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## NAME

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## DESCRIPTION

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AUTHOR

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**Location of Perl**

**Command Switches**

`-0[octal/hexadecimal]` , `-a` , `-C [number/list]` , `-c` , `-d` , `-dt` , `-d:MOD[=bar,baz]` , `-dt:MOD[=bar,baz]` , `-Dletters` , `-Dnumber` , `-ecommandline` , `-E commandline` , `-f` , `-Fpattern` , `-h` , `-i[extension]` , `-ldirectory` , `-l[octnum]` , `-m[-]module` , `-M[-]module` , `-M[-]'module ...'` , `-[mM][-]module=arg[,arg]...` , `-n` , `-p` , `-s` , `-S` , `-t` , `-T` , `-u` , `-U` , `-v` , `-V` , `-V:configvar` , `-w` , `-W` , `-X` , `-x` , `-xdirectory`

### ENVIRONMENT

HOME , LOGDIR , PATH , PERL5LIB , PERL5OPT , PERLIO , :crlf , :perlio , :stdio , :unix , :win32 , PERLIO\_DEBUG , PERLLIB , PERL5DB , PERL5DB\_THREADED , PERL5SHELL (specific to the Win32 port) , PERL\_ALLOW\_NON\_IFS\_LSP (specific to the Win32 port) , PERL\_DEBUG\_MSTATS , PERL\_DESTRUCT\_LEVEL , PERL\_DL\_NONLAZY , PERL\_ENCODING , PERL\_HASH\_SEED , PERL\_PERTURB\_KEYS , PERL\_HASH\_SEED\_DEBUG , PERL\_MEM\_LOG , PERL\_ROOT (specific to the VMS port) , PERL\_SIGNALS , PERL\_UNICODE , PERL\_USE\_UNSAFE\_INC , SYS\$LOGIN (specific to the VMS port) , PERL\_INTERNAL\_RAND\_SEED

### ORDER OF APPLICATION

-I, -M, the PERL5LIB environment variable, combinations of -I, -M and PERL5LIB, the PERL5OPT environment variable, Other complications, arch and version subdirs, sitecustomize.pl

## perlreftut - Mark's very short tutorial about references

### DESCRIPTION

**Who Needs Complicated Data Structures?**

**The Solution**

**Syntax**

**Making References**

**Using References**

**An Example**

**Arrow Rule**

**Solution**

**The Rest**

**Summary**

**Credits**

**Distribution Conditions**

# perldsc - Perl Data Structures Cookbook

## DESCRIPTION

arrays of arrays, hashes of arrays, arrays of hashes, hashes of hashes, more elaborate constructs

## REFERENCES

## COMMON MISTAKES

## CAVEAT ON PRECEDENCE

## WHY YOU SHOULD ALWAYS `use strict`

## DEBUGGING

## CODE EXAMPLES

## ARRAYS OF ARRAYS

Declaration of an ARRAY OF ARRAYS

Generation of an ARRAY OF ARRAYS

Access and Printing of an ARRAY OF ARRAYS

## HASHES OF ARRAYS

Declaration of a HASH OF ARRAYS

Generation of a HASH OF ARRAYS

Access and Printing of a HASH OF ARRAYS

## ARRAYS OF HASHES

Declaration of an ARRAY OF HASHES

Generation of an ARRAY OF HASHES

Access and Printing of an ARRAY OF HASHES

## HASHES OF HASHES

Declaration of a HASH OF HASHES

Generation of a HASH OF HASHES

Access and Printing of a HASH OF HASHES

## MORE ELABORATE RECORDS

Declaration of MORE ELABORATE RECORDS

Declaration of a HASH OF COMPLEX RECORDS

Generation of a HASH OF COMPLEX RECORDS

## Database Ties

## SEE ALSO

## AUTHOR

# perllo1 - Manipulating Arrays of Arrays in Perl

## DESCRIPTION

**Declaration and Access of Arrays of Arrays**

**Growing Your Own**

**Access and Printing**

**Slices**

**SEE ALSO**

**AUTHOR**

## **perlrequick - Perl regular expressions quick start**

**DESCRIPTION**

**The Guide**

**Simple word matching**

**Using character classes**

**Matching this or that**

**Grouping things and hierarchical matching**

**Extracting matches**

**Matching repetitions**

**More matching**

**Search and replace**

**The split operator**

`use re 'strict'`

**BUGS**

**SEE ALSO**

**AUTHOR AND COPYRIGHT**

**Acknowledgments**

## **perlretut - Perl regular expressions tutorial**

**DESCRIPTION**

**Part 1: The basics**

**Simple word matching**

**Using character classes**

**Matching this or that**

**Grouping things and hierarchical matching**

0. Start with the first letter in the string 'a', 1. Try the first alternative in the first group 'abd', 2. Match 'a' followed by 'b'. So far so good, 3. 'd' in the regexp doesn't match 'c' in the string - a dead end. So backtrack two characters and pick the second alternative in the first group 'abc', 4. Match 'a' followed by 'b' followed by 'c'. We are on a roll and have satisfied the first group. Set \$1 to 'abc', 5 Move on to the second group and pick the first alternative 'df', 6 Match the 'd', 7. 'f' in the regexp doesn't match 'e' in the string, so a dead end. Backtrack one



character and pick the second alternative in the second group 'd', 8. 'd' matches. The second grouping is satisfied, so set \$2 to 'd', 9. We are at the end of the regexp, so we are done! We have matched 'abcd' out of the string "abcde"

## Extracting matches

## Backreferences

## Relative backreferences

## Named backreferences

## Alternative capture group numbering

## Position information

## Non-capturing groupings

## Matching repetitions

0. Start with the first letter in the string 't', 1. The first quantifier '.\*' starts out by matching the whole string "the cat in the hat", 2. 'a' in the regexp element 'at' doesn't match the end of the string. Backtrack one character, 3. 'a' in the regexp element 'at' still doesn't match the last letter of the string 't', so backtrack one more character, 4. Now we can match the 'a' and the 't', 5. Move on to the third element '.\*'. Since we are at the end of the string and '.\*' can match 0 times, assign it the empty string, 6. We are done!

## Possessive quantifiers

## Building a regexp

## Using regular expressions in Perl

## Part 2: Power tools

### More on characters, strings, and character classes

### Compiling and saving regular expressions

### Composing regular expressions at runtime

### Embedding comments and modifiers in a regular expression

### Looking ahead and looking behind

### Using independent subexpressions to prevent backtracking

### Conditional expressions

### Defining named patterns

### Recursive patterns

### A bit of magic: executing Perl code in a regular expression

### Backtracking control verbs

### Pragmas and debugging

## SEE ALSO

## AUTHOR AND COPYRIGHT

### Acknowledgments

# perloutut - Object-Oriented Programming in Perl Tutorial

## DATE

## DESCRIPTION

### OBJECT-ORIENTED FUNDAMENTALS

Object

Class

Methods

Attributes

Polymorphism

Inheritance

Encapsulation

Composition

Roles

When to Use OO

### PERL OO SYSTEMS

Moose

Declarative sugar, Roles built-in, A miniature type system, Full introspection and manipulation, Self-hosted and extensible, Rich ecosystem, Many more features

**Class::Accessor**

**Class::Tiny**

**Role::Tiny**

OO System Summary

[Moose](#), [Class::Accessor](#), [Class::Tiny](#), [Role::Tiny](#).

Other OO Systems

### CONCLUSION

## perlperf - Perl Performance and Optimization Techniques

### DESCRIPTION

#### OVERVIEW

ONE STEP SIDEWAYS

ONE STEP FORWARD

ANOTHER STEP SIDEWAYS

#### GENERAL GUIDELINES

#### BENCHMARKS

Assigning and Dereferencing Variables.

Search and replace or tr

#### PROFILING TOOLS

Devel::DProf

**Devel::Profiler**

**Devel::SmallProf**

**Devel::FastProf**

**Devel::NYTProf**

## **SORTING**

Elapsed Real Time, User CPU Time, System CPU Time

## **LOGGING**

Logging if DEBUG (constant)

## **POSTSCRIPT**

## **SEE ALSO**

**PERLDOCS**

**MAN PAGES**

**MODULES**

**URLS**

## **AUTHOR**

# **perlstyle - Perl style guide**

## **DESCRIPTION**

# **perlcheat - Perl 5 Cheat Sheet**

## **DESCRIPTION**

The sheet

## **ACKNOWLEDGEMENTS**

## **AUTHOR**

## **SEE ALSO**

# **perltrap - Perl traps for the unwary**

## **DESCRIPTION**

Awk Traps

C/C++ Traps

JavaScript Traps

Sed Traps

Shell Traps

Perl Traps

# **perldebtut - Perl debugging tutorial**

## **DESCRIPTION**

**use strict**

**Looking at data and -w and v**

**help**

**Stepping through code**

**Placeholder for a, w, t, T**

**REGULAR EXPRESSIONS**

**OUTPUT TIPS**

**CGI**

**GUIs**

**SUMMARY**

**SEE ALSO**

**AUTHOR**

**CONTRIBUTORS**

## **perlfaq - Frequently asked questions about Perl**

**VERSION**

**DESCRIPTION**

**Where to find the perlfaq**

**How to use the perlfaq**

**How to contribute to the perlfaq**

**What if my question isn't answered in the FAQ?**

**TABLE OF CONTENTS**

perlfaq1 - General Questions About Perl, perlfaq2 - Obtaining and Learning about Perl, perlfaq3 - Programming Tools, perlfaq4 - Data Manipulation, perlfaq5 - Files and Formats, perlfaq6 - Regular Expressions, perlfaq7 - General Perl Language Issues, perlfaq8 - System Interaction, perlfaq9 - Web, Email and Networking

**THE QUESTIONS**

**perlfaq1: General Questions About Perl**

**perlfaq2: Obtaining and Learning about Perl**

**perlfaq3: Programming Tools**

**perlfaq4: Data Manipulation**

**perlfaq5: Files and Formats**

**perlfaq6: Regular Expressions**

**perlfaq7: General Perl Language Issues**

**perlfaq8: System Interaction**

**perlfaq9: Web, Email and Networking**

**CREDITS**

## AUTHOR AND COPYRIGHT

# perlfaq1 - General Questions About Perl

## VERSION

## DESCRIPTION

What is Perl?

Who supports Perl? Who develops it? Why is it free?

Which version of Perl should I use?

What are Perl 4, Perl 5, or Raku (Perl 6)?

What is Raku (Perl 6)?

How stable is Perl?

How often are new versions of Perl released?

Is Perl difficult to learn?

How does Perl compare with other languages like Java, Python, REXX, Scheme, or Tcl?

Can I do [task] in Perl?

When shouldn't I program in Perl?

What's the difference between "perl" and "Perl"?

What is a JAPH?

How can I convince others to use Perl?

<http://www.perl.org/about.html>, <http://perltraining.com.au/whyperl.html>

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# perlfaq2 - Obtaining and Learning about Perl

## VERSION

## DESCRIPTION

What machines support Perl? Where do I get it?

How can I get a binary version of Perl?

I don't have a C compiler. How can I build my own Perl interpreter?

I copied the Perl binary from one machine to another, but scripts don't work.

I grabbed the sources and tried to compile but gdbm/dynamic loading/malloc/linking/... failed.  
How do I make it work?

What modules and extensions are available for Perl? What is CPAN?

Where can I get information on Perl?

<http://www.perl.org/>, <http://perldoc.perl.org/>, <http://learn.perl.org/>

What is perl.com? Perl Mongers? pm.org? perl.org? cpan.org?

<http://www.perl.org/>, <http://learn.perl.org/>, <http://jobs.perl.org/>, <http://lists.perl.org/>

Where can I post questions?

**Perl Books**

**Which magazines have Perl content?**

**Which Perl blogs should I read?**

**What mailing lists are there for Perl?**

**Where can I buy a commercial version of Perl?**

**Where do I send bug reports?**

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## **perlfaq3 - Programming Tools**

**VERSION**

**DESCRIPTION**

**How do I do (anything)?**

Basics, [perldata](#) - Perl data types, [perlvar](#) - Perl pre-defined variables, [perlsyn](#) - Perl syntax, [perlop](#) - Perl operators and precedence, [perlsub](#) - Perl subroutines, Execution, [perlrun](#) - how to execute the Perl interpreter, [perldebug](#) - Perl debugging, Functions, [perlfunc](#) - Perl builtin functions, Objects, [perlref](#) - Perl references and nested data structures, [perlmod](#) - Perl modules (packages and symbol tables), [perlobj](#) - Perl objects, [perltie](#) - how to hide an object class in a simple variable, Data Structures, [perlref](#) - Perl references and nested data structures, [perllol](#) - Manipulating arrays of arrays in Perl, [perldsc](#) - Perl Data Structures Cookbook, Modules, [perlmod](#) - Perl modules (packages and symbol tables), [perlmodlib](#) - constructing new Perl modules and finding existing ones, Regexes, [perlre](#) - Perl regular expressions, [perlfunc](#) - Perl builtin functions>, [perlop](#) - Perl operators and precedence, [perllocale](#) - Perl locale handling (internationalization and localization), Moving to perl5, [perltrap](#) - Perl traps for the unwary, [perl](#), Linking with C, [perlxsut](#) - Tutorial for writing XSUBs, [perlx](#) - XS language reference manual, [perlcall](#) - Perl calling conventions from C, [perlguts](#) - Introduction to the Perl API, [perlembed](#) - how to embed perl in your C program, Various

**How can I use Perl interactively?**

**How do I find which modules are installed on my system?**

**How do I debug my Perl programs?**

**How do I profile my Perl programs?**

**How do I cross-reference my Perl programs?**

**Is there a pretty-printer (formatter) for Perl?**

**Is there an IDE or Windows Perl Editor?**

Eclipse, Enginsite, IntelliJ IDEA, Kephra, Komodo, Notepad++, Open Perl IDE, OptiPerl, Padre, PerlBuilder, visiPerl+, Visual Perl, Zeus, GNU Emacs, MicroEMACS, XEmacs, Jed, Vim, Vile, MultiEdit, SlickEdit, ConTEXT, bash, zsh, BBEdit and TextWrangler

**Where can I get Perl macros for vi?**

**Where can I get perl-mode or cperl-mode for emacs?**

**How can I use curses with Perl?**

**How can I write a GUI (X, Tk, Gtk, etc.) in Perl?**

Tk, Wx, Gtk and Gtk2, Win32::GUI, CamelBones, Qt, Athena

**How can I make my Perl program run faster?**

**How can I make my Perl program take less memory?**

Don't slurp!, Use map and grep selectively, Avoid unnecessary quotes and stringification, Pass by reference, Tie large variables to disk

**Is it safe to return a reference to local or lexical data?**

**How can I free an array or hash so my program shrinks?**

**How can I make my CGI script more efficient?**

**How can I hide the source for my Perl program?**

**How can I compile my Perl program into byte code or C?**

**How can I get `#!perl` to work on [MS-DOS,NT,...]?**

**Can I write useful Perl programs on the command line?**

**Why don't Perl one-liners work on my DOS/Mac/VMS system?**

**Where can I learn about CGI or Web programming in Perl?**

**Where can I learn about object-oriented Perl programming?**

**Where can I learn about linking C with Perl?**

**I've read perlembed, perlguts, etc., but I can't embed perl in my C program; what am I doing wrong?**

**When I tried to run my script, I got this message. What does it mean?**

**What's MakeMaker?**

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## **perlfaq4 - Data Manipulation**

**VERSION**

**DESCRIPTION**

**Data: Numbers**

**Why am I getting long decimals (eg, 19.949999999999) instead of the numbers I should be getting (eg, 19.95)?**

**Why is `int()` broken?**

**Why isn't my octal data interpreted correctly?**

**Does Perl have a `round()` function? What about `ceil()` and `floor()`? Trig functions?**

**How do I convert between numeric representations/bases/radixes?**

How do I convert hexadecimal into decimal, How do I convert from decimal to hexadecimal, How do I convert from octal to decimal, How do I convert from decimal to octal, How do I convert from binary to decimal, How do I convert from decimal to binary

**Why doesn't & work the way I want it to?**

**How do I multiply matrices?**

**How do I perform an operation on a series of integers?**

**How can I output Roman numerals?**

**Why aren't my random numbers random?**

**How do I get a random number between X and Y?**

## Data: Dates

How do I find the day or week of the year?

How do I find the current century or millennium?

How can I compare two dates and find the difference?

How can I take a string and turn it into epoch seconds?

How can I find the Julian Day?

How do I find yesterday's date?

Does Perl have a Year 2000 or 2038 problem? Is Perl Y2K compliant?

## Data: Strings

How do I validate input?

How do I unescape a string?

How do I remove consecutive pairs of characters?

How do I expand function calls in a string?

How do I find matching/nesting anything?

How do I reverse a string?

How do I expand tabs in a string?

How do I reformat a paragraph?

How can I access or change N characters of a string?

How do I change the Nth occurrence of something?

How can I count the number of occurrences of a substring within a string?

How do I capitalize all the words on one line?

How can I split a [character]-delimited string except when inside [character]?

How do I strip blank space from the beginning/end of a string?

How do I pad a string with blanks or pad a number with zeroes?

How do I extract selected columns from a string?

How do I find the soundex value of a string?

How can I expand variables in text strings?

What's wrong with always quoting "\$vars"?

Why don't my <<HERE documents work?

There must be no space after the << part, There (probably) should be a semicolon at the end of the opening token, You can't (easily) have any space in front of the tag, There needs to be at least a line separator after the end token

## Data: Arrays

What is the difference between a list and an array?

What is the difference between \$array[1] and @array[1]?

How can I remove duplicate elements from a list or array?



How can I tell whether a certain element is contained in a list or array?

How do I compute the difference of two arrays? How do I compute the intersection of two arrays?

How do I test whether two arrays or hashes are equal?

How do I find the first array element for which a condition is true?

How do I handle linked lists?

How do I handle circular lists?

How do I shuffle an array randomly?

How do I process/modify each element of an array?

How do I select a random element from an array?

How do I permute N elements of a list?

How do I sort an array by (anything)?

How do I manipulate arrays of bits?

Why does `defined()` return true on empty arrays and hashes?

#### Data: Hashes (Associative Arrays)

How do I process an entire hash?

How do I merge two hashes?

What happens if I add or remove keys from a hash while iterating over it?

How do I look up a hash element by value?

How can I know how many entries are in a hash?

How do I sort a hash (optionally by value instead of key)?

How can I always keep my hash sorted?

What's the difference between "delete" and "undef" with hashes?

Why don't my tied hashes make the defined/exists distinction?

How do I reset an `each()` operation part-way through?

How can I get the unique keys from two hashes?

How can I store a multidimensional array in a DBM file?

How can I make my hash remember the order I put elements into it?

Why does passing a subroutine an undefined element in a hash create it?

How can I make the Perl equivalent of a C structure/C++ class/hash or array of hashes or arrays?

How can I use a reference as a hash key?

How can I check if a key exists in a multilevel hash?

How can I prevent addition of unwanted keys into a hash?

#### Data: Misc

How do I handle binary data correctly?

How do I determine whether a scalar is a number/whole/integer/float?

How do I keep persistent data across program calls?  
How do I print out or copy a recursive data structure?  
How do I define methods for every class/object?  
How do I verify a credit card checksum?  
How do I pack arrays of doubles or floats for XS code?

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# perlfaq5 - Files and Formats

## VERSION

## DESCRIPTION

How do I flush/unbuffer an output filehandle? Why must I do this?  
How do I change, delete, or insert a line in a file, or append to the beginning of a file?  
How do I count the number of lines in a file?  
How do I delete the last N lines from a file?  
How can I use Perl's `-i` option from within a program?  
How can I copy a file?  
How do I make a temporary file name?  
How can I manipulate fixed-record-length files?  
How can I make a filehandle local to a subroutine? How do I pass filehandles between subroutines? How do I make an array of filehandles?  
How can I use a filehandle indirectly?  
How can I open a filehandle to a string?  
How can I set up a footer format to be used with `write()`?  
How can I write() into a string?  
How can I output my numbers with commas added?  
How can I translate tildes (~) in a filename?  
How come when I open a file read-write it wipes it out?  
Why do I sometimes get an "Argument list too long" when I use `<*>`?  
How can I open a file named with a leading ">" or trailing blanks?  
How can I reliably rename a file?  
How can I lock a file?  
Why can't I just open(FH, ">file.lock")?  
I still don't get locking. I just want to increment the number in the file. How can I do this?  
All I want to do is append a small amount of text to the end of a file. Do I still have to use locking?  
How do I randomly update a binary file?  
How do I get a file's timestamp in perl?

How do I set a file's timestamp in perl?

How do I print to more than one file at once?

How can I read in an entire file all at once?

How can I read in a file by paragraphs?

How can I read a single character from a file? From the keyboard?

How can I tell whether there's a character waiting on a filehandle?

How do I do a `tail -f` in perl?

How do I dup() a filehandle in Perl?

How do I close a file descriptor by number?

Why can't I use "C:\temp\foo" in DOS paths? Why doesn't "C:\temp\foo.exe" work?

Why doesn't `glob("**.*")` get all the files?

Why does Perl let me delete read-only files? Why does `-i` clobber protected files? Isn't this a bug in Perl?

How do I select a random line from a file?

Why do I get weird spaces when I print an array of lines?

How do I traverse a directory tree?

How do I delete a directory tree?

How do I copy an entire directory?

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## perlfaq6 - Regular Expressions

**VERSION**

**DESCRIPTION**

How can I hope to use regular expressions without creating illegible and unmaintainable code?

Comments Outside the Regex, Comments Inside the Regex, Different Delimiters

I'm having trouble matching over more than one line. What's wrong?

How can I pull out lines between two patterns that are themselves on different lines?

How do I match XML, HTML, or other nasty, ugly things with a regex?

I put a regular expression into `$/` but it didn't work. What's wrong?

How do I substitute case-insensitively on the LHS while preserving case on the RHS?

How can I make `\w` match national character sets?

How can I match a locale-smart version of `/[a-zA-Z]/`?

How can I quote a variable to use in a regex?

What is `/o` really for?

How do I use a regular expression to strip C-style comments from a file?

Can I use Perl regular expressions to match balanced text?

What does it mean that regexes are greedy? How can I get around it?

How do I process each word on each line?

How can I print out a word-frequency or line-frequency summary?

How can I do approximate matching?

How do I efficiently match many regular expressions at once?

Why don't word-boundary searches with `\b` work for me?

Why does using `$&`, `$``, or `$'` slow my program down?

What good is `\G` in a regular expression?

Are Perl regexes DFAs or NFAs? Are they POSIX compliant?

What's wrong with using `grep` in a void context?

How can I match strings with multibyte characters?

How do I match a regular expression that's in a variable?

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# perlfaq7 - General Perl Language Issues

## VERSION

## DESCRIPTION

Can I get a BNF/yacc/RE for the Perl language?

What are all these `$_%&*` punctuation signs, and how do I know when to use them?

Do I always/never have to quote my strings or use semicolons and commas?

How do I skip some return values?

How do I temporarily block warnings?

What's an extension?

Why do Perl operators have different precedence than C operators?

How do I declare/create a structure?

How do I create a module?

How do I adopt or take over a module already on CPAN?

How do I create a class?

How can I tell if a variable is tainted?

What's a closure?

What is variable suicide and how can I prevent it?

How can I pass/return a {Function, FileHandle, Array, Hash, Method, Regex}?

Passing Variables and Functions, Passing Filehandles, Passing Regexes, Passing Methods

How do I create a static variable?

What's the difference between dynamic and lexical (static) scoping? Between `local()` and `my()`?

How can I access a dynamic variable while a similarly named lexical is in scope?

**What's the difference between deep and shallow binding?**

**Why doesn't "my(\$foo) = <\$fh>," work right?**

**How do I redefine a builtin function, operator, or method?**

**What's the difference between calling a function as &foo and foo()?**

**How do I create a switch or case statement?**

**How can I catch accesses to undefined variables, functions, or methods?**

**Why can't a method included in this same file be found?**

**How can I find out my current or calling package?**

**How can I comment out a large block of Perl code?**

**How do I clear a package?**

**How can I use a variable as a variable name?**

**What does "bad interpreter" mean?**

**Do I need to recompile XS modules when there is a change in the C library?**

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## **perlfaq8 - System Interaction**

**VERSION**

**DESCRIPTION**

**How do I find out which operating system I'm running under?**

**How come exec() doesn't return?**

**How do I do fancy stuff with the keyboard/screen/mouse?**

Keyboard, Screen, Mouse

**How do I print something out in color?**

**How do I read just one key without waiting for a return key?**

**How do I check whether input is ready on the keyboard?**

**How do I clear the screen?**

**How do I get the screen size?**

**How do I ask the user for a password?**

**How do I read and write the serial port?**

lockfiles, open mode, end of line, flushing output, non-blocking input

**How do I decode encrypted password files?**

**How do I start a process in the background?**

STDIN, STDOUT, and STDERR are shared, Signals, Zombies

**How do I trap control characters/signals?**

**How do I modify the shadow password file on a Unix system?**

**How do I set the time and date?**

How can I sleep() or alarm() for under a second?

How can I measure time under a second?

How can I do an atexit() or setjmp()/longjmp() ? (Exception handling)

Why doesn't my sockets program work under System V (Solaris)? What does the error message "Protocol not supported" mean?

How can I call my system's unique C functions from Perl?

Where do I get the include files to do ioctl() or syscall()?

Why do setuid perl scripts complain about kernel problems?

How can I open a pipe both to and from a command?

Why can't I get the output of a command with system()?

How can I capture STDERR from an external command?

Why doesn't open() return an error when a pipe open fails?

What's wrong with using backticks in a void context?

How can I call backticks without shell processing?

Why can't my script read from STDIN after I gave it EOF (^D on Unix, ^Z on MS-DOS)?

How can I convert my shell script to perl?

Can I use perl to run a telnet or ftp session?

How can I write expect in Perl?

Is there a way to hide perl's command line from programs such as "ps"?

I {changed directory, modified my environment} in a perl script. How come the change disappeared when I exited the script? How do I get my changes to be visible?

Unix

How do I close a process's filehandle without waiting for it to complete?

How do I fork a daemon process?

How do I find out if I'm running interactively or not?

How do I timeout a slow event?

How do I set CPU limits?

How do I avoid zombies on a Unix system?

How do I use an SQL database?

How do I make a system() exit on control-C?

How do I open a file without blocking?

How do I tell the difference between errors from the shell and perl?

How do I install a module from CPAN?

What's the difference between require and use?

How do I keep my own module/library directory?

How do I add the directory my program lives in to the module/library search path?

**How do I add a directory to my include path (@INC) at runtime?**

the `PERLLIB` environment variable, the `PERLSLIB` environment variable, the `perl -I` command line flag, the `lib` pragma, the `local::lib` module:

**Where are modules installed?**

**What is socket.ph and where do I get it?**

**AUTHOR AND COPYRIGHT**

## perlfaq9 - Web, Email and Networking

**VERSION**

**DESCRIPTION**

**Should I use a web framework?**

**Which web framework should I use?**

[Catalyst](#), [Dancer2](#), [Mojolicious](#), [Web::Simple](#)

**What is Plack and PSGI?**

**How do I remove HTML from a string?**

**How do I extract URLs?**

**How do I fetch an HTML file?**

**How do I automate an HTML form submission?**

**How do I decode or create those %-encodings on the web?**

**How do I redirect to another page?**

**How do I put a password on my web pages?**

**How do I make sure users can't enter values into a form that causes my CGI script to do bad things?**

**How do I parse a mail header?**

**How do I check a valid mail address?**

**How do I decode a MIME/BASE64 string?**

**How do I find the user's mail address?**

**How do I send email?**

[Email::Sender::Transport::Sendmail](#), [Email::Sender::Transport::SMTP](#)

**How do I use MIME to make an attachment to a mail message?**

**How do I read email?**

**How do I find out my hostname, domainname, or IP address?**

**How do I fetch/put an (S)FTP file?**

**How can I do RPC in Perl?**

**AUTHOR AND COPYRIGHT**

## perlsyn - Perl syntax

## DESCRIPTION

Declarations

Comments

Simple Statements

Statement Modifiers

Compound Statements

Loop Control

For Loops

Foreach Loops

Basic BLOCKs

Switch Statements

Goto

The Ellipsis Statement

PODs: Embedded Documentation

Plain Old Comments (Not!)

Experimental Details on given and when

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

## perldata - Perl data types

### DESCRIPTION

Variable names

Identifier parsing

Context

Scalar values

Scalar value constructors

List value constructors

Subscripts

Multi-dimensional array emulation

Slices

Typeglobs and Filehandles

### SEE ALSO

## perlop - Perl operators and precedence

### DESCRIPTION

Operator Precedence and Associativity

Terms and List Operators (Leftward)



## The Arrow Operator

## Auto-increment and Auto-decrement

## Exponentiation

## Symbolic Unary Operators

## Binding Operators

## Multiplicative Operators

## Additive Operators

## Shift Operators

## Named Unary Operators

## Relational Operators

## Equality Operators

## Class Instance Operator

## Smartmatch Operator

1. Empty hashes or arrays match, 2. That is, each element smartmatches the element of the same index in the other array.[3], 3. If a circular reference is found, fall back to referential equality, 4. Either an actual number, or a string that looks like one

## Bitwise And

## Bitwise Or and Exclusive Or

## C-style Logical And

## C-style Logical Or

## Logical Defined-Or

## Range Operators

## Conditional Operator

## Assignment Operators

## Comma Operator

## List Operators (Rightward)

## Logical Not

## Logical And

## Logical or and Exclusive Or

## C Operators Missing From Perl

unary &, unary \*, (TYPE)

## Quote and Quote-like Operators

[1], [2], [3], [4], [5], [6], [7], [8]

## Regexp Quote-Like Operators

`qr/STRING/msixpodualn` , `m/PATTERN/msixpodualnc` , `/PATTERN/msixpodualnc` , The empty pattern `//` , Matching in list context, `\G assertion` , `m?PATTERN?msixpodualnc` , `s/PATTERN/REPLACEMENT/msixpodualncger`

## Quote-Like Operators

`q/STRING/` , `'STRING'` , `qq/STRING/` , `"STRING"` , `qx/STRING/` , ``STRING`` , `qw/STRING/` , `tr/SEARCHLIST/REPLACEMENTLIST/cdsr` , `y/SEARCHLIST/REPLACEMENTLIST/cdsr` , `<<EOF` , Double Quotes, Single Quotes, Backticks, Indented Here-docs

## Gory details of parsing quoted constructs

Finding the end, Interpolation , `<<'EOF'` , `m''` , the pattern of `s''''` , `''` , `q//` , `tr''''` , `y''''` , the replacement of `s''''` , `tr///` , `y///` , `""` , ``` , `qx//` , `<file*glob>` , `<<"EOF"` , the replacement of `s///` , `RE` in `m?RE?` , `/RE/` , `m/RE/` , `s/RE/foo/` , parsing regular expressions , Optimization of regular expressions

## I/O Operators

### Constant Folding

### No-ops

### Bitwise String Operators

### Integer Arithmetic

### Floating-point Arithmetic

### Bigger Numbers

# perlsb - Perl subroutines

## SYNOPSIS

## DESCRIPTION

documented later in this document, documented in [perlmod](#), documented in [perlobj](#), documented in [perltie](#), documented in [PerlIO::via](#), documented in [perlfunc](#), documented in [UNIVERSAL](#), documented in [perldebbugs](#), undocumented, used internally by the [overload](#) feature

### Signatures

### Private Variables via my()

### Persistent Private Variables

### Temporary Values via local()

### Lvalue subroutines

### Lexical Subroutines

### Passing Symbol Table Entries (typeglobs)

### When to Still Use local()

### Pass by Reference

### Prototypes

### Constant Functions

### Overriding Built-in Functions

### Autoloading

### Subroutine Attributes

## SEE ALSO

# perlfunc - Perl builtin functions

## DESCRIPTION

### Perl Functions by Category

Functions for SCALARs or strings , Regular expressions and pattern matching , Numeric functions , Functions for real @ARRAYs , Functions for list data , Functions for real %HASHes , Input and output functions , Functions for fixed-length data or records , Functions for filehandles, files, or directories , Keywords related to the control flow of your Perl program , Keywords related to scoping , Miscellaneous functions, Functions for processes and process groups , Keywords related to Perl modules , Keywords related to classes and object-orientation , Low-level socket functions , System V interprocess communication functions , Fetching user and group info , Fetching network info , Time-related functions , Non-function keywords

### Portability

### Alphabetical Listing of Perl Functions

-X FILEHANDLE , -X EXPR , -X DIRHANDLE , -X, abs VALUE , abs, accept  
NEWSOCKET,GENERICSOCKET , alarm SECONDS , alarm, atan2 Y,X , bind SOCKET,NAME ,  
binmode FILEHANDLE , LAYER , binmode FILEHANDLE , bless REF,CLASSNAME , bless REF,  
break , caller EXPR , caller, chdir EXPR , chdir FILEHANDLE , chdir DIRHANDLE , chdir, chmod LIST ,  
chomp VARIABLE , chomp( LIST ) , chomp, chop VARIABLE , chop( LIST ) , chop, chown LIST , chr  
NUMBER , chr, chroot FILENAME , chroot, close FILEHANDLE , close, closedir DIRHANDLE ,  
connect SOCKET,NAME , continue BLOCK , continue, cos EXPR , cos, crypt PLAINTEXT,SALT ,  
dbmclose HASH , dbmopen HASH,DBNAME,MASK , defined EXPR , defined, delete EXPR , die LIST ,  
do BLOCK , do EXPR , dump LABEL , dump EXPR , dump, each HASH , each ARRAY , eof  
FILEHANDLE , eof ( ) , eof, eval EXPR , eval BLOCK , eval, String eval, Under  
the "unicode\_eval" feature, Outside the "unicode\_eval" feature, Block eval, evalbytes EXPR ,  
evalbytes, exec LIST , exec PROGRAM LIST , exists EXPR , exit EXPR , exit, exp EXPR , exp, fc  
EXPR , fc, fcntl FILEHANDLE,FUNCTION,SCALAR , \_\_FILE\_\_ , fileno FILEHANDLE , fileno  
DIRHANDLE , flock FILEHANDLE,OPERATION , fork , format , formline PICTURE,LIST , getc  
FILEHANDLE , getc, getlogin , getpeername SOCKET , getpgpr PID , getpid , getpriority  
WHICH,WHO , getpwnam NAME , getgrnam NAME , gethostbyname NAME , getnetbyname NAME,  
getprotobyname NAME , getpwuid UID , getgrgid GID , getservbyname NAME,PROTO , gethostbyaddr  
ADDR,ADDRTYPE , getnetbyaddr ADDR,ADDRTYPE , getprotobyname NUMBER , getservbyport  
PORT,PROTO , getpwent , getgrent , getthostent , getnetent , getprotoent , getservent , setpwent , setgrent ,  
sethostent STAYOPEN , setnetent STAYOPEN , setprotoent STAYOPEN , setservent STAYOPEN ,  
endpwent , endgrent , endhostent , endnetent , endprotoent , endservent , getsockname SOCKET ,  
getsockopt SOCKET,LEVEL,OPTNAME , glob EXPR , glob, gmtime EXPR , gmtime, goto LABEL ,  
goto EXPR , goto &NAME , grep BLOCK LIST , grep EXPR,LIST , hex EXPR , hex, import LIST , index  
STR,SUBSTR,POSITION , index STR,SUBSTR , int EXPR , int, ioctl  
FILEHANDLE,FUNCTION,SCALAR , join EXPR,LIST , keys HASH , keys ARRAY , kill SIGNAL , LIST ,  
kill SIGNAL , last LABEL , last EXPR , last, lc EXPR , lc, If use bytes is in effect; Otherwise, if use  
locale for LC\_CTYPE is in effect; Otherwise, If EXPR has the UTF8 flag set; Otherwise, if use  
feature 'unicode\_strings' or use locale ':not\_characters' is in effect; Otherwise;, lcfirst EXPR ,  
lcfirst, length EXPR , length, \_\_LINE\_\_ , link OLDFILE,NEWFILE , listen SOCKET,QUEUESIZE , local  
EXPR , localtime EXPR , localtime, lock THING , log EXPR , log, lstat FILEHANDLE , lstat EXPR , lstat  
DIRHANDLE , lstat, m// , map BLOCK LIST , map EXPR,LIST , mkdir FILENAME,MODE , mkdir  
FILENAME , mkdir, msgctl ID,CMD,ARG , msgget KEY,FLAGS , msgrcv ID,VAR,SIZE,TYPE,FLAGS ,  
msgsnd ID,MSG,FLAGS , my VARLIST , my TYPE VARLIST , my VARLIST : ATTRS , my TYPE  
VARLIST : ATTRS , next LABEL , next EXPR , next, no MODULE VERSION LIST , no MODULE  
VERSION , no MODULE LIST , no MODULE , no VERSION , oct EXPR , oct, open  
FILEHANDLE,MODE,EXPR , open FILEHANDLE,MODE,EXPR,LIST , open  
FILEHANDLE,MODE,REFERENCE , open FILEHANDLE,EXPR , open FILEHANDLE , Working with  
files, Simple examples , About filehandles , About modes , Checking the return value , Specifying I/O  
layers in MODE , Using undef for temporary files , Opening a filehandle into an in-memory scalar ,  
Opening a filehandle into a command , Duping filehandles , Legacy usage , Specifying mode and  
filename as a single argument , Calling open with one argument via global variables , Assigning a  
filehandle to a bareword , Other considerations , Automatic filehandle closure , Automatic pipe flushing ,  
Direct versus by-reference assignment of filehandles , Whitespace and special characters in the  
filename argument , Invoking C-style open , Portability issues , opendir DIRHANDLE,EXPR , ord EXPR  
, ord, our VARLIST , our TYPE VARLIST , our VARLIST : ATTRS , our TYPE VARLIST : ATTRS , pack  
TEMPLATE,LIST , package NAMESPACE , package NAMESPACE VERSION , package  
NAMESPACE BLOCK , package NAMESPACE VERSION BLOCK , \_\_PACKAGE\_\_ , pipe  
READHANDLE,WRITEHANDLE , pop ARRAY , pop, pos SCALAR , pos, print FILEHANDLE LIST ,  
print FILEHANDLE , print LIST , print, printf FILEHANDLE FORMAT , LIST , printf FILEHANDLE , printf  
FORMAT , LIST , printf, prototype FUNCTION , prototype, push ARRAY,LIST , q/STRING/, qq/STRING/,

qw/STRING/, qx/STRING/, qr/STRING/, quotemeta EXPR , quotemeta, rand EXPR , rand, read  
FILEHANDLE, SCALAR, LENGTH, OFFSET , read FILEHANDLE, SCALAR, LENGTH, readdir  
DIRHANDLE , readline EXPR, readline , readlink EXPR , readlink, readpipe EXPR, readpipe , recv  
SOCKET, SCALAR, LENGTH, FLAGS , redo LABEL , redo EXPR, redo, ref EXPR , ref, rename  
OLDNAME, NEWNAME , require VERSION , require EXPR, require, reset EXPR , reset, return EXPR  
, return, reverse LIST , rewinddir DIRHANDLE , rindex STR, SUBSTR, POSITION , rindex  
STR, SUBSTR, rmdir FILENAME , rmdir, s///, say FILEHANDLE LIST , say FILEHANDLE, say LIST,  
say, scalar EXPR , seek FILEHANDLE, POSITION, WHENCE , seekdir DIRHANDLE, POS , select  
FILEHANDLE , select, select RBITS, WBITS, EBITS, TIMEOUT , semctl ID, SEMNUM, CMD, ARG ,  
semget KEY, NSEMS, FLAGS , semop KEY, OPSTRING , send SOCKET, MSG, FLAGS, TO , send  
SOCKET, MSG, FLAGS, setpgid PID, PGRP , setpriority WHICH, WHO, PRIORITY , setsockopt  
SOCKET, LEVEL, OPTNAME, OPTVAL , shift ARRAY , shift, shmctl ID, CMD, ARG , shmget  
KEY, SIZE, FLAGS , shmread ID, VAR, POS, SIZE , shmwrite ID, STRING, POS, SIZE , shutdown  
SOCKET, HOW , sin EXPR , sin, sleep EXPR , sleep, socket SOCKET, DOMAIN, TYPE, PROTOCOL ,  
socketpair SOCKET1, SOCKET2, DOMAIN, TYPE, PROTOCOL , sort SUBNAME LIST , sort BLOCK  
LIST , sort LIST , splice ARRAY, OFFSET, LENGTH, LIST , splice ARRAY, OFFSET, LENGTH, splice  
ARRAY, OFFSET, splice ARRAY, split /PATTERN/, EXPR, LIMIT , split /PATTERN/, EXPR, split  
/PATTERN/, split, sprintf FORMAT, LIST , format parameter index, flags, vector flag, (minimum) width,  
precision, or maximum width , size, order of arguments, sqrt EXPR , sqrt, srand EXPR , srand, stat  
FILEHANDLE , stat EXPR, stat DIRHANDLE, stat, state VARLIST , state TYPE VARLIST, state  
VARLIST : ATTRS, state TYPE VARLIST : ATTRS, study SCALAR , study, sub NAME BLOCK , sub  
NAME (PROTO) BLOCK, sub NAME : ATTRS BLOCK, sub NAME (PROTO) : ATTRS BLOCK,  
\_\_SUB\_\_ , substr EXPR, OFFSET, LENGTH, REPLACEMENT , substr EXPR, OFFSET, LENGTH,  
substr EXPR, OFFSET, symlink OLDFILE, NEWFILE , syscall NUMBER, LIST , sysopen  
FILEHANDLE, FILENAME, MODE , sysopen FILEHANDLE, FILENAME, MODE, PERMS, sysread  
FILEHANDLE, SCALAR, LENGTH, OFFSET , sysread FILEHANDLE, SCALAR, LENGTH, sysseek  
FILEHANDLE, POSITION, WHENCE , system LIST , system PROGRAM LIST, syswrite  
FILEHANDLE, SCALAR, LENGTH, OFFSET , syswrite FILEHANDLE, SCALAR, LENGTH, syswrite  
FILEHANDLE, SCALAR, tell FILEHANDLE , tell, telldir DIRHANDLE , tie  
VARIABLE, CLASSNAME, LIST , tied VARIABLE , time , times , tr///, truncate FILEHANDLE, LENGTH ,  
truncate EXPR, LENGTH, uc EXPR , uc, ucfirst EXPR , ucfirst, umask EXPR , umask, undef EXPR ,  
undef, unlink LIST , unlink, unpack TEMPLATE, EXPR , unpack TEMPLATE, unshift ARRAY, LIST ,  
untie VARIABLE , use Module VERSION LIST , use Module VERSION, use Module LIST, use Module,  
use VERSION, utime LIST , values HASH , values ARRAY, vec EXPR, OFFSET, BITS , wait , waitpid  
PID, FLAGS , wantarray , warn LIST , write FILEHANDLE , write EXPR, write, y///

### Non-function Keywords by Cross-reference

\_\_DATA\_\_, \_\_END\_\_, BEGIN, CHECK, END, INIT, UNITCHECK, DESTROY, and, cmp, eq, ge, gt, le,  
lt, ne, not, or, x, xor, AUTOLOAD, else, elsif, for, foreach, if, unless, until, while, elsif, default, given,  
when

## perlopenutut - simple recipes for opening files and pipes in Perl

### DESCRIPTION

*OK, HANDLE, MODE, PATHNAME*

### Opening Text Files

Opening Text Files for Reading

Opening Text Files for Writing

### Opening Binary Files

### Opening Pipes

Opening a pipe for reading

Opening a pipe for writing

Expressing the command as a list

### SEE ALSO

### AUTHOR and COPYRIGHT

# **perlpacktut - tutorial on pack and unpack**

## **DESCRIPTION**

**The Basic Principle**

**Packing Text**

**Packing Numbers**

**Integers**

**Unpacking a Stack Frame**

**How to Eat an Egg on a Net**

**Byte-order modifiers**

**Floating point Numbers**

**Exotic Templates**

**Bit Strings**

**Uuencoding**

**Doing Sums**

**Unicode**

**Another Portable Binary Encoding**

**Template Grouping**

**Lengths and Widths**

**String Lengths**

**Dynamic Templates**

**Counting Repetitions**

**Intel HEX**

**Packing and Unpacking C Structures**

**The Alignment Pit**

**Dealing with Endian-ness**

**Alignment, Take 2**

**Alignment, Take 3**

**Pointers for How to Use Them**

**Pack Recipes**

**Funnies Section**

**Authors**

# **perlpod - the Plain Old Documentation format**

## **DESCRIPTION**

**Ordinary Paragraph**

## Verbatim Paragraph

## Command Paragraph

```
=head1 Heading Text , =head2 Heading Text , =head3 Heading Text , =head4 Heading Text , =over indentlevel , =itemstuff... , =back , =cut , =pod , =begin formatname , =end formatname , =for formatname text... , =encodingencodingname
```

## Formatting Codes

I<text> -- italic text , B<text> -- bold text , C<code> -- code text , L<name> -- a hyperlink , E<escape> -- a character escape , F<filename> -- used for filenames , S<text> -- text contains non-breaking spaces , X<topic name> -- an index entry , Z<> -- a null (zero-effect) formatting code

## The Intent

## Embedding Pods in Perl Modules

## Hints for Writing Pod

## SEE ALSO

## AUTHOR

# perlpodspec - Plain Old Documentation: format specification and notes

## DESCRIPTION

### Pod Definitions

### Pod Commands

"=head1", "=head2", "=head3", "=head4", "=pod", "=cut", "=over", "=item", "=back", "=begin formatname", "=begin formatname parameter", "=end formatname", "=for formatname text...", "=encoding encodingname"

### Pod Formatting Codes

I<text> -- italic text, B<text> -- bold text, C<code> -- code text, F<filename> -- style for filenames, X<topic name> -- an index entry, Z<> -- a null (zero-effect) formatting code, L<name> -- a hyperlink, E<escape> -- a character escape, S<text> -- text contains non-breaking spaces

### Notes on Implementing Pod Processors

### About L<...> Codes

First:, Second:, Third:, Fourth:, Fifth:, Sixth:

### About =over...=back Regions

### About Data Paragraphs and "=begin/=end" Regions

## SEE ALSO

## AUTHOR

# perlpodstyle - Perl POD style guide

## DESCRIPTION

NAME, SYNOPSIS, DESCRIPTION, OPTIONS, RETURN VALUE, ERRORS, DIAGNOSTICS, EXAMPLES, ENVIRONMENT, FILES, CAVEATS, BUGS, RESTRICTIONS, NOTES, AUTHOR, HISTORY, COPYRIGHT AND LICENSE, SEE ALSO

## AUTHOR

## COPYRIGHT AND LICENSE

SEE ALSO

## perldiag - various Perl diagnostics

DESCRIPTION

SEE ALSO

## perldeprecation - list Perl deprecations

DESCRIPTION

Perl 5.34

Perl 5.32

Perl 5.30

Perl 5.28

Perl 5.26

Perl 5.24

Perl 5.16

SEE ALSO

## perllexwarn - Perl Lexical Warnings

DESCRIPTION

## perldebug - Perl debugging

DESCRIPTION

The Perl Debugger

Calling the Debugger

perl -d program\_name, perl -d -e 0, perl -d:ptkdb program\_name, perl -dt threaded\_program\_name

Debugger Commands

h, h [command], h h, p expr, x [maxdepth] expr, V [pkg [vars]], X [vars], y [level [vars]], T, s [expr], n [expr], r, <CR>, c [line]sub, l, l min+incr, l min-max, l line, l subname, -, v [line], ., f filename, /pattern/, ?pattern?, L [abw], S [![regex], t [n], t [n] expr, b, b [line] [condition], b [file]:[line] [condition], b subname [condition], b postpone subname [condition], b load filename, b compile subname, B line, B \*, disable [file]:[line], disable [line], enable [file]:[line], enable [line], a [line] command, A line, A \*, w expr, W expr, W \*, o, o booloption ..., o anyoption? ..., o option=value ..., < ?, < [ command ], < \*, << command, > ?, > command, > \*, >> command, { ?, { [ command ], { \*, {{ command, ! number, !-number, ! pattern, !! cmd, source file, H -number, q or ^D, R, |dbcmd, ||dbcmd, command, m expr, M, man [manpage]

Configurable Options

recallCommand, ShellBang, pager, tkRunning, signalLevel, warnLevel, dieLevel, AutoTrace, LineInfo, inhibit\_exit, PrintRet, ornaments, frame, maxTraceLen, windowSize, arrayDepth, hashDepth, dumpDepth, compactDump, veryCompact, globPrint, DumpDBFiles, DumpPackages, DumpReused, quote, HighBit, undefPrint, UsageOnly, HistFile, HistSize, TTY, noTTY, ReadLine, NonStop

Debugger Input/Output

Prompt, Multiline commands, Stack backtrace , Line Listing Format, Frame listing

## Debugging Compile-Time Statements

## Debugger Customization

## Readline Support / History in the Debugger

## Editor Support for Debugging

## The Perl Profiler

## Debugging Regular Expressions

## Debugging Memory Usage

## SEE ALSO

## BUGS

# perlvar - Perl predefined variables

## DESCRIPTION

### The Syntax of Variable Names

## SPECIAL VARIABLES

### General Variables

`$ARG`, `$_`, `@ARG`, `@_`, `$LIST_SEPARATOR`, `$"`, `$PROCESS_ID`, `$PID`, `$$`, `$PROGRAM_NAME`, `$0`, `$REAL_GROUP_ID`, `$GID`, `$(`, `$EFFECTIVE_GROUP_ID`, `$EGID`, `)`, `$REAL_USER_ID`, `$UID`, `<`, `$EFFECTIVE_USER_ID`, `$EUID`, `>`, `$SUBSCRIPT_SEPARATOR`, `$SUBSEP`, `;`, `$a`, `$b`, `%ENV`, `$OLD_PERL_VERSION`, `$]`, `$SYSTEM_FD_MAX`, `$'F`, `@F`, `@INC`, `%INC`, `$INPLACE_EDIT`, `$'I`, `@ISA`, `$'M`, `$OSNAME`, `$'O`, `%SIG`, `$BASETIME`, `$'T`, `$PERL_VERSION`, `$'V`, `$(^WIN32_SLOPPY_STAT)`, `$EXECUTABLE_NAME`, `$'X`

### Variables related to regular expressions

`<$digits>` (`$1`, `$2`, ...) , `@{^CAPTURE}` , `$MATCH`, `$&` , `#{^MATCH}` , `$PREMATCH`, `$`` , `#{^PREMATCH}` , `$POSTMATCH`, `$'` , `#{^POSTMATCH}` , `$LAST_PAREN_MATCH`, `$_+` , `$LAST_SUBMATCH_RESULT`, `$^N` , `@LAST_MATCH_END`, `@+` , `%{^CAPTURE}` , `%LAST_PAREN_MATCH`, `%+` , `@LAST_MATCH_START`, `@-` , `$'` is the same as `substr($var, 0, $-[0])` , `$&` is the same as `substr($var, $-[0], $+[0] - $-[0])` , `$'` is the same as `substr($var, $+[0])` , `$1` is the same as `substr($var, $-[1], $+[1] - $-[1])` , `$2` is the same as `substr($var, $-[2], $+[2] - $-[2])` , `$3` is the same as `substr($var, $-[3], $+[3] - $-[3])` , `%` `{^CAPTURE_ALL}` , `%-` , `$LAST_REGEXP_CODE_RESULT`, `$^R` , `#{^RE_COMPILE_RECURSION_LIMIT}` , `#{^RE_DEBUG_FLAGS}` , `#{^RE_TRIE_MAXBUF}`

### Variables related to filehandles

`$ARGV` , `@ARGV` , `ARGV` , `ARGVOUT` , `IO::Handle->output_field_separator( EXPR )` , `$OUTPUT_FIELD_SEPARATOR`, `$OFS`, `$` , `HANDLE->input_line_number( EXPR )` , `$INPUT_LINE_NUMBER`, `$NR`, `$` , `IO::Handle->input_record_separator( EXPR )` , `$INPUT_RECORD_SEPARATOR`, `$RS`, `$/` , `IO::Handle->output_record_separator( EXPR )` , `$OUTPUT_RECORD_SEPARATOR`, `$ORS`, `$\` , `HANDLE->autoflush( EXPR )` , `$OUTPUT_AUTOFLUSH`, `$|` , `#{^LAST_FH}` , `$ACCUMULATOR`, `$^A` , `IO::Handle->format_formfeed(EXPR)` , `$FORMAT_FORMFEED`, `$^L` , `HANDLE->format_page_number(EXPR)` , `$FORMAT_PAGE_NUMBER`, `%` , `HANDLE->format_lines_left(EXPR)` , `$FORMAT_LINES_LEFT`, `$-` , `IO::Handle->format_line_break_characters EXPR` , `$FORMAT_LINE_BREAK_CHARACTERS`, `$:` , `HANDLE->format_lines_per_page(EXPR)` , `$FORMAT_LINES_PER_PAGE`, `$=` , `HANDLE->format_top_name(EXPR)` , `$FORMAT_TOP_NAME`, `$^` , `HANDLE->format_name(EXPR)` , `$FORMAT_NAME`, `$~`

### Error Variables



```
$_CHILD_ERROR_NATIVE}, $EXTENDED_OS_ERROR, $^E, $EXCEPTIONS_BEING_CAUGHT,
$^S, $WARNING, $^W, ${^WARNING_BITS}, $OS_ERROR, $ERRNO, $!, %OS_ERROR,
%ERRNO, %!, $CHILD_ERROR, $?, $EVAL_ERROR, @$
```

### Variables related to the interpreter state

```
$COMPILING, $^C, $DEBUGGING, $^D, ${^ENCODING}, ${^GLOBAL_PHASE}, CONSTRUCT,
START, CHECK, INIT, RUN, END, DESTRUCT, $^H, %^H, ${^OPEN}, $PERLDB, $^P, 0x01, 0x02,
0x04, 0x08, 0x10, 0x20, 0x40, 0x80, 0x100, 0x200, 0x400, 0x800, 0x1000, ${^TAINT},
${^SAFE_LOCALES}, ${^UNICODE}, ${^UTF8CACHE}, ${^UTF8LOCALE}
```

### Deprecated and removed variables

```
$#, $*, $[
```

## perlre - Perl regular expressions

### DESCRIPTION

#### The Basics

#### Modifiers

```
m, s, i, x and xx, p, a, d, l, and u, n, Other Modifiers
```

#### Regular Expressions

```
[1], [2], [3], [4], [5], [6], [7], [8]
```

#### Quoting metacharacters

#### Extended Patterns

```
(?#text), (?adlupimnsx-imnsx), (?alupimnsx), (?pattern), (?adluimnsx-
imnsx:pattern), (?aluimnsx:pattern), (?|pattern), Lookaround Assertions, (?
=pattern), (*pla:pattern), (*positive_lookahead:pattern), (?!pattern), (*nla:pattern), (*
negative_lookahead:pattern), (?
<=pattern), \K, (*plb:pattern), (*positive_lookbehind:pattern), (?
<!pattern), (*nlb:pattern), (*negative_lookbehind:pattern), (?
<NAME>pattern), (?'NAME'pattern), \k<NAME>, \k'NAME', (?{ code }), (?>{ code }), (?
PARNO) (?-PARNO) (?+PARNO) (?R) (?0), (?<NAME>), (?<condition>yes-pattern|no-
pattern), (?<condition>yes-pattern), an integer in parentheses, a lookahead/lookbehind/evaluate
zero-width assertion, a name in angle brackets or single quotes, the special
symbol (R), (1) (2) ..., (<NAME>) ('NAME'), (?=...) (?!...) (?<=...) (?<!...), (?
{ CODE }), (R), (R1) (R2) ..., (R<NAME>), (DEFINE), (?>pattern), (*atomic:pattern), (?[ ])
```

#### Backtracking

#### Script Runs

#### Special Backtracking Control Verbs

```
Verbs, (*PRUNE) (*PRUNE:NAME), (*SKIP) (*SKIP:NAME), (*MARK:NAME) (*:NAME), (*THEN) (*
THEN:NAME), (*COMMIT) (*COMMIT:arg), (*FAIL) (*F) (*FAIL:arg), (*ACCEPT) (*ACCEPT:arg)
```

#### Warning on \1 Instead of \$1

#### Repeated Patterns Matching a Zero-length Substring

#### Combining RE Pieces

```
S, S|T, S{REPEAT_COUNT}, S{min,max}, S{min,max}?, S?, S*, S+, S??, S*?, S+?, (?>S), (?
=S), (?<=S), (?!S), (?<!S), (??{ EXPR }), (?PARNO), (?<condition>yes-pattern|no-pattern)
```

#### Creating Custom RE Engines

#### Embedded Code Execution Frequency

## PCRE/Python Support

`(?P<NAME>pattern)`, `(?P=NAME)`, `(?P>NAME)`

## BUGS

## SEE ALSO

# perlrebackslash - Perl Regular Expression Backslash Sequences and Escapes

## DESCRIPTION

### The backslash

[1]

### All the sequences and escapes

### Character Escapes

[1], [2]

### Modifiers

### Character classes

### Referencing

### Assertions

`\A`, `\z`, `\Z`, `\G`, `\b{}`, `\b`, `\B{}`, `\B`, `\b{gcb}` or `\b{g}`, `\b{lb}`, `\b{sb}`, `\b{wb}`

### Misc

`\K`, `\N`, `\R`, `\X`

# perlrecharclass - Perl Regular Expression Character Classes

## DESCRIPTION

### The dot

### Backslash sequences

If the `/a` modifier is in effect ..., otherwise ..., For code points above 255 ..., For code points below 256 ..., if locale rules are in effect ..., if, instead, Unicode rules are in effect ..., otherwise ..., If the `/a` modifier is in effect ..., otherwise ..., For code points above 255 ..., For code points below 256 ..., if locale rules are in effect ..., if, instead, Unicode rules are in effect ..., otherwise ..., [1], [2]

### Bracketed Character Classes

[1], [2], [3], [4], [5], [6], [7], If the `/a` modifier, is in effect ..., otherwise ..., For code points above 255 ..., For code points below 256 ..., if locale rules are in effect ..., word, `ascii`, `blank`, if, instead, Unicode rules are in effect ..., otherwise ..

# perlref - Perl Regular Expressions Reference

## DESCRIPTION

### OPERATORS

### SYNTAX

### ESCAPE SEQUENCES

**CHARACTER CLASSES**

**ANCHORS**

**QUANTIFIERS**

**EXTENDED CONSTRUCTS**

**VARIABLES**

**FUNCTIONS**

**TERMINOLOGY**

**AUTHOR**

**SEE ALSO**

**THANKS**

## **perlref - Perl references and nested data structures**

**NOTE**

**DESCRIPTION**

**Making References**

**Using References**

**Circular References**

**Symbolic references**

**Not-so-symbolic references**

**Pseudo-hashes: Using an array as a hash**

**Function Templates**

**WARNING: Don't use references as hash keys**

**Postfix Dereference Syntax**

**Postfix Reference Slicing**

**Assigning to References**

**Declaring a Reference to a Variable**

**SEE ALSO**

## **perlform - Perl formats**

**DESCRIPTION**

**Text Fields**

**Numeric Fields**

**The Field @\* for Variable-Width Multi-Line Text**

**The Field ^\* for Variable-Width One-line-at-a-time Text**

**Specifying Values**

**Using Fill Mode**

**Suppressing Lines Where All Fields Are Void**

**Repeating Format Lines**

**Top of Form Processing**

**Format Variables**

## **NOTES**

**Footers**

**Accessing Formatting Internals**

## **WARNINGS**

# **perlobj - Perl object reference**

## **DESCRIPTION**

**An Object is Simply a Data Structure**

**A Class is Simply a Package**

**A Method is Simply a Subroutine**

**Method Invocation**

**Inheritance**

**Writing Constructors**

**Attributes**

**An Aside About Smarter and Safer Code**

**Method Call Variations**

**Invoking Class Methods**

`bless` , `blessed` , **and** `ref`

**The UNIVERSAL Class**

`isa($class)` , `DOES($role)` , `can($method)` , `VERSION($need)`

## **AUTOLOAD**

**Destructors**

**Non-Hash Objects**

**Inside-Out objects**

**Pseudo-hashes**

## **SEE ALSO**

# **perlite - how to hide an object class in a simple variable**

## **SYNOPSIS**

## **DESCRIPTION**

**Tying Scalars**

`TIESCALAR classname` , `LIST` , `FETCH this` , `STORE this` , `value` , `UNTIE this` , `DESTROY this`

## Tying Arrays

TIEARRAY classname, LIST , FETCH this, index , STORE this, index, value , FETCHSIZE this , STORESIZE this, count , EXTEND this, count , EXISTS this, key , DELETE this, key , CLEAR this , PUSH this, LIST , POP this , SHIFT this , UNSHIFT this, LIST , SPLICE this, offset, length, LIST , UNTIE this , DESTROY this

## Tying Hashes

USER, HOME, CLOBBER, LIST, TIEHASH classname, LIST , FETCH this, key , STORE this, key, value , DELETE this, key , CLEAR this , EXISTS this, key , FIRSTKEY this , NEXTKEY this, lastkey , SCALAR this , UNTIE this , DESTROY this

## Tying FileHandles

TIEHANDLE classname, LIST , WRITE this, LIST , PRINT this, LIST , PRINTF this, LIST , READ this, LIST , READLINE this , GETC this , EOF this , CLOSE this , UNTIE this , DESTROY this

## UNTIE this

### The `untie` Gotcha

## SEE ALSO

## BUGS

## AUTHOR

# perldbmfilter - Perl DBM Filters

## SYNOPSIS

## DESCRIPTION

`filter_store_key`, `filter_store_value`, `filter_fetch_key`, `filter_fetch_value`

### The Filter

An Example: the NULL termination problem.

Another Example: Key is a C int.

## SEE ALSO

## AUTHOR

# perlipc - Perl interprocess communication (signals, fifos, pipes, safe subprocesses, sockets, and semaphores)

## DESCRIPTION

### Signals

#### Handling the SIGHUP Signal in Daemons

#### Deferred Signals (Safe Signals)

Long-running opcodes, Interrupting IO, Restartable system calls, Signals as "faults", Signals triggered by operating system state

### Named Pipes

### Using `open()` for IPC

#### Filehandles

#### Background Processes

**Complete Dissociation of Child from Parent**

**Safe Pipe Opens**

**Avoiding Pipe Deadlocks**

**Bidirectional Communication with Another Process**

**Bidirectional Communication with Yourself**

**Sockets: Client/Server Communication**

**Internet Line Terminators**

**Internet TCP Clients and Servers**

**Unix-Domain TCP Clients and Servers**

**TCP Clients with IO::Socket**

**A Simple Client**

`Proto, PeerAddr, PeerPort`

**A Webget Client**

**Interactive Client with IO::Socket**

**TCP Servers with IO::Socket**

`Proto, LocalPort, Listen, Reuse`

**UDP: Message Passing**

**SysV IPC**

**NOTES**

**BUGS**

**AUTHOR**

**SEE ALSO**

## **perlfork - Perl's fork() emulation**

**SYNOPSIS**

**DESCRIPTION**

**Behavior of other Perl features in forked pseudo-processes**

`$$` or `$PROCESS_ID`, `%ENV`, `chdir()` and all other builtins that accept filenames, `wait()` and `waitpid()`, `kill()`, `exec()`, `exit()`, Open handles to files, directories and network sockets

**Resource limits**

**Killing the parent process**

**Lifetime of the parent process and pseudo-processes**

**CAVEATS AND LIMITATIONS**

BEGIN blocks, Open filehandles, Open directory handles, Forking pipe `open()` not yet implemented, Global state maintained by XSUBs, Interpreter embedded in larger application, Thread-safety of extensions

**PORTABILITY CAVEATS**

**BUGS**

**AUTHOR**

**SEE ALSO**

## **perlnumber - semantics of numbers and numeric operations in Perl**

**SYNOPSIS**

**DESCRIPTION**

**Storing numbers**

**Numeric operators and numeric conversions**

**Flavors of Perl numeric operations**

Arithmetic operators, ++, Arithmetic operators during `use integer`, Other mathematical operators, Bitwise operators, Bitwise operators during `use integer`, Operators which expect an integer, Operators which expect a string

**AUTHOR**

**SEE ALSO**

## **perlthrtut - Tutorial on threads in Perl**

**DESCRIPTION**

**What Is A Thread Anyway?**

**Threaded Program Models**

**Boss/Worker**

**Work Crew**

**Pipeline**

**What kind of threads are Perl threads?**

**Thread-Safe Modules**

**Thread Basics**

**Basic Thread Support**

**A Note about the Examples**

**Creating Threads**

**Waiting For A Thread To Exit**

**Ignoring A Thread**

**Process and Thread Termination**

**Threads And Data**

**Shared And Unshared Data**

**Thread Pitfalls: Races**

**Synchronization and control**

**Controlling access: lock()**

**A Thread Pitfall: Deadlocks**

**Queues: Passing Data Around**

**Semaphores: Synchronizing Data Access**

**Basic semaphores**

**Advanced Semaphores**

**Waiting for a Condition**

**Giving up control**

**General Thread Utility Routines**

**What Thread Am I In?**

**Thread IDs**

**Are These Threads The Same?**

**What Threads Are Running?**

**A Complete Example**

**Different implementations of threads**

**Performance considerations**

**Process-scope Changes**

**Thread-Safety of System Libraries**

**Conclusion**

**SEE ALSO**

**Bibliography**

**Introductory Texts**

**OS-Related References**

**Other References**

**Acknowledgements**

**AUTHOR**

**Copyrights**

## **perlport - Writing portable Perl**

### **DESCRIPTION**

Not all Perl programs have to be portable, Nearly all of Perl already *is* portable

### **ISSUES**

**Newlines**

**Numbers endianness and Width**

**Files and Filesystems**

**System Interaction**

**Command names versus file pathnames**

**Networking**



**Interprocess Communication (IPC)**

**External Subroutines (XS)**

**Standard Modules**

**Time and Date**

**Character sets and character encoding**

**Internationalisation**

**System Resources**

**Security**

**Style**

**CPAN Testers**

**PLATFORMS**

**Unix**

**DOS and Derivatives**

**VMS**

**VOS**

**EBCDIC Platforms**

**Acorn RISC OS**

**Other perls**

**FUNCTION IMPLEMENTATIONS**

**Alphabetical Listing of Perl Functions**

-X, alarm, atan2, binmode, chmod, chown, chroot, crypt, dbmclose, dbmopen, dump, exec, exit, fcntl, flock, fork, getlogin, getpgrp, getppid, getpriority, getpwnam, getgrnam, getnetbyname, getpwuid, getgrgid, getnetbyaddr, getprotobynumber, getpwent, getgrent, gethostbyname, gethostent, getnetent, getprotoent, getservent, seekdir, sethostent, setnetent, setprotoent, setservent, endpwent, endgrent, endhostent, endnetent, endprotoent, endservent, getsockopt, glob, gmtime, ioctl, kill, link, localtime, lstat, msgctl, msgget, msgsnd, msgrcv, open, readlink, rename, rewinddir, select, semctl, semget, semop, setgrent, setpgrp, setpriority, setpwent, setsockopt, shmctl, shmget, shmread, shmwrite, sleep, socketpair, stat, symlink, syscall, sysopen, system, telldir, times, truncate, umask, utime, wait, waitpid

**Supported Platforms**

Linux (x86, ARM, IA64), HP-UX, AIX, Win32, Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7, Cygwin, Solaris (x86, SPARC), OpenVMS, Alpha (7.2 and later), I64 (8.2 and later), Symbian, NetBSD, FreeBSD, Debian GNU/kFreeBSD, Haiku, Irix (6.5. What else?), OpenBSD, Dragonfly BSD, Midnight BSD, QNX Neutrino RTOS (6.5.0), MirOS BSD, Stratus OpenVOS (17.0 or later), time\_t issues that may or may not be fixed, Symbian (Series 60 v3, 3.2 and 5 - what else?), Stratus VOS / OpenVOS, AIX, Android, FreeMINT

**EOL Platforms**

**(Perl 5.20)**

AT&T 3b1

**(Perl 5.14)**

Windows 95, Windows 98, Windows ME, Windows NT4

**(Perl 5.12)**

## Supported Platforms (Perl 5.8)

## SEE ALSO

## AUTHORS / CONTRIBUTORS

# perllocale - Perl locale handling (internationalization and localization)

## DESCRIPTION

## WHAT IS A LOCALE

Category `LC_NUMERIC`: Numeric formatting, Category `LC_MONETARY`: Formatting of monetary amounts, Category `LC_TIME`: Date/Time formatting, Category `LC_MESSAGES`: Error and other messages, Category `LC_COLLATE`: Collation, Category `LC_CTYPE`: Character Types, Other categories

## PREPARING TO USE LOCALES

## USING LOCALES

The `"use locale"` pragma

Not within the scope of `"use locale"`, Lingering effects of `use locale`, Under `"use locale"`;

The `setlocale` function

Multi-threaded operation

Finding locales

## LOCALE PROBLEMS

Testing for broken locales

Temporarily fixing locale problems

Permanently fixing locale problems

Permanently fixing your system's locale configuration

Fixing system locale configuration

The `localeconv` function

`l18N::Langinfo`

## LOCALE CATEGORIES

Category `LC_COLLATE`: Collation: Text Comparisons and Sorting

Category `LC_CTYPE`: Character Types

Category `LC_NUMERIC`: Numeric Formatting

Category `LC_MONETARY`: Formatting of monetary amounts

Category `LC_TIME`: Representation of time

Other categories

## SECURITY

## ENVIRONMENT

`PERL_SKIP_LOCALE_INIT`,  
`PERL_BADLANG`, `LC_ALL`, `LANGUAGE`, `LC_CTYPE`, `LC_COLLATE`, `LC_MONETARY`, `LC_NUMERIC`, `LC_TIME`, `LANG`

**Examples**

## **NOTES**

**String** `eval` and `LC_NUMERIC`

**Backward compatibility**

**I18N:Collate obsolete**

**Sort speed and memory use impacts**

**Freely available locale definitions**

**I18n and I10n**

**An imperfect standard**

**Unicode and UTF-8**

## **BUGS**

**Collation of strings containing embedded `NUL` characters**

**Multi-threaded**

**Broken systems**

## **SEE ALSO**

## **HISTORY**

# **perluniintro - Perl Unicode introduction**

## **DESCRIPTION**

**Unicode**

**Perl's Unicode Support**

**Perl's Unicode Model**

**Unicode and EBCDIC**

**Creating Unicode**

**Handling Unicode**

**Legacy Encodings**

**Unicode I/O**

**Displaying Unicode As Text**

**Special Cases**

**Advanced Topics**

**Miscellaneous**

**Questions With Answers**

**Hexadecimal Notation**

**Further Resources**

## **UNICODE IN OLDER PERLS**

## **SEE ALSO**

## ACKNOWLEDGMENTS

## AUTHOR, COPYRIGHT, AND LICENSE

# perlunicode - Unicode support in Perl

## DESCRIPTION

### Important Caveats

Safest if you use feature 'unicode\_strings', Input and Output Layers, You must convert your non-ASCII, non-UTF-8 Perl scripts to be UTF-8, use utf8 still needed to enable UTF-8 in scripts, UTF-16 scripts autodetected

### Byte and Character Semantics

### ASCII Rules versus Unicode Rules

When the string has been upgraded to UTF-8, There are additional methods for regular expression patterns

### Extended Grapheme Clusters (Logical characters)

### Unicode Character Properties

```
\p{All}, \p{Alnum}, \p{Any}, \p{ASCII}, \p{Assigned}, \p{Blank}, \p{Decomposition_Type:
Non_Canonical} (Short: \p{Dt=NonCanon}), \p{Graph}, \p{HorizSpace}, \p{In=*}, \p{PerlSpace}, \
p{PerlWord}, \p{Posix...}, \p{Present_In:
*} (Short: \p{In=*}), \p{Print}, \p{SpacePerl}, \p{Title} and \p{Titlecase}, \p{Unicode}, \
p{VertSpace}, \p{Word}, \p{XPosix...}
```

### Comparison of \N{...} and \p{name=...}

[1], [2], [3], [4], [5]

### Wildcards in Property Values

### User-Defined Character Properties

### User-Defined Case Mappings (for serious hackers only)

### Character Encodings for Input and Output

### Unicode Regular Expression Support Level

[1] \N{U+...} and \x{...}, [2] \p{...} \P{...}. This requirement is for a minimal list of properties. Perl supports these. See R2.7 for other properties, [3] Perl has \d \D \s \S \w \W \X [:prop:] [:^(prop:)], plus all the properties specified by [https://www.unicode.org/reports/tr18/#Compatibility\\_Properties](https://www.unicode.org/reports/tr18/#Compatibility_Properties). These are described above in "Other Properties", [4], Regular expression lookahead, [5] \b \B meet most, but not all, the details of this requirement, but \b{wb} and \B{wb} do, as well as the stricter R2.3, [6], [7], [8] UTF-8/UTF-EBDDIC used in Perl allows not only U+10000 to U+10FFFF but also beyond U+10FFFF, [9] Unicode has rewritten this portion of UTS#18 to say that getting canonical equivalence (see UAX#15 "Unicode Normalization Forms") is basically to be done at the programmer level. Use NFD to write both your regular expressions and text to match them against (you can use Unicode::Normalize), [10] Perl has \x and \b{gcb}. Unicode has retracted their "Grapheme Cluster Mode", and recently added string properties, which Perl does not yet support, [11] see UAX#29 "Unicode Text Segmentation", [12] see "Wildcards in Property Values" above, [13] Perl supports all the properties in the Unicode Character Database (UCD). It does not yet support the listed properties that come from other Unicode sources, [14] The only optional property that Perl supports is Named Sequence. None of these properties are in the UCD

### Unicode Encodings

### Noncharacter code points

### Beyond Unicode code points

**Security Implications of Unicode**

**Unicode in Perl on EBCDIC**

**Locales**

**When Unicode Does Not Happen**

**The "Unicode Bug"**

**Forcing Unicode in Perl (Or Unforcing Unicode in Perl)**

**Using Unicode in XS**

**Hacking Perl to work on earlier Unicode versions (for very serious hackers only)**

**Porting code from perl-5.6.X**

## **BUGS**

**Interaction with Extensions**

**Speed**

## **SEE ALSO**

# **perlunicook - cookbookish examples of handling Unicode in Perl**

## **DESCRIPTION**

## **EXAMPLES**

**R 0: Standard preamble**

**R 1: Generic Unicode-savvy filter**

**R 2: Fine-tuning Unicode warnings**

**R 3: Declare source in utf8 for identifiers and literals**

**R 4: Characters and their numbers**

**R 5: Unicode literals by character number**

**R 6: Get character name by number**

**R 7: Get character number by name**

**R 8: Unicode named characters**

**R 9: Unicode named sequences**

**R 10: Custom named characters**

**R 11: Names of CJK codepoints**

**R 12: Explicit encode/decode**

**R 13: Decode program arguments as utf8**

**R 14: Decode program arguments as locale encoding**

**R 15: Declare STD{IN,OUT,ERR} to be utf8**

**R 16: Declare STD{IN,OUT,ERR} to be in locale encoding**

**R 17: Make file I/O default to utf8**

- R 18: Make all I/O and args default to utf8**
- R 19: Open file with specific encoding**
- R 20: Unicode casing**
- R 21: Unicode case-insensitive comparisons**
- R 22: Match Unicode linebreak sequence in regex**
- R 23: Get character category**
- R 24: Disabling Unicode-awareness in builtin charclasses**
- R 25: Match Unicode properties in regex with \p, \P**
- R 26: Custom character properties**
- R 27: Unicode normalization**
- R 28: Convert non-ASCII Unicode numerics**
- R 29: Match Unicode grapheme cluster in regex**
- R 30: Extract by grapheme instead of by codepoint (regex)**
- R 31: Extract by grapheme instead of by codepoint (substr)**
- R 32: Reverse string by grapheme**
- R 33: String length in graphemes**
- R 34: Unicode column-width for printing**
- R 35: Unicode collation**
- R 36: Case- *and* accent-insensitive Unicode sort**
- R 37: Unicode locale collation**
- R 38: Making `cmp` work on text instead of codepoints**
- R 39: Case- *and* accent-insensitive comparisons**
- R 40: Case- *and* accent-insensitive locale comparisons**
- R 41: Unicode linebreaking**
- R 42: Unicode text in DBM hashes, the tedious way**
- R 43: Unicode text in DBM hashes, the easy way**
- R 44: PROGRAM: Demo of Unicode collation and printing**

## **SEE ALSO**

§3.13 Default Case Algorithms, page 113; §4.2 Case, pages 120–122; Case Mappings, page 166–172, especially Caseless Matching starting on page 170, UAX #44: Unicode Character Database, UTS #18: Unicode Regular Expressions, UAX #15: Unicode Normalization Forms, UTS #10: Unicode Collation Algorithm, UAX #29: Unicode Text Segmentation, UAX #14: Unicode Line Breaking Algorithm, UAX #11: East Asian Width

## **AUTHOR**

## **COPYRIGHT AND LICENCE**

## **REVISION HISTORY**

# perlunifaq - Perl Unicode FAQ

## Q and A

perlunitut isn't really a Unicode tutorial, is it?

What character encodings does Perl support?

Which version of perl should I use?

What about binary data, like images?

When should I decode or encode?

What if I don't decode?

What if I don't encode?

Is there a way to automatically decode or encode?

What if I don't know which encoding was used?

Can I use Unicode in my Perl sources?

Data::Dumper doesn't restore the UTF8 flag; is it broken?

Why do regex character classes sometimes match only in the ASCII range?

Why do some characters not uppercase or lowercase correctly?

How can I determine if a string is a text string or a binary string?

How do I convert from encoding FOO to encoding BAR?

What are `decode_utf8` and `encode_utf8`?

What is a "wide character"?

## INTERNALS

What is "the UTF8 flag"?

What about the `use bytes pragma`?

What about the `use encoding pragma`?

What is the difference between `:encoding` and `:utf8`?

What's the difference between `UTF-8` and `utf8`?

I lost track; what encoding is the internal format really?

## AUTHOR

## SEE ALSO

# perluniprops - Index of Unicode Version 13.0.0 character properties in Perl

## DESCRIPTION

Properties accessible through `\p{}` and `\P{}`

Single form (`\p{name}`) tighter rules:, white space adjacent to a non-word character, underscores separating digits in numbers, Compound form (`\p{name=value}` or `\p{name:value}`) tighter rules:, Stabilized, Deprecated, Obsolete, Discouraged, \* is a wild-card, (ld+) in the info column gives the number

of Unicode code points matched by this property, **D** means this is deprecated, **O** means this is obsolete, **S** means this is stabilized, **T** means tighter (stricter) name matching applies, **X** means use of this form is discouraged, and may not be stable

## Legal `\p{}` and `\P{}` constructs that match no characters

\p{Canonical\_Combining\_Class=Attached\_Below\_Left}, \p{Canonical\_Combining\_Class=CCC133},  
 \p{Grapheme\_Cluster\_Break=E\_Base}, \p{Grapheme\_Cluster\_Break=E\_Base\_GAZ},  
 \p{Grapheme\_Cluster\_Break=E\_Modifier}, \p{Grapheme\_Cluster\_Break=Glue\_After\_Zwj},  
 \p{Word\_Break=E\_Base}, \p{Word\_Break=E\_Base\_GAZ}, \p{Word\_Break=E\_Modifier},  
 \p{Word\_Break=Glue\_After\_Zwj}

## Properties accessible through Unicode::UCD

### Properties accessible through other means

## Unicode character properties that are NOT accepted by Perl

*Expands\_On\_NFC* (XO\_NFC), *Expands\_On\_NFD* (XO\_NFD), *Expands\_On\_NFKC* (XO\_NFKC), *Expands\_*(

## Other information in the Unicode data base

*auxiliary/GraphemeBreakTest.html, auxiliary/LineBreakTest.html, auxiliary/SentenceBreakTest.html, auxiliary.*

## SEE ALSO

## perlunitut - Perl Unicode Tutorial

## DESCRIPTION

## Definitions

## Your new toolkit

## I/O flow (the actual 5 minute tutorial)

## SUMMARY

## Q and A (or FAQ)

## ACKNOWLEDGEMENTS

**AUTHOR**

## SEE ALSO

## perlebcdic - Considerations for running Perl on EBCDIC platforms

### DESCRIPTION

## COMMON CHARACTER CODE SETS

## ASCII

**ISO 8859**

### Latin 1 (ISO 8859-1)

## EBCDIC

0037. 1047. POSIX-BC

## Unicode code points versus EBCDIC code points

## Unicode and UTF

## Using Encode



## SINGLE OCTET TABLES

recipe 0, recipe 1, recipe 2, recipe 3, recipe 4, recipe 5, recipe 6

Table in hex, sorted in 1047 order

## IDENTIFYING CHARACTER CODE SETS

### CONVERSIONS

`utf8::unicode_to_native()` and `utf8::native_to_unicode()`

`tr///`

`iconv`

C RTL

### OPERATOR DIFFERENCES

### FUNCTION DIFFERENCES

`chr()`, `ord()`, `pack()`, `print()`, `printf()`, `sort()`, `sprintf()`, `unpack()`

### REGULAR EXPRESSION DIFFERENCES

### SOCKETS

### SORTING

Ignore ASCII vs. EBCDIC sort differences.

Use a sort helper function

MONO CASE then sort data (for non-digits, non-underscore)

Perform sorting on one type of platform only.

### TRANSFORMATION FORMATS

URL decoding and encoding

uu encoding and decoding

Quoted-Printable encoding and decoding

Caesarean ciphers

Hashing order and checksums

### I18N AND L10N

### MULTI-OCTET CHARACTER SETS

### OS ISSUES

OS/400

PASE, IFS access

OS/390, z/OS

`sigaction`, `chcp`, dataset access, `iconv`, locales

POSIX-BC?

### BUGS

### SEE ALSO

**REFERENCES**

**HISTORY**

**AUTHOR**

## **perlsec - Perl security**

**DESCRIPTION**

**SECURITY VULNERABILITY CONTACT INFORMATION**

**SECURITY MECHANISMS AND CONCERNS**

**Taint mode**

**Laundering and Detecting Tainted Data**

**Switches On the "#!" Line**

**Taint mode and @INC**

**Cleaning Up Your Path**

**Shebang Race Condition**

**Protecting Your Programs**

**Unicode**

**Algorithmic Complexity Attacks**

Hash Seed Randomization, Hash Traversal Randomization, Bucket Order Perturbance, New Default Hash Function, Alternative Hash Functions

**Using Sudo**

**SEE ALSO**

## **perlmod - Perl modules (packages and symbol tables)**

**DESCRIPTION**

**Is this the document you were after?**

This doc, [perlnewmod](#), [perlmodstyle](#)

**Packages**

**Symbol Tables**

**BEGIN, UNITCHECK, CHECK, INIT and END**

**Perl Classes**

**Perl Modules**

**Making your module threadsafe**

**SEE ALSO**

## **perlmodlib - constructing new Perl modules and finding existing ones**

**THE PERL MODULE LIBRARY**

**Pragmatic Modules**

attributes, autodie, autodie::exception, autodie::exception::system, autodie::hints, autodie::skip, autouse, base, bigint, bignum, bigrat, blib, bytes, charnames, constant, deprecate, diagnostics, encoding, encoding::warnings, experimental, feature, fields, filetest, if, integer, less, lib, locale, mro, ok, open, ops, overload, overloading, parent, re, sigtrap, sort, strict, subs, threads, threads::shared, utf8, vars, version, vmsish, warnings, warnings::register

## Standard Modules

Amiga::ARexx, Amiga::Exec, AnyDBM\_File, App::Cpan, App::Prove, App::Prove::State, App::Prove::State::Result, App::Prove::State::Result::Test, Archive::Tar, Archive::Tar::File, Attribute::Handlers, AutoLoader, AutoSplit, B, B::Concise, B::Deparse, B::Op\_private, B::Showlex, B::Terse, B::Xref, Benchmark, IO::Socket::IP, IO::Socket, CORE, CPAN, CPAN::API::HOWTO, CPAN::Debug, CPAN::Distroprefs, CPAN::FirstTime, CPAN::HandleConfig, CPAN::Kwalify, CPAN::Meta, CPAN::Meta::Converter, CPAN::Meta::Feature, CPAN::Meta::History, CPAN::Meta::History::Meta\_1\_0, CPAN::Meta::History::Meta\_1\_1, CPAN::Meta::History::Meta\_1\_2, CPAN::Meta::History::Meta\_1\_3, CPAN::Meta::History::Meta\_1\_4, CPAN::Meta::Merge, CPAN::Meta::Prereqs, CPAN::Meta::Requirements, CPAN::Meta::Spec, CPAN::Meta::Validator, CPAN::Meta::YAML, CPAN::Nox, CPAN::Plugin, CPAN::Plugin::Specfile, CPAN::Queue, CPAN::Tarzip, CPAN::Version, Carp, Class::Struct, Compress::Raw::Bzip2, Compress::Raw::Zlib, Compress::Zlib, Config, Config::Extensions, Config::Perl::V, Cwd, DB, DBM\_Filter, DBM\_Filter::compress, DBM\_Filter::encode, DBM\_Filter::int32, DBM\_Filter::null, DBM\_Filter::utf8, DB\_File, Data::Dumper, Devel::PPPort, Devel::Peek, Devel::SelfStubber, Digest, Digest::MD5, Digest::SHA, Digest::base, Digest::file, DirHandle, Dumpvalue, DynaLoader, Encode, Encode::Alias, Encode::Byte, Encode::CJKConstants, Encode::CN, Encode::CN::HZ, Encode::Config, Encode::EBCDIC, Encode::Encoder, Encode::Encoding, Encode::GSM0338, Encode::Guess, Encode::JP, Encode::JP::H2Z, Encode::JP::JIS7, Encode::KR, Encode::KR::2022\_KR, Encode::MIME::Header, Encode::MIME::Name, Encode::PerlIO, Encode::Supported, Encode::Symbol, Encode::TW, Encode::Unicode, Encode::Unicode::UTF7, English, Env, Erno, Exporter, Exporter::Heavy, ExtUtils::CBuilder, ExtUtils::CBuilder::Platform::Windows, ExtUtils::Command, ExtUtils::Command::MM, ExtUtils::Constant, ExtUtils::Constant::Base, ExtUtils::Constant::Utils, ExtUtils::Constant::XS, ExtUtils::Embed, ExtUtils::Install, ExtUtils::Installed, ExtUtils::Liblist, ExtUtils::MM, ExtUtils::MM\_AIX, ExtUtils::MM\_Any, ExtUtils::MM\_BeOS, ExtUtils::MM\_Cygwin, ExtUtils::MM\_DOS, ExtUtils::MM\_Darwin, ExtUtils::MM\_MacOS, ExtUtils::MM\_NW5, ExtUtils::MM\_OS2, ExtUtils::MM\_QNX, ExtUtils::MM\_UWIN, ExtUtils::MM\_Unix, ExtUtils::MM\_VMS, ExtUtils::MM\_VOS, ExtUtils::MM\_Win32, ExtUtils::MM\_Win95, ExtUtils::MY, ExtUtils::MakeMaker, ExtUtils::MakeMaker::Config, ExtUtils::MakeMaker::FAQ, ExtUtils::MakeMaker::Locale, ExtUtils::MakeMaker::Tutorial, ExtUtils::Manifest, ExtUtils::Miniperl, ExtUtils::Mkbootstrap, ExtUtils::Mksymlists, ExtUtils::Packlist, ExtUtils::ParseXS, ExtUtils::ParseXS::Constants, ExtUtils::ParseXS::Eval, ExtUtils::ParseXS::Utilities, ExtUtils::Typemaps, ExtUtils::Typemaps::Cmd, ExtUtils::Typemaps::InputMap, ExtUtils::Typemaps::OutputMap, ExtUtils::Typemaps::Type, ExtUtils::XSSymSet, ExtUtils::testlib, Fatal, Fcntl, File::Basename, File::Compare, File::Copy, File::DosGlob, File::Fetch, File::Find, File::Glob, File::GlobMapper, File::Path, File::Spec, File::Spec::AmigaOS, File::Spec::Cygwin, File::Spec::EpoC, File::Spec::Functions, File::Spec::Mac, File::Spec::OS2, File::Spec::Unix, File::Spec::VMS, File::Spec::Win32, File::Temp, File::stat, FileCache, FileHandle, Filter::Simple, Filter::Util::Call, FindBin, GDBM\_File, Getopt::Long, Getopt::Std, HTTP::Tiny, Hash::Util, Hash::Util::FieldHash, I18N::Collate, I18N::LangTags, I18N::LangTags::Detect, I18N::LangTags::List, I18N::Langinfo, IO, IO::Compress::Base, IO::Compress::Bzip2, IO::Compress::Deflate, IO::Compress::FAQ, IO::Compress::Gzip, IO::Compress::RawDeflate, IO::Compress::Zip, IO::Dir, IO::File, IO::Handle, IO::Pipe, IO::Poll, IO::Seekable, IO::Select, IO::Socket, IO::Socket::INET, IO::Socket::UNIX, IO::Uncompress::AnyInflate, IO::Uncompress::AnyUncompress, IO::Uncompress::Base, IO::Uncompress::Bunzip2, IO::Uncompress::Gunzip, IO::Uncompress::Inflate, IO::Uncompress::RawInflate, IO::Uncompress::Unzip, IO::Zlib, IPC::Cmd, IPC::Msg, IPC::Open2, IPC::Open3, IPC::Semaphore, IPC::SharedMem, IPC::SysV, Internals, JSON::PP, JSON::PP::Boolean, List::Util, List::Util::XS, Locale::Maketext, Locale::Maketext::Cookbook, Locale::Maketext::Guts, Locale::Maketext::GutsLoader, Locale::Maketext::Simple, Locale::Maketext::TPJ13, MIME::Base64, MIME::QuotedPrint, Math::BigFloat, Math::BigInt, Math::BigInt::Calc, Math::BigInt::FastCalc, Math::BigInt::Lib, Math::BigRat, Math::Complex, Math::Trig, Memoize, Memoize::AnyDBM\_File, Memoize::Expire, Memoize::ExpireFile, Memoize::ExpireTest, Memoize::NDBM\_File, Memoize::SDBM\_File, Memoize::Storable, Module::CoreList, Module::CoreList::Utils, Module::Load, Module::Load::Conditional, Module::Loaded, Module::Metadata, NDBM\_File, NEXT, Net::Cmd, Net::Config, Net::Domain, Net::FTP, Net::FTP::dataconn, Net::NTTP, Net::Netrc, Net::POP3, Net::Ping, Net::SMTP, Net::Time, Net::hostent, Net::libnetFAQ, Net::netent, Net::protoent, Net::servent, O, ODBM\_File, Opcode, POSIX, Params::Check, Parse::CPAN::Meta, Perl::OSType, PerlIO, PerlIO::encoding, PerlIO::mmap, PerlIO::scalar, PerlIO::via, PerlIO::via::QuotedPrint, Pod::Checker, Pod::Escapes, Pod::Functions, Pod::Html, Pod::Man, Pod::ParseLink, Pod::Perldoc, Pod::Perldoc::BaseTo, Pod::Perldoc::GetOptsOO, Pod::Perldoc::ToANSI, Pod::Perldoc::ToChecker,

Pod::Perldoc::ToMan, Pod::Perldoc::ToNroff, Pod::Perldoc::ToPod, Pod::Perldoc::ToRtf,  
 Pod::Perldoc::ToTerm, Pod::Perldoc::ToText, Pod::Perldoc::ToTk, Pod::Perldoc::ToXml, Pod::Simple,  
 Pod::Simple::Checker, Pod::Simple::Debug, Pod::Simple::DumpAsText, Pod::Simple::DumpAsXML,  
 Pod::Simple::HTML, Pod::Simple::HTMLBatch, Pod::Simple::JustPod, Pod::Simple::LinkSection,  
 Pod::Simple::Methody, Pod::Simple::PullParser, Pod::Simple::PullParserEndToken,  
 Pod::Simple::PullParserStartToken, Pod::Simple::PullParserTextToken, Pod::Simple::PullParserToken,  
 Pod::Simple::RTF, Pod::Simple::Search, Pod::Simple::SimpleTree, Pod::Simple::Subclassing,  
 Pod::Simple::Text, Pod::Simple::TextContent, Pod::Simple::XHTML, Pod::Simple::XMLOutputStream,  
 Pod::Text, Pod::Text::Color, Pod::Text::Overstrike, Pod::Text::Termcap, Pod::Usage, SDBM\_File, Safe,  
 Scalar::Util, Search::Dict, SelectSaver, SelfLoader, Storable, Sub::Util, Symbol, Sys::Hostname,  
 Sys::Syslog, Sys::Syslog::Win32, TAP::Base, TAP::Formatter::Base, TAP::Formatter::Color,  
 TAP::Formatter::Console, TAP::Formatter::Console::ParallelSession,  
 TAP::Formatter::Console::Session, TAP::Formatter::File, TAP::Formatter::File::Session,  
 TAP::Formatter::Session, TAP::Harness, TAP::Harness::Env, TAP::Object, TAP::Parser,  
 TAP::Parser::Aggregator, TAP::Parser::Grammar, TAP::Parser::Iterator, TAP::Parser::Iterator::Array,  
 TAP::Parser::Iterator::Process, TAP::Parser::Iterator::Stream, TAP::Parser::IteratorFactory,  
 TAP::Parser::Multiplexer, TAP::Parser::Result, TAP::Parser::Result::Bailout,  
 TAP::Parser::Result::Comment, TAP::Parser::Result::Plan, TAP::Parser::Result::Pragma,  
 TAP::Parser::Result::Dist, TAP::Parser::Result::Unknown, TAP::Parser::Result::Version,  
 TAP::Parser::Result::YAML, TAP::Parser::ResultFactory, TAP::Parser::Scheduler,  
 TAP::Parser::Scheduler::Job, TAP::Parser::Scheduler::Spinner, TAP::Parser::Source,  
 TAP::Parser::SourceHandler, TAP::Parser::SourceHandler::Executable,  
 TAP::Parser::SourceHandler::File, TAP::Parser::SourceHandler::Handle,  
 TAP::Parser::SourceHandler::Perl, TAP::Parser::SourceHandler::RawTAP,  
 TAP::Parser::YAMLish::Reader, TAP::Parser::YAMLish::Writer, Term::ANSIColor, Term::Cap,  
 Term::Complete, Term::ReadLine, Test, Test2, Test2::API, Test2::API::Breakage, Test2::API::Context,  
 Test2::API::Instance, Test2::API::Stack, Test2::Event, Test2::Event::Bail, Test2::Event::Diag,  
 Test2::Event::Encoding, Test2::Event::Exception, Test2::Event::Fail, Test2::Event::Generic,  
 Test2::Event::Note, Test2::Event::Ok, Test2::Event::Pass, Test2::Event::Plan, Test2::Event::Skip,  
 Test2::Event::Subtest, Test2::Event::TAP::Version, Test2::Event::V2, Test2::Event::Waiting,  
 Test2::EventFacet, Test2::EventFacet::About, Test2::EventFacet::Amnesty, Test2::EventFacet::Assert,  
 Test2::EventFacet::Control, Test2::EventFacet::Error, Test2::EventFacet::Hub, Test2::EventFacet::Info,  
 Test2::EventFacet::Info::Table, Test2::EventFacet::Meta, Test2::EventFacet::Parent,  
 Test2::EventFacet::Plan, Test2::EventFacet::Render, Test2::EventFacet::Trace, Test2::Formatter,  
 Test2::Formatter::TAP, Test2::Hub, Test2::Hub::Interceptor, Test2::Hub::Interceptor::Terminator,  
 Test2::Hub::Subtest, Test2::IPC, Test2::IPC::Driver, Test2::IPC::Driver::Files, Test2::Tools::Tiny,  
 Test2::Transition, Test2::Util, Test2::Util::ExternalMeta, Test2::Util::Facets2Legacy,  
 Test2::Util::HashBase, Test2::Util::Trace, Test::Builder, Test::Builder::Formatter,  
 Test::Builder::IO::Scalar, Test::Builder::Module, Test::Builder::Tester, Test::Builder::Tester::Color,  
 Test::Builder::TodoDiag, Test::Harness, Test::Harness::Beyond, Test::More, Test::Simple, Test::Tester,  
 Test::Capture, Test::Tester::CaptureRunner, Test::Tutorial, Test::use::ok, Text::Abbrev,  
 Text::Balanced, Text::ParseWords, Text::Tabs, Text::Wrap, Thread, Thread::Queue,  
 Thread::Semaphore, Tie::Array, Tie::File, Tie::Handle, Tie::Hash, Tie::Hash::NamedCapture,  
 Tie::Memoize, Tie::RefHash, Tie::Scalar, Tie::StdHandle, Tie::SubstrHash, Time::HiRes, Time::Local,  
 Time::Piece, Time::Seconds, Time::gmtime, Time::localtime, Time::tm, UNIVERSAL, Unicode::Collate,  
 Unicode::Collate::CJK::Big5, Unicode::Collate::CJK::GB2312, Unicode::Collate::CJK::JISX0208,  
 Unicode::Collate::CJK::Korean, Unicode::Collate::CJK::Pinyin, Unicode::Collate::CJK::Stroke,  
 Unicode::Collate::CJK::Zhuyin, Unicode::Collate::Locale, Unicode::Normalize, Unicode::UCD,  
 User::grent, User::pwent, VMS::DCLsym, VMS::Filespec, VMS::Stdio, Win32, Win32API::File,  
 Win32CORE, XS::APitest, XS::Typeemap, XSLoader, autodie::Scope::Guard,  
 autodie::Scope::GuardStack, autodie::Util, version::Internals

## Extension Modules

### CPAN

#### Africa

South Africa, Uganda, Zimbabwe

#### Asia

Bangladesh, China, India, Indonesia, Iran, Israel, Japan, Kazakhstan, Philippines, Qatar, Republic of Korea, Singapore, Taiwan, Turkey, Viet Nam

#### Europe

Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom

## **North America**

Canada, Costa Rica, Mexico, United States, Alabama, Arizona, California, Idaho, Illinois, Indiana, Kansas, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Texas, Utah, Virginia, Washington, Wisconsin

## **Oceania**

Australia, New Caledonia, New Zealand

## **South America**

Argentina, Brazil, Chile

## **RSYNC Mirrors**

### **Modules: Creation, Use, and Abuse**

#### **Guidelines for Module Creation**

#### **Guidelines for Converting Perl 4 Library Scripts into Modules**

#### **Guidelines for Reusing Application Code**

### **NOTE**

# **perlmodstyle - Perl module style guide**

## **INTRODUCTION**

### **QUICK CHECKLIST**

**Before you start**

**The API**

**Stability**

**Documentation**

**Release considerations**

### **BEFORE YOU START WRITING A MODULE**

**Has it been done before?**

**Do one thing and do it well**

**What's in a name?**

**Get feedback before publishing**

### **DESIGNING AND WRITING YOUR MODULE**

**To OO or not to OO?**

**Designing your API**

Write simple routines to do simple things, Separate functionality from output, Provide sensible shortcuts and defaults, Naming conventions, Parameter passing

**Strictness and warnings**

**Backwards compatibility**

Error handling and messages

## DOCUMENTING YOUR MODULE

POD

**README, INSTALL, release notes, changelogs**

perl Makefile.PL, make, make test, make install, perl Build.PL, perl Build, perl Build test, perl Build install

## RELEASE CONSIDERATIONS

Version numbering

Pre-requisites

Testing

Packaging

Licensing

## COMMON PITFALLS

Reinventing the wheel

Trying to do too much

Inappropriate documentation

## SEE ALSO

[perlstyle](#), [perlnewmod](#), [perlpod](#), [podchecker](#), Packaging Tools, Testing tools, <https://pause.perl.org/>, Any good book on software engineering

## AUTHOR

# perlmodinstall - Installing CPAN Modules

## DESCRIPTION

### PREAMBLE

**DECOMPRESS** the file, **UNPACK** the file into a directory, **BUILD** the module (sometimes unnecessary), **INSTALL** the module

## PORTABILITY

HEY

AUTHOR

COPYRIGHT

# perlnewmod - preparing a new module for distribution

## DESCRIPTION

Warning

What should I make into a module?

**Step-by-step: Preparing the ground**

Look around, Check it's new, Discuss the need, Choose a name, Check again

### Step-by-step: Making the module

Start with *module-starter* or *h2xs*, Use [strict](#) and [warnings](#), Use [Carp](#), Use [Exporter](#) - wisely!, Use [plain old documentation](#), Write tests, Write the *README*, Write *Changes*

### Step-by-step: Distributing your module

Get a CPAN user ID, `perl Makefile.PL; make test; make distcheck; make dist`, Upload the tarball, Fix bugs!

#### AUTHOR

#### SEE ALSO

## perlpragma - how to write a user pragma

#### DESCRIPTION

##### A basic example

##### Key naming

##### Implementation details

## perlutil - utilities packaged with the Perl distribution

#### DESCRIPTION

#### LIST OF UTILITIES

##### Documentation

[perldoc](#), [pod2man](#) and [pod2text](#), [pod2html](#), [pod2usage](#), [podchecker](#), [splain](#), [roffitall](#)

##### Converters

##### Administration

[libnetcfg](#), [perlvp](#)

##### Development

[perlbug](#), [perlthanks](#), [h2ph](#), [h2xs](#), [enc2xs](#), [xsubpp](#), [prove](#), [corelist](#)

##### General tools

[piconv](#), [ptar](#), [ptardiff](#), [ptargrep](#), [shasum](#), [zipdetails](#)

##### Installation

[cpan](#), [instmodsh](#)

#### SEE ALSO

## perlfilter - Source Filters

#### DESCRIPTION

#### CONCEPTS

#### USING FILTERS

#### WRITING A SOURCE FILTER

#### WRITING A SOURCE FILTER IN C

## Decryption Filters

### CREATING A SOURCE FILTER AS A SEPARATE EXECUTABLE

### WRITING A SOURCE FILTER IN PERL

### USING CONTEXT: THE DEBUG FILTER

### CONCLUSION

### LIMITATIONS

### THINGS TO LOOK OUT FOR

Some Filters Clobber the `DATA` Handle

### REQUIREMENTS

### AUTHOR

### Copyrights

## perlDTrace - Perl's support for DTrace

### SYNOPSIS

### DESCRIPTION

### HISTORY

### PROBES

sub-entry(SUBNAME, FILE, LINE, PACKAGE), sub-return(SUBNAME, FILE, LINE, PACKAGE), phase-change(NEUPHASE, OLDPHASE), op-entry(OPNAME), loading-file(FILENAME), loaded-file(FILENAME)

### EXAMPLES

Most frequently called functions, Trace function calls, Function calls during interpreter cleanup, System calls at compile time, Perl functions that execute the most opcodes

### REFERENCES

DTrace Dynamic Tracing Guide, DTrace: Dynamic Tracing in Oracle Solaris, Mac OS X and FreeBSD

### SEE ALSO

[Devel::DTrace::Provider](#)

### AUTHORS

## perlglossary - Perl Glossary

### VERSION

### DESCRIPTION

#### A

accessor methods, actual arguments, address operator, algorithm, alias, alphabetic, alternatives, anonymous, application, architecture, argument, ARGV, arithmetical operator, array, array context, Artistic License, ASCII, assertion, assignment, assignment operator, associative array, associativity, asynchronous, atom, atomic operation, attribute, autogeneration, autoincrement, autoloader, autosplit, autovivification, AV, awk

#### B



backreference, backtracking, backward compatibility, bareword, base class, big-endian, binary, binary operator, bind, bit, bit shift, bit string, bless, block, BLOCK, block buffering, Boolean, Boolean context, breakpoint, broadcast, BSD, bucket, buffer, built-in, bundle, byte, bytecode

## C

C, cache, callback, call by reference, call by value, canonical, capture variables, capturing, cargo cult, case, casefolding, casemapping, character, character class, character property, circumfix operator, class, class method, client, closure, cluster, CODE, code generator, codepoint, code subpattern, collating sequence, co-maintainer, combining character, command, command buffering, command-line arguments, command name, comment, compilation unit, compile, compile phase, compiler, compile time, composer, concatenation, conditional, connection, construct, constructor, context, continuation, core dump, CPAN, C preprocessor, cracker, currently selected output channel, current package, current working directory, CV

## D

dangling statement, datagram, data structure, data type, DBM, declaration, declarator, decrement, default, defined, delimiter, dereference, derived class, descriptor, destroy, destructor, device, directive, directory, directory handle, discipline, dispatch, distribution, dual-lived, dweomer, dwimmer, dynamic scoping

## E

eclectic, element, embedding, empty subclass test, encapsulation, endian, en passant, environment, environment variable, EOF, errno, error, escape sequence, exception, exception handling, exec, executable file, execute, execute bit, exit status, exploit, export, expression, extension

## F

false, FAQ, fatal error, feeping creaturism, field, FIFO, file, file descriptor, fileglob, filehandle, filename, filesystem, file test operator, filter, first-come, flag, floating point, flush, FMTEYEWTK, foldcase, fork, formal arguments, format, freely available, freely redistributable, freeware, function, funny character

## G

garbage collection, GID, glob, global, global destruction, glue language, granularity, grapheme, greedy, grep, group, GV

## H

hacker, handler, hard reference, hash, hash table, header file, here document, hexadecimal, home directory, host, hubris, HV

## I

identifier, impatience, implementation, import, increment, indexing, indirect filehandle, indirection, indirect object, indirect object slot, infix, inheritance, instance, instance data, instance method, instance variable, integer, interface, interpolation, interpreter, invocant, invocation, I/O, IO, I/O layer, IPA, IP, IPC, is-a, iteration, iterator, IV

## J

JAPH

## K

key, keyword

## L

label, laziness, leftmost longest, left shift, lexeme, lexer, lexical analysis, lexical scoping, lexical variable, library, LIFO, line, linebreak, line buffering, line number, link, LIST, list, list context, list operator, list value, literal, little-endian, local, logical operator, lookahead, lookbehind, loop, loop control statement, loop label, lowercase, lvaluable, lvalue, lvalue modifier

## M

magic, magical increment, magical variables, Makefile, man, manpage, matching, member data, memory, metacharacter, metasympol, method, method resolution order, minicpan, minimalism, mode, modifier, module, modulus, mojbake, monger, mortal, mro, multidimensional array, multiple inheritance

## N

named pipe, namespace, NaN, network address, newline, NFS, normalization, null character, null list, null string, numeric context, numification, NV, nybble

## O

object, octal, offset, one-liner, open source software, operand, operating system, operator, operator overloading, options, ordinal, overloading, overriding, owner

## P

package, pad, parameter, parent class, parse tree, parsing, patch, PATH, pathname, pattern, pattern matching, PAUSE, Perl mongers, permission bits, Pern, pipe, pipeline, platform, pod, pod command, pointer, polymorphism, port, portable, porter, possessive, POSIX, postfix, pp, pragma, precedence, prefix, preprocessing, primary maintainer, procedure, process, program, program generator, progressive matching, property, protocol, prototype, pseudofunction, pseudohash, pseudoliteral, public domain, pumpkin, pumping, PV

## Q

qualified, quantifier

## R

race condition, readable, reaping, record, recursion, reference, referent, regex, regular expression, regular expression modifier, regular file, relational operator, reserved words, return value, RFC, right shift, role, root, RTFM, run phase, runtime, runtime pattern, RV, rvalue

## S

sandbox, scalar, scalar context, scalar literal, scalar value, scalar variable, scope, scratchpad, script, script kiddie, sed, semaphore, separator, serialization, server, service, setgid, setuid, shared memory, shebang, shell, side effects, sigil, signal, signal handler, single inheritance, slice, slurp, socket, soft reference, source filter, stack, standard, standard error, standard input, standard I/O, Standard Library, standard output, statement, statement modifier, static, static method, static scoping, static variable, stat structure, status, STDERR, STDIN, STDOUT, stream, string, string context, stringification, struct, structure, subclass, subpattern, subroutine, subscript, substitution, substring, superclass, superuser, SV, switch, switch cluster, switch statement, symbol, symbolic debugger, symbolic link, symbolic reference, symbol table, synchronous, syntactic sugar, syntax, syntax tree, syscall

## T

taint checks, tainted, taint mode, TCP, term, terminator, ternary, text, thread, tie, titlecase, TMTOWTDI, token, tokenener, tokenizing, toolbox approach, topic, transliterate, trigger, trinary, troff, true, truncating, type, type casting, typedef, typed lexical, typeglob, typemap

## U

UDP, UID, umask, unary operator, Unicode, Unix, uppercase

## V

value, variable, variable interpolation, variadic, vector, virtual, void context, v-string

## W

warning, watch expression, weak reference, whitespace, word, working directory, wrapper, WYSIWYG

## X

XS, XSUB

## Y

yacc

## **Z**

zero width, zombie

### **AUTHOR AND COPYRIGHT**

## **perlembded - how to embed perl in your C program**

### **DESCRIPTION**

#### **PREAMBLE**

Use C from Perl?, Use a Unix program from Perl?, Use Perl from Perl?, Use C from C?, Use Perl from C?

#### **ROADMAP**

Compiling your C program

Adding a Perl interpreter to your C program

Calling a Perl subroutine from your C program

Evaluating a Perl statement from your C program

Performing Perl pattern matches and substitutions from your C program

Fiddling with the Perl stack from your C program

Maintaining a persistent interpreter

Execution of END blocks

\$0 assignments

Maintaining multiple interpreter instances

Using Perl modules, which themselves use C libraries, from your C program

Using embedded Perl with POSIX locales

Hiding Perl\_

#### **MORAL**

#### **AUTHOR**

#### **COPYRIGHT**

## **perldebbugs - Guts of Perl debugging**

### **DESCRIPTION**

Debugger Internals

Writing Your Own Debugger

Frame Listing Output Examples

Debugging Regular Expressions

Compile-time Output

anchored *STRING* at *POS*, floating *STRING* at *POS1..POS2*, matching  
floating/anchored, minlen, stclass *TYPE*, noscan, isall, GPOS, plus, implicit, with  
eval, anchored(*TYPE*)

## Types of Nodes

## Run-time Output

## Debugging Perl Memory Usage

Using `$ENV{PERL_DEBUG_MSTATS}`

buckets SMALLEST(APPROX)..GREATEST(APPROX), Free/Used, Total sbrk():  
SBRKed/SBRKs:CONTINUOUS, pad: 0, heads: 2192, chain: 0, tail: 6144

## SEE ALSO

# perlxstut - Tutorial for writing XSUBs

## DESCRIPTION

## SPECIAL NOTES

make

Version caveat

Dynamic Loading versus Static Loading

Threads and PERL\_NO\_GET\_CONTEXT

## TUTORIAL

### EXAMPLE 1

### EXAMPLE 2

What has gone on?

Writing good test scripts

### EXAMPLE 3

What's new here?

Input and Output Parameters

The XSUBPP Program

The TYPEMAP file

Warning about Output Arguments

### EXAMPLE 4

What has happened here?

Anatomy of .xs file

Getting the fat out of XSUBs

More about XSUB arguments

The Argument Stack

Extending your Extension

Documenting your Extension

**Installing your Extension**

**EXAMPLE 5**

**New Things in this Example**

**EXAMPLE 6**

**New Things in this Example**

**EXAMPLE 7 (Coming Soon)**

**EXAMPLE 8 (Coming Soon)**

**EXAMPLE 9 Passing open files to XSes**

**Troubleshooting these Examples**

**See also**

**Author**

**Last Changed**

## **perlx - XS language reference manual**

### **DESCRIPTION**

**Introduction**

**On The Road**

**The Anatomy of an XSUB**

**The Argument Stack**

**The RETVAL Variable**

**Returning SVs, AVs and HVs through RETVAL**

**The MODULE Keyword**

**The PACKAGE Keyword**

**The PREFIX Keyword**

**The OUTPUT: Keyword**

**The NO\_OUTPUT Keyword**

**The CODE: Keyword**

**The INIT: Keyword**

**The NO\_INIT Keyword**

**The TYPEMAP: Keyword**

**Initializing Function Parameters**

**Default Parameter Values**

**The PREINIT: Keyword**

**The SCOPE: Keyword**

**The INPUT: Keyword**

**The IN/OUTLIST/IN\_OUTLIST/OUT/IN\_OUT Keywords**

**The `length(NAME)` Keyword**

**Variable-length Parameter Lists**

**The `C_ARGS`: Keyword**

**The `PPCODE`: Keyword**

**Returning Undef And Empty Lists**

**The `REQUIRE`: Keyword**

**The `CLEANUP`: Keyword**

**The `POSTCALL`: Keyword**

**The `BOOT`: Keyword**

**The `VERSIONCHECK`: Keyword**

**The `PROTOTYPES`: Keyword**

**The `PROTOTYPE`: Keyword**

**The `ALIAS`: Keyword**

**The `OVERLOAD`: Keyword**

**The `FALLBACK`: Keyword**

**The `INTERFACE`: Keyword**

**The `INTERFACE_MACRO`: Keyword**

**The `INCLUDE`: Keyword**

**The `INCLUDE_COMMAND`: Keyword**

**The `CASE`: Keyword**

**The `EXPORT_XSUB_SYMBOLS`: Keyword**

**The `&` Unary Operator**

**Inserting POD, Comments and C Preprocessor Directives**

**Using XS With C++**

**Interface Strategy**

**Perl Objects And C Structures**

**Safely Storing Static Data in XS**

```
MY_CXT_KEY, typedef my_cxt_t, START_MY_CXT, MY_CXT_INIT, dMY_CXT, MY_CXT,  
aMY_CXT/pMY_CXT, MY_CXT_CLONE, MY_CXT_INIT_INTERP(my_perl),  
dMY_CXT_INTERP(my_perl)
```

**Thread-aware system interfaces**

## **EXAMPLES**

## **CAVEATS**

Non-locale-aware XS code, Locale-aware XS code

## **XS VERSION**

## **AUTHOR**

# perlxsypemap - Perl XS C/Perl type mapping

## DESCRIPTION

Anatomy of a typemap

The Role of the typemap File in Your Distribution

Sharing typemaps Between CPAN Distributions

Writing typemap Entries

Full Listing of Core Typemaps

T\_SV, T\_SVREF, T\_SVREF\_FIXED, T\_AVREF, T\_AVREF\_REFCOUNT\_FIXED, T\_HVREF, T\_HVREF\_REFCOUNT\_FIXED, T\_CVREF, T\_CVREF\_REFCOUNT\_FIXED, T\_SYSRET, T\_UV, T\_IV, T\_INT, T\_ENUM, T\_BOOL, T\_U\_INT, T\_SHORT, T\_U\_SHORT, T\_LONG, T\_U\_LONG, T\_CHAR, T\_U\_CHAR, T\_FLOAT, T\_NV, T\_DOUBLE, T\_PV, T\_PTR, T\_PTRREF, T\_PTROBJ, T\_REF\_IV\_REF, T\_REF\_IV\_PTR, T\_PTRDESC, T\_REFREF, T\_REFOBJ, T\_OPAQUEPTR, T\_OPAQUE, Implicit array, T\_PACKED, T\_PACKEDARRAY, T\_DATAUNIT, T\_CALLBACK, T\_ARRAY, T\_STDIO, T\_INOUT, T\_IN, T\_OUT

# perlclib - Internal replacements for standard C library functions

## DESCRIPTION

Conventions

t, p, n, s

File Operations

File Input and Output

File Positioning

Memory Management and String Handling

Character Class Tests

*stdlib.h* functions

Miscellaneous functions

## SEE ALSO

# perlguys - Introduction to the Perl API

## DESCRIPTION

Variables

Datatypes

What is an "IV"?

Working with SVs

Offsets

What's Really Stored in an SV?

Working with AVs

Working with HVs

## Hash API Extensions

## AVs, HVs and undefined values

## References

## Blessed References and Class Objects

## Creating New Variables

`GV_ADDMULTI`, `GV_ADDWARN`

## Reference Counts and Mortality

## Stashes and Globs

## Double-Typed SVs

## Read-Only Values

## Copy on Write

## Magic Variables

## Assigning Magic

## Magic Virtual Tables

## Finding Magic

## Understanding the Magic of Tied Hashes and Arrays

## Localizing changes

```
SAVEINT(int i), SAVEIV(IV i), SAVEI32(I32 i), SAVELONG(long
i), SAVESPTR(s), SAVEPPTR(p), SAVEFREESV(SV *sv), SAVEMORTALIZESV(SV *sv), SAVEFREEOP(OP
*op), SAVEFREEPV(p), SAVECLEARSV(SV *sv), SAVEDELETE(HV *hv, char *key, I32
length), SAVEDESTRUCTOR(DESTRUCTORFUNC_NOCONTEXT_t f, void
*p), SAVEDESTRUCTOR_X(DESTRUCTORFUNC_t f, void *p), SAVESTACK_POS(), SV* save_scalar(GV
*gv), AV* save_ary(GV *gv), HV* save_hash(GV *gv), void save_item(SV *item), void
save_list(SV **sarg, I32 maxsarg), SV* save_svref(SV **sptr), void save_aptr(AV
**aptr), void save_hptr(HV **hptr)
```

## Subroutines

## XSUBs and the Argument Stack

## Autoloading with XSUBs

## Calling Perl Routines from within C Programs

## Putting a C value on Perl stack

## Scratchpads

## Scratchpads and recursion

## Memory Allocation

## Allocation

## Reallocation

## Moving

## PerlIO

## Compiled code

## Code tree



## Examining the tree

### Compile pass 1: check routines

### Compile pass 1a: constant folding

### Compile pass 2: context propagation

### Compile pass 3: peephole optimization

### Pluggable runops

### Compile-time scope hooks

```
void bhk_start(pTHX_ int full), void bhk_pre_end(pTHX_ OP **o), void bhk_post_end(pTHX_ OP **o), void bhk_eval(pTHX_ OP *const o)
```

## Examining internal data structures with the `dump` functions

### How multiple interpreters and concurrency are supported

#### Background and PERL\_IMPLICIT\_CONTEXT

#### So what happened to dTHR?

#### How do I use all this in extensions?

#### Should I do anything special if I call perl from multiple threads?

#### Future Plans and PERL\_IMPLICIT\_SYS

## Internal Functions

### Formatted Printing of IVs, UVs, and NVs

### Formatted Printing of SVs

### Formatted Printing of Strings

### Formatted Printing of `Size_t` and `SSize_t`

### Pointer-To-Integer and Integer-To-Pointer

### Exception Handling

### Source Documentation

### Backwards compatibility

## Unicode Support

### What is Unicode, anyway?

### How can I recognise a UTF-8 string?

### How does UTF-8 represent Unicode characters?

### How does Perl store UTF-8 strings?

### How do I convert a string to UTF-8?

### How do I compare strings?

### Is there anything else I need to know?

## Custom Operators

```
xop_name, xop_desc, xop_class, OA_BASEOP, OA_UNOP, OA_BINOP, OA_LOGOP, OA_LISTOP, OA_PMOP, OA_SVOP, OA_PADOP, OA_PVOP_OR_SVOP, OA_LOOP, OA_COP, xop_peep
```

## Stacks

Value Stack

Mark Stack

Temporaries Stack

Save Stack

Scope Stack

## Dynamic Scope and the Context Stack

Introduction to the context stack

Pushing contexts

Popping contexts

Redoing contexts

## Slab-based operator allocation

## AUTHORS

## SEE ALSO

# perlcall - Perl calling conventions from C

## DESCRIPTION

An Error Handler, An Event-Driven Program

## THE CALL\_ FUNCTIONS

call\_sv, call\_pv, call\_method, call\_argv

## FLAG VALUES

G\_VOID

G\_SCALAR

G\_ARRAY

G\_DISCARD

G\_NOARGS

G\_EVAL

G\_KEEPPERR

Determining the Context

## EXAMPLES

No Parameters, Nothing Returned

Passing Parameters

Returning a Scalar

Returning a List of Values

Returning a List in Scalar Context

Returning Data from Perl via the Parameter List

**Using G\_EVAL**

**Using G\_KEEPPERR**

**Using call\_sv**

**Using call\_argv**

**Using call\_method**

**Using GIMME\_V**

**Using Perl to Dispose of Temporaries**

**Strategies for Storing Callback Context Information**

1. Ignore the problem - Allow only 1 callback, 2. Create a sequence of callbacks - hard wired limit, 3. Use a parameter to map to the Perl callback

**Alternate Stack Manipulation**

**Creating and Calling an Anonymous Subroutine in C**

**LIGHTWEIGHT CALLBACKS**

**SEE ALSO**

**AUTHOR**

**DATE**

## **perlmoapi - Perl method resolution plugin interface**

**DESCRIPTION**

resolve, name, length, kflags, hash

**Callbacks**

**Caching**

**Examples**

**AUTHORS**

## **perlreapi - Perl regular expression plugin interface**

**DESCRIPTION**

**Callbacks**

**comp**

`/m` - RXf\_PMf\_MULTILINE, `/s` - RXf\_PMf\_SINGLELINE, `/i` - RXf\_PMf\_FOLD, `/x` - RXf\_PMf\_EXTENDED, `/p` - RXf\_PMf\_KEEPCOPY, Character set, RXf\_SPLIT, RXf\_SKIPWHITE, RXf\_START\_ONLY, RXf\_WHITE, RXf\_NULL, RXf\_NO\_INPLACE\_SUBST

**exec**

rx, sv, strbeg, strend, stringarg, minend, data, flags

**intuit**

**checkstr**

**free**

**Numbered capture callbacks**

**Named capture callbacks**

**qr\_package**

**dupe**

**op\_comp**

## The REGEXP structure

```
engine
mother_re
extflags
minlen minlenret
gofs
substrs
nparens, lastparen, and lastcloseparen
intflags
pprivate
offs
precomp prelen
paren_names
substrs
subbeg sublen saved_copy suboffset subcoffset
wrapped wraplen
seen_evals
refcnt
```

## HISTORY

## AUTHORS

## LICENSE

# perlreguts - Description of the Perl regular expression engine.

## DESCRIPTION

## OVERVIEW

**A quick note on terms**

**What is a regular expression engine?**

**Structure of a Regexp Program**

```
regnode_1, regnode_2, regnode_string, regnode_charclass, regnode_charclass_posixl
```

## Process Overview

A. Compilation, 1. Parsing, 2. Peep-hole optimisation and analysis, B. Execution, 3. Start position and no-match optimisations, 4. Program execution

## Compilation

anchored fixed strings, floating fixed strings, minimum and maximum length requirements, start class, Beginning/End of line positions

## Execution

## MISCELLANEOUS

### Unicode and Localisation Support

### Base Structures

offsets, regstclass, data, program

## SEE ALSO

## AUTHOR

## LICENCE

## REFERENCES

# perlapi - autogenerated documentation for the perl public API

## DESCRIPTION

### Array Manipulation Functions

av\_clear, av\_create\_and\_push, av\_create\_and\_unshift\_one, av\_delete, av\_exists, av\_extend, av\_fetch, AvFILL, av\_fill, av\_len, av\_make, av\_pop, av\_push, av\_shift, av\_store, av\_tindex, av\_top\_index, av\_undef, av\_unshift, get\_av, newAV, sortsv

### Callback Functions

call\_argv, call\_method, call\_pv, call\_sv, ENTER, ENTER\_with\_name, eval\_pv, eval\_sv, FREETMPS, LEAVE, LEAVE\_with\_name, SAVETMPS

### Character case changing

toFOLD, toFOLD\_utf8, toFOLD\_utf8\_safe, toFOLD\_uvchr, toLOWER, toLOWER\_L1, toLOWER\_LC, toLOWER\_utf8, toLOWER\_utf8\_safe, toLOWER\_uvchr, toTITLE, toTITLE\_utf8, toTITLE\_utf8\_safe, toTITLE\_uvchr, toUPPER, toUPPER\_utf8, toUPPER\_utf8\_safe, toUPPER\_uvchr, WIDEST\_UTYPE

### Character classification

isALPHA, isALPHANUMERIC, isASCII, isBLANK, isCNTRL, isDIGIT, isGRAPH, isIDCONT, isIDFIRST, isLOWER, isOCTAL, isPRINT, isPSXSPC, isPUNCT, isSPACE, isUPPER, isWORDCHAR, isXDIGIT

### Cloning an interpreter

perl\_clone

### Compile-time scope hooks

BhkDISABLE, BhkENABLE, BhkENTRY\_set, blockhook\_register

### COP Hint Hashes

cophh\_2hv, cophh\_copy, cophh\_delete\_pv, cophh\_delete\_pvn, cophh\_delete\_pvs, cophh\_delete\_sv, cophh\_fetch\_pv, cophh\_fetch\_pvn, cophh\_fetch\_pvs, cophh\_fetch\_sv, cophh\_free, cophh\_new\_empty, cophh\_store\_pv, cophh\_store\_pvn, cophh\_store\_pvs, cophh\_store\_sv

### COP Hint Reading

cop\_hints\_2hv, cop\_hints\_fetch\_pv, cop\_hints\_fetch\_pvn, cop\_hints\_fetch\_pvs, cop\_hints\_fetch\_sv, CopLABEL, CopLABEL\_len, CopLABEL\_len\_flags

## Custom Operators

custom\_op\_register , Perl\_custom\_op\_xop , XopDISABLE , XopENABLE , XopENTRY , XopENTRYCUSTOM , XopENTRY\_set , XopFLAGS

## CV Manipulation Functions

caller\_cx , CvSTASH , find\_runcv , get\_cv , get\_cvn\_flags

### xsubpp variables and internal functions

ax , CLASS , dAX , dAXMARK , dITEMS , dUNDERBAR , dXSARGS , dXSIS2 , items , ix , RETVAL , ST , THIS , UNDERBAR , XS , XS\_EXTERNAL , XS\_INTERNAL

## Debugging Utilities

dump\_all , dump\_packsubs , op\_class , op\_dump , sv\_dump

## Display and Dump functions

pv\_display , pv\_escape , pv\_pretty

## Embedding Functions

cv\_clone , cv\_name , cv\_undef , find\_rundefsv , find\_rundefsvoffset , intro\_my , load\_module , my\_exit , newPADNAMELIST , newPADNAMEouter , newPADNAMEpvn , nothreadhook , pad\_add\_anon , pad\_add\_name\_pv , pad\_add\_name\_pvn , pad\_add\_name\_sv , pad\_alloc , pad\_findmy\_pv , pad\_findmy\_pvn , pad\_findmy\_sv , padnamelist\_fetch , padnamelist\_store , pad\_setsv , pad\_sv , pad\_tidy , perl\_alloc , perl\_construct , perl\_destruct , perl\_free , perl\_parse , perl\_run , require\_pv

## Exception Handling (simple) Macros

dXCPT , XCPT\_CATCH , XCPT\_RETHROW , XCPT\_TRY\_END , XCPT\_TRY\_START

## Functions in file util.c

new\_version , prescan\_version , scan\_version , upg\_version , vcmp , vnormal , vnumify , vstringify , vverify , The SV is an HV or a reference to an HV, The hash contains a "version" key. The "version" key has a reference to an AV as its value

## "Gimme" Values

G\_ARRAY , G\_DISCARD , G\_EVAL , GIMME , GIMME\_V , G\_NOARGS , G\_SCALAR , G\_VOID

## Global Variables

PL\_check , PL\_keyword\_plugin , PL\_phase

## GV Functions

GvAV , gv\_const\_sv , GvCV , gv\_fetchmeth , gv\_fetchmethod\_autoload , gv\_fetchmeth\_autoload , gv\_fetchmeth\_pv , gv\_fetchmeth\_pvn , gv\_fetchmeth\_pvn\_autoload , gv\_fetchmeth\_pv\_autoload , gv\_fetchmeth\_sv , gv\_fetchmeth\_sv\_autoload , GvHV , gv\_init , gv\_init\_pv , gv\_init\_pvn , gv\_init\_sv , gv\_stashpv , gv\_stashpvn , gv\_stashpvs , gv\_stashsv , GvSV , save\_gp , setdefault

## Hardy Values

C\_ARRAY\_END , C\_ARRAY\_LENGTH , cBOOL , Nullav , Nullch , Nullcv , Nullhv , Nullsv , STR\_WITH\_LEN , \_\_ASSERT\_\_

## Hash Manipulation Functions

cop\_fetch\_label , cop\_store\_label , get\_hv , HeF\_SVKEY , HeHASH , HeKEY , HeKLEN , HePV , HeSVKEY , HeSVKEY\_force , HeSVKEY\_set , HeUTF8 , HeVAL , hv\_assert , hv\_bucket\_ratio , hv\_clear , hv\_clear\_placeholders , hv\_copy\_hints\_hv , hv\_delete , hv\_delete\_ent , HvENAME , HvENAMELEN , HvENAMEUTF8 , hv\_exists , hv\_exists\_ent , hv\_fetch , hv\_fetchs , hv\_fetch\_ent , HvFILL , hv\_fill , hv\_iterinit , hv\_iterkey , hv\_iterkeysv , hv\_iternext , hv\_iternextsv , hv\_iternext\_flags , hv\_ival , hv\_magic , HvNAME , HvNAMELEN , HvNAMEUTF8 , hv\_scalar , hv\_store , hv\_stores , hv\_store\_ent , hv\_undef , newHV

## Hook manipulation

wrap\_op\_checker

## Lexer interface

lex\_bufutf8, lex\_discard\_to, lex\_grow\_linestr, lex\_next\_chunk, lex\_peek\_unichar, lex\_read\_space, lex\_read\_to, lex\_read\_unichar, lex\_start, lex\_stuff\_pv, lex\_stuff\_pvn, lex\_stuff\_pvs, lex\_stuff\_sv, lex\_unstuff, parse\_arithexpr, parse\_barestmt, parse\_block, parse\_fullexpr, parse\_fullstmt, parse\_label, parse\_listexpr, parse\_stmtseq, parse\_subsignature, parse\_termexpr, PL\_parser, PL\_parser->bufend, PL\_parser->bufptr, PL\_parser->linestart, PL\_parser->linestr, wrap\_keyword\_plugin

## Locale-related functions and macros

DECLARATION\_FOR\_LC\_NUMERIC\_MANIPULATION, IN\_LOCALE, IN\_LOCALE\_COMPILETIME, IN\_LOCALE\_RUNTIME, Perl\_langinfo, Perl\_setlocale, RESTORE\_LC\_NUMERIC, STORE\_LC\_NUMERIC\_FORCE\_TO\_UNDERLYING, STORE\_LC\_NUMERIC\_SET\_TO\_NEEDED, STORE\_LC\_NUMERIC\_SET\_TO\_NEEDED\_IN, switch\_to\_global\_locale, [POSIX::localeconv](#), [I18N::Langinfo](#), items CRNCYSTR and THOUSEP, "Perl\_langinfo" in perlapi, items CRNCYSTR and THOUSEP, sync\_locale, WITH\_LC\_NUMERIC\_SET\_TO\_NEEDED, WITH\_LC\_NUMERIC\_SET\_TO\_NEEDED\_IN

## Magical Functions

mg\_clear, mg\_copy, mg\_find, mg\_findext, mg\_free, mg\_freeext, mg\_free\_type, mg\_get, mg\_length, mg\_magical, mg\_set, SvGETMAGIC, SvLOCK, SvSETMAGIC, SvSetMagicSV, SvSetMagicSV\_nosteal, SvSetSV, SvSetSV\_nosteal, SvSHARE, sv\_string\_from\_errnum, SvUNLOCK

## Memory Management

Copy, CopyD, Move, MoveD, Newx, Newxc, Newxz, Poison, PoisonFree, PoisonNew, PoisonWith, Renew, Renewc, Safefree, savepv, savepvn, savepvs, savesharedpv, savesharedpvn, savesharedpvs, savesharedsvp, savesvpv, StructCopy, Zero, ZeroD

## Miscellaneous Functions

dump\_c\_backtrace, fbm\_compile, fbm\_instr, foldEQ, foldEQ\_locale, form, getcwd\_sv, get\_c\_backtrace\_dump, ibcmp, ibcmp\_locale, instr, IS\_SAFE\_SYSCALL, is\_safe\_syscall, LIKELY, memCHRs, memEQ, memEQs, memNE, memNEs, mess, mess\_sv, my\_snprintf, my\_sprintf, my\_strcat, my\_strcpy, my\_strlen, my\_vsnprintf, ninstr, PERL\_SYS\_INIT, PERL\_SYS\_INIT3, PERL\_SYS\_TERM, READ\_XDIGIT, rninstr, STMT\_START, strEQ, strGE, strGT, strLE, strLT, strNE, strnEQ, strnNE, sv\_destroyable, sv\_nosharing, UNLIKELY, vmess

## MRO Functions

mro\_get\_linear\_isa, mro\_method\_changed\_in, mro\_register

## Multicall Functions

dMULTICALL, MULTICALL, POP\_MULTICALL, PUSH\_MULTICALL

## Numeric functions

grok\_bin, grok\_hex, grok\_infnan, grok\_number, grok\_number\_flags, GROK\_NUMERIC\_RADIX, grok\_numeric\_radix, grok\_oct, isinfnan, IS\_NUMBER\_GREATER\_THAN\_UV\_MAX bool, IS\_NUMBER\_GREATER\_THAN\_UV\_MAX, IS\_NUMBER\_INFINITY bool, IS\_NUMBER\_INFINITY, IS\_NUMBER\_IN\_UV bool, IS\_NUMBER\_IN\_UV, IS\_NUMBER\_NAN bool, IS\_NUMBER\_NAN, IS\_NUMBER\_NEG bool, IS\_NUMBER\_NEG, IS\_NUMBER\_NOT\_INT, my\_strtod, PERL\_ABS, PERL\_INT\_MAX, Perl\_signbit, scan\_bin, scan\_hex, scan\_oct, Strtod, Strtol, Strtoul

## Obsolete backwards compatibility functions

custom\_op\_desc, custom\_op\_name, gv\_fetchmethod, is\_utf8\_char, is\_utf8\_char\_buf, pack\_cat, pad\_compname\_type, sv\_2pvbyte\_nolen, sv\_2pvutf8\_nolen, sv\_2pv\_nolen, sv\_catpvn\_mg, sv\_catsv\_mg, sv\_force\_normal, sv\_iv, sv\_nolocking, sv\_nounlocking, sv\_nv, sv\_pv, sv\_pvbyte, sv\_pvablyten, sv\_pvn, sv\_pvutf8, sv\_pvutf8n, sv\_taint, sv\_unref, sv\_usepvn, sv\_usepvn\_mg, sv\_uv, unpack\_str, utf8\_to\_uvchr

## Optree construction

newASSIGNOP , newBINOP , newCONDOP , newDEFSVOP , newFOROP , newGIVENOP , newGVOP , newLISTOP , newLOGOP , newLOOPEX , newLOOPOP , newMETHOP , newMETHOP\_named , newNULLLIST , newOP , newPADOP , newPMOP , newPVOP , newRANGE , newSLICEOP , newSTATEOP , newSVOP , newUNOP , newUNOP\_AUX , newWHENOP , newWHILEOP

## Optree Manipulation Functions

alloccopstash , block\_end , block\_start , ck\_entersub\_args\_list , ck\_entersub\_args\_proto , ck\_entersub\_args\_proto\_or\_list , cv\_const\_sv , cv\_get\_call\_checker , cv\_get\_call\_checker\_flags , cv\_set\_call\_checker , cv\_set\_call\_checker\_flags , LINKLIST , newCONSTSUB , newCONSTSUB\_flags , newXS , op\_append\_elem , op\_append\_list , OP\_CLASS , op\_contextualize , op\_convert\_list , OP\_DESC , op\_free , OpHAS\_SIBLING , OpLASTSIB\_set , op\_linklist , op\_lvalue , OpMAYBESIB\_set , OpMORESIB\_set , OP\_NAME , op\_null , op\_parent , op\_prepend\_elem , op\_scope , OpSIBLING , op\_sibling\_splice , OP\_TYPE\_IS , OP\_TYPE\_IS\_OR\_WAS , rv2cv\_op\_cv

## Pack and Unpack

packlist , unpackstring

## Pad Data Structures

CvPADLIST , pad\_add\_name\_pvs , PadARRAY , pad\_findmy\_pvs , PadlistARRAY , PadlistMAX , PadlistNAMES , PadlistNAMESARRAY , PadlistNAMESMAX , PadlistREFCNT , PadMAX , PadnameLEN , PadnamelistARRAY , PadnamelistMAX , PadnamelistREFCNT , PadnamelistREFCNT\_dec , PadnamePV , PadnameREFCNT , PadnameREFCNT\_dec , PadnameSV , PadnameUTF8 , pad\_new , PL\_comppad , PL\_comppad\_name , PL\_curpad

## Per-Interpreter Variables

PL\_curcop , PL\_curstash , PL\_defgv , PL\_exit\_flags , PERL\_EXIT\_DESTRUCT\_END , PERL\_EXIT\_ABORT , PERL\_EXIT\_WARN , PERL\_EXIT\_EXPECTED , PL\_modglobal , PL\_na , PL\_opfreehook , PL\_peekp , PL\_perl\_destruct\_level , 0 - none , 1 - full , 2 or greater - full with checks , PL\_rpepp , PL\_runops , PL\_sv\_no , PL\_sv\_undef , PL\_sv\_yes , PL\_sv\_zero

## REGEXP Functions

SvRX , SvRXOK

## Stack Manipulation Macros

dMARK , dORIGMARK , dSP , EXTEND , MARK , mPUSHi , mPUSHn , mPUSHp , mPUSHs , mPUSHu , mXPUSHi , mXPUSHn , mXPUSHp , mXPUSHs , mXPUSHu , ORIGMARK , POPI , POPI , POPn , POPp , POPpbytex , POPpx , POPs , POPu , POPul , PUSHi , PUSHMARK , PUSHmortal , PUSHn , PUSHp , PUSHs , PUSHu , PUTBACK , SP , SPAGAIN , XPUSHi , XPUSHmortal , XPUSHn , XPUSHp , XPUSHs , XPUSHu , XSRETURN , XSRETURN\_EMPTY , XSRETURN\_IV , XSRETURN\_NO , XSRETURN\_NV , XSRETURN\_PV , XSRETURN\_UNDEF , XSRETURN\_UV , XSRETURN\_YES , XST\_mIV , XST\_mNO , XST\_mNV , XST\_mPV , XST\_mUNDEF , XST\_mUV , XST\_mYES

## SV Flags

Svt\_IV , Svt\_NULL , Svt\_NV , Svt\_PV , Svt\_PVAV , Svt\_PVCV , Svt\_PVFM , Svt\_PVGV , Svt\_PVHV , Svt\_PVIO , Svt\_PVIV , Svt\_PVLV , Svt\_PVMG , Svt\_PVNV , Svt\_REGEXP , svtype

## SV Manipulation Functions

boolSV , croak\_xs\_usage , get\_sv , looks\_like\_number , newRV\_inc , newRV\_noinc , newSV , newSVhek , newSViv , newSVnv , newSVpadname , newSVpv , newSVpvf , newSVpvn , newSVpvn\_flags , newSVpvn\_share , newSVpvn\_utf8 , newSVpvs , newSVpvs\_flags , newSVpv\_share , newSVpvs\_share , newSVrv , newSVsv , newSVsv\_nomg , newSV\_type , newSVuv , sortsv\_flags , sv\_2bool , sv\_2bool\_flags , sv\_2cv , sv\_2io , sv\_2iv\_flags , sv\_2mortal , sv\_2nv\_flags , sv\_2pbyte , sv\_2pvutf8 , sv\_2pv\_flags , sv\_2uv\_flags , sv\_backoff , sv\_bless , sv\_catpv , sv\_catpvf , sv\_catpvf\_mg , sv\_catpvn , sv\_catpvn\_flags , sv\_catpvn\_nomg , sv\_catpvs , sv\_catpvs\_flags , sv\_catpvs\_mg , sv\_catpvs\_nomg , sv\_catpv\_flags , sv\_catpv\_mg , sv\_catpv\_nomg , sv\_catsv , sv\_catsv\_flags , sv\_catsv\_nomg , sv\_chop , sv\_clear , sv\_cmp , sv\_cmp\_flags , sv\_cmp\_locale , sv\_cmp\_locale\_flags , sv\_collxfrm , sv\_collxfrm\_flags , sv\_copypv , sv\_copypv\_flags , sv\_copypv\_nomg , SvCUR , SvCUR\_set , sv\_dec , sv\_dec\_nomg , sv\_derived\_from , sv\_derived\_from\_pv , sv\_derived\_from\_pvn , sv\_derived\_from\_sv , sv\_does , sv\_does\_pv , sv\_does\_pvn , sv\_does\_sv , SvEND , sv\_eq , sv\_eq\_flags , sv\_force\_normal\_flags , sv\_free , SvGAMAGIC , sv\_gets , sv\_get\_backrefs , SvGROW , sv\_grow , sv\_inc , sv\_inc\_nomg , sv\_insert , sv\_insert\_flags , SvIOK ,



SvIOK\_notUV, SvIOK\_off, SvIOK\_on, SvIOK\_only, SvIOK\_only\_UV, SvIOKp, SvIOK\_UV, sv\_isa, sv\_isa\_sv, SvIsCOW, SvIsCOW\_shared\_hash, sv\_isobject, SvIV, SvIV\_nomg, SvIV\_set, SvIVX, SvIVx, SVLEN, sv\_len, SVLEN\_set, sv\_len\_utf8, sv\_magic, sv\_magicext, SvMAGIC\_set, sv\_mortalcopy, sv\_mortalcopy\_flags, sv\_newmortal, sv\_newref, SvNIOK, SvNIOK\_off, SvNIOKp, SvNOK, SvNOK\_off, SvNOK\_on, SvNOK\_only, SvNOKp, SvNV, SvNV\_nomg, SvNV\_set, SvNVX, SvNVx, SvOK, SvOOK, SvOOK\_offset, SvPOK, SvPOK\_off, SvPOK\_on, SvPOK\_only, SvPOK\_only\_UTF8, SvPOKp, sv\_pos\_b2u, sv\_pos\_b2u\_flags, sv\_pos\_u2b, sv\_pos\_u2b\_flags, SvPV, SvPVbyte, SvPVbyte\_force, SvPVbyte\_nolen, SvPVbyte\_nomg, sv\_pvbyten\_force, SvPVbyte\_or\_null, SvPVbyte\_or\_null\_nomg, SvPVbytex, SvPVbytex\_force, SvPVCLEAR, SvPV\_force, SvPV\_force\_nomg, SvPV\_nolen, SvPV\_nomg, SvPV\_nomg\_nolen, sv\_pvn\_force, sv\_pvn\_force\_flags, SvPV\_set, SvPVutf8, sv\_pvutf8n\_force, SvPVutf8x, SvPVutf8x\_force, SvPVutf8\_force, SvPVutf8\_nolen, SvPVutf8\_nomg, SvPVutf8\_or\_null, SvPVutf8\_or\_null\_nomg, SvPVX, SvPVx, SvREADONLY, SvREADONLY\_off, SvREADONLY\_on, sv\_ref, SvREFCNT, SvREFCNT\_dec, SvREFCNT\_dec\_NN, SvREFCNT\_inc, SvREFCNT\_inc\_NN, SvREFCNT\_inc\_simple, SvREFCNT\_inc\_simple\_NN, SvREFCNT\_inc\_simple\_void, SvREFCNT\_inc\_simple\_void\_NN, SvREFCNT\_inc\_void, SvREFCNT\_inc\_void\_NN, sv\_reftype, sv\_replace, sv\_report\_used, sv\_reset, SvROK, SvROK\_off, SvROK\_on, SvRV, SvRV\_set, sv\_rvunweaken, sv\_rvweaken, sv\_setiv, sv\_setiv\_mg, sv\_setnv, sv\_setnv\_mg, sv\_setpv, sv\_setpvf, sv\_setpvf\_mg, sv\_setpviv, sv\_setpviv\_mg, sv\_setpvn, sv\_setpvn\_mg, sv\_setpvs, sv\_setpvs\_mg, sv\_setpvf\_bufsize, sv\_setpv\_mg, sv\_setref\_iv, sv\_setref\_nv, sv\_setref\_pv, sv\_setref\_pvn, sv\_setref\_pvs, sv\_setref\_uv, sv\_setsv, sv\_setsv\_flags, sv\_setsv\_mg, sv\_setsv\_nomg, sv\_setuv, sv\_setuv\_mg, sv\_set\_undef, SvSTASH, SvSTASH\_set, SvTAINT, SvTAINTED, sv\_tainted, SvTAINTED\_off, SvTAINTED\_on, SvTRUE, sv\_true, SvTRUE\_nomg, SvTRUEx, SvTYPE, sv\_unmagic, sv\_unmagicext, sv\_unref\_flags, sv\_untaint, SvUOK, SvUPGRADE, sv\_upgrade, sv\_usepvn\_flags, SvUTF8, sv\_utf8\_decode, sv\_utf8\_downgrade, sv\_utf8\_downgrade\_flags, sv\_utf8\_downgrade\_nomg, sv\_utf8\_encode, sv\_utf8\_upgrade, sv\_utf8\_upgrade\_flags, sv\_utf8\_upgrade\_flags\_grow, sv\_utf8\_upgrade\_nomg, SvUTF8\_off, SvUTF8\_on, SvUV, SvUV\_nomg, SvUV\_set, SvUVX, SvUVx, SvUVXx, sv\_vcatpvf, sv\_vcatpvfn, sv\_vcatpvfn\_flags, sv\_vcatpvf\_mg, SvVOK, sv\_vsetpvf, sv\_vsetpvfn, sv\_vsetpvf\_mg

## Unicode Support

BOM\_UTF8, bytes\_cmp\_utf8, bytes\_from\_utf8, bytes\_to\_utf8, DO\_UTF8, foldEQ\_utf8, is\_ascii\_string, is\_c9strict\_utf8\_string, is\_c9strict\_utf8\_string\_loc, is\_c9strict\_utf8\_string\_loclen, isC9\_STRICT\_UTF8\_CHAR, is\_invariant\_string, isSTRICT\_UTF8\_CHAR, is\_strict\_utf8\_string, is\_strict\_utf8\_string\_loc, is\_strict\_utf8\_string\_loclen, is\_utf8\_fixed\_width\_buf\_flags, is\_utf8\_fixed\_width\_buf\_loclen\_flags, is\_utf8\_fixed\_width\_buf\_loc\_flags, is\_utf8\_invariant\_string, is\_utf8\_invariant\_string\_loc, is\_utf8\_string, is\_utf8\_string\_flags, is\_utf8\_string\_loc, is\_utf8\_string\_loclen, is\_utf8\_string\_loclen\_flags, is\_utf8\_string\_loc\_flags, is\_utf8\_valid\_partial\_char, is\_utf8\_valid\_partial\_char\_flags, isUTF8\_CHAR, isUTF8\_CHAR\_flags, LATIN1\_TO\_NATIVE, NATIVE\_TO\_LATIN1, NATIVE\_TO\_UNI, pv\_uni\_display, REPLACEMENT\_CHARACTER\_utf8, sv\_cat\_decode, sv\_recode\_to\_utf8, sv\_uni\_display, UNICODE\_REPLACEMENT, UNI\_TO\_NATIVE, utf8n\_to\_uvchr, utf8n\_to\_uvchr\_error, UTF8\_GOT\_PERL\_EXTENDED, UTF8\_GOT\_CONTINUATION, UTF8\_GOT\_EMPTY, UTF8\_GOT\_LONG, UTF8\_GOT\_NONCH, UTF8\_GOT\_NON\_CONTINUATION, UTF8\_GOT\_OVERFLOW, UTF8\_GOT\_SHORT, UTF8\_GOT\_SUPER, UTF8\_GOT\_SURROGATE, utf8n\_to\_uvchr\_msgs, text, warn\_categories, flag, UTF8SKIP, "UTF8\_SAFE\_SKIP" if you know the maximum ending pointer in the buffer pointed to by s; or, "UTF8\_CHK\_SKIP" if you don't know it, UTF8\_CHK\_SKIP, utf8\_distance, utf8\_hop, utf8\_hop\_back, utf8\_hop\_forward, utf8\_hop\_safe, UTF8\_IS\_INVARIANT, UTF8\_IS\_NONCHAR, UTF8\_IS\_SUPER, UTF8\_IS\_SURROGATE, utf8\_length, UTF8\_MAXBYTES, UTF8\_MAXBYTES\_CASE, UTF8\_SAFE\_SKIP, UTF8\_SKIP, utf8\_to\_bytes, utf8\_to\_uvchr\_buf, UVCHR\_IS\_INVARIANT, UVCHR\_SKIP, uvchr\_to\_utf8, uvchr\_to\_utf8\_flags, uvchr\_to\_utf8\_flags\_msgs, text, warn\_categories, flag

## Variables created by xsubpp and xsubpp internal functions

newXSproto, XS\_APIVERSION\_BOOTCHECK, XS\_VERSION, XS\_VERSION\_BOOTCHECK

## Warning and Dieing

ckWARN, ckWARN2, ckWARN3, ckWARN4, ckWARN\_d, ckWARN2\_d, ckWARN3\_d, ckWARN4\_d, CLEAR\_ERRSV, croak, croak\_no\_modify, croak\_sv, die, die\_sv, ERRSV, my\_setenv, rsignal, SANE\_ERRSV, vcroak, wwarn, warn, warn\_sv

## Undocumented functions

CvDEPTH, CvGV, GetVars, Gv\_AMupdate, PerlIO\_close, PerlIO\_context\_layers, PerlIO\_error, PerlIO\_fill, PerlIO\_flush, PerlIO\_get\_bufsiz, PerlIO\_get\_ptr, PerlIO\_read, PerlIO\_seek, PerlIO\_set\_cnt, PerlIO\_setlinebuf, PerlIO\_stdout, PerlIO\_unread, SvAMAGIC\_off, SvAMAGIC\_on, amagic\_call, amagic\_deref\_call, any\_dup, atfork\_lock, atfork\_unlock, av\_arylen\_p, av\_iter\_p, block\_gimme,

call\_atexit, call\_list, calloc, cast\_i32, cast\_iv, cast\_ulong, cast\_uv, ck\_warner, ck\_warner\_d, ckwarn, ckwarn\_d, clear\_defarray, clone\_params\_del, clone\_params\_new, croak\_nocontext, csighandler, csighandler1, csighandler3, cx\_dump, cx\_dup, cxinc, deb, deb\_nocontext, debop, debprofdump, debstack, debstackptrs, delimcpy, despatch\_signals, die\_nocontext, dirp\_dup, do\_aspawn, do\_close, do\_gv\_dump, do\_gvgv\_dump, do\_hv\_dump, do\_join, do\_magic\_dump, do\_op\_dump, do\_open, do\_openn, do\_pmop\_dump, do\_spawn, do\_spawn\_nowait, do\_sprintf, do\_sv\_dump, doing\_taint, dorep, downwind, dowantarray, dump\_eval, dump\_form, dump\_indent, dump\_mstats, dump\_sub, dump\_vindent, filter\_del, filter\_read, foldEQ\_latin1, form\_nocontext, fp\_dup, free\_global\_struct, free\_tmps, get\_context, get\_mstats, get\_op\_descs, get\_op\_names, get\_ppaddr, get\_vtbl, gp\_dup, gp\_free, gp\_ref, gv\_AVadd, gv\_HVadd, gv\_IOadd, gv\_SVadd, gv\_add\_by\_type, gv\_autoload4, gv\_autoload\_pv, gv\_autoload\_pvn, gv\_autoload\_sv, gv\_check, gv\_dump, gv\_efullname3, gv\_efullname4, gv\_fetchfile, gv\_fetchfile\_flags, gv\_fetchpv, gv\_fetchpvn\_flags, gv\_fetchsv, gv\_fullname3, gv\_fullname4, gv\_handler, gv\_name\_set, he\_dup, hek\_dup, hv\_common, hv\_common\_key\_len, hv\_delayfree\_ent, hv\_eiter\_p, hv\_eiter\_set, hv\_free\_ent, hv\_ksplit, hv\_name\_set, hv\_placeholders\_get, hv\_placeholders\_set, hv\_rand\_set, hv\_riter\_p, hv\_riter\_set, ibcmp\_utf8, init\_global\_struct, init\_stacks, init\_tm, is\_lvalue\_sub, leave\_scope, load\_module\_nocontext, magic\_dump, markstack\_grow, mess\_nocontext, mfree, mg\_dup, mg\_size, mini\_mktime, moreswitches, mro\_get\_from\_name, mro\_set\_mro, mro\_set\_private\_data, my\_atof, my\_chsize, my\_cxt\_index, my\_cxt\_init, my\_dirfd, my\_failure\_exit, my\_fflush\_all, my\_fork, my\_lstat, my\_pclose, my\_popen, my\_popen\_list, my\_socketpair, my\_stat, my\_strftime, newANONATTRSUB, newANONHASH, newANONLIST, newANONSUB, newATTRSUB, newAVREF, newCVREF, newFORM, newGVREF, newGVgen, newGVgen\_flags, newHVREF, newHVhv, newIO, newMYSUB, newPROG, newRV, newSUB, newSVREF, newSVpvf\_nocontext, newSVsv\_flags, new\_stackinfo, op\_refcnt\_lock, op\_refcnt\_unlock, parser\_dup, perl\_alloc\_using, perl\_clone\_using, perly\_sighandler, pmop\_dump, pop\_scope, pregcomp, pregexec, pregfree, pregfree2, ptr\_table\_fetch, ptr\_table\_free, ptr\_table\_new, ptr\_table\_split, ptr\_table\_store, push\_scope, re\_compile, re\_dup\_guts, reentrant\_free, reentrant\_init, reentrant\_retry, reentrant\_size, ref, reg\_named\_buff\_all, reg\_named\_buff\_exists, reg\_named\_buff\_fetch, reg\_named\_buff\_firstkey, reg\_named\_buff\_nextkey, reg\_named\_buff\_scalar, regdump, regdupe\_internal, regexec\_flags, regfree\_internal, reginitcolors, regnext, repeatcpy, rsignal\_state, runops\_debug, runops\_standard, rvpv\_dup, safesyscalloc, safesysfree, safesysmalloc, safesysrealloc, save\_I16, save\_I32, save\_I8, save\_adelete, save\_aelem, save\_aelem\_flags, save\_alloc, save\_ary, save\_bool, save\_clearsv, save\_delete, save\_destructor, save\_destructor\_x, save\_freeop, save\_freepv, save\_freesv, save\_generic\_pvref, save\_generic\_svref, save\_hdelete, save\_helem, save\_helem\_flags, save\_hints, save\_hptr, save\_int, save\_item, save\_iv, save\_mortalizesv, save\_op, save\_padsv\_and\_mortalize, save\_pptr, save\_pushi32ptr, save\_pushptr, save\_pushptrptr, save\_re\_context, save\_set\_svflags, save\_shared\_pvref, save\_sptr, save\_svref, save\_vptr, savestack\_grow, savestack\_grow\_cnt, scan\_num, scan\_vstring, seed, set\_context, share\_hek, si\_dup, ss\_dup, stack\_grow, start\_subparse, str\_to\_version, sv\_2iv, sv\_2pv, sv\_2pvbyte\_flags, sv\_2pvutf8\_flags, sv\_2uv, sv\_catpvf\_mg\_nocontext, sv\_catpvf\_nocontext, sv\_dup, sv\_dup\_inc, sv\_peek, sv\_setpvf\_mg\_nocontext, sv\_setpvf\_nocontext, sys\_init, sys\_init3, sys\_intern\_clear, sys\_intern\_dup, sys\_intern\_init, sys\_term, taint\_env, taint\_proper, unlnk, unsharepvn, vdeb, vform, vload\_module, vnewSVpvf, vwarner, warn\_nocontext, warner, warner\_nocontext, whichsig, whichsig\_pv, whichsig\_pvn, whichsig\_sv

## AUTHORS

## SEE ALSO

# perlintern - autogenerated documentation of purely internal Perl functions

## DESCRIPTION

### Array Manipulation Functions

AvFILLp

### Compile-time scope hooks

BhkENTRY, BhkFLAGS, CALL\_BLOCK\_HOOKS

### Custom Operators

core\_prototype

### CV Manipulation Functions

docatch

## CV reference counts and CvOUTSIDE

CvWEAKOUTSIDE

## Embedding Functions

cv\_dump , cv\_forget\_slab , do\_dump\_pad , pad\_alloc\_name , pad\_block\_start , pad\_check\_dup , pad\_findlex , pad\_fixup\_inner\_anons , pad\_free , pad\_leavemy , padlist\_dup , padname\_dup , padnamelist\_dup , pad\_push , pad\_reset , pad\_swipe

## Errno

dSAVEDERRNO , dSAVE\_ERRNO , RESTORE\_ERRNO , SAVE\_ERRNO , SETERRNO

## GV Functions

gv\_try\_downgrade

## Hash Manipulation Functions

hv\_ename\_add , hv\_ename\_delete , refcounted\_he\_chain\_2hv , refcounted\_he\_fetch\_pv , refcounted\_he\_fetch\_pvn , refcounted\_he\_fetch\_pvs , refcounted\_he\_fetch\_sv , refcounted\_he\_free , refcounted\_he\_inc , refcounted\_he\_new\_pv , refcounted\_he\_new\_pvn , refcounted\_he\_new\_pvs , refcounted\_he\_new\_sv

## IO Functions

start\_glob

## Lexer interface

validate\_proto

## Magical Functions

magic\_clearhint , magic\_clearhints , magic\_methcall , magic\_sethint , mg\_localize

## Miscellaneous Functions

free\_c\_backtrace , get\_c\_backtrace , quadmath\_format\_needed , quadmath\_format\_valid

## MRO Functions

mro\_get\_linear\_isa\_dfs , mro\_isa\_changed\_in , mro\_package\_moved

## Numeric functions

grok\_atoUV , isinfnavsv

## Obsolete backwards compatibility functions

utf8n\_to\_uvuni , utf8\_to\_uvuni , uvuni\_to\_utf8\_flags

## Optree Manipulation Functions

finalize\_optree , newATTRSUB\_x , newXS\_len\_flags , optimize\_optree , traverse\_op\_tree

## Pad Data Structures

CX\_CURPAD\_SAVE , CX\_CURPAD\_SV , PAD\_BASE\_SV , PAD\_CLONE\_VARS , PAD\_COMPNAME\_FLAGS , PAD\_COMPNAME\_GEN , PAD\_COMPNAME\_GEN\_set , PAD\_COMPNAME\_OURSTASH , PAD\_COMPNAME\_PV , PAD\_COMPNAME\_TYPE , PadnameIsOUR , PadnameIsSTATE , PadnameOURSTASH , PadnameOUTER , PadnameTYPE , PAD\_RESTORE\_LOCAL , PAD\_SAVE\_LOCAL , PAD\_SAVE\_SETNULLPAD , PAD\_SETSV , PAD\_SET\_CUR , PAD\_SET\_CUR\_NOSAVE , PAD\_SV , PAD\_SVI , SAVECLEARSV , SAVECOMPPAD , SAVEPADSV

## Per-Interpreter Variables

PL\_DBsingle , PL\_DBsub , PL\_DBtrace , PL\_dowarn , PL\_last\_in\_gv , PL\_ofsgv , PL\_rs

## Stack Manipulation Macros

djSP , LVRET

## Sv Flags

SvT\_INVLIST

## Sv Manipulation Functions

sv\_2num , sv\_add\_arena , sv\_clean\_all , sv\_clean\_objs , sv\_free\_arenas , SvTHINKFIRST

## Unicode Support

find\_uninit\_var , isSCRIPT\_RUN , is\_utf8\_non\_invariant\_string , report\_uninit , utf8\_to\_uvuni\_buf , uvoffuni\_to\_utf8\_flags , valid\_utf8\_to\_uvchr , variant\_under\_utf8\_count

## Undocumented functions

ASCII\_TO\_NEED , NATIVE\_TO\_NEED , POPMARK , PadnameIN\_SCOPE , PerlIO\_restore\_errno , PerlIO\_save\_errno , PerlLIO\_dup2\_cloexec , PerlLIO\_dup\_cloexec , PerlLIO\_open3\_cloexec , PerlLIO\_open\_cloexec , PerlProc\_pipe\_cloexec , PerlSock\_accept\_cloexec , PerlSock\_socket\_cloexec , PerlSock\_socketpair\_cloexec , ReANY , Slab\_Alloc , Slab\_Free , Slab\_to\_ro , Slab\_to\_rw , TOPMARK , \_add\_range\_to\_invlst , \_byte\_dump\_string , \_force\_out\_malformed\_utf8\_message , \_inverse\_folds , \_invlistEQ , \_invlist\_array\_init , \_invlist\_contains\_cp , \_invlist\_dump , \_invlist\_intersection , \_invlist\_intersection\_maybe\_complement\_2nd , \_invlist\_invert , \_invlist\_len , \_invlist\_search , \_invlist\_subtract , \_invlist\_union , \_invlist\_union\_maybe\_complement\_2nd , \_is\_cur\_LC\_category\_utf8 , \_is\_in\_locale\_category , \_is\_uni\_FOO , \_is\_uni\_perl\_idcont , \_is\_uni\_perl\_idstart , \_is\_utf8\_FOO , \_is\_utf8\_perl\_idcont , \_is\_utf8\_perl\_idstart , \_mem\_collxfrm , \_new\_invlist , \_new\_invlist\_C\_array , \_setup\_canned\_invlist , \_to\_fold\_latin1 , \_to\_uni\_fold\_flags , \_to\_upper\_title\_latin1 , \_to\_utf8\_fold\_flags , \_to\_utf8\_lower\_flags , \_to\_utf8\_title\_flags , \_to\_utf8\_upper\_flags , \_utf8n\_to\_uvchr\_msgs\_helper , \_warn\_problematic\_locale , abort\_execution , add\_cp\_to\_invlist , alloc\_LOGOP , allocmy , amagic\_cmp , amagic\_cmp\_desc , amagic\_cmp\_locale , amagic\_cmp\_locale\_desc , amagic\_i\_ncmp , amagic\_i\_ncmp\_desc , amagic\_is\_enabled , amagic\_ncmp , amagic\_ncmp\_desc , append\_utf8\_from\_native\_byte , apply , av\_extend\_guts , av\_nonelem , av\_reify , bind\_match , boot\_core\_PerlIO , boot\_core\_UNIVERSAL , boot\_core\_mro , cando , check\_utf8\_print , ck\_anoncode , ck\_backtick , ck\_bitop , ck\_cmp , ck\_concat , ck\_delete , ck\_defined , ck\_each , ck\_entersub\_args\_core , ck\_eof , ck\_eval , ck\_exec , ck\_exists , ck\_fst , ck\_fun , ck\_glob , ck\_grep , ck\_index , ck\_isa , ck\_join , ck\_length , ck\_lfun , ck\_listob , ck\_match , ck\_method , ck\_null , ck\_open , ck\_prototype , ck\_readline , ck\_refassign , ck\_repeat , ck\_require , ck\_return , ck\_rfun , ck\_rvconst , ck\_sassign , ck\_select , ck\_shift , ck\_smartmatch , ck\_sort , ck\_spair , ck\_split , ck\_stringify , ck\_subr , ck\_substr , ck\_svconst , ck\_tell , ck\_trunc , closest\_cop , cmp\_desc , cmp\_locale\_desc , cmpchain\_extend , cmpchain\_finish , cmpchain\_start , cntrl\_to\_mnemonic , coresub\_op , create\_eval\_scope , croak\_caller , croak\_memory\_wrap , croak\_no\_mem , croak\_popstack , current\_re\_engine , custom\_op\_get\_field , cv\_ckproto\_len\_flags , cv\_clone\_into , cv\_const\_sv\_or\_av , cv\_undef\_flags , cvgv\_from\_hek , cvgv\_set , cvstash\_set , deb\_stack\_all , defelem\_target , delete\_eval\_scope , delimcpy\_no\_escape , die\_unwind , do\_aexec , do\_aexec5 , do\_eof , do\_exec , do\_exec3 , do\_ipcctl , do\_ipcget , do\_msgrcv , do\_msgsnd , do\_ncmp , do\_open6 , do\_open\_raw , do\_print , do\_readline , do\_seek , do\_semop , do\_shmio , do\_sysseek , do\_tell , do\_trans , do\_unirop\_match , do\_veget , do\_vecset , do\_vop , does\_utf8\_overflow , dofile , drand48\_init\_r , drand48\_r , dtrace\_probe\_call , dtrace\_probe\_load , dtrace\_probe\_op , dtrace\_probe\_phase , dump\_all\_perl , dump\_packsubs\_perl , dump\_sub\_perl , dump\_sv\_child , dup\_warnings , emulate\_cop\_io , find\_first\_differing\_byte\_pos , find\_lexical\_cv , find\_runcv\_where , find\_script , foldEQ\_latin1\_s2\_folded , foldEQ\_utf8\_flags , form\_alien\_digit\_msg , form\_cp\_too\_large\_msg , free\_tied\_hv\_pool , get\_and\_check\_backslash\_N\_name , get\_db\_sub , get\_debug\_opts , get\_deprecated\_property\_msg , get\_hash\_seed , get\_invlist\_iter\_addr , get\_invlist\_offset\_addr , get\_invlist\_previous\_index\_addr , get\_no\_modify , get\_opargs , get\_prop\_definition , get\_prop\_values , get\_re\_arg , get\_re\_gclass\_nonbitmap\_data , get\_regclass\_nonbitmap\_data , get\_regex\_charset\_name , getenv\_len , grok\_bin\_oct\_hex , grok\_bslash\_c , grok\_bslash\_o , grok\_bslash\_x , gv\_fetchmeth\_internal , gv\_override , gv\_setref , gv\_stashpv\_n\_internal , gv\_stashsvpv\_n\_cached , hfree\_next\_entry , hv\_backreferences\_p , hv\_kill\_backrefs , hv\_placeholders\_p , hv\_pushkv , hv\_undef\_flags , hv\_argv\_symbols , init\_constants , init\_dbargs , init\_debugger , init\_i18n10n , init\_i18n14n , init\_named\_cv , init\_uniprops , invert , invlist\_array , invlist\_clear , invlist\_clone , invlist\_contents , invlist\_extend , invlist\_highest , invlist\_is\_iterating , invlist\_iterfinish , invlist\_iterinit , invlist\_iternext , invlist\_lowest , invlist\_max , invlist\_previous\_index , invlist\_set\_len , invlist\_set\_previous\_index , invlist\_trim , invmap\_dump , io\_close , isFF\_OVERLONG , isFOO\_lc , is\_grapheme , is\_invlist , is\_utf8\_char\_helper , is\_utf8\_common ,

is\_utf8\_overlong\_given\_start\_byte\_ok, jmaybe, keyword, keyword\_plugin\_standard, list, load\_charnames, localize, lossless\_NV\_to\_IV, magic\_clear\_all\_env, magic\_cleararylen\_p, magic\_clearenv, magic\_clearisa, magic\_clearpack, magic\_clearsig, magic\_copycallchecker, magic\_existspack, magic\_freearylen\_p, magic\_freeovrld, magic\_get, magic\_getarylen, magic\_getdebugvar, magic\_getdefelem, magic\_getnkeys, magic\_getpack, magic\_getpos, magic\_getsig, magic\_getsubstr, magic\_gettaint, magic\_getuvar, magic\_getvec, magic\_killbackrefs, magic\_nextpack, magic\_regdata\_cnt, magic\_regdatum\_get, magic\_regdatum\_set, magic\_scalarpack, magic\_set, magic\_set\_all\_env, magic\_setarylen, magic\_setcollxfrm, magic\_setdbline, magic\_setdebugvar, magic\_setdefelem, magic\_setenv, magic\_setisa, magic\_setlvref, magic\_setmglob, magic\_setnkeys, magic\_setnonelem, magic\_setpack, magic\_setpos, magic\_setregexp, magic\_setsig, magic\_setsubstr, magic\_settaint, magic\_setutf8, magic\_setuvar, magic\_setvec, magic\_sizepack, magic\_wipepack, malloc\_good\_size, malloced\_size, mem\_collxfrm, mem\_log\_alloc, mem\_log\_free, mem\_log\_realloc, mg\_find\_mglob, mode\_from\_discipline, more\_bodies, mortal\_getenv, mro\_meta\_dup, mro\_meta\_init, multiconcat\_stringify, multideref\_stringify, my\_atof2, my\_atof3, my\_attrs, my\_clearenv, my\_istat\_flags, my\_memchr, my\_mkostemp, my\_mkostemp\_cloexec, my\_mkstemp, my\_mkstemp\_cloexec, my\_stat\_flags, my\_strerror, my\_unexec, newGP, newMETHOP\_internal, newSTUB, newSVavdefelem, newXS\_deffile, new\_warnings\_bitfield, nextargv, noperl\_die, notify\_parser\_that\_changed\_to\_utf8, oopsAV, oopsHV, op\_clear, op\_integerize, op\_lvalue\_flags, op\_refcnt\_dec, op\_refcnt\_inc, op\_relocate\_sv, op\_std\_init, op\_unscope, opmethod\_stash, opslab\_force\_free, opslab\_free, opslab\_free\_nopad, package, package\_version, pad\_add\_weakref, padlist\_store, padname\_free, padnamelist\_free, parse\_unicode\_opts, parser\_free, parser\_free\_nexttoke\_ops, path\_is\_searchable, peep, pmruntime, populate\_isa, ptr\_hash, qerror, re\_exec\_indentf, re\_indentf, re\_intuit\_start, re\_intuit\_string, re\_op\_compile, re\_printf, reg\_named\_buff, reg\_named\_buff\_iter, reg\_numbered\_buff\_fetch, reg\_numbered\_buff\_length, reg\_numbered\_buff\_store, reg\_qr\_package, reg\_skipcomment, reg\_temp\_copy, regcurly, regprop, report\_evil\_fh, report\_redefined\_cv, report\_wrongway\_fh, rpeek, rsignal\_restore, rsignal\_save, rxres\_save, same\_dirent, save\_strlen, save\_to\_buffer, sawparens, scalar, scalarvoid, scan\_str, scan\_word, set\_caret\_X, set\_numeric\_standard, set\_numeric\_underlying, set\_padlist, setfd\_cloexec, setfd\_cloexec\_for\_nonsysfd, setfd\_cloexec\_or\_inhexec\_by\_sysfdness, setfd\_inhexec, setfd\_inhexec\_for\_sysfd, should\_warn\_nl, should\_we\_output\_Debug\_r, sighandler, sighandler1, sighandler3, skipspace\_flags, softref2xv, sortsv\_flags\_impl, sub\_crush\_depth, sv\_add\_backref, sv\_buf\_to\_ro, sv\_del\_backref, sv\_free2, sv\_i\_ncmp, sv\_i\_ncmp\_desc, sv\_kill\_backrefs, sv\_len\_utf8\_nomg, sv\_magicext\_mglob, sv\_ncmp, sv\_ncmp\_desc, sv\_only\_taint\_gmagic, sv\_or\_pv\_pos\_u2b, sv\_resetpvn, sv\_sethek, sv\_setsv\_cow, sv\_unglob, tied\_method, tmps\_grow\_p, to\_uni\_fold, to\_uni\_lower, to\_uni\_title, to\_uni\_upper, translate\_substr\_offsets, try\_amagic\_bin, try\_amagic\_un, uiv\_2buf, unshare\_hek, utf16\_to\_utf8, utf16\_to\_utf8\_reversed, utf8\_to\_uvchr\_buf\_helper, utilize, uvoffuni\_to\_utf8\_flags\_msgs, uvuni\_to\_utf8, valid\_utf8\_to\_uvuni, variant\_byte\_number, varname, vivify\_defelem, vivify\_ref, wait4pid, was\_lvalue\_sub, watch, win32\_croak\_not\_implemented, write\_to\_stderr, xs\_boot\_epilog, xs\_handshake, yyerror, yyerror\_pv, yyerror\_pvn, yylex, yyparse, yyquit, yyunlex

## AUTHORS

## SEE ALSO

# perliol - C API for Perl's implementation of IO in Layers.

## SYNOPSIS

## DESCRIPTION

### History and Background

### Basic Structure

### Layers vs Disciplines

### Data Structures

### Functions and Attributes

### Per-instance Data

### Layers in action.

### Per-instance flag bits

PERLIO\_F\_EOF, PERLIO\_F\_CANWRITE, PERLIO\_F\_CANREAD, PERLIO\_F\_ERROR,  
PERLIO\_F\_TRUNCATE, PERLIO\_F\_APPEND, PERLIO\_F\_CRLF, PERLIO\_F\_UTF8,  
PERLIO\_F\_UNBUF, PERLIO\_F\_WRBUF, PERLIO\_F\_RDBUF, PERLIO\_F\_LINEBUF,  
PERLIO\_F\_TEMP, PERLIO\_F\_OPEN, PERLIO\_F\_FASTGETS

## Methods in Detail

fsize, name, size, kind, PERLIO\_K\_BUFFERED, PERLIO\_K\_RAW, PERLIO\_K CancRLF,  
PERLIO\_K\_FASTGETS, PERLIO\_K\_MULTIARG, Pushed, Popped, Open, Binmode, Getarg, Fileno,  
Dup, Read, Write, Seek, Tell, Close, Flush, Fill, Eof, Error, Clearerr, Setlinebuf, Get\_base, Get\_bufsiz,  
Get\_ptr, Get\_cnt, Set\_ptrcnt

## Utilities

### Implementing PerLIO Layers

C implementations, Perl implementations

### Core Layers

"unix", "perlio", "stdio", "crlf", "mmap", "pending", "raw", "utf8"

### Extension Layers

":encoding", ":scalar", ":via"

## TODO

# perlpio - perl's IO abstraction interface.

## SYNOPSIS

## DESCRIPTION

1. USE\_STDIO, 2. USE\_PERLIO, **PerLIO\_stdin()**, **PerLIO\_stdout()**, **PerLIO\_stderr()**, **PerLIO\_open(path, mode)**, **PerLIO\_fdopen(fd, mode)**, **PerLIO\_reopen(path, mode, f)**, **PerLIO\_printf(f, fmt, ...)**, **PerLIO\_vprintf(f, fr**

### Co-existence with stdio

**PerLIO\_importFILE(f, mode)**, **PerLIO\_exportFILE(f, mode)**, **PerLIO\_releaseFILE(p, f)**, **PerLIO\_findFILE(**

### "Fast gets" Functions

**PerLIO\_fast\_gets(f)**, **PerLIO\_has\_cntptr(f)**, **PerLIO\_get\_cnt(f)**, **PerLIO\_get\_ptr(f)**, **PerLIO\_set\_ptrcnt(f,**

### Other Functions

**PerLIO\_apply\_layers(f, mode, layers)**, **PerLIO\_binmode(f, ptype, imode, layers)**, '<' read, '>' write, '+' read/write, **PerLIO\_debug(fmt, ...)**

# perlhack - How to hack on Perl

## DESCRIPTION

## SUPER QUICK PATCH GUIDE

Check out the source repository, Ensure you're following the latest advice, Create a branch for your change, Make your change, Test your change, Commit your change, Send your change to the Perl issue tracker, Thank you, Acknowledgement, Next time

## BUG REPORTING

## PERL 5 PORTERS

perl-changes mailing list

#p5p on IRC

## GETTING THE PERL SOURCE

Read access via Git

Read access via the web

Read access via rsync

Write access via git

## PATCHING PERL

Submitting patches

Getting your patch accepted

Why, What, How

Patching a core module

Updating perldelta

What makes for a good patch?

## TESTING

*t/base*, *t/comp* and *t/opbasic*, All other subdirectories of *t/*, Test files not found under *t/*

**Special** `make test` **targets**

`test_porting`, `minitest`, `test.valgrind` `check.valgrind`, `test_harness`, `test-notty` `test_notty`

**Parallel tests**

**Running tests by hand**

**Using *t/harness* for testing**

`-v`, `-torture`, `-re=PATTERN`, `-re LIST OF PATTERNS`, `PERL_CORE=1`, `PERL_DESTRUCT_LEVEL=2`,  
`PERL`, `PERL_SKIP_TTY_TEST`, `PERL_TEST_Net_Ping`, `PERL_TEST_NOVREXX`,  
`PERL_TEST_NUMCONVERTS`, `PERL_TEST_MEMORY`

**Performance testing**

**Building perl at older commits**

## MORE READING FOR GUTS HACKERS

[perlsource](#), [perlinterp](#), [perlhacktut](#), [perlhacktips](#), [perlguts](#), [perlxstut](#) and [perlx](#), [perlapi](#), *Porting/pumpkin.pod*

## CPAN TESTERS AND PERL SMOKERS

## WHAT NEXT?

"The Road goes ever on and on, down from the door where it began."

Metaphoric Quotations

## AUTHOR

# perlsource - A guide to the Perl source tree

## DESCRIPTION

## FINDING YOUR WAY AROUND

C code

Core modules

*lib/, ext/, dist/, cpan/*

## **Tests**

Module

tests, *t/base/, t/cmd/, t/comp/, t/io/, t/mro/, t/op/, t/opbasic/, t/re/, t/run/, t/uni/, t/win32/, t/porting/, t/lib/*

## **Documentation**

### **Hacking tools and documentation**

*check\*, Maintainers, Maintainers.pl, and Maintainers.pm, podtidy*

### **Build system**

### **AUTHORS**

### **MANIFEST**

## **perlinterp - An overview of the Perl interpreter**

### **DESCRIPTION**

#### **ELEMENTS OF THE INTERPRETER**

**Startup**

**Parsing**

**Optimization**

**Running**

**Exception handling**

#### **INTERNAL VARIABLE TYPES**

#### **OP TREES**

#### **STACKS**

**Argument stack**

**Mark stack**

**Save stack**

#### **MILLIONS OF MACROS**

#### **FURTHER READING**

## **perlhacktut - Walk through the creation of a simple C code patch**

### **DESCRIPTION**

#### **EXAMPLE OF A SIMPLE PATCH**

**Writing the patch**

**Testing the patch**

**Documenting the patch**

**Submit**

#### **AUTHOR**



# perlhacktips - Tips for Perl core C code hacking

## DESCRIPTION

## COMMON PROBLEMS

Perl environment problems

Portability problems

Problematic System Interfaces

Security problems

## DEBUGGING

Poking at Perl

Using a source-level debugger

run [args], break function\_name, break source.c:xxx, step, next, continue, finish, 'enter', ptype, print

**gdb macro support**

Dumping Perl Data Structures

Using gdb to look at specific parts of a program

Using gdb to look at what the parser/lexer are doing

## SOURCE CODE STATIC ANALYSIS

lint

Coverity

HP-UX cadvise (Code Advisor)

cpd (cut-and-paste detector)

gcc warnings

Warnings of other C compilers

## MEMORY DEBUGGERS

valgrind

AddressSanitizer

-Dcc=clang, -Accflags=-fsanitize=address, -Aldflags=-fsanitize=address, -Alddflags=-shared\ -fsanitize=address, -fsanitize-blacklist='pwd'/asan\_ignore

## PROFILING

Gprof Profiling

-a, -b, -e routine, -f routine, -s, -z

**GCC gcov Profiling**

## MISCELLANEOUS TRICKS

**PERL\_DESTRUCT\_LEVEL**

**PERL\_MEM\_LOG**

**DDD over gdb**

## **C backtrace**

Linux, OS X, `get_c_backtrace`, `free_c_backtrace`, `get_c_backtrace_dump`, `dump_c_backtrace`

## **Poison**

## **Read-only optrees**

## **When is a bool not a bool?**

## **The .i Targets**

## **AUTHOR**

# **perlpolicy - Various and sundry policies and commitments related to the Perl core**

## **DESCRIPTION**

## **GOVERNANCE**

### **Perl 5 Porters**

## **MAINTENANCE AND SUPPORT**

## **BACKWARD COMPATIBILITY AND DEPRECATION**

### **Terminology**

experimental, deprecated, discouraged, removed

## **MAINTENANCE BRANCHES**

### **Getting changes into a maint branch**

## **CONTRIBUTED MODULES**

### **A Social Contract about Artistic Control**

## **DOCUMENTATION**

## **STANDARDS OF CONDUCT**

## **CREDITS**

# **perlgit - Detailed information about git and the Perl repository**

## **DESCRIPTION**

## **CLONING THE REPOSITORY**

## **WORKING WITH THE REPOSITORY**

### **Finding out your status**

### **Patch workflow**

### **A note on derived files**

### **Cleaning a working directory**

### **Bisecting**

### **Topic branches and rewriting history**

### **Grafts**

## WRITE ACCESS TO THE GIT REPOSITORY

Accepting a patch

Committing to bleed

On merging and rebasing

Committing to maintenance versions

Using a smoke-me branch to test changes

## perlbook - Books about and related to Perl

### DESCRIPTION

#### The most popular books

*Programming Perl* (the "Camel Book");, *The Perl Cookbook* (the "Ram Book");, *Learning Perl* (the "Llama Book"), *Intermediate Perl* (the "Alpaca Book")

#### References

*Perl 5 Pocket Reference*, *Perl Debugger Pocket Reference*, *Regular Expression Pocket Reference*

#### Tutorials

*Beginning Perl*, *Learning Perl* (the "Llama Book"), *Intermediate Perl* (the "Alpaca Book"), *Mastering Perl*, *Effective Perl Programming*

#### Task-Oriented

*Writing Perl Modules for CPAN*, *The Perl Cookbook*, *Automating System Administration with Perl*, *Real World SQL Server Administration with Perl*

#### Special Topics

*Regular Expressions Cookbook*, *Programming the Perl DBI*, *Perl Best Practices*, *Higher-Order Perl*, *Mastering Regular Expressions*, *Network Programming with Perl*, *Perl Template Toolkit*, *Object Oriented Perl*, *Data Munging with Perl*, *Mastering Perl/Tk*, *Extending and Embedding Perl*, *Pro Perl Debugging*

#### Free (as in beer) books

#### Other interesting, non-Perl books

*Programming Pearls*, *More Programming Pearls*

#### A note on freshness

#### Get your book listed

## perlcommunity - a brief overview of the Perl community

### DESCRIPTION

#### Where to Find the Community

#### Mailing Lists and Newsgroups

#### IRC

#### Websites

<https://perl.com/>, <http://blogs.perl.org/>, <http://perlsphere.net/>, <http://perlweekly.com/>, <https://www.perlmon>

#### User Groups

Workshops

Hackathons

Conventions

The Perl Conference, OSCON

Calendar of Perl Events

AUTHOR

**perldoc - Look up Perl documentation in Pod format.**

SYNOPSIS

DESCRIPTION

OPTIONS

**-h, -D, -t, -u, -m module, -l, -U, -F, -f perfunc, -q perfaq-search-regexp, -a perlapifunc, -v perlvar, -T, -d destination-filename, -o output-formatname, -M module-name, -w option:value or -w option, -X, -L language\_code, PageName|ModuleName|ProgramName|URL, -n some-formatter, -r, -i, -V**

SECURITY

ENVIRONMENT

CHANGES

SEE ALSO

AUTHOR

**perlhist - the Perl history records**

DESCRIPTION

INTRODUCTION

THE KEEPERS OF THE PUMPKIN

PUMPKIN?

THE RECORDS

SELECTED RELEASE SIZES

SELECTED PATCH SIZES

THE KEEPERS OF THE RECORDS

**perldelta - what is new for perl v5.32.0**

DESCRIPTION

Core Enhancements

The isa Operator

Unicode 13.0 is supported

Chained comparisons capability

New Unicode properties Identifier\_Status and Identifier\_Type supported

It is now possible to write `qr/\p{Name=...}/`, or `qr!\p{na=(SMILING|GRINNING)FACE}/`!

Improvement of `POSIX::mblen()`, `mbtowc`, and `wctomb`

Alpha assertions are no longer experimental

Script runs are no longer experimental

Feature checks are now faster

Perl is now developed on GitHub

Compiled patterns can now be dumped before optimization

## Security

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

Additional Note

## Incompatible Changes

Certain pattern matching features are now prohibited in compiling Unicode property value wildcard subpatterns

Unused functions `POSIX::mbstowcs` and `POSIX::wcstombs` are removed

A bug fix for `(?[\...])` may have caused some patterns to no longer compile

`\p{user-defined}` properties now always override official Unicode ones

Modifiable variables are no longer permitted in constants

Use of `vec` on strings with code points above 0xFF is forbidden

Use of code points over 0xFF in string bitwise operators

`Sys::Hostname::hostname()` does not accept arguments

Plain "0" string now treated as a number for range operator

`\K` now disallowed in look-ahead and look-behind assertions

## Performance Enhancements

### Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

### Documentation

Changes to Existing Documentation

`caller`, `__FILE__`, `__LINE__`, `return`, `open`

### Diagnostics

New Diagnostics

Changes to Existing Diagnostics

### Utility Changes

## perlbug

The bug tracker homepage URL now points to GitHub

## streamzip

### Configuration and Compilation

#### *Configure*

### Testing

### Platform Support

#### Discontinued Platforms

Windows CE

#### Platform-Specific Notes

Linux, NetBSD 8.0, Windows, Solaris, VMS, z/OS

### Internal Changes

### Selected Bug Fixes

### Obituary

### Acknowledgements

### Reporting Bugs

### Give Thanks

### SEE ALSO

## perl5320delta, perldelta - what is new for perl v5.32.0

### DESCRIPTION

#### Core Enhancements

The `isa` Operator

Unicode 13.0 is supported

Chained comparisons capability

New Unicode properties `Identifier_Status` and `Identifier_Type` supported

It is now possible to write `qr/\p{Name=...}/`, or `qr!\p{na=/(SMILING|GRINNING) FACE/}`!

Improvement of `POSIX::mblen()`, `mbtowc`, and `wctomb`

Alpha assertions are no longer experimental

Script runs are no longer experimental

Feature checks are now faster

Perl is now developed on GitHub

Compiled patterns can now be dumped before optimization

#### Security

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

#### Additional Note

### Incompatible Changes

Certain pattern matching features are now prohibited in compiling Unicode property value wildcard subpatterns

Unused functions `POSIX::mbstowcs` and `POSIX::wcstombs` are removed

A bug fix for `(?[\...])` may have caused some patterns to no longer compile

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Use of `vec` on strings with code points above 0xFF is forbidden

Use of code points over 0xFF in string bitwise operators

`Sys::Hostname::hostname()` does not accept arguments

Plain "0" string now treated as a number for range operator

`\K` now disallowed in look-ahead and look-behind assertions

### Performance Enhancements

#### Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

#### Documentation

Changes to Existing Documentation

`caller`, `__FILE__`, `__LINE__`, `return`, `open`

#### Diagnostics

New Diagnostics

Changes to Existing Diagnostics

#### Utility Changes

[perlbug](#)

The bug tracker homepage URL now points to GitHub

[streamzip](#)

#### Configuration and Compilation

*Configure*

#### Testing

#### Platform Support

Discontinued Platforms

Windows CE

## **Platform-Specific Notes**

Linux, NetBSD 8.0, Windows, Solaris, VMS, z/OS

**Internal Changes**

**Selected Bug Fixes**

**Obituary**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## **perl5303delta - what is new for perl v5.30.3**

### **DESCRIPTION**

#### **Security**

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

**Additional Note**

**Incompatible Changes**

**Modules and Pragmata**

**Updated Modules and Pragmata**

**Testing**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## **perl5302delta - what is new for perl v5.30.2**

### **DESCRIPTION**

**Incompatible Changes**

**Modules and Pragmata**

**Updated Modules and Pragmata**

**Documentation**

**Changes to Existing Documentation**

**Configuration and Compilation**

**Testing**

**Platform Support**



## Platform-Specific Notes

Windows

**Selected Bug Fixes**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## perl5301delta - what is new for perl v5.30.1

### DESCRIPTION

**Incompatible Changes**

**Modules and Pragmata**

Updated Modules and Pragmata

**Documentation**

Changes to Existing Documentation

**Configuration and Compilation**

**Testing**

**Platform Support**

Platform-Specific Notes

Win32

**Selected Bug Fixes**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## perl5300delta - what is new for perl v5.30.0

### DESCRIPTION

**Notice**

**Core Enhancements**

Limited variable length lookbehind in regular expression pattern matching is now experimentally supported

The upper limit "n" specifiable in a regular expression quantifier of the form "{m,n}" has been doubled to 65534

Unicode 12.1 is supported

Wildcards in Unicode property value specifications are now partially supported

qr'\N{name}' is now supported

Turkic UTF-8 locales are now seamlessly supported

It is now possible to compile perl to always use thread-safe locale operations.

Eliminate opASSIGN macro usage from core

`-Drv` now means something on `-DDEBUGGING` builds

## Incompatible Changes

Assigning non-zero to `$_` is fatal

Delimiters must now be graphemes

Some formerly deprecated uses of an unescaped left brace `"{"` in regular expression patterns are now illegal

Previously deprecated `sysread()/syswrite()` on `:utf8` handles is now fatal

`my()` in false conditional prohibited

Fatalize `$*` and `$#`

Fatalize unqualified use of `dump()`

Remove `File::Glob::glob()`

`pack()` no longer can return malformed UTF-8

Any set of digits in the Common script are legal in a script run of another script

`JSON::PP` enables `allow_nonref` by default

## Deprecations

In XS code, use of various macros dealing with UTF-8.

## Performance Enhancements

## Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

## Documentation

Changes to Existing Documentation

## Diagnostics

Changes to Existing Diagnostics

## Utility Changes

`xsubpp`

## Configuration and Compilation

## Testing

## Platform Support

### Platform-Specific Notes

HP-UX 11.11, Mac OS X, Minix3, Cygwin, Win32 Mingw, Windows

## Internal Changes

## Selected Bug Fixes

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## **perl5283delta - what is new for perl v5.28.3**

### **DESCRIPTION**

#### **Security**

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

**Additional Note**

#### **Incompatible Changes**

#### **Modules and Pragmata**

**Updated Modules and Pragmata**

#### **Testing**

#### **Acknowledgements**

#### **Reporting Bugs**

#### **Give Thanks**

#### **SEE ALSO**

## **perl5282delta - what is new for perl v5.28.2**

### **DESCRIPTION**

#### **Incompatible Changes**

Any set of digits in the Common script are legal in a script run of another script

#### **Modules and Pragmata**

**Updated Modules and Pragmata**

#### **Platform Support**

**Platform-Specific Notes**

Windows, Mac OS X

#### **Selected Bug Fixes**

#### **Acknowledgements**

#### **Reporting Bugs**

#### **Give Thanks**

#### **SEE ALSO**

## perl5281delta - what is new for perl v5.28.1

### DESCRIPTION

#### Security

[CVE-2018-18311] Integer overflow leading to buffer overflow and segmentation fault

[CVE-2018-18312] Heap-buffer-overflow write in S\_regatom (regcomp.c)

#### Incompatible Changes

#### Modules and Pragmata

Updated Modules and Pragmata

#### Selected Bug Fixes

#### Acknowledgements

#### Reporting Bugs

#### Give Thanks

#### SEE ALSO

## perl5280delta - what is new for perl v5.28.0

### DESCRIPTION

#### Core Enhancements

Unicode 10.0 is supported

`delete` on key/value hash slices

Experimentally, there are now alphabetic synonyms for some regular expression assertions

Mixed Unicode scripts are now detectable

In-place editing with `perl -i` is now safer

Initialisation of aggregate state variables

Full-size inode numbers

The `sprintf %j` format size modifier is now available with pre-C99 compilers

Close-on-exec flag set atomically

String- and number-specific bitwise ops are no longer experimental

Locales are now thread-safe on systems that support them

New read-only predefined variable `${^SAFE_LOCALES}`

#### Security

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] `$ENV{$key}` stack buffer overflow on Windows

Default Hash Function Change

#### Incompatible Changes

**Subroutine attribute and signature order**

**Comma-less variable lists in formats are no longer allowed**

**The `:locked` and `:unique` attributes have been removed**

**`\N{}` with nothing between the braces is now illegal**

**Opening the same symbol as both a file and directory handle is no longer allowed**

**Use of bare `<<` to mean `<<"` is no longer allowed**

**Setting `$/` to a reference to a non-positive integer no longer allowed**

**Unicode code points with values exceeding `IV_MAX` are now fatal**

**The `B::OP::terse` method has been removed**

**Use of inherited `AUTOLOAD` for non-methods is no longer allowed**

**Use of strings with code points over `0xFF` is not allowed for bitwise string operators**

**Setting `${^ENCODING}` to a defined value is now illegal**

**Backslash no longer escapes colon in `PATH` for the `-S` switch**

**the `-DH (DEBUG_H)` misfeature has been removed**

**Yada-yada is now strictly a statement**

**Sort algorithm can no longer be specified**

**Over-radix digits in floating point literals**

**Return type of `unpackstring()`**

## Deprecations

**Use of `vec` on strings with code points above `0xFF` is deprecated**

**Some uses of unescaped `"{"` in regexes are no longer fatal**

**Use of unescaped `"{"` immediately after a `"("` in regular expression patterns is deprecated**

**Assignment to `$[` will be fatal in Perl 5.30**

**`hostname()` won't accept arguments in Perl 5.32**

## Module removals

**`B::Debug`, `Locale::Codes` and its associated Country, Currency and Language modules**

## Performance Enhancements

### Modules and Pragmata

**Removal of use vars**

**Use of `DynaLoader` changed to `XSLoader` in many modules**

**Updated Modules and Pragmata**

**Removed Modules and Pragmata**

## Documentation

### Changes to Existing Documentation

**"Variable length lookbehind not implemented in regex `m/%s/`" in `perldiag`, "Use of state `$_` is experimental" in `perldiag`**

## Diagnostics

### New Diagnostics

### Changes to Existing Diagnostics

## Utility Changes

### perlbug

## Configuration and Compilation

C89 requirement, New probes, HAS\_BUILTIN\_ADD\_OVERFLOW, HAS\_BUILTIN\_MUL\_OVERFLOW, HAS\_BUILTIN\_SUB\_OVERFLOW, HAS\_THREAD\_SAFE\_NL\_LANGINFO\_L, HAS\_LOCALECONV\_L, HAS\_MBRLN, HAS\_MBRTOWC, HAS\_MEMRCHR, HAS\_NANOSLEEP, HAS\_STRNLEN, HAS\_STRTOLD\_L, I\_WCHAR

## Testing

## Packaging

## Platform Support

### Discontinued Platforms

PowerUX / Power MAX OS

### Platform-Specific Notes

CentOS, Cygwin, Darwin, FreeBSD, VMS, Windows

## Internal Changes

## Selected Bug Fixes

## Acknowledgements

## Reporting Bugs

## Give Thanks

## SEE ALSO

# perl5263delta - what is new for perl v5.26.3

## DESCRIPTION

### Security

[CVE-2018-12015] Directory traversal in module Archive::Tar

[CVE-2018-18311] Integer overflow leading to buffer overflow and segmentation fault

[CVE-2018-18312] Heap-buffer-overflow write in S\_regatom (regcomp.c)

[CVE-2018-18313] Heap-buffer-overflow read in S\_grok\_backslash\_N (regcomp.c)

[CVE-2018-18314] Heap-buffer-overflow write in S\_regatom (regcomp.c)

### Incompatible Changes

### Modules and Pragmata

#### Updated Modules and Pragmata

## Diagnostics

### New Diagnostics

**Changes to Existing Diagnostics**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## **perl5262delta - what is new for perl v5.26.2**

### **DESCRIPTION**

#### **Security**

[CVE-2018-6797] heap-buffer-overflow (WRITE of size 1) in S\_regatom (regcomp.c)

[CVE-2018-6798] Heap-buffer-overflow in Perl\_\_byte\_dump\_string (utf8.c)

[CVE-2018-6913] heap-buffer-overflow in S\_pack\_rec

Assertion failure in Perl\_\_core\_swash\_init (utf8.c)

#### **Incompatible Changes**

#### **Modules and Pragmata**

Updated Modules and Pragmata

#### **Documentation**

Changes to Existing Documentation

#### **Platform Support**

Platform-Specific Notes

Windows

#### **Selected Bug Fixes**

#### **Acknowledgements**

#### **Reporting Bugs**

#### **Give Thanks**

#### **SEE ALSO**

## **perl5261delta - what is new for perl v5.26.1**

### **DESCRIPTION**

#### **Security**

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] `$ENV{$key}` stack buffer overflow on Windows

#### **Incompatible Changes**

#### **Modules and Pragmata**

Updated Modules and Pragmata

## Platform Support

### Platform-Specific Notes

FreeBSD, Windows

## Selected Bug Fixes

## Acknowledgements

## Reporting Bugs

## Give Thanks

## SEE ALSO

# perl5260delta - what is new for perl v5.26.0

## DESCRIPTION

### Notice

"." no longer in @INC, do may now warn, In regular expression patterns, a literal left brace "{" should be escaped

### Core Enhancements

**Lexical subroutines are no longer experimental**

**Indented Here-documents**

**New regular expression modifier /xx**

@{^CAPTURE}, %{^CAPTURE}, and %{^CAPTURE\_ALL}

**Declaring a reference to a variable**

**Unicode 9.0 is now supported**

**Use of \p{script} uses the improved Script\_Extensions property**

**Perl can now do default collation in UTF-8 locales on platforms that support it**

**Better locale collation of strings containing embedded NUL characters**

**CORE subroutines for hash and array functions callable via reference**

**New Hash Function For 64-bit Builds**

### Security

**Removal of the current directory (".") from @INC**

*Configure -Udefault\_inc\_excludes\_dot, PERL\_USE\_UNSAFE\_INC, A new deprecation warning issued by do, Script authors, Installing and using CPAN modules, Module Authors*

**Escaped colons and relative paths in PATH**

**New -Di switch is now required for PerlIO debugging output**

### Incompatible Changes

**Unescaped literal "{" characters in regular expression patterns are no longer permissible**

**scalar(%hash) return signature changed**

**keys returned from an lvalue subroutine**

**The \${^ENCODING} facility has been removed**



POSIX: `:tmpnam()` has been removed

require `::Foo::Bar` is now illegal.

Literal control character variable names are no longer permissible

NBSP is no longer permissible in `\N{...}`

## Deprecations

String delimiters that aren't stand-alone graphemes are now deprecated

`\cX` that maps to a printable is no longer deprecated

## Performance Enhancements

New Faster Hash Function on 64 bit builds, readline is faster

## Modules and Pragmata

Updated Modules and Pragmata

## Documentation

New Documentation

Changes to Existing Documentation

## Diagnostics

New Diagnostics

Changes to Existing Diagnostics

## Utility Changes

*c2ph* and *pstruct*

*Porting/pod\_lib.pl*

*Porting/sync-with-cpan*

*perf/benchmarks*

*Porting/checkAUTHORS.pl*

*t/porting/regen.t*

*utils/h2xs.PL*

*perlbug*

## Configuration and Compilation

## Testing

## Platform Support

New Platforms

NetBSD/VAX

Platform-Specific Notes

Darwin, EBCDIC, HP-UX, Hurd, VAX, VMS, Windows, Linux, OpenBSD 6, FreeBSD, DragonFly BSD

## Internal Changes

## Selected Bug Fixes

**Known Problems**

**Errata From Previous Releases**

**Obituary**

**Acknowledgements**

**Reporting Bugs**

**Give Thanks**

**SEE ALSO**

## **perl5244delta - what is new for perl v5.24.4**

### **DESCRIPTION**

#### **Security**

[CVE-2018-6797] heap-buffer-overflow (WRITE of size 1) in S\_regatom (regcomp.c)

[CVE-2018-6798] Heap-buffer-overflow in Perl\_\_byte\_dump\_string (utf8.c)

[CVE-2018-6913] heap-buffer-overflow in S\_pack\_rec

Assertion failure in Perl\_\_core\_swash\_init (utf8.c)

#### **Incompatible Changes**

#### **Modules and Pragmata**

Updated Modules and Pragmata

#### **Selected Bug Fixes**

#### **Acknowledgements**

#### **Reporting Bugs**

**SEE ALSO**

## **perl5243delta - what is new for perl v5.24.3**

### **DESCRIPTION**

#### **Security**

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] `$ENV{$key}` stack buffer overflow on Windows

#### **Incompatible Changes**

#### **Modules and Pragmata**

Updated Modules and Pragmata

#### **Configuration and Compilation**

#### **Platform Support**

##### **Platform-Specific Notes**

VMS, Windows

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5242delta - what is new for perl v5.24.2

### DESCRIPTION

#### Security

Improved handling of '.' in @INC in base.pm

"Escaped" colons and relative paths in PATH

#### Modules and Pragmata

Updated Modules and Pragmata

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5241delta - what is new for perl v5.24.1

### DESCRIPTION

#### Security

-Di switch is now required for PerlIO debugging output

Core modules and tools no longer search "." for optional modules

#### Incompatible Changes

#### Modules and Pragmata

Updated Modules and Pragmata

#### Documentation

Changes to Existing Documentation

#### Testing

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5240delta - what is new for perl v5.24.0

### DESCRIPTION

#### Core Enhancements

**Postfix dereferencing is no longer experimental**

**Unicode 8.0 is now supported**

**perl will now croak when closing an in-place output file fails**

**New `\b{1b}` boundary in regular expressions**

`qr/(?[ ])/` now works in UTF-8 locales

**Integer shift (`<<` and `>>`) now more explicitly defined**

**`printf` and `sprintf` now allow reordered precision arguments**

**More fields provided to `sigaction` callback with `SA_SIGINFO`**

**Hashbang redirection to Perl 6**

## Security

**Set proper umask before calling `mkstemp(3)`**

**Fix out of boundary access in Win32 path handling**

**Fix loss of taint in `canonpath`**

**Avoid accessing uninitialized memory in win32 `crypt()`**

**Remove duplicate environment variables from `environ`**

## Incompatible Changes

**The `autoderef` feature has been removed**

**Lexical `$_` has been removed**

`qr/\b{wb}/` is now tailored to Perl expectations

**Regular expression compilation errors**

`qr/\N{/` now disallowed under `use re "strict"`

**Nested declarations are now disallowed**

**The `/\C/` character class has been removed.**

`chdir('')` no longer chdirs home

**ASCII characters in variable names must now be all visible**

**An off by one issue in `$Carp::MaxArgNums` has been fixed**

**Only blanks and tabs are now allowed within `[...]` within `(? [...])`.**

## Deprecations

**Using code points above the platform's `IV_MAX` is now deprecated**

**Doing bitwise operations on strings containing code points above 0xFF is deprecated**

`sysread()`, `syswrite()`, `recv()` and `send()` are deprecated on utf8 handles

## Performance Enhancements

### Modules and Pragmata

**Updated Modules and Pragmata**

### Documentation

## Changes to Existing Documentation

### Diagnostics

#### New Diagnostics

#### Changes to Existing Diagnostics

### Configuration and Compilation

### Testing

### Platform Support

#### Platform-Specific Notes

AmigaOS, Cygwin, EBCDIC, UTF-EBCDIC extended, EBCDIC `cmp()` and `sort()` fixed for UTF-EBCDIC strings, EBCDIC `tr///` and `y///` fixed for `\N{}`, and `use utf8` ranges, FreeBSD, IRIX, MacOS X, Solaris, Tru64, VMS, Win32, ppc64el, floating point

### Internal Changes

### Selected Bug Fixes

### Acknowledgements

### Reporting Bugs

### SEE ALSO

## perl5224delta - what is new for perl v5.22.4

### DESCRIPTION

#### Security

Improved handling of `'` in `@INC` in `base.pm`

"Escaped" colons and relative paths in `PATH`

#### Modules and Pragmata

Updated Modules and Pragmata

#### Selected Bug Fixes

#### Acknowledgements

#### Reporting Bugs

#### SEE ALSO

## perl5223delta - what is new for perl v5.22.3

### DESCRIPTION

#### Security

`-Di` switch is now required for PerlIO debugging output

Core modules and tools no longer search `"` for optional modules

#### Incompatible Changes

#### Modules and Pragmata

Updated Modules and Pragmata

## Documentation

### Changes to Existing Documentation

## Testing

## Selected Bug Fixes

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5222delta - what is new for perl v5.22.2

## DESCRIPTION

### Security

Fix out of boundary access in Win32 path handling

Fix loss of taint in `canonpath()`

Set proper umask before calling `mkstemp(3)`

Avoid accessing uninitialized memory in Win32 `crypt()`

Remove duplicate environment variables from `environ`

### Incompatible Changes

### Modules and Pragmata

Updated Modules and Pragmata

### Documentation

Changes to Existing Documentation

### Configuration and Compilation

### Platform Support

Platform-Specific Notes

Darwin, OS X/Darwin, ppc64el, Tru64

### Internal Changes

## Selected Bug Fixes

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5221delta - what is new for perl v5.22.1

## DESCRIPTION

### Incompatible Changes

Bounds Checking Constructs

### Modules and Pragmata

## Updated Modules and Pragmata

### Documentation

#### Changes to Existing Documentation

### Diagnostics

#### Changes to Existing Diagnostics

### Configuration and Compilation

### Platform Support

#### Platform-Specific Notes

IRIX

### Selected Bug Fixes

### Acknowledgements

### Reporting Bugs

### SEE ALSO

## perl5220delta - what is new for perl v5.22.0

### DESCRIPTION

#### Core Enhancements

##### New bitwise operators

##### New double-diamond operator

##### New `\b` boundaries in regular expressions

##### Non-Capturing Regular Expression Flag

```
use re 'strict'
```

##### Unicode 7.0 (with correction) is now supported

```
use locale
```

 can restrict which locale categories are affected

##### Perl now supports POSIX 2008 locale currency additions

##### Better heuristics on older platforms for determining locale UTF-8ness

##### Aliasing via reference

```
prototype
```

 with no arguments

##### New `:const` subroutine attribute

```
fileno
```

 now works on directory handles

##### List form of pipe open implemented for Win32

##### Assignment to list repetition

##### Infinity and NaN (not-a-number) handling improved

##### Floating point parsing has been improved

##### Packing infinity or not-a-number into a character is now fatal

##### Experimental C Backtrace API

## Security

Perl is now compiled with `-fstack-protector-strong` if available

The Safe module could allow outside packages to be replaced

Perl is now always compiled with `-D_FORTIFY_SOURCE=2` if available

## Incompatible Changes

Subroutine signatures moved before attributes

`&` and `\&` prototypes accepts only subs

`use encoding` is now lexical

List slices returning empty lists

`\N{}` with a sequence of multiple spaces is now a fatal error

`use UNIVERSAL '...'` is now a fatal error

In double-quotish `\cX`, `X` must now be a printable ASCII character

Splitting the tokens `(?` and `(*` in regular expressions is now a fatal compilation error.

`qr/foo/x` now ignores all Unicode pattern white space

Comment lines within `(?[ ])` are now ended only by a `\n`

`(?[...])` operators now follow standard Perl precedence

Omitting `%` and `@` on hash and array names is no longer permitted

`"$!"` text is now in English outside the scope of `use locale`

`"$!"` text will be returned in UTF-8 when appropriate

Support for `?PATTERN?` without explicit operator has been removed

`defined(@array)` and `defined(%hash)` are now fatal errors

Using a hash or an array as a reference are now fatal errors

Changes to the `*` prototype

## Deprecations

Setting `${^ENCODING}` to anything but `undef`

Use of non-graphic characters in single-character variable names

Inlining of `sub () { $var }` with observable side-effects

Use of multiple `/x` regexp modifiers

Using a NO-BREAK space in a character alias for `\N{...}` is now deprecated

A literal `"{"` should now be escaped in a pattern

Making all warnings fatal is discouraged

## Performance Enhancements

### Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata



## Documentation

### New Documentation

### Changes to Existing Documentation

## Diagnostics

### New Diagnostics

### Changes to Existing Diagnostics

### Diagnostic Removals

## Utility Changes

### *find2perl*, *s2p* and *a2p* removal

### h2ph

### encguess

## Configuration and Compilation

## Testing

## Platform Support

### Regained Platforms

IRIX and Tru64 platforms are working again, z/OS running EBCDIC Code Page 1047

### Discontinued Platforms

NeXTSTEP/OPENSTEP

### Platform-Specific Notes

EBCDIC, HP-UX, Android, VMS, Win32, OpenBSD, Solaris

## Internal Changes

## Selected Bug Fixes

## Known Problems

## Obituary

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5203delta - what is new for perl v5.20.3

## DESCRIPTION

### Incompatible Changes

### Modules and Pragmata

#### Updated Modules and Pragmata

## Documentation

### Changes to Existing Documentation

## Utility Changes

[h2ph](#)

**Testing**

**Platform Support**

**Platform-Specific Notes**

Win32

**Selected Bug Fixes**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5202delta - what is new for perl v5.20.2**

**DESCRIPTION**

**Incompatible Changes**

**Modules and Pragmata**

**Updated Modules and Pragmata**

**Documentation**

**New Documentation**

**Changes to Existing Documentation**

**Diagnostics**

**Changes to Existing Diagnostics**

**Testing**

**Platform Support**

**Regained Platforms**

**Selected Bug Fixes**

**Known Problems**

**Errata From Previous Releases**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5201delta - what is new for perl v5.20.1**

**DESCRIPTION**

**Incompatible Changes**

**Performance Enhancements**

**Modules and Pragmata**

**Updated Modules and Pragmata**

## Documentation

Changes to Existing Documentation

## Diagnostics

Changes to Existing Diagnostics

## Configuration and Compilation

## Platform Support

Platform-Specific Notes

Android, OpenBSD, Solaris, VMS, Windows

## Internal Changes

## Selected Bug Fixes

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5200delta - what is new for perl v5.20.0

## DESCRIPTION

### Core Enhancements

Experimental Subroutine signatures

`sub s` now take a `prototype` attribute

More consistent prototype parsing

`rand` now uses a consistent random number generator

New slice syntax

Experimental Postfix Dereferencing

Unicode 6.3 now supported

New `\p{Unicode}` regular expression pattern property

Better 64-bit support

`use locale` now works on UTF-8 locales

`use locale` now compiles on systems without locale ability

More locale initialization fallback options

`-DL` runtime option now added for tracing locale setting

`-F` now implies `-a` and `-a` implies `-n`

`$a` and `$b` warnings exemption

### Security

Avoid possible read of free()d memory during parsing

### Incompatible Changes

`do` can no longer be used to call subroutines

## Quote-like escape changes

Tainting happens under more circumstances; now conforms to documentation

`\p{}`, `\P{}` matching has changed for non-Unicode code points.

`\p{All}` has been expanded to match all possible code points

`Data::Dumper`'s output may change

Locale decimal point character no longer leaks outside of `use locale` scope

Assignments of Windows sockets error codes to `$!` now prefer *errno.h* values over `WSAGetLastError()` values

Functions `PerlIO_vsprintf` and `PerlIO_sprintf` have been removed

## Deprecations

The `/\C/` character class

Literal control characters in variable names

References to non-integers and non-positive integers in `$/`

Character matching routines in POSIX

Interpreter-based threads are now *discouraged*

### Module removals

[CGI](#) and its associated `CGI::` packages, [inc::latest](#), [Package::Constants](#), [Module::Build](#) and its associated `Module::Build::` packages

### Utility removals

[find2perl](#), [s2p](#), [a2p](#)

## Performance Enhancements

### Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

### Documentation

New Documentation

Changes to Existing Documentation

### Diagnostics

New Diagnostics

Changes to Existing Diagnostics

### Utility Changes

### Configuration and Compilation

### Testing

### Platform Support

#### New Platforms

Android, Bitrig, FreeMiNT, Synology

## Discontinued Platforms

`sfio`, AT&T 3b1, DG/UX, EBCDIC

## Platform-Specific Notes

Cygwin, GNU/Hurd, Linux, Mac OS, MidnightBSD, Mixed-endian platforms, VMS, Win32, WinCE

## Internal Changes

### Selected Bug Fixes

Regular Expressions

Perl 5 Debugger and `-d`

Lexical Subroutines

Everything Else

### Known Problems

### Obituary

### Acknowledgements

### Reporting Bugs

### SEE ALSO

## perl5184delta - what is new for perl v5.18.4

### DESCRIPTION

#### Modules and Pragmata

Updated Modules and Pragmata

#### Platform Support

Platform-Specific Notes

Win32

#### Selected Bug Fixes

#### Acknowledgements

#### Reporting Bugs

#### SEE ALSO

## perl5182delta - what is new for perl v5.18.2

### DESCRIPTION

#### Modules and Pragmata

Updated Modules and Pragmata

#### Documentation

Changes to Existing Documentation

#### Selected Bug Fixes

#### Acknowledgements

**Reporting Bugs**

**SEE ALSO**

## **perl5181delta - what is new for perl v5.18.1**

### **DESCRIPTION**

**Incompatible Changes**

**Modules and Pragmata**

**Updated Modules and Pragmata**

**Platform Support**

**Platform-Specific Notes**

AIX, MidnightBSD

**Selected Bug Fixes**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5180delta - what is new for perl v5.18.0**

### **DESCRIPTION**

**Core Enhancements**

**New mechanism for experimental features**

**Hash overhaul**

**Upgrade to Unicode 6.2**

**Character name aliases may now include non-Latin1-range characters**

**New DTrace probes**

`${^LAST_FH}`

**Regular Expression Set Operations**

**Lexical subroutines**

**Computed Labels**

**More CORE:: subs**

`kill` with negative signal names

**Security**

**See also: hash overhaul**

`Storable` security warning in documentation

`Locale::Maketext` allowed code injection via a malicious template

**Avoid calling memset with a negative count**

**Incompatible Changes**

See also: hash overhaul

An unknown character name in `\N{...}` is now a syntax error

Formerly deprecated characters in `\N{}` character name aliases are now errors.

`\N{BELL}` now refers to U+1F514 instead of U+0007

**New Restrictions in Multi-Character Case-Insensitive Matching in Regular Expression Bracketed Character Classes**

Explicit rules for variable names and identifiers

Vertical tabs are now whitespace

`/({})/` and `/({{}})/` have been heavily reworked

Stricter parsing of substitution replacement

`given` now aliases the global `$_`

The `smartmatch` family of features are now experimental

Lexical `$_` is now experimental

`readline()` with `$/ = \N` now reads N characters, not N bytes

Overridden `glob` is now passed one argument

Here doc parsing

Alphanumeric operators must now be separated from the closing delimiter of regular expressions

`qw(...)` can no longer be used as parentheses

Interaction of lexical and default warnings

`state sub` and `our sub`

Defined values stored in environment are forced to byte strings

`require` dies for unreadable files

`gv_fetchmeth_*` and `SUPER`

`split`'s first argument is more consistently interpreted

## Deprecations

### Module removals

[encoding](#), [Archive::Extract](#), [B::Lint](#), [B::Lint::Debug](#), [CPANPLUS](#) and all included `CPANPLUS::*` modules, [Devel::InnerPackage](#), [Log::Message](#), [Log::Message::Config](#), [Log::Mess](#)

### Deprecated Utilities

[cpanp](#), [cpanp-run-perl](#), [cpan2dist](#), [pod2latex](#)

### PL\_sv\_objcount

Five additional characters should be escaped in patterns with `/x`

User-defined charnames with surprising whitespace

Various XS-callable functions are now deprecated

Certain rare uses of backslashes within regexes are now deprecated

Splitting the tokens `(?` and `(*` in regular expressions

**Pre-PerlIO IO implementations**

**Future Deprecations**

DG/UX, NeXT

**Performance Enhancements**

**Modules and Pragmata**

**New Modules and Pragmata**

**Updated Modules and Pragmata**

**Removed Modules and Pragmata**

**Documentation**

**Changes to Existing Documentation**

**New Diagnostics**

**Changes to Existing Diagnostics**

**Utility Changes**

**Configuration and Compilation**

**Testing**

**Platform Support**

**Discontinued Platforms**

BeOS, UTS Global, VM/ESA, MPE/IX, EPOC, Rhapsody

**Platform-Specific Notes**

**Internal Changes**

**Selected Bug Fixes**

**Known Problems**

**Obituary**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5163delta - what is new for perl v5.16.3**

**DESCRIPTION**

**Core Enhancements**

**Security**

**CVE-2013-1667: memory exhaustion with arbitrary hash keys**

**wrap-around with IO on long strings**

**memory leak in Encode**

**Incompatible Changes**

**Deprecations**



## **Modules and Pragmata**

### **Updated Modules and Pragmata**

## **Known Problems**

## **Acknowledgements**

## **Reporting Bugs**

## **SEE ALSO**

# **perl5162delta - what is new for perl v5.16.2**

## **DESCRIPTION**

### **Incompatible Changes**

## **Modules and Pragmata**

### **Updated Modules and Pragmata**

## **Configuration and Compilation**

configuration should no longer be confused by ls colorization

## **Platform Support**

### **Platform-Specific Notes**

AIX

## **Selected Bug Fixes**

fix /\h/ equivalence with /\[h]/

## **Known Problems**

## **Acknowledgements**

## **Reporting Bugs**

## **SEE ALSO**

# **perl5161delta - what is new for perl v5.16.1**

## **DESCRIPTION**

### **Security**

an off-by-two error in Scalar-List-Util has been fixed

### **Incompatible Changes**

## **Modules and Pragmata**

### **Updated Modules and Pragmata**

## **Configuration and Compilation**

## **Platform Support**

### **Platform-Specific Notes**

VMS

## **Selected Bug Fixes**

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5160delta - what is new for perl v5.16.0

### DESCRIPTION

#### Notice

#### Core Enhancements

`use VERSION`

`__SUB__`

#### New and Improved Built-ins

#### Unicode Support

#### XS Changes

#### Changes to Special Variables

#### Debugger Changes

#### The `CORE` Namespace

#### Other Changes

#### Security

Use `is_utf8_char_buf()` and not `is_utf8_char()`

Malformed UTF-8 input could cause attempts to read beyond the end of the buffer

`File::Glob::bsd_glob()` memory error with `GLOB_ALTDIRFUNC` (CVE-2011-2728).

Privileges are now set correctly when assigning to `$(`

#### Deprecations

Don't read the Unicode data base files in *lib/unicore*

XS functions `is_utf8_char()`, `utf8_to_uvchr()` and `utf8_to_uvuni()`

#### Future Deprecations

##### Core Modules

##### Platforms with no supporting programmers

##### Other Future Deprecations

#### Incompatible Changes

Special blocks called in void context

The `overloading` pragma and regexp objects

Two XS typemap Entries removed

Unicode 6.1 has incompatibilities with Unicode 6.0

Borland compiler

Certain deprecated Unicode properties are no longer supported by default

Dereferencing IO thingies as typeglobs

User-defined case-changing operations

XSUBs are now 'static'

Weakening read-only references

Tying scalars that hold typeglobs

IPC::Open3 no longer provides `xfork()`, `xclose_on_exec()` and `xpipe_anon()`

`$$` no longer caches PID

`$$` and `getppid()` no longer emulate POSIX semantics under LinuxThreads

`$<`, `$>`, `$(` and `$)` are no longer cached

Which Non-ASCII characters get quoted by `quotemeta` and `\Q` has changed

## Performance Enhancements

### Modules and Pragmata

#### Deprecated Modules

[Version::Requirements](#)

#### New Modules and Pragmata

#### Updated Modules and Pragmata

#### Removed Modules and Pragmata

### Documentation

#### New Documentation

#### Changes to Existing Documentation

#### Removed Documentation

### Diagnostics

#### New Diagnostics

#### Removed Errors

#### Changes to Existing Diagnostics

### Utility Changes

### Configuration and Compilation

### Platform Support

#### Platform-Specific Notes

### Internal Changes

### Selected Bug Fixes

#### Array and hash

#### C API fixes

#### Compile-time hints

Copy-on-write scalars

The debugger

Dereferencing operators

Filehandle, last-accessed

Filetests and `stat`

Formats

`given` and `when`

The `glob` operator

Lvalue subroutines

Overloading

Prototypes of built-in keywords

Regular expressions

Smartmatching

The `sort` operator

The `substr` operator

Support for embedded nulls

Threading bugs

Tied variables

Version objects and `vstrings`

Warnings, redefinition

Warnings, "Uninitialized"

Weak references

Other notable fixes

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5144delta - what is new for perl v5.14.4

### DESCRIPTION

#### Core Enhancements

#### Security

CVE-2013-1667: memory exhaustion with arbitrary hash keys

memory leak in Encode

[perl #111594] Socket::unpack\_sockaddr\_un heap-buffer-overflow

[perl #111586] SDBM\_File: fix off-by-one access to global ".dir"

off-by-two error in List::Util

[perl #115994] fix segv in regcomp.c:S\_join\_exact()

[perl #115992] PL\_eval\_start use-after-free

wrap-around with IO on long strings

## Incompatible Changes

## Deprecations

## Modules and Pragmata

### New Modules and Pragmata

### Updated Modules and Pragmata

Socket, SDBM\_File, List::Util

### Removed Modules and Pragmata

## Documentation

### New Documentation

### Changes to Existing Documentation

## Diagnostics

## Utility Changes

## Configuration and Compilation

## Platform Support

### New Platforms

### Discontinued Platforms

### Platform-Specific Notes

VMS

## Selected Bug Fixes

## Known Problems

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5143delta - what is new for perl v5.14.3

## DESCRIPTION

## Core Enhancements

## Security

**Digest** unsafe use of eval (CVE-2011-3597)

Heap buffer overrun in 'x' string repeat operator (CVE-2012-5195)

## Incompatible Changes

## Deprecations

## Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

## Documentation

New Documentation

Changes to Existing Documentation

## Configuration and Compilation

## Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

FreeBSD, Solaris and NetBSD, HP-UX, Linux, Mac OS X, GNU/Hurd, NetBSD

## Bug Fixes

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5142delta - what is new for perl v5.14.2

## DESCRIPTION

### Core Enhancements

### Security

`File::Glob::bsd_glob()` memory error with `GLOB_ALTDIRFUNC` (CVE-2011-2728).

`Encode::decode_xs` n-byte heap-overflow (CVE-2011-2939)

### Incompatible Changes

### Deprecations

## Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

## Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

HP-UX PA-RISC/64 now supports gcc-4.x, Building on OS X 10.7 Lion and Xcode 4 works again

## Bug Fixes

**Known Problems**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5141delta - what is new for perl v5.14.1**

### **DESCRIPTION**

**Core Enhancements**

**Security**

**Incompatible Changes**

**Deprecations**

**Modules and Pragmata**

**New Modules and Pragmata**

**Updated Modules and Pragmata**

**Removed Modules and Pragmata**

**Documentation**

**New Documentation**

**Changes to Existing Documentation**

**Diagnostics**

**New Diagnostics**

**Changes to Existing Diagnostics**

**Utility Changes**

**Configuration and Compilation**

**Testing**

**Platform Support**

**New Platforms**

**Discontinued Platforms**

**Platform-Specific Notes**

**Internal Changes**

**Bug Fixes**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5140delta - what is new for perl v5.14.0**

### **DESCRIPTION**

## Notice

## Core Enhancements

Unicode

Regular Expressions

Syntactical Enhancements

Exception Handling

Other Enhancements

`-d:-foo`, `-d:-foo=bar`

New C APIs

## Security

User-defined regular expression properties

## Incompatible Changes

Regular Expressions and String Escapes

Stashes and Package Variables

Changes to Syntax or to Perl Operators

Threads and Processes

Configuration

## Deprecations

Omitting a space between a regular expression and subsequent word

`\cX`

`"\b{"` and `"\B{"`

Perl 4-era .pl libraries

List assignment to `$_`

Use of `qw(...)` as parentheses

`\N{BELL}`

`?PATTERN?`

Tie functions on scalars holding typeglobs

User-defined case-mapping

Deprecated modules

[Devel::DProf](#)

## Performance Enhancements

"Safe signals" optimisation

Optimisation of `shift()` and `pop()` calls without arguments

Optimisation of regexp engine string comparison work

Regular expression compilation speed-up

String appending is 100 times faster



**Eliminate `PL_*` accessor functions under itthreads**

**Freeing weak references**

**Lexical array and hash assignments**

**@\_ uses less memory**

**Size optimisations to SV and HV structures**

**Memory consumption improvements to Exporter**

**Memory savings for weak references**

**`%+` and `%-` use less memory**

**Multiple small improvements to threads**

**Adjacent pairs of nextstate opcodes are now optimized away**

## Modules and Pragmata

**New Modules and Pragmata**

**Updated Modules and Pragmata**

much less configuration dialog hassle, support for *META/MYMETA.json*, support for `local::lib`, support for `HTTP::Tiny` to reduce the dependency on FTP sites, automatic mirror selection, iron out all known bugs in `configure_requires`, support for distributions compressed with `bzip2(1)`, allow *Foo/Bar.pm* on the command line to mean `Foo::Bar`, `charinfo()`, `charscript()`, `charblock()`

**Removed Modules and Pragmata**

## Documentation

**New Documentation**

**Changes to Existing Documentation**

## Diagnostics

**New Diagnostics**

Closure prototype called, Insecure user-defined property `%s`, panic: `gp_free` failed to free glob pointer - something is repeatedly re-creating entries, Parsing code internal error (`%s`), `refcnt: fd %d%s`, Regexp modifier `"/%c"` may not appear twice, Regexp modifiers `"/%c"` and `"/%c"` are mutually exclusive, Using `!~` with `%s` doesn't make sense, `"\b{"` is deprecated; use `"\b{"` instead, `"\B{"` is deprecated; use `"\B{"` instead, Operation `"%s"` returns its argument for `...`, Use of `qw(...)` as parentheses is deprecated

**Changes to Existing Diagnostics**

## Utility Changes

## Configuration and Compilation

## Platform Support

**New Platforms**

AIX

**Discontinued Platforms**

Apollo DomainOS, MacOS Classic

**Platform-Specific Notes**

## Internal Changes

## New APIs

## C API Changes

## Deprecated C APIs

`Perl_ptr_table_clear`, `sv_compile_2op`, `find_rundefsvoffset`, `CALL_FPTR` and `CPERLscope`

## Other Internal Changes

## Selected Bug Fixes

### I/O

### Regular Expression Bug Fixes

### Syntax/Parsing Bugs

### Stashes, Globs and Method Lookup

Aliasing packages by assigning to globs [perl #77358], Deleting packages by deleting their containing stash elements, Undefined the glob containing a package (`undef *Foo::`), Undefined an ISA glob (`undef *Foo::ISA`), Deleting an ISA stash element (`delete $Foo::{ISA}`), Sharing `@ISA` arrays between classes (via `*Foo::ISA = \@Bar::ISA` or `*Foo::ISA = *Bar::ISA`) [perl #77238]

### Unicode

### Ties, Overloading and Other Magic

### The Debugger

### Threads

### Scoping and Subroutines

### Signals

### Miscellaneous Memory Leaks

### Memory Corruption and Crashes

### Fixes to Various Perl Operators

### Bugs Relating to the C API

## Known Problems

## Errata

`keys()`, `values()`, and `each()` work on arrays

`split()` and `@_`

## Obituary

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5125delta - what is new for perl v5.12.5

## DESCRIPTION

## Security

Encode `decode_xs` n-byte heap-overflow (CVE-2011-2939)

`File::Glob::bsd_glob()` memory error with GLOB\_ALTDIRFUNC (CVE-2011-2728).

Heap buffer overrun in 'x' string repeat operator (CVE-2012-5195)

Incompatible Changes

Modules and Pragmata

Updated Modules

Changes to Existing Documentation

[perlebcdic](#)

[perlunicode](#)

[perluniprops](#)

Installation and Configuration Improvements

Platform Specific Changes

Mac OS X, NetBSD

Selected Bug Fixes

Errata

`split()` and `@_`

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5124delta - what is new for perl v5.12.4

DESCRIPTION

Incompatible Changes

Selected Bug Fixes

Modules and Pragmata

Testing

Documentation

Platform Specific Notes

Linux

Acknowledgements

Reporting Bugs

SEE ALSO

## perl5123delta - what is new for perl v5.12.3

DESCRIPTION

Incompatible Changes

Core Enhancements

`keys`, `values` work on arrays

## Bug Fixes

## Platform Specific Notes

Solaris, VMS, VOS

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5122delta - what is new for perl v5.12.2

## DESCRIPTION

### Incompatible Changes

### Core Enhancements

### Modules and Pragmata

#### New Modules and Pragmata

#### Pragmata Changes

#### Updated Modules

`Carp`, `CPANPLUS`, `File::Glob`, `File::Copy`, `File::Spec`

### Utility Changes

### Changes to Existing Documentation

### Installation and Configuration Improvements

#### Configuration improvements

#### Compilation improvements

### Selected Bug Fixes

## Platform Specific Notes

### AIX

### Windows

### VMS

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5121delta - what is new for perl v5.12.1

## DESCRIPTION

### Incompatible Changes

### Core Enhancements

### Modules and Pragmata

**Pragmata Changes**

**Updated Modules**

**Changes to Existing Documentation**

**Testing**

**Testing Improvements**

**Installation and Configuration Improvements**

**Configuration improvements**

**Bug Fixes**

**Platform Specific Notes**

**HP-UX**

**AIX**

**FreeBSD 7**

**VMS**

**Known Problems**

**Acknowledgements**

**Reporting Bugs**

**SEE ALSO**

## **perl5120delta - what is new for perl v5.12.0**

### **DESCRIPTION**

#### **Core Enhancements**

**New** `package NAME VERSION` **syntax**

**The** `...` **operator**

**Implicit strictures**

**Unicode improvements**

**Y2038 compliance**

**qr overloading**

**Pluggable keywords**

**APIs for more internals**

**Overridable function lookup**

**A proper interface for pluggable Method Resolution Orders**

`\N` **experimental regex escape**

**DTrace support**

**Support for** `configure_requires` **in CPAN module metadata**

`each`, `keys`, `values` **are now more flexible**

`when` **as a statement modifier**

\$, flexibility

// in when clauses

Enabling warnings from your shell environment

delete local

New support for Abstract namespace sockets

32-bit limit on substr arguments removed

## Potentially Incompatible Changes

Deprecations warn by default

Version number formats

@INC reorganization

REGEXPs are now first class

Switch statement changes

flip-flop operators, defined-or operator

Smart match changes

Other potentially incompatible changes

## Deprecations

suidperl, Use of := to mean an empty attribute list, UNIVERSAL->import(), Use of "goto" to jump into a construct, Custom character names in \N{name} that don't look like names, Deprecated Modules, Class::ISA, Pod::Plainer, Shell::Switch, Assignment to \$!, Use of the attribute :locked on subroutines, Use of "locked" with the attributes pragma, Use of "unique" with the attributes pragma, Perl\_pmflag, Numerous Perl 4-era libraries

## Unicode overhaul

### Modules and Pragmata

#### New Modules and Pragmata

autodie, Compress::Raw::Bzip2, overloading, parent, Parse::CPAN::Meta, VMS::DCLsym, VMS::Stdio, XS::APItest::KeywordRPN

#### Updated Pragmata

base, bignum, charnames, constant, diagnostics, feature, less, lib, mro, overload, threads, threads::shared, version, warnings

#### Updated Modules

Archive::Extract, Archive::Tar, Attribute::Handlers, AutoLoader, B::Concise, B::Debug, B::Deparse, B::Lint, CGI, Class::ISA, Compress::Raw::Zlib, CPAN, CPANPLUS, CPANPLUS::Dist::Build, Data::Dumper, DB\_File, Devel::PPPort, Digest, Digest::MD5, Digest::SHA, Encode, Exporter, ExtUtils::CBuilder, ExtUtils::Command, ExtUtils::Constant, ExtUtils::Install, ExtUtils::MakeMaker, ExtUtils::Manifest, ExtUtils::ParseXS, File::Fetch, File::Path, File::Temp, Filter::Simple, Filter::Util::Call, Getopt::Long, IO, IO::Zlib, IPC::Cmd, IPC::SysV, Locale::Maketext, Locale::Maketext::Simple, Log::Message, Log::Message::Simple, Math::BigInt, Math::BigInt::FastCalc, Math::BigRat, Math::Complex, Memoize, MIME::Base64, Module::Build, Module::CoreList, Module::Load, Module::Load::Conditional, Module::Loaded, Module::Pluggable, Net::Ping, NEXT, Object::Accessor, Package::Constants, PerlIO, Pod::Parser, Pod::Perldoc, Pod::Plainer, Pod::Simple, Safe, SelfLoader, Storable, Switch, Sys::Syslog, Term::ANSIColor, Term::UI, Test, Test::Harness, Test::Simple, Text::Balanced, Text::ParseWords, Text::Soundex, Thread::Queue, Thread::Semaphore, Tie::RefHash, Time::HiRes, Time::Local, Time::Piece, Unicode::Collate, Unicode::Normalize, Win32, Win32API::File, XSLoader

## Removed Modules and Pragmata

```
attrs, CPAN::API::HOWTO, CPAN::DeferredCode, CPANPLUS::inc, DCLsym, ExtUtils::MakeMaker::bytes, ExtUtils::MakeMaker::vmsish, Stdio, Test::Harness::Assert, Test::Harness::Iterator, Test::Harness::Point, Test::Harness::Results, Test::Harness::Straps, Test::Harness::Util, XSymSet
```

## Deprecated Modules and Pragmata

### Documentation

#### New Documentation

#### Changes to Existing Documentation

### Selected Performance Enhancements

### Installation and Configuration Improvements

### Internal Changes

### Testing

#### Testing improvements

Parallel tests, Test harness flexibility, Test watchdog

#### New Tests

### New or Changed Diagnostics

#### New Diagnostics

#### Changed Diagnostics

```
Illegal character in prototype for %s : %s, Prototype after '%c' for %s : %s
```

### Utility Changes

### Selected Bug Fixes

### Platform Specific Changes

#### New Platforms

Haiku, MirOS BSD

#### Discontinued Platforms

Domain/OS, MiNT, Tenon MachTen

#### Updated Platforms

AIX, Cygwin, Darwin (Mac OS X), DragonFly BSD, FreeBSD, Irix, NetBSD, OpenVMS, Stratus VOS, Symbian, Windows

### Known Problems

### Errata

### Acknowledgements

### Reporting Bugs

### SEE ALSO

## perl5101delta - what is new for perl v5.10.1

### DESCRIPTION

## Incompatible Changes

### Switch statement changes

flip-flop operators, defined-or operator

### Smart match changes

### Other incompatible changes

## Core Enhancements

### Unicode Character Database 5.1.0

### A proper interface for pluggable Method Resolution Orders

### The overloading pragma

### Parallel tests

### DTrace support

### Support for `configure_requires` in CPAN module metadata

## Modules and Pragmata

### New Modules and Pragmata

`autodie`, `Compress::Raw::Bzip2`, `parent`, `Parse::CPAN::Meta`

### Pragmata Changes

`attributes`, `attrs`, `base`, `bigint`, `bignum`, `bigrat`, `charnames`, `constant`, `feature`, `fields`, `lib`, `open`, `overload`, `overloading`, `version`

### Updated Modules

`Archive::Extract`, `Archive::Tar`, `Attribute::Handlers`, `AutoLoader`, `AutoSplit`, `B`, `B::Debug`, `B::Deparse`, `B::Lint`, `B::Xref`, `Benchmark`, `Carp`, `CGI`, `Compress::Zlib`, `CPAN`, `CPANPLUS`, `CPANPLUS::Dist::Build`, `Cwd`, `Data::Dumper`, `DB`, `DB_File`, `Devel::PPPort`, `Digest::MD5`, `Digest::SHA`, `DirHandle`, `Dumpvalue`, `DynaLoader`, `Encode`, `Errno`, `Exporter`, `ExtUtils::CBuilder`, `ExtUtils::Command`, `ExtUtils::Constant`, `ExtUtils::Embed`, `ExtUtils::Install`, `ExtUtils::MakeMaker`, `ExtUtils::Manifest`, `ExtUtils::ParseXS`, `Fatal`, `File::Basename`, `File::Compare`, `File::Copy`, `File::Fetch`, `File::Find`, `File::Path`, `File::Spec`, `File::stat`, `File::Temp`, `FileCache`, `FileHandle`, `Filter::Simple`, `Filter::Util::Call`, `FindBin`, `GDBM_File`, `Getopt::Long`, `Hash::Util::FieldHash`, `I18N::Collate`, `IO`, `IO::Compress::*`, `IO::Dir`, `IO::Handle`, `IO::Socket`, `IO::Zlib`, `IPC::Cmd`, `IPC::Open3`, `IPC::SysV`, `lib`, `List::Util`, `Locale::MakeText`, `Log::Message`, `Math::BigFloat`, `Math::BigInt`, `Math::BigInt::FastCalc`, `Math::BigRat`, `Math::Complex`, `Math::Trig`, `Memoize`, `Module::Build`, `Module::CoreList`, `Module::Load`, `Module::Load::Conditional`, `Module::Loaded`, `Module::Pluggable`, `NDBM_File`, `Net::Ping`, `NEXT`, `Object::Accessor`, `OS2::REXX`, `Package::Constants`, `PerlIO`, `PerlIO::via`, `Pod::Man`, `Pod::Parser`, `Pod::Simple`, `Pod::Text`, `POSIX`, `Safe`, `Scalar::Util`, `SelectSaver`, `SelfLoader`, `Socket`, `Storable`, `Switch`, `Symbol`, `Sys::Syslog`, `Term::ANSIColor`, `Term::ReadLine`, `Term::UI`, `Test::Harness`, `Test::Simple`, `Text::ParseWords`, `Text::Tabs`, `Text::Wrap`, `Thread::Queue`, `Thread::Semaphore`, `threads`, `threads::shared`, `Tie::RefHash`, `Tie::StdHandle`, `Time::HiRes`, `Time::Local`, `Time::Piece`, `Unicode::Normalize`, `Unicode::UCD`, `UNIVERSAL`, `Win32`, `Win32API::File`, `XSLoader`

## Utility Changes

*`h2ph`, `h2xs`, `perl5db.pl`, `perlthanks`*

## New Documentation

[perlhauku](#), [perlrmroapi](#), [perlperf](#), [perlrepository](#), [perlthanks](#)

## Changes to Existing Documentation

## Performance Enhancements



## Installation and Configuration Improvements

**ext/ reorganisation**

**Configuration improvements**

**Compilation improvements**

**Platform Specific Changes**

AIX, Cygwin, FreeBSD, Irix, Haiku, MirOS BSD, NetBSD, Stratus VOS, Symbian, Win32, VMS

## Selected Bug Fixes

## New or Changed Diagnostics

```
panic: sv_chop %s, Can't locate package %s for the parents of %s, v-string in use/require is
non-portable, Deep recursion on subroutine "%s"
```

## Changed Internals

```
SVf_UTF8, SVs_TEMP
```

## New Tests

```
t/comp/retainedlines.t, t/io/perlio_fail.t, t/io/perlio_leaks.t, t/io/perlio_open.t, t/io/perlio.t, t/io/pvbm.t,
t/mro/package_aliases.t, t/op/dbm.t, t/op/index_thr.t, t/op/pat_thr.t, t/op/qr_gc.t, t/op/reg_email_thr.t,
t/op/regexp_qr_embed_thr.t, t/op/regexp_unicode_prop.t, t/op/regexp_unicode_prop_thr.t,
t/op/reg_nc_tie.t, t/op/reg_posixcc.t, t/op/re.t, t/op/setpgrpstack.t, t/op/substr_thr.t, t/op/upgrade.t,
t/uni/lex_utf8.t, t/uni/tie.t
```

## Known Problems

## Deprecations

## Acknowledgements

## Reporting Bugs

## SEE ALSO

# perl5100delta - what is new for perl 5.10.0

## DESCRIPTION

### Core Enhancements

The `feature` pragma

New **-E** command-line switch

Defined-or operator

Switch and Smart Match operator

Regular expressions

Recursive Patterns, Named Capture Buffers, Possessive Quantifiers, Backtracking control verbs, Relative backreferences, `\K` escape, Vertical and horizontal whitespace, and linebreak, Optional pre-match and post-match captures with the `/p` flag

```
say()
```

Lexical `$_`

The `_` prototype

UNITCHECK blocks

**New Pragma, `mro`**

**`readdir()` may return a "short filename" on Windows**

**`readpipe()` is now overridable**

**Default argument for `readline()`**

**`state()` variables**

**Stacked filetest operators**

**`UNIVERSAL::DOES()`**

**Formats**

**Byte-order modifiers for `pack()` and `unpack()`**

**no `VERSION`**

**`chdir`, `chmod` and `chown` on filehandles**

**OS groups**

**Recursive sort subs**

**Exceptions in constant folding**

**Source filters in `@INC`**

**New internal variables**

**`$_RE_DEBUG_FLAGS`, `^CHILD_ERROR_NATIVE`, `^RE_TRIE_MAXBUF`, `^WIN32_SLOPPY_STAT`**

**Miscellaneous**

**UCD 5.0.0**

**MAD**

**`kill()` on Windows**

## Incompatible Changes

**Packing and UTF-8 strings**

**Byte/character count feature in `unpack()`**

**The `$*` and `$#` variables have been removed**

**`substr()` lvalues are no longer fixed-length**

**Parsing of `-f _`**

**`:unique`**

**Effect of pragmas in `eval`**

**`chdir` FOO**

**Handling of `.pmc` files**

**`$^V` is now a `version` object instead of a v-string**

**`@-` and `@+` in patterns**

**`$AUTOLOAD` can now be tainted**

**Tainting and `printf`**

**`undef` and signal handlers**

**strictures and dereferencing in defined()**

`(?p{})` has been removed

**Pseudo-hashes have been removed**

**Removal of the bytecode compiler and of perlcc**

**Removal of the JPL**

**Recursive inheritance detected earlier**

**warnings::enabled and warnings::warnif changed to favor users of modules**

## Modules and Pragmata

**Upgrading individual core modules**

**Pragmata Changes**

feature, mro, Scoping of the sort pragma, Scoping of bignum, bigint, bigrat, base, strict and warnings, version, warnings, less

**New modules**

**Selected Changes to Core Modules**

Attribute::Handlers, B::Lint, B, Thread

## Utility Changes

perl -d, ptar, ptardiff, shasum, corelist, h2ph and h2xs, perlvp, find2perl, config\_data, cpanp, cpan2dist, pod2html

## New Documentation

### Performance Enhancements

**In-place sorting**

**Lexical array access**

**XS-assisted SWASHGET**

**Constant subroutines**

PERL\_DONT\_CREATE\_GVSV

**Weak references are cheaper**

**sort() enhancements**

**Memory optimisations**

**UTF-8 cache optimisation**

**Sloppy stat on Windows**

**Regular expressions optimisations**

Engine de-recursivised, Single char char-classes treated as literals, Trie optimisation of literal string alternations, Aho-Corasick start-point optimisation

### Installation and Configuration Improvements

**Configuration improvements**

-Dusesitecustomize, Relocatable installations, strlcat() and strlcpy(), d\_pseudofork and d\_printf\_format\_null, Configure help

## Compilation improvements

Parallel build, Borland's compilers support, Static build on Windows, pport.h files, C++ compatibility, Support for Microsoft 64-bit compiler, Visual C++, Win32 builds

## Installation improvements

Module auxiliary files

## New Or Improved Platforms

### Selected Bug Fixes

strictures in regexp-eval blocks, Calling CORE::require(), Subscripts of slices, no warnings 'category' works correctly with -w, threads improvements, chr() and negative values, PERL5SHELL and tainting, Using \*FILE{IO}, Overloading and reblessing, Overloading and UTF-8, eval memory leaks fixed, Random device on Windows, PERLIO\_DEBUG, PerlIO::scalar and read-only scalars, study() and UTF-8, Critical signals, @INC-hook fix, -t switch fix, Duping UTF-8 filehandles, Localisation of hash elements

### New or Changed Diagnostics

Use of uninitialized value, Deprecated use of my() in false conditional, !=~ should be !~, Newline in left-justified string, Too late for "-T" option, "%s" variable %s masks earlier declaration, readdir()/closedir()/etc. attempted on invalid dirhandle, Opening dirhandle/filehandle %s also as a file/directory, Use of -P is deprecated, v-string in use/require is non-portable, perl -V

### Changed Internals

**Reordering of SVt\_\* constants**

**Elimination of SVt\_PVBM**

**New type SVt\_BIND**

**Removal of CPP symbols**

**Less space is used by ops**

**New parser**

**Use of `const`**

**Mathoms**

**`AvFLAGS` has been removed**

**`av_*` changes**

**`%^H` and `%^H`**

**`B::` modules inheritance changed**

**Anonymous hash and array constructors**

### Known Problems

**UTF-8 problems**

### Platform Specific Problems

### Reporting Bugs

### SEE ALSO

## perl589delta - what is new for perl v5.8.9

### DESCRIPTION

### Notice

## Incompatible Changes

## Core Enhancements

Unicode Character Database 5.1.0.

**stat** and **-X** on directory handles

Source filters in **@INC**

Exceptions in constant folding

`no VERSION`

Improved internal UTF-8 caching code

Runtime relocatable installations

New internal variables

`${^CHILD_ERROR_NATIVE}`, `${^UTF8CACHE}`

`readpipe` is now overridable

simple exception handling macros

**-D** option enhancements

**XS**-assisted **SWASHGET**

Constant subroutines

## New Platforms

## Modules and Pragmata

New Modules

Updated Modules

## Utility Changes

debugger upgraded to version 1.31

*perlthanks*

*perlbug*

*h2xs*

*h2ph*

## New Documentation

## Changes to Existing Documentation

## Performance Enhancements

## Installation and Configuration Improvements

Relocatable installations

Configuration improvements

Compilation improvements

Installation improvements.

Platform Specific Changes

## Selected Bug Fixes

Unicode

PerlIO

Magic

Reblessing overloaded objects now works

`strict` now propagates correctly into string evals

Other fixes

Platform Specific Fixes

Smaller fixes

## New or Changed Diagnostics

panic: sv\_chop %s

Maximal count of pending signals (%s) exceeded

panic: attempt to call %s in %s

FETCHSIZE returned a negative value

Can't upgrade %s (%d) to %d

%s argument is not a HASH or ARRAY element or a subroutine

Cannot make the non-overridable builtin %s fatal

Unrecognized character '%s' in column %d

Offset outside string

Invalid escape in the specified encoding in regexp; marked by <-- HERE in m/%s/

Your machine doesn't support dump/undump.

## Changed Internals

Macro cleanups

## New Tests

ext/DynaLoader/t/DynaLoader.t, t/comp/fold.t, t/io/pvbm.t, t/lib/proxy\_constant\_subs.t, t/op/attrhand.t, t/op/dbm.t, t/op/inccode-tie.t, t/op/incfilter.t, t/op/kill0.t, t/op/qrstack.t, t/op/qr.t, t/op/regexp\_qr\_embed.t, t/op/regexp\_qr.t, t/op/rxcode.t, t/op/studyied.t, t/op/substT.t, t/op/symbolcache.t, t/op/upgrade.t, t/mro/package\_aliases.t, t/pod/twice.t, t/run/cloexec.t, t/uni/cache.t, t/uni/chr.t, t/uni/greek.t, t/uni/latin2.t, t/uni/overload.t, t/uni/tie.t

## Known Problems

## Platform Specific Notes

Win32

OS/2

VMS

## Obituary

## Acknowledgements

## Reporting Bugs

SEE ALSO

## perl588delta - what is new for perl v5.8.8

### DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

Utility Changes

`h2xs` enhancements

`perlvp` enhancements

New Documentation

Performance Enhancements

Installation and Configuration Improvements

Selected Bug Fixes

no warnings 'category' works correctly with -w

Remove over-optimisation

sprintf() fixes

Debugger and Unicode slowdown

Smaller fixes

New or Changed Diagnostics

Attempt to set length of freed array

Non-string passed as bitmask

Search pattern not terminated or ternary operator parsed as search pattern

Changed Internals

Platform Specific Problems

Reporting Bugs

SEE ALSO

## perl587delta - what is new for perl v5.8.7

### DESCRIPTION

Incompatible Changes

Core Enhancements

Unicode Character Database 4.1.0

suidperl less insecure

Optional site customization script

`Config.pm` is now much smaller.

**Modules and Pragmata**

**Utility Changes**

find2perl enhancements

**Performance Enhancements**

**Installation and Configuration Improvements**

**Selected Bug Fixes**

**New or Changed Diagnostics**

**Changed Internals**

**Known Problems**

**Platform Specific Problems**

**Reporting Bugs**

**SEE ALSO**

## **perl586delta - what is new for perl v5.8.6**

**DESCRIPTION**

**Incompatible Changes**

**Core Enhancements**

**Modules and Pragmata**

**Utility Changes**

**Performance Enhancements**

**Selected Bug Fixes**

**New or Changed Diagnostics**

**Changed Internals**

**New Tests**

**Reporting Bugs**

**SEE ALSO**

## **perl585delta - what is new for perl v5.8.5**

**DESCRIPTION**

**Incompatible Changes**

**Core Enhancements**

**Modules and Pragmata**

**Utility Changes**

Perl's debugger

h2ph

**Installation and Configuration Improvements**



**Selected Bug Fixes**

**New or Changed Diagnostics**

**Changed Internals**

**Known Problems**

**Platform Specific Problems**

**Reporting Bugs**

**SEE ALSO**

## **perl584delta - what is new for perl v5.8.4**

### **DESCRIPTION**

**Incompatible Changes**

**Core Enhancements**

**Malloc wrapping**

**Unicode Character Database 4.0.1**

**suidperl less insecure**

**format**

**Modules and Pragmata**

**Updated modules**

Attribute::Handlers, B, Benchmark, CGI, Carp, Cwd, Exporter, File::Find, IO, IPC::Open3, Local::Maketext, Math::BigFloat, Math::BigInt, Math::BigRat, MIME::Base64, ODBM\_File, POSIX, Shell, Socket, Storable, Switch, Sys::Syslog, Term::ANSIColor, Time::HiRes, Unicode::UCD, Win32, base, open, threads, utf8

**Performance Enhancements**

**Utility Changes**

**Installation and Configuration Improvements**

**Selected Bug Fixes**

**New or Changed Diagnostics**

**Changed Internals**

**Future Directions**

**Platform Specific Problems**

**Reporting Bugs**

**SEE ALSO**

## **perl583delta - what is new for perl v5.8.3**

### **DESCRIPTION**

**Incompatible Changes**

**Core Enhancements**

## **Modules and Pragmata**

CGI, Cwd, Digest, Digest::MD5, Encode, File::Spec, FindBin, List::Util, Math::BigInt, PodParser, Pod::Perldoc, POSIX, Unicode::Collate, Unicode::Normalize, Test::Harness, threads::shared

## **Utility Changes**

## **New Documentation**

## **Installation and Configuration Improvements**

## **Selected Bug Fixes**

## **New or Changed Diagnostics**

## **Changed Internals**

## **Configuration and Building**

## **Platform Specific Problems**

## **Known Problems**

## **Future Directions**

## **Obituary**

## **Reporting Bugs**

## **SEE ALSO**

# **perl582delta - what is new for perl v5.8.2**

## **DESCRIPTION**

## **Incompatible Changes**

## **Core Enhancements**

### **Hash Randomisation**

### **Threading**

## **Modules and Pragmata**

### **Updated Modules And Pragmata**

Devel::PPPort, Digest::MD5, I18N::LangTags, libnet, MIME::Base64, Pod::Perldoc, strict, Tie::Hash, Time::HiRes, Unicode::Collate, Unicode::Normalize, UNIVERSAL

## **Selected Bug Fixes**

## **Changed Internals**

## **Platform Specific Problems**

## **Future Directions**

## **Reporting Bugs**

## **SEE ALSO**

# **perl581delta - what is new for perl v5.8.1**

## **DESCRIPTION**

## **Incompatible Changes**

**Hash Randomisation**

**UTF-8 On Filehandles No Longer Activated By Locale**

**Single-number v-strings are no longer v-strings before "=>"**

**(Win32) The -C Switch Has Been Repurposed**

**(Win32) The /d Switch Of cmd.exe**

## **Core Enhancements**

**UTF-8 no longer default under UTF-8 locales**

**Unsafe signals again available**

**Tied Arrays with Negative Array Indices**

**local \${x}**

**Unicode Character Database 4.0.0**

**Deprecation Warnings**

**Miscellaneous Enhancements**

## **Modules and Pragmata**

### **Updated Modules And Pragmata**

base, B::Bytecode, B::Concise, B::Deparse, Benchmark, ByteLoader, bytes, CGI, charnames, CPAN, Data::Dumper, DB\_File, Devel::PPPort, Digest::MD5, Encode, fields, libnet, Math::BigInt, MIME::Base64, NEXT, Net::Ping, PerlIO::scalar, podlators, Pod::LaTeX, PodParsers, Pod::Perldoc, Scalar::Util, Storable, strict, Term::ANSIColor, Test::Harness, Test::More, Test::Simple, Text::Balanced, Time::HiRes, threads, threads::shared, Unicode::Collate, Unicode::Normalize, Win32::GetFolderPath, Win32::GetOSVersion

## **Utility Changes**

## **New Documentation**

## **Installation and Configuration Improvements**

### **Platform-specific enhancements**

## **Selected Bug Fixes**

**Closures, eval and lexicals**

**Generic fixes**

**Platform-specific fixes**

## **New or Changed Diagnostics**

**Changed "A thread exited while %d threads were running"**

**Removed "Attempt to clear a restricted hash"**

**New "Illegal declaration of anonymous subroutine"**

**Changed "Invalid range "%s" in transliteration operator"**

**New "Missing control char name in \c"**

**New "Newline in left-justified string for %s"**

**New "Possible precedence problem on bitwise %c operator"**

**New "Pseudo-hashes are deprecated"**

New "read() on %s filehandle %s"

New "5.005 threads are deprecated"

New "Tied variable freed while still in use"

New "To%s: illegal mapping '%s'"

New "Use of freed value in iteration"

## Changed Internals

## New Tests

## Known Problems

Tied hashes in scalar context

Net::Ping 450\_service and 510\_ping\_udp failures

B::C

## Platform Specific Problems

EBCDIC Platforms

Cygwin 1.5 problems

HP-UX: HP cc warnings about sendfile and sendpath

IRIX: t/uni/tr\_7jis.t falsely failing

Mac OS X: no usemymalloc

Tru64: No threaded builds with GNU cc (gcc)

Win32: sysopen, sysread, syswrite

## Future Directions

## Reporting Bugs

## SEE ALSO

# perl58delta - what is new for perl v5.8.0

## DESCRIPTION

## Highlights In 5.8.0

## Incompatible Changes

Binary Incompatibility

64-bit platforms and malloc

AIX Dynaloading

Attributes for `my` variables now handled at run-time

Socket Extension Dynamic in VMS

IEEE-format Floating Point Default on OpenVMS Alpha

New Unicode Semantics (no more `use utf8`, almost)

New Unicode Properties

REF(...) Instead Of SCALAR(...)

**pack/unpack D/F recycled**

**glob() now returns filenames in alphabetical order**

**Deprecations**

## **Core Enhancements**

**Unicode Overhaul**

**PerlIO is Now The Default**

**ithreads**

**Restricted Hashes**

**Safe Signals**

**Understanding of Numbers**

**Arrays now always interpolate into double-quoted strings [561]**

**Miscellaneous Changes**

## **Modules and Pragmata**

**New Modules and Pragmata**

**Updated And Improved Modules and Pragmata**

## **Utility Changes**

## **New Documentation**

## **Performance Enhancements**

## **Installation and Configuration Improvements**

**Generic Improvements**

**New Or Improved Platforms**

## **Selected Bug Fixes**

**Platform Specific Changes and Fixes**

## **New or Changed Diagnostics**

## **Changed Internals**

## **Security Vulnerability Closed [561]**

## **New Tests**

## **Known Problems**

**The Compiler Suite Is Still Very Experimental**

**Localising Tied Arrays and Hashes Is Broken**

**Building Extensions Can Fail Because Of Largefiles**

**Modifying \$\_ Inside for(..)**

**mod\_perl 1.26 Doesn't Build With Threaded Perl**

**lib/ftmp-security tests warn 'system possibly insecure'**

**libwww-perl (LWP) fails base/date #51**

**PDL failing some tests**

**Perl\_get\_sv**

**Self-tying Problems**

**ext/threads/t/libc**

**Failure of Thread (5.005-style) tests**

**Timing problems**

**Tied/Magical Array/Hash Elements Do Not Autovivify**

**Unicode in package/class and subroutine names does not work**

## **Platform Specific Problems**

**AIX**

**Alpha systems with old gccs fail several tests**

**AmigaOS**

**BeOS**

**Cygwin "unable to remap"**

**Cygwin ndbm tests fail on FAT**

**DJGPP Failures**

**FreeBSD built with ithreads coredumps reading large directories**

**FreeBSD Failing locale Test 117 For ISO 8859-15 Locales**

**IRIX fails ext/List/Util/t/shuffle.t or Digest::MD5**

**HP-UX lib/posix Subtest 9 Fails When LP64-Configured**

**Linux with glibc 2.2.5 fails t/op/int subtest #6 with -Duse64bitint**

**Linux With Sflo Fails op/misc Test 48**

**Mac OS X**

**Mac OS X dyld undefined symbols**

**OS/2 Test Failures**

**op/sprintf tests 91, 129, and 130**

**SCO**

**Solaris 2.5**

**Solaris x86 Fails Tests With -Duse64bitint**

**SUPER-UX (NEC SX)**

**Term::ReadKey not working on Win32**

**UNICOS/mk**

**UTS**

**VOS (Stratus)**

**VMS**

Win32

XML::Parser not working

z/OS (OS/390)

Unicode Support on EBCDIC Still Spotty

Seen In Perl 5.7 But Gone Now

Reporting Bugs

SEE ALSO

HISTORY

## perl561delta - what's new for perl v5.6.1

### DESCRIPTION

Summary of changes between 5.6.0 and 5.6.1

#### Security Issues

#### Core bug fixes

UNIVERSAL::isa(), Memory leaks, Numeric conversions, qw(a\b), caller(), Bugs in regular expressions, "slurp" mode, Autovivification of symbolic references to special variables, Lexical warnings, Spurious warnings and errors, glob(), Tainting, sort(), #line directives, Subroutine prototypes, map(), Debugger, PERL5OPT, chop(), Unicode support, 64-bit support, Compiler, Lvalue subroutines, IO::Socket, File::Find, xsubpp, no Module; , Tests

#### Core features

#### Configuration issues

#### Documentation

#### Bundled modules

B::Concise, File::Temp, Pod::LaTeX, Pod::Text::Overstrike, CGI, CPAN, Class::Struct, DB\_File, Devel::Peek, File::Find, Getopt::Long, IO::Poll, IPC::Open3, Math::BigFloat, Math::Complex, Net::Ping, Opcode, Pod::Parser, Pod::Text, SDBM\_File, Sys::Syslog, Tie::RefHash, Tie::SubstrHash

#### Platform-specific improvements

NCR MP-RAS, NonStop-UX

### Core Enhancements

#### Interpreter cloning, threads, and concurrency

#### Lexically scoped warning categories

#### Unicode and UTF-8 support

#### Support for interpolating named characters

#### "our" declarations

#### Support for strings represented as a vector of ordinals

#### Improved Perl version numbering system

#### New syntax for declaring subroutine attributes

#### File and directory handles can be autovivified

#### open() with more than two arguments

**64-bit support**

**Large file support**

**Long doubles**

**"more bits"**

**Enhanced support for sort() subroutines**

`sort $coderef @foo` **allowed**

**File globbing implemented internally**

**Support for CHECK blocks**

**POSIX character class syntax [: :] supported**

**Better pseudo-random number generator**

**Improved `qw//` operator**

**Better worst-case behavior of hashes**

**`pack()` format 'Z' supported**

**`pack()` format modifier 'I' supported**

**`pack()` and `unpack()` support counted strings**

**Comments in `pack()` templates**

**Weak references**

**Binary numbers supported**

**Lvalue subroutines**

**Some arrows may be omitted in calls through references**

**Boolean assignment operators are legal lvalues**

**`exists()` is supported on subroutine names**

**`exists()` and `delete()` are supported on array elements**

**Pseudo-hashes work better**

**Automatic flushing of output buffers**

**Better diagnostics on meaningless filehandle operations**

**Where possible, buffered data discarded from duped input filehandle**

**`eof()` has the same old magic as `<>`**

**`binmode()` can be used to set `:crlf` and `:raw` modes**

`-T` **filetest recognizes UTF-8 encoded files as "text"**

**`system()`, backticks and `pipe open` now reflect `exec()` failure**

**Improved diagnostics**

**Diagnostics follow `STDERR`**

**More consistent close-on-exec behavior**

**`syswrite()` ease-of-use**



**Better syntax checks on parenthesized unary operators**

**Bit operators support full native integer width**

**Improved security features**

**More functional bareword prototype (\*)**

`require` and `do` may be overridden

**\$^X variables may now have names longer than one character**

**New variable \$^C reflects `-c` switch**

**New variable \$^V contains Perl version as a string**

**Optional Y2K warnings**

**Arrays now always interpolate into double-quoted strings**

**@- and @+ provide starting/ending offsets of regex submatches**

## Modules and Pragmata

### Modules

attributes, B, Benchmark, ByteLoader, constant, charnames, Data::Dumper, DB, DB\_File, Devel::DProf, Devel::Peek, Dumpvalue, DynaLoader, English, Env, Fcntl, File::Compare, File::Find, File::Glob, File::Spec, File::Spec::Functions, Getopt::Long, IO, JPL, lib, Math::BigInt, Math::Complex, Math::Trig, Pod::Parser, Pod::InputObjects, Pod::Checker, podchecker, Pod::ParseUtils, Pod::Find, Pod::Select, podselect, Pod::Usage, pod2usage, Pod::Text and Pod::Man, SDBM\_File, Sys::Syslog, Sys::Hostname, Term::ANSIColor, Time::Local, Win32, XSLoader, DBM Filters

### Pragmata

## Utility Changes

**dprofpp**

**find2perl**

**h2xs**

**perlcrc**

**perldoc**

**The Perl Debugger**

## Improved Documentation

perlapi.pod, perlboot.pod, perlcompile.pod, perldbfilter.pod, perldebug.pod, perldebbugs.pod, perlfork.pod, perlfilter.pod, perlhack.pod, perlintern.pod, perllexwarn.pod, perlnumber.pod, perlparent.pod, perlrefut.pod, perltootc.pod, perltodo.pod, perlunicode.pod

## Performance enhancements

**Simple `sort()` using `{ $a <=> $b }` and the like are optimized**

**Optimized assignments to lexical variables**

**Faster subroutine calls**

**`delete()`, `each()`, `values()` and hash iteration are faster**

## Installation and Configuration Improvements

**-Dusethreads means something different**

**New Configure flags**

**Threadedness and 64-bitness now more daring**

**Long Doubles**

**-Dusemorebits**

**-Duselargefiles**

**installusrbinperl**

**SOCKS support**

**-A flag**

**Enhanced Installation Directories**

**gcc automatically tried if 'cc' does not seem to be working**

## **Platform specific changes**

**Supported platforms**

**DOS**

**OS390 (OpenEdition MVS)**

**VMS**

**Win32**

## **Significant bug fixes**

**<HANDLE> on empty files**

**eval '...' improvements**

**All compilation errors are true errors**

**Implicitly closed filehandles are safer**

**Behavior of list slices is more consistent**

**(\%) prototype and \$foo{a}**

**goto &sub and AUTOLOAD**

**-bareword allowed under use integer**

**Failures in DESTROY()**

**Locale bugs fixed**

**Memory leaks**

**Spurious subroutine stubs after failed subroutine calls**

**Taint failures under -U**

**END blocks and the -c switch**

**Potential to leak DATA filehandles**

## **New or Changed Diagnostics**

"%s" variable %s masks earlier declaration in same %s, "my sub" not yet implemented, "our" variable %s redeclared, '!' allowed only after types %s, / cannot take a count, / must be followed by a, A or Z, / must be followed by a\*, A\* or Z\*, / must follow a numeric type, /%s/: Unrecognized escape \\%c passed through, /%s/: Unrecognized escape \\%c in character class passed through, /%s/ should probably be written as "%s", %s() called too early to check prototype, %s argument is not a HASH or ARRAY element, %s argument is not a HASH or ARRAY element or slice, %s argument is not a subroutine name, %s package

attribute may clash with future reserved word: %s, (in cleanup) %s, <> should be quotes, Attempt to join self, Bad eval'd substitution pattern, Bad realloc() ignored, Bareword found in conditional, Binary number > 0b11111111111111111111111111111111 non-portable, Bit vector size > 32 non-portable, Buffer overflow in prime\_env\_iter: %s, Can't check filesystem of script "%s", Can't declare class for non-scalar %s in "%s", Can't declare %s in "%s", Can't ignore signal CHLD, forcing to default, Can't modify non-lvalue subroutine call, Can't read CRTL environ, Can't remove %s: %s, skipping file, Can't return %s from lvalue subroutine, Can't weaken a nonreference, Character class [:%s:] unknown, Character class syntax [%s] belongs inside character classes, Constant is not %s reference, constant(%s): %s, CORE::%s is not a keyword, defined(@array) is deprecated, defined(%hash) is deprecated, Did not produce a valid header, (Did you mean "local" instead of "our"?), Document contains no data, entering effective %s failed, false [] range "%s" in regexp, Filehandle %s opened only for output, flock() on closed filehandle %s, Global symbol "%s" requires explicit package name, Hexadecimal number > 0xffffffff non-portable, Ill-formed CRTL environ value "%s", Ill-formed message in prime\_env\_iter: [%s], Illegal binary digit %s, Illegal binary digit %s ignored, Illegal number of bits in vec, Integer overflow in %s number, Invalid %s attribute: %s, Invalid %s attributes: %s, invalid [] range "%s" in regexp, Invalid separator character %s in attribute list, Invalid separator character %s in subroutine attribute list, leaving effective %s failed, Lvalue subs returning %s not implemented yet, Method %s not permitted, Missing %sbrace%s on \N{}, Missing command in piped open, Missing name in "my sub", No %s specified for -%c, No package name allowed for variable %s in "our", No space allowed after -%c, no UTC offset information; assuming local time is UTC, Octal number > 037777777777 non-portable, panic: del\_backref, panic: kid popen errno read, panic: magic\_killbackrefs, Parentheses missing around "%s" list, Possible unintended interpolation of %s in string, Possible Y2K bug: %s, pragma "attrs" is deprecated, use "sub NAME : ATTRS" instead, Premature end of script headers, Repeat count in pack overflows, Repeat count in unpack overflows, realloc() of freed memory ignored, Reference is already weak, setpgrp can't take arguments, Strange \*+?{} on zero-length expression, switching effective %s is not implemented, This Perl can't reset CRTL environ elements (%s), This Perl can't set CRTL environ elements (%s=%s), Too late to run %s block, Unknown open() mode '%s', Unknown process %x sent message to prime\_env\_iter: %s, Unrecognized escape \% passed through, Unterminated attribute parameter in attribute list, Unterminated attribute list, Unterminated attribute parameter in subroutine attribute list, Unterminated subroutine attribute list, Value of CLI symbol "%s" too long, Version number must be a constant number

## New tests

### Incompatible Changes

#### Perl Source Incompatibilities

CHECK is a new keyword, Treatment of list slices of undef has changed, Format of \$English::PERL\_VERSION is different, Literals of the form 1.2.3 parse differently, Possibly changed pseudo-random number generator, Hashing function for hash keys has changed, undef fails on read only values, Close-on-exec bit may be set on pipe and socket handles, Writing "\$\$1" to mean "\${\$}1" is unsupported, delete(), each(), values() and \%{h} , vec(EXPR,OFFSET,BITS) enforces powers-of-two BITS, Text of some diagnostic output has changed, %@ has been removed, Parenthesized not() behaves like a list operator, Semantics of bareword prototype (\*) have changed, Semantics of bit operators may have changed on 64-bit platforms, More builtins taint their results

#### C Source Incompatibilities

PERL\_POLLUTE , PERL\_IMPLICIT\_CONTEXT , PERL\_POLLUTE\_MALLOC

#### Compatible C Source API Changes

PATCHLEVEL is now PERL\_VERSION

#### Binary Incompatibilities

### Known Problems

Localizing a tied hash element may leak memory

Known test failures

EBCDIC platforms not fully supported

UNICOS/mk CC failures during Configure run

Arrow operator and arrays

## Experimental features

Threads, Unicode, 64-bit support, Lvalue subroutines, Weak references, The pseudo-hash data type, The Compiler suite, Internal implementation of file globbing, The DB module, The regular expression code constructs:

## Obsolete Diagnostics

Character class syntax `[: :]` is reserved for future extensions, Ill-formed logical name `[%s]` in `prime_env_iter`, In string, `@%s` now must be written as `\@%s`, Probable precedence problem on `%s`, `regexp` too big, Use of `"${$<digit}>"` to mean `"${$}<digit>"` is deprecated

## Reporting Bugs

## SEE ALSO

## HISTORY

# perl56delta - what's new for perl v5.6.0

## DESCRIPTION

### Core Enhancements

Interpreter cloning, threads, and concurrency

Lexically scoped warning categories

Unicode and UTF-8 support

Support for interpolating named characters

"our" declarations

Support for strings represented as a vector of ordinals

Improved Perl version numbering system

New syntax for declaring subroutine attributes

File and directory handles can be autovivified

`open()` with more than two arguments

64-bit support

Large file support

Long doubles

"more bits"

Enhanced support for `sort()` subroutines

```
sort $coderef @foo allowed
```

File globbing implemented internally

Support for CHECK blocks

POSIX character class syntax `[: :]` supported

Better pseudo-random number generator

Improved `qw//` operator

Better worst-case behavior of hashes

`pack()` format 'Z' supported

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`exists()` and `delete()` are supported on array elements

Pseudo-hashes work better

Automatic flushing of output buffers

Better diagnostics on meaningless filehandle operations

Where possible, buffered data discarded from duped input filehandle

`eof()` has the same old magic as `<>`

`binmode()` can be used to set `:crlf` and `:raw` modes

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More functional bareword prototype `(*)`

`require` and `do` may be overridden

`$_X` variables may now have names longer than one character

New variable `$_C` reflects `-c` switch

New variable `$_V` contains Perl version as a string

Optional Y2K warnings

Arrays now always interpolate into double-quoted strings

`@-` and `@+` provide starting/ending offsets of regex matches

## Modules and Pragmata

Modules

attributes, B, Benchmark, ByteLoader, constant, charnames, Data::Dumper, DB, DB\_File, Devel::DPProf, Devel::Peek, Dumpvalue, DynaLoader, English, Env, Fcntl, File::Compare, File::Find, File::Glob, File::Spec, File::Spec::Functions, Getopt::Long, IO, JPL, lib, Math::BigInt, Math::Complex, Math::Trig, Pod::Parser, Pod::InputObjects, Pod::Checker, podchecker, Pod::ParseUtils, Pod::Find, Pod::Select, podselect, Pod::Usage, pod2usage, Pod::Text and Pod::Man, SDBM\_File, Sys::Syslog, Sys::Hostname, Term::ANSIColor, Time::Local, Win32, XSLoader, DBM Filters

## **Pragmata**

### **Utility Changes**

**dprofpp**

**find2perl**

**h2xs**

**perlcc**

**perldoc**

**The Perl Debugger**

### **Improved Documentation**

perlapi.pod, perlboot.pod, perlcompile.pod, perldbfilter.pod, perldebug.pod, perldebbugs.pod, perlfork.pod, perlfilter.pod, perlhack.pod, perlintern.pod, perllexwarn.pod, perlnumber.pod, perlopentut.pod, perlrefut.pod, perltootc.pod, perltodo.pod, perlunicode.pod

### **Performance enhancements**

**Simple sort() using { \$a <=> \$b } and the like are optimized**

**Optimized assignments to lexical variables**

**Faster subroutine calls**

**delete(), each(), values() and hash iteration are faster**

### **Installation and Configuration Improvements**

**-Dusethreads means something different**

**New Configure flags**

**Threadedness and 64-bitness now more daring**

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**-Duselargefiles**

**installusrbinperl**

**SOCKS support**

**-A flag**

**Enhanced Installation Directories**

### **Platform specific changes**

**Supported platforms**

**DOS**

**OS390 (OpenEdition MVS)**

**VMS**

## Win32

### Significant bug fixes

**<HANDLE> on empty files**

**eval '...' improvements**

**All compilation errors are true errors**

**Implicitly closed filehandles are safer**

**Behavior of list slices is more consistent**

**(\%) prototype and \$foo{a}**

**goto &sub and AUTOLOAD**

**-bareword allowed under use integer**

**Failures in DESTROY()**

**Locale bugs fixed**

**Memory leaks**

**Spurious subroutine stubs after failed subroutine calls**

**Taint failures under -U**

**END blocks and the -c switch**

**Potential to leak DATA filehandles**

### New or Changed Diagnostics

"%s" variable %s masks earlier declaration in same %s, "my sub" not yet implemented, "our" variable %s redeclared, '!' allowed only after types %s, / cannot take a count, / must be followed by a, A or Z, / must be followed by a\*, A\* or Z\*, / must follow a numeric type, /%s/: Unrecognized escape \\%c passed through, /%s/: Unrecognized escape \\%c in character class passed through, /%s/ should probably be written as "%s", %s() called too early to check prototype, %s argument is not a HASH or ARRAY element, %s argument is not a HASH or ARRAY element or slice, %s argument is not a subroutine name, %s package attribute may clash with future reserved word: %s, (in cleanup) %s, <> should be quotes, Attempt to join self, Bad eval'd substitution pattern, Bad realloc() ignored, Bareword found in conditional, Binary number > 0b11111111111111111111111111111111 non-portable, Bit vector size > 32 non-portable, Buffer overflow in prime\_env\_iter: %s, Can't check filesystem of script "%s", Can't declare class for non-scalar %s in "%s", Can't declare %s in "%s", Can't ignore signal CHLD, forcing to default, Can't modify non-lvalue subroutine call, Can't read CRTL environ, Can't remove %s: %s, skipping file, Can't return %s from lvalue subroutine, Can't weaken a nonreference, Character class [:%s:] unknown, Character class syntax [%s] belongs inside character classes, Constant is not %s reference, constant(%s): %s, CORE::%s is not a keyword, defined(@array) is deprecated, defined(%hash) is deprecated, Did not produce a valid header, (Did you mean "local" instead of "our"?), Document contains no data, entering effective %s failed, false [] range "%s" in regexp, Filehandle %s opened only for output, flock() on closed filehandle %s, Global symbol "%s" requires explicit package name, Hexadecimal number > 0xffffffff non-portable, Ill-formed CRTL environ value "%s", Ill-formed message in prime\_env\_iter: [%s], Illegal binary digit %s, Illegal binary digit %s ignored, Illegal number of bits in vec, Integer overflow in %s number, Invalid %s attribute: %s, Invalid %s attributes: %s, invalid [] range "%s" in regexp, Invalid separator character %s in attribute list, Invalid separator character %s in subroutine attribute list, leaving effective %s failed, Lvalue subs returning %s not implemented yet, Method %s not permitted, Missing %sbrace%s on \N{}, Missing command in piped open, Missing name in "my sub", No %s specified for -%c, No package name allowed for variable %s in "our", No space allowed after -%c, no UTC offset information; assuming local time is UTC, Octal number > 037777777777 non-portable, panic: del\_backref, panic: kid popen errno read, panic: magic\_killbackrefs, Parentheses missing around "%s" list, Possible unintended interpolation of %s in string, Possible Y2K bug: %s, pragma "attrs" is deprecated, use "sub NAME : ATTRS" instead, Premature end of script headers, Repeat count in pack overflows, Repeat count in unpack overflows, realloc() of freed memory ignored, Reference is already weak, setpgrp can't take arguments, Strange \*+?{} on zero-length expression, switching effective %s is not implemented, This Perl can't reset CRTL environ elements (%s), This Perl can't set CRTL environ elements (%s=%s), Too late to run %s block, Unknown open() mode '%s', Unknown process %x sent message to prime\_env\_iter: %s, Unrecognized escape \\%c passed through,

Unterminated attribute parameter in attribute list, Unterminated attribute list, Unterminated attribute parameter in subroutine attribute list, Unterminated subroutine attribute list, Value of CLI symbol "%s" too long, Version number must be a constant number

## New tests

## Incompatible Changes

### Perl Source Incompatibilities

CHECK is a new keyword, Treatment of list slices of undef has changed, Format of \$English::PERL\_VERSION is different, Literals of the form 1.2.3 parse differently, Possibly changed pseudo-random number generator, Hashing function for hash keys has changed, undef fails on read only values, Close-on-exec bit may be set on pipe and socket handles, Writing "\$\$1" to mean "\${\$}1" is unsupported, delete(), each(), values() and \(%h) , vec(EXPR,OFFSET,BITS) enforces powers-of-two BITS, Text of some diagnostic output has changed, %@ has been removed, Parenthesized not() behaves like a list operator, Semantics of bareword prototype (\*) have changed, Semantics of bit operators may have changed on 64-bit platforms, More builtins taint their results

### C Source Incompatibilities

PERL\_POLLUTE , PERL\_IMPLICIT\_CONTEXT , PERL\_POLLUTE\_MALLOC

### Compatible C Source API Changes

PATCHLEVEL is now PERL\_VERSION

### Binary Incompatibilities

## Known Problems

### Thread test failures

### EBCDIC platforms not supported

### In 64-bit HP-UX the lib/io\_multihomed test may hang

### NEXTSTEP 3.3 POSIX test failure

### Tru64 (aka Digital UNIX, aka DEC OSF/1) lib/sdbm test failure with gcc

### UNICOS/mk CC failures during Configure run

### Arrow operator and arrays

### Experimental features

Threads, Unicode, 64-bit support, Lvalue subroutines, Weak references, The pseudo-hash data type, The Compiler suite, Internal implementation of file globbing, The DB module, The regular expression code constructs:

## Obsolete Diagnostics

Character class syntax [::] is reserved for future extensions, Ill-formed logical name [%s] in prime\_env\_iter, In string, @%s now must be written as \@%s, Probable precedence problem on %s, regexp too big, Use of "\$\$<digit>" to mean "\${\$}<digit>" is deprecated

## Reporting Bugs

## SEE ALSO

## HISTORY

# perl5005delta - what's new for perl5.005

## DESCRIPTION

### About the new versioning system



## Incompatible Changes

**WARNING:** This version is not binary compatible with Perl 5.004.

Default installation structure has changed

Perl Source Compatibility

C Source Compatibility

Binary Compatibility

Security fixes may affect compatibility

Relaxed new mandatory warnings introduced in 5.004

Licensing

## Core Changes

Threads

Compiler

Regular Expressions

Many new and improved optimizations, Many bug fixes, New regular expression constructs, New operator for precompiled regular expressions, Other improvements, Incompatible changes

Improved malloc()

Quicksort is internally implemented

Reliable signals

Reliable stack pointers

More generous treatment of carriage returns

Memory leaks

Better support for multiple interpreters

Behavior of local() on array and hash elements is now well-defined

%! is transparently tied to the Errno module

Pseudo-hashes are supported

EXPR foreach EXPR is supported

Keywords can be globally overridden

\$^E is meaningful on Win32

foreach (1..1000000) optimized

Foo:: can be used as implicitly quoted package name

exists \$Foo::{Bar::} tests existence of a package

Better locale support

Experimental support for 64-bit platforms

prototype() returns useful results on builtins

Extended support for exception handling

Re-blessing in DESTROY() supported for chaining DESTROY() methods

**All `printf` format conversions are handled internally**

**New `INIT` keyword**

**New `lock` keyword**

**New `qr//` operator**

**`our` is now a reserved word**

**Tied arrays are now fully supported**

**Tied handles support is better**

**4th argument to `substr`**

**Negative `LENGTH` argument to `splice`**

**Magic lvalues are now more magical**

**`<>` now reads in records**

## Supported Platforms

**New Platforms**

**Changes in existing support**

## Modules and Pragmata

**New Modules**

B, Data::Dumper, Dumpvalue, Errno, File::Spec, ExtUtils::Installed, ExtUtils::Packlist, Fatal, IPC::SysV, Test, Tie::Array, Tie::Handle, Thread, attrs, fields, re

**Changes in existing modules**

Benchmark, Carp, CGI, Fcntl, Math::Complex, Math::Trig, POSIX, DB\_File, MakeMaker, CPAN, Cwd

## Utility Changes

## Documentation Changes

## New Diagnostics

Ambiguous call resolved as `CORE::%( )`, qualify as such or use `&`, Bad index while coercing array into hash, Bareword `""s` refers to nonexistent package, Can't call method `""s` on an undefined value, Can't check filesystem of script `""s` for nosuid, Can't coerce array into hash, Can't goto subroutine from an eval-string, Can't localize pseudo-hash element, Can't use `%%!` because `Errno.pm` is not available, Cannot find an opnumber for `""s`, Character class syntax `[. .]` is reserved for future extensions, Character class syntax `[: :]` is reserved for future extensions, Character class syntax `[= =]` is reserved for future extensions, `%s`: Eval-group in insecure regular expression, `%s`: Eval-group not allowed, use `re 'eval'`, `%s`: Eval-group not allowed at run time, Explicit blessing to `"` (assuming package `main`), Illegal hex digit ignored, No such array field, No such field `""s` in variable `%s` of type `%s`, Out of memory during ridiculously large request, Range iterator outside integer range, Recursive inheritance detected while looking for method `'%s' %s`, Reference found where even-sized list expected, Undefined value assigned to `typeglob`, Use of reserved word `""s` is deprecated, perl: warning: Setting locale failed

## Obsolete Diagnostics

Can't `mktmp()`, Can't write to temp file for `-e: %s`, Cannot open temporary file, regexp too big

## Configuration Changes

## BUGS

## SEE ALSO

## HISTORY

# perl5004delta - what's new for perl5.004

## DESCRIPTION

### Supported Environments

### Core Changes

List assignment to %ENV works

Change to "Can't locate Foo.pm in @INC" error

Compilation option: Binary compatibility with 5.003

\$PERL5OPT environment variable

Limitations on -M, -m, and -T options

More precise warnings

Deprecated: Inherited AUTOLOAD for non-methods

Previously deprecated %OVERLOAD is no longer usable

Subroutine arguments created only when they're modified

Group vector changeable with \$)

Fixed parsing of \$\$<digit>, &\$\$<digit>, etc.

Fixed localization of \$<digit>, \$&, etc.

No resetting of \$. on implicit close

wantarray may return undef

eval EXPR determines value of EXPR in scalar context

### Changes to tainting checks

No glob() or <\*>, No spawning if tainted \$CDPATH, \$ENV, \$BASH\_ENV, No spawning if tainted \$TERM doesn't look like a terminal name

### New Opcode module and revised Safe module

### Embedding improvements

Internal change: FileHandle class based on IO::\* classes

Internal change: PerlIO abstraction interface

### New and changed syntax

\$coderef->(PARAMS)

### New and changed builtin constants

\_\_PACKAGE\_\_

### New and changed builtin variables

\$^E, \$^H, \$^M

### New and changed builtin functions

delete on slices, flock, printf and sprintf, keys as an lvalue, my() in Control Structures, pack() and unpack(), sysseek(), use VERSION, use Module VERSION LIST, prototype(FUNCTION), srand, \$\_ as Default, m//gc does not reset search position on failure, m//x ignores whitespace before ?\*+{}, nested sub{} closures work now, formats work right on changing lexicals

## **New builtin methods**

`isa(CLASS)`, `can(METHOD)`, `VERSION( [NEED] )`

## **TIEHANDLE now supported**

`TIEHANDLE classname`, `LIST`, `PRINT this`, `LIST`, `PRINTF this`, `LIST`, `READ this`, `LIST`, `READLINE this`, `GETC this`, `DESTROY this`

## **Malloc enhancements**

`-DPERL_EMERGENCY_SBRK`, `-DPACK_MALLOC`, `-DTWO_POT_OPTIMIZE`

## **Miscellaneous efficiency enhancements**

## **Support for More Operating Systems**

**Win32**

**Plan 9**

**QNX**

**AmigaOS**

## **Pragmata**

`use autouse MODULE => qw(sub1 sub2 sub3)`, `use blib`, `use blib 'dir'`, `use constant NAME => VALUE`, `use locale`, `use ops`, `use vmsish`

## **Modules**

**Required Updates**

**Installation directories**

**Module information summary**

**Fcntl**

**IO**

**Math::Complex**

**Math::Trig**

**DB\_File**

**Net::Ping**

**Object-oriented overrides for builtin operators**

## **Utility Changes**

**pod2html**

Sends converted HTML to standard output

**xsubpp**

`void` XSUBs now default to returning nothing

## **C Language API Changes**

`gv_fetchmethod` and `perl_call_sv`, `perl_eval_pv`, Extended API for manipulating hashes

## **Documentation Changes**

[`perldelta`](#), [`perlfaq`](#), [`perllocale`](#), [`perltoot`](#), [`perlapi`](#), [`perlmodlib`](#), [`perldebug`](#), [`perlsec`](#)

## New Diagnostics

"my" variable %s masks earlier declaration in same scope, %s argument is not a HASH element or slice, Allocation too large: %lx, Allocation too large, Applying %s to %s will act on scalar(%s), Attempt to free nonexistent shared string, Attempt to use reference as lvalue in substr, Bareword "%s" refers to nonexistent package, Can't redefine active sort subroutine %s, Can't use bareword ("%s") as %s ref while "strict refs" in use, Cannot resolve method '%s' overloading '%s' in package '%s', Constant subroutine %s redefined, Constant subroutine %s undefined, Copy method did not return a reference, Died, Exiting pseudo-block via %s, Identifier too long, Illegal character %s (carriage return), Illegal switch in PERL5OPT: %s, Integer overflow in hex number, Integer overflow in octal number, internal error: glob failed, Invalid conversion in %s: "%s", Invalid type in pack: '%s', Invalid type in unpack: '%s', Name "%s::%s" used only once: possible typo, Null picture in formline, Offset outside string, Out of memory!, Out of memory during request for %s, panic: frexp, Possible attempt to put comments in qw() list, Possible attempt to separate words with commas, Scalar value @%s{%s} better written as \$%s{%s}, Stub found while resolving method '%s' overloading '%s' in %s, Too late for "-T" option, untie attempted while %d inner references still exist, Unrecognized character %s, Unsupported function fork, Use of "\$\${<digit>" to mean "\${\${<digit>" is deprecated, Value of %s can be "0"; test with defined(), Variable "%s" may be unavailable, Variable "%s" will not stay shared, Warning: something's wrong, Ill-formed logical name [%s] in prime\_env\_iter, Got an error from DosAllocMem, Malformed PERLLIB\_PREFIX, PERL\_SH\_DIR too long, Process terminated by SIG%s

## BUGS

## SEE ALSO

## HISTORY

# perlexperiment - A listing of experimental features in Perl

## DESCRIPTION

### Current experiments

Smart match ( ~~~ ), Pluggable keywords, Regular Expression Set Operations, Subroutine signatures, Aliasing via reference, The "const" attribute, use re 'strict';, The <:win32> IO pseudolayer, Declaring a reference to a variable, There is an `installhtml` target in the Makefile, (Limited) Variable-length look-behind

### Accepted features

64-bit support, die accepts a reference, DB module, Weak references, Internal file glob, fork() emulation, -Dusemultiplicity -Duseithreads, Support for long doubles, The `\N` regex character class, `(?{code})` and `(??{ code })`, Linux abstract Unix domain sockets, Lvalue subroutines, Backtracking control verbs, The `<:pop>` IO pseudolayer, `\s` in regex matches vertical tab, Postfix dereference syntax, Lexical subroutines, String- and number-specific bitwise operators, Alphabetic assertions, Script runs

### Removed features

5.005-style threading, perlcc, The pseudo-hash data type, GetOpt::Long Options can now take multiple values at once (experimental), Assertions, Test::Harness::Straps, `legacy`, Lexical `$_`, Array and hash container functions accept references, `our` can have an experimental optional attribute `unique`

## SEE ALSO

## AUTHORS

## COPYRIGHT

## LICENSE

# perlartistic - the Perl Artistic License

## SYNOPSIS

## **DESCRIPTION**

### **The "Artistic License"**

#### **Preamble**

#### **Definitions**

"Package", "Standard Version", "Copyright Holder", "You", "Reasonable copying fee", "Freely Available"

#### **Conditions**

a), b), c), d), a), b), c), d)

## **perl/gpl - the GNU General Public License, version 1**

## **SYNOPSIS**

## **DESCRIPTION**

## **GNU GENERAL PUBLIC LICENSE**

## **perlaix - Perl version 5 on IBM AIX (UNIX) systems**

## **DESCRIPTION**

**Compiling Perl 5 on AIX**

**Supported Compilers**

**Incompatibility with AIX Toolbox lib gdbm**

**Perl 5 was successfully compiled and tested on:**

**Building Dynamic Extensions on AIX**

**Using Large Files with Perl**

**Threaded Perl**

**64-bit Perl**

**Long doubles**

**Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (threaded/32-bit)**

**Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (32-bit)**

**Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (threaded/64-bit)**

**Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (64-bit)**

**Compiling Perl 5 on AIX 7.1.0**

**Compiling Perl 5 on older AIX versions up to 4.3.3**

**OS level**

**Building Dynamic Extensions on AIX < 5L**

**The IBM ANSI C Compiler**

**The usenm option**

**Using GNU's gcc for building Perl**

**Using Large Files with Perl < 5L**

Threaded Perl < 5L

64-bit Perl < 5L

AIX 4.2 and extensions using C++ with statics

## AUTHORS

# perlamiga - Perl under AmigaOS 4.1

## NOTE

## SYNOPSIS

## DESCRIPTION

**Prerequisites for running Perl 5.22.1 under AmigaOS 4.1**

AmigaOS 4.1 update 6 with all updates applied as of 9th October 2013, newlib.library version 53.28 or greater, AmigaOS SDK, abc-shell

**Starting Perl programs under AmigaOS 4.1**

**Limitations of Perl under AmigaOS 4.1**

Nested Piped programs can crash when run from older abc-shells, Incorrect or unexpected command line unescaping, Starting subprocesses via open has limitations, If you find any other limitations or bugs then let me know

## INSTALLATION

### Amiga Specific Modules

Amiga::ARexx

Amiga::Exec

## BUILDING

## CHANGES

**August 2015**, Port to Perl 5.22, Add handling of NIL: to afstat(), Fix inheritance of environment variables by subprocesses, Fix exec, and exit in "forked" subprocesses, Fix issue with newlib's unlink, which could cause infinite loops, Add flock() emulation using IDOS->LockRecord thanks to Tony Cook for the suggestion, Fix issue where kill was using the wrong kind of process ID, **27th November 2013**, Create new installation system based on installperl links and Amiga protection bits now set correctly, Pod now defaults to text, File::Spec should now recognise an Amiga style absolute path as well as an Unix style one. Relative paths must always be Unix style, **20th November 2013**, Configured to use SDK:Local/C/perl to start standard scripts, Added Amiga::Exec module with support for Wait() and AmigaOS signal numbers, **10th October 13**

## SEE ALSO

# perlandroid - Perl under Android

## SYNOPSIS

## DESCRIPTION

### Cross-compilation

Get the Android Native Development Kit (NDK)

Determine the architecture you'll be cross-compiling for

Set up a standalone toolchain

adb or ssh?

Configure and beyond

Native Builds

CCTools

Termux

AUTHOR

## perlbs2000 - building and installing Perl for BS2000.

SYNOPSIS

DESCRIPTION

gzip on BS2000

bison on BS2000

Unpacking Perl Distribution on BS2000

Compiling Perl on BS2000

Testing Perl on BS2000

Installing Perl on BS2000

Using Perl in the Posix-Shell of BS2000

Using Perl in "native" BS2000

Floating point anomalies on BS2000

Using PerlIO and different encodings on ASCII and EBCDIC partitions

AUTHORS

SEE ALSO

Mailing list

HISTORY

## perlcygwin - Perl for Cygwin

SYNOPSIS

PREREQUISITES FOR COMPILING PERL ON CYGWIN

Cygwin = GNU+Cygnus+Windows (Don't leave UNIX without it)

Cygwin Configuration

`PATH`, *nroff*

CONFIGURE PERL ON CYGWIN

Stripping Perl Binaries on Cygwin

Optional Libraries for Perl on Cygwin

`-lcrypt`, `-lgdbm_compat` (use `GDBM_File`), `-ldb` (use `DB_File`), `cygserver` (use `IPC::SysV`), `-lutil`

Configure-time Options for Perl on Cygwin

---



```
-Uused1, -Dusemymalloc, -Uuseperlio, -Dusemultiplicity, -Uuse64bitint, -Duselongdouble, -
Uuseithreads, -Duselargefiles, -Dmk symlinks
```

## Suspicious Warnings on Cygwin

Win9x and `d_eofnblk`, Compiler/Preprocessor defines

## MAKE ON CYGWIN

## TEST ON CYGWIN

### File Permissions on Cygwin

### NDBM\_File and ODBM\_File do not work on FAT filesystems

`fork()` failures in `io_*` tests

## Specific features of the Cygwin port

### Script Portability on Cygwin

Pathnames, Text/Binary, PerlIO, `.exe`, Cygwin vs. Windows process ids, Cygwin vs. Windows errors, rebase errors on fork or system, `chown()`, Miscellaneous

### Prebuilt methods:

```
Cwd:::cwd, Cygwin:::pid_to_winpid, Cygwin:::winpid_to_pid, Cygwin:::win_to_posix_path, Cygwin:
:posix_to_win_path, Cygwin:::mount_table(), Cygwin:::mount_flags, Cygwin:::is_binmount, Cygwi
n:::sync_winev
```

## INSTALL PERL ON CYGWIN

## MANIFEST ON CYGWIN

Documentation, Build, Configure, Make, Install, Tests, Compiled Perl Source, Compiled Module Source, Perl Modules/Scripts, Perl Module Tests

## BUGS ON CYGWIN

## AUTHORS

## HISTORY

# perldos - Perl under DOS, W31, W95.

## SYNOPSIS

## DESCRIPTION

### Prerequisites for Compiling Perl on DOS

DJGPP, Pthreads

### Shortcomings of Perl under DOS

### Building Perl on DOS

### Testing Perl on DOS

### Installation of Perl on DOS

## BUILDING AND INSTALLING MODULES ON DOS

### Building Prerequisites for Perl on DOS

### Unpacking CPAN Modules on DOS

### Building Non-XS Modules on DOS

Building XS Modules on DOS

AUTHOR

SEE ALSO

## **perlfreebsd - Perl version 5 on FreeBSD systems**

DESCRIPTION

FreeBSD core dumps from readdir\_r with ithreads

`$^X` doesn't always contain a full path in FreeBSD

AUTHOR

## **perlhaiku - Perl version 5.10+ on Haiku**

DESCRIPTION

BUILD AND INSTALL

KNOWN PROBLEMS

CONTACT

## **perlhpx - Perl version 5 on Hewlett-Packard Unix (HP-UX) systems**

DESCRIPTION

Using perl as shipped with HP-UX

Using perl from HP's porting centre

Other prebuilt perl binaries

Compiling Perl 5 on HP-UX

PA-RISC

PA-RISC 1.0

PA-RISC 1.1

PA-RISC 2.0

Portability Between PA-RISC Versions

Itanium Processor Family (IPF) and HP-UX

Itanium, Itanium 2 & Madison 6

HP-UX versions

Building Dynamic Extensions on HP-UX

The HP ANSI C Compiler

The GNU C Compiler

Using Large Files with Perl on HP-UX

Threaded Perl on HP-UX

64-bit Perl on HP-UX

Oracle on HP-UX

GDBM and Threads on HP-UX

NFS filesystems and utime(2) on HP-UX

HP-UX Kernel Parameters (maxdsiz) for Compiling Perl

nss\_delete core dump from op/pwent or op/grent

error: pasting ")" and "I" does not give a valid preprocessing token

Redeclaration of "sendpath" with a different storage class specifier

Miscellaneous

AUTHOR

## **perlhurd - Perl version 5 on Hurd**

DESCRIPTION

Known Problems with Perl on Hurd

AUTHOR

## **perlirix - Perl version 5 on Irix systems**

DESCRIPTION

Building 32-bit Perl in Irix

Building 64-bit Perl in Irix

About Compiler Versions of Irix

Linker Problems in Irix

Malloc in Irix

Building with threads in Irix

Irix 5.3

AUTHOR

## **perllinux - Perl version 5 on Linux systems**

DESCRIPTION

Deploying Perl on Linux

Experimental Support for Sun Studio Compilers for Linux OS

AUTHOR

## **perlmacos - Perl under Mac OS (Classic)**

SYNOPSIS

DESCRIPTION

AUTHOR

## **perlmacosx - Perl under Mac OS X**

### **SYNOPSIS**

### **DESCRIPTION**

**Installation Prefix**

**SDK support**

**Universal Binary support**

**64-bit PPC support**

**libperl and Prebinding**

**Updating Apple's Perl**

**Known problems**

**Cocoa**

**Starting From Scratch**

### **AUTHOR**

### **DATE**

## **perlnetware - Perl for NetWare**

### **DESCRIPTION**

### **BUILD**

**Tools & SDK**

**Setup**

SetNWBld.bat, Buildtype.bat

**Make**

**Interpreter**

**Extensions**

### **INSTALL**

### **BUILD NEW EXTENSIONS**

### **ACKNOWLEDGEMENTS**

### **AUTHORS**

### **DATE**

## **perlopenbsd - Perl version 5 on OpenBSD systems**

### **DESCRIPTION**

OpenBSD core dumps from getprotobyname\_r and getservbyname\_r with ithreads

### **AUTHOR**

## **perlos2 - Perl under OS/2, DOS, Win0.3\*, Win0.95 and WinNT.**

## SYNOPSIS

## DESCRIPTION

**Target**

**Other OSES**

**Prerequisites**

EMX, RSX, HPFS, pdksh

**Starting Perl programs under OS/2 (and DOS and...)**

**Starting OS/2 (and DOS) programs under Perl**

## Frequently asked questions

**"It does not work"**

**I cannot run external programs**

**I cannot embed perl into my program, or use *perl.dll* from my program.**

Is your program EMX-compiled with `-Zmt -Zcrttdll ?`, Did you use [ExtUtils::Embed?](#)

**`` and pipe-open do not work under DOS.**

**Cannot start** `find.exe "pattern" file`

## INSTALLATION

**Automatic binary installation**

`PERL_BADLANG`, `PERL_BADFREE`, *Config.pm*

**Manual binary installation**

Perl VIO and PM executables (dynamically linked), Perl\_VIO executable (statically linked), Executables for Perl utilities, Main Perl library, Additional Perl modules, Tools to compile Perl modules, Manpages for Perl and utilities, Manpages for Perl modules, Source for Perl documentation, Perl manual in *.INF* format, Pdksh

## Warning

## Accessing documentation

**OS/2 .INF file**

**Plain text**

**Manpages**

**HTML**

**GNU info files**

**PDF files**

**LaTeX docs**

## BUILD

**The short story**

**Prerequisites**

**Getting perl source**

**Application of the patches**

## Hand-editing

## Making

## Testing

A lot of `bad free`, Process terminated by SIGTERM/SIGINT, *op/fs.t*, 18, 25, *op/stat.t*

## Installing the built perl

`a.out` -style build

## Building a binary distribution

## Building custom .EXE files

### Making executables with a custom collection of statically loaded extensions

### Making executables with a custom search-paths

## Build FAQ

Some `/` became `\` in `pdksh`.

`'errno'` - unresolved external

### Problems with `tr` or `sed`

Some problem (forget which ;-)

Library ... not found

Segfault in `make`

`op/sprintf` test failure

## Specific (mis)features of OS/2 port

`setpriority`, `getpriority`

`system()`

`extproc` on the first line

### Additional modules:

### Prebuilt methods:

```
File::Copy::syscopy, DynaLoader::mod2fname, Cwd::current_drive(), Cwd::sys_chdir(name), Cw
d::change_drive(name), Cwd::sys_is_absolute(name), Cwd::sys_is_rooted(name), Cwd::sys_is_r
elative(name), Cwd::sys_cwd(name), Cwd::sys_abspath(name,
dir), Cwd::extLibpath([type]), Cwd::extLibpath_set( path [, type ]
), OS2::Error(do_hardware_error,do_exception), OS2::Errors2Drive(drive), OS2::SysInfo(),
OS2::BootDrive(), OS2::MorphPM(serve), OS2::UnMorphPM(serve), OS2::Serve_Messages(force), O
S2::Process_Messages(force [, cnt]), OS2::_control87(new,mask),
OS2::get_control87(), OS2::set_control87_em(new=MCW_EM,mask=MCW_EM), OS2::DLLname([how [,
\&xsub]])
```

### Prebuilt variables:

`$OS2::emx_rev`, `$OS2::emx_env`, `$OS2::os_ver`, `$OS2::is_aout`, `$OS2::can_fork`, `$OS2::nsyserror`

### Misfeatures

### Modifications

`popen`, `tmpnam`, `tmpfile`, `ctermid`, `stat`, `mkdir`, `rmdir`, `flock`

### Identifying DLLs

## Centralized management of resources

HAB, HMQ, Treating errors reported by OS/2  
API, CheckOSErrors(expr), CheckWinError(expr), SaveWinError(expr), SaveCroakWinError(expr, die, name1, name2), WinError\_2\_Perl\_rc, FillWinError, FillIOSError(rc), Loading DLLs and  
ordinals in DLLs

## Perl flavors

*perl.exe*

*perl\_.exe*

*perl\_\_.exe*

*perl\_\_\_\_.exe*

Why strange names?

Why dynamic linking?

Why chimera build?

## ENVIRONMENT

PERLLIB\_PREFIX

PERL\_BADLANG

PERL\_BADFREE

PERL\_SH\_DIR

USE\_PERL\_FLOCK

TMP or TEMP

## Evolution

Text-mode filehandles

Priorities

DLL name mangling: pre 5.6.2

DLL name mangling: 5.6.2 and beyond

Global DLLs, specific DLLs, BEGINLIBPATH and ENDLIBPATH, . from LIBPATH

DLL forwarder generation

Threading

Calls to external programs

Memory allocation

Threads

COND\_WAIT, os2.c

## BUGS

## AUTHOR

## SEE ALSO

**perlos390 - building and installing Perl for OS/390 and z/OS**

## **SYNOPSIS**

## **DESCRIPTION**

### **Tools**

**Unpacking Perl distribution on OS/390**

**Setup and utilities for Perl on OS/390**

**Configure Perl on OS/390**

**Build, Test, Install Perl on OS/390**

**Build Anomalies with Perl on OS/390**

**Testing Anomalies with Perl on OS/390**

**Installation Anomalies with Perl on OS/390**

**Usage Hints for Perl on OS/390**

**Floating Point Anomalies with Perl on OS/390**

**Modules and Extensions for Perl on OS/390**

## **AUTHORS**

## **SEE ALSO**

**Mailing list for Perl on OS/390**

## **HISTORY**

# **perlos400 - Perl version 5 on OS/400**

## **DESCRIPTION**

**Compiling Perl for OS/400 PASE**

**Installing Perl in OS/400 PASE**

**Using Perl in OS/400 PASE**

**Known Problems**

**Perl on ILE**

## **AUTHORS**

# **perlplan9 - Plan 9-specific documentation for Perl**

## **DESCRIPTION**

**Invoking Perl**

**What's in Plan 9 Perl**

**What's not in Plan 9 Perl**

**Perl5 Functions not currently supported in Plan 9 Perl**

**Signals in Plan 9 Perl**

## **COMPILING AND INSTALLING PERL ON PLAN 9**

**Installing Perl Documentation on Plan 9**



**BUGS**

**Revision date**

**AUTHOR**

## **perlqnx - Perl version 5 on QNX**

### **DESCRIPTION**

**Required Software for Compiling Perl on QNX4**

/bin/sh, ar, nm, cpp, make

**Outstanding Issues with Perl on QNX4**

**QNX auxiliary files**

qnx/ar, qnx/cpp

**Outstanding issues with perl under QNX6**

**Cross-compilation**

**AUTHOR**

## **perliscos - Perl version 5 for RISC OS**

### **DESCRIPTION**

**BUILD**

**AUTHOR**

## **perlsolaris - Perl version 5 on Solaris systems**

### **DESCRIPTION**

**Solaris Version Numbers.**

### **RESOURCES**

Solaris FAQ, Precompiled Binaries, Solaris Documentation

### **SETTING UP**

**File Extraction Problems on Solaris.**

**Compiler and Related Tools on Solaris.**

**Environment for Compiling perl on Solaris**

### **RUN CONFIGURE.**

**64-bit perl on Solaris.**

**Threads in perl on Solaris.**

**Malloc Issues with perl on Solaris.**

### **MAKE PROBLEMS.**

Dynamic Loading Problems With GNU as and GNU ld, ld.so.1: ./perl: fatal: relocation error: stub interception failed, #error "No DATAMODEL\_NATIVE specified", sh: ar: not found

### **MAKE TEST**

`op/stat.t` test 4 in Solaris

`nss_delete` core dump from `op/pwent` or `op/grent`

## CROSS-COMPILATION

PREBUILT BINARIES OF PERL FOR SOLARIS.

RUNTIME ISSUES FOR PERL ON SOLARIS.

Limits on Numbers of Open Files on Solaris.

SOLARIS-SPECIFIC MODULES.

SOLARIS-SPECIFIC PROBLEMS WITH MODULES.

`Proc::ProcessTable` on Solaris

`BSD::Resource` on Solaris

`Net::SSLeay` on Solaris

SunOS 4.x

AUTHOR

## **perlsymbian - Perl version 5 on Symbian OS**

### DESCRIPTION

Compiling Perl on Symbian

Compilation problems

PerlApp

`sisify.pl`

Using Perl in Symbian

TO DO

WARNING

NOTE

AUTHOR

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HISTORY

## **perlsynology - Perl 5 on Synology DSM systems**

### DESCRIPTION

Setting up the build environment

Compiling Perl 5

Known problems

Error message "No error definitions found"; `ext/DynaLoader/t/DynaLoader.t`

Smoke testing Perl 5

Adding libraries

REVISION

AUTHOR

## **perltru64 - Perl version 5 on Tru64 (formerly known as Digital UNIX formerly known as DEC OSF/1) systems**

### **DESCRIPTION**

Compiling Perl 5 on Tru64

Using Large Files with Perl on Tru64

Threaded Perl on Tru64

Long Doubles on Tru64

DB\_File tests failing on Tru64

64-bit Perl on Tru64

Warnings about floating-point overflow when compiling Perl on Tru64

Testing Perl on Tru64

ext/ODBM\_File/odbm Test Failing With Static Builds

Perl Fails Because Of Unresolved Symbol sockatmark

read\_cur\_obj\_info: bad file magic number

AUTHOR

## **perlvms - VMS-specific documentation for Perl**

### **DESCRIPTION**

Installation

Organization of Perl Images

Core Images

Perl Extensions

Installing static extensions

Installing dynamic extensions

File specifications

Syntax

Filename Case

Symbolic Links

Wildcard expansion

Pipes

PERL5LIB and PERLLIB

The Perl Forked Debugger

## **PERL\_VMS\_EXCEPTION\_DEBUG**

### **Command line**

**I/O redirection and backgrounding**

**Command line switches**

-i, -S, -u

### **Perl functions**

File tests, backticks, binmode FILEHANDLE, crypt PLAINTEXT, USER, die, dump, exec LIST, fork, getpwent, getpwnam, getpwuid, gmtime, kill, qx//, select (system call), stat EXPR, system LIST, time, times, unlink LIST, utime LIST, waitpid PID, FLAGS

### **Perl variables**

%ENV, CRTL\_ENV, CLISYM\_[LOCAL], Any other string, \$!, \$^E, \$?, \$|

### **Standard modules with VMS-specific differences**

**SDBM\_File**

### **Revision date**

### **AUTHOR**

## **perlvos - Perl for Stratus OpenVOS**

### **SYNOPSIS**

### **BUILDING PERL FOR OPENVOS**

### **INSTALLING PERL IN OPENVOS**

### **USING PERL IN OPENVOS**

**Restrictions of Perl on OpenVOS**

### **TEST STATUS**

### **SUPPORT STATUS**

### **AUTHOR**

### **LAST UPDATE**

## **perlwin32 - Perl under Windows**

### **SYNOPSIS**

### **DESCRIPTION**

<http://mingw.org>, <http://mingw-w64.org>

### **Setting Up Perl on Windows**

Make, Command Shell, Microsoft Visual C++, Microsoft Visual C++ 2008-2019 Express/Community Edition, Microsoft Visual C++ 2005 Express Edition, Microsoft Visual C++ Toolkit 2003, Microsoft Platform SDK 64-bit Compiler, GCC, Intel C++ Compiler

### **Building**

### **Testing Perl on Windows**

### **Installation of Perl on Windows**

## **Usage Hints for Perl on Windows**

Environment Variables, File Globbing, Using perl from the command line, Building Extensions, Command-line Wildcard Expansion, Notes on 64-bit Windows

## **Running Perl Scripts**

## **Miscellaneous Things**

## **BUGS AND CAVEATS**

## **ACKNOWLEDGEMENTS**

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## **SEE ALSO**

## **HISTORY**

## **perlboot - Links to information on object-oriented programming in Perl**

### **DESCRIPTION**

## **perlbot - Links to information on object-oriented programming in Perl**

### **DESCRIPTION**

## **perlrepository - Links to current information on the Perl source repository**

### **DESCRIPTION**

## **perltodo - Link to the Perl to-do list**

### **DESCRIPTION**

## **perltooc - Links to information on object-oriented programming in Perl**

### **DESCRIPTION**

## **perltoot - Links to information on object-oriented programming in Perl**

### **DESCRIPTION**

## **PRAGMA DOCUMENTATION**

## **attributes - get/set subroutine or variable attributes**

### **SYNOPSIS**

### **DESCRIPTION**

What `import` does

### **Built-in Attributes**

lvalue, method, prototype(..), const, shared

### **Available Subroutines**

get, reftype

### **Package-specific Attribute Handling**

FETCH\_type\_ATTRIBUTES, MODIFY\_type\_ATTRIBUTES

### **Syntax of Attribute Lists**

## **EXPORTS**

Default exports

Available exports

Export tags defined

## **EXAMPLES**

## **MORE EXAMPLES**

## **SEE ALSO**

# **autodie - Replace functions with ones that succeed or die with lexical scope**

## **SYNOPSIS**

## **DESCRIPTION**

## **EXCEPTIONS**

## **CATEGORIES**

## **FUNCTION SPECIFIC NOTES**

print

flock

system/exec

## **GOTCHAS**

## **DIAGNOSTICS**

:void cannot be used with lexical scope, No user hints defined for %s

## **Tips and Tricks**

Importing autodie into another namespace than "caller"

## **BUGS**

autodie and string eval

## **REPORTING BUGS**

## **FEEDBACK**

## **AUTHOR**

## **LICENSE**

SEE ALSO

ACKNOWLEDGEMENTS

**autodie::Scope::Guard** - Wrapper class for calling subs at end of scope

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

**autodie::Scope::GuardStack** - Hook stack for managing scopes via  
%^H

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

**autodie::Util** - Internal Utility subroutines for autodie and Fatal

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

**autodie::exception** - Exceptions from autodying functions.

SYNOPSIS

DESCRIPTION

Common Methods

Advanced methods

SEE ALSO

LICENSE

AUTHOR

**autodie::exception::system** - Exceptions from autodying system().

SYNOPSIS

DESCRIPTION

**stringify**

**LICENSE**

**AUTHOR**

## **autodie::hints - Provide hints about user subroutines to autodie**

**SYNOPSIS**

**DESCRIPTION**

**Introduction**

**What are hints?**

**Example hints**

**Manually setting hints from within your program**

**Adding hints to your module**

**Insisting on hints**

**Diagnostics**

Attempts to set `_hints_` for unidentifiable subroutine, fail hints cannot be provided with either scalar or list hints for `%s`, `%s` hint missing for `%s`

**ACKNOWLEDGEMENTS**

**AUTHOR**

**LICENSE**

**SEE ALSO**

## **autodie::skip - Skip a package when throwing autodie exceptions**

**SYNOPSIS**

**DESCRIPTION**

**AUTHOR**

**LICENSE**

**SEE ALSO**

## **autouse - postpone load of modules until a function is used**

**SYNOPSIS**

**DESCRIPTION**

**WARNING**

**AUTHOR**

**SEE ALSO**

## **base - Establish an ISA relationship with base classes at compile time**

**SYNOPSIS**



## DESCRIPTION

## DIAGNOSTICS

Base class package "%s" is empty, Class 'Foo' tried to inherit from itself

## HISTORY

## CAVEATS

## SEE ALSO

# bigint - Transparent BigInteger support for Perl

## SYNOPSIS

## DESCRIPTION

**use integer vs. use bigint**

**Options**

a or accuracy, p or precision, t or trace, hex, oct, l, lib, try or only, v or version

**Math Library**

**Internal Format**

**Sign**

**Method calls**

**Methods**

inf(), NaN(), e, PI, bexp(), bpi(), upgrade(), in\_effect()

## CAVEATS

Operator vs literal overloading, ranges, in\_effect(), hex()/oct()

## MODULES USED

## EXAMPLES

## BUGS

## SUPPORT

## LICENSE

## SEE ALSO

## AUTHORS

# bignum - Transparent BigNumber support for Perl

## SYNOPSIS

## DESCRIPTION

**Options**

a or accuracy, p or precision, t or trace, l or lib, hex, oct, v or version

**Methods**

**Caveats**

`inf()`, `NaN()`, `e`, `PI()`, `bexp()`, `bpi()`, `upgrade()`, `in_effect()`

## Math Library

## INTERNAL FORMAT

## SIGN

## CAVEATS

Operator vs literal overloading, `in_effect()`, `hex()/oct()`

## MODULES USED

## EXAMPLES

## BUGS

## SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, Search CPAN, CPAN Testers Matrix

## LICENSE

## SEE ALSO

## AUTHORS

# bigrat - Transparent BigNumber/BigRational support for Perl

## SYNOPSIS

## DESCRIPTION

### Modules Used

### Math Library

### Sign

### Methods

`inf()`, `NaN()`, `e`, `PI`, `bexp()`, `bpi()`, `upgrade()`, `in_effect()`

## MATH LIBRARY

### Caveat

### Options

a or accuracy, p or precision, t or trace, l or lib, hex, oct, v or version

## CAVEATS

Operator vs literal overloading, `in_effect()`, `hex()/oct()`

## EXAMPLES

## BUGS

## SUPPORT

## LICENSE

## SEE ALSO

## AUTHORS

## **blib - Use MakeMaker's uninstalled version of a package**

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

## **bytes - Perl pragma to expose the individual bytes of characters**

NOTICE

SYNOPSIS

DESCRIPTION

LIMITATIONS

SEE ALSO

## **charnames - access to Unicode character names and named character sequences; also define character names**

SYNOPSIS

DESCRIPTION

LOOSE MATCHES

ALIASES

CUSTOM ALIASES

`charnames::string_vianame(name)`

`charnames::vianame(name)`

`charnames::viacode(code)`

CUSTOM TRANSLATORS

BUGS

## **constant - Perl pragma to declare constants**

SYNOPSIS

DESCRIPTION

NOTES

    List constants

    Defining multiple constants at once

    Magic constants

TECHNICAL NOTES

CAVEATS

SEE ALSO

BUGS

AUTHORS

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## deprecate - Perl pragma for deprecating the inclusion of a module in core

SYNOPSIS

DESCRIPTION

Important Caveat

EXPORT

SEE ALSO

AUTHOR

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## diagnostics, splain - produce verbose warning diagnostics

SYNOPSIS

DESCRIPTION

The `diagnostics` Pragma

The *splain* Program

EXAMPLES

INTERNALS

BUGS

AUTHOR

## encoding - allows you to write your script in non-ASCII and non-UTF-8

WARNING

SYNOPSIS

DESCRIPTION

```
use encoding ['ENCNAME'] ; , use encoding ENCNAME, Filter=>1; , no encoding;
```

OPTIONS

Setting `STDIN` and/or `STDOUT` individually

The `:locale` sub-pragma

CAVEATS

SIDE EFFECTS

DO NOT MIX MULTIPLE ENCODINGS

Prior to Perl v5.22

Prior to Encode version 1.87

## Prior to Perl v5.8.1

"NON-EUC" doublebyte encodings, `tr///`, Legend of characters above

### EXAMPLE - Greekperl

### BUGS

Thread safety, Can't be used by more than one module in a single program, Other modules using `STDIN` and `STDOUT` get the encoded stream, literals in regex that are longer than 127 bytes, EBCDIC, `format`, See also "[CAVEATS](#)"

### HISTORY

### SEE ALSO

## encoding::warnings - Warn on implicit encoding conversions

### VERSION

### NOTICE

### SYNOPSIS

### DESCRIPTION

Overview of the problem

Detecting the problem

Solving the problem

Upgrade both sides to unicode-strings, Downgrade both sides to byte-strings, Specify the encoding for implicit byte-string upgrading, PerlIO layers for **STDIN** and **STDOUT**, Literal conversions, Implicit upgrading for byte-strings

### CAVEATS

### SEE ALSO

### AUTHORS

### COPYRIGHT

## experimental - Experimental features made easy

### VERSION

### SYNOPSIS

### DESCRIPTION

`array_base` - allow the use of `$[` to change the starting index of `@array`, `autoderef` - allow push, each, keys, and other built-ins on references, `bitwise` - allow the new stringwise bit operators, `const_attr` - allow the `:const` attribute on subs, `lexical_topic` - allow the use of lexical `$_` via my `$_`, `lexical_subs` - allow the use of lexical subroutines, `postderef` - allow the use of postfix dereferencing expressions, including in interpolating strings, `re_strict` - enables strict mode in regular expressions, `refaliasing` - allow aliasing via `\$x = \$y`, `regex_sets` - allow extended bracketed character classes in regexps, `signatures` - allow subroutine signatures (for named arguments), `smartmatch` - allow the use of `~~`, `switch` - allow the use of `~~`, `given`, and `when`, `win32_perlio` - allows the use of the `:win32` IO layer

Ordering matters

Disclaimer

### SEE ALSO

AUTHOR

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## feature - Perl pragma to enable new features

### SYNOPSIS

### DESCRIPTION

Lexical effect

no feature

### AVAILABLE FEATURES

The 'say' feature

The 'state' feature

The 'switch' feature

The 'unicode\_strings' feature

The 'unicode\_eval' and 'evalbytes' features

The 'current\_sub' feature

The 'array\_base' feature

The 'fc' feature

The 'lexical\_subs' feature

The 'postderef' and 'postderef\_qq' features

The 'signatures' feature

The 'refaliasing' feature

The 'bitwise' feature

The 'declared\_refs' feature

The 'isa' feature

The 'indirect' feature

### FEATURE BUNDLES

### IMPLICIT LOADING

## fields - compile-time class fields

### SYNOPSIS

### DESCRIPTION

new, phash

### SEE ALSO

## filetest - Perl pragma to control the filetest permission operators

### SYNOPSIS

## DESCRIPTION

Consider this carefully

The "access" sub-pragma

Limitation with regard to `_`

## if - `use` a Perl module if a condition holds

### SYNOPSIS

#### DESCRIPTION

`use if`

`no if`

### BUGS

### SEE ALSO

### AUTHOR

### COPYRIGHT AND LICENCE

## integer - Perl pragma to use integer arithmetic instead of floating point

### SYNOPSIS

#### DESCRIPTION

## less - perl pragma to request less of something

### SYNOPSIS

#### DESCRIPTION

#### FOR MODULE AUTHORS

`BOOLEAN = less->of( FEATURE )`

`FEATURES = less->of()`

### CAVEATS

This probably does nothing, This works only on 5.10+

## lib - manipulate `@INC` at compile time

### SYNOPSIS

#### DESCRIPTION

Adding directories to `@INC`

Deleting directories from `@INC`

Restoring original `@INC`

### CAVEATS

### NOTES

### SEE ALSO

AUTHOR

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## locale - Perl pragma to use or avoid POSIX locales for built-in operations

WARNING

SYNOPSIS

DESCRIPTION

## mro - Method Resolution Order

SYNOPSIS

DESCRIPTION

OVERVIEW

The C3 MRO

What is C3?

How does C3 work

Functions

`mro::get_linear_isa($classname[, $type])`

`mro::set_mro ($classname, $type)`

`mro::get_mro($classname)`

`mro::get_isarev($classname)`

`mro::is_universal($classname)`

`mro::invalidate_all_method_caches()`

`mro::method_changed_in($classname)`

`mro::get_pkg_gen($classname)`

`next::method`

`next::can`

`maybe::next::method`

SEE ALSO

The original Dylan paper

["/citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.19.3910&rep=rep1 &type=pdf"](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.19.3910&rep=rep1&type=pdf) in [http:](http://www.python.org/download/releases/2.3/mro/)

Python 2.3 MRO

<https://www.python.org/download/releases/2.3/mro/>

Class::C3

[Class::C3](#)

AUTHOR



## ok - Alternative to Test::More::use\_ok

### SYNOPSIS

### DESCRIPTION

CC0 1.0 Universal

## open - perl pragma to set default PerlIO layers for input and output

### SYNOPSIS

### DESCRIPTION

### IMPLEMENTATION DETAILS

### SEE ALSO

## ops - Perl pragma to restrict unsafe operations when compiling

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

## overload - Package for overloading Perl operations

### SYNOPSIS

### DESCRIPTION

#### Fundamentals

#### Overloadable Operations

`not`, `neg`, `++`, `--`, *Assignments*, *Non-mutators with a mutator variant*, `int`, *String*, *numeric*, *boolean*, *and regexp conversions*, *Iteration*, *File tests*, *Matching*, *Dereferencing*, *Special*

#### Magic Autogeneration

#### Special Keys for `use overload`

`defined`, but `FALSE`, `undef`, `TRUE`

#### How Perl Chooses an Operator Implementation

#### Losing Overloading

#### Inheritance and Overloading

Method names in the `use overload` directive, Overloading of an operation is inherited by derived classes

#### Run-time Overloading

#### Public Functions

`overload::StrVal(arg)`, `overload::Overloaded(arg)`, `overload::Method(obj,op)`

#### Overloading Constants

`integer`, `float`, `binary`, `q`, `qr`

### IMPLEMENTATION

## COOKBOOK

Two-face Scalars

Two-face References

Symbolic Calculator

*Really* Symbolic Calculator

## AUTHOR

## SEE ALSO

## DIAGNOSTICS

Odd number of arguments for overload::constant, '%s' is not an overloadable type, '%s' is not a code reference, overload arg '%s' is invalid

## BUGS AND PITFALLS

# overloading - perl pragma to lexically control overloading

## SYNOPSIS

## DESCRIPTION

```
no overloading, no overloading @ops, use overloading, use overloading @ops
```

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

## SYNOPSIS

## DESCRIPTION

## HISTORY

## CAVEATS

## SEE ALSO

[base](#), [parent::versioned](#)

## AUTHORS AND CONTRIBUTORS

## MAINTAINER

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# re - Perl pragma to alter regular expression behaviour

## SYNOPSIS

## DESCRIPTION

'taint' mode

'eval' mode

'strict' mode

'/flags' mode

'debug' mode

'Debug' mode

Compile related options, COMPILE, PARSE, OPTIMISE, TRIEC, DUMP, FLAGS, TEST, Execute related options, EXECUTE, MATCH, TRIEE, INTUIT, Extra debugging options, EXTRA, BUFFERS, TRIEM, STATE, STACK, GPOS, OPTIMISEM, OFFSETS, OFFSETSDBG, DUMP\_PRE\_OPTIMIZE, WILDCARD, Other useful flags, ALL, All, MORE, More

### Exportable Functions

is\_regexp(\$ref), regexp\_pattern(\$ref), regmust(\$ref), regname(\$name,\$all), regnames(\$all), regnames\_count()

### SEE ALSO

## sigtrap - Perl pragma to enable simple signal handling

### SYNOPSIS

### DESCRIPTION

### OPTIONS

#### SIGNAL HANDLERS

`stack-trace`, `die`, `handler` *your-handler*

#### SIGNAL LISTS

`normal-signals`, `error-signals`, `old-interface-signals`

#### OTHER

`untrapped`, `any`, *signal*, *number*

### EXAMPLES

## sort - perl pragma to control sort() behaviour

### SYNOPSIS

### DESCRIPTION

### CAVEATS

## strict - Perl pragma to restrict unsafe constructs

### SYNOPSIS

### DESCRIPTION

`strict refs`, `strict vars`, `strict subs`

### HISTORY

## subs - Perl pragma to predeclare subroutine names

### SYNOPSIS

### DESCRIPTION

## threads - Perl interpreter-based threads

### VERSION

### WARNING

## SYNOPSIS

## DESCRIPTION

```
$thr = threads->create(FUNCTION, ARGS), $thr->join(), $thr->detach(), threads->detach(), threads->self(),  
$thr->tid(), threads->tid(), "$thr", threads->object($tid), threads->yield(), threads->list(), threads->  
list(threads::all), threads->list(threads::running), threads->list(threads::joinable), $thr1->equal($thr2),  
async BLOCK;, $thr->error(), $thr->_handle(), threads->_handle()
```

## EXITING A THREAD

```
threads->exit(), threads->exit(status), die(), exit(status), use threads 'exit' => 'threads_only', threads->  
>create({'exit' => 'thread_only'}, ...), $thr->set_thread_exit_only(boolean), threads->  
>set_thread_exit_only(boolean)
```

## THREAD STATE

```
$thr->is_running(), $thr->is_joinable(), $thr->is_detached(), threads->is_detached()
```

## THREAD CONTEXT

**Explicit context**

**Implicit context**

**`$thr->wantarray()`**

**`threads->wantarray()`**

## THREAD STACK SIZE

```
threads->get_stack_size();, $size = $thr->get_stack_size();, $old_size = threads->  
>set_stack_size($new_size);, use threads ('stack_size' => VALUE);,  
$ENV{'PERL5_ITHREADS_STACK_SIZE'}, threads->create({'stack_size' => VALUE}, FUNCTION,  
ARGS), $thr2 = $thr1->create(FUNCTION, ARGS)
```

## THREAD SIGNALLING

```
$thr->kill('SIG...');
```

## WARNINGS

Perl exited with active threads:, Thread creation failed: pthread\_create returned #, Thread # terminated abnormally: ..., Using minimum thread stack size of #, Thread creation failed: pthread\_attr\_setstacksize(SIZE) returned 22

## ERRORS

This Perl not built to support threads, Cannot change stack size of an existing thread, Cannot signal threads without safe signals, Unrecognized signal name: ..

## BUGS AND LIMITATIONS

Thread-safe modules, Using non-thread-safe modules, Memory consumption, Current working directory, Locales, Environment variables, Catching signals, Parent-child threads, Unsafe signals, Perl has been built with PERL\_OLD\_SIGNALS (see `perl -v`), The environment variable PERL\_SIGNALS is set to `unsafe` (see "[PERL\\_SIGNALS](#)" in `perlrun`), The module `Perl::Unsafe::Signals` is used, Identity of objects returned from threads, Returning blessed objects from threads, END blocks in threads, Open directory handles, Detached threads and global destruction, Perl Bugs and the CPAN Version of [threads](#)

## REQUIREMENTS

## SEE ALSO

## AUTHOR

## LICENSE

## ACKNOWLEDGEMENTS

# threads::shared - Perl extension for sharing data structures between threads

## VERSION

## SYNOPSIS

## DESCRIPTION

## EXPORT

## FUNCTIONS

share VARIABLE, shared\_clone REF, is\_shared VARIABLE, lock VARIABLE, cond\_wait VARIABLE, cond\_wait CONDVAR, LOCKVAR, cond\_timedwait VARIABLE, ABS\_TIMEOUT, cond\_timedwait CONDVAR, ABS\_TIMEOUT, LOCKVAR, cond\_signal VARIABLE, cond\_broadcast VARIABLE

## OBJECTS

## NOTES

## WARNINGS

cond\_broadcast() called on unlocked variable, cond\_signal() called on unlocked variable

## BUGS AND LIMITATIONS

## SEE ALSO

## AUTHOR

## LICENSE

# utf8 - Perl pragma to enable/disable UTF-8 (or UTF-EBCDIC) in source code

## SYNOPSIS

## DESCRIPTION

### Utility functions

```
$num_octets = utf8::upgrade($string), $success = utf8::downgrade($string[,  
$fail_ok]), utf8::encode($string), $success = utf8::decode($string), $unicode =  
utf8::native_to_unicode($code_point), $native = utf8::unicode_to_native($code_point), $flag  
= utf8::is_utf8($string), $flag = utf8::valid($string)
```

## BUGS

## SEE ALSO

# vars - Perl pragma to predeclare global variable names

## SYNOPSIS

## DESCRIPTION

# version - Perl extension for Version Objects

## SYNOPSIS

## DESCRIPTION

## TYPES OF VERSION OBJECTS

Decimal Versions, Dotted Decimal Versions

## DECLARING VERSIONS

How to convert a module from decimal to dotted-decimal

How to `declare()` a dotted-decimal version

## PARSING AND COMPARING VERSIONS

How to `parse()` a version

How to check for a legal version string

`is_lax()`, `is_strict()`

How to compare version objects

## OBJECT METHODS

`is_alpha()`

`is_qv()`

`normal()`

`numify()`

`stringify()`

## EXPORTED FUNCTIONS

`qv()`

`is_lax()`

`is_strict()`

## AUTHOR

## SEE ALSO

# version::Internals - Perl extension for Version Objects

## DESCRIPTION

### WHAT IS A VERSION?

Decimal versions, Dotted-Decimal versions

**Decimal Versions**

**Dotted-Decimal Versions**

**Alpha Versions**

**Regular Expressions for Version Parsing**

`$version::LAX`, `$version::STRICT`, `v1.234.5`

## IMPLEMENTATION DETAILS

**Equivalence between Decimal and Dotted-Decimal Versions**

**Quoting Rules**

**What about v-strings?**

**Version Object Internals**

original, qv, alpha, version

**Replacement UNIVERSAL::VERSION**

## USAGE DETAILS

**Using modules that use version.pm**

Decimal versions always work, Dotted-Decimal version work sometimes

**Object Methods**

new(), qv(), Normal Form, Numification, Stringification, Comparison operators, Logical Operators

**AUTHOR**

**SEE ALSO**

## vmsish - Perl pragma to control VMS-specific language features

**SYNOPSIS**

**DESCRIPTION**

```
vmsish status, vmsish exit, vmsish time, vmsish hushed
```

## warnings - Perl pragma to control optional warnings

**SYNOPSIS**

**DESCRIPTION**

**Default Warnings and Optional Warnings**

**What's wrong with -w and `$^W`**

**Controlling Warnings from the Command Line**

**-w , -W , -X**

**Backward Compatibility**

**Category Hierarchy**

**Fatal Warnings**

**Reporting Warnings from a Module**

**FUNCTIONS**

```
use warnings::register, warnings::enabled(), warnings::enabled($category), warnings::enabled($object),
warnings::enabled_at_level($category, $level), warnings::fatal_enabled(),
warnings::fatal_enabled($category), warnings::fatal_enabled($object),
warnings::fatal_enabled_at_level($category, $level), warnings::warn($message),
warnings::warn($category, $message), warnings::warn($object, $message),
warnings::warn_at_level($category, $level, $message), warnings::warnif($message),
warnings::warnif($category, $message), warnings::warnif($object, $message),
warnings::warnif_at_level($category, $level, $message), warnings::register_categories(@names)
```

## warnings::register - warnings import function

**SYNOPSIS**

**DESCRIPTION**

# MODULE DOCUMENTATION

## AnyDBM\_File - provide framework for multiple DBMs

### SYNOPSIS

### DESCRIPTION

#### DBM Comparisons

[0], [1], [2], [3]

### SEE ALSO

## App::Cpan - easily interact with CPAN from the command line

### SYNOPSIS

### DESCRIPTION

#### Options

-a, -A module [ module ... ], -c module, -C module [ module ... ], -D module [ module ... ], -f, -F, -g module [ module ... ], -G module [ module ... ], -h, -i module [ module ... ], -l, -j Config.pm, -J, -l, -L author [ author ... ], -m, -M mirror1,mirror2,..., -n, -O, -p, -P, -f, -s, -t module [ module ... ], -T, -u, -v, -V, -w, -x module [ module ... ], -X

#### Examples

#### Environment variables

NONINTERACTIVE\_TESTING, PERL\_MM\_USE\_DEFAULT, CPAN\_OPTS, CPANSRIPT\_LOGLEVEL, GIT\_COMMAND

#### Methods

run()

### EXIT VALUES

### TO DO

### BUGS

### SEE ALSO

### SOURCE AVAILABILITY

### CREDITS

### AUTHOR

### COPYRIGHT

## App::Prove - Implements the `prove` command.

### VERSION

### DESCRIPTION

### SYNOPSIS

### METHODS

#### Class Methods



**Attributes**

archive, argv, backwards, blib, color, directives, dry, exec, extensions, failures, comments, formatter, harness, ignore\_exit, includes, jobs, lib, merge, modules, parse, plugins, quiet, really\_quiet, recurse, rules, show\_count, show\_help, show\_man, show\_version, shuffle, state, state\_class, taint\_fail, taint\_warn, test\_args, timer, verbose, warnings\_fail, warnings\_warn, tapversion, trap

**PLUGINS**

**Sample Plugin**

**SEE ALSO**

**App::Prove::State - State storage for the prove command.**

**VERSION**

**DESCRIPTION**

**SYNOPSIS**

**METHODS**

**Class Methods**

store, extensions (optional), result\_class (optional)

result\_class

extensions

results

commit

**Instance Methods**

last, failed, passed, all, hot, todo, slow, fast, new, old, save

**App::Prove::State::Result - Individual test suite results.**

**VERSION**

**DESCRIPTION**

**SYNOPSIS**

**METHODS**

**Class Methods**

state\_version

test\_class

**App::Prove::State::Result::Test - Individual test results.**

**VERSION**

**DESCRIPTION**

**SYNOPSIS**

**METHODS**

## Class Methods

## Instance Methods

# Archive::Tar - module for manipulations of tar archives

## SYNOPSIS

## DESCRIPTION

## Object Methods

```
Archive::Tar->new( [$file, $compressed] )
```

```
$star->read ( $filename|$handle, [$compressed, {opt => 'val'}] )
```

limit, filter, md5, extract

```
$star->contains_file( $filename )
```

```
$star->extract( [@filenames] )
```

```
$star->extract_file( $file, [$extract_path] )
```

```
$star->list_files( [ \@properties ] )
```

```
$star->get_files( [@filenames] )
```

```
$star->get_content( $file )
```

```
$star->replace_content( $file, $content )
```

```
$star->rename( $file, $new_name )
```

```
$star->chmod( $file, $mode )
```

```
$star->chown( $file, $uname [, $gname] )
```

```
$star->remove ( @filenamelist )
```

```
$star->clear
```

```
$star->write ( [$file, $compressed, $prefix] )
```

```
$star->add_files( @filenamelist )
```

```
$star->add_data ( $filename, $data, [$opthashref] )
```

FILE, HARDLINK, SYMLINK, CHARDEV, BLOCKDEV, DIR, FIFO, SOCKET

```
$star->error( [$BOOL] )
```

```
$star->setcwd( $cwd );
```

## Class Methods

```
Archive::Tar->create_archive($file, $compressed, @filelist)
```

```
Archive::Tar->iter( $filename, [ $compressed, {opt => $val} ] )
```

```
Archive::Tar->list_archive($file, $compressed, [ \@properties ])
```

```
Archive::Tar->extract_archive($file, $compressed)
```

```
$bool = Archive::Tar->has_io_string
```

```
$bool = Archive::Tar->has_perlio
```

```
$bool = Archive::Tar->has_zlib_support
```

**\$bool = Archive::Tar->has\_bzip2\_support**

**\$bool = Archive::Tar->has\_xz\_support**

**Archive::Tar->can\_handle\_compressed\_files**

## **GLOBAL VARIABLES**

**\$Archive::Tar::FOLLOW\_SYMLINK**

**\$Archive::Tar::CHOWN**

**\$Archive::Tar::CHMOD**

**\$Archive::Tar::SAME\_PERMISSIONS**

**\$Archive::Tar::DO\_NOT\_USE\_PREFIX**

**\$Archive::Tar::DEBUG**

**\$Archive::Tar::WARN**

**\$Archive::Tar::error**

**\$Archive::Tar::INSECURE\_EXTRACT\_MODE**

**\$Archive::Tar::HAS\_PERLIO**

**\$Archive::Tar::HAS\_IO\_STRING**

**\$Archive::Tar::ZERO\_PAD\_NUMBERS**

**Tuning the way RESOLVE\_SYMLINK will works**

## **FAQ**

What's the minimum perl version required to run Archive::Tar?, Isn't Archive::Tar slow?, Isn't Archive::Tar heavier on memory than /bin/tar?, Can you lazy-load data instead?, How much memory will an X kb tar file need?, What do you do with unsupported filetypes in an archive?, I'm using WinZip, or some other non-POSIX client, and files are not being extracted properly!, How do I extract only files that have property X from an archive?, How do I access .tar.Z files?, How do I handle Unicode strings?

## **CAVEATS**

## **TODO**

Check if passed in handles are open for read/write, Allow archives to be passed in as string, Facilitate processing an opened filehandle of a compressed archive

## **SEE ALSO**

The GNU tar specification, The PAX format specification, A comparison of GNU and POSIX tar standards; [http://www.delorie.com/gnu/docs/tar/tar\\_114.html](http://www.delorie.com/gnu/docs/tar/tar_114.html), GNU tar intends to switch to POSIX compatibility, A Comparison between various tar implementations

## **AUTHOR**

## **ACKNOWLEDGEMENTS**

## **COPYRIGHT**

# **Archive::Tar::File - a subclass for in-memory extracted file from Archive::Tar**

## **SYNOPSIS**

## **DESCRIPTION**

## Accessors

name, mode, uid, gid, size, mtime, chksum, type, linkname, magic, version, uname, gname, devmajor, devminor, prefix, raw

## Methods

**Archive::Tar::File->new( file => \$path )**

**Archive::Tar::File->new( data => \$path, \$data, \$opt )**

**Archive::Tar::File->new( chunk => \$chunk )**

**\$bool = \$file->extract( [ \$alternative\_name ] )**

**\$path = \$file->full\_path**

**\$bool = \$file->validate**

**\$bool = \$file->has\_content**

**\$content = \$file->get\_content**

**\$cref = \$file->get\_content\_by\_ref**

**\$bool = \$file->replace\_content( \$content )**

**\$bool = \$file->rename( \$new\_name )**

**\$bool = \$file->chmod \$mode)**

**\$bool = \$file->chown( \$user [, \$group])**

## Convenience methods

**\$file->is\_file, \$file->is\_dir, \$file->is\_hardlink, \$file->is\_symlink, \$file->is\_chardev, \$file->is\_blockdev, \$file->is\_fifo, \$file->is\_socket, \$file->is\_longlink, \$file->is\_label, \$file->is\_unknown**

# Attribute::Handlers - Simpler definition of attribute handlers

## VERSION

## SYNOPSIS

## DESCRIPTION

[0], [1], [2], [3], [4], [5], [6], [7]

**Typed lexicals**

**Type-specific attribute handlers**

**Non-interpretive attribute handlers**

**Phase-specific attribute handlers**

**Attributes as tie interfaces**

## EXAMPLES

## UTILITY FUNCTIONS

findsym

## DIAGNOSTICS

Bad attribute type: ATTR(%s), Attribute handler %s doesn't handle %s attributes, Declaration of %s attribute in package %s may clash with future reserved word, Can't have two ATTR specifiers on one subroutine, Can't autotie a %s, Internal error: %s symbol went

missing, Won't be able to apply END handler

**AUTHOR**

**BUGS**

**COPYRIGHT AND LICENSE**

## AutoLoader - load subroutines only on demand

**SYNOPSIS**

**DESCRIPTION**

Subroutine Stubs

Using **AutoLoader's** AUTOLOAD Subroutine

Overriding **AutoLoader's** AUTOLOAD Subroutine

Package Lexicals

Not Using AutoLoader

**AutoLoader vs. SelfLoader**

Forcing AutoLoader to Load a Function

**CAVEATS**

**SEE ALSO**

**AUTHOR**

**COPYRIGHT AND LICENSE**

## AutoSplit - split a package for autoloading

**SYNOPSIS**

**DESCRIPTION**

\$keep, \$check, \$modtime

Multiple packages

**DIAGNOSTICS**

**AUTHOR**

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## B - The Perl Compiler Backend

**SYNOPSIS**

**DESCRIPTION**

**OVERVIEW**

Utility Functions

Functions Returning B::SV, B::AV, B::HV, and B::CV objects

sv\_undef, sv\_yes, sv\_no, svref\_2object(SVREF), amagic\_generation, init\_av, check\_av, unitcheck\_av, begin\_av, end\_av, comppadlist, regex\_padav, main\_cv

### Functions for Examining the Symbol Table

walksymtable(SYMREF, METHOD, RECURSE, PREFIX)

### Functions Returning B::OP objects or for walking op trees

main\_root, main\_start, walkoptree(OP, METHOD), walkoptree\_debug(DEBUG)

### Miscellaneous Utility Functions

ppname(OPNUM), hash(STR), cast\_l32(l), minus\_c, cstring(STR), perlstring(STR), safename(STR), class(OBJ), threadsv\_names

### Exported utility variables

@optype, @specialsv\_name

## OVERVIEW OF CLASSES

### SV-RELATED CLASSES

#### B::SV Methods

REFCNT, FLAGS, object\_2svref

#### B::IV Methods

IV, IVX, UVX, int\_value, needs64bits, packiv

#### B::NV Methods

NV, NVX, COP\_SEQ\_RANGE\_LOW, COP\_SEQ\_RANGE\_HIGH

#### B::RV Methods

RV

#### B::PV Methods

PV, RV, PVX, CUR, LEN

#### B::PVMG Methods

MAGIC, SvSTASH

#### B::MAGIC Methods

MOREMAGIC, precomp, PRIVATE, TYPE, FLAGS, OBJ, PTR, REGEX

#### B::PVLV Methods

TARGOFF, TARGLEN, TYPE, TARG

#### B::BM Methods

USEFUL, PREVIOUS, RARE, TABLE

#### B::REGEXP Methods

REGEX, precomp, qr\_anoncv, compflags

#### B::GV Methods

is\_empty, NAME, SAFENAME, STASH, SV, IO, FORM, AV, HV, EGV, CV, CVGEN, LINE, FILE, FILEGV, GvREFCNT, FLAGS, GPFLAGS

#### B::IO Methods

LINES, PAGE, PAGE\_LEN, LINES\_LEFT, TOP\_NAME, TOP\_GV, FMT\_NAME, FMT\_GV,  
BOTTOM\_NAME, BOTTOM\_GV, SUBPROCESS, IoTYPE, IoFLAGS, IsSTD

### **B::AV Methods**

FILL, MAX, ARRAY, ARRAYelt

### **B::CV Methods**

STASH, START, ROOT, GV, FILE, DEPTH, PADLIST, OUTSIDE, OUTSIDE\_SEQ, XSUB, XSUBANY,  
CvFLAGS, const\_sv, NAME\_HEK

### **B::HV Methods**

FILL, MAX, KEYS, RITER, NAME, ARRAY

## **OP-RELATED CLASSES**

### **B::OP Methods**

next, sibling, parent, name, ppaddr, desc, targ, type, opt, flags, private, spare

### **B::UNOP Method**

first

### **B::UNOP\_AUX Methods (since 5.22)**

aux\_list(cv), string(cv)

### **B::BINOP Method**

last

### **B::LOGOP Method**

other

### **B::LISTOP Method**

children

### **B::PMOP Methods**

pmreplroot, pmreplstart, pmflags, precomp, pmoffset, code\_list, pmregexp

### **B::SVOP Methods**

sv, gv

### **B::PADOP Method**

padix

### **B::PVOP Method**

pv

### **B::LOOP Methods**

redoop, nextop, lastop

### **B::COP Methods**

label, stash, stashpv, stashoff (threaded only), file, cop\_seq, line, warnings, io, hints, hints\_hash

### **B::METHOP Methods (Since Perl 5.22)**

first, meth\_sv

## PAD-RELATED CLASSES

### B::PADLIST Methods

MAX, ARRAY, ARRAYelt, NAMES, REFCNT, id, outid

### B::PADNAMELIST Methods

MAX, ARRAY, ARRAYelt, REFCNT

### B::PADNAME Methods

PV, PVX, LEN, REFCNT, FLAGS, TYPE, SvSTASH, OURSTASH, PROTOCV,  
COP\_SEQ\_RANGE\_LOW, COP\_SEQ\_RANGE\_HIGH, PARENT\_PAD\_INDEX,  
PARENT\_FAKELEX\_FLAGS

\$B::overlay

## AUTHOR

# B::Concise - Walk Perl syntax tree, printing concise info about ops

## SYNOPSIS

## DESCRIPTION

## EXAMPLE

## OPTIONS

### Options for Opcode Ordering

-basic, -exec, -tree

### Options for Line-Style

-concise, -terse, -linenoise, -debug, -env

### Options for tree-specific formatting

-compact, -loose, -vt, -ascii

### Options controlling sequence numbering

-basen, -bigendian, -littleendian

### Other options

-src, -stash="somepackage", -main, -nomain, -nobanner, -banner, -banneris => subref

### Option Stickiness

## ABBREVIATIONS

OP class abbreviations

OP flags abbreviations

## FORMATTING SPECIFICATIONS

### Special Patterns

(x(exec\_text;basic\_text)x), (\*(text)\*), (\*(text1;text2)\*), (? (text1#varText2)?), ~

### # Variables

#var, #varN, #Var, #addr, #arg, #class, #classsym, #coplabel, #exname, #extarg, #firstaddr, #flags,

## One-Liner Command tips



```
perl -MO=Concise,bar foo.pl, perl -MDigest::MD5=md5 -MO=Concise,md5 -e1, perl -MPOSIX -
MO=Concise,_POSIX_ARG_MAX -e1, perl -MPOSIX -MO=Concise,a -e 'print _POSIX_SAVED_IDS', perl
-MPOSIX -MO=Concise,a -e 'sub a{ _POSIX_SAVED_IDS}', perl -MB::Concise -e 'B::Concise::compile("-
exec","-src", \%B::Concise::)->()'
```

## Using B::Concise outside of the O framework

### Example: Altering Concise Renderings

**set\_style()**

**set\_style\_standard(\$name)**

**add\_style ()**

**add\_callback ()**

**Running B::Concise::compile()**

**B::Concise::reset\_sequence()**

**Errors**

**AUTHOR**

## B::Deparse - Perl compiler backend to produce perl code

### SYNOPSIS

### DESCRIPTION

### OPTIONS

**-d, -fFILE, -l, -p, -P, -q, -sLETTERS, C, iNUMBER, T, vSTRING., -xLEVEL**

### USING B::Deparse AS A MODULE

**Synopsis**

**Description**

**new**

**ambient\_pragmas**

**strict, \$[, bytes, utf8, integer, re, warnings, hint\_bits, warning\_bits, %^H**

**coderef2text**

**BUGS**

**AUTHOR**

## B::Op\_private - OP op\_private flag definitions

### SYNOPSIS

### DESCRIPTION

**%bits**

**%defines**

**%labels**

**%ops\_using**

## B::Showlex - Show lexical variables used in functions or files

### SYNOPSIS

### DESCRIPTION

### EXAMPLES

#### OPTIONS

### SEE ALSO

### TODD

### AUTHOR

## B::Terse - Walk Perl syntax tree, printing terse info about ops

### SYNOPSIS

### DESCRIPTION

### AUTHOR

## B::Xref - Generates cross reference reports for Perl programs

### SYNOPSIS

### DESCRIPTION

i, &, s, r

### OPTIONS

-oFILENAME, -r, -d, -D[t0]

### BUGS

### AUTHOR

## Benchmark - benchmark running times of Perl code

### SYNOPSIS

### DESCRIPTION

#### Methods

new, debug, iters

#### Standard Exports

timeit(COUNT, CODE), timethis ( COUNT, CODE, [ TITLE, [ STYLE ] ] ), timethese ( COUNT, CODEHASHREF, [ STYLE ] ), timediff ( T1, T2 ), timestr ( TIMEDIFF, [ STYLE, [ FORMAT ] ] )

#### Optional Exports

clearcache ( COUNT ), clearallcache ( ), cmpthese ( COUNT, CODEHASHREF, [ STYLE ] ), cmpthese ( RESULTSHASHREF, [ STYLE ] ), countit(TIME, CODE), disablecache ( ), enablecache ( ), timesum ( T1, T2 )

:hireswallclock

### Benchmark Object

cpu\_p, cpu\_c, cpu\_a, real, iters

## NOTES

## EXAMPLES

## INHERITANCE

## CAVEATS

## SEE ALSO

## AUTHORS

## MODIFICATION HISTORY

# CORE - Namespace for Perl's core routines

## SYNOPSIS

## DESCRIPTION

## OVERRIDING CORE FUNCTIONS

## AUTHOR

## SEE ALSO

# CPAN - query, download and build perl modules from CPAN sites

## SYNOPSIS

## DESCRIPTION

### **CPAN::shell([\$prompt, \$command]) Starting Interactive Mode**

Searching for authors, bundles, distribution files and modules, `get`, `make`, `test`, `install`, `clean` modules or distributions, `readme`, `perldoc`, `look` module or distribution, `ls author`, `ls globbing_expression`, `failed`, Persistence between sessions, The `force` and the `fforce` pragma, Lockfile, Signals

### **CPAN::Shell**

#### **autobundle**

#### **hosts**

`install_tested`, `is_tested`

#### **mkmyconfig**

`r [Module]/Regexp/...`

**recent** \*\*\*EXPERIMENTAL COMMAND\*\*\*

#### **recompile**

**report** Bundle|Distribution|Module

**smoke** \*\*\*EXPERIMENTAL COMMAND\*\*\*

**upgrade** [Module]/Regexp/...

The four CPAN::\* Classes: Author, Bundle, Module, Distribution

Integrating local directories

## Redirection

## Plugin support \*\*\*EXPERIMENTAL\*\*\*

## CONFIGURATION

completion support, displaying some help: o conf help, displaying current values: o conf [KEY], changing of scalar values: o conf KEY VALUE, changing of list values: o conf KEY SHIFT|UNSHIFT|PUSH|POP|SPLICE|LIST, reverting to saved: o conf defaults, saving the config: o conf commit

### Config Variables

```
o conf <scalar option>, o conf <scalar option> <value>, o conf <list option>, o conf <list option> [shift|pop], o conf <list option> [unshift|push|splice] <list>, interactive editing: o conf init [MATCH|LIST]
```

### CPAN::anycwd(\$path): Note on config variable getcwd

cwd, getcwd, fastcwd, getdcwd, backtickcwd

### Note on the format of the urllist parameter

### The urllist parameter has CD-ROM support

### Maintaining the urllist parameter

### The requires and build\_requires dependency declarations

### Configuration of the allow\_installing\_\* parameters

### Configuration for individual distributions (*Distroprefs*)

### Filenames

### Fallback Data::Dumper and Storable

### Blueprint

### Language Specs

```
comment [scalar], cpanconfig [hash], depends [hash] *** EXPERIMENTAL FEATURE ***, disabled [boolean], features [array] *** EXPERIMENTAL FEATURE ***, goto [string], install [hash], make [hash], match [hash], patches [array], pl [hash], test [hash]
```

### Processing Instructions

args [array], commandline, eexpect [hash], env [hash], expect [array]

### Schema verification with Kwalify

### Example Distroprefs Files

## PROGRAMMER'S INTERFACE

expand(\$type,@things), expandany(@things), Programming Examples

### Methods in the other Classes

```
CPAN::Author::as_glimpse(), CPAN::Author::as_string(), CPAN::Author::email(),  
CPAN::Author::fullname(), CPAN::Author::name(), CPAN::Bundle::as_glimpse(),  
CPAN::Bundle::as_string(), CPAN::Bundle::clean(), CPAN::Bundle::contains(),  
CPAN::Bundle::force($method,@args), CPAN::Bundle::get(), CPAN::Bundle::inst_file(),  
CPAN::Bundle::inst_version(), CPAN::Bundle::uptodate(), CPAN::Bundle::install(),  
CPAN::Bundle::make(), CPAN::Bundle::readme(), CPAN::Bundle::test(),  
CPAN::Distribution::as_glimpse(), CPAN::Distribution::as_string(), CPAN::Distribution::author(),  
CPAN::Distribution::pretty_id(), CPAN::Distribution::base_id(), CPAN::Distribution::clean(),  
CPAN::Distribution::containsmods(), CPAN::Distribution::cvs_import(), CPAN::Distribution::dir(),  
CPAN::Distribution::force($method,@args), CPAN::Distribution::get(), CPAN::Distribution::install(),
```

CPAN::Distribution::isa\_perl(), CPAN::Distribution::look(), CPAN::Distribution::make(),  
CPAN::Distribution::perldoc(), CPAN::Distribution::prefs(), CPAN::Distribution::prereq\_pm(),  
CPAN::Distribution::readme(), CPAN::Distribution::reports(), CPAN::Distribution::read\_yaml(),  
CPAN::Distribution::test(), CPAN::Distribution::uptodate(), CPAN::Index::force\_reload(),  
CPAN::Index::reload(), CPAN::InfoObj::dump(), CPAN::Module::as\_glimpse(),  
CPAN::Module::as\_string(), CPAN::Module::clean(), CPAN::Module::cpan\_file(),  
CPAN::Module::cpan\_version(), CPAN::Module::cvs\_import(), CPAN::Module::description(),  
CPAN::Module::distribution(), CPAN::Module::dslip\_status(), CPAN::Module::force(\$method,@args),  
CPAN::Module::get(), CPAN::Module::inst\_file(), CPAN::Module::available\_file(),  
CPAN::Module::inst\_version(), CPAN::Module::available\_version(), CPAN::Module::install(),  
CPAN::Module::look(), CPAN::Module::make(), CPAN::Module::manpage\_headline(),  
CPAN::Module::perldoc(), CPAN::Module::readme(), CPAN::Module::reports(), CPAN::Module::test(),  
CPAN::Module::uptodate(), CPAN::Module::userid()

## **Cache Manager**

## **Bundles**

## **PREREQUISITES**

## **UTILITIES**

### **Finding packages and VERSION**

### **Debugging**

o debug package..., o debug -package..., o debug all, o debug number

### **Floppy, Zip, Offline Mode**

### **Basic Utilities for Programmers**

has\_inst(\$module), use\_inst(\$module), has\_usable(\$module), instance(\$module), frontend(),  
frontend(\$new\_frontend)

## **SECURITY**

### **Cryptographically signed modules**

## **EXPORT**

## **ENVIRONMENT**

## **POPULATE AN INSTALLATION WITH LOTS OF MODULES**

## **WORKING WITH CPAN.pm BEHIND FIREWALLS**

### **Three basic types of firewalls**

http firewall, ftp firewall, One-way visibility, SOCKS, IP Masquerade

### **Configuring lynx or ncftp for going through a firewall**

## **FAQ**

1), 2), 3), 4), 5), 6), 7), 8), 9), 10), 11), 12), 13), 14), 15), 16), 17), 18), 19)

## **COMPATIBILITY**

### **OLD PERL VERSIONS**

### **CPANPLUS**

### **CPANMINUS**

## **SECURITY ADVICE**

## **BUGS**

## **AUTHOR**

**LICENSE**

**TRANSLATIONS**

**SEE ALSO**

## **CPAN::API::HOWTO - a recipe book for programming with CPAN.pm**

**RECIPES**

What distribution contains a particular module?

What modules does a particular distribution contain?

**SEE ALSO**

**LICENSE**

**AUTHOR**

## **CPAN::Debug - internal debugging for CPAN.pm**

**LICENSE**

## **CPAN::Distroprefs -- read and match distroprefs**

**SYNOPSIS**

**DESCRIPTION**

**INTERFACE**

a CPAN::Distroprefs::Result object, `undef`, indicating that no prefs files remain to be found

**RESULTS**

**Common**

**Errors**

**Successes**

**PREFS**

**LICENSE**

## **CPAN::FirstTime - Utility for CPAN::Config file Initialization**

**SYNOPSIS**

**DESCRIPTION**

allow\_installing\_module\_downgrades, allow\_installing\_outdated\_dists, auto\_commit, build\_cache, build\_dir, build\_dir\_reuse, build\_requires\_install\_policy, cache\_metadata, check\_sigs, cleanup\_after\_install, colorize\_output, colorize\_print, colorize\_warn, colorize\_debug, commandnumber\_in\_prompt, connect\_to\_internet\_ok, ftp\_passive, ftpstats\_period, ftpstats\_size, getcwd, halt\_on\_failure, histfile, histsize, inactivity\_timeout, index\_expire, inhibit\_startup\_message, keep\_source\_where, load\_module\_verbosity, makepl\_arg, make\_arg, make\_install\_arg, make\_install\_make\_command, mbuildpl\_arg, mbuild\_arg, mbuild\_install\_arg, mbuild\_install\_build\_command, pager, prefer\_installer, prefs\_dir, prerequisites\_policy, randomize\_urllist, recommends\_policy, scan\_cache, shell, show\_unparsable\_versions, show\_upload\_date, show\_zero\_versions, suggests\_policy, tar\_verbosity, term\_is\_latin, term\_ornaments, test\_report, perl5lib\_verbosity, prefer\_external\_tar, trust\_test\_report\_history, urllist\_ping\_external, urllist\_ping\_verbose, use\_prompt\_default, use\_sqlite, version\_timeout, yaml\_load\_code, yaml\_module

## LICENSE

# CPAN::HandleConfig - internal configuration handling for CPAN.pm

```
CLASS->safe_quote ITEM
```

## LICENSE

# CPAN::Kwalify - Interface between CPAN.pm and Kwalify.pm

## SYNOPSIS

## DESCRIPTION

```
_validate($schema_name, $data, $file, $doc), yaml($schema_name)
```

## AUTHOR

## LICENSE

# CPAN::Meta - the distribution metadata for a CPAN dist

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

new

create

load\_file

load\_yaml\_string

load\_json\_string

load\_string

save

meta\_spec\_version

effective\_prereqs

should\_index\_file

should\_index\_package

features

feature

as\_struct

as\_string

## STRING DATA

## LIST DATA

## MAP DATA

**CUSTOM DATA**

**BUGS**

**SEE ALSO**

**SUPPORT**

**Bugs / Feature Requests**

**Source Code**

**AUTHORS**

**CONTRIBUTORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::Converter - Convert CPAN distribution metadata structures**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**new**

**convert**

**upgrade\_fragment**

**BUGS**

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::Feature - an optional feature provided by a CPAN distribution**

**VERSION**

**DESCRIPTION**

**METHODS**

**new**

**identifier**

**description**

**prereqs**

**BUGS**

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::History - history of CPAN Meta Spec changes**



**VERSION**

**DESCRIPTION**

**HISTORY**

**Version 2**

**Version 1.4**

**Version 1.3**

**Version 1.2**

**Version 1.1**

**Version 1.0**

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::History::Meta\_1\_0 - Version 1.0 metadata specification for META.yml**

**PREFACE**

**DESCRIPTION**

**Format**

**Fields**

name, version, license, perl, gpl, lgpl, artistic, bsd, open\_source, unrestricted, restrictive, distribution\_type, requires, recommends, build\_requires, conflicts, dynamic\_config, generated\_by

**Related Projects**

DOAP

**History**

## **CPAN::Meta::History::Meta\_1\_1 - Version 1.1 metadata specification for META.yml**

**PREFACE**

**DESCRIPTION**

**Format**

**Fields**

name, version, license, perl, gpl, lgpl, artistic, bsd, open\_source, unrestricted, restrictive, license\_uri, distribution\_type, private, requires, recommends, build\_requires, conflicts, dynamic\_config, generated\_by

**Inggy's suggestions**

short\_description, description, maturity, author\_id, owner\_id, categorization, keyword, chapter\_id, URL for further information, namespaces

**History**

## **CPAN::Meta::History::Meta\_1\_2 - Version 1.2 metadata specification for META.yml**

## **PREFACE**

## **SYNOPSIS**

## **DESCRIPTION**

## **FORMAT**

## **TERMINOLOGY**

distribution, module

## **VERSION SPECIFICATIONS**

## **HEADER**

## **FIELDS**

**meta-spec**

**name**

**version**

**abstract**

**author**

**license**

perl, gpl, lgpl, artistic, bsd, open\_source, unrestricted, restrictive

**distribution\_type**

**requires**

**recommends**

**build\_requires**

**conflicts**

**dynamic\_config**

**private**

**provides**

**no\_index**

**keywords**

**resources**

homepage, license, bugtracker

**generated\_by**

## **SEE ALSO**

## **HISTORY**

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December 9, 2003, December 15, 2003, July 26, 2005, August 23, 2005

**CPAN::Meta::History::Meta\_1\_3 - Version 1.3 metadata specification for META.yml**

## **PREFACE**

## **SYNOPSIS**

## **DESCRIPTION**

## **FORMAT**

## **TERMINOLOGY**

distribution, module

## **HEADER**

## **FIELDS**

**meta-spec**

**name**

**version**

**abstract**

**author**

**license**

apache, artistic, bsd, gpl, lgpl, mit, mozilla, open\_source, perl, restrictive, unrestricted

**distribution\_type**

**requires**

**recommends**

**build\_requires**

**conflicts**

**dynamic\_config**

**private**

**provides**

**no\_index**

**keywords**

**resources**

homepage, license, bugtracker

**generated\_by**

## **VERSION SPECIFICATIONS**

## **SEE ALSO**

## **HISTORY**

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December 9, 2003, December 15, 2003, July 26, 2005, August 23, 2005

**CPAN::Meta::History::Meta\_1\_4 - Version 1.4 metadata specification for META.yml**

## **PREFACE**

## **SYNOPSIS**

## **DESCRIPTION**

## **FORMAT**

## **TERMINOLOGY**

distribution, module

## **HEADER**

## **FIELDS**

**meta-spec**

**name**

**version**

**abstract**

**author**

**license**

apache, artistic, bsd, gpl, lgpl, mit, mozilla, open\_source, perl, restrictive, unrestricted

**distribution\_type**

**requires**

**recommends**

**build\_requires**

**configure\_requires**

**conflicts**

**dynamic\_config**

**private**

**provides**

**no\_index**

**keywords**

**resources**

homepage, license, bugtracker

**generated\_by**

## **VERSION SPECIFICATIONS**

## **SEE ALSO**

## **HISTORY**

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December 9, 2003, December 15, 2003, July 26, 2005, August 23, 2005, June 12, 2007

# **CPAN::Meta::Merge - Merging CPAN Meta fragments**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**new**

**merge(@fragments)**

**MERGE STRATEGIES**

identical, set\_addition, uniq\_map, improvise

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::Prereqs - a set of distribution prerequisites by phase and type**

**VERSION**

**DESCRIPTION**

**METHODS**

**new**

**requirements\_for**

**phases**

**types\_in**

**with\_merged\_prereqs**

**merged\_requirements**

**as\_string\_hash**

**is\_finalized**

**finalize**

**clone**

**BUGS**

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::Requirements - a set of version requirements for a CPAN dist**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

new  
add\_minimum  
add\_maximum  
add\_exclusion  
exact\_version  
add\_requirements  
accepts\_module  
clear\_requirement  
requirements\_for\_module  
structured\_requirements\_for\_module  
required\_modules  
clone  
is\_simple  
is\_finalized  
finalize  
as\_string\_hash  
add\_string\_requirement  
    >= 1.3, <= 1.3, != 1.3, > 1.3, < 1.3, >= 1.3, != 1.5, <= 2.0  
from\_string\_hash

## **SUPPORT**

Bugs / Feature Requests  
Source Code

## **AUTHORS**

## **CONTRIBUTORS**

## **COPYRIGHT AND LICENSE**

# **CPAN::Meta::Spec - specification for CPAN distribution metadata**

## **VERSION**

## **SYNOPSIS**

## **DESCRIPTION**

## **TERMINOLOGY**

distribution, module, package, consumer, producer, must, should, may, etc

## **DATA TYPES**

Boolean  
String  
List

**Map**

**License String**

**URL**

**Version**

**Version Range**

## **STRUCTURE**

### **REQUIRED FIELDS**

version, url, stable, testing, unstable

### **OPTIONAL FIELDS**

file, directory, package, namespace, description, prereqs, file, version, homepage, license, bugtracker, repository

### **DEPRECATED FIELDS**

## **VERSION NUMBERS**

### **Version Formats**

Decimal versions, Dotted-integer versions

### **Version Ranges**

## **PREREQUISITES**

### **Prereq Spec**

configure, build, test, runtime, develop, requires, recommends, suggests, conflicts

### **Merging and Resolving Prerequisites**

## **SERIALIZATION**

## **NOTES FOR IMPLEMENTORS**

**Extracting Version Numbers from Perl Modules**

**Comparing Version Numbers**

**Prerequisites for dynamically configured distributions**

**Indexing distributions a la PAUSE**

## **SEE ALSO**

## **HISTORY**

## **AUTHORS**

## **COPYRIGHT AND LICENSE**

# **CPAN::Meta::Validator - validate CPAN distribution metadata structures**

## **VERSION**

## **SYNOPSIS**

## **DESCRIPTION**

## **METHODS**

**new**

**is\_valid**

**errors**

**Check Methods**

**Validator Methods**

**BUGS**

**AUTHORS**

**COPYRIGHT AND LICENSE**

## **CPAN::Meta::YAML - Read and write a subset of YAML for CPAN Meta files**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**SUPPORT**

**SEE ALSO**

**AUTHORS**

**COPYRIGHT AND LICENSE**

**SYNOPSIS**

**DESCRIPTION**

`new( LOCAL_FILE_NAME )`

`continents()`

`countries( [CONTINENTS] )`

`mirrors( [COUNTRIES] )`

`get_mirrors_by_countries( [COUNTRIES] )`

`get_mirrors_by_continents( [CONTINENTS] )`

`get_countries_by_continents( [CONTINENTS] )`

`default_mirror`

`best_mirrors`

`get_n_random_mirrors_by_continents( N, [CONTINENTS] )`

`get_mirrors_timings( MIRROR_LIST, SEEN, CALLBACK, %ARGS );`

`find_best_continents( HASH_REF );`

**AUTHOR**

**LICENSE**

## **CPAN::Nox - Wrapper around CPAN.pm without using any XS module**



**SYNOPSIS**

**DESCRIPTION**

**LICENSE**

**SEE ALSO**

## **CPAN::Plugin - Base class for CPAN shell extensions**

**SYNOPSIS**

**DESCRIPTION**

Alpha Status

How Plugins work?

**METHODS**

plugin\_requires

distribution\_object

distribution

distribution\_info

build\_dir

is\_xs

**AUTHOR**

## **CPAN::Plugin::Specfile - Proof of concept implementation of a trivial CPAN::Plugin**

**SYNOPSIS**

**DESCRIPTION**

OPTIONS

**AUTHOR**

## **CPAN::Queue - internal queue support for CPAN.pm**

**LICENSE**

## **CPAN::Tarzip - internal handling of tar archives for CPAN.pm**

**LICENSE**

## **CPAN::Version - utility functions to compare CPAN versions**

**SYNOPSIS**

**DESCRIPTION**

**LICENSE**

## **Carp - alternative warn and die for modules**

## SYNOPSIS

## DESCRIPTION

Forcing a Stack Trace

Stack Trace formatting

## GLOBAL VARIABLES

`$Carp::MaxEvalLen`

`$Carp::MaxArgLen`

`$Carp::MaxArgNums`

`$Carp::Verbose`

`$Carp::RefArgFormatter`

`@CARP_NOT`

`%Carp::Internal`

`%Carp::CarpInternal`

`$Carp::CarpLevel`

## BUGS

## SEE ALSO

## CONTRIBUTING

## AUTHOR

## COPYRIGHT

## LICENSE

# Class::Struct - declare struct-like datatypes as Perl classes

## SYNOPSIS

## DESCRIPTION

The `struct()` function

Class Creation at Compile Time

Element Types and Accessor Methods

Scalar ( `'$'` or `'*${}'` ), Array ( `'@'` or `'*@'` ), Hash ( `'%'` or `'*%'` ), Class  
( `'Class_Name'` or `'*Class_Name'` )

Initializing with `new`

## EXAMPLES

Example 1, Example 2, Example 3

## Author and Modification History

# Compress::Raw::Bzip2 - Low-Level Interface to bzip2 compression library

## SYNOPSIS

## DESCRIPTION

### Compression

```
($z, $status) = new Compress::Raw::Bzip2 $appendOutput, $blockSize100k, $workfactor;  
    $appendOutput, $blockSize100k, $workfactor  
  
$status = $bz->bzdeflate($input, $output);  
$status = $bz->bzflush($output);  
$status = $bz->bzclose($output);
```

#### Example

### Uncompression

```
($z, $status) = new Compress::Raw::Bunzip2 $appendOutput, $consumeInput, $small, $verbosity,  
    $limitOutput;  
    $appendOutput, $consumeInput, $small, $limitOutput, $verbosity  
  
$status = $z->bzinflate($input, $output);
```

### Misc

```
my $version = Compress::Raw::Bzip2::bzlibversion();
```

### Constants

### SUPPORT

### SEE ALSO

### AUTHOR

### MODIFICATION HISTORY

### COPYRIGHT AND LICENSE

## Compress::Raw::Zlib - Low-Level Interface to zlib compression library

### SYNOPSIS

### DESCRIPTION

#### Compress::Raw::Zlib::Deflate

```
($d, $status) = new Compress::Raw::Zlib::Deflate( [OPT] )
```

```
    -Level, -Method, -WindowBits, -MemLevel, -Strategy, -Dictionary, -Bufsize, -AppendOutput, -  
    CRC32, -ADLER32
```

```
$status = $d->deflate($input, $output)
```

```
$status = $d->flush($output [, $flush_type])
```

```
$status = $d->deflateReset()
```

```
$status = $d->deflateParams([OPT])
```

```
    -Level, -Strategy, -BufSize
```

```
$status = $d->deflateTune($good_length, $max_lazy, $nice_length, $max_chain)
```

```
$d->dict_adler()
```

**\$d->crc32()**

**\$d->adler32()**

**\$d->msg()**

**\$d->total\_in()**

**\$d->total\_out()**

**\$d->get\_Strategy()**

**\$d->get\_Level()**

**\$d->get\_BufSize()**

Example

**Compress::Raw::Zlib::Inflate**

**(\$i, \$status) = new Compress::Raw::Zlib::Inflate( [OPT] )**

-WindowBits, -Bufsize, -Dictionary, -AppendOutput, -CRC32, -ADLER32, -ConsumeInput, -LimitOutput

**\$status = \$i->inflate(\$input, \$output [, \$eof])**

**\$status = \$i->inflateSync(\$input)**

**\$status = \$i->inflateReset()**

**\$i->dict\_adler()**

**\$i->crc32()**

**\$i->adler32()**

**\$i->msg()**

**\$i->total\_in()**

**\$i->total\_out()**

**\$d->get\_BufSize()**

Examples

## CHECKSUM FUNCTIONS

### Misc

**my \$version = Compress::Raw::Zlib::zlib\_version();**

**my \$flags = Compress::Raw::Zlib::zlibCompileFlags();**

The LimitOutput option.

## ACCESSING ZIP FILES

### FAQ

Compatibility with Unix compress/uncompress.

Accessing .tar.Z files

## Zlib Library Version Support

### CONSTANTS

### SUPPORT

### SEE ALSO

### AUTHOR

### MODIFICATION HISTORY

### COPYRIGHT AND LICENSE

## Compress::Zlib - Interface to zlib compression library

### SYNOPSIS

### DESCRIPTION

Notes for users of Compress::Zlib version 1

### GZIP INTERFACE

```
$gz = gzopen($filename, $mode), $gz = gzopen($filehandle, $mode), $bytesread = $gz->gzread($buffer [, $size]) ;, $bytesread = $gz->gzreadline($line) ;, $byteswritten = $gz->gzwrite($buffer) ;, $status = $gz->gzflush($flush_type) ;, $offset = $gz->gztell() ;, $status = $gz->gzseek($offset, $whence) ;, $gz->gzclose, $gz->gzsetparams($level, $strategy, $level, $strategy, $gz->gzerror, $gzerrno
```

#### Examples

```
Compress::Zlib::memGzip
```

```
Compress::Zlib::memGunzip
```

### COMPRESS/UNCOMPRESS

```
$dest = compress($source [, $level] ) ;, $dest = uncompress($source) ;
```

### Deflate Interface

```
($d, $status) = deflateInit( [OPT] )
```

-Level, -Method, -WindowBits, -MemLevel, -Strategy, -Dictionary, -Bufsize

```
($out, $status) = $d->deflate($buffer)
```

```
($out, $status) = $d->flush() =head2 ($out, $status) = $d->flush($flush_type)
```

```
$status = $d->deflateParams([OPT])
```

-Level, -Strategy

```
$d->dict_adler()
```

```
$d->msg()
```

```
$d->total_in()
```

```
$d->total_out()
```

#### Example

### Inflate Interface

```
($i, $status) = inflateInit()
    -WindowBits, -Bufsize, -Dictionary

($out, $status) = $i->inflate($buffer)

$status = $i->inflateSync($buffer)

$i->dict_adler()

$i->msg()

$i->total_in()

$i->total_out()
```

Example

## CHECKSUM FUNCTIONS

### Misc

```
my $version = Compress::Zlib::zlib_version();
```

### CONSTANTS

### SUPPORT

### SEE ALSO

### AUTHOR

### MODIFICATION HISTORY

### COPYRIGHT AND LICENSE

**Config, =for comment Generated by configpm. Any changes made here will be lost!**

### SYNOPSIS

### DESCRIPTION

```
myconfig(), config_sh(), config_re($regex), config_vars(@names), bincompat_options(),
non_bincompat_options(), compile_date(), local_patches(), header_files()
```

### EXAMPLE

### WARNING

### GLOSSARY

—

`_a`, `_exe`, `_o`

**a**

`afs`, `afsroot`, `alignbytes`, `aphostname`, `api_revision`, `api_subversion`, `api_version`, `api_versions`, `trimg`, `ar`, `archlib`, `archlibexp`, `archname`, `archname64`, `archobjs`, `asctime_r_proto`, `awk`

**b**

`baserev`, `bash`, `bin`, `bin_ELF`, `binexp`, `bison`, `byacc`, `byteorder`

**c**

\_\_\_\_\_

c, castflags, cat, cc, cccdlflags, ccdlflags, ccflags, ccflags\_uselargefiles, ccname, ccsymbo  
ls, ccversion, cf\_by, cf\_email, cf\_time, charbits, charsize, chgrp, chmod, chown, clocktype, c  
omm, compress, config\_arg0, config\_argc, config\_args, contains, cp, cpio, cpp, cpp\_stuff, cpp  
ccsymbols, cppflags, cpplast, cppminus, cprun, cppstdin, cppsymbols, crypt\_r\_proto, cryptlib, c  
sh, ctermid\_r\_proto, ctime\_r\_proto

d

d\_fwalk, d\_accept4, d\_access, d\_accessx, d\_acosh, d\_aintl, d\_alarm, d\_archlib, d\_asctime64, d  
\_asctime\_r, d\_asinh, d\_atanh, d\_atofl, d\_atoll, d\_attribute\_deprecated, d\_attribute\_format, d  
\_attribute\_malloc, d\_attribute\_nonnull, d\_attribute\_noreturn, d\_attribute\_pure, d\_attribute\_unu  
sed, d\_attribute\_warn\_unused\_result, d\_backtrace, d\_bsd, d\_bsdgetpggrp, d\_bsdsetpggrp, d\_builtin  
\_add\_overflow, d\_builtin\_choose\_expr, d\_builtin\_expect, d\_builtin\_mul\_overflow, d\_builtin\_sub  
overflow, d\_c99\_variadic\_macros, d\_casti32, d\_castneg, d\_cbrt, d\_chown, d\_chroot, d\_chsize, d  
\_class, d\_clearenv, d\_closedir, d\_cmsgghdr\_s, d\_copysign, d\_copysignl, d\_cpluplus, d\_crypt, d  
\_crypt\_r, d\_csh, d\_ctermid, d\_ctermid\_r, d\_ctime64, d\_ctime\_r, d\_cuserid, d\_dbminitproto, d\_d  
ifftime, d\_difftime64, d\_dir\_dd\_fd, d\_dirfd, d\_dirnamlen, d\_dladdr, d\_dlderror, d\_dlopen, d\_dl  
symun, d\_dosuid, d\_double\_has\_inf, d\_double\_has\_nan, d\_double\_has\_negative\_zero, d\_double\_has  
subnormals, d\_double\_style\_cray, d\_double\_style\_ibm, d\_double\_style\_ieee, d\_double\_style\_vax, d  
\_drand48\_r, d\_drand48proto, d\_dup2, d\_dup3, d\_duplocale, d\_eaccess, d\_endgrent, d\_endgrent\_r, d  
\_endhent, d\_endhostent\_r, d\_endnent, d\_endnetent\_r, d\_endpent, d\_endprotoent\_r, d\_endpwent  
\_r, d\_endsept, d\_endservent\_r, d\_eofnblk, d\_erf, d\_erfc, d\_eunice, d\_exp2, d\_expm1, d  
\_faststdio, d\_fchdir, d\_fchmod, d\_fchmodat, d\_fchown, d\_fcntl, d\_fcntl\_can\_lock, d\_fd\_macros, d  
\_fd\_set, d\_fdclose, d\_fdim, d\_fds\_bits, d\_fegetround, d\_fgetpos, d\_finite, d\_finitel, d\_flexf  
nam, d\_flock, d\_flockproto, d\_fma, d\_fmax, d\_fmin, d\_fork, d\_fp\_class, d\_fp\_classify, d\_fp\_cl  
assl, d\_fpathconf, d\_fpclass, d\_fpclassify, d\_fpclassl, d\_fpgetround, d\_fpos64\_t, d\_freelocal  
e, d\_frexp1, d\_fs\_data\_s, d\_fseeko, d\_fsetpos, d\_fstatfs, d\_fstatvfs, d\_fsync, d\_ftello, d\_ft  
ime, d\_futimes, d\_gai\_strerror, d\_Gconvert, d\_gdbm\_ndbm\_h\_uses\_prototypes, d\_gdbmndbm\_h\_uses\_p  
rototypes, d\_getaddrinfo, d\_getcwd, d\_getespwnam, d\_getfsstat, d\_getgrent, d\_getgrent\_r, d\_get  
grgid\_r, d\_getgrnam\_r, d\_getgrps, d\_gethbyaddr, d\_gethbyname, d\_gethent, d\_gethname, d\_gethost  
byaddr\_r, d\_gethostbyname\_r, d\_gethostent\_r, d\_gethostprotos, d\_getitimer, d\_getlogin, d\_getlo  
gin\_r, d\_getmnt, d\_getmntent, d\_getnameinfo, d\_getnbyaddr, d\_getnbyname, d\_getnent, d\_getnetby  
addr\_r, d\_getnetbyname\_r, d\_getnetent\_r, d\_getnetprotos, d\_getpgsz, d\_getpbyname, d\_getpbynu  
mber, d\_getpent, d\_getpgid, d\_getpggrp, d\_getpggrp2, d\_getppid, d\_getpprior, d\_getprotobynum\_r, d  
\_getprotobynumber\_r, d\_getprotoent\_r, d\_getprototprotos, d\_getprpwnam, d\_getpwent, d\_getpwent  
\_r, d\_getpwnam\_r, d\_getpwuid\_r, d\_getsbyname, d\_getsbyproto, d\_getsent, d\_getservbyname\_r, d\_get  
servbyport\_r, d\_getservent\_r, d\_getservprotos, d\_getspnam, d\_getspnam\_r, d\_gettimeof, d\_gmtim  
e64, d\_gmtime\_r, d\_gnulibc, d\_grpasswd, d\_has\_C\_UTF8, d\_hasmntopt, d\_htonl, d\_hypot, d\_ilogb, d  
\_ilogbl, d\_inc\_version\_list, d\_inetaton, d\_inetntop, d\_inetpton, d\_int64\_t, d\_ip\_mreq, d\_ip\_mre  
q\_source, d\_ipv6\_mreq, d\_ipv6\_mreq\_source, d\_isascii, d\_isblank, d\_isfinite, d\_isfinitel, d  
\_isinf, d\_isinfl, d\_issless, d\_isnan, d\_isnanl, d\_isnormal, d\_j0, d\_j0l, d\_killpg, d\_lc\_monetar  
y\_2008, d\_lchown, d\_ldbl\_dig, d\_ldexpl, d\_lgamma, d\_lgamma\_r, d\_libm\_lib\_version, d\_libname\_u  
nique, d\_link, d\_linkat, d\_llrint, d\_llrintl, d\_llroundl, d\_localeconv\_l, d\_localt  
ime64, d\_localtime\_r, d\_localtime\_r\_needs\_tzset, d\_loconv, d\_lockf, d\_loglp, d\_log2, d\_logb, d  
\_long\_double\_style\_ieee, d\_long\_double\_style\_ieee\_doubledouble, d\_long\_double\_style\_ieee\_exten  
ded, d\_long\_double\_style\_ieee\_std, d\_long\_double\_style\_vax, d\_longdbl, d\_longlong, d\_lrint, d  
\_lrintl, d\_lround, d\_lroundl, d\_lseekproto, d\_lstat, d\_madvise, d\_malloc\_good\_size, d\_malloc\_s  
ize, d\_mblen, d\_mbrlen, d\_mbrtowc, d\_mbstowcs, d\_mbtowc, d\_memmem, d\_memchr, d\_mkdir, d\_mkd  
emp, d\_mkfifo, d\_mkostemp, d\_mkstemp, d\_mkstemps, d\_mktime, d\_mktime64, d\_mmap, d\_modfl, d\_mo  
dflproto, d\_mprotect, d\_msg, d\_msg\_ctru, d\_msg\_dontroute, d\_msg\_oob, d\_msg\_peek, d\_msg\_prox  
y, d\_msgctl, d\_msgget, d\_msgghdr\_s, d\_msgrcv, d\_msgsnd, d\_msyn, d\_munmap, d\_mymalloc, d\_nan, d  
\_nanosleep, d\_ndbm, d\_ndbm\_h\_uses\_prototypes, d\_nearbyint, d\_newlocale, d\_nextafter, d\_nextto  
ward, d\_nice, d\_nl\_langinfo, d\_nv\_preserves\_uv, d\_nv\_zero\_is\_allbits\_zero, d\_off64\_t, d\_old\_pt  
hread\_create\_joinable, d\_oldpthreads, d\_oldsock, d\_open3, d\_openat, d\_pathconf, d\_pause, d\_per  
l\_otherlibdirs, d\_phostname, d\_pipe, d\_pipe2, d\_poll, d\_portable, d\_prctl, d\_prctl\_set\_name, d  
\_PRIe64, d\_PRIeldbl, d\_PRIeldbl1, d\_PRIfldbl1, d\_PRIfldbl1, d\_PRIgldbl1, d\_PRIgldbl1, d\_PRIi64, d  
\_printf\_format\_null, d\_PRIo64, d\_PRIu64, d\_PRIx64, d\_PRIXu64, d\_procselfexe, d\_pseudofork, d\_p  
thread\_atfork, d\_pthread\_attr\_setscope, d\_pthread\_yield, d\_ptrdiff\_t, d\_pwage, d\_pwchange, d\_p  
wclass, d\_pwcomment, d\_pwxexpire, d\_pwgecos, d\_pwpasswd, d\_pwquota, d\_qgcvt, d\_quad, d\_querylo  
cale, d\_random\_r, d\_re\_comp, d\_readdir, d\_readdir64\_r, d\_readdir\_r, d\_readlink, d\_readv, d\_re  
cvmsg, d\_regcmp, d\_regcomp, d\_remainder, d\_remquo, d\_rename, d\_renameat, d\_rewinddir, d\_rint, d  
\_rmdir, d\_round, d\_sbrkproto, d\_scalbn, d\_sched\_yield, d\_scm\_rights, d\_SCNfldbl1, d  
\_seekdir, d\_select, d\_sem, d\_semctl, d\_semctl\_semid\_ds, d\_semctl\_semun, d\_semget, d\_semop, d  
\_sendmsg, d\_setegid, d\_seteu, d\_setgid, d\_setgrent, d\_setgrent\_r, d\_setgrps, d\_sethent, d\_sethostent\_r, d  
\_setitimer, d\_setlinebuf, d\_setlocale, d\_setlocale\_accepts\_any\_locale\_name, d\_setlocale\_r, d\_s  
etnent, d\_setnetent\_r, d\_setpent, d\_setpgid, d\_setpggrp, d\_setpggrp2, d\_setprior, d\_setproctitl  
e, d\_setprotoent\_r, d\_setpwent, d\_setpwent\_r, d\_setregid, d\_setresgid, d\_setresuid, d\_setreu





## k

known\_extensions, ksh

## l

ld, ld\_can\_script, lddflags, ldflags, ldflags\_uselargefiles, ldlibpthname, less, lib\_ext, libc, libperl, libpth, libs, libsdirs, libsfiles, libsfound, libspath, libswanted, libswanted\_uselargefiles, line, lint, lkflags, ln, lns, localtime\_r\_proto, locincpth, loclibpth, longdbl\_infbytes, longdblkind, longdblmanbits, longdblmanbytes, longdblsize, longlongsize, longsize, lp, lpr, ls, lseeksize, lseektype

## m

mail, mailx, make, make\_set\_make, mallocobj, mallocsrc, malloctype, man1dir, man1direxp, man1ext, man3dir, man3direxp, man3ext, mips\_type, mistrustnm, mkdir, mmaptype, modetype, more, multiarch, mv, myarchname, mydomain, myhostname, myuname

## n

n, need\_va\_copy, netdb\_hlen\_type, netdb\_host\_type, netdb\_name\_type, netdb\_net\_type, nm, nm\_opt, nm\_so\_opt, nonxs\_ext, nroff, nv\_overflows\_integers\_at, nv\_preserves\_uv\_bits, nveformat, nvUformat, nvfformat, nvFUformat, nvgformat, nvGUformat, nvmanbits, nvsize, nvtype

## o

o\_nonblock, obj\_ext, old\_pthread\_create\_joinable, optimize, orderlib, osname, osvers, otherlibdirs

## p

package, pager, passcat, patchlevel, path\_sep, perl, perl5

## P

PERL\_API\_REVISION, PERL\_API\_SUBVERSION, PERL\_API\_VERSION, PERL\_CONFIG\_SH, PERL\_PATCHLEVEL, perl\_patchlevel, PERL\_REVISION, perl\_static\_inline, PERL\_SUBVERSION, PERL\_VERSION, perladmin, perllibs, perlpith, pg, phostname, pidtype, plibpth, pmake, pr, prefix, prefixexp, privlib, pri\_vlibexp, procseluxe, ptrsize

## q

quadkind, quadtype

## r

randbits, randfunc, random\_r\_proto, randseedtype, ranlib, rd\_nodata, readdir64\_r\_proto, readdir\_r\_proto, revision, rm, rm\_try, rmail, run, runnm

## s

sched\_yield, scriptdir, scriptdirexp, sed, seedfunc, selectminbits, selecttype, sendmail, setgrent\_r\_proto, sethostent\_r\_proto, setlocale\_r\_proto, setnetent\_r\_proto, setprotoent\_r\_proto, setpwent\_r\_proto, setservernt\_r\_proto, sGMTIME\_max, sGMTIME\_min, sh, shar, sharpbang, shmatttype, shrtsize, shrpenv, shsharp, sig\_count, sig\_name, sig\_name\_init, sig\_num, sig\_num\_init, sig\_size, signal\_t, sitearch, sitearchexp, sitebin, sitebinexp, sitehtml1ldir, sitehtml1ldirexp, sitehtml3dir, sitehtml3direxp, sitelib, sitelib\_stem, sitelibexp, siteman1dir, siteman1direxp, siteman3dir, siteman3direxp, siteprefix, siteprefixexp, sitescript, sitescriptexp, sizesize, sizetype, sleep, sLOCALTIME\_max, sLOCALTIME\_min, smail, so, sockethdr, socketlib, socksizetype, sort, spackage, spitshell, sPRIi64, sPRIeldbl, sPRIeuldbl, sPRIfdbl, sPRIfuldbl, sPRIGldbl, sPRIGuldbl, sPRIi64, sPRIo64, sPRIu64, sPRIx64, sPRIXu64, srand48\_r\_proto, srandom\_r\_proto, src, sSCNfdbl, ssize\_t, st\_ino\_sign, st\_ino\_size, startperl, startsh, static\_ext, stdchar, stdio\_base, stdio\_bufsiz, stdio\_cnt, stdio\_filbuf, stdio\_ptr, stdio\_stream\_array, strerror\_r\_proto, submit, subversion, sysman, sysroot

## t

tail, tar, targetarch, targetdir, targetenv, targethost, targetmkdir, targetport, targetsh, t  
bl, tee, test, timeincl, timetype, tmpnam\_r\_proto, to, touch, tr, trnl, troff, ttyname\_r\_prot  
o

## U

u16size, u16type, u32size, u32type, u64size, u64type, u8size, u8type, uidformat, uidsign, ui  
dsize, uidtype, uname, uniq, uquadtype, use5005threads, use64bitall, use64bitint, usecbacktra  
ce, usecrosscompile, usedevel, usedl, usedtrace, usefaststdio, useithreads, usekernprocpa  
thname, uselanginfo, uselargefiles, uselongdouble, usemallocwrap, usemorebits, usemultiplicity, us  
emymalloc, usenm, usensgetexecutablename, useopcode, useperlio, useposix, usequadmath, usereen  
trant, userelocatableinc, useshrplib, usesitecustomize, usesocks, usethreads, usevendorprefix, u  
seversionedarchname, usevfork, usrinc, uname, uvoformat, uvsize, uvtype, uvuformat, uvxforma  
t, uvXUformat

## V

vendorarch, vendorarchexp, vendorbin, vendorbinexp, vendorhtml1dir, vendorhtml1direxp, vendor  
html3dir, vendorhtml3direxp, vendorlib, vendorlib\_stem, vendorlibexp, vendorman1dir, vendorman  
1direxp, vendorman3dir, vendorman3direxp, vendorprefix, vendorprefixexp, vendorscript, vendors  
criptexp, version, version\_patchlevel\_string, versiononly, vi

## X

xlibpth

## Y

yacc, yaccflags

## Z

zcat, zip

## GIT DATA

## NOTE

# Config::Extensions - hash lookup of which core extensions were built.

## SYNOPSIS

## DESCRIPTION

dynamic, nonxs, static

## AUTHOR

# Config::Perl::V - Structured data retrieval of perl -V output

## SYNOPSIS

## DESCRIPTION

**\$conf = myconfig ()**

**\$conf = plv2hash (\$text [, ...])**

**\$info = summary ([ \$conf ])**

**\$md5 = signature ([ \$conf ])**

**The hash structure**

build, osname, stamp, options, derived, patches, environment, config, inc

## REASONING

BUGS

TODO

AUTHOR

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## Cwd - get pathname of current working directory

SYNOPSIS

DESCRIPTION

**getcwd and friends**

getcwd, cwd, fastcwd, fastgetcwd, getdcwd

**abs\_path and friends**

abs\_path, realpath, fast\_abs\_path

**\$ENV{PWD}**

NOTES

AUTHOR

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SEE ALSO

## DB - programmatic interface to the Perl debugging API

SYNOPSIS

DESCRIPTION

**Global Variables**

```
$DB::sub, %DB::sub, $DB::single, $DB::signal, $DB::trace, @DB::args,  
@DB::dbline, %DB::dbline, $DB::package, $DB::filename, $DB::subname,  
$DB::lineno
```

**API Methods**

```
CLIENT->register(), CLIENT->evalcode(String), CLIENT->skippkg('D::hide'), CLIENT->run(),  
CLIENT->step(), CLIENT->next(), CLIENT->done()
```

**Client Callback Methods**

```
CLIENT->init(), CLIENT->prestop([String]), CLIENT->stop(), CLIENT->idle(), CLIENT->  
>poststop([String]), CLIENT->evalcode(String), CLIENT->cleanup(), CLIENT->output(List)
```

BUGS

AUTHOR

## DBM\_Filter -- Filter DBM keys/values

SYNOPSIS

DESCRIPTION

## What is a DBM Filter?

So what's new?

### METHODS

`$db->Filter_Push()` / `$db->Filter_Key_Push()` / `$db->Filter_Value_Push()`

`Filter_Push`, `Filter_Key_Push`, `Filter_Value_Push`

`$db->Filter_Pop()`

`$db->Filtered()`

### Writing a Filter

**Immediate Filters**

**Canned Filters**

"name", params

### Filters Included

utf8, encode, compress, int32, null

### NOTES

**Maintain Round Trip Integrity**

**Don't mix filtered & non-filtered data in the same database file.**

### EXAMPLE

### SEE ALSO

### AUTHOR

## DBM\_Filter::compress - filter for DBM\_Filter

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

### AUTHOR

## DBM\_Filter::encode - filter for DBM\_Filter

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

### AUTHOR

## DBM\_Filter::int32 - filter for DBM\_Filter

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

AUTHOR

## **DBM\_Filter::null - filter for DBM\_Filter**

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

## **DBM\_Filter::utf8 - filter for DBM\_Filter**

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

## **DB\_File - Perl5 access to Berkeley DB version 1.x**

SYNOPSIS

DESCRIPTION

**DB\_HASH, DB\_BTREE, DB\_RECNO**

Using DB\_File with Berkeley DB version 2 or greater

Interface to Berkeley DB

Opening a Berkeley DB Database File

Default Parameters

In Memory Databases

**DB\_HASH**

A Simple Example

**DB\_BTREE**

Changing the BTREE sort order

Handling Duplicate Keys

The get\_dup() Method

The find\_dup() Method

The del\_dup() Method

Matching Partial Keys

**DB\_RECNO**

The 'bval' Option

A Simple Example

Extra RECNO Methods

```
$X->push(list) ;; $value = $X->pop ;; $X->shift, $X->unshift(list) ;; $X->length, $X->splice(offset, length, elements);
```

### Another Example

## THE API INTERFACE

```
$status = $X->get($key, $value [, $flags]) ;; $status = $X->put($key, $value [, $flags]) ;; $status = $X->del($key [, $flags]) ;; $status = $X->fd ;; $status = $X->seq($key, $value, $flags) ;; $status = $X->sync([$flags]) ;
```

## DBM FILTERS

### DBM Filter Low-level API

```
filter_store_key, filter_store_value, filter_fetch_key, filter_fetch_value
```

### The Filter

An Example -- the NULL termination problem.

Another Example -- Key is a C int.

## HINTS AND TIPS

Locking: The Trouble with fd

Safe ways to lock a database

```
Tie::DB_Lock, Tie::DB_LockFile, DB_File::Lock
```

Sharing Databases With C Applications

The untie() Gotcha

## COMMON QUESTIONS

Why is there Perl source in my database?

How do I store complex data structures with DB\_File?

What does "wide character in subroutine entry" mean?

What does "Invalid Argument" mean?

What does "Bareword 'DB\_File' not allowed" mean?

## REFERENCES

### HISTORY

### BUGS

### SUPPORT

### AVAILABILITY

### COPYRIGHT

### SEE ALSO

### AUTHOR

**Data::Dumper - stringified perl data structures, suitable for both printing and `eval`**

## SYNOPSIS

## DESCRIPTION

### Methods

*PACKAGE->new(ARRAYREF [, ARRAYREF]), \$OBJ->Dump or PACKAGE->Dump(ARRAYREF [, ARRAYREF]), \$OBJ->Seen([HASHREF]), \$OBJ->Values([ARRAYREF]), \$OBJ->Names([ARRAYREF]), \$OBJ->Reset*

### Functions

*Dumper(LIST)*

### Configuration Variables or Methods

### Exports

*Dumper*

## EXAMPLES

## BUGS

### NOTE

## AUTHOR

## VERSION

## SEE ALSO

# Devel::PPPort - Perl/Pollution/Portability

## SYNOPSIS

Start using Devel::PPPort for XS projects

## DESCRIPTION

Why use ppport.h?

How to use ppport.h

Running ppport.h

## FUNCTIONS

WriteFile

GetFileContents

## COMPATIBILITY

Provided Perl compatibility API

Supported Perl API, sorted by version

perl 5.31.5, perl 5.31.4, perl 5.31.3, perl 5.29.10, perl 5.29.9, perl 5.27.9, perl 5.27.8, perl 5.27.7, perl 5.27.6, perl 5.27.4, perl 5.27.3, perl 5.27.2, perl 5.27.1, perl 5.25.10, perl 5.25.9, perl 5.25.8, perl 5.25.7, perl 5.25.6, perl 5.25.5, perl 5.25.3, perl 5.25.1, perl 5.23.8, perl 5.23.2, perl 5.23.0, perl 5.21.10, perl 5.21.9, perl 5.21.8, perl 5.21.7, perl 5.21.6, perl 5.21.5, perl 5.21.4, perl 5.21.2, perl 5.21.1, perl 5.19.10, perl 5.19.9, perl 5.19.7, perl 5.19.5, perl 5.19.4, perl 5.19.3, perl 5.19.2, perl 5.19.1, perl 5.18.0, perl 5.17.11, perl 5.17.8, perl 5.17.7, perl 5.17.6, perl 5.17.5, perl 5.17.4, perl 5.17.2, perl 5.17.1, perl 5.16.0, perl 5.15.8, perl 5.15.6, perl 5.15.4, perl 5.15.3, perl 5.15.2, perl 5.15.1, perl 5.13.10, perl 5.13.9, perl 5.13.8, perl 5.13.7, perl 5.13.6, perl 5.13.5, perl 5.13.4, perl 5.13.3, perl 5.13.2, perl 5.13.1, perl 5.11.5, perl 5.11.4, perl 5.11.2, perl 5.11.1, perl 5.11.0, perl 5.10.1, perl 5.10.0, perl 5.9.5, perl 5.9.4, perl 5.9.3, perl 5.9.2, perl 5.9.1, perl 5.9.0, perl 5.8.9, perl 5.8.8, perl 5.8.3, perl 5.8.1, perl 5.8.0, perl 5.7.3, perl 5.7.2, perl 5.7.1, perl 5.6.1, perl 5.6.0, perl 5.005\_03, perl 5.005, perl 5.004\_05, perl 5.004, perl 5.003\_07 (at least), Backported version unknown

**BUGS**

**AUTHORS**

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**SEE ALSO**

## **Devel::Peek - A data debugging tool for the XS programmer**

**SYNOPSIS**

**DESCRIPTION**

Runtime debugging

Memory footprint debugging

**EXAMPLES**

A simple scalar string

A simple scalar number

A simple scalar with an extra reference

A reference to a simple scalar

A reference to an array

A reference to a hash

Dumping a large array or hash

A reference to an SV which holds a C pointer

A reference to a subroutine

**EXPORTS**

**BUGS**

**AUTHOR**

**SEE ALSO**

## **Devel::SelfStubber - generate stubs for a SelfLoading module**

**SYNOPSIS**

**DESCRIPTION**

## **Digest - Modules that calculate message digests**

**SYNOPSIS**

**DESCRIPTION**

*binary, hex, base64*

**OO INTERFACE**

```
$ctx = Digest->XXX($arg,...), $ctx = Digest->new(XXX => $arg,...), $ctx = Digest::XXX->new($arg,...),  
$other_ctx = $ctx->clone, $ctx->reset, $ctx->add( $data ), $ctx->add( $chunk1, $chunk2, ... ), $ctx->  
addfile( $io_handle ), $ctx->add_bits( $data, $nbits ), $ctx->add_bits( $bitstring ), $ctx->digest, $ctx->  
hexdigest, $ctx->b64digest
```



**Digest speed**

**SEE ALSO**

**AUTHOR**

## **Digest::MD5 - Perl interface to the MD5 Algorithm**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

`md5($data,...), md5_hex($data,...), md5_base64($data,...)`

**METHODS**

`$md5 = Digest::MD5->new, $md5->reset, $md5->clone, $md5->add($data,...), $md5->addfile($io_handle),  
$md5->add_bits($data, $nbits), $md5->add_bits($bitstring), $md5->digest, $md5->hexdigest, $md5->  
b64digest, @ctx = $md5->context, $md5->context(@ctx)`

**EXAMPLES**

**SEE ALSO**

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**AUTHORS**

## **Digest::SHA - Perl extension for SHA-1/224/256/384/512**

**SYNOPSIS**

**SYNOPSIS (HMAC-SHA)**

**ABSTRACT**

**DESCRIPTION**

**UNICODE AND SIDE EFFECTS**

**NIST STATEMENT ON SHA-1**

**PADDING OF BASE64 DIGESTS**

**EXPORT**

**EXPORTABLE FUNCTIONS**

`sha1($data, ...), sha224($data, ...), sha256($data, ...), sha384($data, ...), sha512($data,  
...), sha512224($data, ...), sha512256($data, ...), sha1_hex($data, ...), sha224_hex($data,  
...), sha256_hex($data, ...), sha384_hex($data, ...), sha512_hex($data, ...), sha512224_hex($data,  
...), sha512256_hex($data, ...), sha1_base64($data, ...), sha224_base64($data,  
...), sha256_base64($data, ...), sha384_base64($data, ...), sha512_base64($data,  
...), sha512224_base64($data, ...), sha512256_base64($data,  
...), new($alg), reset($alg), hashsize, algorithm, clone, add($data, ...), add_bits($data,  
$nbits), add_bits($bits), addfile(*FILE), addfile($filename [,  
$mode]), getstate, putstate($str), dump($filename), load($filename), digest, hexdigest, b64digest, hmac  
($key), hmac_sha224($data, $key), hmac_sha256($data, $key), hmac_sha384($data,  
$key), hmac_sha512($data, $key), hmac_sha512224($data, $key), hmac_sha512256($data,  
$key), hmac_sha1_hex($data, $key), hmac_sha224_hex($data, $key), hmac_sha256_hex($data,  
$key), hmac_sha384_hex($data, $key), hmac_sha512_hex($data,  
$key), hmac_sha512224_hex($data, $key), hmac_sha512256_hex($data,  
$key), hmac_sha1_base64($data, $key), hmac_sha224_base64($data,`

```
$key), hmac_sha256_base64($data, $key), hmac_sha384_base64($data,
$key), hmac_sha512_base64($data, $key), hmac_sha512224_base64($data,
$key), hmac_sha512256_base64($data, $key)
```

**SEE ALSO**

**AUTHOR**

**ACKNOWLEDGMENTS**

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## Digest::base - Digest base class

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

## Digest::file - Calculate digests of files

**SYNOPSIS**

**DESCRIPTION**

```
digest_file( $file, $algorithm, [$arg,...] ), digest_file_hex( $file, $algorithm, [$arg,...] ), digest_file_base64(
$file, $algorithm, [$arg,...] )
```

**SEE ALSO**

## DirHandle - (obsolete) supply object methods for directory handles

**SYNOPSIS**

**DESCRIPTION**

## Dumpvalue - provides screen dump of Perl data.

**SYNOPSIS**

**DESCRIPTION**

### Creation

```
arrayDepth, hashDepth, compactDump, veryCompact, globPrint, dumpDBFiles, dumpPackages, du
mpReused, tick, quoteHighBit, printUndef, usageOnly, unctrl, subdump, bareStringify,
quoteHighBit, stopDbSignal
```

### Methods

```
dumpValue, dumpValues, stringify, dumpvars, set_quote, set_unctrl, compactDump, veryCompact,
set, get
```

## DynaLoader - Dynamically load C libraries into Perl code

**SYNOPSIS**

**DESCRIPTION**

```
@dl_library_path, @dl_resolve_using, @dl_require_symbols, @dl_librefs, @dl_modules,
@dl_shared_objects, dl_error(), $dl_debug, $dl_dlexit, dl_findfile(), dl_expandspec(), dl_load_file(),
dl_unload_file(), dl_load_flags(), dl_find_symbol(), dl_find_symbol_anywhere(), dl_undef_symbols(),
```

dl\_install\_xsub(), bootstrap()

**AUTHOR**

## Encode - character encodings in Perl

**SYNOPSIS**

### Table of Contents

[Encode::Alias](#) - Alias definitions to encodings, [Encode::Encoding](#) - Encode Implementation Base Class, [Encode::Supported](#) - List of Supported Encodings, [Encode::CN](#) - Simplified Chinese Encodings, [Encode::JP](#) - Japanese Encodings, [Encode::KR](#) - Korean Encodings, [Encode::TW](#) - Traditional Chinese Encodings

**DESCRIPTION**

### TERMINOLOGY

**THE PERL ENCODING API**

#### Basic methods

#### Listing available encodings

#### Defining Aliases

#### Finding IANA Character Set Registry names

**Encoding via PerlIO**

**Handling Malformed Data**

#### List of *CHECK* values

perlqq mode (*CHECK* = Encode::FB\_PERLQQ), HTML charref mode (*CHECK* = Encode::FB\_HTMLCREF), XML charref mode (*CHECK* = Encode::FB\_XMLCREF)

#### coderef for CHECK

**Defining Encodings**

**The UTF8 flag**

Goal #1:, Goal #2:, Goal #3:, Goal #4:

#### Messing with Perl's Internals

**UTF-8 vs. utf8 vs. UTF8**

**SEE ALSO**

**MAINTAINER**

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## Encode::Alias - alias definitions to encodings

**SYNOPSIS**

**DESCRIPTION**

As a simple string, As a qr// compiled regular expression, e.g.:, As a code reference, e.g.:

#### Alias overloading

**SEE ALSO**

# Encode::Byte - Single Byte Encodings

- SYNOPSIS
- ABSTRACT
- DESCRIPTION
- SEE ALSO

# Encode::CJKConstants -- Internally used by Encode::??::ISO\_2022\_\*

# Encode::CN - China-based Chinese Encodings

- SYNOPSIS
- DESCRIPTION
- NOTES
- BUGS
- SEE ALSO

# Encode::CN::HZ -- internally used by Encode::CN

# Encode::Config -- internally used by Encode

# Encode::EBCDIC - EBCDIC Encodings

- SYNOPSIS
- ABSTRACT
- DESCRIPTION
- SEE ALSO

# Encode::Encoder -- Object Oriented Encoder

- SYNOPSIS
- ABSTRACT
- Description

## Predefined Methods

```
$e = Encode::Encoder->new([$data, $encoding]);, encoder(), $e->data([$data]), $e->encoding([$encoding]), $e->bytes([$encoding])
```

## Example: base64 transcoder

## Operator Overloading

- SEE ALSO

# Encode::Encoding - Encode Implementation Base Class

- SYNOPSIS

## DESCRIPTION

### Methods you should implement

```
->encode($string [,$check]), ->decode($octets [,$check]), ->cat_decode($destination, $octets, $offset, $terminator [,$check])
```

### Other methods defined in Encode::Encodings

```
->name, ->mime_name, ->renew, ->renewed, ->perlio_ok(), ->needs_lines()
```

**Example: Encode::ROT13**

### Why the heck Encode API is different?

#### Compiled Encodings

## SEE ALSO

Scheme 1, Scheme 2, Other Schemes

## Encode::GSM0338 -- ESTI GSM 03.38 Encoding

### SYNOPSIS

### DESCRIPTION

### NOTES

### BUGS

### SEE ALSO

## Encode::Guess -- Guesses encoding from data

### SYNOPSIS

### ABSTRACT

### DESCRIPTION

```
Encode::Guess->set_suspects, Encode::Guess->add_suspects, Encode::decode("Guess" ...),  
Encode::Guess->guess($data), guess_encoding($data, [, list of suspects])
```

### CAVEATS

### TO DO

### SEE ALSO

## Encode::JP - Japanese Encodings

### SYNOPSIS

### ABSTRACT

### DESCRIPTION

**Note on ISO-2022-JP(-1)?**

### BUGS

### SEE ALSO

## Encode::JP::H2Z -- internally used by Encode::JP::2022\_JP\*

**Encode::JP::JIS7 -- internally used by Encode::JP**

## **Encode::KR - Korean Encodings**

SYNOPSIS

DESCRIPTION

BUGS

SEE ALSO

**Encode::KR::2022\_KR -- internally used by Encode::KR**

## **Encode::MIME::Header -- MIME encoding for an unstructured email header**

SYNOPSIS

ABSTRACT

DESCRIPTION

BUGS

AUTHORS

SEE ALSO

## **Encode::MIME::Name, Encode::MIME::NAME -- internally used by Encode**

SEE ALSO

## **Encode::PerlIO -- a detailed document on Encode and PerlIO**

Overview

How does it work?

Line Buffering

How can I tell whether my encoding fully supports PerlIO ?

SEE ALSO

## **Encode::Supported -- Encodings supported by Encode**

DESCRIPTION

Encoding Names

Supported Encodings

Built-in Encodings

Encode::Unicode -- other Unicode encodings

Encode::Byte -- Extended ASCII

ISO-8859 and corresponding vendor mappings, KOI8 - De Facto Standard for the Cyrillic world

## **gsm0338 - Hentai Latin 1**

gsm0338 support before 2.19

## **CJK: Chinese, Japanese, Korean (Multibyte)**

Encode::CN -- Continental China, Encode::JP -- Japan, Encode::KR -- Korea, Encode::TW -- Taiwan, Encode::HanExtra -- More Chinese via CPAN, Encode::JIS2K -- JIS X 0213 encodings via CPAN

## **Miscellaneous encodings**

Encode::EBCDIC, Encode::Symbols, Encode::MIME::Header, Encode::Guess

## **Unsupported encodings**

ISO-2022-JP-2 [RFC1554], ISO-2022-CN [RFC1922], Various HP-UX encodings, Cyrillic encoding ISO-IR-111, ISO-8859-8-1 [Hebrew], ISIRI 3342, Iran System, ISIRI 2900 [Farsi], Thai encoding TCVN, Vietnamese encodings VPS, Various Mac encodings, (Mac) Indic encodings

## **Encoding vs. Charset -- terminology**

## **Encoding Classification (by Anton Tagunov and Dan Kogai)**

### **Microsoft-related naming mess**

KS\_C\_5601-1987, GB2312, Big5, Shift\_JIS

## **Glossary**

character repertoire, coded character set (CCS), character encoding scheme (CES), charset (in MIME context), EUC, ISO-2022, UCS, UCS-2, Unicode, UTF, UTF-16

## **See Also**

## **References**

ECMA, ECMA-035 (eq ISO-2022 ), IANA, Assigned Charset Names by IANA, ISO, RFC, UC, Unicode Glossary

### **Other Notable Sites**

czyborra.com, CJK.inf, Jungshik Shin's Hangul FAQ, debian.org: "Introduction to i18n"

### **Offline sources**

CJKV Information Processing by Ken Lunde

# **Encode::Symbol - Symbol Encodings**

## **SYNOPSIS**

## **ABSTRACT**

## **DESCRIPTION**

## **SEE ALSO**

# **Encode::TW - Taiwan-based Chinese Encodings**

## **SYNOPSIS**

## **DESCRIPTION**

## **NOTES**

BUGS

SEE ALSO

## Encode::Unicode -- Various Unicode Transformation Formats

SYNOPSIS

ABSTRACT

<http://www.unicode.org/glossary/> says:, Quick Reference

Size, Endianness, and BOM

by size

by endianness

BOM as integer when fetched in network byte order

Surrogate Pairs

Error Checking

SEE ALSO

## Encode::Unicode::UTF7 -- UTF-7 encoding

SYNOPSIS

ABSTRACT

In Practice

SEE ALSO

## English - use nice English (or awk) names for ugly punctuation variables

SYNOPSIS

DESCRIPTION

PERFORMANCE

## Env - perl module that imports environment variables as scalars or arrays

SYNOPSIS

DESCRIPTION

LIMITATIONS

AUTHOR

## Errno - System errno constants

SYNOPSIS

DESCRIPTION



CAVEATS

AUTHOR

COPYRIGHT

## Exporter - Implements default import method for modules

SYNOPSIS

DESCRIPTION

How to Export

Selecting What to Export

How to Import

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

Advanced Features

Specialised Import Lists

Exporting Without Using Exporter's import Method

Exporting Without Inheriting from Exporter

Module Version Checking

Managing Unknown Symbols

Tag Handling Utility Functions

Generating Combined Tags

AUTOLOAD ed Constants

Good Practices

Declaring @EXPORT\_OK and Friends

Playing Safe

What Not to Export

SEE ALSO

LICENSE

## Exporter::Heavy - Exporter guts

SYNOPSIS

DESCRIPTION

## ExtUtils::CBuilder - Compile and link C code for Perl modules

SYNOPSIS

DESCRIPTION

METHODS

```
new, have_compiler, have_cplusplus,  
compile, object_file, include_dirs, extra_compiler_flags, C++, link, lib_file, module_name,  
extra_linker_flags, link_executable, exe_file, object_file, lib_file, exe_file, prelink, need_prelink,  
extra_link_args_after_prelink
```

**TO DO**

**HISTORY**

**SUPPORT**

**AUTHOR**

**COPYRIGHT**

**SEE ALSO**

## **ExtUtils::CBuilder::Platform::Windows - Builder class for Windows platforms**

**DESCRIPTION**

**AUTHOR**

**SEE ALSO**

## **ExtUtils::Command - utilities to replace common UNIX commands in Makefiles etc.**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

cat

eqtime

rm\_rf

rm\_f

touch

mv

cp

chmod

mkpath

test\_f

test\_d

dos2unix

**SEE ALSO**

**AUTHOR**

## **ExtUtils::Command::MM - Commands for the MM's to use in Makefiles**

## SYNOPSIS

## DESCRIPTION

test\_harness

pod2man

warn\_if\_old\_packlist

perllocal\_install

uninstall

test\_s

cp\_nonempty

## ExtUtils::Constant - generate XS code to import C header constants

## SYNOPSIS

## DESCRIPTION

## USAGE

IV, UV, NV, PV, PVN, SV, YES, NO, UNDEF

## FUNCTIONS

constant\_types

XS\_constant PACKAGE, TYPES, XS\_SUBNAME, C\_SUBNAME

autoload PACKAGE, VERSION, AUTOLOADER

WriteMakefileSnippet

WriteConstants ATTRIBUTE => VALUE [, ...], NAME, DEFAULT\_TYPE, BREAKOUT\_AT, NAMES, PROXYSUBS, C\_FH, C\_FILE, XS\_FH, XS\_FILE, XS\_SUBNAME, C\_SUBNAME

## AUTHOR

## ExtUtils::Constant::Base - base class for ExtUtils::Constant objects

## SYNOPSIS

## DESCRIPTION

## USAGE

header

memEQ\_clause args\_hashref

dump\_names arg\_hashref, ITEM..

assign arg\_hashref, VALUE..

return\_clause arg\_hashref, ITEM

switch\_clause arg\_hashref, NAMELEN, ITEMHASH, ITEM..

params WHAT

dogfood arg\_hashref, ITEM..

normalise\_items args, default\_type, seen\_types, seen\_items, ITEM..

C\_constant arg\_hashref, ITEM..., name, type, value, macro, default, pre, post, def\_pre, def\_post, utf8, weight

**BUGS**

**AUTHOR**

## **ExtUtils::Constant::Utils - helper functions for ExtUtils::Constant**

**SYNOPSIS**

**DESCRIPTION**

**USAGE**

C\_stringify NAME

perl\_stringify NAME

**AUTHOR**

## **ExtUtils::Constant::XS - generate C code for XS modules' constants.**

**SYNOPSIS**

**DESCRIPTION**

**BUGS**

**AUTHOR**

## **ExtUtils::Embed - Utilities for embedding Perl in C/C++ applications**

**SYNOPSIS**

**DESCRIPTION**

**@EXPORT**

**FUNCTIONS**

xsinit(), Examples, ldopts(), Examples, perl\_inc(), ccflags(), ccdlflags(), ccopts(), xsi\_header(),  
xsi\_protos(@modules), xsi\_body(@modules)

**EXAMPLES**

**SEE ALSO**

**AUTHOR**

## **ExtUtils::Install - install files from here to there**

**SYNOPSIS**

**VERSION**

**DESCRIPTION**

\_chmod(\$\$,\$), \_warnonce(@), \_choke(@)

\_move\_file\_at\_boot( \$file, \$target, \$moan )

\_unlink\_or\_rename( \$file, \$tryhard, \$installing )

**Functions**

```
_get_install_skip
_have_write_access
_can_write_dir( $dir )
_mkpath($dir,$show,$mode,$verbose,$dry_run)
_copy($from,$to,$verbose,$dry_run)
_chdir($from)

install

_do_cleanup
install_rooted_file( $file ), install_rooted_dir( $dir )
forceunlink( $file, $tryhard )
directory_not_empty( $dir )

install_default DISCOURAGED

uninstall

inc_uninstall($filepath,$libdir,$verbose,$dry_run,$ignore,$results)
run_filter($cmd,$src,$dest)

pm_to_blib

_autosplit
_invokant
```

## **ENVIRONMENT**

PERL\_INSTALL\_ROOT, EU\_INSTALL\_IGNORE\_SKIP, EU\_INSTALL\_SITE\_SKIPFILE, EU\_INSTALL\_AL'

## **AUTHOR**

## **LICENSE**

# **ExtUtils::Installed - Inventory management of installed modules**

## **SYNOPSIS**

## **DESCRIPTION**

## **USAGE**

## **METHODS**

new(), modules(), files(), directories(), directory\_tree(), validate(), packlist(), version()

## **EXAMPLE**

## **AUTHOR**

# **ExtUtils::Liblist - determine libraries to use and how to use them**

## **SYNOPSIS**

## **DESCRIPTION**

For static extensions, For dynamic extensions at build/link time, For dynamic extensions at load time

EXTRALIBS

LDLOADLIBS and LD\_RUN\_PATH

BSLOADLIBS

PORTABILITY

VMS implementation

Win32 implementation

SEE ALSO

## **ExtUtils::MM - OS adjusted ExtUtils::MakeMaker subclass**

SYNOPSIS

DESCRIPTION

## **ExtUtils::MM\_AIX - AIX specific subclass of ExtUtils::MM\_Unix**

SYNOPSIS

DESCRIPTION

Overridden methods

AUTHOR

SEE ALSO

## **ExtUtils::MM\_Any - Platform-agnostic MM methods**

SYNOPSIS

DESCRIPTION

METHODS

Cross-platform helper methods

Targets

Init methods

Tools

File::Spec wrappers

Misc

AUTHOR

## **ExtUtils::MM\_BeOS - methods to override UN\*X behaviour in ExtUtils::MakeMaker**

SYNOPSIS

DESCRIPTION

os\_flavor

init\_linker

## **ExtUtils::MM\_Cygwin - methods to override UN\*X behaviour in ExtUtils::MakeMaker**

### **SYNOPSIS**

### **DESCRIPTION**

os\_flavor

cflags

replace\_manpage\_separator

init\_linker

maybe\_command

dynamic\_lib

install

## **ExtUtils::MM\_DOS - DOS specific subclass of ExtUtils::MM\_Unix**

### **SYNOPSIS**

### **DESCRIPTION**

#### **Overridden methods**

os\_flavor

replace\_manpage\_separator

xs\_static\_lib\_is\_xs

### **AUTHOR**

### **SEE ALSO**

## **ExtUtils::MM\_Darwin - special behaviors for OS X**

### **SYNOPSIS**

### **DESCRIPTION**

#### **Overridden Methods**

## **ExtUtils::MM\_MacOS - once produced Makefiles for MacOS Classic**

### **SYNOPSIS**

### **DESCRIPTION**

## **ExtUtils::MM\_NW5 - methods to override UN\*X behaviour in ExtUtils::MakeMaker**

### **SYNOPSIS**

### **DESCRIPTION**

os\_flavor

init\_platform, platform\_constants

static\_lib\_pure\_cmd

xs\_static\_lib\_is\_xs

dynamic\_lib

## **ExtUtils::MM\_OS2 - methods to override UN\*X behaviour in ExtUtils::MakeMaker**

### **SYNOPSIS**

### **DESCRIPTION**

### **METHODS**

init\_dist

init\_linker

os\_flavor

xs\_static\_lib\_is\_xs

## **ExtUtils::MM\_QNX - QNX specific subclass of ExtUtils::MM\_Unix**

### **SYNOPSIS**

### **DESCRIPTION**

Overridden methods

### **AUTHOR**

### **SEE ALSO**

## **ExtUtils::MM\_UWIN - U/WIN specific subclass of ExtUtils::MM\_Unix**

### **SYNOPSIS**

### **DESCRIPTION**

Overridden methods

os\_flavor

replace\_manpage\_separator

### **AUTHOR**

### **SEE ALSO**

## **ExtUtils::MM\_Unix - methods used by ExtUtils::MakeMaker**

### **SYNOPSIS**

### **DESCRIPTION**

### **METHODS**

#### **Methods**

os\_flavor

c\_o(o)



xs\_obj\_opt  
dbgoutflag  
cflags (o)  
const\_cccmd (o)  
const\_config (o)  
const\_loadlibs (o)  
constants (o)  
depend (o)  
init\_DEST  
init\_dist  
dist (o)  
dist\_basics (o)  
dist\_ci (o)  
dist\_core (o)  
**dist\_target**  
**tardist\_target**  
**zipdist\_target**  
**tarfile\_target**  
zipfile\_target  
uutardist\_target  
shdist\_target  
dlsyms (o)  
dynamic\_bs (o)  
dynamic\_lib (o)  
xs\_dynamic\_lib\_macros  
xs\_make\_dynamic\_lib  
exescan  
extliblist  
find\_perl  
fixin  
force (o)  
guess\_name  
has\_link\_code  
init\_dirscan  
init\_MANPODS

init\_MAN1PODS  
init\_MAN3PODS  
init\_PM  
init\_DIRFILESEP  
init\_main  
init\_tools  
init\_linker  
init\_lib2arch  
init\_PERL  
init\_platform, platform\_constants  
init\_PERM  
init\_xs  
install (o)  
installbin (o)  
linkext (o)  
lsdir  
macro (o)  
makeaperl (o)  
xs\_static\_lib\_is\_xs (o)  
makefile (o)  
maybe\_command  
needs\_linking (o)  
parse\_abstract  
parse\_version  
psthru (o)  
perl\_script  
perldepend (o)  
pm\_to\_blib  
ppd  
prefixify  
processPL (o)  
specify\_shell  
quote\_paren  
replace\_manpage\_separator  
cd

oneliner  
quote\_literal  
escape\_newlines  
max\_exec\_len  
static (o)  
xs\_make\_static\_lib  
static\_lib\_closures  
static\_lib\_fixtures  
static\_lib\_pure\_cmd  
staticmake (o)  
subdir\_x (o)  
subdirs (o)  
test (o)  
test\_via\_harness (override)  
test\_via\_script (override)  
tool\_xsubpp (o)  
all\_target  
top\_targets (o)  
writedoc  
xs\_c (o)  
xs\_cpp (o)  
xs\_o (o)

## **SEE ALSO**

# **ExtUtils::MM\_VMS - methods to override UN\*X behaviour in ExtUtils::MakerMaker**

## **SYNOPSIS**

## **DESCRIPTION**

### **Methods always loaded**

wraplist

### **Methods**

guess\_name (override)  
find\_perl (override)  
\_fixin\_replace\_shebang (override)  
maybe\_command (override)  
psthru (override)

pm\_to\_blib (override)  
perl\_script (override)  
replace\_manpage\_separator  
init\_DEST  
init\_DIRFILESEP  
init\_main (override)  
init\_tools (override)  
init\_platform (override)  
platform\_constants  
init\_VERSION (override)  
constants (override)  
special\_targets  
cflags (override)  
const\_cccmd (override)  
tools\_other (override)  
init\_dist (override)  
c\_o (override)  
xs\_c (override)  
xs\_o (override)  
\_xsbuild\_replace\_macro (override)  
\_xsbuild\_value (override)  
dlsyms (override)  
xs\_obj\_opt  
dynamic\_lib (override)  
xs\_make\_static\_lib (override)  
static\_lib\_pure\_cmd (override)  
xs\_static\_lib\_is\_xs  
extra\_clean\_files  
zipfile\_target, tarfile\_target, shdist\_target  
install (override)  
perldepend (override)  
makeaperl (override)  
maketext\_filter (override)  
prefixify (override)  
cd

oneliner

**echo**

quote\_literal

escape\_dollarsigns

escape\_all\_dollarsigns

escape\_newlines

max\_exec\_len

init\_linker

catdir (override), catfile (override)

eliminate\_macros

fixpath

os\_flavor

is\_make\_type (override)

make\_type (override)

**AUTHOR**

## **ExtUtils::MM\_VOS - VOS specific subclass of ExtUtils::MM\_Unix**

**SYNOPSIS**

**DESCRIPTION**

Overridden methods

**AUTHOR**

**SEE ALSO**

## **ExtUtils::MM\_Win32 - methods to override UN\*X behaviour in ExtUtils::MakerMaker**

**SYNOPSIS**

**DESCRIPTION**

Overridden methods

dlsyms

xs\_dlsyms\_ext

replace\_manpage\_separator

**maybe\_command**

**init\_DIRFILESEP**

init\_tools

init\_others

init\_platform, platform\_constants

specify\_shell  
constants  
special\_targets  
static\_lib\_pure\_cmd  
dynamic\_lib  
extra\_clean\_files  
init\_linker  
perl\_script  
quote\_dep  
xs\_obj\_opt  
psthru  
arch\_check (override)  
oneliner  
cd  
max\_exec\_len  
os\_flavor  
dbgoutflag  
cflags  
make\_type

## **ExtUtils::MM\_Win95 - method to customize MakeMaker for Win9X**

### **SYNOPSIS**

#### **DESCRIPTION**

##### **Overridden methods**

max\_exec\_len

os\_flavor

#### **AUTHOR**

## **ExtUtils::MY - ExtUtils::MakeMaker subclass for customization**

### **SYNOPSIS**

#### **DESCRIPTION**

## **ExtUtils::MakeMaker - Create a module Makefile**

### **SYNOPSIS**

#### **DESCRIPTION**

How To Write A Makefile.PL

## Default Makefile Behaviour

**make test**

**make testdb**

**make install**

**INSTALL\_BASE**

**PREFIX and LIB attribute**

**AFS users**

**Static Linking of a new Perl Binary**

**Determination of Perl Library and Installation Locations**

**Which architecture dependent directory?**

**Using Attributes and Parameters**

ABSTRACT, ABSTRACT\_FROM, AUTHOR, BINARY\_LOCATION, BUILD\_REQUIRES, C, CCFLAGS, CONFIG, CONFIGURE, CONFIGURE\_REQUIRES, DEFINE, DESTDIR, DIR, DISTNAME, DISTVNAME, DLEXTR, DL\_FUNCS, DL\_VARS, EXCLUDE\_EXT, EXE\_FILES, FIRST\_MAKEFILE, FULLPERL, FULLPERLRUN, FULLPERLRUNINST, FUNCLIST, H, IMPORTS, INC, INCLUDE\_EXT, INSTALLARCHLIB, INSTALLBIN, INSTALLEDIRS, INSTALLMAN1DIR, INSTALLMAN3DIR, INSTALLPRIVLIB, INSTALLSCRIPT, INSTALLSITEARCH, INSTALLSITEBIN, INSTALLSITELIB, INSTALLSITEMAN1DIR, INSTALLSITEMAN3DIR, INSTALLSITESCRIPT, INSTALLVENDORARCH, INSTALLVENDORBIN, INSTALLVENDORLIB, INSTALLVENDORMAN1DIR, INSTALLVENDORMAN3DIR, INSTALLVENDORSRIPT, INST\_ARCHLIB, INST\_BIN, INST\_LIB, INST\_MAN1DIR, INST\_MAN3DIR, INST\_SCRIPT, LD, LDDLFLAGS, LDFROM, LIB, LIBPERL\_A, LIBS, LICENSE, LINKTYPE, MAGICXS, MAKE, MAKEAPERL, MAKEFILE\_OLD, MAN1PODS, MAN3PODS, MAP\_TARGET, META\_ADD, META\_MERGE, MIN\_PERL\_VERSION, MYEXTLIB, NAME, NEEDS\_LINKING, NOECHO, NORECURS, NO\_META, NO\_MYMETA, NO\_PACKLIST, NO\_PERLLOCAL, NO\_VC, OBJECT, OPTIMIZE, PERL\_PERL\_CORE, PERLMAINCC, PERL\_ARCHLIB, PERL\_LIB, PERL\_MALLOC\_OK, PERLPREFIX, PERLRUN, PERLRUNINST, PERL\_SRC, PERM\_DIR, PERM\_RW, PERM\_RWX, PL\_FILES, PM, PMLIBDIRS, PM\_FILTER, POLLUTE, PPM\_INSTALL\_EXEC, PPM\_INSTALL\_SCRIPT, PPM\_UNINSTALL\_EXEC, PPM\_UNINSTALL\_SCRIPT, PREFIX, PREREQ\_FATAL, PREREQ\_PM, PREREQ\_PRINT, PRINT\_PREREQ, SITEPREFIX, SIGN, SKIP\_TEST\_REQUIRES, TYPEMAPS, VENDORPREFIX, VERBINST, VERSION, VERSION\_FROM, VERSION\_SYM, XS, XSBUILD, XSMULTI, XSOPT, XSPROTOARG, XS\_VERSION

**Additional lowercase attributes**

clean, depend, dist, dynamic\_lib, linkext, macro, postamble, realclean, test, tool\_autosplit

**Overriding MakeMaker Methods**

**The End Of Cargo Cult Programming**

```
MAN3PODS => ' '
```

**Hintsfile support**

**Distribution Support**

```
make distcheck,      make skipcheck,      make distclean,      make veryclean,
make manifest,       make distdir,      make disttest,       make tardist,
make dist,           make uatardist,    make shdist,         make zipdist,        make ci
```

**Module Meta-Data (META and MYMETA)**

**Disabling an extension**

**Other Handy Functions**

prompt, os\_unsupported

## Supported versions of Perl

## ENVIRONMENT

PERL\_MM\_OPT, PERL\_MM\_USE\_DEFAULT, PERL\_CORE

## SEE ALSO

## AUTHORS

## LICENSE

# ExtUtils::MakeMaker::Config - Wrapper around Config.pm

## SYNOPSIS

## DESCRIPTION

# ExtUtils::MakeMaker::FAQ - Frequently Asked Questions About MakeMaker

## DESCRIPTION

### Module Installation

How do I install a module into my home directory?, How do I get MakeMaker and Module::Build to install to the same place?, How do I keep from installing man pages?, How do I use a module without installing it?, How can I organize tests into subdirectories and have them run?, PREFIX vs INSTALL\_BASE from Module::Build::Cookbook, Generating \*.pm files with substitutions eg of \$VERSION

### Common errors and problems

"No rule to make target `/usr/lib/perl5/CORE/config.h', needed by `Makefile'"

### Philosophy and History

Why not just use <insert other build config tool here>?, What is Module::Build and how does it relate to MakeMaker?, pure perl. no make, no shell commands, easier to customize, cleaner internals, less cruft

### Module Writing

How do I keep my \$VERSION up to date without resetting it manually?, What's this *META.yml* thing and how did it get in my *MANIFEST*?!, How do I delete everything not in my *MANIFEST*?, Which tar should I use on Windows?, Which zip should I use on Windows for "[ndg]make zipdist"?

### XS

How do I prevent "object version X.XX does not match bootstrap parameter Y.YY" errors?, How do I make two or more XS files coexist in the same directory?, XSMULTI, Separate directories, Bootstrapping

## DESIGN

### MakeMaker object hierarchy (simplified)

### MakeMaker object hierarchy (real)

### The MM\_\* hierarchy

## PATCHING



make a pull request on the MakeMaker github repository, raise a issue on the MakeMaker github repository, file an RT ticket, email [makemaker@perl.org](mailto:makemaker@perl.org)

**AUTHOR**

**SEE ALSO**

## **ExtUtils::MakeMaker::Locale - bundled Encode::Locale**

**SYNOPSIS**

**DESCRIPTION**

```
decode_argv( ), decode_argv( Encode::FB_CROAK ), env( $uni_key ), env( $uni_key => $uni_value ),
reinit( ), reinit( $encoding ), $ENCODING_LOCALE, $ENCODING_LOCALE_FS,
$ENCODING_CONSOLE_IN, $ENCODING_CONSOLE_OUT
```

**NOTES**

**Windows**

**Mac OS X**

**POSIX (Linux and other Unixes)**

**SEE ALSO**

**AUTHOR**

## **ExtUtils::MakeMaker::Tutorial - Writing a module with MakeMaker**

**SYNOPSIS**

**DESCRIPTION**

**The Mantra**

**The Layout**

Makefile.PL, MANIFEST, lib/, t/, Changes, README, INSTALL, MANIFEST.SKIP, bin/

**SEE ALSO**

## **ExtUtils::Manifest - Utilities to write and check a MANIFEST file**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

**mkmanifest**

**manifind**

**manicheck**

**filecheck**

**fullcheck**

**skipcheck**

**maniread**

maniskip

manicopy

maniadd

MANIFEST

MANIFEST.SKIP

`#!include_default, #!include /Path/to/another/manifest.skip`

EXPORT\_OK

GLOBAL VARIABLES

DIAGNOSTICS

`Not in MANIFEST: file, Skipping file, No such file: file, MANIFEST: $!, Added to MANIFEST: file`

ENVIRONMENT

`PERL_MM_MANIFEST_DEBUG`

SEE ALSO

AUTHOR

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## ExtUtils::Miniperl - write the C code for miniperlmain.c and perlmain.c

SYNOPSIS

DESCRIPTION

SEE ALSO

## ExtUtils::Mkbootstrap - make a bootstrap file for use by DynaLoader

SYNOPSIS

DESCRIPTION

## ExtUtils::Mksymlists - write linker options files for dynamic extension

SYNOPSIS

DESCRIPTION

`DLBASE, DL_FUNCS, DL_VARS, FILE, FUNCLIST, IMPORTS, NAME`

AUTHOR

REVISION

`mkfh()`

`__find_relocations`

## ExtUtils::Packlist - manage .packlist files

SYNOPSIS

DESCRIPTION

## USAGE

## FUNCTIONS

`new()`, `read()`, `write()`, `validate()`, `packlist_file()`

## EXAMPLE

## AUTHOR

# ExtUtils::ParseXS - converts Perl XS code into C code

## SYNOPSIS

## DESCRIPTION

## EXPORT

## METHODS

```
$pxs->new(), $pxs->process_file(), C++, hiertype, except, typemap, prototypes, versioncheck, linenumbers, optimize, ino!
$pxs->report_error_count()
```

## AUTHOR

## COPYRIGHT

## SEE ALSO

# ExtUtils::ParseXS::Constants - Initialization values for some globals

## SYNOPSIS

## DESCRIPTION

# ExtUtils::ParseXS::Eval - Clean package to evaluate code in

## SYNOPSIS

## SUBROUTINES

```
$pxs->eval_output_typemap_code($typemapcode, $other_hashref)
```

```
$pxs->eval_input_typemap_code($typemapcode, $other_hashref)
```

## TODO

# ExtUtils::ParseXS::Utilities - Subroutines used with ExtUtils::ParseXS

## SYNOPSIS

## SUBROUTINES

```
standard_typemap_locations()
```

Purpose, Arguments, Return Value

```
trim_whitespace()
```

Purpose, Argument, Return Value

```
C_string()
```

Purpose, Arguments, Return Value

`valid_proto_string()`

Purpose, Arguments, Return Value

`process_ttypemaps()`

Purpose, Arguments, Return Value

`map_type()`

Purpose, Arguments, Return Value

`standard_XS_defs()`

Purpose, Arguments, Return Value

`assign_func_args()`

Purpose, Arguments, Return Value

`analyze_preprocessor_statements()`

Purpose, Arguments, Return Value

`set_cond()`

Purpose, Arguments, Return Value

`current_line_number()`

Purpose, Arguments, Return Value

`warn()`

Purpose, Arguments, Return Value

`blurt()`

Purpose, Arguments, Return Value

`death()`

Purpose, Arguments, Return Value

`check_conditional_preprocessor_statements()`

Purpose, Arguments, Return Value

`escape_file_for_line_directive()`

Purpose, Arguments, Return Value

`report_ttypemap_failure`

Purpose, Arguments, Return Value

## ExtUtils::Typemaps - Read/Write/Modify Perl/XS typemap files

### SYNOPSIS

### DESCRIPTION

### METHODS

**new**

**file**

**add\_ttypemap**

add\_inputmap  
add\_outputmap  
add\_string  
remove\_typemap  
remove\_inputmap  
remove\_outputmap  
get\_typemap  
get\_inputmap  
get\_outputmap  
write  
as\_string  
as\_embedded\_typemap  
merge  
is\_empty  
list\_mapped\_ctypes  
\_get\_typemap\_hash  
\_get\_inputmap\_hash  
\_get\_outputmap\_hash  
\_get\_prototype\_hash  
clone  
tidy\_type  
CAVEATS  
SEE ALSO  
AUTHOR  
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## **ExtUtils::Typemaps::Cmd - Quick commands for handling typemaps**

SYNOPSIS  
DESCRIPTION  
EXPORTED FUNCTIONS  
    embeddable\_typemap  
SEE ALSO  
AUTHOR  
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## **ExtUtils::Typemaps::InputMap - Entry in the INPUT section of a typemap**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**new**

**code**

**xstype**

**cleaned\_code**

**SEE ALSO**

**AUTHOR**

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## **ExtUtils::Typemaps::OutputMap - Entry in the OUTPUT section of a typemap**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**new**

**code**

**xstype**

**cleaned\_code**

**targetable**

**SEE ALSO**

**AUTHOR**

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## **ExtUtils::Typemaps::Type - Entry in the TYPEMAP section of a typemap**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**new**

**proto**

**xstype**

**ctype**

**tidy\_ctype**

SEE ALSO

AUTHOR

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## **ExtUtils::testlib - add blib/\* directories to @INC**

SYNOPSIS

DESCRIPTION

## **Fatal - Replace functions with equivalents which succeed or die**

SYNOPSIS

BEST PRACTICE

DESCRIPTION

DIAGNOSTICS

Bad subroutine name for Fatal: %s, %s is not a Perl subroutine, %s is neither a builtin, nor a Perl subroutine, Cannot make the non-overridable %s fatal, Internal error: %s

BUGS

AUTHOR

LICENSE

SEE ALSO

## **Fcntl - load the C Fcntl.h defines**

SYNOPSIS

DESCRIPTION

NOTE

EXPORTED SYMBOLS

## **File::Basename - Parse file paths into directory, filename and suffix.**

SYNOPSIS

DESCRIPTION

fileparse

basename

dirname

fileparse\_set\_fstype

SEE ALSO

## **File::Compare - Compare files or filehandles**

SYNOPSIS

DESCRIPTION

**RETURN**

**AUTHOR**

## **File::Copy - Copy files or filehandles**

**SYNOPSIS**

**DESCRIPTION**

copy , move , syscopy , rmscopy(\$from,\$to[, \$date\_flag])

**RETURN**

**NOTES**

**AUTHOR**

## **File::DosGlob - DOS like globbing and then some**

**SYNOPSIS**

**DESCRIPTION**

**EXPORTS** (by request only)

**BUGS**

**AUTHOR**

**HISTORY**

**SEE ALSO**

## **File::Fetch - A generic file fetching mechanism**

**SYNOPSIS**

**DESCRIPTION**

**ACCESSORS**

\$ff->uri, \$ff->scheme, \$ff->host, \$ff->vol, \$ff->share, \$ff->path, \$ff->file, \$ff->file\_default

\$ff->output\_file

**METHODS**

**\$ff = File::Fetch->new( uri => 'http://some.where.com/dir/file.txt' );**

**\$where = \$ff->fetch( [to => /my/output/dir/ | \ \$scalar] )**

**\$ff->error([BOOL])**

**HOW IT WORKS**

**GLOBAL VARIABLES**

**\$File::Fetch::FROM\_EMAIL**

**\$File::Fetch::USER\_AGENT**

**\$File::Fetch::FTP\_PASSIVE**

**\$File::Fetch::TIMEOUT**



**\$File::Fetch::WARN**

**\$File::Fetch::DEBUG**

**\$File::Fetch::BLACKLIST**

**\$File::Fetch::METHOD\_FAIL**

## MAPPING

## FREQUENTLY ASKED QUESTIONS

So how do I use a proxy with File::Fetch?

I used 'lynx' to fetch a file, but its contents is all wrong!

Files I'm trying to fetch have reserved characters or non-ASCII characters in them. What do I do?

## TODO

Implement \$PREFER\_BIN

## BUG REPORTS

## AUTHOR

## COPYRIGHT

# File::Find - Traverse a directory tree.

## SYNOPSIS

## DESCRIPTION

**find, finddepth**

**%options**

wanted, bydepth, preprocess, postprocess, follow, follow\_fast, follow\_skip, dangling\_sym  
links, no\_chdir, untaint, untaint\_pattern, untaint\_skip

### The wanted function

\$File::Find::dir is the current directory name,, \$\_ is the current filename within that  
directory, \$File::Find::name is the complete pathname to the file

## WARNINGS

## CAVEAT

\$dont\_use\_nlink, symlinks

## BUGS AND CAVEATS

## HISTORY

## SEE ALSO

# File::Glob - Perl extension for BSD glob routine

## SYNOPSIS

## DESCRIPTION

### META CHARACTERS

### EXPORTS

**POSIX FLAGS**

`GLOB_ERR` , `GLOB_LIMIT` , `GLOB_MARK` , `GLOB_NOCASE` , `GLOB_NOCHECK` , `GLOB_NOSORT` , `GLOB_BRACE` , `GLOB_NOMAGIC` , `GLOB_QUOTE` , `GLOB_TILDE` , `GLOB_CSH` , `GLOB_ALPHASORT`

**DIAGNOSTICS**

`GLOB_NOSPACE` , `GLOB_ABEND`

**NOTES**

**SEE ALSO**

**AUTHOR**

**File::GlobMapper - Extend File Glob to Allow Input and Output Files**

**SYNOPSIS**

**DESCRIPTION**

**Behind The Scenes**

**Limitations**

**Input File Glob**

`~, ~user, ., *, ?, \, [], {}, ()`

**Output File Glob**

`"*", #1`

**Returned Data**

**EXAMPLES**

**A Rename script**

**A few example globmaps**

**SEE ALSO**

**AUTHOR**

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**File::Path - Create or remove directory trees**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

`make_path( $dir1, $dir2, .... ), make_path( $dir1, $dir2, ...., \%opts ), mode => $num, chmod => $num, verbose => $bool, error => \$err, owner => $owner, user => $owner, uid => $owner, group => $group, mkpath( $dir ), mkpath( $dir, $verbose, $mode ), mkpath( [$dir1, $dir2,...], $verbose, $mode ), mkpath( $dir1, $dir2,..., \%opt ), remove_tree( $dir1, $dir2, .... ), remove_tree( $dir1, $dir2, ...., \%opts ), verbose => $bool, safe => $bool, keep_root => $bool, result => \$res, error => \$err, rmtree( $dir ), rmtree( $dir, $verbose, $safe ), rmtree( [$dir1, $dir2,...], $verbose, $safe ), rmtree( $dir1, $dir2,..., \%opt )`

**ERROR HANDLING**

**NOTE:**

**NOTES**

## DIAGNOSTICS

mkdir [path]: [errmsg] (SEVERE), No root path(s) specified, No such file or directory, cannot fetch initial working directory: [errmsg], cannot stat initial working directory: [errmsg], cannot chdir to [dir]: [errmsg], directory [dir] changed before chdir, expected dev=[n] ino=[n], actual dev=[n] ino=[n], aborting. (FATAL), cannot make directory [dir] read+writeable: [errmsg], cannot read [dir]: [errmsg], cannot reset chmod [dir]: [errmsg], cannot remove [dir] when cwd is [dir], cannot chdir to [parent-dir] from [child-dir]: [errmsg], aborting. (FATAL), cannot stat prior working directory [dir]: [errmsg], aborting. (FATAL), previous directory [parent-dir] changed before entering [child-dir], expected dev=[n] ino=[n], actual dev=[n] ino=[n], aborting. (FATAL), cannot make directory [dir] writeable: [errmsg], cannot remove directory [dir]: [errmsg], cannot restore permissions of [dir] to [0nnn]: [errmsg], cannot make file [file] writeable: [errmsg], cannot unlink file [file]: [errmsg], cannot restore permissions of [file] to [0nnn]: [errmsg], unable to map [owner] to a uid, ownership not changed";, unable to map [group] to a gid, group ownership not changed

## SEE ALSO

## BUGS AND LIMITATIONS

### MULTITHREADED APPLICATIONS

### NFS Mount Points

### REPORTING BUGS

## ACKNOWLEDGEMENTS

## AUTHORS

## CONTRIBUTORS

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# File::Spec - portably perform operations on file names

## SYNOPSIS

## DESCRIPTION

## METHODS

canonpath, catdir, catfile, curdir, devnull, rootdir, tmpdir, updir, no\_upwards, case\_tolerant, file\_name\_is\_absolute, path, join, splitpath, splitdir, catpath(), abs2rel, rel2abs()

## SEE ALSO

## AUTHOR

## COPYRIGHT

# File::Spec::AmigaOS - File::Spec for AmigaOS

## SYNOPSIS

## DESCRIPTION

## METHODS

tmpdir

file\_name\_is\_absolute

## File::Spec::Cygwin - methods for Cygwin file specs

### SYNOPSIS

### DESCRIPTION

canonpath

file\_name\_is\_absolute

tmpdir (override)

case\_tolerant

### COPYRIGHT

## File::Spec::Epoc - methods for Epoc file specs

### SYNOPSIS

### DESCRIPTION

canonpath()

### AUTHOR

### COPYRIGHT

### SEE ALSO

## File::Spec::Functions - portably perform operations on file names

### SYNOPSIS

### DESCRIPTION

#### Exports

### COPYRIGHT

### SEE ALSO

## File::Spec::Mac - File::Spec for Mac OS (Classic)

### SYNOPSIS

### DESCRIPTION

### METHODS

canonpath

catdir()

catfile

curdir

devnull

rootdir

tmpdir

updir  
file\_name\_is\_absolute  
path  
splitpath  
splitdir  
catpath  
abs2rel  
rel2abs

#### **AUTHORS**

#### **COPYRIGHT**

#### **SEE ALSO**

## **File::Spec::OS2 - methods for OS/2 file specs**

#### **SYNOPSIS**

#### **DESCRIPTION**

tmpdir, splitpath

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## **File::Spec::Unix - File::Spec for Unix, base for other File::Spec modules**

#### **SYNOPSIS**

#### **DESCRIPTION**

#### **METHODS**

canonpath()

catdir()  
catfile  
curdir  
devnull  
rootdir  
tmpdir  
updir  
no\_upwards  
case\_tolerant  
file\_name\_is\_absolute  
path  
join  
splitpath

splitdir  
catpath()  
abs2rel  
rel2abs()

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**SEE ALSO**

## **File::Spec::VMS - methods for VMS file specs**

**SYNOPSIS**

**DESCRIPTION**

canonpath (override)  
catdir (override)  
catfile (override)  
curdir (override)  
devnull (override)  
rootdir (override)  
tmpdir (override)  
updir (override)  
case\_tolerant (override)  
path (override)  
file\_name\_is\_absolute (override)  
splitpath (override)  
splitdir (override)  
catpath (override)  
abs2rel (override)  
rel2abs (override)

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**SEE ALSO**

## **File::Spec::Win32 - methods for Win32 file specs**

**SYNOPSIS**

**DESCRIPTION**

devnull  
tmpdir  
case\_tolerant  
file\_name\_is\_absolute

catfile

canonpath

splitpath

splitdir

catpath

**Note For File::Spec::Win32 Maintainers**

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**SEE ALSO**

## **File::Temp - return name and handle of a temporary file safely**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**PORTABILITY**

**OBJECT-ORIENTED INTERFACE**

new, newdir, filename, dirname, unlink\_on\_destroy, DESTROY

**FUNCTIONS**

tempfile, tempdir

**MKTEMP FUNCTIONS**

mkstemp, mkstemp, mkdtemp, mktemp

**POSIX FUNCTIONS**

tmpnam, tmpfile

**ADDITIONAL FUNCTIONS**

tempnam

**UTILITY FUNCTIONS**

unlink0, cmpstat, unlink1, cleanup

**PACKAGE VARIABLES**

safe\_level, STANDARD, MEDIUM, HIGH, TopSystemUID, \$KEEP\_ALL, \$DEBUG

**WARNING**

Temporary files and NFS

Forking

Directory removal

Taint mode

BINMODE

**HISTORY**

**SEE ALSO**

**SUPPORT**

**AUTHOR**

**CONTRIBUTORS**

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## **File::stat - by-name interface to Perl's built-in stat() functions**

**SYNOPSIS**

**DESCRIPTION**

**BUGS**

**ERRORS**

-%s is not implemented on a File::stat object

**WARNINGS**

File::stat ignores use filetest 'access', File::stat ignores VMS ACLs

**NOTE**

**AUTHOR**

## **FileCache - keep more files open than the system permits**

**SYNOPSIS**

**DESCRIPTION**

cacheout EXPR, cacheout MODE, EXPR

**CAVEATS**

**BUGS**

## **FileHandle - supply object methods for filehandles**

**SYNOPSIS**

**DESCRIPTION**

\$fh->print, \$fh->printf, \$fh->getline, \$fh->getlines

**SEE ALSO**

## **Filter::Simple - Simplified source filtering**

**SYNOPSIS**

**DESCRIPTION**

**The Problem**

**A Solution**

**Disabling or changing <no> behaviour**

**All-in-one interface**

**Filtering only specific components of source code**

---



```
"code", "code_no_comments", "executable", "executable_no_comments", "quotelike", "string", "regex", "all"
```

Filtering only the code parts of source code

Using `Filter::Simple` with an explicit `import` subroutine

Using `Filter::Simple` and `Exporter` together

How it works

AUTHOR

CONTACT

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## Filter::Util::Call - Perl Source Filter Utility Module

SYNOPSIS

DESCRIPTION

**use Filter::Util::Call**

**import()**

**filter\_add()**

**filter() and anonymous sub**

`$_`, `$status`, `filter_read` and `filter_read_exact`, `filter_del`, *real\_import*, *unimport*()

LIMITATIONS

`__DATA__` is ignored, Max. codesize limited to 32-bit

EXAMPLES

Example 1: A simple filter.

Example 2: Using the context

Example 3: Using the context within the filter

Example 4: Using `filter_del`

`Filter::Simple`

AUTHOR

DATE

LICENSE

## FindBin - Locate directory of original perl script

SYNOPSIS

DESCRIPTION

EXPORTABLE VARIABLES

KNOWN ISSUES

AUTHORS

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## GDBM\_File - Perl5 access to the gdbm library.

SYNOPSIS

DESCRIPTION

AVAILABILITY

SECURITY AND PORTABILITY

BUGS

SEE ALSO

## Getopt::Long - Extended processing of command line options

SYNOPSIS

DESCRIPTION

Command Line Options, an Introduction

Getting Started with Getopt::Long

- Simple options

- A little bit less simple options

- Mixing command line option with other arguments

- Options with values

- Options with multiple values

- Options with hash values

- User-defined subroutines to handle options

- Options with multiple names

- Case and abbreviations

- Summary of Option Specifications

  - `!, +, s, i, o, f, : type [ desttype ], : number [ desttype ], : + [ desttype ]`

Advanced Possibilities

- Object oriented interface

- Thread Safety

- Documentation and help texts

- Parsing options from an arbitrary array

- Parsing options from an arbitrary string

- Storing options values in a hash

- Bundling

- The lonesome dash

- Argument callback

## Configuring Getopt::Long

default, posix\_default, auto\_abbrev, getopt\_compat, gnu\_compat, gnu\_getopt, require\_order, permute, bundling (default: disabled), bundling\_override (default: disabled), ignore\_case (default: enabled), ignore\_case\_always (default: disabled), auto\_version (default: disabled), auto\_help (default: disabled), pass\_through (default: disabled), prefix, prefix\_pattern, long\_prefix\_pattern, debug (default: disabled)

## Exportable Methods

VersionMessage, -message, -msg, -exitval, -output, HelpMessage

## Return values and Errors

### Legacy

Default destinations

Alternative option starters

Configuration variables

### Tips and Techniques

Pushing multiple values in a hash option

### Troubleshooting

GetOptions does not return a false result when an option is not supplied

GetOptions does not split the command line correctly

Undefined subroutine &main::GetOptions called

How do I put a "-?" option into a Getopt::Long?

## AUTHOR

## COPYRIGHT AND DISCLAIMER

# Getopt::Std - Process single-character switches with switch clustering

## SYNOPSIS

## DESCRIPTION

--help and --version

# HTTP::Tiny - A small, simple, correct HTTP/1.1 client

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

new

get|head|put|post|delete

post\_form

mirror

request

[www\\_form\\_urlencode](#)

[can\\_ssl](#)

[connected](#)

[SSL SUPPORT](#)

[PROXY SUPPORT](#)

[LIMITATIONS](#)

[SEE ALSO](#)

[SUPPORT](#)

[Bugs / Feature Requests](#)

[Source Code](#)

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## Hash::Util - A selection of general-utility hash subroutines

**SYNOPSIS**

**DESCRIPTION**

**Restricted hashes**

[lock\\_keys](#), [unlock\\_keys](#)

[lock\\_keys\\_plus](#)

[lock\\_value](#), [unlock\\_value](#)

[lock\\_hash](#), [unlock\\_hash](#)

[lock\\_hash\\_recurse](#), [unlock\\_hash\\_recurse](#)

[hashref\\_locked](#), [hash\\_locked](#)

[hashref\\_unlocked](#), [hash\\_unlocked](#)

[legal\\_keys](#), [hidden\\_keys](#), [all\\_keys](#), [hash\\_seed](#), [hash\\_value](#), [bucket\\_info](#), [bucket\\_stats](#), [bucket\\_array](#)

[bucket\\_stats\\_formatted](#)

[hv\\_store](#), [hash\\_traversal\\_mask](#), [bucket\\_ratio](#), [used\\_buckets](#), [num\\_buckets](#)

**Operating on references to hashes.**

[lock\\_ref\\_keys](#), [unlock\\_ref\\_keys](#), [lock\\_ref\\_keys\\_plus](#), [lock\\_ref\\_value](#), [unlock\\_ref\\_value](#), [lock\\_hashref](#),  
[unlock\\_hashref](#), [lock\\_hashref\\_recurse](#), [unlock\\_hashref\\_recurse](#), [hash\\_ref\\_unlocked](#), [legal\\_ref\\_keys](#),  
[hidden\\_ref\\_keys](#)

**CAVEATS**

**BUGS**

**AUTHOR**

**SEE ALSO**

# Hash::Util::FieldHash - Support for Inside-Out Classes

## SYNOPSIS

## FUNCTIONS

`id`, `id_2obj`, `register`, `idhash`, `idhashes`, `fieldhash`, `fieldhashes`

## DESCRIPTION

**The Inside-out Technique**

**Problems of Inside-out**

**Solutions**

**More Problems**

**The Generic Object**

**How to use Field Hashes**

**Garbage-Collected Hashes**

## EXAMPLES

```
init(), first(), last(), name(), Name_hash, Name_id, Name_idhash, Name_id_reg, Name_idhash_r  
eg, Name_fieldhash
```

**Example 1**

**Example 2**

## GUTS

**The `PERL_MAGIC_uvar` interface for hashes**

**Weakrefs call uvar magic**

**How field hashes work**

**Internal function `Hash::Util::FieldHash::_fieldhash`**

## AUTHOR

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# I18N::Collate - compare 8-bit scalar data according to the current locale

## SYNOPSIS

## DESCRIPTION

# I18N::LangTags - functions for dealing with RFC3066-style language tags

## SYNOPSIS

## DESCRIPTION

the function `is_language_tag($lang1)`

the function `extract_language_tags($whatever)`

the function `same_language_tag($lang1, $lang2)`

the function `similarity_language_tag($lang1, $lang2)`

the function `is_dialect_of($lang1, $lang2)`

the function `super_languages($lang1)`

the function `locale2language_tag($locale_identifier)`

the function `encode_language_tag($lang1)`

the function `alternate_language_tags($lang1)`

the function `@langs = panic_languages(@accept_languages)`

the function `implicate_supers( ...languages... )`, the function `implicate_supers_strictly( ...languages... )`

**ABOUT LOWERCASING**

**ABOUT UNICODE PLAINTEXT LANGUAGE TAGS**

**SEE ALSO**

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**AUTHOR**

**I18N::LangTags::Detect - detect the user's language preferences**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

**ENVIRONMENT**

**SEE ALSO**

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**AUTHOR**

**I18N::LangTags::List -- tags and names for human languages**

**SYNOPSIS**

**DESCRIPTION**

**ABOUT LANGUAGE TAGS**

**LIST OF LANGUAGES**

`{ab}` : Abkhazian, `{ace}` : Achinese, `{ach}` : Acoli, `{ada}` : Adangme, `{ady}` : Adyghe, `{aa}` : Afar, `{afh}` : Afrihili, `{af}` : Afrikaans, `{afa}` : Afro-Asiatic (Other), `{ak}` : Akan, `{akk}` : Akkadian, `{sq}` : Albanian, `{ale}` : Aleut, `{alg}` : Algonquian languages, `{tut}` : Altaic (Other), `{am}` : Amharic, `{i-ami}` : Ami, `{apa}` : Apache languages, `{ar}` : Arabic, `{arc}` : Aramaic, `{arp}` : Arapaho, `{arn}` : Araucanian, `{arw}` : Arawak, `{hy}` : Armenian, `{an}` : Aragonese, `{art}` : Artificial (Other), `{ast}` : Asturian, `{as}` : Assamese, `{ath}` : Athapaskan languages, `{aus}` : Australian languages, `{map}` : Austronesian (Other), `{av}` : Avaric, `{ae}` : Avestan, `{awa}` : Awadhi, `{ay}` : Aymara, `{az}` : Azerbaijani, `{ban}` : Balinese, `{bat}` : Baltic (Other), `{bal}` : Baluchi, `{bm}` : Bambara, `{bai}` : Bamileke languages, `{bad}` : Banda, `{bnt}` : Bantu (Other), `{bas}` : Basa, `{ba}` : Bashkir, `{eu}` : Basque, `{btk}` : Batak (Indonesia), `{bej}` : Beja, `{be}` : Belarusian, `{bem}` : Bemba, `{bn}` : Bengali, `{ber}` : Berber (Other), `{bho}` : Bhojpuri, `{bh}` : Bihari, `{bik}` : Bikol, `{bin}` : Bini, `{bi}` : Bislama, `{bs}` : Bosnian, `{bra}` : Braj, `{br}` : Breton, `{bug}` : Buginese, `{bg}` : Bulgarian, `{i-bnn}` : Bunun, `{bua}` : Buriat, `{my}` : Burmese, `{cad}` : Caddo, `{car}` : Carib, `{ca}` : Catalan, `{cau}` : Caucasian (Other), `{ceb}` : Cebuano, `{cel}` : Celtic (Other), `{cai}` : Central American Indian (Other), `{chg}` : Chagatai, `{cmc}` : Chamic languages, `{ch}` : Chamorro, `{ce}` : Chechen, `{chr}` : Cherokee, `{chy}` : Cheyenne, `{chb}` : Chibcha, `{ny}` : Chichewa, `{zh}` : Chinese, `{chn}` : Chinook Jargon, `{chp}` : Chipewyan, `{cho}` : Choctaw, `{cu}` : Church Slavic, `{chk}` :

Chuukese, {cv} : Chuvash, {cop} : Coptic, {kw} : Cornish, {co} : Corsican, {cr} : Cree, {mus} : Creek, [{cpe} : English-based Creoles and pidgins (Other)], [{cpf} : French-based Creoles and pidgins (Other)], [{cpp} : Portuguese-based Creoles and pidgins (Other)], [{crp} : Creoles and pidgins (Other)], {hr} : Croatian, [{cus} : Cushitic (Other)], {cs} : Czech, {dak} : Dakota, {da} : Danish, {dar} : Dargwa, {day} : Dayak, {i-default} : Default (Fallthru) Language, {del} : Delaware, {din} : Dinka, {dv} : Divehi, {doi} : Dogri, {dgr} : Dogrib, [{dra} : Dravidian (Other)], {dua} : Duala, {nl} : Dutch, {dum} : Middle Dutch (ca.1050-1350), {dyu} : Dyula, {dz} : Dzongkha, {efi} : Efik, {egy} : Ancient Egyptian, {eka} : Ekajuk, {elx} : Elamite, {en} : English, {enm} : Old English (1100-1500), {ang} : Old English (ca.450-1100), {i-enochian} : Enochian (Artificial), {myv} : Erzya, {eo} : Esperanto, {et} : Estonian, {ee} : Ewe, {ewo} : Ewondo, {fan} : Fang, {fat} : Fanti, {fo} : Faroese, {fj} : Fijian, {fi} : Finnish, [{fiu} : Finno-Ugrian (Other)], {fon} : Fon, {fr} : French, {frm} : Middle French (ca.1400-1600), {fro} : Old French (842-ca.1400), {fy} : Frisian, {fur} : Friulian, {ff} : Fulah, {gaa} : Ga, {gd} : Scots Gaelic, {gl} : Gallegan, {lg} : Ganda, {gay} : Gayo, {gba} : Gbaya, {gez} : Geez, {ka} : Georgian, {de} : German, {gmh} : Middle High German (ca.1050-1500), {goh} : Old High German (ca.750-1500), [{gem} : Germanic (Other)], {gil} : Gilbertese, {gon} : Gondi, {gor} : Gorontalo, {got} : Gothic, {grb} : Grebo, {grc} : Ancient Greek, {el} : Modern Greek, {gn} : Guarani, {gu} : Gujarati, {gwi} : Gwich'in, {hai} : Haida, {ht} : Haitian, {ha} : Hausa, {haw} : Hawaiian, {he} : Hebrew, {hz} : Herero, {hil} : Hiligaynon, {him} : Himachali, {hi} : Hindi, {ho} : Hiri Motu, {hit} : Hittite, {hmn} : Hmong, {hu} : Hungarian, {hup} : Hupa, {iba} : Iban, {is} : Icelandic, {io} : Ido, {ig} : Igbo, {ijo} : Ijo, {ilo} : Iloko, [{inc} : Indic (Other)], [{ine} : Indo-European (Other)], {id} : Indonesian, {inh} : Ingush, {ia} : Interlingua (International Auxiliary Language Association), {ie} : Interlingue, {iu} : Inuktitut, {ik} : Inupiaq, [{ira} : Iranian (Other)], {ga} : Irish, {mga} : Middle Irish (900-1200), {sga} : Old Irish (to 900), [{iro} : Iroquoian languages], {it} : Italian, {ja} : Japanese, {jv} : Javanese, {jrb} : Judeo-Arabic, {jpr} : Judeo-Persian, {kbd} : Kabardian, {kab} : Kabyle, {kac} : Kachin, {kl} : Kalaallisut, {xal} : Kalmyk, {kam} : Kamba, {kn} : Kannada, {kr} : Kanuri, {krc} : Karachay-Balkar, {kaa} : Kara-Kalpak, {kar} : Karen, {ks} : Kashmiri, {csb} : Kashubian, {kaw} : Kawi, {kk} : Kazakh, {kha} : Khasi, {km} : Khmer, [{khi} : Khoisan (Other)], {kho} : Khotanese, {ki} : Kikuyu, {kmb} : Kimbundu, {rw} : Kinyarwanda, {ky} : Kirghiz, {i-klngon} : Klingon, {kv} : Komi, {kg} : Kongo, {kok} : Konkani, {ko} : Korean, {kos} : Kosraean, {kpe} : Kpelle, {kro} : Kru, {kj} : Kuanyama, {kum} : Kumyk, {ku} : Kurdish, {kru} : Kurukh, {kut} : Kutenai, {lad} : Ladino, {lah} : Lahnda, {lam} : Lamba, {lo} : Lao, {la} : Latin, {lv} : Latvian, {lb} : Letzeburgesch, {lez} : Lezghian, {li} : Limburgish, {ln} : Lingala, {lt} : Lithuanian, {nds} : Low German, {art-lojban} : Lojban (Artificial), {loz} : Lozi, {lu} : Luba-Katanga, {lua} : Luba-Lulua, {lui} : Luiseno, {lun} : Lunda, {luo} : Luo (Kenya and Tanzania), {lus} : Lushai, {mk} : Macedonian, {mad} : Madurese, {mag} : Magahi, {mai} : Maithili, {mak} : Makasar, {mg} : Malagasy, {ms} : Malay, {ml} : Malayalam, {mt} : Maltese, {mnc} : Manchu, {mdr} : Mandar, {man} : Mandingo, {mni} : Manipuri, [{mno} : Manobo languages], {gv} : Manx, {mi} : Maori, {mr} : Marathi, {chm} : Mari, {mh} : Marshall, {mwr} : Marwari, {mas} : Masai, [{myn} : Mayan languages], {men} : Mende, {mic} : Micmac, {min} : Minangkabau, {i-mingo} : Mingo, [{mis} : Miscellaneous languages], {moh} : Mohawk, {mdf} : Moksha, {mo} : Moldavian, [{mkh} : Mon-Khmer (Other)], {lol} : Mongo, {mn} : Mongolian, {mos} : Mossi, [{mul} : Multiple languages], [{mun} : Munda languages], {nah} : Nahuatl, {nap} : Neapolitan, {na} : Nauru, {nv} : Navajo, {nd} : North Ndebele, {nr} : South Ndebele, {ng} : Ndonga, {ne} : Nepali, {new} : Newari, {nia} : Nias, [{nic} : Niger-Kordofanian (Other)], [{ssa} : Nilo-Saharan (Other)], {niu} : Niuean, {nog} : Nogai, {non} : Old Norse, [{nai} : North American Indian], {no} : Norwegian, {nb} : Norwegian Bokmal, {nn} : Norwegian Nynorsk, [{nub} : Nubian languages], {nym} : Nyamwezi, {nyn} : Nyankole, {nyo} : Nyoro, {nzi} : Nzima, {oc} : Occitan (post 1500), {oj} : Ojibwa, {or} : Oriya, {om} : Oromo, {osa} : Osage, {os} : Ossetian; Ossetic, [{oto} : Otomian languages], {pal} : Pahlavi, {i-pwn} : Paiwan, {pau} : Palauan, {pi} : Pali, {pam} : Pampanga, {pag} : Pangasinan, {pa} : Panjabi, {pap} : Papiamentu, [{paa} : Papuan (Other)], {fa} : Persian, {peo} : Old Persian (ca.600-400 B.C.), [{phi} : Philippine (Other)], {phn} : Phoenician, {pon} : Pohnpeian, {pl} : Polish, {pt} : Portuguese, [{pra} : Prakrit languages], {pro} : Old Provencal (to 1500), {ps} : Pushto, {qu} : Quechua, {rm} : Raeto-Romance, {raj} : Rajasthani, {rap} : Rapanui, {rar} : Rarotongan, [{qaa - qtz} : Reserved for local use.], [{roa} : Romance (Other)], {ro} : Romanian, {rom} : Romany, {rn} : Rundi, {ru} : Russian, [{sal} : Salishan languages], {sam} : Samaritan Aramaic, {se} : Northern Sami, {sma} : Southern Sami, {smn} : Inari Sami, {smj} : Lule Sami, {sms} : Skolt Sami, {smi} : Sami languages (Other), {sm} : Samoan, {sad} : Sandawe, {sg} : Sango, {sa} : Sanskrit, {sat} : Santali, {sc} : Sardinian, {sas} : Sasak, {sco} : Scots, {sel} : Selkup, [{sem} : Semitic (Other)], {sr} : Serbian, {srr} : Serer, {shn} : Shan, {sn} : Shona, {sid} : Sidamo, {sgn-...} : Sign Languages, {bla} : Siksika, {sd} : Sindhi, {si} : Sinhalese, [{sit} : Sino-Tibetan (Other)], [{sio} : Siouan languages], {den} : Slave (Athapaskan), [{sla} : Slavic (Other)], {sk} : Slovak, {sl} : Slovenian, {sog} : Sogdian, {so} : Somali, {son} : Songhai, {snk} : Soninke, {wen} : Sorbian languages, {ns} : Northern Sotho, {st} : Southern Sotho, [{sai} : South American Indian (Other)], {es} : Spanish, {suk} : Sukuma, {sux} : Sumerian, {su} : Sundanese, {sus} : Susu, {sw} : Swahili, {ss} : Swati, {sv} : Swedish, {syr} : Syriac, {tl} : Tagalog, {ty} : Tahitian, {tai} : Tai (Other)], {tg} : Tajik, {tmh} : Tamashek, {ta} : Tamil, {i-tao} : Tao, {tt} : Tatar, {i-tay} : Tayal, {te} : Telugu, {ter} : Tereno, {tet} : Tetum, {th} : Thai, {bo} : Tibetan, {tig} : Tigre, {ti} : Tigrinya, {tem} : Timne, {tiv} : Tiv, {tli} : Tlingit, {tpi} : Tok Pisin, {tkl} : Tokelau, {tog} : Tonga (Nyasa), {to} : Tonga (Tonga Islands), {tsi} : Tsimshian, {ts} : Tsonga, {i-tsu} : Tsou, {tn} : Tswana, {tum} : Tumbuka, [{tup} : Tupi languages], {tr} : Turkish, {ota} : Ottoman Turkish (1500-1928), {crh} : Crimean Turkish, {tk} : Turkmen, {tvl} : Tuvalu, {tyv} : Tuvian, {tw} : Twi, {udm} : Udmurt, {uga} : Ugaritic, {ug} : Uighur, {uk} : Ukrainian, {umb} : Umbundu, {und} : Undetermined, {ur} : Urdu, {uz} : Uzbek, {vai} : Vai, {ve} : Venda, {vi} : Vietnamese, {vo} : Volapuk, {vot} : Votic, [{wak} : Wakashan languages], {wa} : Walloon, {wal} :

Walamo, {war} : Waray, {was} : Washo, {cy} : Welsh, {wo} : Wolof, {x-...} : Unregistered (Semi-Private Use), {xh} : Xhosa, {sah} : Yakut, {yao} : Yao, {yap} : Yapese, {ii} : Sichuan Yi, {yi} : Yiddish, {yo} : Yoruba, [{ypk} : Yupik languages], {znd} : Zande, [{zap} : Zapotec], {zen} : Zenaga, {za} : Zhuang, {zu} : Zulu, {zun} : Zuni

SEE ALSO

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AUTHOR

## I18N::Langinfo - query locale information

SYNOPSIS

DESCRIPTION

For systems without nl\_langinfo

ERA, CODESET, YESEXPR, YESSTR, NOEXPR, NOSTR, D\_FMT, T\_FMT, D\_T\_FMT, CRNCYSTR, ALT\_DIGIT  
S, ERA\_D\_FMT, ERA\_T\_FMT, ERA\_D\_T\_FMT, T\_FMT\_AMPM

EXPORT

BUGS

SEE ALSO

AUTHOR

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## IO - load various IO modules

SYNOPSIS

DESCRIPTION

DEPRECATED

## IO::Compress::Base - Base Class for IO::Compress modules

SYNOPSIS

DESCRIPTION

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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## IO::Compress::Bzip2 - Write bzip2 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

bzip2 \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]



A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

## Notes

### Optional Parameters

`AutoClose => 0|1`, `BinModeIn => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

`AutoClose => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle, `BlockSize100K => number`, `WorkFactor => number`, `Strict => 0|1`

### Examples

## Methods

`print`

`printf`

`syswrite`

`write`

`flush`

`tell`

`eof`

`seek`

`binmode`

`opened`

`autoflush`

`input_line_number`

`fileno`

`close`

`newStream([OPTS])`

## Importing

`:all`

## EXAMPLES

`Apache::GZip Revisited`

`Working with Net::FTP`

## SUPPORT

## SEE ALSO

**AUTHOR**

**MODIFICATION HISTORY**

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## **IO::Compress::Deflate - Write RFC 1950 files/buffers**

**SYNOPSIS**

**DESCRIPTION**

**Functional Interface**

**deflate \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

**Notes**

**Optional Parameters**

AutoClose => 0|1, BinModeIn => 0|1, Append => 0|1, A Buffer, A Filename, A Filehandle

**Examples**

**OO Interface**

**Constructor**

A filename, A filehandle, A scalar reference

**Constructor Options**

AutoClose => 0|1, Append => 0|1, A Buffer, A Filename, A Filehandle, Merge => 0|1, -Level, -  
Strategy, Strict => 0|1

**Examples**

**Methods**

**print**

**printf**

**syswrite**

**write**

**flush**

**tell**

**eof**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**newStream([OPTS])**

**deflateParams**

## **Importing**

`:all, :constants, :flush, :level, :strategy`

## **EXAMPLES**

**Apache::GZip Revisited**

**Working with Net::FTP**

## **SUPPORT**

## **SEE ALSO**

## **AUTHOR**

## **MODIFICATION HISTORY**

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# **IO::Compress::FAQ -- Frequently Asked Questions about IO::Compress**

## **DESCRIPTION**

## **GENERAL**

**Compatibility with Unix compress/uncompress.**

**Accessing .tar.Z files**

**How do I recompress using a different compression?**

## **ZIP**

**What Compression Types do IO::Compress::Zip & IO::Uncompress::Unzip support?**

Store (method 0), Deflate (method 8), Bzip2 (method 12), Lzma (method 14)

**Can I Read/Write Zip files larger the 4 Gig?**

**Can I write more that 64K entries is a Zip files?**

**Zip Resources**

## **GZIP**

**Gzip Resources**

**Dealing with concatenated gzip files**

**Reading bgzip files with IO::Uncompress::Gunzip**

## **ZLIB**

**Zlib Resources**

## **Bzip2**

**Bzip2 Resources**

**Dealing with Concatenated bzip2 files**

**Interoperating with Pbzip2**

## **HTTP & NETWORK**

**Apache::GZip Revisited**

**Compressed files and Net::FTP**

**MISC**

Using `InputLength` to uncompress data embedded in a larger file/buffer.

**SUPPORT**

**SEE ALSO**

**AUTHOR**

**MODIFICATION HISTORY**

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## **IO::Compress::Gzip - Write RFC 1952 files/buffers**

**SYNOPSIS**

**DESCRIPTION**

**Functional Interface**

**`gzip $input_filename_or_reference => $output_filename_or_reference [, OPTS]`**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference, An Output FileGlob

**Notes**

**Optional Parameters**

`AutoClose => 0|1`, `BinModeIn => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle

**Examples**

**OO Interface**

**Constructor**

A filename, A filehandle, A scalar reference

**Constructor Options**

`AutoClose => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle, `Merge => 0|1`, `-Level, -Strategy`, `Minimal => 0|1`, `Comment => $comment`, `Name => $string`, `Time => $number`, `TextFlag => 0|1`, `HeaderCRC => 0|1`, `OS_Code => $value`, `ExtraField => $data`, `ExtraFlags => $value`, `Strict => 0|1`

**Examples**

**Methods**

**`print`**

**`printf`**

**`syswrite`**

**`write`**

**`flush`**

**`tell`**

**`eof`**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**newStream([OPTS])**

**deflateParams**

## Importing

`:all, :constants, :flush, :level, :strategy`

## EXAMPLES

**Apache::GZip Revisited**

**Working with Net::FTP**

## SUPPORT

## SEE ALSO

## AUTHOR

## MODIFICATION HISTORY

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# IO::Compress::RawDeflate - Write RFC 1951 files/buffers

## SYNOPSIS

## DESCRIPTION

### Functional Interface

**rawdeflate \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference, An Output FileGlob

### Notes

### Optional Parameters

`AutoClose => 0|1`, `BinModeIn => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

`AutoClose => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle, `Merge => 0|1`, `-Level`, `-Strategy`, `Strict => 0|1`

## Examples

### Methods

**print**

**printf**

**syswrite**

**write**

**flush**

**tell**

**eof**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**newStream([OPTS])**

**deflateParams**

### Importing

`:all, :constants, :flush, :level, :strategy`

### EXAMPLES

**Apache::GZip Revisited**

**Working with Net::FTP**

### SUPPORT

### SEE ALSO

### AUTHOR

### MODIFICATION HISTORY

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## IO::Compress::Zip - Write zip files/buffers

### SYNOPSIS

### DESCRIPTION

To use Bzip2 compression, the module `IO::Compress::Bzip2` must be installed, To use LZMA compression, the module `IO::Compress::Lzma` must be installed

### Functional Interface

**zip \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

## Notes

### Optional Parameters

AutoClose => 0|1, BinModeIn => 0|1, Append => 0|1, A Buffer, A Filename, A Filehandle

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

AutoClose => 0|1, Append => 0|1, A Buffer, A Filename, A Filehandle, Name => \$string, If  
the \$input parameter is not a filename, the *archive member name* will be an empty  
string, CanonicalName => 0|1, FilterName => sub { ... }, Efs => 0|1, Minimal => 1|0, Stream  
=> 0|1, Zip64 => 0|1, -Level, -Strategy, BlockSize100K => number, WorkFactor =>  
number, Preset => number, Extreme => 0|1, Time => \$number, ExtAttr => \$attr, exTime =>  
[\$atime, \$mtime, \$ctime], exUnix2 => [\$uid, \$gid], exUnixN => [\$uid, \$gid], Comment =>  
\$comment, ZipComment => \$comment, Method => \$method, TextFlag => 0|1, ExtraFieldLocal =>  
\$data, ExtraFieldCentral => \$data, Strict => 0|1

### Examples

## Methods

print

printf

syswrite

write

flush

tell

eof

seek

binmode

opened

autoflush

input\_line\_number

fileno

close

newStream([OPTS])

deflateParams

## Importing

:all, :constants, :flush, :level, :strategy, :zip\_method

## EXAMPLES

**Apache::GZip Revisited**

**Working with Net::FTP**

**SUPPORT**

**SEE ALSO**

**AUTHOR**

**MODIFICATION HISTORY**

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## **IO::Dir - supply object methods for directory handles**

**SYNOPSIS**

**DESCRIPTION**

```
new ( [ DIRNAME ] ), open ( DIRNAME ), read (), seek ( POS ), tell (), rewind (), close (), tie %hash,  
'IO::Dir', DIRNAME [, OPTIONS ]
```

**SEE ALSO**

**AUTHOR**

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## **IO::File - supply object methods for filehandles**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

```
new ( FILENAME [,MODE [,PERMS]] ), new_tmpfile
```

**METHODS**

```
open( FILENAME [,MODE [,PERMS]] ), open( FILENAME, IOLAYERS ), binmode( [LAYER] )
```

**NOTE**

**SEE ALSO**

**HISTORY**

## **IO::Handle - supply object methods for I/O handles**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

```
new (), new_from_fd ( FD, MODE )
```

**METHODS**

```
$io->fdopen ( FD, MODE ), $io->opened, $io->getline, $io->getlines, $io->ungetc ( ORD ), $io->write (   
BUF, LEN [, OFFSET ] ), $io->error, $io->clearerr, $io->sync, $io->flush, $io->printflush ( ARGS ), $io-  
>blocking ( [ BOOL ] ), $io->untaint
```

**NOTE**



**SEE ALSO**

**BUGS**

**HISTORY**

## **IO::Pipe - supply object methods for pipes**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

`new ( [READER, WRITER] )`

**METHODS**

`reader ([ARGS]), writer ([ARGS]), handles ()`

**SEE ALSO**

**AUTHOR**

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## **IO::Poll - Object interface to system poll call**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

`mask ( IO [, EVENT_MASK ] ), poll ( [ TIMEOUT ] ), events ( IO ), remove ( IO ), handles( [ EVENT_MASK ] )`

**SEE ALSO**

**AUTHOR**

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## **IO::Seekable - supply seek based methods for I/O objects**

**SYNOPSIS**

**DESCRIPTION**

`$io->getpos, $io->setpos, $io->seek ( POS, WHENCE ), WHENCE=0 (SEEK_SET), WHENCE=1 (SEEK_CUR), WHENCE=2 (SEEK_END), $io->sysseek( POS, WHENCE ), $io->tell`

**SEE ALSO**

**HISTORY**

## **IO::Select - OO interface to the select system call**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

`new ( [ HANDLES ] )`

## **METHODS**

`add ( HANDLES ), remove ( HANDLES ), exists ( HANDLE ), handles, can_read ( [ TIMEOUT ] ),  
can_write ( [ TIMEOUT ] ), has_exception ( [ TIMEOUT ] ), count (), bits(), select ( READ, WRITE,  
EXCEPTION [, TIMEOUT ] )`

## **EXAMPLE**

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# **IO::Socket - Object interface to socket communications**

## **SYNOPSIS**

## **DESCRIPTION**

## **CONSTRUCTOR ARGUMENTS**

**Blocking**

**Domain**

**Listen**

**Timeout**

**Type**

## **CONSTRUCTORS**

**new**

## **METHODS**

**accept**

**atmark**

**autoflush**

**bind**

**connected**

**getsockopt**

**listen**

**peername**

**protocol**

**recv**

**send**

**setsockopt**

**shutdown**

**sockdomain**

**socket**

**socketpair**

**sockname**

**sockopt**

**socktype**

**timeout**

**EXAMPLES**

**LIMITATIONS**

**SEE ALSO**

**AUTHOR**

**COPYRIGHT**

## **IO::Socket::INET - Object interface for AF\_INET domain sockets**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

`new ( [ARGS] )`

**METHODS**

`sockaddr ( ), sockport ( ), sockhost ( ), peeraddr ( ), peerport ( ), peerhost ( )`

**SEE ALSO**

**AUTHOR**

**COPYRIGHT**

## **IO::Socket::IP, IO::Socket::IP - Family-neutral IP socket supporting both IPv4 and IPv6**

**SYNOPSIS**

**DESCRIPTION**

**REPLACING** `IO::Socket` **DEFAULT BEHAVIOUR**

**CONSTRUCTORS**

**`$sock = IO::Socket::IP->new( %args )`**

PeerHost => STRING, PeerService => STRING, PeerAddr => STRING, PeerPort => STRING,  
PeerAddrInfo => ARRAY, LocalHost => STRING, LocalService => STRING, LocalAddr => STRING,  
LocalPort => STRING, LocalAddrInfo => ARRAY, Family => INT, Type => INT, Proto => STRING or INT,  
GetAddrInfoFlags => INT, Listen => INT, ReuseAddr => BOOL, ReusePort => BOOL, Broadcast => BOOL,  
Sockopts => ARRAY, V6Only => BOOL, MultiHomed, Blocking => BOOL, Timeout => NUM

**`$sock = IO::Socket::IP->new( $peeraddr )`**

**METHODS**

**`( $host, $service ) = $sock->sockhost_service( $numeric )`**

**`$addr = $sock->sockhost`**

**`$port = $sock->sockport`**

**`$host = $sock->sockhostname`**

```

$service = $sock->sockservice
$addr = $sock->sockaddr
( $host, $service ) = $sock->peerhost_service( $numeric )
$addr = $sock->peerhost
$port = $sock->peerport
$host = $sock->peerhostname
$service = $sock->peerservice
$addr = $peer->peeraddr
$inet = $sock->as_inet

```

## NON-BLOCKING

```
PeerHost AND LocalHost PARSING
```

```
( $host, $port ) = IO::Socket::IP->split_addr( $addr )
```

```
$addr = IO::Socket::IP->join_addr( $host, $port )
```

```
IO::Socket::INET INCOMPATIBILITES
```

## TODO

## AUTHOR

# IO::Socket::UNIX - Object interface for AF\_UNIX domain sockets

## SYNOPSIS

## DESCRIPTION

## CONSTRUCTOR

```
new ( [ARGS] )
```

## METHODS

```
hostpath(), peerpath()
```

## SEE ALSO

## AUTHOR

## COPYRIGHT

# IO::Uncompress::AnyInflate - Uncompress zlib-based (zip, gzip) file/buffer

## SYNOPSIS

## DESCRIPTION

RFC 1950, RFC 1951 (optionally), gzip (RFC 1952), zip

## Functional Interface

```
anyinflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference, An Output FileGlob

## Notes

### Optional Parameters

`AutoClose => 0|1`, `BinModeOut => 0|1`, `Append => 0|1`, A Buffer, A Filename, A Filehandle, `MultiStream => 0|1`, `TrailingData => $scalar`

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

`AutoClose => 0|1`, `MultiStream => 0|1`, `Prime => $string`, `Transparent => 0|1`, `BlockSize => $num`, `InputLength => $size`, `Append => 0|1`, `Strict => 0|1`, `RawInflate => 0|1`, `ParseExtra => 0|1` If the gzip FEXTRA header field is present and this option is set, it will force the module to check that it conforms to the sub-field structure as defined in RFC 1952

### Examples

## Methods

`read`

`read`

`getline`

`getc`

`ungetc`

`inflateSync`

`getHeaderInfo`

`tell`

`eof`

`seek`

`binmode`

`opened`

`autoflush`

`input_line_number`

`fileno`

`close`

`nextStream`

`trailingData`

## Importing

`:all`

## EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

COPYRIGHT AND LICENSE

## IO::Uncompress::AnyUncompress - Uncompress gzip, zip, bzip2, xz, lzma, lzop, lzf or lzop file/buffer

SYNOPSIS

DESCRIPTION

RFC 1950, RFC 1951 (optionally), gzip (RFC 1952), zip, bzip2, lzop, lzf, lzma, lzop, xz

Functional Interface

**anyuncompress \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

Notes

Optional Parameters

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A  
Filehandle, MultiStream => 0|1, TrailingData => \$scalar

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

AutoClose => 0|1, MultiStream => 0|1, Prime => \$string, Transparent => 0|1, BlockSize =>  
\$num, InputLength => \$size, Append => 0|1, Strict => 0|1, RawInflate => 0|1, UnLzma => 0|1

Examples

Methods

read

read

getline

getc

ungetc

getHeaderInfo

tell

eof

seek

**binmode**  
**opened**  
**autoflush**  
**input\_line\_number**  
**fileno**  
**close**  
**nextStream**  
**trailingData**

## Importing

:all

## EXAMPLES

## SUPPORT

## SEE ALSO

## AUTHOR

## MODIFICATION HISTORY

## COPYRIGHT AND LICENSE

# IO::Uncompress::Base - Base Class for IO::Uncompress modules

## SYNOPSIS

## DESCRIPTION

## SUPPORT

## SEE ALSO

## AUTHOR

## MODIFICATION HISTORY

## COPYRIGHT AND LICENSE

# IO::Uncompress::Bunzip2 - Read bzip2 files/buffers

## SYNOPSIS

## DESCRIPTION

## Functional Interface

**bunzip2 \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

## Notes

## Optional Parameters

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A  
Filehandle, MultiStream => 0|1, TrailingData => \$scalar

## Examples

### OO Interface

#### Constructor

A filename, A filehandle, A scalar reference

#### Constructor Options

```
AutoClose => 0|1, MultiStream => 0|1, Prime => $string, Transparent => 0|1, BlockSize => $num, InputLength => $size, Append => 0|1, Strict => 0|1, Small => 0|1
```

## Examples

### Methods

**read**

**read**

**getline**

**getc**

**ungetc**

**getHeaderInfo**

**tell**

**eof**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**nextStream**

**trailingData**

### Importing

:all

### EXAMPLES

Working with Net::FTP

### SUPPORT

### SEE ALSO

### AUTHOR

### MODIFICATION HISTORY

### COPYRIGHT AND LICENSE



# IO::Uncompress::Gunzip - Read RFC 1952 files/buffers

## SYNOPSIS

## DESCRIPTION

### Functional Interface

**gunzip \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference, An Output FileGlob

### Notes

### Optional Parameters

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A Filehandle, MultiStream => 0|1, TrailingData => \$scalar

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

AutoClose => 0|1, MultiStream => 0|1, Prime => \$string, Transparent => 0|1, BlockSize => \$num, InputLength => \$size, Append => 0|1, Strict => 0|1, ParseExtra => 0|1 If the gzip FEXTRA header field is present and this option is set, it will force the module to check that it conforms to the sub-field structure as defined in RFC 1952

### Examples

## Methods

**read**

**read**

**getline**

**getc**

**ungetc**

**inflateSync**

**getHeaderInfo**

Name, Comment

**tell**

**eof**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**nextStream**

**trailingData**

**Importing**

:all

**EXAMPLES**

**Working with Net::FTP**

**SUPPORT**

**SEE ALSO**

**AUTHOR**

**MODIFICATION HISTORY**

**COPYRIGHT AND LICENSE**

## **IO::Uncompress::Inflate - Read RFC 1950 files/buffers**

**SYNOPSIS**

**DESCRIPTION**

**Functional Interface**

**inflate \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

**Notes**

**Optional Parameters**

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A  
Filehandle, MultiStream => 0|1, TrailingData => \$scalar

**Examples**

**OO Interface**

**Constructor**

A filename, A filehandle, A scalar reference

**Constructor Options**

AutoClose => 0|1, MultiStream => 0|1, Prime => \$string, Transparent => 0|1, BlockSize =>  
\$num, InputLength => \$size, Append => 0|1, Strict => 0|1

**Examples**

**Methods**

**read**

**read**

**getline**

**getc**  
**ungetc**  
**inflateSync**  
**getHeaderInfo**  
**tell**  
**eof**  
**seek**  
**binmode**  
**opened**  
**autoflush**  
**input\_line\_number**  
**fileno**  
**close**  
**nextStream**  
**trailingData**

## Importing

:all

## EXAMPLES

**Working with Net::FTP**

## SUPPORT

## SEE ALSO

## AUTHOR

## MODIFICATION HISTORY

## COPYRIGHT AND LICENSE

# IO::Uncompress::RawInflate - Read RFC 1951 files/buffers

## SYNOPSIS

## DESCRIPTION

### Functional Interface

**rawinflate \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

### Notes

### Optional Parameters

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A  
Filehandle, MultiStream => 0|1, TrailingData => \$scalar

### Examples

# OO Interface

## Constructor

A filename, A filehandle, A scalar reference

## Constructor Options

```
AutoClose => 0|1, MultiStream => 0|1, Prime => $string, Transparent => 0|1, BlockSize => $num, InputLength => $size, Append => 0|1, Strict => 0|1
```

## Examples

## Methods

- read
- read
- getline
- getc
- ungetc
- inflateSync
- getHeaderInfo
- tell
- eof
- seek
- binmode
- opened
- autoflush
- input\_line\_number
- fileno
- close
- nextStream
- trailingData

## Importing

:all

## EXAMPLES

Working with Net::FTP

## SUPPORT

## SEE ALSO

## AUTHOR

## MODIFICATION HISTORY

## COPYRIGHT AND LICENSE

# IO::Uncompress::Unzip - Read zip files/buffers

## SYNOPSIS

## DESCRIPTION

### Functional Interface

**unzip \$input\_filename\_or\_reference => \$output\_filename\_or\_reference [, OPTS]**

A filename, A filehandle, A scalar reference, An array reference, An Input FileGlob string, A filename,  
A filehandle, A scalar reference, An Array Reference, An Output FileGlob

### Notes

### Optional Parameters

AutoClose => 0|1, BinModeOut => 0|1, Append => 0|1, A Buffer, A Filename, A  
Filehandle, MultiStream => 0|1, TrailingData => \$scalar

### Examples

## OO Interface

### Constructor

A filename, A filehandle, A scalar reference

### Constructor Options

Name => "membername", Efs => 0| 1, AutoClose => 0|1, MultiStream => 0|1, Prime =>  
\$string, Transparent => 0|1, BlockSize => \$num, InputLength => \$size, Append =>  
0|1, Strict => 0|1

### Examples

## Methods

**read**

**read**

**getline**

**getc**

**ungetc**

**inflateSync**

**getHeaderInfo**

**tell**

**eof**

**seek**

**binmode**

**opened**

**autoflush**

**input\_line\_number**

**fileno**

**close**

**nextStream**

**trailingData**

**Importing**

:all

**EXAMPLES**

**Working with Net::FTP**

**Walking through a zip file**

**Unzipping a complete zip file to disk**

**SUPPORT**

**SEE ALSO**

**AUTHOR**

**MODIFICATION HISTORY**

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## **IO::Zlib - IO:: style interface to Compress::Zlib**

**SYNOPSIS**

**DESCRIPTION**

**CONSTRUCTOR**

new ( [ARGS] )

**OBJECT METHODS**

open ( FILENAME, MODE ), opened, close, getc, getline, getlines, print ( ARGS... ), read ( BUF, NBYTES, [OFFSET] ), eof, seek ( OFFSET, WHENCE ), tell, setpos ( POS ), getpos ( POS )

**USING THE EXTERNAL GZIP**

**CLASS METHODS**

has\_Compress\_Zlib, gzip\_external, gzip\_used, gzip\_read\_open, gzip\_write\_open

**DIAGNOSTICS**

IO::Zlib::getlines: must be called in list context, IO::Zlib::gzopen\_external: mode '...' is illegal, IO::Zlib::import: '...' is illegal, IO::Zlib::import: 'gzip\_external' requires an argument, IO::Zlib::import: 'gzip\_read\_open' requires an argument, IO::Zlib::import: 'gzip\_read' '...' is illegal, IO::Zlib::import: 'gzip\_write\_open' requires an argument, IO::Zlib::import: 'gzip\_write\_open' '...' is illegal, IO::Zlib::import: no Compress::Zlib and no external gzip, IO::Zlib::open: needs a filename, IO::Zlib::READ: NBYTES must be specified, IO::Zlib::WRITE: too long LENGTH

**SEE ALSO**

**HISTORY**

**COPYRIGHT**

## **IPC::Cmd - finding and running system commands made easy**

**SYNOPSIS**

**DESCRIPTION**

## CLASS METHODS

```
$ipc_run_version = IPC::Cmd->can_use_ipc_run( [VERBOSE] )
```

```
$ipc_open3_version = IPC::Cmd->can_use_ipc_open3( [VERBOSE] )
```

```
$bool = IPC::Cmd->can_capture_buffer
```

```
$bool = IPC::Cmd->can_use_run_forked
```

## FUNCTIONS

```
$path = can_run( PROGRAM );
```

```
$ok | ($ok, $err, $full_buf, $stdout_buf, $stderr_buf) = run( command => COMMAND, [verbose =>
BOOL, buffer => \$$SCALAR, timeout => DIGIT] );
```

command, verbose, buffer, timeout, success, error message, full\_buffer, out\_buffer, error\_buffer

```
$hashref = run_forked( COMMAND, { child_stdin => SCALAR, timeout => DIGIT, stdout_handler =>
CODEREF, stderr_handler => CODEREF} );
```

timeout, child\_stdin, stdout\_handler, stderr\_handler, wait\_loop\_callback, discard\_output, terminate\_on\_parent\_sudden\_death, exit\_code, timeout, stdout, stderr, merged, err\_msg

```
$q = QUOTE
```

## HOW IT WORKS

### Global Variables

```
$IPC::Cmd::VERBOSE
```

```
$IPC::Cmd::USE_IPC_RUN
```

```
$IPC::Cmd::USE_IPC_OPEN3
```

```
$IPC::Cmd::WARN
```

```
$IPC::Cmd::INSTANCES
```

```
$IPC::Cmd::ALLOW_NULL_ARGS
```

### Caveats

Whitespace and IPC::Open3 / system(), Whitespace and IPC::Run, IO Redirect, Interleaving STDOUT/STDERR

### See Also

## ACKNOWLEDGEMENTS

## BUG REPORTS

## AUTHOR

## COPYRIGHT

# IPC::Msg - SysV Msg IPC object class

## SYNOPSIS

## DESCRIPTION

## METHODS

```
new ( KEY , FLAGS ), id, rcv ( BUF, LEN [, TYPE [, FLAGS ]] ), remove, set ( STAT ), set ( NAME =>
VALUE [, NAME => VALUE ...] ), snd ( TYPE, MSG [, FLAGS ] ), stat
```

**SEE ALSO**

**AUTHORS**

**COPYRIGHT**

## **IPC::Open2 - open a process for both reading and writing using open2()**

**SYNOPSIS**

**DESCRIPTION**

**WARNING**

**SEE ALSO**

## **IPC::Open3 - open a process for reading, writing, and error handling using open3()**

**SYNOPSIS**

**DESCRIPTION**

**See Also**

[IPC::Open2](#), [IPC::Run](#)

**WARNING**

## **IPC::Semaphore - SysV Semaphore IPC object class**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

new ( KEY , NSEMS , FLAGS ), getall, getncnt ( SEM ), getpid ( SEM ), getval ( SEM ), getzcnt ( SEM ), id, op ( OPLIST ), remove, set ( STAT ), set ( NAME => VALUE [, NAME => VALUE ...] ), setall ( VALUES ), setval ( N , VALUE ), stat

**SEE ALSO**

**AUTHORS**

**COPYRIGHT**

## **IPC::SharedMem - SysV Shared Memory IPC object class**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

new ( KEY , SIZE , FLAGS ), id, read ( POS, SIZE ), write ( STRING, POS, SIZE ), remove, is\_removed, stat, attach ( [FLAG] ), detach, addr

**SEE ALSO**

**AUTHORS**

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# IPC::SysV - System V IPC constants and system calls

## SYNOPSIS

## DESCRIPTION

`ftok( PATH ), ftok( PATH, ID ), shmat( ID, ADDR, FLAG ), shmdt( ADDR ), memread( ADDR, VAR, POS, SIZE ), memwrite( ADDR, STRING, POS, SIZE )`

## SEE ALSO

## AUTHORS

## COPYRIGHT

# Internals - Reserved special namespace for internals related functions

## SYNOPSIS

## DESCRIPTION

### FUNCTIONS

`SvREFCNT(THING [, $value]), SvREADONLY(THING, [, $value]), hv_clear_placeholders(%hash)`

## AUTHOR

## SEE ALSO

# JSON::PP - JSON::XS compatible pure-Perl module.

## SYNOPSIS

## VERSION

## DESCRIPTION

## FUNCTIONAL INTERFACE

`encode_json`

`decode_json`

`JSON::PP::is_bool`

## OBJECT-ORIENTED INTERFACE

`new`

`ascii`

`latin1`

`utf8`

`pretty`

`indent`

`space_before`

`space_after`

`relaxed`

list items can have an end-comma, shell-style `'#'-comments`, C-style multiple-line `'/* */'-comments` (JSON::PP only), C++-style one-line `'//'-comments` (JSON::PP only), literal ASCII TAB characters in strings

**canonical**

**allow\_nonref**

**allow\_unknown**

**allow\_blessed**

**convert\_blessed**

**allow\_tags**

**boolean\_values**

**filter\_json\_object**

**filter\_json\_single\_key\_object**

**shrink**

**max\_depth**

**max\_size**

**encode**

**decode**

**decode\_prefix**

## FLAGS FOR JSON::PP ONLY

**allow\_singlequote**

**allow\_barekey**

**allow\_bignum**

**loose**

**escape\_slash**

**indent\_length**

**sort\_by**

## INCREMENTAL PARSING

**incr\_parse**

**incr\_text**

**incr\_skip**

**incr\_reset**

## MAPPING

### JSON -> PERL

object, array, string, number, true, false, null, shell-style comments (`# text`), tagged values (`(tag)value`)

### PERL -> JSON

hash references, array references, other references, JSON::PP::true, JSON::PP::false, JSON::PP::null, blessed objects, simple scalars

## OBJECT SERIALISATION

1. `allow_tags` is enabled and the object has a `FREEZE` method, 2. `convert_blessed` is enabled and the object has a `TO_JSON` method, 3. `allow_bignum` is enabled and the object is a `Math::BigInt` or `Math::BigFloat`, 4. `allow_blessed` is enabled, 5. none of the above

## ENCODING/CODESET FLAG NOTES

`utf8` flag disabled, `utf8` flag enabled, `latin1` or `ascii` flags enabled

## BUGS

## SEE ALSO

## AUTHOR

## CURRENT MAINTAINER

## COPYRIGHT AND LICENSE

# JSON::PP::Boolean - dummy module providing JSON::PP::Boolean

## SYNOPSIS

## DESCRIPTION

## AUTHOR

## LICENSE

# List::Util - A selection of general-utility list subroutines

## SYNOPSIS

## DESCRIPTION

## LIST-REDUCTION FUNCTIONS

`reduce`

`reductions`

`any`

`all`

`none`

`notall`

`first`

`max`

`maxstr`

`min`

`minstr`

`product`

`sum`

sum0

## KEY/VALUE PAIR LIST FUNCTIONS

pairs

unpairs

pairkeys

pairvalues

pairgrep

pairfirst

pairmap

## OTHER FUNCTIONS

shuffle

sample

uniq

uniqint

uniqnum

uniqstr

head

tail

## CONFIGURATION VARIABLES

\$RAND

## KNOWN BUGS

RT #95409

uniqnum() on oversized bignums

## SUGGESTED ADDITIONS

SEE ALSO

COPYRIGHT

**List::Util::XS** - Indicate if List::Util was compiled with a C compiler

SYNOPSIS

DESCRIPTION

SEE ALSO

COPYRIGHT

**Locale::Maketext** - framework for localization

SYNOPSIS

DESCRIPTION

## QUICK OVERVIEW

## METHODS

### Construction Methods

### The "maketext" Method

`$lh->fail_with` or `$lh->fail_with(PARAM)`, `$lh->failure_handler_auto`, `$lh->blacklist(@list)`, `$lh->whitelist(@list)`

### Utility Methods

`$language->quant($number, $singular)`, `$language->quant($number, $singular, $plural)`, `$language->quant($number, $singular, $plural, $negative)`, `$language->numf($number)`, `$language->numerate($number, $singular, $plural, $negative)`, `$language->sprintf($format, @items)`, `$language->language_tag()`, `$language->encoding()`

### Language Handle Attributes and Internals

## LANGUAGE CLASS HIERARCHIES

## ENTRIES IN EACH LEXICON

## BRACKET NOTATION

## BRACKET NOTATION SECURITY

## AUTO LEXICONS

## READONLY LEXICONS

## CONTROLLING LOOKUP FAILURE

## HOW TO USE MAKETEXT

## SEE ALSO

## COPYRIGHT AND DISCLAIMER

## AUTHOR

# Locale::Maketext::Cookbook - recipes for using Locale::Maketext

## INTRODUCTION

## ONESIDED LEXICONS

## DECIMAL PLACES IN NUMBER FORMATTING

# Locale::Maketext::Guts - Deprecated module to load Locale::Maketext utf8 code

## SYNOPSIS

## DESCRIPTION

# Locale::Maketext::GutsLoader - Deprecated module to load Locale::Maketext utf8 code

## SYNOPSIS

## DESCRIPTION

## **Locale::Maketext::Simple - Simple interface to Locale::Maketext::Lexicon**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**OPTIONS**

**Class**

**Path**

**Style**

**Export**

**Subclass**

**Decode**

**Encoding**

**ACKNOWLEDGMENTS**

**SEE ALSO**

**AUTHORS**

**COPYRIGHT**

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## **Locale::Maketext::TPJ13 -- article about software localization**

**SYNOPSIS**

**DESCRIPTION**

Localization and Perl: gettext breaks, Maketext fixes

A Localization Horror Story: It Could Happen To You

The Linguistic View

Breaking gettext

Replacing gettext

Buzzwords: Abstraction and Encapsulation

Buzzword: Isomorphism

Buzzword: Inheritance

Buzzword: Concision

The Devil in the Details

The Proof in the Pudding: Localizing Web Sites

References

## **MIME::Base64 - Encoding and decoding of base64 strings**

**SYNOPSIS**

**DESCRIPTION**

```
encode_base64( $bytes ), encode_base64( $bytes, $eol );, decode_base64( $str ), encode_base64url(
$bytes ), decode_base64url( $str ), encoded_base64_length( $bytes ), encoded_base64_length( $bytes,
$eol ), decoded_base64_length( $str )
```

**EXAMPLES**

**COPYRIGHT**

**SEE ALSO**

**MIME::QuotedPrint - Encoding and decoding of quoted-printable strings**

**SYNOPSIS**

**DESCRIPTION**

```
encode_qp( $str ), encode_qp( $str, $eol ), encode_qp( $str, $eol, $binmode ), decode_qp( $str )
```

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**SEE ALSO**

**Math::BigFloat - Arbitrary size floating point math package**

**SYNOPSIS**

**DESCRIPTION**

**Input**

**Output**

**METHODS**

**Configuration methods**

```
accuracy(), precision()
```

**Constructor methods**

```
from_hex(), from_oct(), from_bin(), from_ieee754(), bpi()
```

**Arithmetic methods**

```
bmuladd(), bdiv(), bmod(), bexp(), bnok(), bsin(), bcos(), batan(), batan2(), as_float(), to_ieee754()
```

**ACCURACY AND PRECISION**

**Rounding**

```
bround ( +$scale ), bround ( -$scale ), bround ( 0 ), bround ( +$scale ), bround ( -$scale ) and
bround ( 0 )
```

**Autocreating constants**

**Math library**

**Using Math::BigInt::Lite**

**EXPORTS**

**CAVEATS**

stringify, bstr(), brsft(), Modifying and =, precision() vs. accuracy()

## BUGS

## SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, MetaCPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

## LICENSE

## SEE ALSO

## AUTHORS

# Math::BigInt - Arbitrary size integer/float math package

## SYNOPSIS

## DESCRIPTION

### Input

### Output

## METHODS

### Configuration methods

accuracy(), precision(), div\_scale(), round\_mode(), upgrade(), downgrade(), modify(), config()

### Constructor methods

new(), from\_hex(), from\_oct(), from\_bin(), from\_bytes(), from\_base(), bzero(), bone(), binf(), bnan(), bpi(), copy(), as\_int(), as\_number()

### Boolean methods

is\_zero(), is\_one( [ SIGN ] ), is\_finite(), is\_inf( [ SIGN ] ), is\_nan(), is\_positive(), is\_pos(), is\_negative(), is\_neg(), is\_non\_positive(), is\_non\_negative(), is\_odd(), is\_even(), is\_int()

### Comparison methods

bcmp(), bacmp(), beq(), bne(), blt(), ble(), bgt(), bge()

### Arithmetic methods

bneg(), babs(), bsgn(), bnorm(), binc(), bdec(), badd(), bsub(), bmul(), bmuladd(), bdiv(), btdiv(), bmod(), btmod(), bmodinv(), bmodpow(), bpow(), blog(), bexp(), bnok(), buparrow(), uparrow(), backermann(), ackermann(), bsin(), bcos(), batan(), batan2(), bsqrt(), broot(), bfac(), bdfac(), bfib(), blucas(), brsft(), blsft()

### Bitwise methods

band(), bior(), bxor(), bnot()

### Rounding methods

round(), bround(), bfound(), bfloor(), bceil(), bint()

### Other mathematical methods

bgcd(), blcm()

### Object property methods

sign(), digit(), digitsum(), bdigitsum(), length(), mantissa(), exponent(), parts(), sparts(), nparts(), eparts(), dparts()



## String conversion methods

`bstr()`, `bsstr()`, `bnstr()`, `bestr()`, `bdstr()`, `to_hex()`, `to_bin()`, `to_oct()`, `to_bytes()`, `to_base()`, `as_hex()`, `as_bin()`, `as_oct()`, `as_bytes()`

## Other conversion methods

`numify()`

## ACCURACY and PRECISION

### Precision P

### Accuracy A

### Fallback F

### Rounding mode R

'trunc', 'even', 'odd', '+inf', '-inf', 'zero', 'common', Precision, Accuracy (significant digits), Setting/Accessing, Creating numbers, Usage, Precedence, Overriding globals, Local settings, Rounding, Default values, Remarks

## Infinity and Not a Number

`oct()/hex()`

## INTERNALS

### MATH LIBRARY

### SIGN

## EXAMPLES

### Autocreating constants

## PERFORMANCE

### Alternative math libraries

## SUBCLASSING

### Subclassing `Math::BigInt`

## UPGRADING

### Auto-upgrade

## EXPORTS

## CAVEATS

Comparing numbers as strings, `int()`, Modifying and `=`, Overloading `-$x`, Mixing different object types

## BUGS

## SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, MetaCPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

## LICENSE

## SEE ALSO

## AUTHORS

# Math::BigInt::Calc - Pure Perl module to support Math::BigInt

## SYNOPSIS

## DESCRIPTION

## SEE ALSO

# Math::BigInt::FastCalc - Math::BigInt::Calc with some XS for more speed

## SYNOPSIS

## DESCRIPTION

## STORAGE

## METHODS

## BUGS

## SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, Search CPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

## LICENSE

## AUTHORS

## SEE ALSO

# Math::BigInt::Lib - virtual parent class for Math::BigInt libraries

## SYNOPSIS

## DESCRIPTION

### General Notes

```
CLASS->api_version(), CLASS->_new(STR), CLASS->_zero(), CLASS->_one(), CLASS->_two(),
CLASS->_ten(), CLASS->_from_bin(STR), CLASS->_from_oct(STR), CLASS->_from_hex(STR),
CLASS->_from_bytes(STR), CLASS->_from_base(STR, BASE, COLLSEQ), CLASS->_add(OBJ1,
OBJ2), CLASS->_mul(OBJ1, OBJ2), CLASS->_div(OBJ1, OBJ2), CLASS->_sub(OBJ1, OBJ2,
FLAG), CLASS->_sub(OBJ1, OBJ2), CLASS->_dec(OBJ), CLASS->_inc(OBJ), CLASS->_mod(OBJ1,
OBJ2), CLASS->_sqrt(OBJ), CLASS->_root(OBJ, N), CLASS->_fac(OBJ), CLASS->_dfac(OBJ),
CLASS->_pow(OBJ1, OBJ2), CLASS->_modinv(OBJ1, OBJ2), CLASS->_modpow(OBJ1, OBJ2,
OBJ3), CLASS->_rsft(OBJ, N, B), CLASS->_lsft(OBJ, N, B), CLASS->_log_int(OBJ, B), CLASS-
>_gcd(OBJ1, OBJ2), CLASS->_lcm(OBJ1, OBJ2), CLASS->_fib(OBJ), CLASS->_lucas(OBJ),
CLASS->_and(OBJ1, OBJ2), CLASS->_or(OBJ1, OBJ2), CLASS->_xor(OBJ1, OBJ2), CLASS-
>_sand(OBJ1, OBJ2, SIGN1, SIGN2), CLASS->_sor(OBJ1, OBJ2, SIGN1, SIGN2), CLASS-
>_sxor(OBJ1, OBJ2, SIGN1, SIGN2), CLASS->_is_zero(OBJ), CLASS->_is_one(OBJ), CLASS-
>_is_two(OBJ), CLASS->_is_ten(OBJ), CLASS->_is_even(OBJ), CLASS->_is_odd(OBJ), CLASS-
>_acmp(OBJ1, OBJ2), CLASS->_str(OBJ), CLASS->_to_bin(OBJ), CLASS->_to_oct(OBJ), CLASS-
>_to_hex(OBJ), CLASS->_to_bytes(OBJ), CLASS->_to_base(OBJ, BASE, COLLSEQ), CLASS-
>_as_bin(OBJ), CLASS->_as_oct(OBJ), CLASS->_as_hex(OBJ), CLASS->_as_bytes(OBJ), CLASS-
>_num(OBJ), CLASS->_copy(OBJ), CLASS->_len(OBJ), CLASS->_zeros(OBJ), CLASS->_digit(OBJ,
N), CLASS->_digitsum(OBJ), CLASS->_check(OBJ), CLASS->_set(OBJ)
```

### API version 2

```
CLASS->_1ex(N), CLASS->_nok(OBJ1, OBJ2), CLASS->_alen(OBJ)
```

## WRAP YOUR OWN

## BUGS

## SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, MetaCPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

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**AUTHOR**

**SEE ALSO**

## Math::BigRat - Arbitrary big rational numbers

**SYNOPSIS**

**DESCRIPTION**

**MATH LIBRARY**

**METHODS**

new(), numerator(), denominator(), parts(), numify(), as\_int(), as\_number(), as\_float(), as\_hex(), as\_bin(), as\_oct(), from\_hex(), from\_oct(), from\_bin(), bnan(), bzero(), bnf(), bone(), length(), digit(), bnorm(), bfac(), bround()/round()/bround(), bmod(), bmodinv(), bmodpow(), bneg(), is\_one(), is\_zero(), is\_pos()/is\_positive(), is\_neg()/is\_negative(), is\_int(), is\_odd(), is\_even(), bceil(), bfloor(), bint(), bsqrt(), broot(), badd(), bmul(), bsub(), bdiv(), bdec(), binc(), copy(), bstr()/bsstr(), bcmp(), bacmp(), beq(), bne(), blt(), ble(), bgt(), bge(), blsft()/brsft(), band(), bior(), bxor(), bnot(), bpow(), blog(), bexp(), bnok(), config()

**BUGS**

**SUPPORT**

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, Search CPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

**LICENSE**

**SEE ALSO**

**AUTHORS**

## Math::Complex - complex numbers and associated mathematical functions

**SYNOPSIS**

**DESCRIPTION**

**OPERATIONS**

**CREATION**

**DISPLAYING**

**CHANGED IN PERL 5.6**

**USAGE**

**CONSTANTS**

**PI**

**Inf**

**ERRORS DUE TO DIVISION BY ZERO OR LOGARITHM OF ZERO**

**ERRORS DUE TO INDIGESTIBLE ARGUMENTS**

**BUGS**

SEE ALSO

AUTHORS

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## Math::Trig - trigonometric functions

SYNOPSIS

DESCRIPTION

TRIGONOMETRIC FUNCTIONS

tan

ERRORS DUE TO DIVISION BY ZERO

SIMPLE (REAL) ARGUMENTS, COMPLEX RESULTS

PLANE ANGLE CONVERSIONS

deg2rad, grad2rad, rad2deg, grad2deg, deg2grad, rad2grad, rad2rad, deg2deg, grad2grad

RADIAL COORDINATE CONVERSIONS

COORDINATE SYSTEMS

3-D ANGLE CONVERSIONS

cartesian\_to\_cylindrical, cartesian\_to\_spherical, cylindrical\_to\_cartesian, cylindrical\_to\_spherical,  
spherical\_to\_cartesian, spherical\_to\_cylindrical

GREAT CIRCLE DISTANCES AND DIRECTIONS

great\_circle\_distance

great\_circle\_direction

great\_circle\_bearing

great\_circle\_destination

great\_circle\_midpoint

great\_circle\_waypoint

EXAMPLES

CAVEAT FOR GREAT CIRCLE FORMULAS

Real-valued asin and acos

asin\_real, acos\_real

BUGS

AUTHORS

LICENSE

## Memoize - Make functions faster by trading space for time

SYNOPSIS

DESCRIPTION

DETAILS

**OPTIONS**

**INSTALL**

**NORMALIZER**

SCALAR\_CACHE , LIST\_CACHE

MEMORY , HASH , TIE , FAULT , MERGE

**OTHER FACILITIES**

unmemoize

flush\_cache

**CAVEATS**

**PERSISTENT CACHE SUPPORT**

**EXPIRATION SUPPORT**

**BUGS**

**MAILING LIST**

**AUTHOR**

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**THANK YOU**

**Memoize::AnyDBM\_File - glue to provide EXISTS for AnyDBM\_File for Storable use**

**DESCRIPTION**

**Memoize::Expire - Plug-in module for automatic expiration of memoized values**

**SYNOPSIS**

**DESCRIPTION**

**INTERFACE**

TIEHASH, EXISTS, STORE

**ALTERNATIVES**

**CAVEATS**

**AUTHOR**

**SEE ALSO**

**Memoize::ExpireFile - test for Memoize expiration semantics**

**DESCRIPTION**

**Memoize::ExpireTest - test for Memoize expiration semantics**

## DESCRIPTION

**Memoize::NDBM\_File** - glue to provide EXISTS for NDBM\_File for Storable use

## DESCRIPTION

**Memoize::SDBM\_File** - glue to provide EXISTS for SDBM\_File for Storable use

## DESCRIPTION

**Memoize::Storable** - store Memoized data in Storable database

## DESCRIPTION

**Module::CoreList** - what modules shipped with versions of perl

## SYNOPSIS

## DESCRIPTION

## FUNCTIONS API

```
first_release( MODULE ), first_release_by_date( MODULE ), find_modules( REGEX, [ LIST OF PERLS ] ), find_version( PERL_VERSION ), is_core( MODULE, [ MODULE_VERSION, [ PERL_VERSION ] ] ), is_deprecated( MODULE, PERL_VERSION ), deprecated_in( MODULE ), removed_from( MODULE ), removed_from_by_date( MODULE ), changes_between( PERL_VERSION, PERL_VERSION )
```

## DATA STRUCTURES

```
%Module::CoreList::version, %Module::CoreList::delta, %Module::CoreList::released, %Module::CoreList::families, %Module::CoreList::deprecated, %Module::CoreList::upstream, %Module::CoreList::bug_tracker
```

## CAVEATS

## HISTORY

## AUTHOR

## LICENSE

## SEE ALSO

**Module::CoreList::Utils** - what utilities shipped with versions of perl

## SYNOPSIS

## DESCRIPTION

## FUNCTIONS API

```
utilities, first_release( UTILITY ), first_release_by_date( UTILITY ), removed_from( UTILITY ), removed_from_by_date( UTILITY )
```

## DATA STRUCTURES

```
%Module::CoreList::Utils::utilities
```

## AUTHOR

LICENSE

SEE ALSO

## Module::Load - runtime require of both modules and files

SYNOPSIS

DESCRIPTION

Difference between `load` and `autoload`

FUNCTIONS

`load`, `autoload`, `load_remote`, `autoload_remote`

Rules

IMPORTS THE FUNCTIONS

`"load", "autoload", "load_remote", "autoload_remote", 'all', "", 'none', undef`

Caveats

SEE ALSO

ACKNOWLEDGEMENTS

BUG REPORTS

AUTHOR

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## Module::Load::Conditional - Looking up module information / loading at runtime

SYNOPSIS

DESCRIPTION

Methods

```
$href = check_install( module => NAME [, version => VERSION, verbose => BOOL ] );
```

`module`, `version`, `verbose`, `file`, `dir`, `version`, `uptodate`

```
$bool = can_load( modules => { NAME => VERSION [,NAME => VERSION] }, [verbose => BOOL,  
nocache => BOOL, autoload => BOOL] )
```

`modules`, `verbose`, `nocache`, `autoload`

```
@list = requires( MODULE );
```

Global Variables

`$Module::Load::Conditional::VERBOSE`

`$Module::Load::Conditional::FIND_VERSION`

`$Module::Load::Conditional::CHECK_INC_HASH`

`$Module::Load::Conditional::FORCE_SAFE_INC`

`$Module::Load::Conditional::CACHE`

`$Module::Load::Conditional::ERROR`

**\$Module::Load::Conditional::DEPRECATED**

**See Also**

**BUG REPORTS**

**AUTHOR**

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## **Module::Loaded - mark modules as loaded or unloaded**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

```
$bool = mark_as_loaded( PACKAGE );
```

```
$bool = mark_as_unloaded( PACKAGE );
```

```
$loc = is_loaded( PACKAGE );
```

**BUG REPORTS**

**AUTHOR**

**COPYRIGHT**

## **Module::Metadata - Gather package and POD information from perl module files**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**CLASS METHODS**

```
new_from_file($filename, collect_pod => 1, decode_pod => 1)
```

```
new_from_handle($handle, $filename, collect_pod => 1, decode_pod => 1)
```

```
new_from_module($module, collect_pod => 1, inc => \@dirs, decode_pod => 1)
```

```
find_module_by_name($module, \@dirs)
```

```
find_module_dir_by_name($module, \@dirs)
```

```
provides( %options )
```

```
version (required), dir, files, prefix
```

```
package_versions_from_directory($dir, \@files?)
```

```
log_info (internal)
```

**OBJECT METHODS**

```
name()
```

```
version($package)
```

```
filename()
```

```
packages_inside()
```



```
pod_inside()
contains_pod()
pod($section)

is_indexable($package) or is_indexable()
```

## SUPPORT

## AUTHOR

## CONTRIBUTORS

## COPYRIGHT & LICENSE

# NDBM\_File - Tied access to ndbm files

## SYNOPSIS

## DESCRIPTION

```
O_RDONLY, O_WRONLY, O_RDWR
```

## DIAGNOSTICS

```
ndbm store returned -1, errno 22, key "..." at ...
```

## SECURITY AND PORTABILITY

## BUGS AND WARNINGS

# NEXT - Provide a pseudo-class NEXT (et al) that allows method redispatch

## SYNOPSIS

## DESCRIPTION

Enforcing redispatch

Avoiding repetitions

Invoking all versions of a method with a single call

Using EVERY methods

## SEE ALSO

## AUTHOR

## BUGS AND IRRITATIONS

## COPYRIGHT

# Net::Cmd - Network Command class (as used by FTP, SMTP etc)

## SYNOPSIS

## DESCRIPTION

## USER METHODS

```
debug ( VALUE ), message (), code (), ok (), status (), datasend ( DATA ), dataend ()
```

## CLASS METHODS

```
debug_print ( DIR, TEXT ), debug_text ( DIR, TEXT ), command ( CMD [, ARGS, ... ]), unsupported (),  
response (), parse_response ( TEXT ), getline (), ungetline ( TEXT ), rawdatasend ( DATA ), read_until_dot  
( ), tied_fh ()
```

## **PSEUDO RESPONSES**

Initial value, Connection closed, Timeout

## **EXPORTS**

## **AUTHOR**

## **COPYRIGHT**

## **LICENCE**

# **Net::Config - Local configuration data for libnet**

## **SYNOPSIS**

## **DESCRIPTION**

## **METHODS**

requires\_firewall ( HOST )

## **NetConfig VALUES**

nntp\_hosts, snpp\_hosts, pop3\_hosts, smtp\_hosts, ph\_hosts, daytime\_hosts, time\_hosts, inet\_domain,  
ftp\_firewall, ftp\_firewall\_type, 0, 1, 2, 3, 4, 5, 6, 7, ftp\_ext\_passive, ftp\_int\_passive, local\_netmask,  
test\_hosts, test\_exists

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## **LICENCE**

# **Net::Domain - Attempt to evaluate the current host's internet name and domain**

## **SYNOPSIS**

## **DESCRIPTION**

hostfqdn (), domainname (), hostname (), hostdomain ()

## **AUTHOR**

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## **LICENCE**

# **Net::FTP - FTP Client class**

## **SYNOPSIS**

## **DESCRIPTION**

## **OVERVIEW**

## **CONSTRUCTOR**

new ([ HOST ] [, OPTIONS ])

## METHODS

login ([LOGIN [,PASSWORD [, ACCOUNT] ] ]), starttls (), stoptls (), prot ( LEVEL ), host (), account( ACCT ), authorize ( [AUTH [, RESP]]), site (ARGS), ascii (), binary (), type ( [ TYPE ] ), rename ( OLDNAME, NEWNAME ), delete ( FILENAME ), cwd ( [ DIR ] ), cdup (), passive ( [ PASSIVE ] ), pwd (), restart ( WHERE ), rmdir ( DIR [, RECURSE ]), mkdir ( DIR [, RECURSE ]), alloc ( SIZE [, RECORD\_SIZE] ), ls ( [ DIR ] ), dir ( [ DIR ] ), get ( REMOTE\_FILE [, LOCAL\_FILE [, WHERE]] ), put ( LOCAL\_FILE [, REMOTE\_FILE ] ), put\_unique ( LOCAL\_FILE [, REMOTE\_FILE ] ), append ( LOCAL\_FILE [, REMOTE\_FILE ] ), unique\_name (), mdtm ( FILE ), size ( FILE ), supported ( CMD ), hash ( [FILEHANDLE\_GLOB\_REF],[ BYTES\_PER\_HASH\_MARK] ), feature ( NAME ), nlst ( [ DIR ] ), list ( [ DIR ] ), retr ( FILE ), stor ( FILE ), stou ( FILE ), appe ( FILE ), port ( [ PORT ] ), eprt ( [ PORT ] ), pasv (), epsv (), pasv\_xfer ( SRC\_FILE, DEST\_SERVER [, DEST\_FILE ] ), pasv\_xfer\_unique ( SRC\_FILE, DEST\_SERVER [, DEST\_FILE ] ), pasv\_wait ( NON\_PASV\_SERVER ), abort (), quit ()

### Methods for the adventurous

quot (CMD [,ARGS]), can\_inet6 (), can\_ssl ()

## THE dataconn CLASS

## UNIMPLEMENTED

SMNT, HELP, MODE, SYST, STAT, STRU, REIN

## REPORTING BUGS

## AUTHOR

## SEE ALSO

## USE EXAMPLES

<http://www.csh.rit.edu/~adam/Progs/>

## CREDITS

## COPYRIGHT

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# Net::NNTP - NNTP Client class

## SYNOPSIS

## DESCRIPTION

## CONSTRUCTOR

new ( [ HOST ] [, OPTIONS ])

## METHODS

host (), starttls (), article ( [ MSGID|MSGNUM ], [FH] ), body ( [ MSGID|MSGNUM ], [FH] ), head ( [ MSGID|MSGNUM ], [FH] ), articlefh ( [ MSGID|MSGNUM ] ), bodyfh ( [ MSGID|MSGNUM ] ), headfh ( [ MSGID|MSGNUM ] ), nntpstat ( [ MSGID|MSGNUM ] ), group ( [ GROUP ] ), help ( ), ihave ( MSGID [, MESSAGE ] ), last (), date (), postok (), authinfo ( USER, PASS ), authinfo\_simple ( USER, PASS ), list (), newgroups ( SINCE [, DISTRIBUTIONS ] ), newnews ( SINCE [, GROUPS [, DISTRIBUTIONS ]]), next (), post ( [ MESSAGE ] ), postfh (), slave (), quit (), can\_inet6 (), can\_ssl ()

### Extension methods

newsgroups ( [ PATTERN ] ), distributions (), distribution\_patterns (), subscriptions (), overview\_fmt (), active\_times (), active ( [ PATTERN ] ), xgtitle ( PATTERN ), xhdr ( HEADER, MESSAGE-SPEC ), xover ( MESSAGE-SPEC ), xpath ( MESSAGE-ID ), xpat ( HEADER, PATTERN, MESSAGE-SPEC ), xrover (), listgroup ( [ GROUP ] ), reader ()

## UNSUPPORTED

## DEFINITIONS

MESSAGE-SPEC, PATTERN, Examples, [^]-], \*bdc, [0-9a-zA-Z], a??d

## SEE ALSO

## AUTHOR

## COPYRIGHT

## LICENCE

# Net::Netrc - OO interface to users netrc file

## SYNOPSIS

## DESCRIPTION

## THE .netrc FILE

machine name, default, login name, password string, account string, macdef name

## CONSTRUCTOR

lookup ( MACHINE [, LOGIN ] )

## METHODS

login (), password (), account (), lpa ()

## AUTHOR

## SEE ALSO

## COPYRIGHT

## LICENCE

# Net::POP3 - Post Office Protocol 3 Client class (RFC1939)

## SYNOPSIS

## DESCRIPTION

## CONSTRUCTOR

new ( [ HOST ] [, OPTIONS ] )

## METHODS

host (), auth ( USERNAME, PASSWORD ), user ( USER ), pass ( PASS ), login ( [ USER [, PASS ] ] ), starttls ( SSLARGS ), apop ( [ USER [, PASS ] ] ), banner (), capa (), capabilities (), top ( MSGNUM [, NUMLINES ] ), list ( [ MSGNUM ] ), get ( MSGNUM [, FH ] ), getfh ( MSGNUM ), last (), popstat (), ping ( USER ), uidl ( [ MSGNUM ] ), delete ( MSGNUM ), reset (), quit (), can\_inet6 (), can\_ssl ()

## NOTES

## SEE ALSO

## AUTHOR

## COPYRIGHT

## LICENCE

# Net::Ping - check a remote host for reachability

**SYNOPSIS**

**DESCRIPTION**

**Functions**

```
Net::Ping->new([proto, timeout, bytes, device, tos, ttl, family, host, port, bind, gateway, retrans,
pingstring, source_verify econnrefused dontfrag IPV6_USE_MIN_MTU IPV6_RECVPATHMTU]), $p->
ping($host [, $timeout [, $family]]); , $p->source_verify( { 0 | 1 } ); , $p->service_check( { 0 | 1 } ); , $p->
tcp_service_check( { 0 | 1 } ); , $p->hires( { 0 | 1 } ); , $p->time , $p->socket_blocking_mode( $fh,
$mode ); , $p->IPV6_USE_MIN_MTU , $p->IPV6_RECVPATHMTU , $p->IPV6_HOPLIMIT , $p->
IPV6_REACHCONF NYI , $p->bind($local_addr); , $p->message_type([$ping_type]); , $p->
open($host); , $p->ack( [ $host ] ); , $p->nack( $failed_ack_host ); , $p->ack_unfork($host) , $p->
ping_icmp([$host, $timeout, $family]) , $p->ping_icmpv6([$host, $timeout, $family]) NYI , $p->
ping_stream([$host, $timeout, $family]) , $p->ping_syn([$host, $ip, $start_time, $stop_time]) , $p->
ping_syn_fork([$host, $timeout, $family]) , $p->ping_tcp([$host, $timeout, $family]) , $p->
ping_udp([$host, $timeout, $family]) , $p->ping_external([$host, $timeout, $family]) , $p->
tcp_connect([$ip, $timeout]) , $p->tcp_echo([$ip, $timeout, $pingstring]) , $p->close(); , $p->
port_number([$port_number]) , $p->mselect , $p->ntop , $p->checksum($msg) , $p->icmp_result ,
pingecho($host [, $timeout]); , wakeonlan($mac, [$host, [$port]])
```

**NOTES**

**INSTALL**

**BUGS**

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**Net::SMTP - Simple Mail Transfer Protocol Client**

**SYNOPSIS**

**DESCRIPTION**

**EXAMPLES**

**CONSTRUCTOR**

```
new ( [ HOST ] [, OPTIONS ] )
```

**METHODS**

```
banner () , domain () , hello ( DOMAIN ) , host () , etrn ( DOMAIN ) , starttls ( SSLARGS ) , auth ( USERNAME,
PASSWORD ) , auth ( SASL ) , mail ( ADDRESS [, OPTIONS] ) , send ( ADDRESS ) , send_or_mail (
ADDRESS ) , send_and_mail ( ADDRESS ) , reset () , recipient ( ADDRESS [, ADDRESS [, ...]] [, OPTIONS ]
) , to ( ADDRESS [, ADDRESS [...]] ) , cc ( ADDRESS [, ADDRESS [...]] ) , bcc ( ADDRESS [, ADDRESS
[...]] ) , data ( [ DATA ] ) , bdat ( DATA ) , bdatlast ( DATA ) , expand ( ADDRESS ) , verify ( ADDRESS ) , help (
[ $subject ] ) , quit () , can_inet6 () , can_ssl ()
```

**ADDRESSES**

**SEE ALSO**

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**LICENCE**

**Net::Time - time and daytime network client interface**

**SYNOPSIS**

**DESCRIPTION**

inet\_time ( [HOST [, PROTOCOL [, TIMEOUT]]]), inet\_daytime ( [HOST [, PROTOCOL [, TIMEOUT]]])

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**LICENCE**

## **Net::hostent - by-name interface to Perl's built-in gethost\*() functions**

**SYNOPSIS**

**DESCRIPTION**

**EXAMPLES**

**NOTE**

**AUTHOR**

## **Net::libnetFAQ, libnetFAQ - libnet Frequently Asked Questions**

**DESCRIPTION**

Where to get this document

How to contribute to this document

**Author and Copyright Information**

Disclaimer

**Obtaining and installing libnet**

What is libnet ?

Which version of perl do I need ?

What other modules do I need ?

What machines support libnet ?

Where can I get the latest libnet release

**Using Net::FTP**

How do I download files from an FTP server ?

How do I transfer files in binary mode ?

How can I get the size of a file on a remote FTP server ?

How can I get the modification time of a file on a remote FTP server ?

How can I change the permissions of a file on a remote server ?

Can I do a reget operation like the ftp command ?

How do I get a directory listing from an FTP server ?

Changing directory to "" does not fail ?

I am behind a SOCKS firewall, but the Firewall option does not work ?

I am behind an FTP proxy firewall, but cannot access machines outside ?

My ftp proxy firewall does not listen on port 21

Is it possible to change the file permissions of a file on an FTP server ?

I have seen scripts call a method message, but cannot find it documented ?

Why does Net::FTP not implement mput and mget methods

Using Net::SMTP

Why can't the part of an Email address after the @ be used as the hostname ?

Why does Net::SMTP not do DNS MX lookups ?

The verify method always returns true ?

Debugging scripts

How can I debug my scripts that use Net::\* modules ?

AUTHOR AND COPYRIGHT

## **Net::netent - by-name interface to Perl's built-in getnet\*() functions**

SYNOPSIS

DESCRIPTION

EXAMPLES

NOTE

AUTHOR

## **Net::protoent - by-name interface to Perl's built-in getproto\*() functions**

SYNOPSIS

DESCRIPTION

NOTE

AUTHOR

## **Net::servent - by-name interface to Perl's built-in getserv\*() functions**

SYNOPSIS

DESCRIPTION

EXAMPLES

NOTE

AUTHOR

## **O - Generic interface to Perl Compiler backends**

SYNOPSIS

DESCRIPTION

CONVENTIONS

IMPLEMENTATION

BUGS

**AUTHOR**

## **ODBM\_File - Tied access to odbm files**

**SYNOPSIS**

**DESCRIPTION**

```
O_RDONLY, O_WRONLY, O_RDWR
```

**DIAGNOSTICS**

```
odbm store returned -1, errno 22, key "..." at ...
```

**SECURITY AND PORTABILITY**

**BUGS AND WARNINGS**

## **Opcode - Disable named opcodes when compiling perl code**

**SYNOPSIS**

**DESCRIPTION**

**NOTE**

**WARNING**

**Operator Names and Operator Lists**

an operator name (opname), an operator tag name (optag), a negated opname or optag, an operator set (opset)

**Opcode Functions**

opcodes, opset (OP, ...), opset\_to\_ops (OPSET), opset\_to\_hex (OPSET), full\_opset, empty\_opset, invert\_opset (OPSET), verify\_opset (OPSET, ...), define\_optag (OPTAG, OPSET), opmask\_add (OPSET), opmask, opdesc (OP, ...), opdump (PAT)

**Manipulating Opsets**

**TO DO (maybe)**

**Predefined Opcode Tags**

```
:base_core, :base_mem, :base_loop, :base_io, :base_orig, :base_math, :base_thread, :default,  
:filesystem_read, :sys_db, :browse, :filesystem_open, :filesystem_write, :subprocess, :ownprocess, :others, :load,  
:still_to_be_decided, :dangerous
```

**SEE ALSO**

**AUTHORS**

## **POSIX - Perl interface to IEEE Std 1003.1**

**SYNOPSIS**

**DESCRIPTION**

**CAVEATS**

**FUNCTIONS**

```
_exit, abort, abs, access, acos, acosh, alarm, asctime, asin, asinh, assert, atan, atanh, a  
tan2, atexit, atof, atoi, atol, bsearch, calloc, cbrt, ceil, chdir, chmod, chown, clearerr, c  
lock, close, closedir, cos, cosh, copysign, creat, ctermid, ctime, cuserid [POSIX.1-
```



1988], difftime, div, dup, dup2, erf, erfc, errno, execl, execlx, execlp, execv, execve, exe  
cvp, exit, exp, expm1, fabs, fclose, fcntl, fdopen, feof, ferror, fflush, fgetc, fgetpos, fg  
ets, fileno, floor, fdim, fegetround, fesetround, fma, fmax, fmin, fmod, fopen, fork, fpathc  
onf, fpclassify, fprintf, fputc, fputs, fread, free, freopen, frexp, fscanf, fseek, fsetpos, f  
stat, fsync, ftell, fwrite,getc, getchar, getcwd, getegid, getenv, geteuid, getgid, getgrgi  
d, getgrnam, getgroups, getlogin, getpayload, getpgrp, getpid, getppid, getpwnam, getpwuid, g  
ets, getuid, gmtime, hypot, ilogb, Inf, isalnum, isalpha, isatty, iscntrl, isdigit, isfinite, i  
sgraph, isgreater, isinf, islower, isnan, isnormal, isprint, ispunct, issignaling, isspace, i  
supper, isxdigit, j0, j1, jn, y0, y1, yn, kill, labs, lchown, ldexp, ldiv, lgamma, loglp, l  
og2, logb, link, localeconv, localtime, log, log10, longjmp, lseek, lrint, lround, malloc, m  
blen, mbtowc, memchr, memcmp, memcpy, memmove, memset, mkdir, mkfifo, mktime, modf, NaN, nan, n  
earbyint, nextafter, nexttoward, nice, offsetof, open, opendir, pathconf, pause, perror, pip  
e, pow, printf, putc, putchar, puts, qsort, raise, rand, read, readdir, realloc, remainder, r  
emove, remquo, rename, rewind, rewinddir, rint, rmdir, round, scalbn, scanf, setgid, setjmp, s  
etlocale, setpayload, setpayloadsig, setpgid, setsid, setuid, sigaction, siglongjmp, signbit, s  
igpending, sigprocmask, sigsetjmp, sigsuspend, sin, sinh, sleep, sprintf, sqrt, srand, sscan  
f, stat, strcat, strchr, strcmp, strcoll, strcpy, strcspn, strerror, strptime, strlen, strnc  
at, strncmp, strncpy, strpbrk, strrchr, strspn, strstr, strtod, strtok, strtol, strtold, str  
toul, strxfrm, sysconf, system, tan, tanh, tcdrain, tcflow, tcflush, tcgetpgrp, tcsendbreak, t  
csetpgrp, tgamma, time, times, tmpfile, tmpnam, tolower, toupper, trunc, ttyname, tzname, tz  
set, umask, uname, ungetc, unlink, utime, vfprintf, vprintf, vsprintf, wait, waitpid, wctomb, w  
rite

## CLASSES

POSIX::SigAction

new, handler, mask, flags, safe

POSIX::SigRt

%SIGRT, SIGRTMIN, SIGRTMAX

POSIX::SigSet

new, addset, delset, emptyset, fillset, ismember

POSIX::Termios

new, getattr, getcc, getcflag, getiflag, getispeed, getlflag, getoflag, getospeed, setat  
tr, setcc, setcflag, setiflag, setispeed, setlflag, setoflag, setospeed, Baud rate values,  
Terminal interface values, c\_cc field values, c\_cflag field values, c\_iflag field  
values, c\_lflag field values, c\_oflag field values

## PATHNAME CONSTANTS

Constants

## POSIX CONSTANTS

Constants

## RESOURCE CONSTANTS

Constants

## SYSTEM CONFIGURATION

Constants

## ERRNO

Constants

## FCNTL

Constants

## FLOAT

Constants

## FLOATING-POINT ENVIRONMENT

Constants

## LIMITS

Constants

## LOCALE

Constants

## MATH

Constants

## SIGNAL

Constants

## STAT

Constants, Macros

## STDLIB

Constants

## STDIO

Constants

## TIME

Constants

## UNISTD

Constants

## WAIT

Constants, WNOHANG, WUNTRACED,  
Macros, WIFEXITED, WEXITSTATUS, WIFSIGNALED, WTERMSIG, WIFSTOPPED, WSTOPSIG

## WINSOCK

Constants

# Params::Check - A generic input parsing/checking mechanism.

## SYNOPSIS

## DESCRIPTION

### Template

default, required, strict\_type, defined, no\_override, store, allow

### Functions

**check( \%tmpl, \%args, [\$verbose] );**

Template, Arguments, Verbose

**allow( \$test\_me, \@criteria );**

string, regexp, subroutine, array ref

**last\_error()**

#### **Global Variables**

**\$Params::Check::VERBOSE**

**\$Params::Check::STRICT\_TYPE**

**\$Params::Check::ALLOW\_UNKNOWN**

**\$Params::Check::STRIP\_LEADING\_DASHES**

**\$Params::Check::NO\_DUPLICATES**

**\$Params::Check::PRESERVE\_CASE**

**\$Params::Check::ONLY\_ALLOW\_DEFINED**

**\$Params::Check::SANITY\_CHECK\_TEMPLATE**

**\$Params::Check::WARNINGS\_FATAL**

**\$Params::Check::CALLER\_DEPTH**

#### **Acknowledgements**

#### **BUG REPORTS**

#### **AUTHOR**

#### **COPYRIGHT**

## **Parse::CPAN::Meta - Parse META.yml and META.json CPAN metadata files**

#### **VERSION**

#### **SYNOPSIS**

#### **DESCRIPTION**

#### **METHODS**

**load\_file**

**load\_yaml\_string**

**load\_json\_string**

**load\_string**

**yaml\_backend**

**json\_backend**

**json\_decoder**

#### **FUNCTIONS**

**Load**

**LoadFile**

#### **ENVIRONMENT**

**CPAN\_META\_JSON\_DECODER**

CPAN\_META\_JSON\_BACKEND

PERL\_JSON\_BACKEND

PERL\_YAML\_BACKEND

AUTHORS

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## Perl::OSType - Map Perl operating system names to generic types

VERSION

SYNOPSIS

DESCRIPTION

USAGE

`os_type()`

`is_os_type()`

SEE ALSO

SUPPORT

[Bugs / Feature Requests](#)

[Source Code](#)

AUTHOR

CONTRIBUTORS

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## PerlIO - On demand loader for PerlIO layers and root of PerlIO::\* name space

SYNOPSIS

DESCRIPTION

**Layers**

`:unix`, `:stdio`, `:perlio`, `:crlf`, `:utf8`, `:bytes`, `:raw`, `:pop`, `:win32`

**Custom Layers**

`:encoding`, `:mmap`, `:via`, `:scalar`

**Alternatives to raw**

**Defaults and how to override them**

**Querying the layers of filehandles**

AUTHOR

SEE ALSO

## PerlIO::encoding - encoding layer

SYNOPSIS

DESCRIPTION

SEE ALSO

## PerlIO::mmap - Memory mapped IO

SYNOPSIS

DESCRIPTION

IMPLEMENTATION NOTE

## PerlIO::scalar - in-memory IO, scalar IO

SYNOPSIS

DESCRIPTION

IMPLEMENTATION NOTE

## PerlIO::via - Helper class for PerlIO layers implemented in perl

SYNOPSIS

DESCRIPTION

EXPECTED METHODS

```
$class->PUSHED([$mode,$fh]), $obj->POPPED([$fh]), $obj->UTF8($belowFlag,$fh), $obj->OPEN($path,$mode,$fh), $obj->BINMODE([$fh]), $obj->FDOPEN($fd,$fh), $obj->SYSOPEN($path,$mode,$perm,$fh), $obj->FILENO($fh), $obj->READ($buffer,$len,$fh), $obj->WRITE($buffer,$fh), $obj->FILL($fh), $obj->CLOSE($fh), $obj->SEEK($posn,$whence,$fh), $obj->TELL($fh), $obj->UNREAD($buffer,$fh), $obj->FLUSH($fh), $obj->SETLINEBUF($fh), $obj->CLEARERR($fh), $obj->ERROR($fh), $obj->EOF($fh)
```

EXAMPLES

Example - a Hexadecimal Handle

## PerlIO::via::QuotedPrint - PerlIO layer for quoted-printable strings

SYNOPSIS

VERSION

DESCRIPTION

REQUIRED MODULES

SEE ALSO

ACKNOWLEDGEMENTS

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## Pod::Checker - check pod documents for syntax errors

SYNOPSIS

OPTIONS/ARGUMENTS

podchecker()

`-warnings => val, -quiet => val`

## DESCRIPTION

## DIAGNOSTICS

### Errors

empty `=headn`, `=over` on line *N* without closing `=back`, You forgot a `'=back'` before `'=headN'`, `=over` is the last thing in the document?!, `'=item'` outside of any `'=over'`, `=back` without `=over`, Can't have a 0 in `=over N`, `=over` should be: `'=over'` or `'=over positive_number'`, `=begin TARGET` without matching `=end TARGET`, `=begin` without a target?, `=end TARGET` without matching `=begin`, `'=end'` without a target?, `'=end TARGET'` is invalid, `=end CONTENT` doesn't match `=begin TARGET`, `=for` without a target?, unresolved internal link *NAME*, Unknown directive: *CMD*, Deleting unknown formatting code *SEQ*, Unterminated *SEQ*<> sequence, An *E*<...> surrounding strange content, An empty *E*<>, An empty *L*<>, An empty *X*<>, A non-empty *Z*<>, Spurious text after `=pod / =cut`, `=back` doesn't take any parameters, but you said `=back ARGUMENT`, `=pod` directives shouldn't be over one line long! Ignoring all *N* lines of content, `=cut` found outside a pod block, Invalid `=encoding` syntax: *CONTENT*

### Warnings

nested commands *CMD*<...*CMD*<...>...>, multiple occurrences (*N*) of link target *name*, line containing nothing but whitespace in paragraph, `=item` has no contents, You can't have `=items` (as at line *N*) unless the first thing after the `=over` is an `=item`, Expected `'=item EXPECTED VALUE'`, Expected `'=item '`, Possible `=item` type mismatch: `'x'` found leading a supposed definition `=item`, You have `'=item x'` instead of the expected `'=item N'`, Unknown *E* content in *E*<*CONTENT*>, empty `=over/=back` block, empty section in previous paragraph, Verbatim paragraph in *NAME* section, `=headn` without preceding higher level

### Hyperlinks

ignoring leading/trailing whitespace in link, alternative text/node '%s' contains non-escaped | or /

## RETURN VALUE

## EXAMPLES

## SCRIPTS

## INTERFACE

```
Pod::Checker->new( %options )
```

```
$checker->poderror( @args ), $checker->poderror( {%opts}, @args )
```

```
$checker->num_errors()
```

```
$checker->num_warnings()
```

```
$checker->name()
```

```
$checker->node()
```

```
$checker->idx()
```

```
$checker->hyperlinks()
```

```
line()
```

```
type()
```

```
page()
```

```
node()
```

## AUTHOR

## Pod::Escapes - for resolving Pod *E*<...> sequences

## SYNOPSIS

## DESCRIPTION

## GOODIES

```
e2char($e_content), e2charnum($e_content), $Name2character{name},  
$Name2character_number{name}, $Latin1Code_to_fallback{integer}, $Latin1Char_to_fallback{character},  
$Code2USASCII{integer}
```

## CAVEATS

## SEE ALSO

## REPOSITORY

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

# Pod::Html - module to convert pod files to HTML

## SYNOPSIS

## DESCRIPTION

## FUNCTIONS

### pod2html

backlink, cachedir, css, flush, header, help, htmlmdir, htmlroot, index, infile, outfile, poderrors, podpath,  
podroot, quiet, recurse, title, verbose

### htmlify

### anchorify

## ENVIRONMENT

## AUTHOR

## SEE ALSO

## COPYRIGHT

# Pod::Man - Convert POD data to formatted \*roff input

## SYNOPSIS

## DESCRIPTION

center, date, errors, fixed, fixedbold, fixeditalic, fixedbolditalic, lquote, rquote, name, nourls, quotes,  
release, section, stderr, utf8

## DIAGNOSTICS

roff font should be 1 or 2 chars, not "%s", Invalid errors setting "%s", Invalid quote specification "%s", POD  
document had syntax errors

## ENVIRONMENT

PERL\_CORE, POD\_MAN\_DATE, SOURCE\_DATE\_EPOCH

## BUGS

## CAVEATS

**AUTHOR**

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**SEE ALSO**

## **Pod::ParseLink - Parse an L<> formatting code in POD text**

**SYNOPSIS**

**DESCRIPTION**

**AUTHOR**

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**SEE ALSO**

## **Pod::Perldoc - Look up Perl documentation in Pod format.**

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

**COPYRIGHT AND DISCLAIMERS**

**AUTHOR**

## **Pod::Perldoc::BaseTo - Base for Pod::Perldoc formatters**

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

**COPYRIGHT AND DISCLAIMERS**

**AUTHOR**

## **Pod::Perldoc::GetOptsOO - Customized option parser for Pod::Perldoc**

**SYNOPSIS**

**DESCRIPTION**

Call Pod::Perldoc::GetOptsOO::getopts(\$object, \@ARGV, \$truth), Given -n, if there's a opt\_n\_with, it'll call \$object->opt\_n\_with( ARGUMENT ) (e.g., "-n foo" => \$object->opt\_n\_with('foo'). Ditto "-nfoo"), Otherwise (given -n) if there's an opt\_n, we'll call it \$object->opt\_n(\$truth) (Truth defaults to 1), Otherwise we try calling \$object->handle\_unknown\_option('n') (and we increment the error count by the return value of it), If there's no handle\_unknown\_option, then we just warn, and then increment the error counter

**SEE ALSO**

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**AUTHOR**

## **Pod::Perldoc::ToANSI - render Pod with ANSI color escapes**

**SYNOPSIS**



DESCRIPTION

CAVEAT

SEE ALSO

COPYRIGHT AND DISCLAIMERS

AUTHOR

## **Pod::Perldoc::ToChecker - let Perldoc check Pod for errors**

SYNOPSIS

DESCRIPTION

SEE ALSO

COPYRIGHT AND DISCLAIMERS

AUTHOR

## **Pod::Perldoc::ToMan - let Perldoc render Pod as man pages**

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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AUTHOR

## **Pod::Perldoc::ToNroff - let Perldoc convert Pod to nroff**

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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AUTHOR

## **Pod::Perldoc::ToPod - let Perldoc render Pod as ... Pod!**

SYNOPSIS

DESCRIPTION

SEE ALSO

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AUTHOR

## **Pod::Perldoc::ToRtf - let Perldoc render Pod as RTF**

SYNOPSIS

DESCRIPTION

SEE ALSO

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## **Pod::Perldoc::ToTerm - render Pod with terminal escapes**

SYNOPSIS

DESCRIPTION

PAGER FORMATTING

CAVEAT

SEE ALSO

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## **Pod::Perldoc::ToText - let Perldoc render Pod as plaintext**

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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## **Pod::Perldoc::ToTk - let Perldoc use Tk::Pod to render Pod**

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

## **Pod::Perldoc::ToXml - let Perldoc render Pod as XML**

SYNOPSIS

DESCRIPTION

SEE ALSO

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## **Pod::Simple - framework for parsing Pod**

## SYNOPSIS

## DESCRIPTION

## MAIN METHODS

```
$parser = SomeClass->new();, $parser->output_fh( *OUT );, $parser->output_string( \somestring );, $parser->parse_file( $some_filename );, $parser->parse_file( *INPUT_FH );, $parser->parse_string_document( $all_content );, $parser->parse_lines( ...@Lines..., undef );, $parser->content_seen, SomeClass->filter( $filename );, SomeClass->filter( *INPUT_FH );, SomeClass->filter( \document_content );
```

## SECONDARY METHODS

```
$parser->parse_characters( SOMEVALUE ), $parser->no_whining( SOMEVALUE ), $parser->no_errata_section( SOMEVALUE ), $parser->complain_stderr( SOMEVALUE ), $parser->source_filename, $parser->doc_has_started, $parser->source_dead, $parser->strip_verbatim_indent( SOMEVALUE ), $parser->expand_verbatim_tabs( n )
```

## TERTIARY METHODS

```
$parser->abandon_output_fh(), $parser->abandon_output_string(), $parser->accept_code( @codes ), $parser->accept_codes( @codes ), $parser->accept_directive_as_data( @directives ), $parser->accept_directive_as_processed( @directives ), $parser->accept_directive_as_verbatim( @directives ), $parser->accept_target( @targets ), $parser->accept_target_as_text( @targets ), $parser->accept_targets( @targets ), $parser->accept_targets_as_text( @targets ), $parser->any_errata_seen(), $parser->errata_seen(), $parser->detected_encoding(), $parser->encoding(), $parser->parse_from_file( $source, $to ), $parser->scream( @error_messages ), $parser->unaccept_code( @codes ), $parser->unaccept_codes( @codes ), $parser->unaccept_directive( @directives ), $parser->unaccept_directives( @directives ), $parser->unaccept_target( @targets ), $parser->unaccept_targets( @targets ), $parser->version_report(), $parser->whine( @error_messages )
```

## ENCODING

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::Checker -- check the Pod syntax of a document

## SYNOPSIS

## DESCRIPTION

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::Debug -- put Pod::Simple into trace/debug mode

## SYNOPSIS

## DESCRIPTION

## CAVEATS

## GUTS

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::DumpAsText -- dump Pod-parsing events as text

## SYNOPSIS

## DESCRIPTION

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::DumpAsXML -- turn Pod into XML

## SYNOPSIS

## DESCRIPTION

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::HTML - convert Pod to HTML

## SYNOPSIS

## DESCRIPTION

## CALLING FROM THE COMMAND LINE

## CALLING FROM PERL

Minimal code

More detailed example

## METHODS

html\_css  
html\_javascript  
title\_prefix  
title\_postfix  
html\_header\_before\_title  
top\_anchor  
html\_h\_level  
index  
html\_header\_after\_title  
html\_footer

## SUBCLASSING

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## ACKNOWLEDGEMENTS

## AUTHOR

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

## SYNOPSIS

## DESCRIPTION

### FROM THE COMMAND LINE

## MAIN METHODS

```
$batchconv = Pod::Simple::HTMLBatch->new(, $batchconv->batch_convert( indirs, outdir );, $batchconv->batch_convert( undef , ... );, $batchconv->batch_convert( q{@INC}, ... );, $batchconv->batch_convert( \@dirs , ... );, $batchconv->batch_convert( "somedir" , ... );, $batchconv->batch_convert( 'somedir:someother:also' , ... );, $batchconv->batch_convert( ... , undef );, $batchconv->batch_convert( ... , 'somedir' );
```

## ACCESSOR METHODS

```
$batchconv->verbose( nonnegative_integer );, $batchconv->index( true-or-false );, $batchconv->contents_file( filename );, $batchconv->contents_page_start( HTML_string );, $batchconv->contents_page_end( HTML_string );, $batchconv->add_css( $url );, $batchconv->add_javascript( $url );, $batchconv->css_flurry( true-or-false );, $batchconv->javascript_flurry( true-or-false );, $batchconv->no_contents_links( true-or-false );, $batchconv->html_render_class( classname );, $batchconv->search_class( classname );
```

## NOTES ON CUSTOMIZATION

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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## Pod::Simple::JustPod -- just the Pod, the whole Pod, and nothing but the Pod

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

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## Pod::Simple::LinkSection -- represent "section" attributes of L codes

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

## AUTHOR

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## Pod::Simple::Methody -- turn Pod::Simple events into method calls

### SYNOPSIS

### DESCRIPTION

### METHOD CALLING

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

## AUTHOR

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## Pod::Simple::PullParser -- a pull-parser interface to parsing Pod

### SYNOPSIS

### DESCRIPTION

## METHODS

```
my $token = $parser->get_token, $parser->unget_token( $token ), $parser->unget_token( $token1,
$token2, ... ), $parser->set_source( $filename ), $parser->set_source( $filehandle_object ), $parser-
>set_source( \ $document_source ), $parser->set_source( \ @document_lines ), $parser->parse_file(...),
$parser->parse_string_document(...), $parser->filter(...), $parser->parse_from_file(...), my $title_string =
$parser->get_title, my $title_string = $parser->get_short_title, $author_name = $parser->get_author,
$description_name = $parser->get_description, $version_block = $parser->get_version
```

## NOTE

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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Wheeler [dwheeler@cpan.org](mailto:dwheeler@cpan.org)

# Pod::Simple::PullParserEndToken -- end-tokens from Pod::Simple::PullParser

## SYNOPSIS

## DESCRIPTION

`$token->tagname`, `$token->tagname(somestring)`, `$token->tag(...)`, `$token->is_tag(somestring)` or `$token->is_tagname(somestring)`

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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# Pod::Simple::PullParserStartToken -- start-tokens from Pod::Simple::PullParser

## SYNOPSIS

## DESCRIPTION

`$token->tagname`, `$token->tagname(somestring)`, `$token->tag(...)`, `$token->is_tag(somestring)` or `$token->is_tagname(somestring)`, `$token->attr(attrname)`, `$token->attr(attrname, newvalue)`, `$token->attr_hash`

## SEE ALSO

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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Wheeler [dwheeler@cpan.org](mailto:dwheeler@cpan.org)

## Pod::Simple::PullParserTextToken -- text-tokens from Pod::Simple::PullParser

### SYNOPSIS

### DESCRIPTION

`$token->text`, `$token->text(somestring)`, `$token->text_r()`

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

### AUTHOR

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## Pod::Simple::PullParserToken -- tokens from Pod::Simple::PullParser

### SYNOPSIS

### DESCRIPTION

`$token->type`, `$token->is_start`, `$token->is_text`, `$token->is_end`, `$token->dump`

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

### AUTHOR

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## Pod::Simple::RTF -- format Pod as RTF

### SYNOPSIS

### DESCRIPTION

### FORMAT CONTROL ATTRIBUTES

```
$parser->head1_halfpoint_size( halfpoint_integer );, $parser->head2_halfpoint_size( halfpoint_integer );,
$parser->head3_halfpoint_size( halfpoint_integer );, $parser->head4_halfpoint_size( halfpoint_integer );,
$parser->codeblock_halfpoint_size( halfpoint_integer );, $parser-
>header_halfpoint_size( halfpoint_integer );, $parser->normal_halfpoint_size( halfpoint_integer );, $parser-
>no_proofing_exemptions( true_or_false );, $parser->doc_lang( microsoft_decimal_language_code )
```

### SEE ALSO

### SUPPORT

### COPYRIGHT AND DISCLAIMERS

### AUTHOR

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## Pod::Simple::Search - find POD documents in directory trees



## SYNOPSIS

## DESCRIPTION

## CONSTRUCTOR

## ACCESSORS

```
$search->inc( true-or-false );, $search->verbose( nonnegative-number );, $search->limit_glob( some-glob-string );, $search->callback( \&some_routine );, $search->laborious( true-or-false );, $search->recurse( true-or-false );, $search->shadows( true-or-false );, $search->is_case_insensitive( true-or-false );, $search->limit_re( some-regexp );, $search->dir_prefix( some-string-value );, $search->progress( some-progress-object );, $name2path = $self->name2path;, $path2name = $self->path2name;
```

## MAIN SEARCH METHODS

```
$search->survey( @directories )

        name2path, path2name

$search->simplify_name( $str )

$search->find( $pod )

$search->find( $pod, @search_dirs )

$self->contains_pod( $file )
```

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

Allison Randal [allison@perl.org](mailto:allison@perl.org), Hans Dieter Pearcey [hdp@cpan.org](mailto:hdp@cpan.org), David E. Wheeler [dwheeler@cpan.org](mailto:dwheeler@cpan.org)

# Pod::Simple::SimpleTree -- parse Pod into a simple parse tree

## SYNOPSIS

## DESCRIPTION

## METHODS

## Tree Contents

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

Allison Randal [allison@perl.org](mailto:allison@perl.org), Hans Dieter Pearcey [hdp@cpan.org](mailto:hdp@cpan.org), David E. Wheeler [dwheeler@cpan.org](mailto:dwheeler@cpan.org)

# Pod::Simple::Subclassing -- write a formatter as a Pod::Simple subclass

## SYNOPSIS

## DESCRIPTION

Pod::Simple, Pod::Simple::Methody, Pod::Simple::PullParser, Pod::Simple::SimpleTree

## Events

```
$parser->_handle_element_start( element_name, attr_hashref ), $parser->_handle_element_end( element_name ), $parser->_handle_text( text_string ), events with an element_name of Document, events with an element_name of Para, events with an element_name of B, C, F, or I, events with an element_name of S, events with an element_name of X, events with an element_name of L, events with an element_name of E or Z, events with an element_name of Verbatim, events with an element_name of head1 .. head4, events with an element_name of encoding, events with an element_name of over-bullet, events with an element_name of over-number, events with an element_name of over-text, events with an element_name of over-block, events with an element_name of over-empty, events with an element_name of item-bullet, events with an element_name of item-number, events with an element_name of item-text, events with an element_name of for, events with an element_name of Data
```

## More Pod::Simple Methods

```
$parser->accept_targets( SOMEVALUE ), $parser->accept_targets_as_text( SOMEVALUE ), $parser->accept_codes( Codename,Codename... ), $parser->accept_directive_as_data( directive_name ), $parser->accept_directive_as_verbatim(directive_name ), $parser->accept_directive_as_processed( directive_name ), $parser->nbsp_for_S( BOOLEAN );, $parser->version_report(), $parser->pod_para_count(), $parser->line_count(), $parser->nix_X_codes( SOMEVALUE ), $parser->keep_encoding_directive( SOMEVALUE ), $parser->merge_text( SOMEVALUE ), $parser->code_handler( CODE_REF ), $parser->cut_handler( CODE_REF ), $parser->pod_handler( CODE_REF ), $parser->whiteline_handler( CODE_REF ), $parser->whine(Linenumber, complaint string ), $parser->scream( Linenumber, complaint string ), $parser->source_dead(1), $parser->hide_line_numbers( SOMEVALUE ), $parser->no_whining( SOMEVALUE ), $parser->no_errata_section( SOMEVALUE ), $parser->complain_stderr( SOMEVALUE ), $parser->bare_output( SOMEVALUE ), $parser->preserve_whitespace( SOMEVALUE ), $parser->parse_empty_lists( SOMEVALUE )
```

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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## Pod::Simple::Text -- format Pod as plaintext

## SYNOPSIS

## DESCRIPTION

## SEE ALSO

## SUPPORT

## COPYRIGHT AND DISCLAIMERS

## AUTHOR

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## Pod::Simple::TextContent -- get the text content of Pod

## SYNOPSIS

## DESCRIPTION

**SEE ALSO**

**SUPPORT**

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**AUTHOR**

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## **Pod::Simple::XHTML -- format Pod as validating XHTML**

**SYNOPSIS**

**DESCRIPTION**

Minimal code

**METHODS**

`perldoc_url_prefix`

`perldoc_url_postfix`

`man_url_prefix`

`man_url_postfix`

`title_prefix`, `title_postfix`

`html_css`

`html_javascript`

`html_doctype`

`html_charset`

`html_header_tags`

`html_h_level`

`default_title`

`force_title`

`html_header`, `html_footer`

`index`

`anchor_items`

`backlink`

**SUBCLASSING**

`handle_text`

`handle_code`

`accept_targets_as_html`

`resolve_pod_page_link`

`resolve_man_page_link`

`idify`

`batch_mode_page_object_init`

**SEE ALSO**

**SUPPORT**

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**ACKNOWLEDGEMENTS**

**AUTHOR**

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## **Pod::Simple::XMLOutStream -- turn Pod into XML**

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

**ABOUT EXTENDING POD**

**SEE ALSO**

**SUPPORT**

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**AUTHOR**

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## **Pod::Text - Convert POD data to formatted text**

**SYNOPSIS**

**DESCRIPTION**

`alt`, `code`, `errors`, `indent`, `loose`, `margin`, `houri`ls, `quotes`, `sentence`, `stderr`, `utf8`, `width`

**DIAGNOSTICS**

Bizarre space in item, Item called without tag, Can't open %s for reading: %s, Invalid errors setting "%s", Invalid quote specification "%s", POD document had syntax errors

**BUGS**

**CAVEATS**

**NOTES**

**AUTHOR**

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**SEE ALSO**

## **Pod::Text::Color - Convert POD data to formatted color ASCII text**

**SYNOPSIS**

**DESCRIPTION**

BUGS

AUTHOR

COPYRIGHT AND LICENSE

SEE ALSO

## Pod::Text::Overstrike - Convert POD data to formatted overstrike text

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

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SEE ALSO

## Pod::Text::Termcap - Convert POD data to ASCII text with format escapes

SYNOPSIS

DESCRIPTION

AUTHOR

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SEE ALSO

## Pod::Usage - print a usage message from embedded pod documentation

SYNOPSIS

ARGUMENTS

```
-message string, -msg string, -exitval value, -verbose value, -sections spec, -output handle, -  
input handle, -pathlist string, -noperldoc, -perlcmd, -perldoc path-to-perldoc, -perldocopt string
```

Formatting base class

Pass-through options

DESCRIPTION

Scripts

EXAMPLES

Recommended Use

CAVEATS

AUTHOR

ACKNOWLEDGMENTS

SEE ALSO

## SDBM\_File - Tied access to sdbm files

### SYNOPSIS

### DESCRIPTION

Tie

### EXPORTS

### DIAGNOSTICS

sdbm store returned -1, errno 22, key "..." at ...

### SECURITY WARNING

### BUGS AND WARNINGS

## Safe - Compile and execute code in restricted compartments

### SYNOPSIS

### DESCRIPTION

a new namespace, an operator mask

### WARNING

### METHODS

permit (OP, ...)

permit\_only (OP, ...)

deny (OP, ...)

deny\_only (OP, ...)

trap (OP, ...), untrap (OP, ...)

share (NAME, ...)

share\_from (PACKAGE, ARRAYREF)

varglob (VARNAME)

reval (STRING, STRICT)

rdo (FILENAME)

root (NAMESPACE)

mask (MASK)

wrap\_code\_ref (CODEREF)

wrap\_code\_refs\_within (...)

### RISKS

Memory, CPU, Snooping, Signals, State Changes

### AUTHOR

## Scalar::Util - A selection of general-utility scalar subroutines

### SYNOPSIS

## DESCRIPTION

## FUNCTIONS FOR REFERENCES

**blessed**

**refaddr**

**reftype**

**weaken**

**unweaken**

**isweak**

## OTHER FUNCTIONS

**dualvar**

**isdual**

**isvstring**

**looks\_like\_number**

**openhandle**

**readonly**

**set\_prototype**

**tainted**

## DIAGNOSTICS

Weak references are not implemented in the version of perl, Vstrings are not implemented in the version of perl

## KNOWN BUGS

## SEE ALSO

## COPYRIGHT

# Search::Dict - look - search for key in dictionary file

## SYNOPSIS

## DESCRIPTION

# SelectSaver - save and restore selected file handle

## SYNOPSIS

## DESCRIPTION

# SelfLoader - load functions only on demand

## SYNOPSIS

## DESCRIPTION

The `__DATA__` token

SelfLoader autoloading

Autoloading and package lexicals

SelfLoader and AutoLoader

\_\_DATA\_\_, \_\_END\_\_, and the FOOBAR::DATA filehandle.

Classes and inherited methods.

Multiple packages and fully qualified subroutine names

AUTHOR

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a), b)

## Socket, Socket - networking constants and support functions

SYNOPSIS

DESCRIPTION

CONSTANTS

PF\_INET, PF\_INET6, PF\_UNIX, ...

AF\_INET, AF\_INET6, AF\_UNIX, ...

SOCK\_STREAM, SOCK\_DGRAM, SOCK\_RAW, ...

SOCK\_NONBLOCK. SOCK\_CLOEXEC

SOL\_SOCKET

SO\_ACCEPTCONN, SO\_BROADCAST, SO\_ERROR, ...

IP\_OPTIONS, IP\_TOS, IP\_TTL, ...

IP\_PMTUDISC\_WANT, IP\_PMTUDISC\_DONT, ...

IPTOS\_LOWDELAY, IPTOS\_THROUGHPUT, IPTOS\_RELIABILITY, ...

MSG\_BCAST, MSG\_OOB, MSG\_TRUNC, ...

SHUT\_RD, SHUT\_RDWR, SHUT\_WR

INADDR\_ANY, INADDR\_BROADCAST, INADDR\_LOOPBACK, INADDR\_NONE

IPPROTO\_IP, IPPROTO\_IPV6, IPPROTO\_TCP, ...

TCP\_CORK, TCP\_KEEPAIVE, TCP\_NODELAY, ...

IN6ADDR\_ANY, IN6ADDR\_LOOPBACK

IPV6\_ADD\_MEMBERSHIP, IPV6\_MTU, IPV6\_V6ONLY, ...

STRUCTURE MANIPULATORS

\$family = sockaddr\_family \$sockaddr

\$sockaddr = pack\_sockaddr\_in \$port, \$ip\_address

(\$port, \$ip\_address) = unpack\_sockaddr\_in \$sockaddr

\$sockaddr = sockaddr\_in \$port, \$ip\_address

(\$port, \$ip\_address) = sockaddr\_in \$sockaddr

\$sockaddr = pack\_sockaddr\_in6 \$port, \$ip6\_address, [\$scope\_id, [\$flowinfo]]



**(\$port, \$ip6\_address, \$scope\_id, \$flowinfo) = unpack\_sockaddr\_in6 \$sockaddr**

**\$sockaddr = sockaddr\_in6 \$port, \$ip6\_address, [\$scope\_id, [\$flowinfo]]**

**(\$port, \$ip6\_address, \$scope\_id, \$flowinfo) = sockaddr\_in6 \$sockaddr**

**\$sockaddr = pack\_sockaddr\_un \$path**

**(\$path) = unpack\_sockaddr\_un \$sockaddr**

**\$sockaddr = sockaddr\_un \$path**

**(\$path) = sockaddr\_un \$sockaddr**

**\$ip\_mreq = pack\_ip\_mreq \$multiaddr, \$interface**

**(\$multiaddr, \$interface) = unpack\_ip\_mreq \$ip\_mreq**

**\$ip\_mreq\_source = pack\_ip\_mreq\_source \$multiaddr, \$source, \$interface**

**(\$multiaddr, \$source, \$interface) = unpack\_ip\_mreq\_source \$ip\_mreq**

**\$ipv6\_mreq = pack\_ipv6\_mreq \$multiaddr6, \$ifindex**

**(\$multiaddr6, \$ifindex) = unpack\_ipv6\_mreq \$ipv6\_mreq**

## **FUNCTIONS**

**\$ip\_address = inet\_aton \$string**

**\$string = inet\_ntoa \$ip\_address**

**\$address = inet\_pton \$family, \$string**

**\$string = inet\_ntop \$family, \$address**

**(\$err, @result) = getaddrinfo \$host, \$service, [\$hints]**

flags => INT, family => INT, socktype => INT, protocol => INT, family => INT, socktype => INT, protocol => INT, addr => STRING, canonname => STRING, AI\_PASSIVE, AI\_CANONNAME, AI\_NUMERICHOST

**(\$err, \$hostname, \$servicename) = getnameinfo \$sockaddr, [\$flags, [\$xflags]]**

NI\_NUMERICHOST, NI\_NUMERICSERV, NI\_NAMEREQD, NI\_DGRAM, Nix\_NOHOST, Nix\_NOSERV

## **getaddrinfo() / getnameinfo() ERROR CONSTANTS**

EAI\_AGAIN, EAI\_BADFLAGS, EAI\_FAMILY, EAI\_NODATA, EAI\_NONAME, EAI\_SERVICE

## **EXAMPLES**

**Lookup for connect()**

**Making a human-readable string out of an address**

**Resolving hostnames into IP addresses**

**Accessing socket options**

## **AUTHOR**

# **Storable - persistence for Perl data structures**

## **SYNOPSIS**

## **DESCRIPTION**

## **MEMORY STORE**

## ADVISORY LOCKING

## SPEED

## CANONICAL REPRESENTATION

## CODE REFERENCES

## FORWARD COMPATIBILITY

utf8 data, restricted hashes, huge objects, files from future versions of Storable

## ERROR REPORTING

## WIZARDS ONLY

### Hooks

```
STORABLE_freeze obj, cloning, STORABLE_thaw obj, cloning, serialized,  
.., STORABLE_attach class, cloning, serialized
```

### Predicates

```
Storable::last_op_in_netorder, Storable::is_storing, Storable::is_retrieving
```

### Recursion

### Deep Cloning

## Storable magic

```
$info = Storable::file_magic( $filename  
) , version , version_nv , major , minor , hdrsize , netorder , byteorder , intsize , longsize , ptrsiz  
e , nvsize , file , $info = Storable::read_magic( $buffer ) , $info = Storable::read_magic( $buffer ,  
$must_be_file )
```

## EXAMPLES

## SECURITY WARNING

## WARNING

## REGULAR EXPRESSIONS

## BUGS

64 bit data in perl 5.6.0 and 5.6.1

## CREDITS

## AUTHOR

## SEE ALSO

# Sub::Util - A selection of utility subroutines for subs and CODE references

## SYNOPSIS

## DESCRIPTION

## FUNCTIONS

prototype

set\_prototype

subname

`set_subname`

**AUTHOR**

## Symbol - manipulate Perl symbols and their names

**SYNOPSIS**

**DESCRIPTION**

**BUGS**

## Sys::Hostname - Try every conceivable way to get hostname

**SYNOPSIS**

**DESCRIPTION**

**AUTHOR**

## Sys::Syslog - Perl interface to the UNIX syslog(3) calls

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**EXPORTS**

**FUNCTIONS**

```
openlog($ident, $logopt, $facility), syslog($priority, $message), syslog($priority, $format,
@args), Note, setlogmask($mask_priority), setlogsock(), Note, closelog()
```

**THE RULES OF SYS::SYSLOG**

**EXAMPLES**

**CONSTANTS**

**Facilities**

**Levels**

**DIAGNOSTICS**

```
Invalid argument passed to setlogsock, eventlog passed to setlogsock, but no Win32 API
available, no connection to syslog available, stream passed to setlogsock, but %s is not
writable, stream passed to setlogsock, but could not find any device, tcp passed to setlogsock,
but tcp service unavailable, syslog: expecting argument %s, syslog: invalid level/facility:
%s, syslog: too many levels given: %s, syslog: too many facilities given: %s, syslog: level
must be given, udp passed to setlogsock, but udp service unavailable, unix passed to
setlogsock, but path not available
```

**HISTORY**

**SEE ALSO**

**Other modules**

**Manual Pages**

**RFCs**

**Articles**

Event Log

AUTHORS & ACKNOWLEDGEMENTS

BUGS

SUPPORT

Perl Documentation, MetaCPAN, Search CPAN, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, RT: CPAN's request tracker

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## **TAP::Base - Base class that provides common functionality to TAP::Parser and TAP::Harness**

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

## **TAP::Formatter::Base - Base class for harness output delegates**

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

```
verbosity, verbose, timer, failures, comments, quiet, really_quiet, silent, errors, directives, stdout, color, jobs, show_count
```

## **TAP::Formatter::Color - Run Perl test scripts with color**

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

## **TAP::Formatter::Console - Harness output delegate for default console output**

VERSION

DESCRIPTION

SYNOPSIS

---

`open_test`

## **TAP::Formatter::Console::ParallelSession - Harness output delegate for parallel console output**

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

## **TAP::Formatter::Console::Session - Harness output delegate for default console output**

VERSION

DESCRIPTION

`clear_for_close`

`close_test`

`header`

`result`

## **TAP::Formatter::File - Harness output delegate for file output**

VERSION

DESCRIPTION

SYNOPSIS

`open_test`

## **TAP::Formatter::File::Session - Harness output delegate for file output**

VERSION

DESCRIPTION

METHODS

`result`

`close_test`

## **TAP::Formatter::Session - Abstract base class for harness output delegate**

VERSION

METHODS

Class Methods

`formatter`, `parser`, `name`, `show_count`

# TAP::Harness - Run test scripts with statistics

## VERSION

## DESCRIPTION

## SYNOPSIS

## METHODS

### Class Methods

```
verbosity, timer, failures, comments, show_count, normalize, lib, switches, test_args, color, exec, merge, sources, aggregator_class, version, formatter_class, multiplexer_class, parser_class, scheduler_class, formatter, errors, directives, ignore_exit, jobs, rules, rulesfiles, stdout, trap
```

### Instance Methods

the source name of a test to run, a reference to a [ source name, display name ] array

## CONFIGURING

### Plugins

```
Module::Build
```

```
ExtUtils::MakeMaker
```

```
prove
```

## WRITING PLUGINS

Customize how TAP gets into the parser, Customize how TAP results are output from the parser

## SUBCLASSING

### Methods

"new", "runtests", "summary"

## REPLACING

## SEE ALSO

# TAP::Harness::Beyond, Test::Harness::Beyond - Beyond make test

## Beyond make test

Saved State

Parallel Testing

Non-Perl Tests

Mixing it up

Rolling My Own

Deeper Customisation

Callbacks

Parsing TAP

Getting Support

# TAP::Harness::Env - Parsing harness related environmental variables where appropriate

VERSION

SYNOPSIS

DESCRIPTION

METHODS

create( \%args )

ENVIRONMENTAL VARIABLES

HARNESS\_PERL\_SWITCHES, HARNESS\_VERBOSE, HARNESS\_SUBCLASS, HARNESS\_OPTIONS, j<n>, c, a<file.tgz>, fPackage-With-Dashes, HARNESS\_TIMER, HARNESS\_COLOR, HARNESS\_IGNORE\_EXIT

## TAP::Object - Base class that provides common functionality to all TAP::\* modules

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

## TAP::Parser - Parse TAP output

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

source, tap, exec, sources, callback, switches, test\_args, spool, merge, grammar\_class, result\_factory\_class, iterator\_factory\_class

Instance Methods

INDIVIDUAL RESULTS

Result types

Version, Plan, Pragma, Test, Comment, Bailout, Unknown

Common type methods

plan methods

pragma methods

comment methods

bailout methods

`unknown` **methods**

`test` **methods**

## TOTAL RESULTS

### Individual Results

### Pragmas

### Summary Results

`ignore_exit`

Misplaced plan, No plan, More than one plan, Test numbers out of sequence

## CALLBACKS

`test`, `version`, `plan`, `comment`, `bailout`, `yaml`, `unknown`, `ELSE`, `ALL`, `EOF`

## TAP GRAMMAR

## BACKWARDS COMPATIBILITY

### Differences

TODO plans, 'Missing' tests

## SUBCLASSING

### Parser Components

option 1, option 2

## ACKNOWLEDGMENTS

Michael Schwern, Andy Lester, chromatic, GEOFFR, Shlomi Fish, Torsten Schoenfeld, Jerry Gay, Aristotle, Adam Kennedy, Yves Orton, Adrian Howard, Sean & Lil, Andreas J. Koenig, Florian Ragwitz, Corion, Mark Stosberg, Matt Kraai, David Wheeler, Alex Vandiver, Cosimo Streppone, Ville Skyttä

## AUTHORS

## BUGS

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# TAP::Parser::Aggregator - Aggregate TAP::Parser results

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

### Class Methods

### Instance Methods

### Summary methods

`failed`, `parse_errors`, `passed`, `planned`, `skipped`, `todo`, `todo_passed`, `wait`, `exit`

Failed tests, Parse errors, Bad exit or wait status

## See Also



**TAP::Parser::Grammar - A grammar for the Test Anything Protocol.**

- VERSION
- SYNOPSIS
- DESCRIPTION
- METHODS
  - Class Methods
  - Instance Methods
- TAP GRAMMAR
- SUBCLASSING
- SEE ALSO

**TAP::Parser::Iterator - Base class for TAP source iterators**

- VERSION
- SYNOPSIS
- DESCRIPTION
- METHODS
  - Class Methods
  - Instance Methods
- SUBCLASSING
  - Example
- SEE ALSO

**TAP::Parser::Iterator::Array - Iterator for array-based TAP sources**

- VERSION
- SYNOPSIS
- DESCRIPTION
- METHODS
  - Class Methods
  - Instance Methods
- ATTRIBUTION
- SEE ALSO

**TAP::Parser::Iterator::Process - Iterator for process-based TAP sources**

- VERSION
- SYNOPSIS
- DESCRIPTION

## **METHODS**

Class Methods

Instance Methods

## **ATTRIBUTION**

## **SEE ALSO**

# **TAP::Parser::Iterator::Stream - Iterator for filehandle-based TAP sources**

## **VERSION**

## **SYNOPSIS**

## **DESCRIPTION**

## **METHODS**

Class Methods

Instance Methods

## **ATTRIBUTION**

## **SEE ALSO**

# **TAP::Parser::IteratorFactory - Figures out which SourceHandler objects to use for a given Source**

## **VERSION**

## **SYNOPSIS**

## **DESCRIPTION**

## **METHODS**

Class Methods

Instance Methods

## **SUBCLASSING**

Example

## **AUTHORS**

## **ATTRIBUTION**

## **SEE ALSO**

# **TAP::Parser::Multiplexer - Multiplex multiple TAP::Parsers**

## **VERSION**

## **SYNOPSIS**

## **DESCRIPTION**

## **METHODS**

Class Methods

Instance Methods

See Also

# TAP::Parser::Result - Base class for TAP::Parser output objects

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Boolean methods

`is_plan`, `is_pragma`, `is_test`, `is_comment`, `is_bailout`, `is_version`, `is_unknown`, `is_yaml`

SUBCLASSING

Example

SEE ALSO

# TAP::Parser::Result::Bailout - Bailout result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`

Instance Methods

# TAP::Parser::Result::Comment - Comment result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`

Instance Methods

# TAP::Parser::Result::Plan - Plan result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`, `raw`

Instance Methods

# TAP::Parser::Result::Pragma - TAP pragma token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`, `raw`

Instance Methods

**TAP::Parser::Result::Test - Test result token.**

VERSION

DESCRIPTION

OVERRIDDEN METHODS

Instance Methods

**TAP::Parser::Result::Unknown - Unknown result token.**

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`, `raw`

**TAP::Parser::Result::Version - TAP syntax version token.**

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`, `raw`

Instance Methods

**TAP::Parser::Result::YAML - YAML result token.**

VERSION

DESCRIPTION

OVERRIDDEN METHODS

`as_string`, `raw`

Instance Methods

**TAP::Parser::ResultFactory - Factory for creating TAP::Parser output objects**

SYNOPSIS

VERSION

DESCRIPTION

METHODS

## Class Methods

## SUBCLASSING

### Example

## SEE ALSO

# TAP::Parser::Scheduler - Schedule tests during parallel testing

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

### Class Methods

### Rules data structure

By default, all tests are eligible to be run in parallel. Specifying any of your own rules removes this one, "First match wins". The first rule that matches a test will be the one that applies. Any test which does not match a rule will be run in sequence at the end of the run. The existence of a rule does not imply selecting a test. You must still specify the tests to run. Specifying a rule to allow tests to run in parallel does not make the run in parallel. You still need specify the number of parallel `jobs` in your Harness object

### Instance Methods

# TAP::Parser::Scheduler::Job - A single testing job.

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

### Class Methods

### Instance Methods

### Attributes

# TAP::Parser::Scheduler::Spinner - A no-op job.

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

### Class Methods

### Instance Methods

## SEE ALSO

# TAP::Parser::Source - a TAP source & meta data about it

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

AUTHORS

SEE ALSO

## **TAP::Parser::SourceHandler - Base class for different TAP source handlers**

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

AUTHORS

SEE ALSO

## **TAP::Parser::SourceHandler::Executable - Stream output from an executable TAP source**

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

SEE ALSO

## **TAP::Parser::SourceHandler::File - Stream TAP from a text file.**

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

CONFIGURATION

SUBCLASSING

SEE ALSO

**TAP::Parser::SourceHandler::Handle** - Stream TAP from an IO::Handle or a GLOB.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

SEE ALSO

**TAP::Parser::SourceHandler::Perl** - Stream TAP from a Perl executable

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

SEE ALSO

**TAP::Parser::SourceHandler::RawTAP** - Stream output from raw TAP in a scalar/array ref.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

SEE ALSO

**TAP::Parser::YAMLish::Reader** - Read YAMLish data from iterator

VERSION

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**Class Methods**

**Instance Methods**

**AUTHOR**

**SEE ALSO**

**COPYRIGHT**

**TAP::Parser::YAMLish::Writer - Write YAMLish data**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**METHODS**

**Class Methods**

**Instance Methods**

a reference to a scalar to append YAML to, the handle of an open file, a reference to an array into which YAML will be pushed, a code reference

**AUTHOR**

**SEE ALSO**

**COPYRIGHT**

**Term::ANSIColor - Color screen output using ANSI escape sequences**

**SYNOPSIS**

**DESCRIPTION**

**Supported Colors**

**Function Interface**

color(ATTR[, ATTR ...]), colored(String, ATTR[, ATTR ...]), colored(ATTR-REF, String[, String...]), uncolor(ESCAPE), colorstrip(String[, String ...]), colorvalid(ATTR[, ATTR ...]), coloralias(ALIAS[, ATTR ...])

**Constant Interface**

**The Color Stack**

**Supporting CLICOLOR**

**DIAGNOSTICS**

Bad color mapping %s, Bad escape sequence %s, Bareword "%s" not allowed while "strict subs" in use, Cannot alias standard color %s, Cannot alias standard color %s in %s, Invalid alias name %s, Invalid alias name %s in %s, Invalid attribute name %s, Invalid attribute name %s in %s, Name "%s" used only once: possible typo, No comma allowed after filehandle, No name for escape sequence %s

**ENVIRONMENT**



ANSI\_COLORS\_ALIASES, ANSI\_COLORS\_DISABLED, NO\_COLOR

## COMPATIBILITY

## RESTRICTIONS

## NOTES

## AUTHORS

## COPYRIGHT AND LICENSE

## SEE ALSO

# Term::Cap - Perl termcap interface

## SYNOPSIS

## DESCRIPTION

### METHODS

Tgetent, OSPEED, TERM

Tpad, \$string, \$cnt, \$FH

Tputs, \$cap, \$cnt, \$FH

Tgoto, \$cap, \$col, \$row, \$FH

Trequire

## EXAMPLES

## COPYRIGHT AND LICENSE

## AUTHOR

## SEE ALSO

# Term::Complete - Perl word completion module

## SYNOPSIS

## DESCRIPTION

<tab>, ^D, ^U, <del>, <bs>

## DIAGNOSTICS

## BUGS

## AUTHOR

**Term::ReadLine - Perl interface to various readline packages. If no real package is found, substitutes stubs instead of basic functions.**

## SYNOPSIS

## DESCRIPTION

### Minimal set of supported functions

ReadLine, new, readline, addhistory, IN, OUT, MinLine, findConsole, Attribs, Features

### Additional supported functions

```
tkRunning, event_loop, ornaments, newTTY
```

## EXPORTS

## ENVIRONMENT

# Test - provides a simple framework for writing test scripts

## SYNOPSIS

## DESCRIPTION

## QUICK START GUIDE

### Functions

```
plan(...), tests => number, todo => [1,5,14], onfail => sub { ... }, onfail => \&some_sub
```

`_to_value`

```
ok(...)
```

```
skip(skip_if_true, args...)
```

## TEST TYPES

NORMAL TESTS, SKIPPED TESTS, TODO TESTS

## ONFAIL

## BUGS and CAVEATS

## ENVIRONMENT

## NOTE

## SEE ALSO

## AUTHOR

# Test2 - Framework for writing test tools that all work together.

## DESCRIPTION

### WHAT IS NEW?

Easier to test new testing tools, Better diagnostics capabilities, Event driven, More complete API, Support for output other than TAP, Subtest implementation is more sane, Support for threading/forking

## GETTING STARTED

**Test2**, This describes the namespace layout for the Test2 ecosystem. Not all the namespaces listed here are part of the Test2 distribution, some are implemented in Test2::Suite.

**Test2::Tools::**

**Test2::Plugin::**

**Test2::Bundle::**

**Test2::Require::**

**Test2::Formatter::**

**Test2::Event::**

**Test2::Hub::**

**Test2::IPC::**

**Test2::Util::**

**Test2::API::**

**Test2::**

**SEE ALSO**

**CONTACTING US**

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## Test2::API - Primary interface for writing Test2 based testing tools.

\*\*\*INTERNALS NOTE\*\*\*

**DESCRIPTION**

**SYNOPSIS**

**WRITING A TOOL**

**TESTING YOUR TOOLS**

The event from `ok(1, "pass")`, The plan event for the subtest, The subtest event itself, with the first 2 events nested inside it as children

**OTHER API FUNCTIONS**

**MAIN API EXPORTS**

**context(...)**

`$ctx = context(), $ctx = context(%params), level => $int, wrapped => $int, stack => $stack, hub => $hub, on_init => sub { ... }, on_release => sub { ... }`

**release(\$;\$)**

`release $ctx;, release $ctx, ...;`

**context\_do(&:@)**

**no\_context(&,\$)**

`no_context { ... };;, no_context { ... } $hid;`

**intercept(&)**

**run\_subtest(...)**

`$NAME, \&CODE, $BUFFERED or \%PARAMS, 'buffered' => $bool, 'inherit_trace' => $bool, 'no_fork' => $bool, @ARGS`, Things not effected by this flag, Things that are effected by this flag, Things that are formatter dependant

## OTHER API EXPORTS

### STATUS AND INITIALIZATION STATE

```
$bool = test2_init_done(), $bool = test2_load_done(), test2_set_is_end(), test2_set_is_end($bool),  
$bool = test2_get_is_end(), $stack = test2_stack(), $bool = test2_is_testing_done(), test2_ipc_disable,  
$bool = test2_ipc_disabled, test2_ipc_wait_enable(), test2_ipc_wait_disable(), $bool =  
test2_ipc_wait_enabled(), $bool = test2_no_wait(), test2_no_wait($bool), $fh = test2_stdout(), $fh =  
test2_stderr(), test2_reset_io()
```

### BEHAVIOR HOOKS

```
test2_add_callback_exit(sub { ... }), test2_add_callback_post_load(sub { ... }),  
test2_add_callback_testing_done(sub { ... }), test2_add_callback_context_acquire(sub { ... }),  
test2_add_callback_context_init(sub { ... }), test2_add_callback_context_release(sub { ... }),  
test2_add_callback_pre_subtest(sub { ... }), @list = test2_list_context_acquire_callbacks(), @list =  
test2_list_context_init_callbacks(), @list = test2_list_context_release_callbacks(), @list =  
test2_list_exit_callbacks(), @list = test2_list_post_load_callbacks(), @list =  
test2_list_pre_subtest_callbacks(), test2_add_uuid_via(sub { ... }), $sub = test2_add_uuid_via()
```

### IPC AND CONCURRENCY

```
$bool = test2_has_ipc(), $ipc = test2_ipc(), test2_ipc_add_driver($DRIVER), @drivers =  
test2_ipc_drivers(), $bool = test2_ipc_polling(), test2_ipc_enable_polling(),  
test2_ipc_disable_polling(), test2_ipc_enable_shm(), test2_ipc_set_pending($uniq_val), $pending =  
test2_ipc_get_pending(), $timeout = test2_ipc_get_timeout(), test2_ipc_set_timeout($timeout)
```

### MANAGING FORMATTERS

```
$formatter = test2_formatter, test2_formatter_set($class_or_instance), @formatters =  
test2_formatters(), test2_formatter_add($class_or_instance)
```

## OTHER EXAMPLES

### SEE ALSO

### MAGIC

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

### COPYRIGHT

## Test2::API::Breakage - What breaks at what version

### DESCRIPTION

### FUNCTIONS

```
%mod_ver = upgrade_suggested(), %mod_ver = Test2::API::Breakage->upgrade_suggested(), %mod_ver =  
upgrade_required(), %mod_ver = Test2::API::Breakage->upgrade_required(), %mod_ver =  
known_broken(), %mod_ver = Test2::API::Breakage->known_broken()
```

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::API::Context - Object to represent a testing context.

## DESCRIPTION

## SYNOPSIS

## CRITICAL DETAILS

you MUST always use the context() sub from Test2::API, You MUST always release the context when done with it, You MUST NOT pass context objects around, You MUST NOT store or cache a context for later, You SHOULD obtain your context as soon as possible in a given tool

## METHODS

```
$ctx->done_testing;, $clone = $ctx->snapshot(), $ctx->release(), $ctx->throw($message), $ctx->alert($message), $stack = $ctx->stack(), $hub = $ctx->hub(), $dbg = $ctx->trace(), $ctx->do_in_context(\&code, @args);, $ctx->restore_error_vars(), $! = $ctx->errno(), $? = $ctx->child_error(), $@ = $ctx->eval_error()
```

## EVENT PRODUCTION METHODS

```
$event = $ctx->pass(), $event = $ctx->pass($name), $true = $ctx->pass_and_release(), $true = $ctx->pass_and_release($name), my $event = $ctx->fail(), my $event = $ctx->fail($name), my $event = $ctx->fail($name, @diagnostics), my $false = $ctx->fail_and_release(), my $false = $ctx->fail_and_release($name), my $false = $ctx->fail_and_release($name, @diagnostics), $event = $ctx->ok($bool, $name), $event = $ctx->ok($bool, $name, \@on_fail), $event = $ctx->note($message), $event = $ctx->diag($message), $event = $ctx->plan($max), $event = $ctx->plan(0, 'SKIP', $reason), $event = $ctx->skip($name, $reason);, $event = $ctx->bail($reason), $event = $ctx->send_ev2(%facets), $event = $ctx->build_e2(%facets), $event = $ctx->send_ev2_and_release($Type, %parameters), $event = $ctx->send_event($Type, %parameters), $event = $ctx->build_event($Type, %parameters), $event = $ctx->send_event_and_release($Type, %parameters)
```

## HOOKS

### INIT HOOKS

### RELEASE HOOKS

## THIRD PARTY META-DATA

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>, Kent Fredric <kentnl@cpan.org>

## COPYRIGHT

# Test2::API::Instance - Object used by Test2::API under the hood

## DESCRIPTION

## SYNOPSIS

```
$pid = $obj->pid, $obj->tid, $obj->reset(), $obj->load(), $bool = $obj->loaded, $arrayref = $obj->post_load_callbacks, $obj->add_post_load_callback(sub { ... }), $hashref = $obj->contexts(), $arrayref = $obj->context_acquire_callbacks, $arrayref = $obj->context_init_callbacks, $arrayref = $obj->context_release_callbacks, $arrayref = $obj->pre_subtest_callbacks, $obj-
```

```

>add_context_init_callback(sub { ... }), $obj->add_context_release_callback(sub { ... }), $obj-
>add_pre_subtest_callback(sub { ... }), $obj->set_exit(), $obj->set_ipc_pending($val), $pending = $obj-
>get_ipc_pending(), $timeout = $obj->ipc_timeout, $obj->set_ipc_timeout($timeout), $drivers = $obj-
>ipc_drivers, $obj->add_ipc_driver($DRIVER_CLASS), $bool = $obj->ipc_polling, $obj-
>enable_ipc_polling, $obj->disable_ipc_polling, $bool = $obj->no_wait, $bool = $obj->set_no_wait($bool),
$arrayref = $obj->exit_callbacks, $obj->add_exit_callback(sub { ... }), $bool = $obj->finalized, $ipc = $obj-
>ipc, $obj->ipc_disable, $bool = $obj->ipc_disabled, $stack = $obj->stack, $formatter = $obj->formatter,
$bool = $obj->formatter_set(), $obj->add_formatter($class), $obj->add_formatter($obj), $obj-
>set_add_uuid_via(sub { ... }), $sub = $obj->add_uuid_via()

```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::API::Stack - Object to manage a stack of Test2::Hub instances.

## \*\*\*INTERNALS NOTE\*\*\*

## DESCRIPTION

## SYNOPSIS

## METHODS

```

$stack = Test2::API::Stack->new(), $hub = $stack->new_hub(), $hub = $stack->new_hub(%params), $hub
= $stack->new_hub(%params, class => $class), $hub = $stack->top(), $hub = $stack->peek(), $stack-
>cull, @hubs = $stack->all, $stack->clear, $stack->push($hub), $stack->pop($hub)

```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Event - Base class for events

## DESCRIPTION

## SYNOPSIS

## METHODS

### GENERAL

```

$trace = $e->trace, $bool_or_undef = $e->related($e2), $e->add_amnesty({tag => $TAG, details =>
$DETAILS});, $uuid = $e->uuid, $class = $e->load_facet($name), @classes = $e->FACET_TYPES(),
@classes = Test2::Event->FACET_TYPES()

```

### NEW API

```

$hashref = $e->common_facet_data(), $hashref = $e->facet_data(), $hashref = $e->facets(), @errors
= $e->validate_facet_data(), @errors = $e->validate_facet_data(%params), @errors = $e-
>validate_facet_data(%facets, %params), @errors = Test2::Event->validate_facet_data(%params),

```

```
@errors = Test2::Event->validate_facet_data(\%facets, \%params);, require_facet_class => $BOOL,  
about => {...}, assert => {...}, control => {...}, meta => {...}, parent => {...}, plan => {...}, trace => {...},  
amnesty => [...], ..., errors => [...], ..., info => [...], ...]
```

## LEGACY API

```
$bool = $e->causes_fail, $bool = $e->increments_count, $e->callback($hub), $num = $e->nested,  
$bool = $e->global, $code = $e->terminate, $msg = $e->summary, ($count, $directive, $reason) = $e-  
>sets_plan(), $bool = $e->diagnostics, $bool = $e->no_display, $id = $e->in_subtest, $id = $e-  
>subtest_id
```

## THIRD PARTY META-DATA

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

### COPYRIGHT

## Test2::Event::Bail - Bailout!

### DESCRIPTION

### SYNOPSIS

### METHODS

```
$reason = $e->reason
```

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

### COPYRIGHT

## Test2::Event::Diag - Diag event type

### DESCRIPTION

### SYNOPSIS

### ACCESSORS

```
$diag->message
```

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Encoding - Set the encoding for the output stream**

## **DESCRIPTION**

## **SYNOPSIS**

## **METHODS**

```
$encoding = $e->encoding
```

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Exception - Exception event**

## **DESCRIPTION**

## **SYNOPSIS**

## **METHODS**

```
$reason = $e->error
```

## **CAVEATS**

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Fail - Event for a simple failed assertion**

## **DESCRIPTION**

## **SYNOPSIS**

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

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## Test2::Event::Generic - Generic event type.

### DESCRIPTION

### SYNOPSIS

### METHODS

```
$e->facet_data($data), $data = $e->facet_data, $e->callback($hub), $e->set_callback(sub { ... }), $bool =
$e->causes_fail, $e->set_causes_fail($bool), $bool = $e->diagnostics, $e->set_diagnostics($bool),
$bool_or_undef = $e->global, @bool_or_empty = $e->global, $e->set_global($bool_or_undef), $bool = $e-
>increments_count, $e->set_increments_count($bool), $bool = $e->no_display, $e-
>set_no_display($bool), @plan = $e->sets_plan, $e->set_sets_plan(\@plan), $summary = $e->summary,
$e->set_summary($summary_or_undef), $int_or_undef = $e->terminate, @int_or_empty = $e->terminate,
$e->set_terminate($int_or_undef)
```

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

### COPYRIGHT

## Test2::Event::Note - Note event type

### DESCRIPTION

### SYNOPSIS

### ACCESSORS

\$note->message

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

### AUTHORS

Chad Granum <exodist@cpan.org>

### COPYRIGHT

## Test2::Event::Ok - Ok event type

### DESCRIPTION

### SYNOPSIS

### ACCESSORS

\$rb = \$e->pass, \$name = \$e->name, \$b = \$e->effective\_pass

### SOURCE

### MAINTAINERS

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Pass - Event for a simple passing assertion**

## **DESCRIPTION**

## **SYNOPSIS**

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Plan - The event of a plan**

## **DESCRIPTION**

## **SYNOPSIS**

## **ACCESSORS**

\$num = \$plan->max, \$dir = \$plan->directive, \$reason = \$plan->reason

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

## **COPYRIGHT**

# **Test2::Event::Skip - Skip event type**

## **DESCRIPTION**

## **SYNOPSIS**

## **ACCESSORS**

\$reason = \$e->reason

## **SOURCE**

## **MAINTAINERS**

Chad Granum <exodist@cpan.org>

## **AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::Event::Subtest - Event for subtest types**

**DESCRIPTION**

**ACCESSORS**

`$arrayref = $e->subevents, $bool = $e->buffered`

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::Event::TAP::Version - Event for TAP version.**

**DESCRIPTION**

**SYNOPSIS**

**METHODS**

`$version = $e->version`

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::Event::V2 - Second generation event.**

**DESCRIPTION**

**SYNOPSIS**

**USING A CONTEXT**

**USING THE CONSTRUCTOR**

**METHODS**

`$fd = $e->facet_data(), $about = $e->about(), $trace = $e->trace()`

**MUTATION**

`$e->add_amnesty({...}), $e->add_hub({...}), $e->set_uuid($UUID), $e->set_trace($trace)`

**LEGACY SUPPORT METHODS**

`causes_fail, diagnostics, global, increments_count, no_display, sets_plan, subtest_id, summary, terminate`

### THIRD PARTY META-DATA

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

#### AUTHORS

Chad Granum <exodist@cpan.org>

#### COPYRIGHT

## Test2::Event::Waiting - Tell all procs/threads it is time to be done

#### DESCRIPTION

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

#### AUTHORS

Chad Granum <exodist@cpan.org>

#### COPYRIGHT

## Test2::EventFacet - Base class for all event facets.

#### DESCRIPTION

#### METHODS

```
$key = $facet_class->facet_key(), $bool = $facet_class->is_list(), $clone = $facet->clone(), $clone =  
$facet->clone(%replace)
```

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

#### AUTHORS

Chad Granum <exodist@cpan.org>

#### COPYRIGHT

## Test2::EventFacet::About - Facet with event details.

#### DESCRIPTION

#### FIELDS

```
$string = $about->{details}, $string = $about->details(), $package = $about->{package}, $package =  
$about->package(), $bool = $about->{no_display}, $bool = $about->no_display(), $uuid = $about->{uuid},  
$uuid = $about->uuid(), $uuid = $about->{eid}, $uuid = $about->eid()
```

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Amnesty - Facet for assertion amnesty.

## DESCRIPTION

## NOTES

## FIELDS

```
$string = $amnesty->{details}, $string = $amnesty->details(), $short_string = $amnesty->{tag},  
$short_string = $amnesty->tag(), $bool = $amnesty->{inherited}, $bool = $amnesty->inherited()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Assert - Facet representing an assertion.

## DESCRIPTION

## FIELDS

```
$string = $assert->{details}, $string = $assert->details(), $bool = $assert->{pass}, $bool = $assert->pass(),  
$bool = $assert->{no_debug}, $bool = $assert->no_debug(), $int = $assert->{number}, $int = $assert-  
>number()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Control - Facet for hub actions and behaviors.

## DESCRIPTION

## FIELDS

```
$string = $control->{details}, $string = $control->details(), $bool = $control->{global}, $bool = $control-  
>global(), $exit = $control->{terminate}, $exit = $control->terminate(), $bool = $control->{halt}, $bool =  
$control->halt(), $bool = $control->{has_callback}, $bool = $control->has_callback(), $encoding = $control-  
>{encoding}, $encoding = $control->encoding(), $phase = $control->{phase}, $phase = $control->phase()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Error - Facet for errors that need to be shown.

## DESCRIPTION

## NOTES

## FIELDS

```
$string = $error->{details}, $string = $error->details(), $short_string = $error->{tag}, $short_string = $error->tag(), $bool = $error->{fail}, $bool = $error->fail()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Hub - Facet for the hubs an event passes through.

## DESCRIPTION

## FACET FIELDS

```
$string = $trace->{details}, $string = $trace->details(), $int = $trace->{pid}, $int = $trace->pid(), $int = $trace->{tid}, $int = $trace->tid(), $hid = $trace->{hid}, $hid = $trace->hid(), $huuid = $trace->{huuid}, $huuid = $trace->huuid(), $int = $trace->{nested}, $int = $trace->nested(), $bool = $trace->{buffered}, $bool = $trace->buffered()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Info - Facet for information a developer might care about.

## DESCRIPTION

## NOTES

## FIELDS

```
$string_or_structure = $info->{details}, $string_or_structure = $info->details(), $structure = $info->{table},  
$structure = $info->table(), $short_string = $info->{tag}, $short_string = $info->tag(), $bool = $info->  
{debug}, $bool = $info->debug(), $bool = $info->{important}, $bool = $info->important
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Info::Table - Intermediary representation of a table.

## DESCRIPTION

## SYNOPSIS

## ATTRIBUTES

```
$header_oref = $t->header(), $rows_oref = $t->rows(), $bool = $t->collapse(), $aref = $t->no_collapse(),  
$str = $t->as_string(), $href = $t->as_hash(), %args = $t->info_args()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Meta - Facet for meta-data

## DESCRIPTION

## METHODS AND FIELDS

```
$anything = $meta->{anything}, $anything = $meta->anything()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Parent - Facet for events contains other events

## DESCRIPTION

## FIELDS

```
$string = $parent->{details}, $string = $parent->details(), $hid = $parent->{hid}, $hid = $parent->hid(),  
$arrayref = $parent->{children}, $arrayref = $parent->children(), $bool = $parent->{buffered}, $bool =  
$parent->buffered()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Plan - Facet for setting the plan

## DESCRIPTION

## FIELDS

```
$string = $plan->{details}, $string = $plan->details(), $positive_int = $plan->{count}, $positive_int = $plan->  
count(), $bool = $plan->{skip}, $bool = $plan->skip(), $bool = $plan->{none}, $bool = $plan->none()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Render - Facet that dictates how to render an event.

## DESCRIPTION

## FIELDS

```
$string = $render->[#]->{details}, $string = $render->[#]->details(), $string = $render->[#]->{tag}, $string =  
$render->[#]->tag(), $string = $render->[#]->{facet}, $string = $render->[#]->facet(), $mode = $render->[#]->  
{mode}, $mode = $render->[#]->mode(), calculated, replace
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::EventFacet::Trace - Debug information for events

## DESCRIPTION

## SYNOPSIS

## FACET FIELDS



```
$string = $trace->{details}, $string = $trace->details(), $frame = $trace->{frame}, $frame = $trace->frame(),  
$int = $trace->{pid}, $int = $trace->pid(), $int = $trace->{tid}, $int = $trace->tid(), $id = $trace->{cid}, $id =  
$trace->cid(), $uuid = $trace->{uuid}, $uuid = $trace->uuid()
```

#### DISCOURAGED HUB RELATED FIELDS

```
$hid = $trace->{hid}, $hid = $trace->hid(), $huuid = $trace->{huuid}, $huuid = $trace->huuid(), $int =  
$trace->{nested}, $int = $trace->nested(), $bool = $trace->{buffered}, $bool = $trace->buffered()
```

#### METHODS

```
$trace->set_detail($msg), $msg = $trace->detail, $str = $trace->debug, $trace->alert($MESSAGE), $trace->  
throw($MESSAGE), ($package, $file, $line, $subname) = $trace->call(), $pkg = $trace->package, $file =  
$trace->file, $line = $trace->line, $subname = $trace->subname, $sig = trace->signature
```

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

#### AUTHORS

Chad Granum <exodist@cpan.org>

#### COPYRIGHT

## Test2::Formatter - Namespace for formatters.

#### DESCRIPTION

#### CREATING FORMATTERS

The number of tests that were planned, The number of tests actually seen, The number of tests which failed, A boolean indicating whether or not the test suite passed, A boolean indicating whether or not this call is for a subtest

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

#### AUTHORS

Chad Granum <exodist@cpan.org>

#### COPYRIGHT

## Test2::Formatter::TAP - Standard TAP formatter

#### DESCRIPTION

#### SYNOPSIS

#### METHODS

```
$bool = $tap->no_numbers, $tap->set_no_numbers($bool), $arrayref = $tap->handles, $tap->  
set_handles(\@handles), $encoding = $tap->encoding, $tap->encoding($encoding), $tap->write($e,  
$num)
```

#### SOURCE

#### MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>, Kent Fredric <kentnl@cpan.org>

## COPYRIGHT

# Test2::Hub - The conduit through which all events flow.

## SYNOPSIS

## DESCRIPTION

## COMMON TASKS

### SENDING EVENTS

### ALTERING OR REMOVING EVENTS

### LISTENING FOR EVENTS

### POST-TEST BEHAVIORS

### SETTING THE FORMATTER

## METHODS

```
$hub->send($event), $hub->process($event), $old = $hub->format($formatter), $sub = $hub->listen(sub {  
    ... }, %optional_params), $hub->unlisten($sub), $sub = $hub->filter(sub { ... }, %optional_params), $sub =  
$hub->pre_filter(sub { ... }, %optional_params), $hub->unfilter($sub), $hub->pre_unfilter($sub), $hub->  
follow_op(sub { ... }), $sub = $hub->add_context_acquire(sub { ... });, $hub->  
remove_context_acquire($sub);, $sub = $hub->add_context_init(sub { ... });, $hub->  
remove_context_init($sub);, $sub = $hub->add_context_release(sub { ... });, $hub->  
remove_context_release($sub);, $hub->cull(), $pid = $hub->pid(), $tid = $hub->tid(), $hud = $hub->hid(),  
$uuid = $hub->uuid(), $ipc = $hub->ipc(), $hub->set_no_ending($bool), $bool = $hub->no_ending, $bool =  
$hub->active, $hub->set_active($bool)
```

## STATE METHODS

```
$hub->reset_state(), $num = $hub->count, $num = $hub->failed, $bool = $hub->ended, $bool = $hub->  
is_passing, $hub->is_passing($bool), $hub->plan($plan), $plan = $hub->plan, $bool = $hub->  
check_plan
```

## THIRD PARTY META-DATA

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Hub::Interceptor - Hub used by interceptor to grab results.

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::Hub::Interceptor::Terminator - Exception class used by Test2::Hub::Interceptor**

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::Hub::Subtest - Hub used by subtests**

**DESCRIPTION**

**TOGGLES**

`$bool = $hub->manual_skip_all, $hub->set_manual_skip_all($bool)`

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::IPC - Turn on IPC for threading or forking support.**

**SYNOPSIS**

**DISABLING IT**

**EXPORTS**

`cull()`

**SOURCE**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**AUTHORS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test2::IPC::Driver - Base class for Test2 IPC drivers.**

**SYNOPSIS**

**METHODS**

```
$self->abort($msg), $self->abort_trace($msg)
```

## LOADING DRIVERS

## WRITING DRIVERS

### METHODS SUBCLASSES MUST IMPLEMENT

```
$ipc->is_viable, $ipc->add_hub($hid), $ipc->drop_hub($hid), $ipc->send($hid, $event);, $ipc->send($hid, $event, $global);, @events = $ipc->cull($hid), $ipc->waiting()
```

### METHODS SUBCLASSES MAY IMPLEMENT OR OVERRIDE

```
$ipc->driver_abort($msg)
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::IPC::Driver::Files - Temp dir + Files concurrency model.

## DESCRIPTION

## SYNOPSIS

## ENVIRONMENT VARIABLES

```
T2_KEEP_TEMPDIR=0, T2_TEMPDIR_TEMPLATE='test2-XXXXXX'
```

## SEE ALSO

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Tools::Tiny - Tiny set of tools for unfortunate souls who cannot use Test2::Suite.

## DESCRIPTION

## USE Test2::Suite INSTEAD

## EXPORTS

```
ok($bool, $name), ok($bool, $name, @diag), is($got, $want, $name), is($got, $want, $name, @diag),  
isnt($got, $do_not_want, $name), isnt($got, $do_not_want, $name, @diag), like($got, $regex, $name),  
like($got, $regex, $name, @diag), unlike($got, $regex, $name), unlike($got, $regex, $name, @diag),  
is_deeply($got, $want, $name), is_deeply($got, $want, $name, @diag), diag($msg), note($msg),  
skip_all($reason), todo $reason => sub { ... }, plan($count), done_testing(), $warnings = warnings { ... },  
$exception = exception { ... }, tests $name => sub { ... }, $output = capture { ... }
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Transition - Transition notes when upgrading to Test2

## DESCRIPTION

### THINGS THAT BREAK

**Test::Builder1.5/2 conditionals**

**Replacing the Test::Builder singleton**

**Directly Accessing Hash Elements**

**Subtest indentation**

### DISTRIBUTIONS THAT BREAK OR NEED TO BE UPGRADED

#### WORKS BUT TESTS WILL FAIL

Test::DBIx::Class::Schema, Device::Chip

#### UPGRADE SUGGESTED

Test::Exception, Data::Peek, circular::require, Test::Module::Used, Test::Moose::More, Test::FITesque, Test::Kit, autouse

#### NEED TO UPGRADE

Test::SharedFork, Test::Builder::Clutch, Test::Dist::VersionSync, Test::Modern, Test::UseAllModules, Test::More::Prefix

#### STILL BROKEN

Test::Aggregate, Test::Wrapper, Test::ParallelSubtest, Test::Pretty, Net::BitTorrent, Test::Group, Test::Flatten, Log::Dispatch::Config::TestLog, Test::Able

### MAKE ASSERTIONS -> SEND EVENTS

#### LEGACY

#### TEST2

ok(\$bool, \$name), diag(@messages), note(@messages), subtest(\$name, \$code)

### WRAP EXISTING TOOLS

#### LEGACY

#### TEST2

### USING UTF8

#### LEGACY

#### TEST2

### AUTHORS, CONTRIBUTORS AND REVIEWERS

Chad Granum (EXODIST) <exodist@cpan.org>

## SOURCE

## MAINTAINER

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Util - Tools used by Test2 and friends.

## DESCRIPTION

## EXPORTS

```
($success, $error) = try { ... }, protect { ... }, CAN_FORK, CAN_REALLY_FORK, CAN_THREAD,
USE_THREADS, get_tid, my $file = pkg_to_file($package), $string = ipc_separator(), $string = gen_uid(),
($ok, $err) = do_rename($old_name, $new_name), ($ok, $err) = do_unlink($filename), ($ok, $err) =
try_sig_mask { ... }, SIGINT, SIGALRM, SIGHUP, SIGTERM, SIGUSR1, SIGUSR2
```

## NOTES && CAVEATS

Devel::Cover

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>, Kent Fredric <kentnl@cpan.org>

## COPYRIGHT

# Test2::Util::ExternalMeta - Allow third party tools to safely attach meta-data to your instances.

## DESCRIPTION

## SYNOPSIS

## WHERE IS THE DATA STORED?

## EXPORTS

```
$val = $obj->meta($key), $val = $obj->meta($key, $default), $val = $obj->get_meta($key), $val = $obj-
>delete_meta($key), $obj->set_meta($key, $val)
```

## META-KEY RESTRICTIONS

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Util::Facets2Legacy - Convert facet data to the legacy event API.

## DESCRIPTION

## SYNOPSIS

### AS METHODS

### AS FUNCTIONS

## NOTE ON CYCLES

## EXPORTS

```
$bool = $e->causes_fail(), $bool = causes_fail($f), $bool = $e->diagnostics(), $bool = diagnostics($f),  
$bool = $e->global(), $bool = global($f), $bool = $e->increments_count(), $bool = increments_count($f),  
$bool = $e->no_display(), $bool = no_display($f), ($max, $directive, $reason) = $e->sets_plan(), ($max,  
$directive, $reason) = sets_plan($f), $id = $e->subtest_id(), $id = subtest_id($f), $string = $e->summary(),  
$string = summary($f), $undef_or_int = $e->terminate(), $undef_or_int = terminate($f), $uuid = $e->uuid(),  
$uuid = uuid($f)
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Util::HashBase - Build hash based classes.

## SYNOPSIS

## DESCRIPTION

## THIS IS A BUNDLED COPY OF HASHBASE

## METHODS

### PROVIDED BY HASH BASE

```
$it = $class->new(%PAIRS), $it = $class->new(\%PAIRS), $it = $class->new(\@ORDERED_VALUES)
```

### HOOKS

```
$self->init()
```

## ACCESSORS

### READ/WRITE

```
foo(), set_foo(), FOO()
```

### READ ONLY

```
set_foo()
```

### DEPRECATED SETTER

```
set_foo()
```

### NO SETTER

### NO READER

### CONSTANT ONLY

## SUBCLASSING

## GETTING A LIST OF ATTRIBUTES FOR A CLASS

```
@list = Test2::Util::HashBase::attr_list($class), @list = $class->Test2::Util::HashBase::attr_list()
```

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test2::Util::Trace - Legacy wrapper for Test2::EventFacet::Trace.

## DESCRIPTION

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test::Builder - Backend for building test libraries

## SYNOPSIS

## DESCRIPTION

### Construction

new, create, subtest, name, reset

### Setting up tests

plan, expected\_tests, no\_plan, done\_testing, has\_plan, skip\_all, exported\_to

### Running tests

ok, is\_eq, is\_num, isnt\_eq, isnt\_num, like, unlike, cmp\_ok

### Other Testing Methods

BAIL\_OUT, skip, todo\_skip, skip\_rest

### Test building utility methods

maybe\_regex, is\_fh

## Test style

level, use\_numbers, no\_diag, no\_ending, no\_header

## Output

diag, note, explain, output, failure\_output, todo\_output, reset\_outputs, carp, croak



## Test Status and Info

`no_log_results, current_test, is_passing, summary, details, todo, find_TODO, in_todo, todo_start, todo_end, caller`

## EXIT CODES

## THREADS

## MEMORY

## EXAMPLES

## SEE ALSO

### INTERNALS

### LEGACY

### EXTERNAL

## AUTHORS

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test::Builder::Formatter - Test::Builder subclass of Test2::Formatter::TAP

## DESCRIPTION

## SYNOPSIS

## SOURCE

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## AUTHORS

Chad Granum <exodist@cpan.org>

## COPYRIGHT

# Test::Builder::IO::Scalar - A copy of IO::Scalar for Test::Builder

## DESCRIPTION

## COPYRIGHT and LICENSE

### Construction

`new [ARGS...]`

`open [SCALARREF]`

`opened`

`close`

### Input and output

`flush`

getc  
getline  
getlines  
print ARGS..  
read BUF, NBYTES, [OFFSET]  
write BUF, NBYTES, [OFFSET]  
sysread BUF, LEN, [OFFSET]  
syswrite BUF, NBYTES, [OFFSET]

### **Seeking/telling and other attributes**

autoflush  
binmode  
clearerr  
eof  
seek OFFSET, WHENCE  
sysseek OFFSET, WHENCE  
tell

use\_RS [YESNO]

setpos POS  
getpos  
sref

### **WARNINGS**

### **VERSION**

### **AUTHORS**

**Primary Maintainer**

**Principal author**

**Other contributors**

### **SEE ALSO**

## **Test::Builder::Module - Base class for test modules**

### **SYNOPSIS**

### **DESCRIPTION**

**Importing**

**Builder**

### **SEE ALSO**

## **Test::Builder::Tester - test testsuites that have been built with Test::Builder**

### **SYNOPSIS**

### **DESCRIPTION**

### **Functions**

test\_out, test\_err

test\_fail

test\_diag

test\_test, title (synonym 'name', 'label'), skip\_out, skip\_err

line\_num

color

### **BUGS**

### **AUTHOR**

### **MAINTAINERS**

Chad Granum <exodist@cpan.org>

### **NOTES**

### **SEE ALSO**

## **Test::Builder::Tester::Color - turn on colour in Test::Builder::Tester**

### **SYNOPSIS**

### **DESCRIPTION**

### **AUTHOR**

### **BUGS**

### **SEE ALSO**

## **Test::Builder::TodoDiag - Test::Builder subclass of Test2::Event::Diag**

### **DESCRIPTION**

### **SYNOPSIS**

### **SOURCE**

### **MAINTAINERS**

Chad Granum <exodist@cpan.org>

### **AUTHORS**

Chad Granum <exodist@cpan.org>

### **COPYRIGHT**

## **Test::Harness - Run Perl standard test scripts with statistics**

**VERSION**

**SYNOPSIS**

**DESCRIPTION**

**FUNCTIONS**

`runtests( @test_files )`

`execute_tests( tests => \@test_files, out => \'FH )`

**EXPORT**

**ENVIRONMENT VARIABLES THAT TAP::HARNESS::COMPATIBLE SETS**

`HARNESS_ACTIVE` , `HARNESS_VERSION`

**ENVIRONMENT VARIABLES THAT AFFECT TEST::HARNESS**

`HARNESS_PERL_SWITCHES` , `HARNESS_TIMER` , `HARNESS_VERBOSE` , `HARNESS_OPTIONS` , `j<n>` , `c` , `a<file.tgz>` , `f`  
`Package-With-`  
`Dashes` , `HARNESS_SUBCLASS` , `HARNESS_SUMMARY_COLOR_SUCCESS` , `HARNESS_SUMMARY_COLOR_FAIL`

**Taint Mode**

**SEE ALSO**

**BUGS**

**AUTHORS**

**LICENCE AND COPYRIGHT**

## Test::More - yet another framework for writing test scripts

**SYNOPSIS**

**DESCRIPTION**

I love it when a plan comes together

`done_testing`

**Test names**

I'm ok, you're not ok.

`ok`

`is`, `isnt`

`like`

`unlike`

`cmp_ok`

`can_ok`

`isa_ok`

`new_ok`

`subtest`

`pass`, `fail`

**Module tests**

`require_ok`

`use_ok`

## Complex data structures

`is_deeply`

## Diagnostics

`diag`, `note`

`explain`

## Conditional tests

**SKIP: BLOCK**

**TODO: BLOCK**, `todo_skip`

When do I use SKIP vs. TODO?

## Test control

**BAIL\_OUT**

## Discouraged comparison functions

`eq_array`

`eq_hash`

`eq_set`

## Extending and Embedding Test::More

`builder`

## EXIT CODES

## COMPATIBILITY

`subtests`, `done_testing()`, `cmp_ok()`, `new_ok()` `note()` and `explain()`

## CAVEATS and NOTES

utf8 / "Wide character in print", Overloaded objects, Threads

## HISTORY

## SEE ALSO

**ALTERNATIVES**

**ADDITIONAL LIBRARIES**

**OTHER COMPONENTS**

**BUNDLES**

## AUTHORS

## MAINTAINERS

Chad Granum <exodist@cpan.org>

## BUGS

## SOURCE

**COPYRIGHT**

## **Test::Simple - Basic utilities for writing tests.**

**SYNOPSIS**

**DESCRIPTION**

ok

**EXAMPLE**

**CAVEATS**

**NOTES**

**HISTORY**

**SEE ALSO**

[Test::More](#)

**AUTHORS**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

**COPYRIGHT**

## **Test::Tester - Ease testing test modules built with Test::Builder**

**SYNOPSIS**

**DESCRIPTION**

**HOW TO USE (THE EASY WAY)**

**HOW TO USE (THE HARD WAY)**

**TEST RESULTS**

ok, actual\_ok, name, type, reason, diag, depth

**SPACES AND TABS**

**COLOUR**

**EXPORTED FUNCTIONS**

**HOW IT WORKS**

**CAVEATS**

**SEE ALSO**

**AUTHOR**

**LICENSE**

## **Test::Tester::Capture - Help testing test modules built with Test::Builder**

**DESCRIPTION**

**AUTHOR**

**LICENSE**

## **Test::Tester::CaptureRunner - Help testing test modules built with Test::Builder**

**DESCRIPTION**

**AUTHOR**

**LICENSE**

## **Test::Tutorial - A tutorial about writing really basic tests**

**DESCRIPTION**

Nuts and bolts of testing.

Where to start?

Names

Test the manual

Sometimes the tests are wrong

Testing lots of values

Informative names

Skipping tests

Todo tests

Testing with taint mode.

**FOOTNOTES**

**AUTHORS**

**MAINTAINERS**

Chad Granum <exodist@cpan.org>

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## **Test::use::ok - Alternative to Test::More::use\_ok**

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

**MAINTAINER**

Chad Granum <exodist@cpan.org>

**CC0 1.0 Universal**

## **Text::Abbrev - abbrev - create an abbreviation table from a list**

**SYNOPSIS**

**DESCRIPTION**

## EXAMPLE

# Text::Balanced - Extract delimited text sequences from strings.

## SYNOPSIS

## DESCRIPTION

### General behaviour in list contexts

```
[0], [1], [2]
```

### General behaviour in scalar and void contexts

### A note about prefixes

```
extract_delimited
```

```
extract_bracketed
```

```
extract_variable
```

```
[0], [1], [2]
```

```
extract_tagged
```

```
reject => $listref, ignore => $listref, fail => $str, [0], [1], [2], [3], [4], [5]
```

```
gen_extract_tagged
```

```
extract_quotelike
```

```
[0], [1], [2], [3], [4], [5], [6], [7], [8], [9], [10]
```

```
extract_quotelike and "here documents"
```

```
[0], [1], [2], [3], [4], [5], [6], [7..10]
```

```
extract_codeblock
```

```
extract_multiple
```

```
gen_delimited_pat
```

```
delimited_pat
```

## DIAGNOSTICS

```
C<Did not find a suitable bracket: "%s">, C<Did not find prefix: /%s/>,
C<Did not find opening bracket after prefix: "%s">, C<No quotelike
operator found after prefix: "%s">, C<Unmatched closing bracket: "%c">,
C<Unmatched opening bracket(s): "%s">, C<Unmatched embedded quote (%s)>,
C<Did not find closing delimiter to match '%s'>, C<Mismatched closing
bracket: expected "%c" but found "%s">, C<No block delimiter found after
quotelike "%s">, C<Did not find leading dereferencer>, C<Bad identifier
after dereferencer>, C<Did not find expected opening bracket at %s>,
C<Improperly nested codeblock at %s>, C<Missing second block for quotelike
"%s">, C<No match found for opening bracket>, C<Did not find opening tag:
/%s/>, C<Unable to construct closing tag to match: /%s/>, C<Found invalid
nested tag: %s>, C<Found unbalanced nested tag: %s>, C<Did not find closing
tag>
```

## AUTHOR



**BUGS AND IRRITATIONS**

**COPYRIGHT**

## **Text::ParseWords - parse text into an array of tokens or array of arrays**

**SYNOPSIS**

**DESCRIPTION**

**EXAMPLES**

0, 1, 2, 3, 4, 5

**SEE ALSO**

**AUTHORS**

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## **Text::Tabs - expand and unexpand tabs like unix expand(1) and unexpand(1)**

**SYNOPSIS**

**DESCRIPTION**

**EXPORTS**

expand, unexpand, \$tabstop

**EXAMPLE**

**SUBVERSION**

**BUGS**

**LICENSE**

## **Text::Wrap - line wrapping to form simple paragraphs**

**SYNOPSIS**

**DESCRIPTION**

**OVERRIDES**

**EXAMPLES**

**SUBVERSION**

**SEE ALSO**

**AUTHOR**

**LICENSE**

## **Thread - Manipulate threads in Perl (for old code only)**

**DEPRECATED**

**HISTORY**

**SYNOPSIS**

## DESCRIPTION

## FUNCTIONS

`$thread = Thread->new(\&start_sub), $thread = Thread->new(\&start_sub, LIST), lock VARIABLE, async BLOCK;, Thread->self, Thread->list, cond_wait VARIABLE, cond_signal VARIABLE, cond_broadcast VARIABLE, yield`

## METHODS

`join, detach, equal, tid, done`

## DEFUNCT

`lock(\&sub), eval, flags`

## SEE ALSO

# Thread::Queue - Thread-safe queues

## VERSION

## SYNOPSIS

## DESCRIPTION

Ordinary scalars, Array refs, Hash refs, Scalar refs, Objects based on the above

## QUEUE CREATION

`->new(), ->new(LIST)`

## BASIC METHODS

`->enqueue(LIST), ->dequeue(), ->dequeue(COUNT), ->dequeue_nb(), ->dequeue_nb(COUNT), ->dequeue_timed(TIMEOUT), ->dequeue_timed(TIMEOUT, COUNT), ->pending(), ->limit, ->end()`

## ADVANCED METHODS

`->peek(), ->peek(INDEX), ->insert(INDEX, LIST), ->extract(), ->extract(INDEX), ->extract(INDEX, COUNT)`

## NOTES

## LIMITATIONS

## SEE ALSO

## MAINTAINER

## LICENSE

# Thread::Semaphore - Thread-safe semaphores

## VERSION

## SYNOPSIS

## DESCRIPTION

## METHODS

`->new(), ->new(NUMBER), ->down(), ->down(NUMBER), ->down_nb(), ->down_nb(NUMBER), ->down_force(), ->down_force(NUMBER), ->down_timed(TIMEOUT), ->down_timed(TIMEOUT, NUMBER), ->up(), ->up(NUMBER)`

## NOTES

SEE ALSO

MAINTAINER

LICENSE

## Tie::Array - base class for tied arrays

SYNOPSIS

DESCRIPTION

TIEARRAY classname, LIST, STORE this, index, value, FETCH this, index, FETCHSIZE this, STORESIZE this, count, EXTEND this, count, EXISTS this, key, DELETE this, key, CLEAR this, DESTROY this, PUSH this, LIST, POP this, SHIFT this, UNSHIFT this, LIST, SPLICE this, offset, length, LIST

CAVEATS

AUTHOR

## Tie::File - Access the lines of a disk file via a Perl array

SYNOPSIS

DESCRIPTION

recsep

autochomp

mode

memory

dw\_size

**Option Format**

**Public Methods**

flock

autochomp

defer, flush, discard, **and** autodefer

offset

**Tying to an already-opened filehandle**

**Deferred Writing**

**Autodeferring**

**CONCURRENT ACCESS TO FILES**

**CAVEATS**

**SUBCLASSING**

**WHAT ABOUT `DB_File`?**

**AUTHOR**

**LICENSE**

**WARRANTY**

THANKS

TODO

## Tie::Handle - base class definitions for tied handles

### SYNOPSIS

### DESCRIPTION

TIEHANDLE classname, LIST, WRITE this, scalar, length, offset, PRINT this, LIST, PRINTF this, format, LIST, READ this, scalar, length, offset, READLINE this, GETC this, CLOSE this, OPEN this, filename, BINMODE this, EOF this, TELL this, SEEK this, offset, whence, DESTROY this

### MORE INFORMATION

### COMPATIBILITY

## Tie::Hash, Tie::StdHash, Tie::ExtraHash - base class definitions for tied hashes

### SYNOPSIS

### DESCRIPTION

TIEHASH classname, LIST, STORE this, key, value, FETCH this, key, FIRSTKEY this, NEXTKEY this, lastkey, EXISTS this, key, DELETE this, key, CLEAR this, SCALAR this

Inheriting from **Tie::StdHash**

Inheriting from **Tie::ExtraHash**

SCALAR, UNTIE and DESTROY

### MORE INFORMATION

## Tie::Hash::NamedCapture - Named regexp capture buffers

### SYNOPSIS

### DESCRIPTION

### SEE ALSO

## Tie::Memoize - add data to hash when needed

### SYNOPSIS

### DESCRIPTION

Inheriting from **Tie::Memoize**

### EXAMPLE

### BUGS

### AUTHOR

## Tie::RefHash - use references as hash keys

### SYNOPSIS

DESCRIPTION

EXAMPLE

THREAD SUPPORT

STORABLE SUPPORT

RELIC SUPPORT

LICENSE

MAINTAINER

AUTHOR

SEE ALSO

## **Tie::Scalar, Tie::StdScalar - base class definitions for tied scalars**

SYNOPSIS

DESCRIPTION

TIESCALAR classname, LIST, FETCH this, STORE this, value, DESTROY this

**Tie::Scalar vs Tie::StdScalar**

MORE INFORMATION

## **Tie::StdHandle - base class definitions for tied handles**

SYNOPSIS

DESCRIPTION

## **Tie::SubstrHash - Fixed-table-size, fixed-key-length hashing**

SYNOPSIS

DESCRIPTION

CAVEATS

## **Time::HiRes - High resolution alarm, sleep, gettimeofday, interval timers**

SYNOPSIS

DESCRIPTION

gettimeofday (), usleep ( \$useconds ), nanosleep ( \$nanoseconds ), ualarm ( \$useconds [, \$interval\_useconds ] ), tv\_interval, time (), sleep ( \$floating\_seconds ), alarm ( \$floating\_seconds [, \$interval\_floating\_seconds ] ), setitimer ( \$which, \$floating\_seconds [, \$interval\_floating\_seconds ] ), getitimer ( \$which ), clock\_gettime ( \$which ), clock\_getres ( \$which ), clock\_nanosleep ( \$which, \$nanoseconds, \$flags = 0 ), clock(), stat, stat FH, stat EXPR, lstat, lstat FH, lstat EXPR, utime LIST

EXAMPLES

C API

DIAGNOSTICS

useconds or interval more than ...

negative time not invented yet  
internal error: useconds < 0 (unsigned ... signed ...)  
useconds or uinterval equal to or more than 1000000  
unimplemented in this platform

CAVEATS

SEE ALSO

AUTHORS

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## Time::Local - Efficiently compute time from local and GMT time

VERSION

SYNOPSIS

DESCRIPTION

FUNCTIONS

`timelocal_modern()` and `timegm_modern()`  
`timelocal()` and `timegm()`  
`timelocal_nocheck()` and `timegm_nocheck()`

Year Value Interpretation

Limits of `time_t`

Ambiguous Local Times (DST)

Non-Existent Local Times (DST)

Negative Epoch Values

IMPLEMENTATION

AUTHORS EMERITUS

BUGS

SOURCE

AUTHOR

CONTRIBUTORS

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## Time::Piece - Object Oriented time objects

SYNOPSIS

DESCRIPTION

USAGE

Local Locales

Date Calculations

Truncation

Date Comparisons

Date Parsing

YYYY-MM-DDThh:mm:ss

Week Number

Global Overriding

## CAVEATS

Setting \$ENV{TZ} in Threads on Win32

Use of epoch seconds

## AUTHOR

## COPYRIGHT AND LICENSE

## SEE ALSO

## BUGS

# Time::Seconds - a simple API to convert seconds to other date values

## SYNOPSIS

## DESCRIPTION

## METHODS

## AUTHOR

## COPYRIGHT AND LICENSE

## Bugs

# Time::gmtime - by-name interface to Perl's built-in gmtime() function

## SYNOPSIS

## DESCRIPTION

## NOTE

## AUTHOR

# Time::localtime - by-name interface to Perl's built-in localtime() function

## SYNOPSIS

## DESCRIPTION

## NOTE

## AUTHOR

# Time::tm - internal object used by Time::gmtime and Time::localtime

## SYNOPSIS

## DESCRIPTION

**AUTHOR**

## UNIVERSAL - base class for ALL classes (blessed references)

**SYNOPSIS**

**DESCRIPTION**

```
$obj->isa( TYPE ), CLASS->isa( TYPE ), eval { VAL->isa( TYPE )
}, TYPE, $obj, CLASS, VAL, $obj->DOES( ROLE ), CLASS->DOES( ROLE ), $obj->can( METHOD
), CLASS->can( METHOD ), eval { VAL->can( METHOD ) }, VERSION ( [ REQUIRE ] )
```

**WARNINGS**

**EXPORTS**

## Unicode::Collate - Unicode Collation Algorithm

**SYNOPSIS**

**DESCRIPTION**

### Constructor and Tailoring

UCA\_Version, alternate, backwards, entry, hangul\_terminator, highestFFFF, identical, ignoreChar, ignoreName, ignore\_level2, katakana\_before\_hiragana, level, long\_contraction, minimalFFFE, normalization, overrideCJK, overrideHangul, overrideOut, preprocess, rearrange, rewrite, suppress, table, undefChar, undefName, upper\_before\_lower, variable

### Methods for Collation

```
@sorted = $Collator->sort(@not_sorted), $result = $Collator->cmp($a, $b), $result =
$Collator->eq($a, $b), $result = $Collator->ne($a, $b), $result = $Collator->lt($a,
$b), $result = $Collator->le($a, $b), $result = $Collator->gt($a, $b), $result =
$Collator->ge($a, $b), $sortKey = $Collator->getSortKey($string), $sortKeyForm = $Collator-
>viewSortKey($string)
```

### Methods for Searching

```
$position = $Collator->index($string, $substring[, $position]), ($position, $length) =
$Collator->index($string, $substring[, $position]), $match_ref = $Collator->match($string,
$substring), ($match) = $Collator->match($string, $substring), @match = $Collator-
>gmatch($string, $substring), $count = $Collator->subst($string, $substring,
$replacement), $count = $Collator->gsubst($string, $substring, $replacement)
```

### Other Methods

```
%old_tailoring = $Collator->change(%new_tailoring), $modified_collator = $Collator-
>change(%new_tailoring), $version = $Collator-
>version(), UCA_Version(), Base_Unicode_Version()
```

**EXPORT**

**INSTALL**

**CAVEATS**

Normalization, Conformance Test

**AUTHOR, COPYRIGHT AND LICENSE**

**SEE ALSO**

Unicode Collation Algorithm - UTS #10, The Default Unicode Collation Element Table (DUCET), The conformance test for the UCA, Hangul Syllable Type, Unicode Normalization Forms - UAX #15, Unicode Locale Data Markup Language (LDML) - UTS #35



# Unicode::Collate::CJK::Big5 - weighting CJK Unified Ideographs for Unicode::Collate

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

# Unicode::Collate::CJK::GB2312 - weighting CJK Unified Ideographs for Unicode::Collate

**SYNOPSIS**

**DESCRIPTION**

**CAVEAT**

**SEE ALSO**

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

# Unicode::Collate::CJK::JISX0208 - weighting JIS KANJI for Unicode::Collate

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

[Unicode::Collate](#), [Unicode::Collate::Locale](#)

# Unicode::Collate::CJK::Korean - weighting CJK Unified Ideographs for Unicode::Collate

**SYNOPSIS**

**DESCRIPTION**

**SEE ALSO**

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

# Unicode::Collate::CJK::Pinyin - weighting CJK Unified Ideographs for Unicode::Collate

**SYNOPSIS**

**DESCRIPTION**

**CAVEAT**

**SEE ALSO**

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

## Unicode::Collate::CJK::Stroke - weighting CJK Unified Ideographs for Unicode::Collate

### SYNOPSIS

### DESCRIPTION

### CAVEAT

### SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

## Unicode::Collate::CJK::Zhuyin - weighting CJK Unified Ideographs for Unicode::Collate

### SYNOPSIS

### DESCRIPTION

### CAVEAT

### SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language (LDML) - UTS #35, [Unicode::Collate](#), [Unicode::Collate::Locale](#)

## Unicode::Collate::Locale - Linguistic tailoring for DUCET via Unicode::Collate

### SYNOPSIS

### DESCRIPTION

#### Constructor

#### Methods

```
$Collator->getlocale, $Collator->locale_version
```

#### A list of tailorable locales

#### A list of variant codes and their aliases

### INSTALL

### CAVEAT

Tailoring is not maximum, Collation reordering is not supported

#### Reference

### AUTHOR

### SEE ALSO

Unicode Collation Algorithm - UTS #10, The Default Unicode Collation Element Table (DUCET), Unicode Locale Data Markup Language (LDML) - UTS #35, CLDR - Unicode Common Locale Data Repository, [Unicode::Collate](#), [Unicode::Normalize](#)

# Unicode::Normalize - Unicode Normalization Forms

## SYNOPSIS

## DESCRIPTION

### Normalization Forms

```
$NFD_string = NFD($string), $NFC_string = NFC($string), $NFKD_string =
NFKD($string), $NFKC_string = NFKC($string), $FCD_string = FCD($string), $FCC_string =
FCC($string), $normalized_string = normalize($form_name, $string)
```

### Decomposition and Composition

```
$decomposed_string = decompose($string [, $useCompatMapping]), $reordered_string =
reorder($string), $composed_string = compose($string), ($processed, $unprocessed) =
splitOnLastStarter($normalized), $processed = normalize_partial($form,
$unprocessed), $processed = NFD_partial($unprocessed), $processed =
NFC_partial($unprocessed), $processed = NFKD_partial($unprocessed), $processed =
NFKC_partial($unprocessed)
```

### Quick Check

```
$result = checkNFD($string), $result = checkNFC($string), $result =
checkNFKD($string), $result = checkNFKC($string), $result = checkFCD($string), $result =
checkFCC($string), $result = check($form_name, $string)
```

### Character Data

```
$canonical_decomposition = getCanon($code_point), $compatibility_decomposition =
getCompat($code_point), $code_point_composite = getComposite($code_point_here,
$code_point_next), $combining_class =
getCombinClass($code_point), $may_be_composed_with_prev_char =
isComp2nd($code_point), $is_exclusion = isExclusion($code_point), $is_singleton =
isSingleton($code_point), $is_non_starter_decomposition =
isNonStDecomp($code_point), $is_Full_Composition_Exclusion =
isComp_Ex($code_point), $NFD_is_NO = isNFD_NO($code_point), $NFC_is_NO =
isNFC_NO($code_point), $NFC_is_MAYBE = isNFC_MAYBE($code_point), $NFKD_is_NO =
isNFKD_NO($code_point), $NFKC_is_NO = isNFKC_NO($code_point), $NFKC_is_MAYBE =
isNFKC_MAYBE($code_point)
```

## EXPORT

## CAVEATS

Perl's version vs. Unicode version, Correction of decomposition mapping, Revised definition of canonical composition

## AUTHOR

## LICENSE

## SEE ALSO

<http://www.unicode.org/reports/tr15/>, <http://www.unicode.org/Public/UNIDATA/CompositionExclusions.txt>, <http://29.html>, <http://www.unicode.org/notes/tn5/>

# Unicode::UCD - Unicode character database

## SYNOPSIS

## DESCRIPTION

code point argument

**charinfo()**

code, name, category, combining, bidi, decomposition, decimal, digit, numeric, mirrored, unicode10,

## **charprop()**

Block, Decomposition\_Mapping, Name\_Alias, Numeric\_Value, Script\_Extensions

## **charprops\_all()**

## **charblock()**

## **charscript()**

## **charblocks()**

## **charscripts()**

## **charinrange()**

## **general\_categories()**

## **bidi\_types()**

## **compexcl()**

## **casefold()**

code, full, simple, mapping, status, \* If you use this `I` mapping, \* If you exclude this `I` mapping, **turkic**

## **all\_casefolds()**

## **casespec()**

code, lower, title, upper, condition

## **namedseq()**

## **num()**

## **prop\_aliases()**

## **prop\_values()**

## **prop\_value\_aliases()**

## **prop\_invlist()**

## **prop\_invmap()**

`s`, `s1`, `correction`, `control`, `alternate`, `figment`, `abbreviation`, `a`, `al`, `ae`, `ale`, `ar`, `n`, `ad`

## **search\_invlist()**

Unicode::UCD::UnicodeVersion

## **Blocks versus Scripts**

## **Matching Scripts and Blocks**

Old-style versus new-style block names

Use with older Unicode versions

AUTHOR

## User::grent - by-name interface to Perl's built-in getgr\*() functions

### SYNOPSIS

### DESCRIPTION

### NOTE

### AUTHOR

## User::pwent - by-name interface to Perl's built-in getpw\*() functions

### SYNOPSIS

### DESCRIPTION

#### System Specifics

### NOTE

### AUTHOR

### HISTORY

March 18th, 2000

## XSLoader - Dynamically load C libraries into Perl code

### VERSION

### SYNOPSIS

### DESCRIPTION

#### Migration from DynaLoader

#### Backward compatible boilerplate

#### Order of initialization: early load()

#### The most hairy case

### DIAGNOSTICS

Can't find '%s' symbol in %s, Can't load '%s' for module %s: %s, Undefined symbols present after loading %s: %s

### LIMITATIONS

### KNOWN BUGS

### BUGS

### SEE ALSO

### AUTHORS

### COPYRIGHT & LICENSE

## AUXILIARY DOCUMENTATION

Here should be listed all the extra programs' documentation, but they don't all have manual pages yet:

h2ph

**h2xs**

**perlbug**

**pl2pm**

**pod2html**

**pod2man**

**splain**

**xsubpp**