- \* Isaac Dunham <<https://github.com/idunham>>
- \* [2014-08-03] Fixed link error on Linux/musl
  
- \* Dave Nuechterlein
- \* [2014-10-10] trmm and sgemv kernels (optimized for APM's X-Gene 1).  
ARMv8 support.
  
- \* Jerome Robert <[jeromerobert@gmx.com](mailto:jeromerobert@gmx.com)>
- \* [2015-01-01] Speed-up small `ger` and `gemv` using stack allocation (bug #478)
- \* [2015-12-23] `stack\_check` in `gemv.c` (bug #722)
- \* [2015-12-28] Allow to force the number of parallel make job
- \* [2015-12-28] Fix detection of AMD E2-3200 detection
- \* [2015-12-31] Let `make MAX\_STACK\_ALLOC=0` do what expected
- \* [2016-01-19] Disable multi-threading in `ger` and `swap` for small matrices (bug #731)
- \* [2016-01-24] Use `GEMM\_MULTITHREAD\_THRESHOLD` as a number of ops (bug #742)
- \* [2016-01-26] Let `openblas\_get\_num\_threads` return the number of active threads (bug #760)
- \* [2016-01-30] Speed-up small `zger`, `zgemv`, `ztrmv` using stack allocation (bug #727)
  
- \* Dan Kortschak
- \* [2015-01-07] Added test for drotmg bug #484.
  
- \* Ton van den Heuvel <<https://github.com/ton>>
- \* [2015-03-18] Fix race condition during shutdown causing a crash in gotoblas\_set\_affinity().
  
- \* Martin Koehler <<https://github.com/grisuthedragon/>>
- \* [2015-09-07] Improved imatcopy
  
- \* Ashwin Sekhar T K <<https://github.com/ashwinyes/>>
- \* [2015-11-09] Assembly kernels for Cortex-A57 (ARMv8)
- \* [2015-11-20] lapack-test fixes for Cortex-A57
- \* [2016-03-14] Additional functional Assembly Kernels for Cortex-A57
- \* [2016-03-14] Optimize Dgemm 4x4 for Cortex-A57
  
- \* theoractice <<https://github.com/theoractice/>>
- \* [2016-03-20] Fix compiler error in VisualStudio with CMake
- \* [2016-03-22] Fix access violation on Windows while static linking
  
- \* Paul Mustire <<https://github.com/buffer51/>>
- \* [2016-02-04] Fix Android build on ARMV7
- \* [2016-04-26] Android build with LAPACK for ARMV7 & ARMV8
  
- \* Shivraj Patil <<https://github.com/sva-img/>>
- \* [2016-05-03] DGEMM optimization for MIPS P5600 and I6400 using MSA
  
- \* Kaustubh Raste <<https://github.com/ksraste/>>
- \* [2016-05-09] DTRSM optimization for MIPS P5600 and I6400 using MSA
- \* [2016-05-20] STRSM optimization for MIPS P5600 and I6400 using MSA

- \* Abdelrauf <<https://github.com/quickwritereader>>
- \* [2017-01-01] dgemm and dtrmm kernels for IBM z13
- \* [2017-02-26] ztrmm kernel for IBM z13
- \* [2017-03-13] strmm and ctrmm kernel for IBM z13
- \* [2017-09-01] initial Blas Level-1,2 (double precision) for IBM z13
- \* [2018-03-07] added missing Blas Level 1-2 (double precision) simd codes
- \* [2019-02-01] added missing Blas Level-1,2 (single precision) simd codes
- \* [2019-03-14] power9 dgemm/dtrmm kernel
- \* [2019-04-29] power9 sgemm/strmm kernel

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## 1.253 Lucene-join 7.7.2

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## 1.255 file 5.11-35.el7

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## 1.256 perl-scalar-list-utils 1.27 248.el7

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## 1.257 bcel 1.8

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## 1.260 servlet-api 8.5.32

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- javaee\_6.xsd
- javaee\_web\_services\_1\_3.xsd
- javaee\_web\_services\_client\_1\_3.xsd
- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd
- javaee\_7.xsd
- javaee\_web\_services\_1\_4.xsd
- javaee\_web\_services\_client\_1\_4.xsd
- jsp\_2\_3.xsd
- web-app\_3\_1.xsd
- web-common\_3\_1.xsd
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- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd

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# 1.261 mpclib 1.0.1-3.el7

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freemarker/ext/jsp/web-app_2_3.dtd
freemarker/ext/jsp/web-app_2_4.xsd
freemarker/ext/jsp/web-app_2_5.xsd
freemarker/ext/jsp/web-jsptaglibrary_1_1.dtd
freemarker/ext/jsp/web-jsptaglibrary_1_2.dtd
freemarker/ext/jsp/web-jsptaglibrary_2_0.xsd
freemarker/ext/jsp/web-jsptaglibrary_2_1.xsd
```

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# 1.263 readline 4.2.46-33.el7

## 1.263.1 Available under license :

From friedman@cli.com Thu May 25 12:19:06 1995

Flags: 10

Return-Path: friedman@cli.com

Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTTP (8.6.10+cwru/CWRU-2.1-ins)

id MAA08685; Thu, 25 May 1995 12:19:05 -0400 (from friedman@cli.com for <chet@odin.INS.CWRU.Edu>)

Received: from cli.com (cli.com [192.31.85.1]) by po.cwru.edu with SMTP (8.6.10+cwru/CWRU-2.3)

id MAA11299; Thu, 25 May 1995 12:19:00 -0400 (from friedman@cli.com for <chet@po.cwru.edu>)

Received: from tepui.cli.com by cli.com (4.1/SMI-4.1)

id AA27213; Thu, 25 May 95 11:18:25 CDT

Received: by tepui.cli.com (4.1) id AA16031; Thu, 25 May 95 11:18:23 CDT  
Message-Id: <9505251618.AA16031@tepui.cli.com>  
From: friedman@gnu.ai.mit.edu (Noah Friedman)  
To: chet@po.cwru.edu  
Subject: Bash scripts  
Reply-To: friedman@gnu.ai.mit.edu  
In-Reply-To: <chet@odin.ins.cwru.edu> Thu, 25 May 1995 11:19:59 -0400  
References: <9505251519.AA06424.SM@odin.INS.CWRU.Edu>  
Date: Thu, 25 May 95 11:18:21 CST

>Hi. I snagged some of your bash functions from your home directory on  
>the FSF machines (naughty, I know), and I was wondering if you'd let  
>me distribute them with bash-2.0. Thanks.

Sure. I think there's a later copy in  
~ftp/friedman/shell-inits/init-4.89.tar.gz. There are also some elisp and  
es frobs in that file.

It should serve as a pretty good example of how to get carried away. :-)

From spcedt@armory.com Wed May 10 10:21:11 1995

Flags: 10

Return-Path: spcedt@armory.com

Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTTP  
(8.6.10+cwru/CWRU-2.1-ins)

id KAA22876; Wed, 10 May 1995 10:21:10 -0400 (from spcedt@armory.com for <chet@odin.INS.CWRU.Edu>)

Received: from deepthought.armory.com (mmdf@deepthought.armory.com [192.122.209.42]) by po.cwru.edu with  
SMTP (8.6.10+cwru/CWRU-2.3)

id BAA16354; Wed, 10 May 1995 01:33:22 -0400 (from spcedt@armory.com for <chet@po.cwru.edu>)

From: John DuBois <spcedt@armory.com>

Date: Tue, 9 May 1995 22:33:12 -0700

In-Reply-To: Chet Ramey <chet@odin.ins.cwru.edu>

"ksh scripts" (May 9, 1:36pm)

X-Www: <http://www.armory.com/~spcedt/>

X-Mailer: Mail User's Shell (7.2.5 10/14/92)

To: chet@po.cwru.edu

Subject: Re: ksh scripts

Message-ID: <9505092233.aa13001@deepthought.armory.com>

Sure. The canonical versions are available on ftp.armory.com; you might  
want to pick up the latest versions before modifying them.

John

On May 9, 1:36pm, Chet Ramey wrote:

} Subject: ksh scripts

} From odin.ins.cwru.edu!chet Tue May 9 10:39:51 1995

} Received: from odin.INS.CWRU.Edu by deepthought.armory.com id aa22336;

} 9 May 95 10:39 PDT

} Received: (chet@localhost) by odin.INS.CWRU.Edu (8.6.10+cwru/CWRU-2.1-ins)  
} id NAA20487; Tue, 9 May 1995 13:39:24 -0400 (from chet)  
} Date: Tue, 9 May 1995 13:36:54 -0400  
} From: Chet Ramey <chet@odin.ins.cwru.edu>  
} To: john@armory.com  
} Subject: ksh scripts  
} Cc: chet@odin.ins.cwru.edu  
} Reply-To: chet@po.cwru.edu  
} Message-ID: <9505091736.AA20411.SM@odin.INS.CWRU.Edu>  
} Read-Receipt-To: chet@po.CWRU.Edu  
} MIME-Version: 1.0  
} Content-Type: text/plain; charset=us-ascii  
} Status: OR  
}  
} Hi. I'm the maintainer of bash (the GNU `Bourne Again shell') for  
} the FSF.  
}  
} I picked up a tar file of ksh scripts you wrote from an anon FTP site  
} a while back. I'd like your permission to include modified versions  
} of some of them in the next major bash distribution (with proper credit  
} given, of course). Is it OK if I do that?  
}  
} Chet Ramey  
}  
} --  
} ``The lyf so short, the craft so long to lerne." - Chaucer  
}  
} Chet Ramey, Case Western Reserve University Internet: chet@po.CWRU.Edu  
}-- End of excerpt from Chet Ramey

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Flags: 10

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Received: from ruby.ora.com (ruby.ora.com [198.112.208.25]) by odin.INS.CWRU.Edu with ESMTMP (8.6.12+cwru/CWRU-2.1-ins) id MAA01565; Tue, 1 Aug 1995 12:13:18 -0400 (from mikel@ora.com for <chet@odin.INS.CWRU.Edu>)

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From: mikel@ora.com (Michael Loukides)

Message-Id: <9508011257.AA00672@los.ora.com>

Subject: Re: Ksh debugger from Rosenblatt's book [for bash]

To: Chet Ramey <chet@odin.INS.CWRU.Edu>

Cc: cmarie@ora.com, cam@iinet.com.au, brosenblatt@tm.com

In-Reply-To: Chet Ramey <chet@odin.INS.CWRU.Edu>, Mon, 31 Jul 1995 16:22:48 -0400

I've modified a (modified) version of Bill Rosenblatt's ksh debugger to work with bash-2.0. Does ORA have any problem with me distributing it with bash-2.0?

That's great!

Go ahead and circulate it; in fact, we should probably grab it and stick it in our ftp archive, and put a reference to it in the book. (Too late to actually discuss the thing, at least for this edition).

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## 1.264 jbig-kit 2.0 11.e17

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## 1.265 plexus-classworlds 1.1-alpha-2

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`analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt`,  
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The levenshtein automata tables (under core/src/java/org/apache/lucene/util/automaton) were  
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Jean-Philippe Barrette-LaPierre. This library is available under an MIT license, see <http://sites.google.com/site/rrettesite/moman> and <http://bitbucket.org/jpbarrette/moman/overview/>

The class `org.apache.lucene.util.WeakIdentityMap` was derived from the Apache CXF project and is Apache License 2.0.

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The full snowball package is available from <http://snowball.tartarus.org/>

The KStem stemmer in `analysis/common/src/org/apache/lucene/analysis/en` was developed by Bob Krovetz and Sergio Guzman-Lara (CIIR-UMass Amherst) under the BSD-license.

The Arabic,Persian,Romanian,Bulgarian, Hindi and Bengali analyzers (common) come with a default stopword list that is BSD-licensed created by Jacques Savoy. These files reside in:  
`analysis/common/src/resources/org/apache/lucene/analysis/ar/stopwords.txt`,  
`analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt`,  
`analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt`,  
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`analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt`,  
`analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt`  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

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`analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java`  
`analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java`  
`analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java`  
`analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java`

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analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

The Stempel analyzer (stempel) includes BSD-licensed software developed by the Egothor project <http://egothor.sf.net/>, created by Leo Galambos, Martin Kvapil, and Edmond Nolan.

The Polish analyzer (stempel) comes with a default stopword list that is BSD-licensed created by the Carrot2 project. The file resides in `stempel/src/resources/org/apache/lucene/analysis/pl/stopwords.txt`. See <http://project.carrot2.org/license.html>.

The SmartChineseAnalyzer source code (smartcn) was provided by Xiaoping Gao and copyright 2009 by [www.imdict.net](http://www.imdict.net).

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`Servlet-api.jar` and `javax.servlet-*.jar` are under the CDDL license, the original source code for this can be found at <http://www.eclipse.org/jetty/downloads.php>

=====  
Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration  
=====

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which can be obtained from

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or

<http://jaist.dl.sourceforge.net/project/mecab/mecab-ipadic/2.7.0-20070801/mecab-ipadic-2.7.0-20070801.tar.gz>

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=====  
Nori Korean Morphological Analyzer - Apache Lucene Integration  
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## 1.272 kmod 20 25.e17

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#

include/freetype/internal/fthash.h

#

src/base/fthash.c

src/base/md5.c

src/base/md5.h

#

src/bdf/bdf.c

src/bdf/bdf.h

src/bdf/bdfdrivr.c

src/bdf/bdfdrivr.h

src/bdf/bdferror.h

src/bdf/bdflib.c

src/bdf/module.mk

src/bdf/README

```
src/bdf/rules.mk
#
src/pcf/module.mk
src/pcf/pcf.c
src/pcf/pcf.h
src/pcf/pcfdrivr.c
src/pcf/pcfdrivr.h
src/pcf/pcferror.h
src/pcf/pcfread.c
src/pcf/pcfread.h
src/pcf/pcfutil.c
src/pcf/pcfutil.h
src/pcf/README
src/pcf/rules.mk
#
src/gzip/adler32.c
src/gzip/infblock.c
src/gzip/infblock.h
src/gzip/infcodes.c
src/gzip/infcodes.h
src/gzip/inffixed.h
src/gzip/inflate.c
src/gzip/inftrees.c
src/gzip/inftrees.h
src/gzip/infutil.c
src/gzip/infutil.h
src/gzip/zconf.h
src/gzip/zlib.h
src/gzip/zutil.c
src/gzip/zutil.h
#
src/tools/apinames.c
src/tools/ftrandom/ftrandom.c
#
# EOF
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```
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```

```
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```

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```
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```

```
signature of Ty Coon, 1 April 1989
```

```
Ty Coon, President of Vice
```

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```
package java.security;
```

```
/**
```

```
* Abstract class for representing access to a system resource.  
* All permissions have a name (whose interpretation depends on the subclass),  
* as well as abstract functions for defining the semantics of the  
* particular Permission subclass.
```

```
*
```

```
* <p>Most Permission objects also include an "actions" list that tells the actions  
* that are permitted for the object. For example,  
* for a { @code java.io.FilePermission } object, the permission name is  
* the pathname of a file (or directory), and the actions list  
* (such as "read, write") specifies which actions are granted for the  
* specified file (or for files in the specified directory).  
* The actions list is optional for Permission objects, such as  
* { @code java.lang.RuntimePermission },  
* that don't need such a list; you either have the named permission (such  
* as "system.exit") or you don't.
```

```
*
```

```
* <p>An important method that must be implemented by each subclass is  
* the { @code implies } method to compare Permissions. Basically,  
* "permission p1 implies permission p2" means that  
* if one is granted permission p1, one is naturally granted permission p2.  
* Thus, this is not an equality test, but rather more of a  
* subset test.
```

```
*
```

```
* <P> Permission objects are similar to String objects in that they  
* are immutable once they have been created. Subclasses should not  
* provide methods that can change the state of a permission  
* once it has been created.
```

```
*
```

```
* @see Permissions  
* @see PermissionCollection
```

```
*
```

```
*
```

```
* @author Marianne Mueller  
* @author Roland Schemers
```

```
*/
```

```
public abstract class Permission implements Guard, java.io.Serializable {
```

```
    private static final long serialVersionUID = -563657022231596674L;
```

```

private String name;

/**
 * Constructs a permission with the specified name.
 *
 * @param name name of the Permission object being created.
 *
 */

public Permission(String name) {
    this.name = name;
}

/**
 * Implements the guard interface for a permission. The
 * {@code SecurityManager.checkPermission} method is called,
 * passing this permission object as the permission to check.
 * Returns silently if access is granted. Otherwise, throws
 * a SecurityException.
 *
 * @param object the object being guarded (currently ignored).
 *
 * @throws SecurityException
 *     if a security manager exists and its
 *     {@code checkPermission} method doesn't allow access.
 *
 * @see Guard
 * @see GuardedObject
 * @see SecurityManager#checkPermission
 *
 */
public void checkGuard(Object object) throws SecurityException {
    SecurityManager sm = System.getSecurityManager();
    if (sm != null) sm.checkPermission(this);
}

/**
 * Checks if the specified permission's actions are "implied by"
 * this object's actions.
 *
 * <P>
 * This must be implemented by subclasses of Permission, as they are the
 * only ones that can impose semantics on a Permission object.
 *
 * <p>The {@code implies} method is used by the AccessController to determine
 * whether or not a requested permission is implied by another permission that
 * is known to be valid in the current execution context.
 *
 */

```

```
* @param permission the permission to check against.  
*  
* @return true if the specified permission is implied by this object,  
* false if not.  
*/
```

```
public abstract boolean implies(Permission permission);
```

```
/**  
 * Checks two Permission objects for equality.  
 * <P>  
 * Do not use the { @code equals } method for making access control  
 * decisions; use the { @code implies } method.  
 *  
 * @param obj the object we are testing for equality with this object.  
 *  
 * @return true if both Permission objects are equivalent.  
 */
```

```
public abstract boolean equals(Object obj);
```

```
/**  
 * Returns the hash code value for this Permission object.  
 * <P>  
 * The required { @code hashCode } behavior for Permission Objects is  
 * the following:  
 * <ul>  
 * <li>Whenever it is invoked on the same Permission object more than  
 * once during an execution of a Java application, the  
 * { @code hashCode } method  
 * must consistently return the same integer. This integer need not  
 * remain consistent from one execution of an application to another  
 * execution of the same application.  
 * <li>If two Permission objects are equal according to the  
 * { @code equals }  
 * method, then calling the { @code hashCode } method on each of the  
 * two Permission objects must produce the same integer result.  
 * </ul>  
 *  
 * @return a hash code value for this object.  
 */
```

```
public abstract int hashCode();
```

```
/**  
 * Returns the name of this Permission.  
 * For example, in the case of a { @code java.io.FilePermission },  
 * the name will be a pathname.
```



```

*
* @return the name of this Permission.
*
*/

public final String getName() {
    return name;
}

/**
 * Returns the actions as a String. This is abstract
 * so subclasses can defer creating a String representation until
 * one is needed. Subclasses should always return actions in what they
 * consider to be their
 * canonical form. For example, two FilePermission objects created via
 * the following:
 *
 * <pre>
 * perm1 = new FilePermission(p1,"read,write");
 * perm2 = new FilePermission(p2,"write,read");
 * </pre>
 *
 * both return
 * "read,write" when the {@code getActions} method is invoked.
 *
 * @return the actions of this Permission.
 *
*/

public abstract String getActions();

/**
 * Returns an empty PermissionCollection for a given Permission object, or null if
 * one is not defined. Subclasses of class Permission should
 * override this if they need to store their permissions in a particular
 * PermissionCollection object in order to provide the correct semantics
 * when the {@code PermissionCollection.implies} method is called.
 * If null is returned,
 * then the caller of this method is free to store permissions of this
 * type in any PermissionCollection they choose (one that uses a Hashtable,
 * one that uses a Vector, etc).
 *
 * @return a new PermissionCollection object for this type of Permission, or
 * null if one is not defined.
 *
*/

public PermissionCollection newPermissionCollection() {
    return null;
}

```

```

}

/**
 * Returns a string describing this Permission. The convention is to
 * specify the class name, the permission name, and the actions in
 * the following format: '("ClassName" "name" "actions")', or
 * '("ClassName" "name")' if actions list is null or empty.
 *
 * @return information about this Permission.
 */
public String toString() {
    String actions = getActions();
    if ((actions == null) || (actions.length() == 0)) { // OPTIONAL
        return "(" + getClass().getName() + "\ " + name + "\)";
    } else {
        return "(" + getClass().getName() + "\ " + name +
            "\ " + actions + "\)";
    }
}
}

```

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```

#

# Version

# Uses Fedora Core 6 fonts and file paths.

version=1

# Component Font Mappings

dialog.plain.latin-1=DejaVu LGC Sans

dialog.plain.japanese-x0208=Sazanami Gothic

dialog.plain.korean=Baekmuk Gulim

dialog.plain.chinese-big5=AR PL ShanHeiSun Uni

dialog.plain.chinese-gb18030=AR PL ShanHeiSun Uni

dialog.bold.latin-1=DejaVu LGC Sans Bold

dialog.bold.japanese-x0208=Sazanami Gothic

dialog.bold.korean=Baekmuk Gulim

dialog.bold.chinese-big5=AR PL ShanHeiSun Uni

dialog.bold.chinese-gb18030=AR PL ShanHeiSun Uni

dialog.italic.latin-1=DejaVu LGC Sans Oblique

dialog.italic.japanese-x0208=Sazanami Gothic

dialog.italic.korean=Baekmuk Gulim

dialog.italic.chinese-big5=AR PL ShanHeiSun Uni

dialog.italic.chinese-gb18030=AR PL ShanHeiSun Uni

dialog.bolditalic.latin-1=DejaVu LGC Sans Bold Oblique

dialog.bolditalic.japanese-x0208=Sazanami Gothic

dialog.bolditalic.korean=Baekmuk Gulim

dialog.bolditalic.chinese-big5=AR PL ShanHeiSun Uni

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sansserif.plain.japanese-x0208=Sazanami Gothic

sansserif.plain.korean=Baekmuk Gulim

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sansserif.italic.japanese-x0208=Sazanami Gothic

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sansserif.bolditalic.latin-1=DejaVu LGC Sans Bold Oblique  
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serif.plain.latin-1=DejaVu LGC Serif  
serif.plain.japanese-x0208=Sazanami Mincho  
serif.plain.korean=Baekmuk Batang  
serif.plain.chinese-big5=AR PL ZenKai Uni  
serif.plain.chinese-gb18030=AR PL ZenKai Uni

serif.bold.latin-1=DejaVu LGC Serif Bold  
serif.bold.japanese-x0208=Sazanami Mincho  
serif.bold.korean=Baekmuk Batang  
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serif.italic.latin-1=DejaVu LGC Serif Oblique  
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dialoginput.bolditalic.korean=Baekmuk Gulim  
dialoginput.bolditalic.chinese-big5=AR PL ShanHeiSun Uni  
dialoginput.bolditalic.chinese-gb18030=AR PL ShanHeiSun Uni

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sequence.allfonts=latin-1  
sequence.allfonts.Big5=chinese-big5,latin-1  
sequence.allfonts.x-euc-jp-bsd=japanese-x0208,latin-1  
sequence.allfonts.EUC-KR=korean,latin-1  
sequence.allfonts.GB18030=chinese-gb18030,latin-1  
sequence.fallback=chinese-big5,chinese-gb18030,japanese-x0208,korean

#### # Font File Names

filename.DejaVu\_LGC\_Sans=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans.ttf  
filename.DejaVu\_LGC\_Sans\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-Bold.ttf  
filename.DejaVu\_LGC\_Sans\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-Oblique.ttf  
filename.DejaVu\_LGC\_Sans\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSans-BoldOblique.ttf

filename.DejaVu\_LGC\_Sans\_Mono=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono.ttf  
filename.DejaVu\_LGC\_Sans\_Mono\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-Bold.ttf  
filename.DejaVu\_LGC\_Sans\_Mono\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-Oblique.ttf  
filename.DejaVu\_LGC\_Sans\_Mono\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSansMono-BoldOblique.ttf

filename.DejaVu\_LGC\_Serif=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif.ttf  
filename.DejaVu\_LGC\_Serif\_Bold=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-Bold.ttf  
filename.DejaVu\_LGC\_Serif\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-Oblique.ttf  
filename.DejaVu\_LGC\_Serif\_Bold\_Oblique=/usr/share/fonts/dejavu-lgc/DejaVuLGCSerif-BoldOblique.ttf

filename.Sazanami\_Gothic=/usr/share/fonts/japanese/TrueType/sazanami-gothic.ttf  
filename.Sazanami\_Mincho=/usr/share/fonts/japanese/TrueType/sazanami-mincho.ttf  
filename.AR\_PL\_ShanHeiSun\_Uni=/usr/share/fonts/chinese/TrueType/uming.ttf  
filename.AR\_PL\_ZenKai\_Uni=/usr/share/fonts/chinese/TrueType/ukai.ttf  
filename.Baekmuk\_Gulim=/usr/share/fonts/korean/TrueType/gulim.ttf  
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  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html>
<head>
```



```

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<title>W3C IPR SOFTWARE NOTICE</title>
<style type="text/css">
<!--
html, body { background: #fff; color: #000; } /* body for Windows IE3 */
-->
</style>
</head>
<body>
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```
package java.security.acl;
```

```
/**
 * This interface represents a permission, such as that used to grant
 * a particular type of access to a resource.
 *
 * @author Satish Dharmaraj
 */
public interface Permission {

    /**
     * Returns true if the object passed matches the permission represented
     * in this interface.
     *
     * @param another the Permission object to compare with.
     *
     * @return true if the Permission objects are equal, false otherwise
     */
    public boolean equals(Object another);

    /**
     * Prints a string representation of this permission.
     */
}
```

```
*  
* @return the string representation of the permission.  
*/  
public String toString();  
  
}
```

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1998-05-11

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\*/

```
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public interface Legal extends Remote {};
```

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```
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import org.somewhere.ws.EchoResponse;  
  
public class CopyingResponse extends EchoResponse {  
  
    public CopyingResponse() { }  
  
    public CopyingResponse(EchoRequest request) {  
        content = request.getContent();  
    }  
}
```

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```

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import java.util.GregorianCalendar;
import java.util.Locale;
import java.util.TimeZone;

class CopyrightHeaders {
    private static final String ORACLE2012 =
        "/*\n" +
        " * Copyright (c) %d, Oracle and/or its affiliates. All rights reserved.\n" +
        " */\n";

    private static final String ORACLE_AFTER2012 =
        "/*\n" +
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" */\n";
```

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```

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" * or visit www.oracle.com if you need additional information or have any\n" +
" * questions.\n" +
" */\n";

```

```

static String getOracleCopyright() {
    int year = getYear();
    return String.format(year > 2012 ? ORACLE_AFTER2012 : ORACLE2012, year);
}

static String getUnicodeCopyright() {
    return UNICODE;
}

static String getOpenJDKCopyright() {
    int year = getYear();
    return String.format(year > 2012 ? OPENJDK_AFTER2012 : OPENJDK2012, year);
}

private static int getYear() {
    return new GregorianCalendar(TimeZone.getTimeZone("America/Los_Angeles"),
        Locale.US).get(Calendar.YEAR);
}

```

```

// no instantiation
private CopyrightHeaders() {
}
}

```

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David Megginson  
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## 1.279 compiler 0.9.3

## 1.280 xorg-x11-fonts 7.5 9.e17



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From f5488561bdaab57380bf07e8e66778503a41aca3 Mon Sep 17 00:00:00 2001

From: Father Chrysostomos <[sprout@cpan.org](mailto:sprout@cpan.org)>

Date: Sun, 23 Sep 2012 12:42:15 -0700

Subject: [PATCH] =?UTF-8?q?Don=E2=80=99t=20leak=20if=20hh=20copying=20dies?=>

MIME-Version: 1.0

Content-Type: text/plain; charset=UTF-8

Content-Transfer-Encoding: 8bit

When %^H is copied on entering a new scope, if it happens to have been tied it can die. This was resulting in leaks, because no protections were added to handle that case.

The two things that were leaking were the new hash in hv\_copy\_hints\_hv and the new value (for an element) in newSVsv.

By fixing newSVsv itself, this also fixes any potential leaks when other pieces of code call newSVsv on explosive values.

Petr Pizar: Ported to 5.16.3

---

hv.c | 6++++++

sv.c | 7++++---

t/op/svleak.t | 22+++++

3 files changed, 31 insertions(+), 4 deletions(-)

diff --git a/hv.c b/hv.c

index 3c35341..29d6352 100644

--- a/hv.c

+++ b/hv.c

@@ -1440,6 +1440,9 @@ Perl\_hv\_copy\_hints\_hv(pTHX\_ HV \*const ohv)

const I32 riter = HvRITER\_get(ohv);

HE \* const eiter = HvEITER\_get(ohv);

+ ENTER;

+ SAVEFREESV(hv);

+

while (hv\_max && hv\_max + 1 >= hv\_fill \* 2)

    hv\_max = hv\_max / 2;

HvMAX(hv) = hv\_max;

@@ -1461,6 +1464,9 @@ Perl\_hv\_copy\_hints\_hv(pTHX\_ HV \*const ohv)

}

HvRITER\_set(ohv, riter);

HvEITER\_set(ohv, eiter);

+

+ SvREFCNT\_inc\_simple\_void\_NN(hv);

+ LEAVE;

}

    hv\_magic(hv, NULL, PERL\_MAGIC\_hints);

    return hv;

diff --git a/sv.c b/sv.c

index a43feac..597d71b 100644

--- a/sv.c

+++ b/sv.c

@@ -8764,11 +8764,12 @@ Perl\_newSVsv(pTHX\_ register SV \*const old)

Perl\_ck\_warner\_d(aTHX\_ packWARN(WARN\_INTERNAL), "semi-panic: attempt to dup freed string");

return NULL;

```

    }
+ /* Do this here, otherwise we leak the new SV if this croaks. */
+ SvGETMAGIC(old);
  new_SV(sv);
- /* SV_GMAGIC is the default for sv_setv()
-   SV_NOSTEAL prevents TEMP buffers being, well, stolen, and saves games
+ /* SV_NOSTEAL prevents TEMP buffers being, well, stolen, and saves games
   with SvTEMP_off and SvTEMP_on round a call to sv_setsv. */
- sv_setsv_flags(sv, old, SV_GMAGIC | SV_NOSTEAL);
+ sv_setsv_flags(sv, old, SV_NOSTEAL);
  return sv;
}

```

```
diff --git a/t/op/svleak.t b/t/op/svleak.t
```

```
index 2f09af3..011c184 100644
```

```
--- a/t/op/svleak.t
```

```
+++ b/t/op/svleak.t
```

```
@@ -13,7 +13,7 @@ BEGIN {
  or skip_all("XS::APItest not available");
}

```

```
-plan tests => 23;
```

```
+plan tests => 24;
```

```
# run some code N times. If the number of SVs at the end of loop N is
```

```
# greater than (N-1)*delta at the end of loop 1, we've got a leak
```

```
@@ -176,3 +176,23 @@ leak(2, 0, sub {
```

```
  each %$h;
```

```
  undef $h;
```

```
}, 'tied hash iteration does not leak');
```

```
+
```

```
+# [perl #107000]
```

```
+package hhtie {
```

```
+ sub TIEHASH { bless [] }
```

```
+ sub STORE { $_[0][0]{$_[1]} = $_[2] }
```

```
+ sub FETCH { die if $explosive; $_[0][0]{$_[1]} }
```

```
+ sub FIRSTKEY { keys %{$_[0][0]}; each %{$_[0][0]} }
```

```
+ sub NEXTKEY { each %{$_[0][0]} }
```

```
+
```

```
+leak(2,!!$Config{mad}, sub {
```

```
+ eval q`
```

```
+ BEGIN {
```

```
+ $hhtie::explosive = 0;
```

```
+ tie %^H, hhtie;
```

```
+ $^H{foo} = bar;
```

```
+ $hhtie::explosive = 1;
```

```
+ }
```

```
+ { 1; }
```

```
+ `;
+}, 'hint-hash copying does not leak');
--
1.8.1.4
```

-----

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Julian Seward, [jseward@bzip.org](mailto:jseward@bzip.org)  
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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abstract: 'Build and install Perl modules'

author:

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

- "Development questions, bug reports, and patches should be sent to the\nModule-Build mailing list at <module-build@perl.org>."

build\_requires:

File::Temp: 0.15

Test::Harness: 3.16

Test::More: 0.49

generated\_by: 'Module::Build version 0.3608'

license: gpl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Module-Build

resources:

MailingList: <mailto:module-build@perl.org>

license: <http://dev.perl.org/licenses/>

repository: <http://github.com/dagolden/module-build/>

version: 3

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```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

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

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) 19yy <name of author>
```

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Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) 19xx name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

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

You should also get your employer (if you work as a programmer) or your

school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (a program to direct compilers to make passes at assemblers) written by James Hacker.

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

That's all there is to it!  
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The "Artistic License"

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The End

```

use strict;
use lib 't/lib';
use MBTest;
use DistGen;

plan 'no_plan';

# Ensure any Module::Build modules are loaded from correct directory
blib_load('Module::Build');

#-----#
# Create test distribution
#-----#

{
my $dist = DistGen->new(
    name => 'Simple::Name',
    version => '0.01',
    license => 'perl'
);

$dist->regen;
$dist->chdir_in;

my $mb = $dist->new_from_context();
isa_ok( $mb, "Module::Build" );
is( $mb->license, 'perl',
    "license 'perl' is valid"
);

my $meta = $mb->get_metadata( fatal => 0 );

is( $meta->{license} => 'perl', "META license will be 'perl'" );
is( $meta->{resources}{license}, "http://dev.perl.org/licenses/",
    "META license URL is correct"
);
}

{
my $dist = DistGen->new(
    name => 'Simple::Name',
    version => '0.01',
    license => 'VaporWare'
);

$dist->regen;
$dist->chdir_in;

```



```

my $mb = $dist->new_from_context();
isa_ok( $mb, "Module::Build" );
is( $mb->license, 'VaporWare',
    "license 'VaporWare' is valid"
);

my $meta = $mb->get_metadata( fatal => 0 );

is( $meta->{license} => 'unrestricted', "META license will be 'unrestricted'" );
is( $meta->{resources}{license}, "http://example.com/vaporware/",
    "META license URL is correct"
);

}

# Test with alpha number
# vim:ts=2:sw=2:et:sta:sts=2

```

# 1.282 libglvnd 1.0.1 0.8.git5baa1e5.e17

## 1.282.1 Available under license :

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```
<!DOCTYPE html
  PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
  <link rel="stylesheet" type="text/css" href="styles.css" />
  <title>uthash: a hash table for C structures</title>
</head>
<body>

<div id="banner">

</div> <!-- banner -->

<div id="topnav">
<a href="http://troydhanson.github.com/uthash/">uthash home</a> >
BSD license
</div>

<hr />
<div id="mid">
  <div id="main">
<pre>
Copyright (c) 2005-2013, Troy D. Hanson http://troydhanson.github.com/uthash/
All rights reserved.
```

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```
</pre>
</div> <!-- mid -->
</div> <!-- main -->

<hr />
<div id="footer">
</div> <!-- footer -->

</body>

</html>
```

## 1.283 perl-storable 2.45-3.el7

### 1.283.1 Available under license :

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-gMrYpE99/perl-Storable.spec

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

Storable 2.14

Copyright (c) 1995-2000, Raphael Manfredi

Copyright (c) 2001-2004, Larry Wall

-----  
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-----

```
+=====
| Storable is distributed as a module, but is also part of the official
| Perl core distribution, as of perl 5.8.
| Maintenance is now done by the perl5-porters. We thank Raphael
| Manfredi for providing us with this very useful module.
+=====
```

The Storable extension brings persistence to your data.

You may recursively store to disk any data structure, no matter how complex and circular it is, provided it contains only SCALAR, ARRAY, HASH (possibly tied) and references (possibly blessed) to those items.

At a later stage, or in another program, you may retrieve data from the stored file and recreate the same hierarchy in memory. If you had blessed references, the retrieved references are blessed into the same package, so you must make sure you have access to the same perl class than the one used to create the relevant objects.

There is also a dclone() routine which performs an optimized mirroring of any data structure, preserving its topology.

Objects (blessed references) may also redefine the way storage and retrieval is performed, and/or what deep cloning should do on those objects.

To compile this extension, run:

```
perl Makefile.PL [PERL_SRC=...where you put perl sources...]
make
make install
```

There is an embedded POD manual page in Storable.pm.

Storable was written by Raphael Manfredi <Raphael\_Manfredi@pobox.com>  
Maintenance is now done by the perl5-porters <perl5-porters@perl.org>

Please e-mail us with problems, bug fixes, comments and complaints, although if you have complements you should send them to Raphael. Please don't e-mail Raphael with problems, as he no longer works on Storable, and your message will be delayed while he forwards it to us.

-----  
Thanks to (in chronological order):

```
Jarkko Hietaniemi <jhi@iki.fi>
Ulrich Pfeifer <pfeifer@charly.informatik.uni-dortmund.de>
Benjamin A. Holzman <bholzman@earthlink.net>
```

Andrew Ford <A.Ford@ford-mason.co.uk>  
Gisle Aas <gisle@as.no>  
Jeff Gresham <gresham\_jeffrey@jpmorgan.com>  
Murray Nesbitt <murray@activestate.com>  
Albert N. Mischev <Albert.N.Mischev@f80.n5049.z2.fidonet.org>  
Marc Lehmann <pcg@opengroup.org>  
Justin Banks <justinb@wamnet.com>  
Jarkko Hietaniemi <jhi@iki.fi> (AGAIN, as perl 5.7.0 Pumpkin!)

for their contributions.

A Japanese translation of this man page is available at the Japanized Perl Resources Project <<https://sourceforge.jp/projects/perldocjp/>>.

-----  
The perl5-porters would like to thank

Raphael Manfredi <Raphael\_Manfredi@pobox.com>

According to the perl5.8 Changes file, the following people have helped bring you this Storable release:

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Tim Bunce <Tim.Bunce@pobox.com>  
VMSperlrs  
Yitzchak Scott-Thoennes <sthoenna@efn.org>

If I've missed you out, please accept my apologies, and e-mail your patch to perl5-porters@perl.org.

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-gMrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/README

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

=back

=head1 NOTES

Test::More is B<explicitly> tested all the way back to perl 5.004.

Test::More is thread-safe for perl 5.8.0 and up.

=head1 BUGS and CAVEATS

=over 4

=item Making your own ok()

If you are trying to extend Test::More, don't. Use Test::Builder instead.

=item The eq\_\* family has some caveats.

=item Test::Harness upgrades

no\_plan and todo depend on new Test::Harness features and fixes. If you're going to distribute tests that use no\_plan or todo your end-users will have to upgrade Test::Harness to the latest one on CPAN. If you avoid no\_plan and TODO tests, the stock Test::Harness will work fine.

If you simply depend on Test::More, it's own dependencies will cause a Test::Harness upgrade.

=back

=head1 HISTORY

This is a case of convergent evolution with Joshua Pritikin's Test module. I was largely unaware of its existence when I'd first written my own ok() routines. This module exists because I can't figure out how to easily wedge test names into Test's interface (along with a few other problems).

The goal here is to have a testing utility that's simple to learn,

quick to use and difficult to trip yourself up with while still providing more flexibility than the existing Test.pm. As such, the names of the most common routines are kept tiny, special cases and magic side-effects are kept to a minimum. WYSIWYG.

=head1 SEE ALSO

L<Test::Simple> if all this confuses you and you just want to write some tests. You can upgrade to Test::More later (it's forward compatible).

L<Test::Differences> for more ways to test complex data structures. And it plays well with Test::More.

L<Test> is the old testing module. Its main benefit is that it has been distributed with Perl since 5.004\_05.

L<Test::Harness> for details on how your test results are interpreted by Perl.

L<Test::Unit> describes a very featureful unit testing interface.

L<Test::Inline> shows the idea of embedded testing.

L<SelfTest> is another approach to embedded testing.

=head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> with much inspiration from Joshua Pritikin's Test module and lots of help from Barrie Slaymaker, Tony Bowden, chromatic and the perl-qa gang.

=head1 COPYRIGHT

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See F<<http://www.perl.com/perl/misc/Artistic.html>>

=cut

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-

gMrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/t/compat/Test/More.pm  
No license file was found, but licenses were detected in source scan.

# (C) Copyright 1997, Universitat Dortmund, all rights reserved.

Found in path(s):

```
* /opt/cola/permits/1000848947_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-gMrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/t/forgive.t
```

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

=back

Test::Simple will start by printing number of tests run in the form "1..M" (so "1..5" means you're going to run 5 tests). This strange format lets Test::Harness know how many tests you plan on running in case something goes horribly wrong.

If all your tests passed, Test::Simple will exit with zero (which is normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Simple will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

This module is by no means trying to be a complete testing system. It's just to get you started. Once you're off the ground its recommended you look at L<Test::More>.

=head1 EXAMPLE

Here's an example of a simple .t file for the fictional Film module.

```
use Test::Simple tests => 5;

use Film; # What you're testing.

my $btaste = Film->new({ Title => 'Bad Taste',
                       Director => 'Peter Jackson',
```



```

        Rating => 'R',
        NumExplodingSheep => 1
    });
ok( defined($btaste) and ref $btaste eq 'Film', 'new() works' );

ok( $btaste->Title eq 'Bad Taste', 'Title() get' );
ok( $btaste->Director eq 'Peter Jackson', 'Director() get' );
ok( $btaste->Rating eq 'R', 'Rating() get' );
ok( $btaste->NumExplodingSheep == 1, 'NumExplodingSheep() get' );

```

It will produce output like this:

```

1..5
ok 1 - new() works
ok 2 - Title() get
ok 3 - Director() get
not ok 4 - Rating() get
# Failed test (t/film.t at line 14)
ok 5 - NumExplodingSheep() get
# Looks like you failed 1 tests of 5

```

Indicating the `Film::Rating()` method is broken.

=head1 CAVEATS

`Test::Simple` will only report a maximum of 254 failures in its exit code. If this is a problem, you probably have a huge test script. Split it into multiple files. (Otherwise blame the Unix folks for using an unsigned short integer as the exit status).

Because VMS's exit codes are much, much different than the rest of the universe, and perl does horrible mangling to them that gets in my way, it works like this on VMS.

```

0  SS$_NORMAL    all tests successful
4  SS$_ABORT     something went wrong

```

Unfortunately, I can't differentiate any further.

=head1 NOTES

`Test::Simple` is B<explicitly> tested all the way back to perl 5.004.

`Test::Simple` is thread-safe in perl 5.8.0 and up.

=head1 HISTORY

This module was conceived while talking with Tony Bowden in his kitchen one night about the problems I was having writing some really complicated feature into the new Testing module. He observed that the main problem is not dealing with these edge cases but that people hate to write tests `B<at all>`. What was needed was a dead simple module that took all the hard work out of testing and was really, really easy to learn. Paul Johnson simultaneously had this idea (unfortunately, he wasn't in Tony's kitchen). This is it.

=head1 SEE ALSO

=over 4

=item L<Test::More>

More testing functions! Once you outgrow `Test::Simple`, look at `Test::More`. `Test::Simple` is 100% forward compatible with `Test::More` (i.e. you can just use `Test::More` instead of `Test::Simple` in your programs and things will still work).

=item L<Test>

The original Perl testing module.

=item L<Test::Unit>

Elaborate unit testing.

=item L<Test::Inline>, L<SelfTest>

Embed tests in your code!

=item L<Test::Harness>

Interprets the output of your test program.

=back

=head1 AUTHORS

Idea by Tony Bowden and Paul Johnson, code by Michael G Schwern  
E<lt>schwern@pobox.comE<gt>, wardrobe by Calvin Klein.

=head1 COPYRIGHT

Copyright 2001 by Michael G Schwern E<lt>schwern@pobox.comE<gt>.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-MrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/t/compat/Test/Simple.pm

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

=head1 THREADS

In perl 5.8.0 and later, Test::Builder is thread-safe. The test number is shared amongst all threads. This means if one thread sets the test number using current\_test() they will all be effected.

=head1 EXAMPLES

CPAN can provide the best examples. Test::Simple, Test::More, Test::Exception and Test::Differences all use Test::Builder.

=head1 SEE ALSO

Test::Simple, Test::More, Test::Harness

=head1 AUTHORS

Original code by chromatic, maintained by Michael G Schwern E<lt>schwern@pobox.comE<gt>

=head1 COPYRIGHT

Copyright 2002 by chromatic E<lt>chromatic@wgz.orgE<gt>,  
Michael G Schwern E<lt>schwern@pobox.comE<gt>.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-MrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/t/compat/Test/Builder.pm  
No license file was found, but licenses were detected in source scan.

/\*

-----

ppport.h -- Perl/Pollution/Portability Version 3.19

Automatically created by Devel::PPort running under perl 5.012003.

Do NOT edit this file directly! -- Edit PPPort\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

-----

SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.19

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help            show short help

--version         show version

--patch=file       write one patch file with changes

--copy=suffix      write changed copies with suffix

--diff=program     use diff program and options

--compat-version=version   provide compatibility with Perl version

--cplusplus        accept C++ comments

--quiet            don't output anything except fatal errors

--nodiag           don't show diagnostics

--nohints          don't show hints

--nochanges        don't suggest changes

--nofilter         don't filter input files

--strip           strip all script and doc functionality from  
                  ppport.h

--list-provided    list provided API

--list-unsupported list unsupported API

--api-info=name    show Perl API portability information

## =head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.10.0.

## =head1 OPTIONS

=head2 --help

Display a brief usage summary.

=head2 --version

Display the version of F<ppport.h>.

=head2 --patch=I<file>

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

=head2 --copy=I<suffix>

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does not require any external programs. Note that this does not automagically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither C<--patch> or C<--copy> are given, the default is to simply print the diffs for each file. This requires either C<Text::Diff> or a C<diff> program to be installed.

=head2 --diff=I<program>

Manually set the diff program and options to use. The default is to use C<Text::Diff>, when installed, and output unified context diffs.

=head2 --compat-version=I<version>

Tell F<ppport.h> to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of F<ppport.h> if you intend to be backward compatible only down to a certain Perl version.

=head2 --cplusplus

Usually, F<ppport.h> will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs F<ppport.h> to leave C++ comments untouched.

=head2 --quiet

Be quiet. Don't print anything except fatal errors.

=head2 --nodiag

Don't output any diagnostic messages. Only portability alerts will be printed.

=head2 --nohints

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

=head2 --nochanges

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

=head2 --nofilter

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

=head2 --strip

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort>

module is installed.

=head2 --list-provided

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

=head2 --list-unsupported

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

=head2 --api-info=I<name>

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

=head1 DESCRIPTION

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in

earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more `C<#define>`s in your source code before the inclusion of `F<ppport.h>`.

These functions or variables will be marked `C<explicit>` in the list shown by `C<--list-provided>`.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either `C<static>` or global variants.

For a `C<static>` function or variable (used only in a single source file), use:

```
#define NEED_function
#define NEED_variable
```

For a global function or variable (used in multiple source files), use:

```
#define NEED_function_GLOBAL
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_parser	NEED_PL_parser	NEED_PL_parser_GLOBAL
PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL
grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_sprintf()	NEED_my_sprintf	NEED_my_sprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSV_type()	NEED_newSV_type	NEED_newSV_type_GLOBAL
newSVpvn_flags()	NEED_newSVpvn_flags	NEED_newSVpvn_flags_GLOBAL
newSVpvn_share()	NEED_newSVpvn_share	NEED_newSVpvn_share_GLOBAL
pv_display()	NEED_pv_display	NEED_pv_display_GLOBAL
pv_escape()	NEED_pv_escape	NEED_pv_escape_GLOBAL



<code>pv_pretty()</code>	<code>NEED_pv_pretty</code>	<code>NEED_pv_pretty_GLOBAL</code>
<code>sv_2pv_flags()</code>	<code>NEED_sv_2pv_flags</code>	<code>NEED_sv_2pv_flags_GLOBAL</code>
<code>sv_2pvbyte()</code>	<code>NEED_sv_2pvbyte</code>	<code>NEED_sv_2pvbyte_GLOBAL</code>
<code>sv_catpvf_mg()</code>	<code>NEED_sv_catpvf_mg</code>	<code>NEED_sv_catpvf_mg_GLOBAL</code>
<code>sv_catpvf_mg_nocontext()</code>	<code>NEED_sv_catpvf_mg_nocontext</code>	<code>NEED_sv_catpvf_mg_nocontext_GLOBAL</code>
<code>sv_pvn_force_flags()</code>	<code>NEED_sv_pvn_force_flags</code>	<code>NEED_sv_pvn_force_flags_GLOBAL</code>
<code>sv_setpvf_mg()</code>	<code>NEED_sv_setpvf_mg</code>	<code>NEED_sv_setpvf_mg_GLOBAL</code>
<code>sv_setpvf_mg_nocontext()</code>	<code>NEED_sv_setpvf_mg_nocontext</code>	<code>NEED_sv_setpvf_mg_nocontext_GLOBAL</code>
<code>vload_module()</code>	<code>NEED_vload_module</code>	<code>NEED_vload_module_GLOBAL</code>
<code>vnewSVpvf()</code>	<code>NEED_vnewSVpvf</code>	<code>NEED_vnewSVpvf_GLOBAL</code>
<code>warn()</code>	<code>NEED_warner</code>	<code>NEED_warner_GLOBAL</code>

To avoid namespace conflicts, you can change the namespace of the explicitly exported functions / variables using the `C<DPPP_NAMESPACE>` macro. Just `C<#define>` the macro before including `C<ppport.h>`:

```
#define DPPP_NAMESPACE MyOwnNamespace_
#include "ppport.h"
```

The default namespace is `C<DPPP_>`.

=back

The good thing is that most of the above can be checked by running `F<ppport.h>` on your source code. See the next section for details.

=head1 EXAMPLES

To verify whether `F<ppport.h>` is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, `F<ppport.h>` can be run as a Perl script to check your source code. Simply say:

```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions

for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different C<diff> program or options, using the C<--diff> option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the C<newSVpv> function, use:

```
perl ppport.h --api-info=newSVpv
```

Since the argument to C<--api-info> can be a regular expression, you can use

```
perl ppport.h --api-info=/_nomg$/
```

to display portability information for all C<\_nomg> functions or

```
perl ppport.h --api-info=./.
```

to display information for all known API elements.

=head1 BUGS

If this version of F<ppport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPPort> are available on CPAN before sending a bug report.

If F<ppport.h> was generated using the latest version of C<Devel::PPPort> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPPort> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2009, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPPort>.

=cut

use strict;

# Disable broken TRIE-optimization

```
BEGIN { eval '${^RE_TRIE_MAXBUF} = -1' if $] >= 5.009004 && $] <= 5.009005 }
```

```
my $VERSION = 3.19;
```

```
my %opt = (
```

```

quiet => 0,
diag => 1,
hints => 1,
changes => 1,
cplusplus => 0,
filter => 1,
strip => 0,
version => 0,
);

my($ppport) = $0 =~ /([\w.]+)$/;
my $LF = '(?:\r\n|[\r\n])'; # line feed
my $HS = "[\t]";          # horizontal whitespace

# Never use C comments in this file!
my $ccs = '/'. '*';
my $cce = '*'. '/';
my $rcs = quotemeta $ccs;
my $rce = quotemeta $cce;

eval {
    require Getopt::Long;
    Getopt::Long::GetOptions(\%opt, qw(
        help quiet diag! filter! hints! changes! cplusplus strip version
        patch=s copy=s diff=s compat-version=s
        list-provided list-unsupported api-info=s
    )) or usage();
};

if ($@ and grep /^-/, @ARGV) {
    usage() if "@ARGV" =~ /^--?h(?::elp)?$/;
    die "Getopt::Long not found. Please don't use any options.\n";
}

if ($opt{version}) {
    print "This is $0 $VERSION.\n";
    exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
    my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
    if ($@) {
        die "Invalid version number format: '$opt{'compat-version'}'\n";
    }
    die "Only Perl 5 is supported\n" if $r != 5;
}

```

```

die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
$opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
$opt{'compat-version'} = 5;
}

```

```

my %API = map { /^(w+)([^\w]*)([^\w]*)(\w*)$/
? ( $1 => {
($2 ? ( base => $2 ) : ()),
($3 ? ( todo => $3 ) : ()),
(index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
(index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
(index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
} )
: die "invalid spec: $_" } qw(

```

```

AvFILLp|5.004050|p
AvFILL|||
CLASS|||n
CPERLscope|5.005000|p
CX_CURPAD_SAVE|||
CX_CURPAD_SV|||
CopFILEAV|5.006000|p
CopFILEGV_set|5.006000|p
CopFILEGV|5.006000|p
CopFILESV|5.006000|p
CopFILE_set|5.006000|p
CopFILE|5.006000|p
CopSTASHPV_set|5.006000|p
CopSTASHPV|5.006000|p
CopSTASH_eq|5.006000|p
CopSTASH_set|5.006000|p
CopSTASH|5.006000|p
CopyD|5.009002|p
Copy|||
CvPADLIST|||
CvSTASH|||
CvWEAKOUTSIDE|||
DEFSV_set|5.011000|p
DEFSV|5.004050|p
END_EXTERN_C|5.005000|p
ENTER|||
ERRSV|5.004050|p
EXTEND|||
EXTERN_C|5.005000|p
F0convert|||n
FREEMPS|||
GIMME_V|5.004000|n

```

GIMME|||n  
GROK\_NUMERIC\_RADIX|5.007002||p  
G\_ARRAY|||  
G\_DISCARD|||  
G\_EVAL|||  
G\_METHOD|5.006001||p  
G\_NOARGS|||  
G\_SCALAR|||  
G\_VOID||5.004000|  
GetVars|||  
GvSVn|5.009003||p  
GvSV|||  
Gv\_AMupdate|||  
HEf\_SVKEY||5.004000|  
HeHASH||5.004000|  
HeKEY||5.004000|  
HeKLEN||5.004000|  
HePV||5.004000|  
HeSVKEY\_force||5.004000|  
HeSVKEY\_set||5.004000|  
HeSVKEY||5.004000|  
HeUTF8||5.011000|  
HeVAL||5.004000|  
HvNAMELEN\_get|5.009003||p  
HvNAME\_get|5.009003||p  
HvNAME|||  
INT2PTR|5.006000||p  
IN\_LOCALE\_COMPILETIME|5.007002||p  
IN\_LOCALE\_RUNTIME|5.007002||p  
IN\_LOCALE|5.007002||p  
IN\_PERL\_COMPILETIME|5.008001||p  
IS\_NUMBER\_GREATER\_THAN\_UV\_MAX|5.007002||p  
IS\_NUMBER\_INFINITY|5.007002||p  
IS\_NUMBER\_IN\_UV|5.007002||p  
IS\_NUMBER\_NAN|5.007003||p  
IS\_NUMBER\_NEG|5.007002||p  
IS\_NUMBER\_NOT\_INT|5.007002||p  
IVSIZE|5.006000||p  
IVTYPE|5.006000||p  
IVdf|5.006000||p  
LEAVE|||  
LVRET|||  
MARK|||  
MULTICALL||5.011000|  
MY\_CXT\_CLONE|5.009002||p  
MY\_CXT\_INIT|5.007003||p  
MY\_CXT|5.007003||p  
MoveD|5.009002||p

Move|||  
NOOP|5.005000||p  
NUM2PTR|5.006000||p  
NVTYPE|5.006000||p  
NVef|5.006001||p  
NVff|5.006001||p  
NVgf|5.006001||p  
Newxc|5.009003||p  
Newxz|5.009003||p  
Newx|5.009003||p  
Nullav|||  
Nullch|||  
Nullcv|||  
Nullhv|||  
Nullsv|||  
ORIGMARK|||  
PAD\_BASE\_SV|||  
PAD\_CLONE\_VARS|||  
PAD\_COMPNAME\_FLAGS|||  
PAD\_COMPNAME\_GEN\_set|||  
PAD\_COMPNAME\_GEN|||  
PAD\_COMPNAME\_OURSTASH|||  
PAD\_COMPNAME\_PV|||  
PAD\_COMPNAME\_TYPE|||  
PAD\_DUP|||  
PAD\_RESTORE\_LOCAL|||  
PAD\_SAVE\_LOCAL|||  
PAD\_SAVE\_SETNULLPAD|||  
PAD\_SETSV|||  
PAD\_SET\_CUR\_NOSAVE|||  
PAD\_SET\_CUR|||  
PAD\_SV1|||  
PAD\_SV|||  
PERLIO\_FUNCS\_CAST|5.009003||p  
PERLIO\_FUNCS\_DECL|5.009003||p  
PERL\_ABS|5.008001||p  
PERL\_BCDVERSION|5.011000||p  
PERL\_GCC\_BRACE\_GROUPS\_FORBIDDEN|5.008001||p  
PERL\_HASH|5.004000||p  
PERL\_INT\_MAX|5.004000||p  
PERL\_INT\_MIN|5.004000||p  
PERL\_LONG\_MAX|5.004000||p  
PERL\_LONG\_MIN|5.004000||p  
PERL\_MAGIC\_arylen|5.007002||p  
PERL\_MAGIC\_backref|5.007002||p  
PERL\_MAGIC\_bm|5.007002||p  
PERL\_MAGIC\_collxfrm|5.007002||p  
PERL\_MAGIC\_dbfile|5.007002||p

PERL\_MAGIC\_dbline|5.007002||p  
PERL\_MAGIC\_defelem|5.007002||p  
PERL\_MAGIC\_envelem|5.007002||p  
PERL\_MAGIC\_env|5.007002||p  
PERL\_MAGIC\_ext|5.007002||p  
PERL\_MAGIC\_fm|5.007002||p  
PERL\_MAGIC\_glob|5.011000||p  
PERL\_MAGIC\_isaelem|5.007002||p  
PERL\_MAGIC\_isa|5.007002||p  
PERL\_MAGIC\_mutex|5.011000||p  
PERL\_MAGIC\_nkeys|5.007002||p  
PERL\_MAGIC\_overload\_elem|5.007002||p  
PERL\_MAGIC\_overload\_table|5.007002||p  
PERL\_MAGIC\_overload|5.007002||p  
PERL\_MAGIC\_pos|5.007002||p  
PERL\_MAGIC\_qr|5.007002||p  
PERL\_MAGIC\_regdata|5.007002||p  
PERL\_MAGIC\_regdatum|5.007002||p  
PERL\_MAGIC\_regex\_global|5.007002||p  
PERL\_MAGIC\_shared\_scalar|5.007003||p  
PERL\_MAGIC\_shared|5.007003||p  
PERL\_MAGIC\_sigelem|5.007002||p  
PERL\_MAGIC\_sig|5.007002||p  
PERL\_MAGIC\_substr|5.007002||p  
PERL\_MAGIC\_sv|5.007002||p  
PERL\_MAGIC\_taint|5.007002||p  
PERL\_MAGIC\_tiedelem|5.007002||p  
PERL\_MAGIC\_tiedscalar|5.007002||p  
PERL\_MAGIC\_tied|5.007002||p  
PERL\_MAGIC\_utf8|5.008001||p  
PERL\_MAGIC\_uvar\_elem|5.007003||p  
PERL\_MAGIC\_uvar|5.007002||p  
PERL\_MAGIC\_vec|5.007002||p  
PERL\_MAGIC\_vstring|5.008001||p  
PERL\_PV\_ESCAPE\_ALL|5.009004||p  
PERL\_PV\_ESCAPE\_FIRSTCHAR|5.009004||p  
PERL\_PV\_ESCAPE\_NOBACKSLASH|5.009004||p  
PERL\_PV\_ESCAPE\_NOCLEAR|5.009004||p  
PERL\_PV\_ESCAPE\_QUOTE|5.009004||p  
PERL\_PV\_ESCAPE\_RE|5.009005||p  
PERL\_PV\_ESCAPE\_UNI\_DETECT|5.009004||p  
PERL\_PV\_ESCAPE\_UNI|5.009004||p  
PERL\_PV\_PRETTY\_DUMP|5.009004||p  
PERL\_PV\_PRETTY\_ELLIPSES|5.010000||p  
PERL\_PV\_PRETTY\_LTGT|5.009004||p  
PERL\_PV\_PRETTY\_NOCLEAR|5.010000||p  
PERL\_PV\_PRETTY\_QUOTE|5.009004||p  
PERL\_PV\_PRETTY\_REGPROP|5.009004||p



PERL\_QUAD\_MAX|5.004000||p  
PERL\_QUAD\_MIN|5.004000||p  
PERL\_REVISION|5.006000||p  
PERL\_SCAN\_ALLOW\_UNDERSCORES|5.007003||p  
PERL\_SCAN\_DISALLOW\_PREFIX|5.007003||p  
PERL\_SCAN\_GREATER\_THAN\_UV\_MAX|5.007003||p  
PERL\_SCAN\_SILENT\_ILLDIGIT|5.008001||p  
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sv\_pos\_u2b\_forwards|||n  
sv\_pos\_u2b\_midway|||n  
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sv\_setnv|||  
sv\_setpv\_mg|5.004050|p  
sv\_setpvf\_mg\_nocontext||pvn  
sv\_setpvf\_mg|5.006000|5.004000|pv  
sv\_setpvf\_nocontext||vn  
sv\_setpvf|5.004000|v  
sv\_setpviv\_mg|5.008001|  
sv\_setpviv|5.008001|  
sv\_setpvn\_mg|5.004050|p  
sv\_setpvn|||  
sv\_setpvs|5.009004|p  
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sv\_setref\_nv|||  
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uvchr\_to\_utf8|||  
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```

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xmldump_sub|||
xmldump_vindent|||
yyerror|||
yylex|||
yyparse|||
yywarn|||
);

if (exists $opt{'list-unsupported'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", '.'x(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

# Scan for possible replacement candidates

my(%replace, %need, %hints, %warnings, %depends);
my $replace = 0;
my($hint, $define, $function);

sub find_api

```

```

{
my $code = shift;
$code =~ s{
 /(?:\[^\]*\*\*(?:\[^\$ccs][^\]*\*\*)* /|/^\r\n)*
|"[^\"]*(?:\\.["\\])*"
|'[^']*'(?:\\.['\\])*'}{ }egsx;
grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

while (<DATA>) {
if ($hint) {
my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
if (m{^\s*\*\s(?:\s*)\s*$}) {
for (@{$hint->[1]}) {
$h->{$_} ||= ""; # suppress warning with older perls
$h->{$_} .= "$1\n";
}
}
else { undef $hint }
}

$hint = [$1, [split /,?\s+/, $2]]
if m{^\s*$rccs\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

if ($define) {
if ($define->[1] =~ /\$/) {
$define->[1] .= $_;
}
else {
if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
my @n = find_api($define->[1]);
push @{$depends{$define->[0]}}, @n if @n
}
undef $define;
}
}

$define = [$1, $2] if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

if ($function) {
if (/^/) {
if (exists $API{$function->[0]}) {
my @n = find_api($function->[1]);
push @{$depends{$function->[0]}}, @n if @n
}
undef $function;
}
else {

```

```

function->[1] .= $_;
}
}

function = [$1, " if m{^DPPP_(my_(\w+))};

$replace = $1 if m{^s*$rccs\s+Replace:\s+(\d+)\s+$rce\s*$};
$replace{$2} = $1 if $replace and m{^s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+)};
$replace{$2} = $1 if m{^s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+).*rccs\s+Replace\s+$rce};
$replace{$1} = $2 if m{^s*$rccs\s+Replace (\w+) with (\w+)\s+$rce\s*$};

if (m{^s*$rccs\s+(\w+(\s*,\s*\w+*))\s+depends\s+on\s+(\w+(\s*,\s*\w+*))\s+$rce\s*$}) {
    my @deps = map { s/\s+//g; $_ } split /\s/, $3;
    my $d;
    for $d (map { s/\s+//g; $_ } split /\s/, $1) {
        push @{$depends{$d}}, @deps;
    }
}

$need{$1} = 1 if m{^#\s+defined\(\NEED_(\w+)(?:_GLOBAL)?\)};
}

for (values %depends) {
    my %s;
    $_ = [sort grep !$_{$_}++, @$_];
}

if (exists $opt{'api-info'}) {
    my $f;
    my $count = 0;
    my $match = $opt{'api-info'} =~ m!^(.*)/! ? $1 : "\Q$opt{'api-info'}\E$";
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $f =~ /$match/;
        print "\n=== $f ===\n";
        my $info = 0;
        if ($API{$f}{base} || $API{$f}{todo}) {
            my $base = format_version($API{$f}{base} || $API{$f}{todo});
            print "Supported at least starting from perl-$base.\n";
            $info++;
        }
        if ($API{$f}{provided}) {
            my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
            print "Support by $ppport provided back to perl-$todo.\n";
            print "Support needs to be explicitly requested by NEED_$_f.\n" if exists $need{$f};
            print "Depends on: ", join(', ', @{$depends{$f}}), ".\n" if exists $depends{$f};
            print "\n$hints{$f}" if exists $hints{$f};
            print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
            $info++;
        }
    }
}

```



```

}
print "No portability information available.\n" unless $info;
$count++;
}
$count or print "Found no API matching '$opt{api-info}'.";
print "\n";
exit 0;
}

```

```

if (exists $opt{'list-provided'}) {
my $f;
for $f (sort { lc $a cmp lc $b } keys %API) {
next unless $API{$f}{provided};
my @flags;
push @flags, 'explicit' if exists $need{$f};
push @flags, 'depend' if exists $depends{$f};
push @flags, 'hint' if exists $hints{$f};
push @flags, 'warning' if exists $warnings{$f};
my $flags = @flags ? ' [' . join(', ', @flags) . '] : ";
print "$f$flags\n";
}
exit 0;
}

```

```

my @files;
my @srcext = qw( .xs .c .h .cc .cpp -c.inc -xs.inc );
my $srcext = join '|', map { quotemeta $_ } @srcext;

```

```

if (@ARGV) {
my %seen;
for (@ARGV) {
if (-e) {
if (-f) {
push @files, $_ unless $seen{$_}++;
}
else { warn "'$_' is not a file.\n" }
}
else {
my @new = grep { -f } glob $_
or warn "'$_' does not exist.\n";
push @files, grep { !$seen{$_}++ } @new;
}
}
}
else {
eval {
require File::Find;
File::Find::find(sub {

```

```

$File::Find::name =~ /($srcext)$/i
    and push @files, $File::Find::name;
}, ');
};
if ($@) {
    @files = map { glob "*$_" } @srcext;
}
}

if (!@ARGV || $opt{filter}) {
    my(@in, @out);
    my %xsc = map { /(.*)\.xs$/ ? ("1.c" => 1, "1.cc" => 1) : () } @files;
    for (@files) {
        my $out = exists $xsc{$_} || /\bQ$ppport\E$/i || !/($srcext)$/i;
        push @ { $out ? \@out : \@in }, $_;
    }
    if (@ARGV && @out) {
        warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
    }
    @files = @in;
}

die "No input files given!\n" unless @files;

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

for $filename (@files) {
    unless (open IN, "<$filename") {
        warn "Unable to read from $filename: $!\n";
        next;
    }

    info("Scanning $filename ...");

    my $c = do { local $/; <IN> };
    close IN;

    my %file = (orig => $c, changes => 0);

    # Temporarily remove C/XS comments and strings from the code
    my @ccom;

    $c =~ s{
        ( ^$HS*\#$HS*include\b[^\r\n]+\b(?:\Q$ppport\E|XSUB\.h)\b[^\r\n]*
          | ^$HS*\#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )

```

```

| ( ^$HS*\#[^\r\n]*
| "[^"\\]*(?:\\.["\\])*"
| '[^']**(?:\\.['\\])*'
| /(?: \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* /|/[\r\n]* ) )
}{ defined $2 and push @ccom, $2;
  defined $1 ? $1 : "$ccs$#ccom$cce" }mgsex;

$file{ccom} = \@ccom;
$file{code} = $c;
$file{has_inc_ppport} = $c =~ /^$HS*#$HS*include[^\r\n]+\b\Q$ppport\E\b/m;

my $func;

for $func (keys %API) {
  my $match = $func;
  $match =~ s/$revreplace{$func}/ if exists $revreplace{$func};
  if ($c =~ /\b(?:Perl_)?($match)\b/) {
    $file{uses_replace}{$func}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
    $file{uses_Perl}{$func}++ if $c =~ /\bPerl_$func\b/;
    if (exists $API{$func}{provided}) {
      $file{uses_provided}{$func}++;
      if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
        $file{uses}{$func}++;
        my @deps = rec_depend($func);
        if (@deps) {
          $file{uses_deps}{$func} = \@deps;
          for (@deps) {
            $file{uses}{$_} = 0 unless exists $file{uses}{$_};
          }
        }
        for ($func, @deps) {
          $file{needs}{$_} = 'static' if exists $need{$_};
        }
      }
    }
  }
  if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
    if ($c =~ /\b$func\b/) {
      $file{uses_todo}{$func}++;
    }
  }
}

while ($c =~ /^$HS*#$HS*define$HS+(NEED_(\w+?)(_GLOBAL)?)\b/mg) {
  if (exists $need{$2}) {
    $file{defined_$3 ? 'needed_global' : 'needed_static'}{$2}++;
  }
  else { warning("Possibly wrong #define $1 in $filename") }
}

```

```

}

for (qw(uses needs uses_todo needed_global needed_static)) {
  for $func (keys % {$file{$_}}) {
    push @{$global{$_}{$func}}, $filename;
  }
}

$files{$filename} = \%file;
}

# Globally resolve NEED_'s
my $need;
for $need (keys % {$global{needs}}) {
  if (@{$global{needs}{$need}} > 1) {
    my @targets = @{$global{needs}{$need}};
    my @t = grep $files{$_}{needed_global}{$need}, @targets;
    @targets = @t if @t;
    @t = grep /\.xs$/i, @targets;
    @targets = @t if @t;
    my $target = shift @targets;
    $files{$target}{needs}{$need} = 'global';
    for (@{$global{needs}{$need}}) {
      $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
    }
  }
}

for $filename (@files) {
  exists $files{$filename} or next;

  info("=== Analyzing $filename ===");

  my %file = % {$files{$filename}};
  my $func;
  my $c = $file{code};
  my $warnings = 0;

  for $func (sort keys % {$file{uses_Perl}}) {
    if ($API{$func}{varargs}) {
      unless ($API{$func}{nothxarg}) {
        my $changes = ($c =~ s{\b(Perl_?func\s*(\s*)(?!aTHX_?)()\[^\s]*\)}
          { $1 . ($2 eq ' ') ? 'aTHX' : 'aTHX_' } . $2 }ge);
        if ($changes) {
          warning("Doesn't pass interpreter argument aTHX to Perl_$func");
          $file{changes} += $changes;
        }
      }
    }
  }
}

```

```

}
else {
    warning("Uses Perl_ $func instead of $func");
    $file{changes} += ($c =~ s{\bPerl_ $func(s*)((\s*aTHX_?)? \s*}
        {$func$1}g);
}
}

for $func (sort keys %{$file{uses_replace}}) {
    warning("Uses $func instead of $replace{$func}");
    $file{changes} += ($c =~ s/\b $func\b/$replace{$func}/g);
}

for $func (sort keys %{$file{uses_provided}}) {
    if ($file{uses}{$func}) {
        if (exists $file{uses_deps}{$func}) {
            diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
        }
        else {
            diag("Uses $func");
        }
    }
    $warnings += hint($func);
}

unless ($opt{quiet}) {
    for $func (sort keys %{$file{uses_todo}}) {
        print "*** WARNING: Uses $func, which may not be portable below perl ",
            format_version($API{$func}{todo}), ", even with '$ppport'\n";
        $warnings++;
    }
}

for $func (sort keys %{$file{needed_static}}) {
    my $message = "";
    if (not exists $file{uses}{$func}) {
        $message = "No need to define NEED_ $func if $func is never used";
    }
    elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
        $message = "No need to define NEED_ $func when already needed globally";
    }
    if ($message) {
        diag($message);
        $file{changes} += ($c =~ s/^\$HS*#\ $HS*define\$HS+NEED_ $func\b.*$LF//mg);
    }
}

for $func (sort keys %{$file{needed_global}}) {

```

```

my $message = "";
if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_${func}_GLOBAL if $func is never used";
}
elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
        $message = "No need to define NEED_${func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
        $message = "No need to define NEED_${func}_GLOBAL when only used in this file";
    }
}
}
if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_${func}_GLOBAL\b.*$LF//mg);
}
}

$file{needs_inc_ppport} = keys %{$file{uses}};

if ($file{needs_inc_ppport}) {
    my $pp = "";

    for $func (sort keys %{$file{needs}}) {
        my $type = $file{needs}{$func};
        next if $type eq 'extern';
        my $suffix = $type eq 'global' ? '_GLOBAL' : "";
        unless (exists $file{"needed_$type"}{$func}) {
            if ($type eq 'global') {
                diag("Files [@$global{needs}{$func}] need $func, adding global request");
            }
            else {
                diag("File needs $func, adding static request");
            }
            $pp .= "#define NEED_${func}$suffix\n";
        }
    }
}

if ($pp && ($c =~ s/^(?=$HS*#\$HS*define\$HS+NEED_(w+)/$pp/m)) {
    $pp = "";
    $file{changes}++;
}

unless ($file{has_inc_ppport}) {
    diag("Needs to include '$ppport'");
    $pp .= qq(#include "$ppport"\n)
}
}

```

```

if ($pp) {
    $file{changes} += ($c =~ s/^(($HS*#$HS*define$HS+NEED_\w+.*?)/$1$pp/ms)
        || ($c =~ s/^(?=$HS*#$HS*include.*\Q$ppport\E)/$pp/m)
        || ($c =~ s/^(($HS*#$HS*include.*XSUB.*\s*?)/$1$pp/m)
        || ($c =~ s/^\$pp/);
}
}
else {
    if ($file{has_inc_ppport}) {
        diag("No need to include '$ppport'");
        $file{changes} += ($c =~ s/^(($HS*?#$HS*include.*\Q$ppport\E.*?)$LF//m);
    }
}

```

# put back in our C comments

```

my $ix;
my $cpc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
    if (!$opt{plusplus} && $ccom[$ix] =~ s!^/!!) {
        $cpc++;
        $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
    }
    else {
        $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
    }
}

```

```

if ($cpc) {
    my $s = $cpc != 1 ? 's' : '';
    warning("Uses $cpc C++ style comment$s, which is not portable");
}

```

```

my $s = $warnings != 1 ? 's' : '';
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

```

```

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("$newfile' already exists, refusing to write copy of '$filename'");
        }
        else {
            local *F;
            if (open F, ">$newfile") {
                info("Writing copy of '$filename' with changes to '$newfile'");
                print F $c;
            }
        }
    }
}

```

```

    close F;
  }
  else {
    error("Cannot open '$newfile' for writing: $!");
  }
}
}
}
elseif (exists $opt{patch} || $opt{changes}) {
  if (exists $opt{patch}) {
    unless ($patch_opened) {
      if (open PATCH, ">$opt{patch}") {
        $patch_opened = 1;
      }
      else {
        error("Cannot open '$opt{patch}' for writing: $!");
        delete $opt{patch};
        $opt{changes} = 1;
        goto fallback;
      }
    }
    mydiff(\*PATCH, $filename, $c);
  }
  else {
fallback:
    info("Suggested changes:");
    mydiff(\*STDOUT, $filename, $c);
  }
}
else {
  my $s = $file{changes} == 1 ? " : 's'";
  info("$file{changes} potentially required change$s detected");
}
}
else {
  info("Looks good");
}
}
}

```

```
close PATCH if $patch_opened;
```

```
exit 0;
```

```
sub try_use { eval "use @_."; return $@ eq " }
```

```
sub mydiff
{
  local *F = shift;
```



```

my($file, $str) = @_;
my $diff;

if (exists $opt{diff}) {
    $diff = run_diff($opt{diff}, $file, $str);
}

if (!defined $diff and try_use("Text::Diff")) {
    $diff = Text::Diff::diff($file, \$str, { STYLE => 'Unified' });
    $diff = <<HEADER . $diff;
--- $file
+++ $file.patched
HEADER
}

if (!defined $diff) {
    $diff = run_diff('diff -u', $file, $str);
}

if (!defined $diff) {
    $diff = run_diff('diff', $file, $str);
}

if (!defined $diff) {
    error("Cannot generate a diff. Please install Text::Diff or use --copy.");
    return;
}

print F $diff;
}

sub run_diff
{
    my($prog, $file, $str) = @_;
    my $tmp = 'dppptemp';
    my $suf = 'aaa';
    my $diff = "";
    local *F;

    while (-e "$tmp.$suf") { $suf++ }
    $tmp = "$tmp.$suf";

    if (open F, ">$tmp") {
        print F $str;
        close F;

        if (open F, "$prog $file $tmp |") {
            while (<F>) {

```

```

    s/\Q$tmp\E/$file.patched/;
    $diff .= $_;
}
close F;
unlink $tmp;
return $diff;
}

unlink $tmp;
}
else {
    error("Cannot open '$tmp' for writing: $!");
}

return undef;
}

sub rec_depend
{
    my($func, $seen) = @_ ;
    return () unless exists $depends{$func};
    $seen = {% {$seen||{}}};
    return () if $seen->{$func}++;
    my %s;
    grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{
    my $ver = shift;

    if ($ver =~ /^(\d+)\.(\d+)\.(\d+)$/) {
        return ($1, $2, $3);
    }
    elsif ($ver !~ /^(\d+)\.([d_]+$)/) {
        die "cannot parse version '$ver'\n";
    }

    $ver =~ s/_//g;
    $ver =~ s/$/000000/;

    my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

    $v = int $v;
    $s = int $s;

    if ($r < 5 || ($r == 5 && $v < 6)) {
        if ($s % 10) {

```

```

    die "cannot parse version '$ver\n";
  }
}

return ($r, $v, $s);
}

sub format_version
{
  my $ver = shift;

  $ver =~ s/$/000000/;
  my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

  $v = int $v;
  $s = int $s;

  if ($r < 5 || ($r == 5 && $v < 6)) {
    if ($s % 10) {
      die "invalid version '$ver\n";
    }
    $s /= 10;

    $ver = sprintf "%d.%03d", $r, $v;
    $s > 0 and $ver .= sprintf "_%02d", $s;

    return $ver;
  }

  return sprintf "%d.%d.%d", $r, $v, $s;
}

sub info
{
  $opt{quiet} and return;
  print @_, "\n";
}

sub diag
{
  $opt{quiet} and return;
  $opt{diag} and print @_, "\n";
}

sub warning
{
  $opt{quiet} and return;
  print "*** ", @_, "\n";
}

```

```

}

sub error
{
print "*** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint
{
$opt{quiet} and return;
my $func = shift;
my $rv = 0;
if (exists $warnings{$func} && !$given_warnings{$func}++) {
my $warn = $warnings{$func};
$warn =~ s/^\!*** !mg;
print "*** WARNING: $func\n", $warn;
$rv++;
}
if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
my $hint = $hints{$func};
$hint =~ s/^\s+ /mg;
print " --- hint for $func ---\n", $hint;
}
$rv;
}

sub usage
{
my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s**^(.*?)\s**^=/ms;
my %M = ( 'T' => '*' );
$usage =~ s/^\s*perl\s+\S+/$^X $0/;
$usage =~ s/([A-Z])<([>]+)>/M{$1}$2M{$1}/g;

print <<ENDUSAGE;

Usage: $usage

See perldoc $0 for details.

ENDUSAGE

exit 2;
}

sub strip
{

```

```

my $self = do { local(@ARGV,$/)=($0); <> };
my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)*^=\w+\/ms;
$copy =~ s/^(?=\S+)/ /gms;
$self =~ s/^\$HS+Do NOT edit.*?(?=\^)/$copy/ms;
$self =~ s/^\$SKIP.*(?=\^__DATA__)/SKIP
if (\@ARGV && \$ARGV[0] eq '--unstrip') {
eval { require Devel::PPPport };
\$_@ and die "Cannot require Devel::PPPport, please install.\n";
if (eval \$Devel::PPPport::VERSION < $VERSION) {
die "$0 was originally generated with Devel::PPPport $VERSION.\n"
. "Your Devel::PPPport is only version \$Devel::PPPport::VERSION.\n"
. "Please install a newer version, or --unstrip will not work.\n";
}
Devel::PPPport::WriteFile(\$0);
exit 0;
}
print <<END;

```

Sorry, but this is a stripped version of \\$0.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X \$0 --unstrip
```

```

END
/ms;
my($pl, $c) = $self =~ /(.*^__DATA__)(.*)/ms;
$c =~ s{
 / (? : \*[^\*]*\*+(?:[^\$ccs][^\*]*\*+)* / | /[\r\n]*
 | ( "[^"]*"(?:\.[^\"]*)*"
 | '[^']*'(?:\.[^']*)*' )
 | (\$HS+) }{ defined $2 ? '': ($1 || ") }gsex;
$c =~ s!\s+#!mg;
$c =~ s!\$LF#!mg;
$c =~ s!\s*#\s*#!mg;
$c =~ s!\^!\s+#!mg;

open OUT, ">$0" or die "cannot strip $0: $!\n";
print OUT "$pl$c\n";

exit 0;
}

__DATA__
*/

```

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-MrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/ppport.h

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

---

abstract: unknown

author:

- unknown

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.68, CPAN::Meta::Converter version 2.112621'

license: unknown

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Storable

no\_index:

directory:

- t

- inc

requires:

XSLoader: 0

resources:

bugtracker: <http://rt.perl.org/perlbug/>

version: 2.45

Found in path(s):

\* /opt/cola/permits/1000848947\_1646171517.14/0/perl-Storable-2.45-3.el7.src.rpm-cosi-expand-archive-MrYpE99/Storable-2.45.tar.gz-cosi-expand-archive-nc4LuAZO/Storable-2.45/META.yml

## 1.284 lucene-spatial3d 7.7.2

### 1.284.1 Available under license :

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analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
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For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the

users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from

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2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the

Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

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

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

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

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

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

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under



Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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Version 2.1, February 1999

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Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General

Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
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in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

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Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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

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

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

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

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

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit

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## 1.289 rsync 3.1.2-6.el7\_6.1

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```

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
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## 1.293 centos-release-virt-common 1-

### 1.el7.centos

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Summary: Common release file to establish shared metadata for CentOS Virt SIG

Name: centos-release-virt-common

Epoch: 0

Version: 1

Release: 1% { ?dist }

License: GPL

Group: System Environment/Base

Source0: RPM-GPG-KEY-CentOS-SIG-Virtualization

URL: <http://wiki.centos.org/SpecialInterestGroup/Virtualization>

BuildArch: noarch

Provides: centos-release-virt-common

Requires: centos-release

BuildRoot: % { \_tmppath } / % { name } -root

%description

Common files needed by other centos-release components in the Virtualization SIG

%prep

%setup -q -n % { name } -T -c

%install

```
rm -rf $RPM_BUILD_ROOT
mkdir -p $RPM_BUILD_ROOT/etc/pki/rpm-gpg/
install -m 644 %SOURCE0 $RPM_BUILD_ROOT/etc/pki/rpm-gpg/
```

```
%clean
```

```
rm -rf $RPM_BUILD_ROOT
```

```
%files
```

```
%defattr(-,root,root)
```

```
/etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-SIG-Virtualization
```

```
%changelog
```

```
* Thu Sep 3 2015 Karanbir Singh <kbsingh@centos.org> - 1-1
```

```
- Basic setup with the gpg key
```

```
Found in path(s):
```

```
* /opt/cola/permits/1004217618_1646171704.27/0/centos-release-virt-common-1-1.el7.centos.src.rpm-cosi-expand-  
archive-4zqHotUb/centos-release-virt-common.spec
```

## 1.294 harfbuzz 1.7.5-2.el7

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```

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```

```
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```

```
Ty Coon, President of Vice
```

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## 1.303 spring-boot-starter-tomcat 2.0.4

## 1.304 pyliblzma 0.5.3-11.el7

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### NAME

Carp - alternative warn and die for modules

### DESCRIPTION

The Carp routines are useful in your own modules because they act like die() or warn(), but with a message which is more likely to be useful to a user of your module. In the case of cluck, confess, and longmess that context is a summary of every call in the call-stack. For a shorter message you can use carp or croak which report the error as being from where your module was called. There is no guarantee that that is where the error was, but it is a good educated guess.

You can also alter the way the output and logic of Carp works, by changing some global variables in the Carp namespace.

### INSTALLATION

```
perl Makefile.PL
make
make test
make install
```

## AUTHOR

The Carp module first appeared in Larry Wall's perl 5.000 distribution. Since then it has been modified by several of the perl 5 porters. Andrew Main (Zefram) <zefram@fysh.org> divested Carp into an independent distribution.

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Found in path(s):

```
* /opt/cola/permits/1000849000_1646171590.41/0/perl-Carp-1.26-244.el7.src.rpm-cosi-expand-archive-RCOFgpaK/Carp-1.26.tar.gz-cosi-expand-archive-8S7LqIRv/Carp-1.26/README
```

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=head1 NAME

Carp - alternative warn and die for modules

=head1 SYNOPSIS

```
use Carp;

# warn user (from perspective of caller)
carp "string trimmed to 80 chars";

# die of errors (from perspective of caller)
croak "We're outta here!";

# die of errors with stack backtrace
confess "not implemented";

# cluck not exported by default
use Carp qw(cluck);
cluck "This is how we got here!";
```

=head1 DESCRIPTION

The Carp routines are useful in your own modules because they act like die() or warn(), but with a message which is more likely to be useful to a user of your module. In the case of cluck, confess, and longmess that context is a summary of every call in the call-stack. For a shorter message you can use C<carp> or C<croak> which report the error as being from where your module was called. There is no guarantee that that is where the error was, but it is a good educated guess.

You can also alter the way the output and logic of C<Carp> works, by changing some global variables in the C<Carp> namespace. See the section on C<GLOBAL VARIABLES> below.

Here is a more complete description of how C<carp> and C<croak> work. What they do is search the call-stack for a function call stack where they have not been told that there shouldn't be an error. If every call is marked safe, they give up and give a full stack backtrace instead. In other words they presume that the first likely looking potential suspect is guilty. Their rules for telling whether a call shouldn't generate errors work as follows:

=over 4

=item 1.

Any call from a package to itself is safe.

=item 2.

Packages claim that there won't be errors on calls to or from packages explicitly marked as safe by inclusion in C<@CARP\_NOT>, or (if that array is empty) C<@ISA>. The ability to override what @ISA says is new in 5.8.

=item 3.

The trust in item 2 is transitive. If A trusts B, and B trusts C, then A trusts C. So if you do not override C<@ISA> with C<@CARP\_NOT>, then this trust relationship is identical to, "inherits from".

=item 4.

Any call from an internal Perl module is safe. (Nothing keeps user modules from marking themselves as internal to Perl, but

this practice is discouraged.)

=item 5.

Any call to Perl's warning system (eg Carp itself) is safe. (This rule is what keeps it from reporting the error at the point where you call `C<carp>` or `C<croak>`.)

=item 6.

`C<$Carp::CarpLevel>` can be set to skip a fixed number of additional call levels. Using this is not recommended because it is very difficult to get it to behave correctly.

=back

=head2 Forcing a Stack Trace

As a debugging aid, you can force Carp to treat a croak as a confess and a carp as a cluck across `I<all>` modules. In other words, force a detailed stack trace to be given. This can be very helpful when trying to understand why, or from where, a warning or error is being generated.

This feature is enabled by 'importing' the non-existent symbol 'verbose'. You would typically enable it by saying

```
perl -MCarp=verbose script.pl
```

or by including the string `C<-MCarp=verbose>` in the `PERL5OPT` environment variable.

Alternately, you can set the global variable `C<$Carp::Verbose>` to true. See the `C<GLOBAL VARIABLES>` section below.

=head1 GLOBAL VARIABLES

=head2 `$Carp::MaxEvalLen`

This variable determines how many characters of a string-eval are to be shown in the output. Use a value of `C<0>` to show all text.

Defaults to `C<0>`.

=head2 `$Carp::MaxArgLen`

This variable determines how many characters of each argument to a function to print. Use a value of `C<0>` to show the full length of the argument.

Defaults to C<64>.

```
=head2 $Carp::MaxArgNums
```

This variable determines how many arguments to each function to show. Use a value of C<0> to show all arguments to a function call.

Defaults to C<8>.

```
=head2 $Carp::Verbose
```

This variable makes C<carp> and C<croak> generate stack backtraces just like C<cluck> and C<confess>. This is how C<use Carp 'verbose'> is implemented internally.

Defaults to C<0>.

```
=head2 @CARP_NOT
```

This variable, I<in your package>, says which packages are I<not> to be considered as the location of an error. The C<carp()> and C<cluck()> functions will skip over callers when reporting where an error occurred.

NB: This variable must be in the package's symbol table, thus:

```
# These work
our @CARP_NOT; # file scope
use vars qw(@CARP_NOT); # package scope
@My::Package::CARP_NOT = ... ; # explicit package variable

# These don't work
sub xyz { ... @CARP_NOT = ... } # w/o declarations above
my @CARP_NOT; # even at top-level
```

Example of use:

```
package My::Carping::Package;
use Carp;
our @CARP_NOT;
sub bar { ... or _error('Wrong input') }
sub _error {
    # temporary control of where'ness, __PACKAGE__ is implicit
    local @CARP_NOT = qw(My::Friendly::Caller);
    carp(@_)
}
}
```

This would make C<Carp> report the error as coming from a caller not

in C<My::Carping::Package>, nor from C<My::Friendly::Caller>.

Also read the L</DESCRIPTION> section above, about how C<Carp> decides where the error is reported from.

Use C<@CARP\_NOT>, instead of C<\$Carp::CarpLevel>.

Overrides C<Carp>'s use of C<@ISA>.

```
=head2 %Carp::Internal
```

This says what packages are internal to Perl. C<Carp> will never report an error as being from a line in a package that is internal to Perl. For example:

```
$Carp::Internal{ (__PACKAGE__) }++;  
# time passes...  
sub foo { ... or confess("whatever") };
```

would give a full stack backtrace starting from the first caller outside of `__PACKAGE__`. (Unless that package was also internal to Perl.)

```
=head2 %Carp::CarpInternal
```

This says which packages are internal to Perl's warning system. For generating a full stack backtrace this is the same as being internal to Perl, the stack backtrace will not start inside packages that are listed in C<%Carp::CarpInternal>. But it is slightly different for the summary message generated by C<carp> or C<croak>. There errors will not be reported on any lines that are calling packages in C<%Carp::CarpInternal>.

For example C<Carp> itself is listed in C<%Carp::CarpInternal>. Therefore the full stack backtrace from C<confess> will not start inside of C<Carp>, and the short message from calling C<croak> is not placed on the line where C<croak> was called.

```
=head2 $Carp::CarpLevel
```

This variable determines how many additional call frames are to be skipped that would not otherwise be when reporting where an error occurred on a call to one of C<Carp>'s functions. It is fairly easy to count these call frames on calls that generate a full stack backtrace. However it is much harder to do this accounting for calls that generate a short message. Usually people skip too many call frames. If they are lucky they skip enough that C<Carp> goes all of the way through the call stack, realizes that something is wrong, and

then generates a full stack backtrace. If they are unlucky then the error is reported from somewhere misleading very high in the call stack.

Therefore it is best to avoid `C<$Carp::CarpLevel>`. Instead use `C<@CARP_NOT>`, `C<%Carp::Internal>` and `C<%Carp::CarpInternal>`.

Defaults to `C<0>`.

## =head1 BUGS

The Carp routines don't handle exception objects currently. If called with a first argument that is a reference, they simply call `die()` or `warn()`, as appropriate.

## =head1 SEE ALSO

`L<Carp::Always>`,  
`L<Carp::Clan>`

## =head1 AUTHOR

The Carp module first appeared in Larry Wall's perl 5.000 distribution. Since then it has been modified by several of the perl 5 porters. Andrew Main (Zefram) <zefram@fysh.org> divested Carp into an independent distribution.

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---

abstract: 'alternative warn and die for modules'

author:

- unknown

build\_requires:



ExtUtils::MakeMaker: 0  
configure\_requires:  
ExtUtils::MakeMaker: 0  
dynamic\_config: 1  
generated\_by: 'ExtUtils::MakeMaker version 6.6302, CPAN::Meta::Converter version 2.120921'  
license: perl  
meta-spec:  
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>  
version: 1.4  
name: Carp  
no\_index:  
directory:  
- t  
- inc  
requires:  
Exporter: 0  
IPC::Open3: 1.0103  
Test::More: 0  
strict: 0  
warnings: 0  
version: 1.26

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\* /opt/cola/permits/1000849000\_1646171590.41/0/perl-Carp-1.26-244.el7.src.rpm-cosi-expand-archive-RCOFgpaK/Carp-1.26.tar.gz-cosi-expand-archive-8S7LqIRv/Carp-1.26/META.yml

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# 1.306 fribidi 1.0.2 1.el7

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[1] <http://www.ecma-international.org/publications/standards/Ecma-376.htm>

[2] <http://www.ecma-international.org/memento/Ecmabylaws.htm>

[3] <http://www.microsoft.com/openspecifications/en/us/programs/osp/default.aspx>

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Hamcrest library (hamcrest-\*.jar) & CuvesAPI / Curve API

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# 1.308 pygpgme 0.3 9.e17

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

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

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

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

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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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## 1.309 geo-ip 1.5.0 14.el7

## 1.309.1 Available under license :

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy

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## 1.313 newt 1.0.2-1.e17

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## 1.314 perl-threads 1.87-4.e17

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/\*

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ppport.h -- Perl/Pollution/Portability Version 3.19

Automatically created by Devel::PPPport running under perl 5.010000.

Do NOT edit this file directly! -- Edit PPPport\_pm.PL and the includes in parts/inc/ instead.

Use 'perldoc ppport.h' to view the documentation below.

-----  
SKIP

=pod

=head1 NAME

ppport.h - Perl/Pollution/Portability version 3.19

=head1 SYNOPSIS

perl ppport.h [options] [source files]

Searches current directory for files if no [source files] are given

--help            show short help

--version         show version

--patch=file      write one patch file with changes

--copy=suffix     write changed copies with suffix

--diff=program    use diff program and options

--compat-version=version   provide compatibility with Perl version

--cplusplus       accept C++ comments

--quiet           don't output anything except fatal errors

--nodiag          don't show diagnostics

--nohints         don't show hints

--nochanges       don't suggest changes

--nofilter        don't filter input files

--strip           strip all script and doc functionality from  
                  ppport.h

--list-provided    list provided API

--list-unsupported list unsupported API

--api-info=name    show Perl API portability information

=head1 COMPATIBILITY

This version of F<ppport.h> is designed to support operation with Perl installations back to 5.003, and has been tested up to 5.10.0.

=head1 OPTIONS

=head2 --help

Display a brief usage summary.

=head2 --version

Display the version of F<ppport.h>.

=head2 --patch=I<file>

If this option is given, a single patch file will be created if any changes are suggested. This requires a working diff program to be installed on your system.

=head2 --copy=I<suffix>

If this option is given, a copy of each file will be saved with the given suffix that contains the suggested changes. This does not require any external programs. Note that this does not automatically add a dot between the original filename and the suffix. If you want the dot, you have to include it in the option argument.

If neither C<--patch> or C<--copy> are given, the default is to simply print the diffs for each file. This requires either C<Text::Diff> or a C<diff> program to be installed.

=head2 --diff=I<program>

Manually set the diff program and options to use. The default is to use C<Text::Diff>, when installed, and output unified context diffs.

=head2 --compat-version=I<version>

Tell F<ppport.h> to check for compatibility with the given Perl version. The default is to check for compatibility with Perl version 5.003. You can use this option to reduce the output of F<ppport.h> if you intend to be backward compatible only down to a certain Perl version.

=head2 --cplusplus

Usually, F<ppport.h> will detect C++ style comments and replace them with C style comments for portability reasons. Using this option instructs F<ppport.h> to leave C++

comments untouched.

=head2 --quiet

Be quiet. Don't print anything except fatal errors.

=head2 --nodiag

Don't output any diagnostic messages. Only portability alerts will be printed.

=head2 --nohints

Don't output any hints. Hints often contain useful portability notes. Warnings will still be displayed.

=head2 --nochanges

Don't suggest any changes. Only give diagnostic output and hints unless these are also deactivated.

=head2 --nofilter

Don't filter the list of input files. By default, files not looking like source code (i.e. not \*.xs, \*.c, \*.cc, \*.cpp or \*.h) are skipped.

=head2 --strip

Strip all script and documentation functionality from F<ppport.h>. This reduces the size of F<ppport.h> dramatically and may be useful if you want to include F<ppport.h> in smaller modules without increasing their distribution size too much.

The stripped F<ppport.h> will have a C<--unstrip> option that allows you to undo the stripping, but only if an appropriate C<Devel::PPPort> module is installed.

=head2 --list-provided

Lists the API elements for which compatibility is provided by F<ppport.h>. Also lists if it must be explicitly requested, if it has dependencies, and if there are hints or warnings for it.

=head2 --list-unsupported

Lists the API elements that are known not to be supported by F<ppport.h> and below which version of Perl they probably won't be available or work.

=head2 --api-info=I<name>

Show portability information for API elements matching I<name>. If I<name> is surrounded by slashes, it is interpreted as a regular expression.

=head1 DESCRIPTION

In order for a Perl extension (XS) module to be as portable as possible across differing versions of Perl itself, certain steps need to be taken.

=over 4

=item \*

Including this header is the first major one. This alone will give you access to a large part of the Perl API that hasn't been available in earlier Perl releases. Use

```
perl ppport.h --list-provided
```

to see which API elements are provided by ppport.h.

=item \*

You should avoid using deprecated parts of the API. For example, using global Perl variables without the C<PL\_> prefix is deprecated. Also, some API functions used to have a C<perl\_> prefix. Using this form is also deprecated. You can safely use the supported API, as F<ppport.h> will provide wrappers for older Perl versions.

=item \*

If you use one of a few functions or variables that were not present in earlier versions of Perl, and that can't be provided using a macro, you have to explicitly request support for these functions by adding one or more C<#define>s in your source code before the inclusion of F<ppport.h>.

These functions or variables will be marked C<explicit> in the list shown by C<--list-provided>.

Depending on whether your module has a single or multiple files that use such functions or variables, you want either C<static> or global variants.

For a C<static> function or variable (used only in a single source file), use:

```
#define NEED_function
#define NEED_variable
```

For a global function or variable (used in multiple source files),  
use:

```
#define NEED_function_GLOBAL
#define NEED_variable_GLOBAL
```

Note that you mustn't have more than one global request for the  
same function or variable in your project.

Function / Variable	Static Request	Global Request
PL_parser	NEED_PL_parser	NEED_PL_parser_GLOBAL
PL_signals	NEED_PL_signals	NEED_PL_signals_GLOBAL
eval_pv()	NEED_eval_pv	NEED_eval_pv_GLOBAL
grok_bin()	NEED_grok_bin	NEED_grok_bin_GLOBAL
grok_hex()	NEED_grok_hex	NEED_grok_hex_GLOBAL
grok_number()	NEED_grok_number	NEED_grok_number_GLOBAL
grok_numeric_radix()	NEED_grok_numeric_radix	NEED_grok_numeric_radix_GLOBAL
grok_oct()	NEED_grok_oct	NEED_grok_oct_GLOBAL
load_module()	NEED_load_module	NEED_load_module_GLOBAL
my_snprintf()	NEED_my_snprintf	NEED_my_snprintf_GLOBAL
my_sprintf()	NEED_my_sprintf	NEED_my_sprintf_GLOBAL
my_strlcat()	NEED_my_strlcat	NEED_my_strlcat_GLOBAL
my_strlcpy()	NEED_my_strlcpy	NEED_my_strlcpy_GLOBAL
newCONSTSUB()	NEED_newCONSTSUB	NEED_newCONSTSUB_GLOBAL
newRV_noinc()	NEED_newRV_noinc	NEED_newRV_noinc_GLOBAL
newSV_type()	NEED_newSV_type	NEED_newSV_type_GLOBAL
newSVpv_flags()	NEED_newSVpv_flags	NEED_newSVpv_flags_GLOBAL
newSVpv_share()	NEED_newSVpv_share	NEED_newSVpv_share_GLOBAL
pv_display()	NEED_pv_display	NEED_pv_display_GLOBAL
pv_escape()	NEED_pv_escape	NEED_pv_escape_GLOBAL
pv_pretty()	NEED_pv_pretty	NEED_pv_pretty_GLOBAL
sv_2pv_flags()	NEED_sv_2pv_flags	NEED_sv_2pv_flags_GLOBAL
sv_2pvbyte()	NEED_sv_2pvbyte	NEED_sv_2pvbyte_GLOBAL
sv_catpvf_mg()	NEED_sv_catpvf_mg	NEED_sv_catpvf_mg_GLOBAL
sv_catpvf_mg_nocontext()	NEED_sv_catpvf_mg_nocontext	NEED_sv_catpvf_mg_nocontext_GLOBAL
sv_pvn_force_flags()	NEED_sv_pvn_force_flags	NEED_sv_pvn_force_flags_GLOBAL
sv_setpvf_mg()	NEED_sv_setpvf_mg	NEED_sv_setpvf_mg_GLOBAL
sv_setpvf_mg_nocontext()	NEED_sv_setpvf_mg_nocontext	NEED_sv_setpvf_mg_nocontext_GLOBAL
vload_module()	NEED_vload_module	NEED_vload_module_GLOBAL
vnewSVpvf()	NEED_vnewSVpvf	NEED_vnewSVpvf_GLOBAL
warn()	NEED_warner	NEED_warner_GLOBAL

To avoid namespace conflicts, you can change the namespace of the



explicitly exported functions / variables using the C<DPPP\_NAMESPACE> macro. Just C<#define> the macro before including C<ppport.h>:

```
#define DPPP_NAMESPACE MyOwnNamespace_  
#include "ppport.h"
```

The default namespace is C<DPPP\_>.

=back

The good thing is that most of the above can be checked by running F<ppport.h> on your source code. See the next section for details.

=head1 EXAMPLES

To verify whether F<ppport.h> is needed for your module, whether you should make any changes to your code, and whether any special defines should be used, F<ppport.h> can be run as a Perl script to check your source code. Simply say:

```
perl ppport.h
```

The result will usually be a list of patches suggesting changes that should at least be acceptable, if not necessarily the most efficient solution, or a fix for all possible problems.

If you know that your XS module uses features only available in newer Perl releases, if you're aware that it uses C++ comments, and if you want all suggestions as a single patch file, you could use something like this:

```
perl ppport.h --compat-version=5.6.0 --cplusplus --patch=test.diff
```

If you only want your code to be scanned without any suggestions for changes, use:

```
perl ppport.h --nochanges
```

You can specify a different C<diff> program or options, using the C<--diff> option:

```
perl ppport.h --diff='diff -C 10'
```

This would output context diffs with 10 lines of context.

If you want to create patched copies of your files instead, use:

```
perl ppport.h --copy=.new
```

To display portability information for the C<newSVpv<pv>> function, use:

```
perl ppport.h --api-info=newSVpv<pv>
```

Since the argument to C<--api-info> can be a regular expression, you can use

```
perl ppport.h --api-info=/_nomg$/
```

to display portability information for all C<\_nomg> functions or

```
perl ppport.h --api-info=./
```

to display information for all known API elements.

## =head1 BUGS

If this version of F<ppport.h> is causing failure during the compilation of this module, please check if newer versions of either this module or C<Devel::PPPort> are available on CPAN before sending a bug report.

If F<ppport.h> was generated using the latest version of C<Devel::PPPort> and is causing failure of this module, please file a bug report using the CPAN Request Tracker at L<<http://rt.cpan.org/>>.

Please include the following information:

=over 4

=item 1.

The complete output from running "perl -V"

=item 2.

This file.

=item 3.

The name and version of the module you were trying to build.

=item 4.

A full log of the build that failed.

=item 5.

Any other information that you think could be relevant.

=back

For the latest version of this code, please get the C<Devel::PPort> module from CPAN.

=head1 COPYRIGHT

Version 3.x, Copyright (c) 2004-2009, Marcus Holland-Moritz.

Version 2.x, Copyright (C) 2001, Paul Marquess.

Version 1.x, Copyright (C) 1999, Kenneth Albanowski.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=head1 SEE ALSO

See L<Devel::PPort>.

=cut

use strict;

# Disable broken TRIE-optimization

BEGIN { eval '\${^RE\_TRIE\_MAXBUF} = -1' if \$] >= 5.009004 && \$] <= 5.009005 }

my \$VERSION = 3.19;

```
my %opt = (  
  quiet => 0,  
  diag => 1,  
  hints => 1,  
  changes => 1,  
  cplusplus => 0,  
  filter => 1,  
  strip => 0,  
  version => 0,  
);
```

```
my($ppport) = $0 =~ /([\w.]+)$/;
```

```
my $LF = '(?:\r\n|[\r\n])'; # line feed
```

```
my $HS = "[\t]"; # horizontal whitespace
```

```

# Never use C comments in this file!
my $ccs = '!.*';
my $cce = '.*!.';
my $rccs = quotemeta $ccs;
my $rcce = quotemeta $cce;

eval {
require Getopt::Long;
Getopt::Long::GetOptions(\%opt, qw(
  help quiet diag! filter! hints! changes! cplusplus strip version
  patch=s copy=s diff=s compat-version=s
  list-provided list-unsupported api-info=s
)) or usage();
};

if ($@ and grep /^-/, @ARGV) {
  usage() if "@ARGV" =~ /^--?h(?:elp)?$/;
  die "Getopt::Long not found. Please don't use any options.\n";
}

if ($opt{version}) {
  print "This is $0 $VERSION.\n";
  exit 0;
}

usage() if $opt{help};
strip() if $opt{strip};

if (exists $opt{'compat-version'}) {
  my($r,$v,$s) = eval { parse_version($opt{'compat-version'}) };
  if ($@) {
    die "Invalid version number format: '$opt{'compat-version'}'\n";
  }
  die "Only Perl 5 is supported\n" if $r != 5;
  die "Invalid version number: $opt{'compat-version'}\n" if $v >= 1000 || $s >= 1000;
  $opt{'compat-version'} = sprintf "%d.%03d%03d", $r, $v, $s;
}
else {
  $opt{'compat-version'} = 5;
}

my %API = map { /^(\w+)\|([^\|]*)\|([^\|]*)\|(\w*)$/
  ? ( $1 => {
    ($2 ? ( base => $2 ) : ()),
    ($3 ? ( todo => $3 ) : ()),
    (index($4, 'v') >= 0 ? ( varargs => 1 ) : ()),
    (index($4, 'p') >= 0 ? ( provided => 1 ) : ()),
  }
}

```

```

        (index($4, 'n') >= 0 ? ( nothxarg => 1 ) : ()),
    } )
    : die "invalid spec: $_" } qw(
AvFILLp|5.004050||p
AvFILL|||
CLASS|||n
CPERLscope|5.005000||p
CX_CURPAD_SAVE|||
CX_CURPAD_SV|||
CopFILEAV|5.006000||p
CopFILEGV_set|5.006000||p
CopFILEGV|5.006000||p
CopFILESV|5.006000||p
CopFILE_set|5.006000||p
CopFILE|5.006000||p
CopSTASHPV_set|5.006000||p
CopSTASHPV|5.006000||p
CopSTASH_eq|5.006000||p
CopSTASH_set|5.006000||p
CopSTASH|5.006000||p
CopyD|5.009002||p
Copy|||
CvPADLIST|||
CvSTASH|||
CvWEAKOUTSIDE|||
DEFSV_set|5.011000||p
DEFSV|5.004050||p
END_EXTERN_C|5.005000||p
ENTER|||
ERRSV|5.004050||p
EXTEND|||
EXTERN_C|5.005000||p
F0convert|||n
FREEMPS|||
GIMME_V|5.004000|n
GIMME|||n
GROK_NUMERIC_RADIX|5.007002||p
G_ARRAY|||
G_DISCARD|||
G_EVAL|||
G_METHOD|5.006001||p
G_NOARGS|||
G_SCALAR|||
G_VOID|5.004000|
GetVars|||
GvSVn|5.009003||p
GvSV|||
Gv_AMupdate|||

```

HEf\_SVKEY|5.004000|  
HeHASH|5.004000|  
HeKEY|5.004000|  
HeKLEN|5.004000|  
HePV|5.004000|  
HeSVKEY\_force|5.004000|  
HeSVKEY\_set|5.004000|  
HeSVKEY|5.004000|  
HeUTF8|5.011000|  
HeVAL|5.004000|  
HvNAMELEN\_get|5.009003||p  
HvNAME\_get|5.009003||p  
HvNAME|||  
INT2PTR|5.006000||p  
IN\_LOCALE\_COMPILETIME|5.007002||p  
IN\_LOCALE\_RUNTIME|5.007002||p  
IN\_LOCALE|5.007002||p  
IN\_PERL\_COMPILETIME|5.008001||p  
IS\_NUMBER\_GREATER\_THAN\_UV\_MAX|5.007002||p  
IS\_NUMBER\_INFINITY|5.007002||p  
IS\_NUMBER\_IN\_UV|5.007002||p  
IS\_NUMBER\_NAN|5.007003||p  
IS\_NUMBER\_NEG|5.007002||p  
IS\_NUMBER\_NOT\_INT|5.007002||p  
IVSIZE|5.006000||p  
IVTYPE|5.006000||p  
IVdf|5.006000||p  
LEAVE|||  
LVRET|||  
MARK|||  
MULTICALL|5.011000|  
MY\_CXT\_CLONE|5.009002||p  
MY\_CXT\_INIT|5.007003||p  
MY\_CXT|5.007003||p  
MoveD|5.009002||p  
Move|||  
NOOP|5.005000||p  
NUM2PTR|5.006000||p  
NVTYPE|5.006000||p  
NVef|5.006001||p  
NVff|5.006001||p  
NVgf|5.006001||p  
Newxc|5.009003||p  
Newxz|5.009003||p  
Newx|5.009003||p  
Nullav|||  
Nullch|||  
Nullcv|||

Nullhv|||  
Nullsv|||  
ORIGMARK|||  
PAD\_BASE\_SV|||  
PAD\_CLONE\_VARS|||  
PAD\_COMPNAME\_FLAGS|||  
PAD\_COMPNAME\_GEN\_set|||  
PAD\_COMPNAME\_GEN|||  
PAD\_COMPNAME\_OURSTASH|||  
PAD\_COMPNAME\_PV|||  
PAD\_COMPNAME\_TYPE|||  
PAD\_DUP|||  
PAD\_RESTORE\_LOCAL|||  
PAD\_SAVE\_LOCAL|||  
PAD\_SAVE\_SETNULLPAD|||  
PAD\_SETSV|||  
PAD\_SET\_CUR\_NOSAVE|||  
PAD\_SET\_CUR|||  
PAD\_SV1|||  
PAD\_SV|||  
PERLIO\_FUNCS\_CAST|5.009003||p  
PERLIO\_FUNCS\_DECL|5.009003||p  
PERL\_ABS|5.008001||p  
PERL\_BCDVERSION|5.011000||p  
PERL\_GCC\_BRACE\_GROUPS\_FORBIDDEN|5.008001||p  
PERL\_HASH|5.004000||p  
PERL\_INT\_MAX|5.004000||p  
PERL\_INT\_MIN|5.004000||p  
PERL\_LONG\_MAX|5.004000||p  
PERL\_LONG\_MIN|5.004000||p  
PERL\_MAGIC\_arylen|5.007002||p  
PERL\_MAGIC\_backref|5.007002||p  
PERL\_MAGIC\_bm|5.007002||p  
PERL\_MAGIC\_collxfrm|5.007002||p  
PERL\_MAGIC\_dbfile|5.007002||p  
PERL\_MAGIC\_dbline|5.007002||p  
PERL\_MAGIC\_defelem|5.007002||p  
PERL\_MAGIC\_envelem|5.007002||p  
PERL\_MAGIC\_env|5.007002||p  
PERL\_MAGIC\_ext|5.007002||p  
PERL\_MAGIC\_fm|5.007002||p  
PERL\_MAGIC\_glob|5.011000||p  
PERL\_MAGIC\_isaelem|5.007002||p  
PERL\_MAGIC\_isa|5.007002||p  
PERL\_MAGIC\_mutex|5.011000||p  
PERL\_MAGIC\_nkeys|5.007002||p  
PERL\_MAGIC\_overload\_elem|5.007002||p  
PERL\_MAGIC\_overload\_table|5.007002||p

PERL\_MAGIC\_overload|5.007002||p  
PERL\_MAGIC\_pos|5.007002||p  
PERL\_MAGIC\_qr|5.007002||p  
PERL\_MAGIC\_regdata|5.007002||p  
PERL\_MAGIC\_regdatum|5.007002||p  
PERL\_MAGIC\_regex\_global|5.007002||p  
PERL\_MAGIC\_shared\_scalar|5.007003||p  
PERL\_MAGIC\_shared|5.007003||p  
PERL\_MAGIC\_sigelem|5.007002||p  
PERL\_MAGIC\_sig|5.007002||p  
PERL\_MAGIC\_substr|5.007002||p  
PERL\_MAGIC\_sv|5.007002||p  
PERL\_MAGIC\_taint|5.007002||p  
PERL\_MAGIC\_tiedelem|5.007002||p  
PERL\_MAGIC\_tiedscalar|5.007002||p  
PERL\_MAGIC\_tied|5.007002||p  
PERL\_MAGIC\_utf8|5.008001||p  
PERL\_MAGIC\_uvar\_elem|5.007003||p  
PERL\_MAGIC\_uvar|5.007002||p  
PERL\_MAGIC\_vec|5.007002||p  
PERL\_MAGIC\_vstring|5.008001||p  
PERL\_PV\_ESCAPE\_ALL|5.009004||p  
PERL\_PV\_ESCAPE\_FIRSTCHAR|5.009004||p  
PERL\_PV\_ESCAPE\_NOBACKSLASH|5.009004||p  
PERL\_PV\_ESCAPE\_NOCLEAR|5.009004||p  
PERL\_PV\_ESCAPE\_QUOTE|5.009004||p  
PERL\_PV\_ESCAPE\_RE|5.009005||p  
PERL\_PV\_ESCAPE\_UNI\_DETECT|5.009004||p  
PERL\_PV\_ESCAPE\_UNI|5.009004||p  
PERL\_PV\_PRETTY\_DUMP|5.009004||p  
PERL\_PV\_PRETTY\_ELLIPSES|5.010000||p  
PERL\_PV\_PRETTY\_LTGT|5.009004||p  
PERL\_PV\_PRETTY\_NOCLEAR|5.010000||p  
PERL\_PV\_PRETTY\_QUOTE|5.009004||p  
PERL\_PV\_PRETTY\_REGPROP|5.009004||p  
PERL\_QUAD\_MAX|5.004000||p  
PERL\_QUAD\_MIN|5.004000||p  
PERL\_REVISION|5.006000||p  
PERL\_SCAN\_ALLOW\_UNDERSCORES|5.007003||p  
PERL\_SCAN\_DISALLOW\_PREFIX|5.007003||p  
PERL\_SCAN\_GREATER\_THAN\_UV\_MAX|5.007003||p  
PERL\_SCAN\_SILENT\_ILLDIGIT|5.008001||p  
PERL\_SHORT\_MAX|5.004000||p  
PERL\_SHORT\_MIN|5.004000||p  
PERL\_SIGNALS\_UNSAFE\_FLAG|5.008001||p  
PERL\_SUBVERSION|5.006000||p  
PERL\_SYS\_INIT3|5.006000|  
PERL\_SYS\_INIT|||



PERL\_SYS\_TERM|5.011000|  
PERL\_UCHAR\_MAX|5.004000||p  
PERL\_UCHAR\_MIN|5.004000||p  
PERL\_UINT\_MAX|5.004000||p  
PERL\_UINT\_MIN|5.004000||p  
PERL\_ULONG\_MAX|5.004000||p  
PERL\_ULONG\_MIN|5.004000||p  
PERL\_UNUSED\_ARG|5.009003||p  
PERL\_UNUSED\_CONTEXT|5.009004||p  
PERL\_UNUSED\_DECL|5.007002||p  
PERL\_UNUSED\_VAR|5.007002||p  
PERL\_UQUAD\_MAX|5.004000||p  
PERL\_UQUAD\_MIN|5.004000||p  
PERL\_USE\_GCC\_BRACE\_GROUPS|5.009004||p  
PERL\_USHORT\_MAX|5.004000||p  
PERL\_USHORT\_MIN|5.004000||p  
PERL\_VERSION|5.006000||p  
PL\_DBsignal|5.005000||p  
PL\_DBsingle|||pn  
PL\_DBsub|||pn  
PL\_DBtrace|||pn  
PL\_Sv|5.005000||p  
PL\_bufend|5.011000||p  
PL\_bufptr|5.011000||p  
PL\_compiling|5.004050||p  
PL\_copline|5.011000||p  
PL\_curcop|5.004050||p  
PL\_curstash|5.004050||p  
PL\_debstash|5.004050||p  
PL\_defgv|5.004050||p  
PL\_diehook|5.004050||p  
PL\_dirty|5.004050||p  
PL\_dowarn|||pn  
PL\_errgv|5.004050||p  
PL\_error\_count|5.011000||p  
PL\_expect|5.011000||p  
PL\_hexdigit|5.005000||p  
PL\_hints|5.005000||p  
PL\_in\_my\_stash|5.011000||p  
PL\_in\_my|5.011000||p  
PL\_last\_in\_gv|||n  
PL\_laststatval|5.005000||p  
PL\_lex\_state|5.011000||p  
PL\_lex\_stuff|5.011000||p  
PL\_linestr|5.011000||p  
PL\_modglobal||5.005000|n  
PL\_na|5.004050||pn  
PL\_no\_modify|5.006000||p

PL\_ofsgv|||n  
PL\_parser|5.009005||p  
PL\_perl\_destruct\_level|5.004050||p  
PL\_perldb|5.004050||p  
PL\_ppaddr|5.006000||p  
PL\_rsfilters|5.004050||p  
PL\_rsfp|5.004050||p  
PL\_rs|||n  
PL\_signals|5.008001||p  
PL\_stack\_base|5.004050||p  
PL\_stack\_sp|5.004050||p  
PL\_statcache|5.005000||p  
PL\_stdingv|5.004050||p  
PL\_sv\_arenaroot|5.004050||p  
PL\_sv\_no|5.004050||pn  
PL\_sv\_undef|5.004050||pn  
PL\_sv\_yes|5.004050||pn  
PL\_tainted|5.004050||p  
PL\_tainting|5.004050||p  
PL\_tokenbuf|5.011000||p  
POP\_MULTICALL||5.011000|  
POPi|||n  
POPi|||n  
POPn|||n  
POPpbytex||5.007001|n  
POPpx||5.005030|n  
POPp|||n  
POPs|||n  
PTR2IV|5.006000||p  
PTR2NV|5.006000||p  
PTR2UV|5.006000||p  
PTR2nat|5.009003||p  
PTR2ul|5.007001||p  
PTRV|5.006000||p  
PUSHMARK|||  
PUSH\_MULTICALL||5.011000|  
PUSHi|||  
PUSHmortal|5.009002||p  
PUSHn|||  
PUSHp|||  
PUSHs|||  
PUSHu|5.004000||p  
PUTBACK|||  
PerlIO\_clearerr||5.007003|  
PerlIO\_close||5.007003|  
PerlIO\_context\_layers||5.009004|  
PerlIO\_eof||5.007003|  
PerlIO\_error||5.007003|

PerlIO\_fileno|5.007003|  
PerlIO\_fill|5.007003|  
PerlIO\_flush|5.007003|  
PerlIO\_get\_base|5.007003|  
PerlIO\_get\_bufsiz|5.007003|  
PerlIO\_get\_cnt|5.007003|  
PerlIO\_get\_ptr|5.007003|  
PerlIO\_read|5.007003|  
PerlIO\_seek|5.007003|  
PerlIO\_set\_cnt|5.007003|  
PerlIO\_set\_ptrcnt|5.007003|  
PerlIO\_setlinebuf|5.007003|  
PerlIO\_stderr|5.007003|  
PerlIO\_stdin|5.007003|  
PerlIO\_stdout|5.007003|  
PerlIO\_tell|5.007003|  
PerlIO\_unread|5.007003|  
PerlIO\_write|5.007003|  
Perl\_signbit|5.009005|n  
PoisonFree|5.009004|p  
PoisonNew|5.009004|p  
PoisonWith|5.009004|p  
Poison|5.008000|p  
RETVL||n  
Renewc||  
Renew||  
SAVECLEARSV||  
SAVECOMPPAD||  
SAVEPADSV||  
SAVETMPS||  
SAVE\_DEFSV|5.004050|p  
SPAGAIN||  
SP||  
START\_EXTERN\_C|5.005000|p  
START\_MY\_CXT|5.007003|p  
STMT\_END||p  
STMT\_START||p  
STR\_WITH\_LEN|5.009003|p  
ST||  
SV\_CONST\_RETURN|5.009003|p  
SV\_COW\_DROP\_PV|5.008001|p  
SV\_COW\_SHARED\_HASH\_KEYS|5.009005|p  
SV\_GMAGIC|5.007002|p  
SV\_HAS\_TRAILING\_NUL|5.009004|p  
SV\_IMMEDIATE\_UNREF|5.007001|p  
SV\_MUTABLE\_RETURN|5.009003|p  
SV\_NOSTEAL|5.009002|p  
SV\_SMAGIC|5.009003|p

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sv\_report\_used|||  
sv\_reset|||  
sv\_rvweaken|5.006000|  
sv\_setiv\_mg|5.004050||p  
sv\_setiv|||

sv\_setnv\_mg|5.006000||p  
sv\_setnv||  
sv\_setpv\_mg|5.004050||p  
sv\_setpvf\_mg\_nocontext|||pvn  
sv\_setpvf\_mg|5.006000|5.004000|pv  
sv\_setpvf\_nocontext|||vn  
sv\_setpvf|5.004000|v  
sv\_setpviv\_mg|5.008001|  
sv\_setpviv||5.008001|  
sv\_setpvn\_mg|5.004050||p  
sv\_setpvn||  
sv\_setpvs|5.009004||p  
sv\_setpv||  
sv\_setref\_iv||  
sv\_setref\_nv||  
sv\_setref\_pvn||  
sv\_setref\_pv||  
sv\_setref\_uv||5.007001|  
sv\_setsv\_cow||  
sv\_setsv\_flags||5.007002|  
sv\_setsv\_mg|5.004050||p  
sv\_setsv\_nomg|5.007002||p  
sv\_setsv||  
sv\_setuv\_mg|5.004050||p  
sv\_setuv|5.004000||p  
sv\_tainted||5.004000|  
sv\_taint||5.004000|  
sv\_true||5.005000|  
sv\_unglob||  
sv\_uni\_display||5.007003|  
sv\_unmagic||  
sv\_unref\_flags||5.007001|  
sv\_unref||  
sv\_untaint||5.004000|  
sv\_upgrade||  
sv\_usepvn\_flags||5.009004|  
sv\_usepvn\_mg|5.004050||p  
sv\_usepvn||  
sv\_utf8\_decode||5.006000|  
sv\_utf8\_downgrade||5.006000|  
sv\_utf8\_encode||5.006000|  
sv\_utf8\_upgrade\_flags\_grow||5.011000|  
sv\_utf8\_upgrade\_flags||5.007002|  
sv\_utf8\_upgrade\_nomg||5.007002|  
sv\_utf8\_upgrade||5.007001|  
sv\_uv|5.005000||p  
sv\_vcatpvf\_mg|5.006000|5.004000|p  
sv\_vcatpvfn||5.004000|

sv\_vcatpvf|5.006000|5.004000|p  
sv\_vsetpvf\_mgl|5.006000|5.004000|p  
sv\_vsetpvfn||5.004000|  
sv\_vsetpvf|5.006000|5.004000|p  
sv\_xmlpeek||  
svtype||  
swallow\_bom||  
swap\_match\_buff||  
swash\_fetch||5.007002|  
swash\_get||  
swash\_init||5.006000|  
sys\_init3||5.010000|n  
sys\_init||5.010000|n  
sys\_intern\_clear||  
sys\_intern\_dup||  
sys\_intern\_init||  
sys\_term||5.010000|n  
taint\_env||  
taint\_proper||  
tmpls\_grow||5.006000|  
toLOWER||  
toUPPER||  
to\_byte\_substr||  
to\_uni\_fold||5.007003|  
to\_uni\_lower\_lc||5.006000|  
to\_uni\_lower||5.007003|  
to\_uni\_title\_lc||5.006000|  
to\_uni\_title||5.007003|  
to\_uni\_upper\_lc||5.006000|  
to\_uni\_upper||5.007003|  
to\_utf8\_case||5.007003|  
to\_utf8\_fold||5.007003|  
to\_utf8\_lower||5.007003|  
to\_utf8\_substr||  
to\_utf8\_title||5.007003|  
to\_utf8\_upper||5.007003|  
token\_free||  
token\_getmad||  
tokenize\_use||  
tokeq||  
tokereport||  
too\_few\_arguments||  
too\_many\_arguments||  
uiv\_2buf||n  
unlnk||  
unpack\_rec||  
unpack\_str||5.007003|  
unpackstring||5.008001|

unshare\_hek\_or\_pvn|||  
unshare\_hek|||  
unsharepvn|5.004000|  
unwind\_handler\_stack|||  
update\_debugger\_info|||  
upg\_version|5.009005|  
usage|||  
utf16\_to\_utf8\_reversed|5.006001|  
utf16\_to\_utf8|5.006001|  
utf8\_distance|5.006000|  
utf8\_hop|5.006000|  
utf8\_length|5.007001|  
utf8\_mg\_pos\_cache\_update|||  
utf8\_to\_bytes|5.006001|  
utf8\_to\_uvchr|5.007001|  
utf8\_to\_uvuni|5.007001|  
utf8n\_to\_uvchr|||  
utf8n\_to\_uvuni|5.007001|  
utilize|||  
uvchr\_to\_utf8\_flags|5.007003|  
uvchr\_to\_utf8|||  
uvuni\_to\_utf8\_flags|5.007003|  
uvuni\_to\_utf8|5.007001|  
validate\_suid|||  
varname|||  
vcmp|5.009000|  
vcroak|5.006000|  
vdeb|5.007003|  
vdie\_common|||  
vdie\_croak\_common|||  
vdie|||  
vform|5.006000|  
visit|||  
vivify\_defelem|||  
vivify\_ref|||  
vload\_module|5.006000|p  
vmess|5.006000|  
vnewSVpvf|5.006000|5.004000|p  
vnormal|5.009002|  
vnumify|5.009000|  
vstringify|5.009000|  
vverify|5.009003|  
vwarner|5.006000|  
vwarn|5.006000|  
wait4pid|||  
warn\_nocontext|||vn  
warner\_nocontext|||vn  
warner|5.006000|5.004000|pv

```

warn||v
watch||
whichsig||
write_no_mem||
write_to_stderr||
xmldump_all||
xmldump_attr||
xmldump_eval||
xmldump_form||
xmldump_indent||v
xmldump_packsubs||
xmldump_sub||
xmldump_vindent||
yyerror||
yylex||
yyparse||
yywarn||
);

if (exists $opt{ 'list-unsupported' }) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{todo};
        print "$f ", 'x'(40-length($f)), " ", format_version($API{$f}{todo}), "\n";
    }
    exit 0;
}

# Scan for possible replacement candidates

my(%replace, %need, %hints, %warnings, %depends);
my $replace = 0;
my($hint, $define, $function);

sub find_api
{
    my $code = shift;
    $code =~ s{
        /(?: \^[^*]*\*(?:\^[^$ccs][^*]*\*)* /| /(?:\r\n)*
        | "[^"\\]*(?:\\.["\\])*"
        | '[^'\\]*(?:\\.['\\])*' ) { } egsx;
    } grep { exists $API{$_} } $code =~ /(\w+)/mg;
}

while (<DATA>) {
    if ($hint) {
        my $h = $hint->[0] eq 'Hint' ? \%hints : \%warnings;
        if (m{^\s*\s*(.*)\s*$}) {

```

```

for (@{$hint->[1]}) {
    $h->{$_} ||= "; # suppress warning with older perls
    $h->{$_} .= "$1\n";
}
}
else { undef $hint }
}

$hint = [$1, [split /,?\s+/, $2]]
    if m{^\s*$rccs\s+(Hint|Warning):\s+(\w+(?:,\s+\w+)*)\s*$};

if ($define) {
    if ($define->[1] =~ /\$/ ) {
        $define->[1] .= $_;
    }
    else {
        if (exists $API{$define->[0]} && $define->[1] !~ /^DPPP_\(/) {
            my @n = find_api($define->[1]);
            push @{$depends{$define->[0]}}, @n if @n
        }
        undef $define;
    }
}

$define = [$1, $2] if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(.*)};

if ($function) {
    if (/^/) {
        if (exists $API{$function->[0]}) {
            my @n = find_api($function->[1]);
            push @{$depends{$function->[0]}}, @n if @n
        }
        undef $function;
    }
    else {
        $function->[1] .= $_;
    }
}

$function = [$1, ""] if m{^DPPP_(my_(\w+))};

$replace = $1 if m{^\s*$rccs\s+Replace:\s+(\d+)\s+$rcces*$};
$replace{$2} = $1 if $replace and m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+)};
$replace{$2} = $1 if m{^\s*#\s*define\s+(\w+)(?:\([^\)]*\))?\s+(\w+).*rccs\s+Replace\s+$rcces*};
$replace{$1} = $2 if m{^\s*$rccs\s+Replace (\w+) with (\w+)\s+$rcces*$};

if (m{^\s*$rccs\s+(\w+(\s*,\s*\w+)*)\s+depends\s+on\s+(\w+(\s*,\s*\w+)*)\s+$rcces*$}) {
    my @deps = map { s/\s+//g; $_ } split /,/, $3;
}

```

```

my $d;
for $d (map { s/^s+//g; $_ } split /\s/, $1) {
    push @{$depends{$d}}, @deps;
}
}

$need{$1} = 1 if m{^#if\s+defined\(\NEED_\(\w+\)(?:_GLOBAL)?\)};
}

for (values %depends) {
    my %s;
    $_ = [sort grep !$_{$_}++, @$_];
}

if (exists $opt{'api-info'}) {
    my $f;
    my $count = 0;
    my $match = $opt{'api-info'} =~ m!^(.*)/$! ? $1 : "\Q$opt{'api-info'}\E\$";
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $f =~ /$match/;
        print "\n=== $f ===\n\n";
        my $info = 0;
        if ($API{$f}{base} || $API{$f}{todo}) {
            my $base = format_version($API{$f}{base} || $API{$f}{todo});
            print "Supported at least starting from perl-$base.\n";
            $info++;
        }
        if ($API{$f}{provided}) {
            my $todo = $API{$f}{todo} ? format_version($API{$f}{todo}) : "5.003";
            print "Support by $ppport provided back to perl-$todo.\n";
            print "Support needs to be explicitly requested by NEED_$f.\n" if exists $need{$f};
            print "Depends on: ", join(', ', @{$depends{$f}}), ".\n" if exists $depends{$f};
            print "\n$hints{$f}" if exists $hints{$f};
            print "\nWARNING:\n$warnings{$f}" if exists $warnings{$f};
            $info++;
        }
        print "No portability information available.\n" unless $info;
        $count++;
    }
    $count or print "Found no API matching '$opt{'api-info'}'.";
    print "\n";
    exit 0;
}

if (exists $opt{'list-provided'}) {
    my $f;
    for $f (sort { lc $a cmp lc $b } keys %API) {
        next unless $API{$f}{provided};
    }
}

```



```

my @flags;
push @flags, 'explicit' if exists $need{$f};
push @flags, 'depend' if exists $depends{$f};
push @flags, 'hint' if exists $hints{$f};
push @flags, 'warning' if exists $warnings{$f};
my $flags = @flags ? ' [' . join(', ', @flags) . '] : ";
print "$f$flags\n";
}
exit 0;
}

my @files;
my @srcext = qw( .xs .c .h .cc .cpp -c.inc -xs.inc );
my $srcext = join '|', map { quotemeta $_ } @srcext;

if (@ARGV) {
my %seen;
for (@ARGV) {
if (-e) {
if (-f) {
push @files, $_ unless $seen{$_}++;
}
else { warn "'$_' is not a file.\n" }
}
else {
my @new = grep { -f } glob $_
or warn "'$_' does not exist.\n";
push @files, grep { !$seen{$_}++ } @new;
}
}
}
else {
eval {
require File::Find;
File::Find::find(sub {
$File::Find::name =~ /($srcext)$/i
and push @files, $File::Find::name;
}, '.');
};
if ($?) {
@files = map { glob "$*" } @srcext;
}
}

if (!@ARGV || $opt{filter}) {
my(@in, @out);
my %xsc = map { /(.*)\.xs$/ ? ("1.c" => 1, "1.cc" => 1) : () } @files;
for (@files) {

```

```

my $out = exists $xsc{$_} || ^b\Q$ppport\E$/i || !/($srcext)$/i;
push @ { $out ? \@out : \@in }, $_;
}
if (@ARGV && @out) {
    warning("Skipping the following files (use --nofilter to avoid this):\n| ", join "\n| ", @out);
}
@files = @in;
}

die "No input files given!\n" unless @files;

my(%files, %global, %revreplace);
%revreplace = reverse %replace;
my $filename;
my $patch_opened = 0;

for $filename (@files) {
    unless (open IN, "<$filename") {
        warn "Unable to read from $filename: $!\n";
        next;
    }

    info("Scanning $filename ...");

    my $c = do { local $/; <IN> };
    close IN;

    my %file = (orig => $c, changes => 0);

    # Temporarily remove C/XS comments and strings from the code
    my @ccom;

    $c =~ s{
        ( ^$HS*#$HS*include\b[^\r\n]+\b(?:\Q$ppport\E|XSUB\.h)\b[^\r\n]*
        | ^$HS*#$HS*(?:define|elif|if(?:def?))\b[^\r\n]* )
    | ( ^$HS*#[^\r\n]*
        | "[^"\\]*(?:\\.[^"\\])*"
        | '[^"\\]*(?:\\.[^"\\])*'
        | /(?:\[^\]*\*+(?:\[^\$ccs][^\]*\*+)* \| / [^\r\n]* ) )
    }{ defined $2 and push @ccom, $2;
        defined $1 ? $1 : "$ccs#$ccom$cc" }mgsex;

    $file{ccom} = \@ccom;
    $file{code} = $c;
    $file{has_inc_ppport} = $c =~ /^$HS*#$HS*include[^\r\n]+\b\Q$ppport\E\b/m;

    my $func;

```

```

for $func (keys %API) {
    my $match = $func;
    $match .= "|$revreplace{$func}" if exists $revreplace{$func};
    if ($c =~ /\b(?:Perl)?($match)\b/) {
        $file{uses_replace}{$1}++ if exists $revreplace{$func} && $1 eq $revreplace{$func};
        $file{uses_Perl}{$func}++ if $c =~ /\bPerl_$func\b/;
        if (exists $API{$func}{provided}) {
            $file{uses_provided}{$func}++;
            if (!exists $API{$func}{base} || $API{$func}{base} > $opt{'compat-version'}) {
                $file{uses}{$func}++;
                my @deps = rec_depend($func);
                if (@deps) {
                    $file{uses_deps}{$func} = \@deps;
                    for (@deps) {
                        $file{uses}{$_} = 0 unless exists $file{uses}{$_};
                    }
                }
                for ($func, @deps) {
                    $file{needs}{$_} = 'static' if exists $need{$_};
                }
            }
        }
        if (exists $API{$func}{todo} && $API{$func}{todo} > $opt{'compat-version'}) {
            if ($c =~ /\b$func\b/) {
                $file{uses_todo}{$func}++;
            }
        }
    }
}

while ($c =~ /^$HS*#$HS*define$HS+(NEED_(\w+?)(_GLOBAL)?)\b/mg) {
    if (exists $need{$2}) {
        $file{defined $3 ? 'needed_global' : 'needed_static'}{$2}++;
    }
    else { warning("Possibly wrong #define $1 in $filename") }
}

for (qw(uses needs uses_todo needed_global needed_static)) {
    for $func (keys %{$file{$_}}) {
        push @{$global{$_}{$func}}, $filename;
    }
}

$files{$filename} = \%file;
}

# Globally resolve NEED_'s
my $need;

```

```

for $need (keys %{$global{needs}}) {
  if (@{$global{needs}{$need}} > 1) {
    my @targets = @{$global{needs}{$need}};
    my @t = grep $files{$_}{needed_global}{$need}, @targets;
    @targets = @t if @t;
    @t = grep /\.xs$/i, @targets;
    @targets = @t if @t;
    my $target = shift @targets;
    $files{$target}{needs}{$need} = 'global';
    for (@{$global{needs}{$need}}) {
      $files{$_}{needs}{$need} = 'extern' if $_ ne $target;
    }
  }
}

for $filename (@files) {
  exists $files{$filename} or next;

  info("=== Analyzing $filename ===");

  my %file = %{$files{$filename}};
  my $func;
  my $c = $file{code};
  my $warnings = 0;

  for $func (sort keys %{$file{uses_Perl}}) {
    if ($API{$func}{varargs}) {
      unless ($API{$func}{nothxarg}) {
        my $changes = ($c =~ s{\b(Perl_?func\s*\s*(?!aTHX_?)\(\)[^\s]*\)}
          { $1 . ($2 eq 'aTHX' ? 'aTHX_') . $2 }ge);
        if ($changes) {
          warning("Doesn't pass interpreter argument aTHX to Perl_$func");
          $file{changes} += $changes;
        }
      }
    }
    else {
      warning("Uses Perl_$func instead of $func");
      $file{changes} += ($c =~ s{\bPerl_?func\s*\s*\(\s*aTHX_?\)\s*}
        {$func$1}g);
    }
  }

  for $func (sort keys %{$file{uses_replace}}) {
    warning("Uses $func instead of $replace{$func}");
    $file{changes} += ($c =~ s/\b$func\b/$replace{$func}/g);
  }
}

```

```

for $func (sort keys %{$file{uses_provided}}) {
  if ($file{uses}{$func}) {
    if (exists $file{uses_deps}{$func}) {
      diag("Uses $func, which depends on ", join(', ', @{$file{uses_deps}{$func}}));
    }
    else {
      diag("Uses $func");
    }
  }
  $warnings += hint($func);
}

unless ($opt{quiet}) {
  for $func (sort keys %{$file{uses_todo}}) {
    print "*** WARNING: Uses $func, which may not be portable below perl ",
      format_version($API{$func}{todo}), ", even with 'Sppport\n";
    $warnings++;
  }
}

for $func (sort keys %{$file{needed_static}}) {
  my $message = "";
  if (not exists $file{uses}{$func}) {
    $message = "No need to define NEED_$func if $func is never used";
  }
  elsif (exists $file{needs}{$func} && $file{needs}{$func} ne 'static') {
    $message = "No need to define NEED_$func when already needed globally";
  }
  if ($message) {
    diag($message);
    $file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_$func\b.*$LF//mg);
  }
}

for $func (sort keys %{$file{needed_global}}) {
  my $message = "";
  if (not exists $global{uses}{$func}) {
    $message = "No need to define NEED_${func}_GLOBAL if $func is never used";
  }
  elsif (exists $file{needs}{$func}) {
    if ($file{needs}{$func} eq 'extern') {
      $message = "No need to define NEED_${func}_GLOBAL when already needed globally";
    }
    elsif ($file{needs}{$func} eq 'static') {
      $message = "No need to define NEED_${func}_GLOBAL when only used in this file";
    }
  }
  if ($message) {

```

```

diag($message);
$file{changes} += ($c =~ s/^\$HS*#\$HS*define\$HS+NEED_${func}_GLOBAL\b.*$LF//mg);
}
}

$file{needs_inc_ppport} = keys %{$file{uses}};

if ($file{needs_inc_ppport}) {
my $pp = "";

for $func (sort keys %{$file{needs}}) {
my $type = $file{needs}{$func};
next if $type eq 'extern';
my $suffix = $type eq 'global' ? '_GLOBAL' : "";
unless (exists $file{"needed_$type"}{$func}) {
if ($type eq 'global') {
diag("Files [ @{$global{needs}{$func}} ] need $func, adding global request");
}
else {
diag("File needs $func, adding static request");
}
$pp .= "#define NEED_${func}$suffix\n";
}
}

if ($pp && ($c =~ s/^(?=$HS*#\$HS*define\$HS+NEED_\w+)$/pp/m)) {
$pp = "";
$file{changes}++;
}

unless ($file{has_inc_ppport}) {
diag("Needs to include '$ppport'");
$pp .= qq(#include "$ppport"\n)
}

if ($pp) {
$file{changes} += ($c =~ s/^\($HS*#\$HS*define\$HS+NEED_\w+.*?\)^/$1$pp/ms)
|| ($c =~ s/^(?=$HS*#\$HS*include.*\Q$ppport\E)/$pp/m)
|| ($c =~ s/^\($HS*#\$HS*include.*XSUB.*\s*?\)^/$1$pp/m)
|| ($c =~ s/^\($pp/);
}
}
else {
if ($file{has_inc_ppport}) {
diag("No need to include '$ppport'");
$file{changes} += ($c =~ s/^\$HS*?#\$HS*include.*\Q$ppport\E.*?$LF//m);
}
}
}

```

```

# put back in our C comments
my $ix;
my $cppc = 0;
my @ccom = @{$file{ccom}};
for $ix (0 .. $#ccom) {
    if (!$opt{cplusplus} && $ccom[$ix] =~ s!^/!!) {
        $cppc++;
        $file{changes} += $c =~ s/$rcs$ix$rcce/$ccs$ccom[$ix] $cce/;
    }
    else {
        $c =~ s/$rcs$ix$rcce/$ccom[$ix]/;
    }
}

if ($cppc) {
    my $s = $cppc != 1 ? 's' : '';
    warning("Uses $cppc C++ style comment$s, which is not portable");
}

my $s = $warnings != 1 ? 's' : '';
my $warn = $warnings ? " ($warnings warning$s)" : "";
info("Analysis completed$warn");

if ($file{changes}) {
    if (exists $opt{copy}) {
        my $newfile = "$filename$opt{copy}";
        if (-e $newfile) {
            error("$newfile' already exists, refusing to write copy of '$filename'");
        }
        else {
            local *F;
            if (open F, ">$newfile") {
                info("Writing copy of '$filename' with changes to '$newfile'");
                print F $c;
                close F;
            }
            else {
                error("Cannot open '$newfile' for writing: $!");
            }
        }
    }
}

elsif (exists $opt{patch} || $opt{changes}) {
    if (exists $opt{patch}) {
        unless ($patch_opened) {
            if (open PATCH, ">$opt{patch}") {
                $patch_opened = 1;
            }
        }
    }
}

```

```

    else {
        error("Cannot open '$opt{patch}' for writing: $!");
        delete $opt{patch};
        $opt{changes} = 1;
        goto fallback;
    }
}
mydiff(\*PATCH, $filename, $c);
}
else {
fallback:
    info("Suggested changes:");
    mydiff(\*STDOUT, $filename, $c);
}
}
else {
    my $s = $file{changes} == 1 ? " : 's'";
    info("$file{changes} potentially required change$s detected");
}
}
else {
    info("Looks good");
}
}

close PATCH if $patch_opened;

exit 0;

sub try_use { eval "use @_;"; return "$@" eq " }

sub mydiff
{
    local *F = shift;
    my($file, $str) = @_;
    my $diff;

    if (exists $opt{diff}) {
        $diff = run_diff($opt{diff}, $file, $str);
    }

    if (!defined $diff and try_use("Text::Diff")) {
        $diff = Text::Diff::diff($file, \ $str, { STYLE => 'Unified' });
        $diff = <<<HEADER . $diff;
    }
    --- $file
    +++ $file.patched
    HEADER

```



```

}

if (!defined $diff) {
    $diff = run_diff('diff -u', $file, $str);
}

if (!defined $diff) {
    $diff = run_diff('diff', $file, $str);
}

if (!defined $diff) {
    error("Cannot generate a diff. Please install Text::Diff or use --copy.");
    return;
}

print F $diff;
}

sub run_diff
{
    my($prog, $file, $str) = @_;
    my $tmp = 'dppptemp';
    my $suf = 'aaa';
    my $diff = "";
    local *F;

    while (-e "$tmp.$suf") { $suf++ }
    $tmp = "$tmp.$suf";

    if (open F, ">$tmp") {
        print F $str;
        close F;

        if (open F, "$prog $file $tmp |") {
            while (<F>) {
                s/\Q$tmp\E/$file.patched/;
                $diff .= $_;
            }
            close F;
            unlink $tmp;
            return $diff;
        }

        unlink $tmp;
    }
    else {
        error("Cannot open '$tmp' for writing: $!");
    }
}

```

```

return undef;
}

sub rec_depend
{
my($func, $seen) = @_;
return () unless exists $depends{$func};
$seen = {%{$seen|{}}};
return () if $seen->{$func}++;
my %s;
grep !${$_}++, map { ($_, rec_depend($_, $seen)) } @{$depends{$func}};
}

sub parse_version
{
my $ver = shift;

if ($ver =~ /^(d+)\.(d+)\.(d+)$/) {
return ($1, $2, $3);
}
elsif ($ver !~ /^d+\.[d_]+$/) {
die "cannot parse version '$ver'\n";
}

$ver =~ s/_//g;
$ver =~ s/$/000000/;

my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

$v = int $v;
$s = int $s;

if ($r < 5 || ($r == 5 && $v < 6)) {
if ($s % 10) {
die "cannot parse version '$ver'\n";
}
}

return ($r, $v, $s);
}

sub format_version
{
my $ver = shift;

$ver =~ s/$/000000/;
my($r,$v,$s) = $ver =~ /(\d+)\.(\d{3})(\d{3})/;

```

```

$V = int $v;
$S = int $s;

if ($r < 5 || ($r == 5 && $v < 6)) {
    if ($s % 10) {
        die "invalid version '$ver'\n";
    }
    $s /= 10;

    $ver = sprintf "%d.%03d", $r, $v;
    $s > 0 and $ver .= sprintf "_%02d", $s;

    return $ver;
}

return sprintf "%d.%d.%d", $r, $v, $s;

sub info
{
    $opt{quiet} and return;
    print @_, "\n";
}

sub diag
{
    $opt{quiet} and return;
    $opt{diag} and print @_, "\n";
}

sub warning
{
    $opt{quiet} and return;
    print "**** ", @_, "\n";
}

sub error
{
    print "**** ERROR: ", @_, "\n";
}

my %given_hints;
my %given_warnings;
sub hint
{
    $opt{quiet} and return;
    my $func = shift;

```

```

my $rv = 0;
if (exists $warnings{$func} && !$given_warnings{$func}++) {
    my $warn = $warnings{$func};
    $warn =~ s/^\!*** !mg;
    print "*** WARNING: $func\n", $warn;
    $rv++;
}
if ($opt{hints} && exists $hints{$func} && !$given_hints{$func}++) {
    my $hint = $hints{$func};
    $hint =~ s/^\s/ /mg;
    print " --- hint for $func ---\n", $hint;
}
$rv;
}

sub usage
{
    my($usage) = do { local(@ARGV,$/)=($0); <> } =~ /^=head\d$HS+SYNOPSIS\s*^(.*?)\s*^=/ms;
    my %M = ( 'T' => '*' );
    $usage =~ s/^\s*perl\s+\S+/$^X $0/;
    $usage =~ s/([A-Z])<([>]+)>/M{$1}$2M{$1}/g;

    print <<ENDUSAGE;

Usage: $usage

See perldoc $0 for details.

ENDUSAGE

    exit 2;
}

sub strip
{
    my $self = do { local(@ARGV,$/)=($0); <> };
    my($copy) = $self =~ /^=head\d\s+COPYRIGHT\s*^(.*?)^=\w+/ms;
    $copy =~ s/^(?=\S+)/ /gms;
    $self =~ s/^\$HS+Do NOT edit.*?(?=\^-)/$copy/ms;
    $self =~ s/^\$SKIP.*(?=\^__DATA__)/SKIP
if (\@ARGV && $ARGV[0] eq '--unstrip') {
    eval { require Devel::PPPport };
    \@ and die "Cannot require Devel::PPPport, please install.\n";
    if (eval $Devel::PPPport::VERSION < $VERSION) {
        die "$0 was originally generated with Devel::PPPport $VERSION.\n"
            . "Your Devel::PPPport is only version $Devel::PPPport::VERSION.\n"
            . "Please install a newer version, or --unstrip will not work.\n";
    }
}

```

```
Devel::PPort::WriteFile(\$0);
exit 0;
}
print <<END;
```

Sorry, but this is a stripped version of \\$0.

To be able to use its original script and doc functionality,  
please try to regenerate this file using:

```
\$^X \$0 --unstrip
```

```
END
/ms;
my($pl, $c) = $self =~ /(.*__DATA__)(.*)/ms;
$c =~ s{
  /(?:\[^\]*\*+(?:\[^\$ccs][^\]*\*+)* /|/^\r\n]*
| ("^\]**(?:\[^\]*\*+)"
| '^\]**(?:\[^\]*\*+)')
| ($HS+) }{ defined $2 ? ' ' : ($1 || " ) }gsex;
$c =~ s!\s+#!mg;
$c =~ s!^\$LF!!mg;
$c =~ s!\s*#\s*#!mg;
$c =~ s!\s+!!mg;

open OUT, ">$0" or die "cannot strip $0: $!\n";
print OUT "$pl$c\n";

exit 0;
}
```

```
__DATA__
*/
```

Found in path(s):

```
* /opt/cola/permits/1000848958_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/threads-1.87.tar.gz-cosi-expand-archive-H5g7shXt/threads-1.87/ppport.h
```

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

=head1 NAME

threads - Perl interpreter-based threads

=head1 VERSION

This document describes threads version 1.87

=head1 SYNOPSIS

```

use threads ('yield',
             'stack_size' => 64*4096,
             'exit' => 'threads_only',
             'stringify');

sub start_thread {
    my @args = @_ ;
    print("Thread started: ', join(' ', @args), "\n");
}
my $thr = threads->create('start_thread', 'argument');
$thr->join();

threads->create(sub { print("I am a thread\n"); })->join();

my $thr2 = async { foreach (@files) { ... } };
$thr2->join();
if (my $err = $thr2->error()) {
    warn("Thread error: $err\n");
}

# Invoke thread in list context (implicit) so it can return a list
my ($thr) = threads->create(sub { return (qw/a b c/); });
# or specify list context explicitly
my $thr = threads->create({'context' => 'list'},
                        sub { return (qw/a b c/); });
my @results = $thr->join();

$thr->detach();

# Get a thread's object
$thr = threads->self();
$thr = threads->object($tid);

# Get a thread's ID
$tid = threads->tid();
$tid = $thr->tid();
$tid = "$thr";

# Give other threads a chance to run
threads->yield();
yield();

# Lists of non-detached threads
my @threads = threads->list();
my $thread_count = threads->list();

my @running = threads->list(threads::running);

```

```

my @joinable = threads->list(threads::joinable);

# Test thread objects
if ($thr1 == $thr2) {
    ...
}

# Manage thread stack size
$stack_size = threads->get_stack_size();
$old_size = threads->set_stack_size(32*4096);

# Create a thread with a specific context and stack size
my $thr = threads->create({ 'context' => 'list',
                          'stack_size' => 32*4096,
                          'exit' => 'thread_only' },
                        \&foo);

# Get thread's context
my $wantarray = $thr->wantarray();

# Check thread's state
if ($thr->is_running()) {
    sleep(1);
}
if ($thr->is_joinable()) {
    $thr->join();
}

# Send a signal to a thread
$thr->kill('SIGUSR1');

# Exit a thread
threads->exit();

```

## =head1 DESCRIPTION

Since Perl 5.8, thread programming has been available using a model called I<interpreter threads> which provides a new Perl interpreter for each thread, and, by default, results in no data or state information being shared between threads.

(Prior to Perl 5.8, I<5005threads> was available through the C<Thread.pm> API. This threading model has been deprecated, and was removed as of Perl 5.10.0.)

As just mentioned, all variables are, by default, thread local. To use shared variables, you need to also load L<threads::shared>:

```
use threads;
```

```
use threads::shared;
```

When loading `L<threads::shared>`, you must `C<use threads>` before you `C<use threads::shared>`. (`C<threads>` will emit a warning if you do it the other way around.)

It is strongly recommended that you enable threads via `C<use threads>` as early as possible in your script.

If needed, scripts can be written so as to run on both threaded and non-threaded Perls:

```
my $can_use_threads = eval 'use threads; 1';
if ($can_use_threads) {
    # Do processing using threads
    ...
} else {
    # Do it without using threads
    ...
}
```

=over

```
=item $thr = threads->create(FUNCTION, ARGS)
```

This will create a new thread that will begin execution with the specified entry point function, and give it the `I<ARGS>` list as parameters. It will return the corresponding threads object, or `C<undef>` if thread creation failed.

`I<FUNCTION>` may either be the name of a function, an anonymous subroutine, or a code ref.

```
my $thr = threads->create('func_name', ...);
# or
my $thr = threads->create(sub { ... }, ...);
# or
my $thr = threads->create(\&func, ...);
```

The `C<-E<gt>new()>` method is an alias for `C<-E<gt>create()>`.

```
=item $thr->join()
```

This will wait for the corresponding thread to complete its execution. When the thread finishes, `C<-E<gt>join()>` will return the return value(s) of the entry point function.

The context (void, scalar or list) for the return value(s) for `C<-E<gt>join()>` is determined at the time of thread creation.



```

# Create thread in list context (implicit)
my ($thr1) = threads->create(sub {
    my @results = qw(a b c);
    return (@results);
});

# or (explicit)
my $thr1 = threads->create({'context' => 'list'},
    sub {
        my @results = qw(a b c);
        return (@results);
    });

# Retrieve list results from thread
my @res1 = $thr1->join();

# Create thread in scalar context (implicit)
my $thr2 = threads->create(sub {
    my $result = 42;
    return ($result);
});

# Retrieve scalar result from thread
my $res2 = $thr2->join();

# Create a thread in void context (explicit)
my $thr3 = threads->create({'void' => 1},
    sub { print("Hello, world\n"); });
# Join the thread in void context (i.e., no return value)
$thr3->join();

```

See [L<"/>"THREAD CONTEXT">](#) for more details.

If the program exits without all threads having either been joined or detached, then a warning will be issued.

Calling `C<-E<gt>join()` or `C<-E<gt>detach()` on an already joined thread will cause an error to be thrown.

`=item $thr->detach()`

Makes the thread unjoinable, and causes any eventual return value to be discarded. When the program exits, any detached threads that are still running are silently terminated.

If the program exits without all threads having either been joined or detached, then a warning will be issued.

Calling `C<-E<gt>join()` or `C<-E<gt>detach()` on an already detached thread will cause an error to be thrown.

=item threads->detach()

Class method that allows a thread to detach itself.

=item threads->self()

Class method that allows a thread to obtain its own I<threads> object.

=item \$thr->tid()

Returns the ID of the thread. Thread IDs are unique integers with the main thread in a program being 0, and incrementing by 1 for every thread created.

=item threads->tid()

Class method that allows a thread to obtain its own ID.

=item "\$thr"

If you add the C<stringify> import option to your C<use threads> declaration, then using a threads object in a string or a string context (e.g., as a hash key) will cause its ID to be used as the value:

```
use threads qw(stringify);
```

```
my $thr = threads->create(...);
```

```
print("Thread $thr started...\n"); # Prints out: Thread 1 started...
```

=item threads->object(\$tid)

This will return the I<threads> object for the I<active> thread associated with the specified thread ID. If C<\$tid> is the value for the current thread, then this call works the same as C<-E<gt>self()>. Otherwise, returns C<undef> if there is no thread associated with the TID, if the thread is joined or detached, if no TID is specified or if the specified TID is undef.

=item threads->yield()

This is a suggestion to the OS to let this thread yield CPU time to other threads. What actually happens is highly dependent upon the underlying thread implementation.

You may do C<use threads qw(yield)>, and then just use C<yield()> in your code.

=item threads->list()

```
=item threads->list(threads::all)
```

```
=item threads->list(threads::running)
```

```
=item threads->list(threads::joinable)
```

With no arguments (or using `C<threads::all>`) and in a list context, returns a list of all non-joined, non-detached `I<threads>` objects. In a scalar context, returns a count of the same.

With a `I<true>` argument (using `C<threads::running>`), returns a list of all non-joined, non-detached `I<threads>` objects that are still running.

With a `I<false>` argument (using `C<threads::joinable>`), returns a list of all non-joined, non-detached `I<threads>` objects that have finished running (i.e., for which `C<-E<gt>join()>` will not `I<block>`).

```
=item $thr1->equal($thr2)
```

Tests if two threads objects are the same thread or not. This is overloaded to the more natural forms:

```
if ($thr1 == $thr2) {
    print("Threads are the same\n");
}
# or
if ($thr1 != $thr2) {
    print("Threads differ\n");
}
```

(Thread comparison is based on thread IDs.)

```
=item async BLOCK;
```

`C<async>` creates a thread to execute the block immediately following it. This block is treated as an anonymous subroutine, and so must have a semicolon after the closing brace. Like `C<threads-E<gt>create()>`, `C<async>` returns a `I<threads>` object.

```
=item $thr->error()
```

Threads are executed in an `C<eval>` context. This method will return `C<undef>` if the thread terminates `I<normally>`. Otherwise, it returns the value of `C<$_>` associated with the thread's execution status in its `C<eval>` context.

```
=item $thr->_handle()
```

This `I<private>` method returns the memory location of the internal thread

structure associated with a threads object. For Win32, this is a pointer to the C<HANDLE> value returned by C<CreateThread> (i.e., C<HANDLE \*>); for other platforms, it is a pointer to the C<pthread\_t> structure used in the C<pthread\_create> call (i.e., C<pthread\_t \*>).

This method is of no use for general Perl threads programming. Its intent is to provide other (XS-based) thread modules with the capability to access, and possibly manipulate, the underlying thread structure associated with a Perl thread.

=item threads->\_handle()

Class method that allows a thread to obtain its own I<handle>.

=back

=head1 EXITING A THREAD

The usual method for terminating a thread is to L<return()|perlfunc/"return EXPR"> from the entry point function with the appropriate return value(s).

=over

=item threads->exit()

If needed, a thread can be exited at any time by calling C<threads-E<gt>exit()>. This will cause the thread to return C<undef> in a scalar context, or the empty list in a list context.

When called from the I<main> thread, this behaves the same as C<exit(0)>.

=item threads->exit(status)

When called from a thread, this behaves like C<threads-E<gt>exit()> (i.e., the exit status code is ignored).

When called from the I<main> thread, this behaves the same as C<exit(status)>.

=item die()

Calling C<die()> in a thread indicates an abnormal exit for the thread. Any C<\${SIG{\_\_DIE\_\_}}> handler in the thread will be called first, and then the thread will exit with a warning message that will contain any arguments passed in the C<die()> call.

=item exit(status)

Calling `L<exit()|perlfunc/"exit EXPR">` inside a thread causes the whole application to terminate. Because of this, the use of `C<exit()>` inside threaded code, or in modules that might be used in threaded applications, is strongly discouraged.

If `C<exit()>` really is needed, then consider using the following:

```
threads->exit() if threads->can('exit'); # Thread friendly
exit(status);
```

=item use threads 'exit' => 'threads\_only'

This globally overrides the default behavior of calling `C<exit()>` inside a thread, and effectively causes such calls to behave the same as `C<threads-E<gt>exit()>`. In other words, with this setting, calling `C<exit()>` causes only the thread to terminate.

Because of its global effect, this setting should not be used inside modules or the like.

The `I<main>` thread is unaffected by this setting.

```
=item threads->create({'exit' => 'thread_only'}, ...)
```

This overrides the default behavior of `C<exit()>` inside the newly created thread only.

```
=item $thr->set_thread_exit_only(boolean)
```

This can be used to change the `I<exit thread only>` behavior for a thread after it has been created. With a `I<true>` argument, `C<exit()>` will cause only the thread to exit. With a `I<false>` argument, `C<exit()>` will terminate the application.

The `I<main>` thread is unaffected by this call.

```
=item threads->set_thread_exit_only(boolean)
```

Class method for use inside a thread to change its own behavior for `C<exit()>`.

The `I<main>` thread is unaffected by this call.

```
=back
```

```
=head1 THREAD STATE
```

The following boolean methods are useful in determining the `I<state>` of a thread.

=over

=item \$thr->is\_running()

Returns true if a thread is still running (i.e., if its entry point function has not yet finished or exited).

=item \$thr->is\_joinable()

Returns true if the thread has finished running, is not detached and has not yet been joined. In other words, the thread is ready to be joined, and a call to `C<$thr-E<gt>join()` will not I<block>.

=item \$thr->is\_detached()

Returns true if the thread has been detached.

=item threads->is\_detached()

Class method that allows a thread to determine whether or not it is detached.

=back

=head1 THREAD CONTEXT

As with subroutines, the type of value returned from a thread's entry point function may be determined by the thread's I<context>: list, scalar or void. The thread's context is determined at thread creation. This is necessary so that the context is available to the entry point function via `L<wantarray()|perlfunc/"wantarray">`. The thread may then specify a value of the appropriate type to be returned from `C<-E<gt>join()`.

=head2 Explicit context

Because thread creation and thread joining may occur in different contexts, it may be desirable to state the context explicitly to the thread's entry point function. This may be done by calling `C<-E<gt>create()` with a hash reference as the first argument:

```
my $thr = threads->create({'context' => 'list'}, \&foo);  
...  
my @results = $thr->join();
```

In the above, the threads object is returned to the parent thread in scalar context, and the thread's entry point function `C<foo>` will be called in list (array) context such that the parent thread can receive a list (array) from the `C<-E<gt>join()` call. (`C<'array'>` is synonymous with `C<'list'>`.)

Similarly, if you need the threads object, but your thread will not be returning a value (i.e., I<void> context), you would do the following:

```
my $thr = threads->create({'context' => 'void'}, \&foo);
...
$thr->join();
```

The context type may also be used as the I<key> in the hash reference followed by a I<true> value:

```
threads->create({'scalar' => 1}, \&foo);
...
my ($thr) = threads->list();
my $result = $thr->join();
```

## =head2 Implicit context

If not explicitly stated, the thread's context is implied from the context of the C<-E<gt>create()> call:

```
# Create thread in list context
my ($thr) = threads->create(...);

# Create thread in scalar context
my $thr = threads->create(...);

# Create thread in void context
threads->create(...);
```

## =head2 \$thr->wantarray()

This returns the thread's context in the same manner as L<wantarray()|perlfunc/"wantarray">.

## =head2 threads->wantarray()

Class method to return the current thread's context. This returns the same value as running L<wantarray()|perlfunc/"wantarray"> inside the current thread's entry point function.

## =head1 THREAD STACK SIZE

The default per-thread stack size for different platforms varies significantly, and is almost always far more than is needed for most applications. On Win32, Perl's makefile explicitly sets the default stack to 16 MB; on most other platforms, the system default is used, which again may be much larger than is needed.

By tuning the stack size to more accurately reflect your application's needs, you may significantly reduce your application's memory usage, and increase the number of simultaneously running threads.

Note that on Windows, address space allocation granularity is 64 KB, therefore, setting the stack smaller than that on Win32 Perl will not save any more memory.

```
=over
```

```
=item threads->get_stack_size();
```

Returns the current default per-thread stack size. The default is zero, which means the system default stack size is currently in use.

```
=item $size = $thr->get_stack_size();
```

Returns the stack size for a particular thread. A return value of zero indicates the system default stack size was used for the thread.

```
=item $old_size = threads->set_stack_size($new_size);
```

Sets a new default per-thread stack size, and returns the previous setting.

Some platforms have a minimum thread stack size. Trying to set the stack size below this value will result in a warning, and the minimum stack size will be used.

Some Linux platforms have a maximum stack size. Setting too large of a stack size will cause thread creation to fail.

If needed, C<\$new\_size> will be rounded up to the next multiple of the memory page size (usually 4096 or 8192).

Threads created after the stack size is set will then either call C<pthread\_attr\_setstacksize()> I<(for pthreads platforms)>, or supply the stack size to C<CreateThread()> I<(for Win32 Perl)>.

(Obviously, this call does not affect any currently extant threads.)

```
=item use threads ('stack_size' => VALUE);
```

This sets the default per-thread stack size at the start of the application.

```
=item $ENV{'PERL5_ITHREADS_STACK_SIZE'}
```

The default per-thread stack size may be set at the start of the application



through the use of the environment variable `C<PERL5_ITHREADS_STACK_SIZE>`:

```
PERL5_ITHREADS_STACK_SIZE=1048576
export PERL5_ITHREADS_STACK_SIZE
perl -e'use threads; print(threads->get_stack_size(), "\n")'
```

This value overrides any `C<stack_size>` parameter given to `C<use threads>`. Its primary purpose is to permit setting the per-thread stack size for legacy threaded applications.

```
=item threads->create({'stack_size' => VALUE}, FUNCTION, ARGS)
```

To specify a particular stack size for any individual thread, call `C<-E<gt>create()>` with a hash reference as the first argument:

```
my $thr = threads->create({'stack_size' => 32*4096}, \&foo, @args);
```

```
=item $thr2 = $thr1->create(FUNCTION, ARGS)
```

This creates a new thread (`C<$thr2>`) that inherits the stack size from an existing thread (`C<$thr1>`). This is shorthand for the following:

```
my $stack_size = $thr1->get_stack_size();
my $thr2 = threads->create({'stack_size' => $stack_size}, FUNCTION, ARGS);
```

```
=back
```

## =head1 THREAD SIGNALLING

When `safe signals` is in effect (the default behavior - see `L</"Unsafe signals">` for more details), then signals may be sent and acted upon by individual threads.

```
=over 4
```

```
=item $thr->kill('SIG...');
```

Sends the specified signal to the thread. Signal names and (positive) signal numbers are the same as those supported by `L<kill()|perlfunc/"kill SIGNAL, LIST">`. For example, `'SIGTERM'`, `'TERM'` and (depending on the OS) `15` are all valid arguments to `C<-E<gt>kill()>`.

Returns the thread object to allow for method chaining:

```
$thr->kill('SIG...')->join();
```

```
=back
```

Signal handlers need to be set up in the threads for the signals they are expected to act upon. Here's an example for I<cancelling> a thread:

```
use threads;

sub thr_func
{
    # Thread 'cancellation' signal handler
    $SIG{'KILL'} = sub { threads->exit(); };

    ...
}

# Create a thread
my $thr = threads->create('thr_func');

...

# Signal the thread to terminate, and then detach
# it so that it will get cleaned up automatically
$thr->kill('KILL')->detach();
```

Here's another simplistic example that illustrates the use of thread signalling in conjunction with a semaphore to provide rudimentary I<suspend> and I<resume> capabilities:

```
use threads;
use Thread::Semaphore;

sub thr_func
{
    my $sema = shift;

    # Thread 'suspend/resume' signal handler
    $SIG{'STOP'} = sub {
        $sema->down();    # Thread suspended
        $sema->up();      # Thread resumes
    };

    ...
}

# Create a semaphore and pass it to a thread
my $sema = Thread::Semaphore->new();
my $thr = threads->create('thr_func', $sema);

# Suspend the thread
$sema->down();
```

```
$thr->kill('STOP');
```

...

```
# Allow the thread to continue  
$sema->up();
```

CAVEAT: The thread signalling capability provided by this module does not actually send signals via the OS. It I<emulates> signals at the Perl-level such that signal handlers are called in the appropriate thread. For example, sending C<\$thr-E<gt>kill('STOP')> does not actually suspend a thread (or the whole process), but does cause a C<SIG{'STOP'}> handler to be called in that thread (as illustrated above).

As such, signals that would normally not be appropriate to use in the C<kill()> command (e.g., C<kill('KILL', \$\$)>) are okay to use with the C<-E<gt>kill()> method (again, as illustrated above).

Correspondingly, sending a signal to a thread does not disrupt the operation the thread is currently working on: The signal will be acted upon after the current operation has completed. For instance, if the thread is I<stuck> on an I/O call, sending it a signal will not cause the I/O call to be interrupted such that the signal is acted up immediately.

Sending a signal to a terminated/finished thread is ignored.

=head1 WARNINGS

=over 4

=item Perl exited with active threads:

If the program exits without all threads having either been joined or detached, then this warning will be issued.

NOTE: If the I<main> thread exits, then this warning cannot be suppressed using C<no warnings 'threads';> as suggested below.

=item Thread creation failed: pthread\_create returned #

See the appropriate I<man> page for C<pthread\_create> to determine the actual cause for the failure.

=item Thread # terminated abnormally: ...

A thread terminated in some manner other than just returning from its entry point function, or by using C<threads-E<gt>exit()>. For example, the thread may have terminated because of an error, or by using C<die>.

=item Using minimum thread stack size of #

Some platforms have a minimum thread stack size. Trying to set the stack size below this value will result in the above warning, and the stack size will be set to the minimum.

=item Thread creation failed: pthread\_attr\_setstacksize(I<SIZE>) returned 22

The specified I<SIZE> exceeds the system's maximum stack size. Use a smaller value for the stack size.

=back

If needed, thread warnings can be suppressed by using:

```
no warnings 'threads';
```

in the appropriate scope.

=head1 ERRORS

=over 4

=item This Perl not built to support threads

The particular copy of Perl that you're trying to use was not built using the C<useithreads> configuration option.

Having threads support requires all of Perl and all of the XS modules in the Perl installation to be rebuilt; it is not just a question of adding the L<threads> module (i.e., threaded and non-threaded Perls are binary incompatible).

=item Cannot change stack size of an existing thread

The stack size of currently extant threads cannot be changed, therefore, the following results in the above error:

```
$thr->set_stack_size($size);
```

=item Cannot signal threads without safe signals

Safe signals must be in effect to use the C<-E<gt>kill()> signalling method. See L<"/>Unsafe signals"> for more details.

=item Unrecognized signal name: ...

The particular copy of Perl that you're trying to use does not support the specified signal being used in a `C<-E<gt>kill()` call.

=back

## =head1 BUGS AND LIMITATIONS

Before you consider posting a bug report, please consult, and possibly post a message to the discussion forum to see if what you've encountered is a known problem.

=over

### =item Thread-safe modules

See [L<perlmod/"Making your module threadsafe">](#) when creating modules that may be used in threaded applications, especially if those modules use non-Perl data, or XS code.

### =item Using non-thread-safe modules

Unfortunately, you may encounter Perl modules that are not `I<thread-safe>`. For example, they may crash the Perl interpreter during execution, or may dump core on termination. Depending on the module and the requirements of your application, it may be possible to work around such difficulties.

If the module will only be used inside a thread, you can try loading the module from inside the thread entry point function using `C<require>` (and `C<import>` if needed):

```
sub thr_func
{
    require Unsafe::Module
    # Unsafe::Module->import(...);

    ....
}
```

If the module is needed inside the `I<main>` thread, try modifying your application so that the module is loaded (again using `C<require>` and `C<-E<gt>import()`) after any threads are started, and in such a way that no other threads are started afterwards.

If the above does not work, or is not adequate for your application, then file a bug report on [L<http://rt.cpan.org/Public/>](http://rt.cpan.org/Public/) against the problematic module.

### =item Memory consumption

On most systems, frequent and continual creation and destruction of threads can lead to ever-increasing growth in the memory footprint of the Perl interpreter. While it is simple to just launch threads and then `C<-E<gt>join()` or `C<-E<gt>detach()` them, for long-lived applications, it is better to maintain a pool of threads, and to reuse them for the work needed, using `L<queues|Thread::Queue>` to notify threads of pending work. The CPAN distribution of this module contains a simple example (`F<examples/pool_reuse.pl>`) illustrating the creation, use and monitoring of a pool of `I<reusable>` threads.

=item Current working directory

On all platforms except MSWin32, the setting for the current working directory is shared among all threads such that changing it in one thread (e.g., using `C<chdir()`) will affect all the threads in the application.

On MSWin32, each thread maintains its own the current working directory setting.

=item Environment variables

Currently, on all platforms except MSWin32, all `I<system>` calls (e.g., using `C<system()` or back-ticks) made from threads use the environment variable settings from the `I<main>` thread. In other words, changes made to `C<%ENV>` in a thread will not be visible in `I<system>` calls made by that thread.

To work around this, set environment variables as part of the `I<system>` call. For example:

```
my $msg = 'hello';
system("FOO=$msg; echo \${FOO}"); # Outputs 'hello' to STDOUT
```

On MSWin32, each thread maintains its own set of environment variables.

=item Catching signals

Signals are `I<caught>` by the main thread (thread ID = 0) of a script. Therefore, setting up signal handlers in threads for purposes other than `L</"THREAD SIGNALLING">` as documented above will not accomplish what is intended.

This is especially true if trying to catch `C<SIGALRM>` in a thread. To handle alarms in threads, set up a signal handler in the main thread, and then use `L</"THREAD SIGNALLING">` to relay the signal to the thread:

```
# Create thread with a task that may time out
my $thr->create(sub {
    threads->yield();
```

```

eval {
    $SIG{ALRM} = sub { die("Timeout\n"); };
    alarm(10);
    ... # Do work here
    alarm(0);
};
if ($@ =~ /Timeout/) {
    warn("Task in thread timed out\n");
}
};

```

```

# Set signal handler to relay SIGALRM to thread
$SIG{ALRM} = sub { $thr->kill('ALRM') };

```

```

... # Main thread continues working

```

=item Parent-child threads

On some platforms, it might not be possible to destroy I<parent> threads while there are still existing I<child> threads.

=item Creating threads inside special blocks

Creating threads inside C<BEGIN>, C<CHECK> or C<INIT> blocks should not be relied upon. Depending on the Perl version and the application code, results may range from success, to (apparently harmless) warnings of leaked scalar, or all the way up to crashing of the Perl interpreter.

=item Unsafe signals

Since Perl 5.8.0, signals have been made safer in Perl by postponing their handling until the interpreter is in a I<safe> state. See L<perl58delta/"Safe Signals"> and L<perlipc/"Deferred Signals (Safe Signals)"> for more details.

Safe signals is the default behavior, and the old, immediate, unsafe signalling behavior is only in effect in the following situations:

=over 4

=item \* Perl has been built with C<PERL\_OLD\_SIGNALS> (see C<perl -V>).

=item \* The environment variable C<PERL\_SIGNALS> is set to C<unsafe> (see L<perlrun/"PERL\_SIGNALS">).

=item \* The module L<Perl::Unsafe::Signals> is used.

=back

If unsafe signals is in effect, then signal handling is not thread-safe, and the C<-E<gt>kill()> signalling method cannot be used.

=item Returning closures from threads

Returning closures from threads should not be relied upon. Depending on the Perl version and the application code, results may range from success, to (apparently harmless) warnings of leaked scalar, or all the way up to crashing of the Perl interpreter.

=item Returning objects from threads

Returning objects from threads does not work. Depending on the classes involved, you may be able to work around this by returning a serialized version of the object (e.g., using L<Data::Dumper> or L<Storable>), and then reconstituting it in the joining thread. If you're using Perl 5.10.0 or later, and if the class supports L<shared objects|threads::shared/"OBJECTS">, you can pass them via L<shared queues|Thread::Queue>.

=item END blocks in threads

It is possible to add L<END blocks|perlmod/"BEGIN, UNITCHECK, CHECK, INIT and END"> to threads by using L<require|perlfunc/"require VERSION"> or L<eval|perlfunc/"eval EXPR"> with the appropriate code. These C<END> blocks will then be executed when the thread's interpreter is destroyed (i.e., either during a C<-E<gt>join()> call, or at program termination).

However, calling any L<threads> methods in such an C<END> block will most likely I<fail> (e.g., the application may hang, or generate an error) due to mutexes that are needed to control functionality within the L<threads> module.

For this reason, the use of C<END> blocks in threads is B<strongly> discouraged.

=item Open directory handles

In perl 5.14 and higher, on systems other than Windows that do not support the C<fchdir> C function, directory handles (see L<opendir|perlfunc/"opendir DIRHANDLE,EXPR">) will not be copied to new threads. You can use the C<d\_fchdir> variable in L<Config.pm|Config> to determine whether your system supports it.

In prior perl versions, spawning threads with open directory handles would crash the interpreter.

L<[perl #75154]|http://rt.perl.org/rt3/Public/Bug/Display.html?id=75154>

=item Perl Bugs and the CPAN Version of L<threads>



Support for threads extends beyond the code in this module (i.e., `F<threads.pm>` and `F<threads.xs>`), and into the Perl interpreter itself. Older versions of Perl contain bugs that may manifest themselves despite using the latest version of `L<threads>` from CPAN. There is no workaround for this other than upgrading to the latest version of Perl.

Even with the latest version of Perl, it is known that certain constructs with threads may result in warning messages concerning leaked scalars or unreferenced scalars. However, such warnings are harmless, and may safely be ignored.

You can search for `L<threads>` related bug reports at `L<http://rt.cpan.org/Public/>`. If needed submit any new bugs, problems, patches, etc. to: `L<http://rt.cpan.org/Public/Dist/Display.html?Name=threads>`

=back

=head1 REQUIREMENTS

Perl 5.8.0 or later

=head1 SEE ALSO

`L<threads>` Discussion Forum on CPAN:  
`L<http://www.cpanforum.com/dist/threads>`

`L<threads::shared>`, `L<perlthrtut>`

`L<http://www.perl.com/pub/a/2002/06/11/threads.html>` and  
`L<http://www.perl.com/pub/a/2002/09/04/threads.html>`

Perl threads mailing list:  
`L<http://lists.perl.org/list/ithreads.html>`

Stack size discussion:  
`L<http://www.perlmonks.org/?node_id=532956>`

=head1 AUTHOR

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CPAN version produced by Jerry D. Hedden `<jdhedden AT cpan DOT org>`

=head1 LICENSE

threads is released under the same license as Perl.

=head1 ACKNOWLEDGEMENTS

Richard Soderberg E<lt>perl AT crystalflame DOT netE<gt> -  
Helping me out tons, trying to find reasons for races and other weird bugs!

Simon Cozens E<lt>simon AT brecon DOT co DOT ukE<gt> -  
Being there to answer zillions of annoying questions

Rocco Caputo E<lt>troc AT netrus DOT netE<gt>

Vipul Ved Prakash E<lt>mail AT vipul DOT netE<gt> -  
Helping with debugging

Dean Arnold E<lt>darnold AT presicient DOT comE<gt> -  
Stack size API

=cut

Found in path(s):

\* /opt/cola/permits/1000848958\_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/threads-1.87.tar.gz-cosi-expand-archive-H5g7shXt/threads-1.87/lib/threads.pm

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

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Found in path(s):

\* /opt/cola/permits/1000848958\_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/threads-1.87.tar.gz-cosi-expand-archive-H5g7shXt/threads-1.87/examples/pool\_reuse.pl

\* /opt/cola/permits/1000848958\_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/threads-1.87.tar.gz-cosi-expand-archive-H5g7shXt/threads-1.87/examples/pool.pl

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---

abstract: 'Perl interpreter-based threads'

author:

- 'Artur Bergman, Jerry D. Hedden <jdhedden AT cpan DOT org>'

build\_requires:

ExtUtils::MakeMaker: 0

configure\_requires:

ExtUtils::MakeMaker: 0

dynamic\_config: 1

generated\_by: 'ExtUtils::MakeMaker version 6.66, CPAN::Meta::Converter version 2.130880'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: threads

no\_index:  
directory:  
- t  
- inc  
requires:  
Carp: 0  
Config: 0  
ExtUtils::testlib: 0  
Hash::Util: 0  
IO::File: 0  
Test::More: 0  
XSLoader: 0  
overload: 0  
strict: 0  
warnings: 0  
version: 1.87

Found in path(s):

\* /opt/cola/permits/1000848958\_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/threads-1.87.tar.gz-cosi-expand-archive-H5g7shXt/threads-1.87/META.yml

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

License: GPL+ or Artistic

Found in path(s):

\* /opt/cola/permits/1000848958\_1646171581.67/0/perl-threads-1.87-4.el7.src.rpm-cosi-expand-archive-9YR7xE5s/perl-threads.spec

# 1.315 expat 2.1.0 10.el7\_3

## 1.315.1 Available under license :

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# 1.316 glibc 2.17-260.el7.6atomix1

## 1.316.1 Available under license :

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@center Version 2.1, February 1999

@c This file is intended to be included within another document,

@c hence no sectioning command or @node.

@display

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@subheading Preamble

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`@enumerate` 0

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@enumerate a

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@end enumerate

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@item

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@enumerate a

@item

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@item

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version that the work was made with.

@item

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@item

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

@item

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

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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

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

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

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

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

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

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that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

- b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

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- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
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its purpose remains meaningful.

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Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

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Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form

under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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

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

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

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

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

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

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\*/

size: 8388608, sector size: 512, PT: dos, offset: 446, id=0x8f8378c0

---

#1: 32 7648 0x83

#2: 7680 8704 0xa5

#5: 7936 4864 0x7 (freebsd)

#6: 12544 3584 0x7 (freebsd)



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Initialize empty image

f1c9645dbc14efddc7d8a322685f26eb bsd.img

Create new DOS partition table

57e721e38d1266c2df055067c18f2cf9 bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors

Units = sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk label type: dos

Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

Create 1st primary partition

ada64ace122978d00d1d1c0e5ee45d26 bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors

Units = sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk label type: dos

Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
__ts_dev__1		2048	4095	1024	83	Linux

Create 2st primary partition

1bebf87248e05d6e4e62b749da65d023 bsd.img

Set 2nd partition type  
2d8e8dff51a88a045db233418dd73fbe bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors  
Units = sectors of 1 \* 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
Disk label type: dos  
Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
__ts_dev__1		2048	4095	1024	83	Linux
__ts_dev__2		4096	20479	8192	a5	FreeBSD

-----  
Create default BSD

2e1cee529cb59c9341afef0443f196a1 bsd.img

---layout-----

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

4 partitions:

#	start	end	size	fstype	[fsize	bsize	cpg]
c:	4096	20479	16384	unused	0	0	
d:	0	16064	16065	unused	0	0	

BSD disklabel command (m for help):

Command (m for help):

-----

b5c121c2091b2ff26b880551feac7112 bsd.img

---layout-----

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

4 partitions:

```
#  start  end  size  fstype  [fsize bsize cpg]
a:  4096  6144  2049  4.2BSD  0  0  0
c:  4096  20479  16384  unused  0  0
d:   0  16064  16065  unused  0  0
```

BSD disklabel command (m for help):

Command (m for help):

-----

Changes will remain in memory only, until you decide to write them.

Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

```
0 unused      5 4.1BSD      9 4.4LFS      d boot
1 swap        6 Eighth Edition  a unknown    e ADOS
2 Version 6   7 4.2BSD      b HPFS       f HFS
3 Version 7   8 MS-DOS     c ISO-9660   10 AdvFS
4 System V
```

BSD disklabel command (m for help):

# 1.318 log4j-api 2.11.1

## 1.318.1 Available under license :

Apache Log4j 1.x Compatibility API

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Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

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- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the

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

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

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

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

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## Preamble

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Finally, software patents pose a constant threat to the existence of

any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

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## 1.322 lucene-misc 7.7.2

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analysis/common/src/java/org/apache/lucene/analysis/fin/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
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```
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```
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```
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```

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```
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## 1.333 fipscheck 1.4.1-6.el7

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## 1.337 glib 2.56.1 5.e17

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```
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```

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## 1.340 lucene-sandbox 7.7.2

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## 1.341 qrencode 3.4.1 3.e17

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## 1.342 javax-annotation-api 1.3.2

## 1.343 xz 5.2.2-1.el7atomix1

### 1.343.1 Available under license :

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=====

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- javaee\_web\_services\_client\_1\_2.xsd
- javaee\_6.xsd
- javaee\_web\_services\_1\_3.xsd
- javaee\_web\_services\_client\_1\_3.xsd
- jsp\_2\_2.xsd

- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd
- javaee\_7.xsd
- javaee\_web\_services\_1\_4.xsd
- javaee\_web\_services\_client\_1\_4.xsd
- jsp\_2\_3.xsd
- web-app\_3\_1.xsd
- web-common\_3\_1.xsd
- web-fragment\_3\_1.xsd

may be obtained from:

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- javaee\_6.xsd
- javaee\_web\_services\_1\_3.xsd
- javaee\_web\_services\_client\_1\_3.xsd
- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd
- javaee\_7.xsd
- javaee\_web\_services\_1\_4.xsd
- javaee\_web\_services\_client\_1\_4.xsd
- jsp\_2\_3.xsd



- web-app\_3\_1.xsd
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## 1.347 hdrhistogram 2.1.9

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```

```
package org.HdrHistogram;
```

```
final class Version {
    public static final String version="$VERSION$";
    public static final String build_time="$BUILD_TIMES$";
}
```

Found in path(s):

```
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
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jar/org/HdrHistogram/SingleWriterRecorder.java
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
jar/org/HdrHistogram/HistogramLogProcessor.java
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
jar/org/HdrHistogram/DoubleHistogram.java
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
jar/org/HdrHistogram/EncodableHistogram.java
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
jar/org/HdrHistogram/SynchronizedDoubleHistogram.java
* /opt/cola/permits/1000000798_1646171445.44/0/hdrhistogram-2-1-9-sources-
```

jar/org/HdrHistogram/PercentileIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleAllValuesIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/IntCountsHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/HistogramLogReader.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/ConcurrentHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleHistogramIterationValue.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleRecorder.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/RecordedValuesIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/AbstractHistogramLogReader.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoublePercentileIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/AbstractHistogramIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/LogarithmicIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/ZigZagEncoding.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleLinearIterator.java  
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jar/org/HdrHistogram/HistogramIterationValue.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/ConcurrentDoubleHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/SynchronizedHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/SingleWriterDoubleRecorder.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleLogarithmicIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/AbstractHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/Recorder.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/Version.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/Histogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/AllValuesIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/LinearIterator.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-

jar/org/HdrHistogram/ShortCountsHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/AtomicHistogram.java  
\* /opt/cola/permits/1000000798\_1646171445.44/0/hdrhistogram-2-1-9-sources-  
jar/org/HdrHistogram/DoubleRecordedValuesIterator.java  
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## 1.349 cyrus-sasl 2.1.26 23.el7

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#pragma ident "@(#)mit-sipb-copyright.h 1.5 93/02/04 SMI"

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```

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* Rob Siemborski
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## 1.351 cryptsetup 2.0.3 5.e17

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## 1.355 tzdata 2019c 1.e17

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# 1.356 apache-httpclient 4.5.6

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# 1.357 Izo 2.06 8.e17

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\*

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\*

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\* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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=====

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## 1.378 copy-jdk-configs 3.3-10.el7\_5

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## 1.379 sqlite 3.26.0-6.el7atomix1

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## 1.383 libsm 1.2.2 2.el7



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```

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```
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archive-SuPkJAji/redhat-rpm-config-9.1.0.tar.bz2-cosi-expand-archive-U3Wl9Oef/redhat-rpm-config-
9.1.0/kmodtool
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archive-SuPkJAji/redhat-rpm-config-9.1.0.tar.bz2-cosi-expand-archive-U3Wl9Oef/redhat-rpm-config-9.1.0/dist.sh
```

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```
* /opt/cola/permits/209695304_1654022959.2839324/0/redhat-rpm-config-9.1.0-88.el7.centos.src.rpm-cosi-expand-
archive-SuPkJAji/redhat-rpm-config.spec
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From: Jiri Benc <jbenc@redhat.com>

Subject: Build correctly with z-stream kernels

In brew, there's usually a newer kernel installed than the one used for installation. Handle this situation correctly by allowing the spec file to define kernel\_version to be used in rpm dependencies, while building against a compatible newer (z-stream) kernel.

Signed-off-by: Jiri Benc <jbenc@redhat.com>

---

```
kmodtool | 31 +-----
```

```
macros | 2 +-
```

```
2 files changed, 29 insertions(+), 4 deletions(-)
```

```

--- a/kmodtool
+++ b/kmodtool
@@ -9,6 +9,7 @@
# Copyright (c) 2003-2010 Ville Skyttä <ville.skytta@iki.fi>,
#           Thorsten Leemhuis <fedora@leemhuis.info>
#           Jon Masters <jcm@redhat.com>
+# Copyright (c) 2012-2013 Jiri Benc <jbenc@redhat.com>
#
# Permission is hereby granted, free of charge, to any person obtaining
# a copy of this software and associated documentation files (the
@@ -49,9 +50,25 @@ kver=
verrel=
variant=

+get_kernel_release ()
+{
+ if [[ -z $1 ]]; then
+  uname -r
+  return
+ fi
+ local arch=$(arch)
+ local verrel=${1%.$sarch}
+ local verprefix=${verrel%.*}
+ local versuffix=${verrel#$verprefix}
+ verrel=$(ls -Ud /usr/src/kernels/$verprefix*$versuffix.$sarch | sort -V | tail -n 1)
+ verrel=${verrel##*/}
+ [[ -z $verrel ]] && verrel=$1.$sarch
+ echo "$verrel"
+}
+
get_verrel ()
{
- verrel=${1:-$(uname -r)}
+ verrel=$(get_kernel_release "$1")
  verrel=${verrel/%.$sknownvariants/}
}

@@ -61,10 +78,16 @@ print_verrel ()
  echo "${verrel}"
}

+get_verrel_for_deps ()
+{
+ verrel_dep=${1:-$(uname -r)}
+ verrel_dep=${verrel_dep/%.$sknownvariants/}
+}
+

```

```

get_variant ()
{
    get_verrel @$
- variant=${1:-$(uname -r)}
+ variant=$(get_kernel_release "$1")
    variant=${variant/#$verrel?(\.)}
    variant=${variant:-""}
}
@@ -129,7 +152,7 @@ get_rpmtree ()
    echo "%global _use_internal_dependency_generator 0"

    cat <<EOF
-Provides:    kernel-modules >= ${verrel}${dotvariant}
+Provides:    kernel-modules >= ${verrel_dep}${dotvariant}
Provides:     ${kmod_name}-kmod = % { ?epoch:% { epoch}: } % { version } - % { release }
Requires(post): /sbin/depmod
Requires(postun): /sbin/depmod
@@ -206,6 +229,8 @@ print_rpmtree ()
    shift
    kver="${1}"
    get_verrel "${1}"
+ get_verrel_for_deps "${1}"
+ [[ -z $kver ]] && kver=$verrel
    shift
    if [ -z "${kmod_name}" ]; then
        echo "Please provide the kmodule-name as first parameter." >&2
--- a/macros
+++ b/macros
@@ -218,7 +218,7 @@ package or when debugging this package.\
    then \
        nobuildreqs="yes" \
    fi \
- override_filelist="$filelist" override_preamble="$preamble" nobuildreqs="$nobuildreqs"
kmod_version=%kmod_version kmod_release=%kmod_release % { kmodtool } rpmtree % { -n* } % { !-n: % name }
% { kverrel } $flavors_to_build 2>/dev/null \
+ override_filelist="$filelist" override_preamble="$preamble" nobuildreqs="$nobuildreqs"
kmod_version=%kmod_version kmod_release=%kmod_release % { kmodtool } rpmtree % { -n* } % { !-n: % name }
% { kernel_version } $flavors_to_build 2>/dev/null \
)}

#=====

```

Found in path(s):

```

* /opt/cola/permits/209695304_1654022959.2839324/0/redhat-rpm-config-9.1.0-88.el7.centos.src.rpm-cosi-expand-
archive-SuPkJAji/redhat-rpm-config-9.1.0-kmod-brew-build.patch

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```
* /opt/cola/permits/209695304_1654022959.2839324/0/redhat-rpm-config-9.1.0-88.el7.centos.src.rpm-cosi-expand-
archive-SuPkJAji/redhat-rpm-config-9.1.0.tar.bz2-cosi-expand-archive-U3Wl9Oef/redhat-rpm-config-9.1.0/rpmsort
```

## 1.385 util-linux 2.23.2 61.el7

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```
/*
```

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\*/

size: 8388608, sector size: 512, PT: dos, offset: 446, id=0x8f8378c0

---

#1: 32 7648 0x83

#2: 7680 8704 0xa5

#5: 7936 4864 0x7 (freebsd)

#6: 12544 3584 0x7 (freebsd)

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Initialize empty image

f1c9645dbc14efddc7d8a322685f26eb bsd.img

Create new DOS partition table

57e721e38d1266c2df055067c18f2cf9 bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors

Units = sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk label type: dos

Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

Create 1st primary partition

ada64ace122978d00d1d1c0e5ee45d26 bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors

Units = sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk label type: dos



Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
__ts_dev__1		2048	4095	1024	83	Linux

-----

Create 2st primary partition

1bebf87248e05d6e4e62b749da65d023 bsd.img

Set 2nd partition type

2d8e8dff51a88a045db233418dd73fbe bsd.img

---layout-----

\_\_ts\_dev\_\_: 10 MB, 10485760 bytes, 20480 sectors

Units = sectors of 1 \* 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 512 bytes

I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk label type: dos

Disk identifier: 0x00000001

Device	Boot	Start	End	Blocks	Id	System
__ts_dev__1		2048	4095	1024	83	Linux
__ts_dev__2		4096	20479	8192	a5	FreeBSD

-----

Create default BSD

2e1cee529cb59c9341afef0443f196a1 bsd.img

---layout-----

Changes will remain in memory only, until you decide to write them.

Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

4 partitions:

#	start	end	size	fstype	[fsize	bsize	cpg]
c:	4096	20479	16384	unused	0	0	
d:	0	16064	16065	unused	0	0	

BSD disklabel command (m for help):

Command (m for help):

-----

b5c121c2091b2ff26b880551feac7112 bsd.img

---layout-----

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

4 partitions:

#	start	end	size	fstype	[fsize	bsize	cpg]
a:	4096	6144	2049	4.2BSD	0	0	0
c:	4096	20479	16384	unused	0	0	
d:	0	16064	16065	unused	0	0	

BSD disklabel command (m for help):

Command (m for help):  
-----

Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.

Command (m for help):

BSD disklabel command (m for help):

0	unused	5	4.1BSD	9	4.4LFS	d	boot
1	swap	6	Eighth Edition	a	unknown	e	ADOS
2	Version 6	7	4.2BSD	b	HPFS	f	HFS
3	Version 7	8	MS-DOS	c	ISO-9660	10	AdvFS
4	System V						

BSD disklabel command (m for help):

# 1.386 less 458 9.e17

## 1.386.1 Available under license :

Less License  
-----

Less

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/\* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

\* <http://www.hypermall.com/>

\* 10/1/97 - commented out CFG\_PHYIE bit - we don't care when the PHY

\* interrupts us (except possibly for removal/insertion of the cable?)

\* 10/4/97 - began heavy inline documentation of the code. Corrected typos

\* and spelling mistakes.

\* 10/5/97 - added code to handle PHY interrupts, disable PHY on

\* loss of link, and correctly re-enable PHY when link is

\* re-established. (put back CFG\_PHYIE)

\*

\* Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.

\*

\* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997

\*

\* Linux driver for the IDT77201 NICStAR PCI ATM controller.

\* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;

\* see init\_nicstar() for PHY initialization to change this. This driver

\* expects the Linux ATM stack to support scatter-gather lists

\* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.

\*

\* Implementing minimal-copy of received data:

\* IDT always receives data into a small buffer, then large buffers

\* as needed. This means that data must always be copied to create

\* the linear buffer needed by most non-ATM protocol stacks (e.g. IP)

\* Fix is simple: make large buffers large enough to hold entire

\* SDU, and leave <small\_buffer\_data> bytes empty at the start. Then

\* copy small buffer contents to head of large buffer.

\* Trick is to avoid fragmenting Linux, due to need for a lot of large

\* buffers. This is done by 2 things:

\* 1) skb->destructor / skb->atm.recycle\_buffer

\* combined, allow nicstar\_free\_rx\_skb to be called to

\* recycle large data buffers

\* 2) skb\_clone of received buffers

\* See nicstar\_free\_rx\_skb and linearize\_buffer for implementation

\* details.

\*

\*



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\*  
\* M. Welsh, 6 July 1996  
\*  
\*  
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for merging the nxt2002 and nxt2004 modules into a  
single nxt200x frontend driver.

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# 1.390 jersey 1.12-3.el7atomix1

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# 1.397 vim 7.4.629 6.e17

## 1.397.1 Available under license :

\*uganda.txt\* For Vim version 7.4. Last change: 2013 Jul 06

VIM REFERENCE MANUAL by Bram Moolenaar

\*uganda\* \*Uganda\* \*copying\* \*copyright\* \*license\*

### SUMMARY

\*iccf\* \*ICCF\*

Vim is Charityware. You can use and copy it as much as you like, but you are encouraged to make a donation for needy children in Uganda. Please see [|kcc|](#) below or visit the ICCF web site, available at these URLs:

<http://iccf-holland.org/>

<http://www.vim.org/iccf/>

<http://www.iccf.nl/>

You can also sponsor the development of Vim. Vim sponsors can vote for features. See [|sponsor|](#). The money goes to Uganda anyway.

The Open Publication License applies to the Vim documentation, see [|manual-copyright|](#).

=== begin of license ===

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<maintainer@vim.org>

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=== end of license ===

Note:

- If you are happy with Vim, please express that by reading the rest of this file and consider helping needy children in Uganda.
- If you want to support further Vim development consider becoming a [sponsor]. The money goes to Uganda anyway.
- According to Richard Stallman the Vim license is GNU GPL compatible. A few minor changes have been made since he checked it, but that should not make a difference.
- If you link Vim with a library that goes under the GNU GPL, this limits further distribution to the GNU GPL. Also when you didn't actually change anything in Vim.
- Once a change is included that goes under the GNU GPL, this forces all further changes to also be made under the GNU GPL or a compatible license.
- If you distribute a modified version of Vim, you can include your name and contact information with the "--with-modified-by" configure argument or the MODIFIED\_BY define.

=====  
Kibaale Children's Centre \*kcc\* \*Kibaale\* \*charity\*

Kibaale Children's Centre (KCC) is located in Kibaale, a small town in the south of Uganda, near Tanzania, in East Africa. The area is known as Rakai District. The population is mostly farmers. Although people are poor, there is enough food. But this district is suffering from AIDS more than any other part of the world. Some say that it started there. Estimations are that 10 to 30% of the Ugandans are infected with HIV. Because parents die, there are many orphans. In this district about 60,000 children have lost one or both parents, out of a population of 350,000. And this is still continuing.

The children need a lot of help. The KCC is working hard to provide the needy with food, medical care and education. Food and medical care to keep them healthy now, and education so that they can take care of themselves in the future. KCC works on a Christian base, but help is given to children of any religion.

The key to solving the problems in this area is education. This has been neglected in the past years with president Idi Amin and the following civil wars. Now that the government is stable again, the children and parents have to learn how to take care of themselves and how to avoid infections. There is also help for people who are ill and hungry, but the primary goal is to prevent people from getting ill and to teach them how to grow healthy food.

Most of the orphans are living in an extended family. An uncle or older sister is taking care of them. Because these families are big and the income (if any) is low, a child is lucky if it gets healthy food. Clothes, medical care and schooling is beyond its reach. To help these needy children, a sponsorship program was put into place. A child can be financially adopted. For a few dollars a month KCC sees to it that the child gets indispensable items, is healthy, goes to school and KCC takes care of anything else that needs to be done for the child and the family that supports it.

Besides helping the child directly, the environment where the child grows up needs to be improved. KCC helps schools to improve their teaching methods. There is a demonstration school at the centre and teacher trainings are given. Health workers are being trained, hygiene education is carried out and households are stimulated to build a proper latrine. I helped setting up a production site for cement slabs. These are used to build a good latrine. They are sold below cost price.

There is a small clinic at the project, which provides children and their family with medical help. When needed, transport to a hospital is offered. Immunization programs are carried out and help is provided when an epidemic is breaking out (measles and cholera have been a problem).

\*donate\*

Summer 1994 to summer 1995 I spent a whole year at the centre, working as a volunteer. I have helped to expand the centre and worked in the area of water and sanitation. I learned that the help that the KCC provides really helps.

When I came back to Holland, I wanted to continue supporting KCC. To do this I'm raising funds and organizing the sponsorship program. Please consider one of these possibilities:

1. Sponsor a child in primary school: 17 euro a month (or more).
2. Sponsor a child in secondary school: 25 euro a month (or more).
3. Sponsor the clinic: Any amount a month or quarter
4. A one-time donation

Compared with other organizations that do child sponsorship the amounts are very low. This is because the money goes directly to the centre. Less than 5% is used for administration. This is possible because this is a small organization that works with volunteers. If you would like to sponsor a child, you should have the intention to do this for at least one year.

How do you know that the money will be spent right? First of all you have my personal guarantee as the author of Vim. I trust the people that are working at the centre, I know them personally. Further more, the centre has been co-sponsored and inspected by World Vision, Save the Children Fund and is now under the supervision of Pacific Academy Outreach Society. The centre is visited about once a year to check the progress (at our own cost). I have visited the centre myself many times, starting in 1993. The visit reports are on the ICCF web site.

If you have any further questions, send me e-mail: <Bram@vim.org>.

The address of the centre is:

Kibaale Children's Centre  
p.o. box 1658  
Masaka, Uganda, East Africa

Sending money: \*iccf-donations\*

Check the ICCF web site for the latest information! See [|iccf|](#) for the URL.

USA: The methods mentioned below can be used.

Sending a check to the Nehemiah Group Outreach Society (NGOS) is no longer possible, unfortunately. We are looking for another way to get you an IRS tax receipt.

For sponsoring a child contact KCF in Canada (see below). US checks can be sent to them to lower banking costs.

Canada: Contact Kibaale Children's Fund (KCF) in Surrey, Canada. They take care of the Canadian sponsors for the children in Kibaale. KCF forwards 100% of the money to the project in Uganda. You can send them a one time donation directly. Please send me a note so that I know what has been donated

because of Vim. Ask KCF for information about sponsorship.

Kibaale Children's Fund c/o Pacific Academy

10238-168 Street

Surrey, B.C. V4N 1Z4

Canada

Phone: 604-581-5353

If you make a donation to Kibaale Children's Fund (KCF) you will receive a tax receipt which can be submitted with your tax return.

Holland: Transfer to the account of "Stichting ICCF Holland" in Lisse.

This will allow for tax deduction if you live in Holland.

Postbank, nr. 4548774

IBAN: NL95 INGB 0004 5487 74

Germany: It is possible to make donations that allow for a tax return.

Check the ICCF web site for the latest information:

<http://iccf-holland.org/germany.html>

World: Use a postal money order. That should be possible from any country, mostly from the post office. Use this name (which is in my passport): "Abraham Moolenaar". Use Euro for the currency if possible.

Europe: Use a bank transfer if possible. Your bank should have a form that you can use for this. See "Others" below for the swift code and IBAN number.

Any other method should work. Ask for information about sponsorship.

Credit Card: You can use PayPal to send money with a Credit card. This is the most widely used Internet based payment system. It's really simple to use. Use this link to find more info:

[https://www.paypal.com/en\\_US/mrb/pal=XAC62PML3GF8Q](https://www.paypal.com/en_US/mrb/pal=XAC62PML3GF8Q)

The e-mail address for sending the money to is:

[Bram@iccf-holland.org](mailto:Bram@iccf-holland.org)

For amounts above 400 Euro (\$500) sending a check is preferred.

Others: Transfer to one of these accounts if possible:

Postbank, account 4548774

Swift code: INGB NL 2A

IBAN: NL95 INGB 0004 5487 74

under the name "stichting ICCF Holland", Lisse

If that doesn't work:

Rabobank Lisse, account 3765.05.117

Swift code: RABO NL 2U

under the name "Bram Moolenaar", Lisse

Otherwise, send a check in euro or US dollars to the address below. Minimal amount: \$70 (my bank does not accept smaller amounts for foreign check, sorry)

Address to send checks to:

Bram Moolenaar  
Finsterruetihof 1  
8134 Adliswil  
Switzerland

This address is expected to be valid for a long time.

```
vim:tw=78:ts=8:ft=help:norl:
```

```
" Vim syntax file
```

```
" Language: Software Distributor product specification file
```

```
" (POSIX 1387.2-1995).
```

```
" Maintainer: Rex Barzee <rex_barzee@hp.com>
```

```
" Last change: 25 Apr 2001
```

```
if version < 600
```

```
" Remove any old syntax stuff hanging around
```

```
syn clear
```

```
elseif exists("b:current_syntax")
```

```
finish
```

```
endif
```

```
" Product specification files are case sensitive
```

```
syn case match
```

```
syn keyword psfObject bundle category control_file depot distribution
```

```
syn keyword psfObject end file fileset host installed_software media
```

```
syn keyword psfObject product root subproduct vendor
```

```
syn match psfUnquotString +["# ][^#]*+ contained
```

```
syn region psfQuotString start="+\" skip="+\\\"+ end="+\"+ contained
```

```
syn match psfObjTag "\<[-_+A-Z0-9a-z]\+\(\.[-_+A-Z0-9a-z]\+\)*" contained
```

```
syn match psfAttAbbrev ",\<(\(fa\|fr\|[aclqrv])\)\(<|>|\<=|\>=|\<==|\>==\)[^,]+\" contained
```

```
syn match psfObjTags "\<[-_+A-Z0-9a-z]\+\(\.[-_+A-Z0-9a-z]\+\)*\(\s\+\<[-_+A-Z0-9a-z]\+\(\.[-_+A-Z0-9a-z]\+\)\)*" contained
```

```
syn match psfNumber "\<d\+\>" contained
```

```
syn match psfFloat "\<d\+\>\(\.\<d\+\>\)*" contained
```

```
syn match psfLongDate "\<d\d\d\d\d\d\d\d\d\d\d\d\d\d\>" contained
```

```
syn keyword psfState available configured corrupt installed transient contained
```

```
syn keyword psfPState applied committed superseded contained
```



syn keyword psfBoolean false true contained

"Some of the attributes covered by attUnquotString and attQuotString:

" architecture category\_tag control\_directory copyright

" create\_date description directory file\_permissions install\_source

" install\_type location machine\_type mod\_date number os\_name os\_release

" os\_version pose\_as\_os\_name pose\_as\_os\_release readme revision

" share\_link title vendor\_tag

syn region psfAttUnquotString matchgroup=psfAttrib start=~^\s\*[\^# ]\+\s\+[\^#" ]~rs=e-1

contains=psfUnquotString,psfComment end=~\$~ keepend oneline

syn region psfAttQuotString matchgroup=psfAttrib start=~^\s\*[\^# ]\+\s\+"~rs=e-1

contains=psfQuotString,psfComment skip=~\|~ matchgroup=psfQuotString end=~"~ keepend

" These regions are defined in attempt to do syntax checking for some

" of the attributes.

syn region psfAttTag matchgroup=psfAttrib start="^\s\*tag\s\+" contains=psfObjTag,psfComment end="\$" keepend

oneline

syn region psfAttSpec matchgroup=psfAttrib

start="^\s\*(ancestor\|applied\_patches\|applied\_to\|contents\|corequisites\|exquisites\|prerequisites\|software\_spec\|

supersedes\|superseded\_by)\s\+" contains=psfObjTag,psfAttAbbrev,psfComment end="\$" keepend

syn region psfAttTags matchgroup=psfAttrib start="^\s\*all\_filesets\s\+" contains=psfObjTags,psfComment end="\$"

keepend

syn region psfAttNumber matchgroup=psfAttrib

start="^\s\*(compressed\_size\|instance\_id\|media\_sequence\_number\|sequence\_number\|size)\s\+"

contains=psfNumber,psfComment end="\$" keepend oneline

syn region psfAttTime matchgroup=psfAttrib start="^\s\*(create\_time\|ctime\|mod\_time\|mtime\|timestamp)\s\+"

contains=psfNumber,psfComment end="\$" keepend oneline

syn region psfAttFloat matchgroup=psfAttrib start="^\s\*(data\_model\_revision\|layout\_version)\s\+"

contains=psfFloat,psfComment end="\$" keepend oneline

syn region psfAttLongDate matchgroup=psfAttrib start="^\s\*install\_date\s\+" contains=psfLongDate,psfComment

end="\$" keepend oneline

syn region psfAttState matchgroup=psfAttrib start="^\s\*(state)\s\+" contains=psfState,psfComment end="\$"

keepend oneline

syn region psfAttPState matchgroup=psfAttrib start="^\s\*(patch\_state)\s\+" contains=psfPState,psfComment

end="\$" keepend oneline

```
syn region psfAttBoolean matchgroup=psfAttrib
start="^\s*(is_kernel|is_locatable|is_patch|is_protected|is_reboot|is_reference|is_secure|is_sparse)\s\+"
contains=psfBoolean,psfComment end="$" keepend oneline
```

```
syn match psfComment "#.*$"
```

```
" Define the default highlighting.
```

```
" For version 5.7 and earlier: only when not done already
```

```
" For version 5.8 and later: only when an item doesn't have highlighting yet
```

```
if version >= 508 || !exists("did_psf_syntax_inits")
```

```
if version < 508
```

```
let did_psf_syntax_inits = 1
```

```
command -nargs=+ HiLink hi link <args>
```

```
else
```

```
command -nargs=+ HiLink hi def link <args>
```

```
endif
```

```
HiLink psfObject Statement
```

```
HiLink psfAttrib Type
```

```
HiLink psfQuotString String
```

```
HiLink psfObjTag Identifier
```

```
HiLink psfAttAbbrev PreProc
```

```
HiLink psfObjTags Identifier
```

```
HiLink psfComment Comment
```

```
delcommand HiLink
```

```
endif
```

```
" Long descriptions and copyrights confuse the syntax highlighting, so
```

```
" force vim to backup at least 100 lines before the top visible line
```

```
" looking for a sync location.
```

```
syn sync lines=100
```

```
let b:current_syntax = "psf"
```

```
/*
```

```
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```

```
*
```

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```

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Arnaud LE HORS    BULL Research FRANCE -- Koala Project

(XPM - X PixMap format version 2 & 3)

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2004, route des Lucioles, 06565 Valbonne Cedex -- FRANCE

Voice phone:    (33) 93.65.77.71, Fax: (33) 93 65 77 66, Telex: 97 00 50 F

## 1.398 spring-boot-autoconfigure 2.0.4

## 1.399 libuser 0.60-9.el7

### 1.399.1 Available under license :

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Version 2, June 1991

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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

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

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work



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That's all there is to it!

# 1.400 jackson-dataformat-yaml 2.9.6

## 1.400.1 Available under license :

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.

It is currently developed by a community of developers, as well as supported commercially by FasterXML.com.

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=head1 NAME
```

Error - Error/exception handling in an OO-ish way

```
=head1 WARNING
```

Using the "Error" module is B<no longer recommended> due to the black-magical nature of its syntactic sugar, which often tends to break. Its maintainers have stopped actively writing code that uses it, and discourage people from doing so. See the "SEE ALSO" section below for better recommendations.

```
=head1 SYNOPSIS
```

```
use Error qw(:try);
```

```
throw Error::Simple( "A simple error");
```



```

sub xyz {
    ...
record Error::Simple("A simple error")
    and return;
}

unlink($file) or throw Error::Simple("$file: $!", $!);

try {
do_some_stuff();
die "error!" if $condition;
throw Error::Simple "Oops!" if $other_condition;
}
catch Error::IO with {
my $E = shift;
print STDERR "File ", $E->{'-file'}, " had a problem\n";
}
except {
my $E = shift;
my $general_handler=sub {send_message $E->{'-description'}};
return {
    UserException1 => $general_handler,
    UserException2 => $general_handler
};
}
otherwise {
print STDERR "Well I don't know what to say\n";
}
finally {
close_the_garage_door_already(); # Should be reliable
}; # Don't forget the trailing ; or you might be surprised

=head1 DESCRIPTION

```

The C<Error> package provides two interfaces. Firstly C<Error> provides a procedural interface to exception handling. Secondly C<Error> is a base class for errors/exceptions that can either be thrown, for subsequent catch, or can simply be recorded.

Errors in the class C<Error> should not be thrown directly, but the user should throw errors from a sub-class of C<Error>.

=head1 PROCEDURAL INTERFACE

C<Error> exports subroutines to perform exception handling. These will be exported if the C<:try> tag is used in the C<use> line.

=over 4

## =item try BLOCK CLAUSES

C<try> is the main subroutine called by the user. All other subroutines exported are clauses to the try subroutine.

The BLOCK will be evaluated and, if no error is throw, try will return the result of the block.

C<CLAUSES> are the subroutines below, which describe what to do in the event of an error being thrown within BLOCK.

## =item catch CLASS with BLOCK

This clauses will cause all errors that satisfy C<\$err-E<gt;isa(CLASS)> to be caught and handled by evaluating C<BLOCK>.

C<BLOCK> will be passed two arguments. The first will be the error being thrown. The second is a reference to a scalar variable. If this variable is set by the catch block then, on return from the catch block, try will continue processing as if the catch block was never found. The error will also be available in C<\$@>.

To propagate the error the catch block may call C<\$err-E<gt;throw>

If the scalar reference by the second argument is not set, and the error is not thrown. Then the current try block will return with the result from the catch block.

## =item except BLOCK

When C<try> is looking for a handler, if an except clause is found C<BLOCK> is evaluated. The return value from this block should be a HASHREF or a list of key-value pairs, where the keys are class names and the values are CODE references for the handler of errors of that type.

## =item otherwise BLOCK

Catch any error by executing the code in C<BLOCK>

When evaluated C<BLOCK> will be passed one argument, which will be the error being processed. The error will also be available in C<\$@>.

Only one otherwise block may be specified per try block

## =item finally BLOCK

Execute the code in C<BLOCK> either after the code in the try block has successfully completed, or if the try block throws an error then C<BLOCK> will be executed after the handler has completed.

If the handler throws an error then the error will be caught, the finally block will be executed and the error will be re-thrown.

Only one finally block may be specified per try block

=back

=head1 COMPATIBILITY

L<Moose> exports a keyword called C<with> which clashes with Error's. This example returns a prototype mismatch error:

```
package MyTest;

use warnings;
use Moose;
use Error qw(:try);
```

(Thanks to C<maik.hentsche@amd.com> for the report.).

=head1 CLASS INTERFACE

=head2 CONSTRUCTORS

The C<Error> object is implemented as a HASH. This HASH is initialized with the arguments that are passed to it's constructor. The elements that are used by, or are retrievable by the C<Error> class are listed below, other classes may add to these.

- file
- line
- text
- value
- object

If C<-file> or C<-line> are not specified in the constructor arguments then these will be initialized with the file name and line number where the constructor was called from.

If the error is associated with an object then the object should be passed as the C<-object> argument. This will allow the C<Error> package to associate the error with the object.

The C<Error> package remembers the last error created, and also the

last error associated with a package. This could either be the last error created by a sub in that package, or the last error which passed an object blessed into that package as the C<-object> argument.

=over 4

=item Error->new()

See the Error::Simple documentation.

=item throw ( [ ARGS ] )

Create a new C<Error> object and throw an error, which will be caught by a surrounding C<try> block, if there is one. Otherwise it will cause the program to exit.

C<throw> may also be called on an existing error to re-throw it.

=item with ( [ ARGS ] )

Create a new C<Error> object and returns it. This is defined for syntactic sugar, eg

```
die with Some::Error ( ... );
```

=item record ( [ ARGS ] )

Create a new C<Error> object and returns it. This is defined for syntactic sugar, eg

```
record Some::Error ( ... )  
and return;
```

=back

=head2 STATIC METHODS

=over 4

=item prior ( [ PACKAGE ] )

Return the last error created, or the last error associated with C<PACKAGE>

=item flush ( [ PACKAGE ] )

Flush the last error created, or the last error associated with C<PACKAGE>.It is necessary to clear the error stack before exiting the

package or uncaught errors generated using C<record> will be reported.

```
$Error->flush;
```

```
=cut
```

```
=back
```

```
=head2 OBJECT METHODS
```

```
=over 4
```

```
=item stacktrace
```

If the variable C<\$Error::Debug> was non-zero when the error was created, then C<stacktrace> returns a string created by calling C<Carp::longmess>. If the variable was zero the C<stacktrace> returns the text of the error appended with the filename and line number of where the error was created, providing the text does not end with a newline.

```
=item object
```

The object this error was associated with

```
=item file
```

The file where the constructor of this error was called from

```
=item line
```

The line where the constructor of this error was called from

```
=item text
```

The text of the error

```
=item $err->associate($obj)
```

Associates an error with an object to allow error propagation. I.e:

```
$ber->encode(...) or  
return Error->prior($ber)->associate($ldap);
```

```
=back
```

```
=head2 OVERLOAD METHODS
```

=over 4

=item stringify

A method that converts the object into a string. This method may simply return the same as the C<text> method, or it may append more information. For example the file name and line number.

By default this method returns the C<-text> argument that was passed to the constructor, or the string C<"Died"> if none was given.

=item value

A method that will return a value that can be associated with the error. For example if an error was created due to the failure of a system call, then this may return the numeric value of C<\$!> at the time.

By default this method returns the C<-value> argument that was passed to the constructor.

=back

=head1 PRE-DEFINED ERROR CLASSES

=head2 Error::Simple

This class can be used to hold simple error strings and values. It's constructor takes two arguments. The first is a text value, the second is a numeric value. These values are what will be returned by the overload methods.

If the text value ends with C<at file line 1> as \$@ strings do, then this information will be used to set the C<-file> and C<-line> arguments of the error object.

This class is used internally if an eval'd block die's with an error that is a plain string. (Unless C<\$Error::ObjectifyCallback> is modified)

=head1 \$Error::ObjectifyCallback

This variable holds a reference to a subroutine that converts errors that are plain strings to objects. It is used by Error.pm to convert textual errors to objects, and can be overridden by the user.

It accepts a single argument which is a hash reference to named parameters. Currently the only named parameter passed is C<'text'> which is the text

of the error, but others may be available in the future.

For example the following code will cause `Error.pm` to throw objects of the class `MyError::Bar` by default:

```
sub throw_MyError_Bar
{
    my $args = shift;
    my $err = MyError::Bar->new();
    $err->{'MyBarText'} = $args->{'text'};
    return $err;
}

{
    local $Error::ObjectifyCallback = \&throw_MyError_Bar;

    # Error handling here.
}
```

=cut

=head1 MESSAGE HANDLERS

`C<Error>` also provides handlers to extend the output of the `C<warn()>` perl function, and to handle the printing of a thrown `C<Error>` that is not caught or otherwise handled. These are not installed by default, but are requested using the `C<:warndie>` tag in the `C<use>` line.

```
use Error qw( :warndie );
```

These new error handlers are installed in `C<${SIG}{__WARN__}>` and `C<${SIG}{__DIE__}>`. If these handlers are already defined when the tag is imported, the old values are stored, and used during the new code. Thus, to arrange for custom handling of warnings and errors, you will need to perform something like the following:

```
BEGIN {
    ${SIG}{__WARN__} = sub {
        print STDERR "My special warning handler: $_[0]"
    };
}
```

```
use Error qw( :warndie );
```

Note that setting `C<${SIG}{__WARN__}>` after the `C<:warndie>` tag has been imported will overwrite the handler that `C<Error>` provides. If this cannot be avoided, then the tag can be explicitly `C<import>`ed later

use Error;

```
$$SIG{__WARN__} = ...;
```

```
import Error qw( :warndie );
```

```
=head2 EXAMPLE
```

The C<\_\_DIE\_\_> handler turns messages such as

```
Can't call method "foo" on an undefined value at examples/warndie.pl line 16.
```

into

```
Unhandled perl error caught at toplevel:
```

```
Can't call method "foo" on an undefined value
```

```
Thrown from: examples/warndie.pl:16
```

```
Full stack trace:
```

```
main::inner('undef') called at examples/warndie.pl line 20
```

```
main::outer('undef') called at examples/warndie.pl line 23
```

```
=cut
```

```
=head1 SEE ALSO
```

See L<Exception::Class> for a different module providing Object-Oriented exception handling, along with a convenient syntax for declaring hierarchies for them. It doesn't provide Error's syntactic sugar of C<try { ... }>, C<catch { ... }>, etc. which may be a good thing or a bad thing based on what you want. (Because Error's syntactic sugar tends to break.)

L<Error::Exception> aims to combine L<Error> and L<Exception::Class> "with correct stringification".

L<TryCatch> and L<Try::Tiny> are similar in concept to Error.pm only providing a syntax that hopefully breaks less.

```
=head1 KNOWN BUGS
```

None, but that does not mean there are not any.

```
=head1 AUTHORS
```

Graham Barr <gbarr@pobox.com>



The code that inspired me to write this was originally written by Peter Seibel <peter@weblogic.com> and adapted by Jesse Glick <jglick@sig.bsh.com>.

C<:warndie> handlers added by Paul Evans <leonerdd@leonerdd.org.uk>

=head1 MAINTAINER

Shlomi Fish, L<<http://www.shlomifish.org/>> .

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Found in path(s):

\* /opt/cola/permits/1000848957\_1646171525.6/0/perl-Error-0.17020-2.e17.src.rpm-cosi-expand-archive-3SOZ6Uuf/Error-0.17020.tar.gz-cosi-expand-archive-6yTE9g5R/Error-0.17020/lib/Error.pm

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---

abstract: 'Error/exception handling in an OO-ish way'

author:

- 'Shlomi Fish ( <http://www.shlomifish.org/> )'

build\_requires: { }

configure\_requires:

Module::Build: 0.39

dynamic\_config: 1

generated\_by: 'Module::Build version 0.3901, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Error

provides:

Error:

file: lib/Error.pm

version: 0.17020

Error::Simple:

file: lib/Error.pm

version: 0.17020  
Error::WarnDie:  
file: lib/Error.pm  
version: 0  
Error::subs:  
file: lib/Error.pm  
version: 0  
requires:  
Scalar::Util: 0  
perl: v5.6.0  
warnings: 0  
resources:  
license: <http://dev.perl.org/licenses/>  
version: 0.17020

Found in path(s):

\* /opt/cola/permits/1000848957\_1646171525.6/0/perl-Error-0.17020-2.el7.src.rpm-cosi-expand-archive-3SOZ6Uuf/Error-0.17020.tar.gz-cosi-expand-archive-6yTE9g5R/Error-0.17020/META.yml

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#### A. HISTORY OF THE SOFTWARE

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

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

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

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release from	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes

2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes

Footnotes:

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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