
NAME

perlmodlib - constructing new Perl modules and finding existing ones

THE PERL MODULE LIBRARY

Many modules are included in the Perl distribution. These are described below, and all end in *.pm*. You may discover compiled library files (usually ending in *.so*) or small pieces of modules to be autoloaded (ending in *.al*); these were automatically generated by the installation process. You may also discover files in the library directory that end in either *.pl* or *.ph*. These are old libraries supplied so that old programs that use them still run. The *.pl* files will all eventually be converted into standard modules, and the *.ph* files made by **h2ph** will probably end up as extension modules made by **h2xs**. (Some *.ph* values may already be available through the *POSIX*, *Errno*, or *Fcntl* modules.) The **pl2pm** file in the distribution may help in your conversion, but it's just a mechanical process and therefore far from bulletproof.

Pragmatic Modules

They work somewhat like compiler directives (pragmata) in that they tend to affect the compilation of your program, and thus will usually work well only when used within a *use*, or *no*. Most of these are lexically scoped, so an inner BLOCK may countermand them by saying:

```
no integer;
no strict 'refs';
no warnings;
```

which lasts until the end of that BLOCK.

Some pragmas are lexically scoped--typically those that affect the $\%^H$ hints variable. Others affect the current package instead, like *use vars* and *use subs*, which allow you to predeclare a variables or subroutines within a particular *file* rather than just a block. Such declarations are effective for the entire file for which they were declared. You cannot rescind them with *no vars* or *no subs*.

The following pragmas are defined (and have their own documentation).

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|----------------------------|--|
| arybase | Set indexing base via \$[|
| attributes | Get/set subroutine or variable attributes |
| autodie | Replace functions with ones that succeed or die with lexical scope |
| autodie::exception | Exceptions from autodying functions. |
| autodie::exception::system | Exceptions from autodying system(). |
| autodie::hints | Provide hints about user subroutines to autodie |
| autouse | Postpone load of modules until a function is used |
| base | Establish an ISA relationship with base classes at compile time |
| bigint | |

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| | Transparent BigInteger support for Perl |
| <code>bignum</code> | Transparent BigNumber support for Perl |
| <code>bigrat</code> | Transparent BigNumber/BigRational support for Perl |
| <code>blib</code> | Use MakeMaker's uninstalled version of a package |
| <code>bytes</code> | Force byte semantics rather than character semantics |
| <code>charnames</code> | Access to Unicode character names and named character sequences; also define character names |
| <code>constant</code> | Declare constants |
| <code>deprecate</code> | Perl pragma for deprecating the core version of a module |
| <code>diagnostics</code> | Produce verbose warning diagnostics |
| <code>encoding</code> | Allows you to write your script in non-ascii or non-utf8 |
| <code>encoding::warnings</code> | Warn on implicit encoding conversions |
| <code>feature</code> | Enable new features |
| <code>fields</code> | Compile-time class fields |
| <code>filetest</code> | Control the filetest permission operators |
| <code>if</code> | use a Perl module if a condition holds |
| <code>inc::latest</code> | Use modules bundled in inc/ if they are newer than installed ones |
| <code>integer</code> | Use integer arithmetic instead of floating point |
| <code>less</code> | Request less of something |
| <code>lib</code> | Manipulate @INC at compile time |

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| locale | Use or avoid POSIX locales for built-in operations |
| mro | Method Resolution Order |
| open | Set default PerlIO layers for input and output |
| ops | Restrict unsafe operations when compiling |
| overload | Package for overloading Perl operations |
| overloading | Lexically control overloading |
| parent | Establish an ISA relationship with base classes at compile time |
| perldoc | Look up Perl documentation in Pod format. |
| perlfac | Frequently asked questions about Perl |
| perlfac1 | General Questions About Perl |
| perlfac2 | Obtaining and Learning about Perl |
| perlfac3 | Programming Tools |
| perlfac4 | Data Manipulation |
| perlfac5 | Files and Formats |
| perlfac6 | Regular Expressions |
| perlfac7 | General Perl Language Issues |
| perlfac8 | System Interaction |
| perlfac9 | Web, Email and Networking |
| perlfunc | Perl builtin functions |

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|--------------------|--|
| perlglossary | Perl Glossary |
| perlpodspeccopy | Plain Old Documentation: format specification and notes |
| perlvarcopy | Perl predefined variables |
| perlxs | XS language reference manual |
| perlxsut | Tutorial for writing XSUBs |
| perlxsypemap | Perl XS C/Perl type mapping |
| re | Alter regular expression behaviour |
| sigtrap | Enable simple signal handling |
| sort | Control sort() behaviour |
| strict | Restrict unsafe constructs |
| subs | Predeclare sub names |
| threads | Perl interpreter-based threads |
| threads::shared | Perl extension for sharing data structures between threads |
| utf8 | Enable/disable UTF-8 (or UTF-EBCDIC) in source code |
| vars | Predeclare global variable names |
| version | Perl extension for Version Objects |
| vmsish | Control VMS-specific language features |
| warnings | Control optional warnings |
| warnings::register | Warnings import function |

Standard Modules

Standard, bundled modules are all expected to behave in a well-defined manner with respect to namespace pollution because they use the Exporter module. See their own documentation for details.

It's possible that not all modules listed below are installed on your system. For example, the GDBM_File module will not be installed if you don't have the gdbm library.

AnyDBM_File

Provide framework for multiple DBMs

App::Cpan

Easily interact with CPAN from the command line

App::Prove

Implements the `prove` command.

App::Prove::State

State storage for the `prove` command.

App::Prove::State::Result

Individual test suite results.

App::Prove::State::Result::Test

Individual test results.

Archive::Extract

A generic archive extracting mechanism

Archive::Tar

Module for manipulations of tar archives

Archive::Tar::File

A subclass for in-memory extracted file from Archive::Tar

Attribute::Handlers

Simpler definition of attribute handlers

AutoLoader

Load subroutines only on demand

AutoSplit

Split a package for autoloading

B

The Perl Compiler Backend

B::Concise

Walk Perl syntax tree, printing concise info about ops

B::Debug

Walk Perl syntax tree, printing debug info about ops

B::Deparse

Perl compiler backend to produce perl code

B::Lint

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| | Perl lint |
| B::Lint::Debug | Adds debugging stringification to B:: |
| B::Showlex | Show lexical variables used in functions or files |
| B::Terse | Walk Perl syntax tree, printing terse info about ops |
| B::Xref | Generates cross reference reports for Perl programs |
| Benchmark | Benchmark running times of Perl code |
| Socket | Networking constants and support functions |
| CGI | Handle Common Gateway Interface requests and responses |
| CGI::Apache | Backward compatibility module for CGI.pm |
| CGI::Carp | CGI routines for writing to the HTTPD (or other) error log |
| CGI::Cookie | Interface to HTTP Cookies |
| CGI::Fast | CGI Interface for Fast CGI |
| CGI::Pretty | Module to produce nicely formatted HTML code |
| CGI::Push | Simple Interface to Server Push |
| CGI::Switch | Backward compatibility module for defunct CGI::Switch |
| CGI::Util | Internal utilities used by CGI module |
| CORE | Namespace for Perl's core routines |
| CPAN | Query, download and build perl modules from CPAN sites |
| CPAN::API::HOWTO | A recipe book for programming with CPAN.pm |

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| CPAN::Debug | Internal debugging for CPAN.pm |
| CPAN::Distroprefs | Read and match distroprefs |
| CPAN::FirstTime | Utility for CPAN::Config file Initialization |
| CPAN::HandleConfig | Internal configuration handling for CPAN.pm |
| CPAN::Kwalify | Interface between CPAN.pm and Kwalify.pm |
| CPAN::Meta | The distribution metadata for a CPAN dist |
| CPAN::Meta::Converter | Convert CPAN distribution metadata structures |
| CPAN::Meta::Feature | An optional feature provided by a CPAN distribution |
| CPAN::Meta::History | History of CPAN Meta Spec changes |
| CPAN::Meta::Prereqs | A set of distribution prerequisites by phase and type |
| CPAN::Meta::Requirements | A set of version requirements for a CPAN dist |
| CPAN::Meta::Spec | Specification for CPAN distribution metadata |
| CPAN::Meta::Validator | Validate CPAN distribution metadata structures |
| CPAN::Meta::YAML | Read and write a subset of YAML for CPAN Meta files |
| CPAN::Nox | Wrapper around CPAN.pm without using any XS module |
| CPAN::Queue | Internal queue support for CPAN.pm |
| CPAN::Tarzip | Internal handling of tar archives for CPAN.pm |
| CPAN::Version | Utility functions to compare CPAN versions |
| CPANPLUS | API & CLI access to the CPAN mirrors |

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| CPANPLUS::Backend | Programmer's interface to CPANPLUS |
| CPANPLUS::Backend::RV | Return value objects |
| CPANPLUS::Config | Configuration defaults and heuristics for CPANPLUS |
| CPANPLUS::Config::HomeEnv | Set the environment for the CPANPLUS base dir |
| CPANPLUS::Configure | Configuration for CPANPLUS |
| CPANPLUS::Dist | Base class for plugins |
| CPANPLUS::Dist::Autobundle | Distribution class for installation snapshots |
| CPANPLUS::Dist::Base | Base class for custom distribution classes |
| CPANPLUS::Dist::Build | CPANPLUS plugin to install packages that use Build.PL |
| CPANPLUS::Dist::Build::Constants | Constants for CPANPLUS::Dist::Build |
| CPANPLUS::Dist::MM | Distribution class for MakeMaker related modules |
| CPANPLUS::Dist::Sample | Sample code to create your own Dist::* plugin |
| CPANPLUS::Error | Error handling for CPANPLUS |
| CPANPLUS::FAQ | CPANPLUS Frequently Asked Questions |
| CPANPLUS::Hacking | Developing CPANPLUS |
| CPANPLUS::Internals | CPANPLUS internals |
| CPANPLUS::Internals::Extract | Internals for archive extraction |
| CPANPLUS::Internals::Fetch | Internals for fetching files |
| CPANPLUS::Internals::Report | Internals for sending test reports |

CPANPLUS::Internals::Search
Internals for searching for modules

CPANPLUS::Internals::Source
Internals for updating source files

CPANPLUS::Internals::Source::Memory
In memory implementation

CPANPLUS::Internals::Source::SQLite
SQLite implementation

CPANPLUS::Internals::Utils
Convenience functions for CPANPLUS

CPANPLUS::Module
CPAN module objects for CPANPLUS

CPANPLUS::Module::Author
CPAN author object for CPANPLUS

CPANPLUS::Module::Author::Fake
Dummy author object for CPANPLUS

CPANPLUS::Module::Checksums
Checking the checksum of a distribution

CPANPLUS::Module::Fake
Fake module object for internal use

CPANPLUS::Selfupdate
Self-updating for CPANPLUS

CPANPLUS::Shell
Base class for CPANPLUS shells

CPANPLUS::Shell::Classic
CPAN.pm emulation for CPANPLUS

CPANPLUS::Shell::Default
The default CPANPLUS shell

CPANPLUS::Shell::Default::Plugins::CustomSource
Add custom sources to CPANPLUS

CPANPLUS::Shell::Default::Plugins::HOWTO
Documentation on how to write your own plugins

CPANPLUS::Shell::Default::Plugins::Remote
Connect to a remote CPANPLUS

CPANPLUS::Shell::Default::Plugins::Source
Read in CPANPLUS commands

Carp
Alternative warn and die for modules

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| Class::Struct | Declare struct-like datatypes as Perl classes |
| Compress::Raw::Bzip2 | Low-Level Interface to bzip2 compression library |
| Compress::Raw::Zlib | Low-Level Interface to zlib compression library |
| Compress::Zlib | Interface to zlib compression library |
| Config | Access Perl configuration information |
| Config::Perl::V | Structured data retrieval of perl -V output |
| Cwd | Get pathname of current working directory |
| DB | Programmatic interface to the Perl debugging API |
| DBM_Filter | Filter DBM keys/values |
| DBM_Filter::compress | Filter for DBM_Filter |
| DBM_Filter::encode | Filter for DBM_Filter |
| DBM_Filter::int32 | Filter for DBM_Filter |
| DBM_Filter::null | Filter for DBM_Filter |
| DBM_Filter::utf8 | Filter for DBM_Filter |
| DB_File | Perl5 access to Berkeley DB version 1.x |
| Data::Dumper | Stringified perl data structures, suitable for both printing and eval |
| Devel::InnerPackage | Find all the inner packages of a package |
| Devel::PPPort | Perl/Pollution/Portability |
| Devel::Peek | A data debugging tool for the XS programmer |

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| Devel::SelfStubber | Generate stubs for a SelfLoading module |
| Digest | Modules that calculate message digests |
| Digest::MD5 | Perl interface to the MD5 Algorithm |
| Digest::SHA | Perl extension for SHA-1/224/256/384/512 |
| Digest::base | Digest base class |
| Digest::file | Calculate digests of files |
| DirHandle | Supply object methods for directory handles |
| Dumpvalue | Provides screen dump of Perl data. |
| DynaLoader | Dynamically load C libraries into Perl code |
| Encode | Character encodings in Perl |
| Encode::Alias | Alias definitions to encodings |
| Encode::Byte | Single Byte Encodings |
| Encode::CJKConstants | Internally used by Encode::???:ISO_2022_* |
| Encode::CN | China-based Chinese Encodings |
| Encode::CN::HZ | Internally used by Encode::CN |
| Encode::Config | Internally used by Encode |
| Encode::EBCDIC | EBCDIC Encodings |
| Encode::Encoder | Object Oriented Encoder |
| Encode::Encoding | Encode Implementation Base Class |

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| Encode::GSM0338 | ESTI GSM 03.38 Encoding |
| Encode::Guess | Guesses encoding from data |
| Encode::JP | Japanese Encodings |
| Encode::JP::H2Z | Internally used by Encode::JP::2022_JP* |
| Encode::JP::JIS7 | Internally used by Encode::JP |
| Encode::KR | Korean Encodings |
| Encode::KR::2022_KR | Internally used by Encode::KR |
| Encode::MIME::Header | MIME 'B' and 'Q' header encoding |
| Encode::MIME::Name | Internally used by Encode |
| Encode::PerlIO | A detailed document on Encode and PerlIO |
| Encode::Supported | Encodings supported by Encode |
| Encode::Symbol | Symbol Encodings |
| Encode::TW | Taiwan-based Chinese Encodings |
| Encode::Unicode | Various Unicode Transformation Formats |
| Encode::Unicode::UTF7 | UTF-7 encoding |
| English | Use nice English (or awk) names for ugly punctuation variables |
| Env | Perl module that imports environment variables as scalars or arrays |
| Errno | System errno constants |
| Exporter | Implements default import method for modules |

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| Exporter::Heavy | Exporter guts |
| ExtUtils::CBuilder | Compile and link C code for Perl modules |
| ExtUtils::CBuilder::Platform::Windows | Builder class for Windows platforms |
| ExtUtils::Command | Utilities to replace common UNIX commands in Makefiles etc. |
| ExtUtils::Command::MM | Commands for the MM's to use in Makefiles |
| ExtUtils::Constant | Generate XS code to import C header constants |
| ExtUtils::Constant::Base | Base class for ExtUtils::Constant objects |
| ExtUtils::Constant::Utils | Helper functions for ExtUtils::Constant |
| ExtUtils::Constant::XS | Generate C code for XS modules' constants. |
| ExtUtils::Embed | Utilities for embedding Perl in C/C++ applications |
| ExtUtils::Install | Install files from here to there |
| ExtUtils::Installed | Inventory management of installed modules |
| ExtUtils::Liblist | Determine libraries to use and how to use them |
| ExtUtils::MM | OS adjusted ExtUtils::MakeMaker subclass |
| ExtUtils::MM_AIX | AIX specific subclass of ExtUtils::MM_Unix |
| ExtUtils::MM_Any | Platform-agnostic MM methods |
| ExtUtils::MM_BeOS | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_Cygwin | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_DOS | DOS specific subclass of ExtUtils::MM_Unix |

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| ExtUtils::MM_Darwin | Special behaviors for OS X |
| ExtUtils::MM_MacOS | Once produced Makefiles for MacOS Classic |
| ExtUtils::MM_NW5 | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_OS2 | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_QNX | QNX specific subclass of ExtUtils::MM_Unix |
| ExtUtils::MM_UWIN | U/WIN specific subclass of ExtUtils::MM_Unix |
| ExtUtils::MM_Unix | Methods used by ExtUtils::MakeMaker |
| ExtUtils::MM_VMS | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_VOS | VOS specific subclass of ExtUtils::MM_Unix |
| ExtUtils::MM_Win32 | Methods to override UN*X behaviour in ExtUtils::MakeMaker |
| ExtUtils::MM_Win95 | Method to customize MakeMaker for Win9X |
| ExtUtils::MY | ExtUtils::MakeMaker subclass for customization |
| ExtUtils::MakeMaker | Create a module Makefile |
| ExtUtils::MakeMaker::Config | Wrapper around Config.pm |
| ExtUtils::MakeMaker::FAQ | Frequently Asked Questions About MakeMaker |
| ExtUtils::MakeMaker::Tutorial | Writing a module with MakeMaker |
| ExtUtils::Manifest | Utilities to write and check a MANIFEST file |
| ExtUtils::Mkbootstrap | Make a bootstrap file for use by DynaLoader |
| ExtUtils::Mksymlists | Write linker options files for dynamic extension |

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| ExtUtils::Packlist | Manage .packlist files |
| ExtUtils::ParseXS | Converts Perl XS code into C code |
| ExtUtils::ParseXS::Constants | Initialization values for some globals |
| ExtUtils::ParseXS::Utilities | Subroutines used with ExtUtils::ParseXS |
| ExtUtils::Typemaps | Read/Write/Modify Perl/XS typemap files |
| ExtUtils::Typemaps::Cmd | Quick commands for handling typemaps |
| ExtUtils::Typemaps::InputMap | Entry in the INPUT section of a typemap |
| ExtUtils::Typemaps::OutputMap | Entry in the OUTPUT section of a typemap |
| ExtUtils::Typemaps::Type | Entry in the TYPEMAP section of a typemap |
| ExtUtils::XSSymSet | Keep sets of symbol names palatable to the VMS linker |
| ExtUtils::testlib | Add blib/* directories to @INC |
| Fatal | Replace functions with equivalents which succeed or die |
| Fcntl | Load the C Fcntl.h defines |
| File::Basename | Parse file paths into directory, filename and suffix. |
| File::CheckTree | Run many filetest checks on a tree |
| File::Compare | Compare files or filehandles |
| File::Copy | Copy files or filehandles |
| File::DosGlob | DOS like globbing and then some |
| File::Fetch | A generic file fetching mechanism |

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| File::Find | Traverse a directory tree. |
| File::Glob | Perl extension for BSD glob routine |
| File::GlobMapper | Extend File Glob to Allow Input and Output Files |
| File::Path | Create or remove directory trees |
| File::Spec | Portably perform operations on file names |
| File::Spec::Cygwin | Methods for Cygwin file specs |
| File::Spec::Epoc | Methods for Epoc file specs |
| File::Spec::Functions | Portably perform operations on file names |
| File::Spec::Mac | File::Spec for Mac OS (Classic) |
| File::Spec::OS2 | Methods for OS/2 file specs |
| File::Spec::Unix | File::Spec for Unix, base for other File::Spec modules |
| File::Spec::VMS | Methods for VMS file specs |
| File::Spec::Win32 | Methods for Win32 file specs |
| File::Temp | Return name and handle of a temporary file safely |
| File::stat | By-name interface to Perl's built-in stat() functions |
| FileCache | Keep more files open than the system permits |
| FileHandle | Supply object methods for filehandles |
| Filter::Simple | Simplified source filtering |
| Filter::Util::Call | Perl Source Filter Utility Module |

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| FindBin | Locate directory of original perl script |
| GDBM_File | Perl5 access to the gdbm library. |
| Getopt::Long | Extended processing of command line options |
| Getopt::Std | Process single-character switches with switch clustering |
| HTTP::Tiny | A small, simple, correct HTTP/1.1 client |
| Hash::Util | A selection of general-utility hash subroutines |
| Hash::Util::FieldHash | Support for Inside-Out Classes |
| I18N::Collate | Compare 8-bit scalar data according to the current locale |
| I18N::LangTags | Functions for dealing with RFC3066-style language tags |
| I18N::LangTags::Detect | Detect the user's language preferences |
| I18N::LangTags::List | Tags and names for human languages |
| I18N::Langinfo | Query locale information |
| IO | Load various IO modules |
| IO::Compress::Base | Base Class for IO::Compress modules |
| IO::Compress::Bzip2 | Write bzip2 files/buffers |
| IO::Compress::Deflate | Write RFC 1950 files/buffers |
| IO::Compress::FAQ | Frequently Asked Questions about IO::Compress |
| IO::Compress::Gzip | Write RFC 1952 files/buffers |
| IO::Compress::RawDeflate | Write RFC 1951 files/buffers |

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| IO::Compress::Zip | Write zip files/buffers |
| IO::Dir | Supply object methods for directory handles |
| IO::File | Supply object methods for filehandles |
| IO::Handle | Supply object methods for I/O handles |
| IO::Pipe | Supply object methods for pipes |
| IO::Poll | Object interface to system poll call |
| IO::Seekable | Supply seek based methods for I/O objects |
| IO::Select | OO interface to the select system call |
| IO::Socket | Object interface to socket communications |
| IO::Socket::INET | Object interface for AF_INET domain sockets |
| IO::Socket::UNIX | Object interface for AF_UNIX domain sockets |
| IO::Uncompress::AnyInflate | Uncompress zlib-based (zip, gzip) file/buffer |
| IO::Uncompress::AnyUncompress | Uncompress gzip, zip, bzip2 or lzop file/buffer |
| IO::Uncompress::Base | Base Class for IO::Uncompress modules |
| IO::Uncompress::Bunzip2 | Read bzip2 files/buffers |
| IO::Uncompress::Gunzip | Read RFC 1952 files/buffers |
| IO::Uncompress::Inflate | Read RFC 1950 files/buffers |
| IO::Uncompress::RawInflate | Read RFC 1951 files/buffers |
| IO::Uncompress::Unzip | Read zip files/buffers |

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| IO::Zlib | IO:: style interface to <i>Compress::Zlib</i> |
| IPC::Cmd | Finding and running system commands made easy |
| IPC::Msg | SysV Msg IPC object class |
| IPC::Open2 | Open a process for both reading and writing using open2() |
| IPC::Open3 | Open a process for reading, writing, and error handling using open3() |
| IPC::Semaphore | SysV Semaphore IPC object class |
| IPC::SharedMem | SysV Shared Memory IPC object class |
| IPC::SysV | System V IPC constants and system calls |
| JSON::PP | JSON::XS compatible pure-Perl module. |
| JSON::PP::Boolean | Dummy module providing JSON::PP::Boolean |
| List::Util | A selection of general-utility list subroutines |
| List::Util::XS | Indicate if List::Util was compiled with a C compiler |
| Locale::Codes | A distribution of modules to handle locale codes |
| Locale::Codes::API | A description of the callable function in each module |
| Locale::Codes::Changes | Details changes to Locale::Codes |
| Locale::Codes::Constants | Constants for Locale codes |
| Locale::Codes::Country | Standard codes for country identification |
| Locale::Codes::Country_Codes | Country codes for the Locale::Codes::Country module |
| Locale::Codes::Country_Retired | Retired country codes for the Locale::Codes::Country module |

Locale::Codes::Currency

Standard codes for currency identification

Locale::Codes::Currency_Codes

Currency codes for the Locale::Codes::Currency module

Locale::Codes::Currency_Retired

Retired currency codes for the Locale::Codes::Currency module

Locale::Codes::LangExt

Standard codes for language extension identification

Locale::Codes::LangExt_Codes

Langext codes for the Locale::Codes::LangExt module

Locale::Codes::LangExt_Retired

Retired langext codes for the Locale::Codes::LangExt module

Locale::Codes::LangFam

Standard codes for language extension identification

Locale::Codes::LangFam_Codes

Langfam codes for the Locale::Codes::LangFam module

Locale::Codes::LangFam_Retired

Retired langfam codes for the Locale::Codes::LangFam module

Locale::Codes::LangVar

Standard codes for language variation identification

Locale::Codes::LangVar_Codes

Langvar codes for the Locale::Codes::LangVar module

Locale::Codes::LangVar_Retired

Retired langvar codes for the Locale::Codes::LangVar module

Locale::Codes::Language

Standard codes for language identification

Locale::Codes::Language_Codes

Language codes for the Locale::Codes::Language module

Locale::Codes::Language_Retired

Retired language codes for the Locale::Codes::Language module

Locale::Codes::Script

Standard codes for script identification

Locale::Codes::Script_Codes

Script codes for the Locale::Codes::Script module

Locale::Codes::Script_Retired

Retired script codes for the Locale::Codes::Script module

Locale::Country

Standard codes for country identification

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| Locale::Currency | Standard codes for currency identification |
| Locale::Language | Standard codes for language identification |
| Locale::Maketext | Framework for localization |
| Locale::Maketext::Cookbook | Recipes for using Locale::Maketext |
| Locale::Maketext::Guts | Deprecated module to load Locale::Maketext utf8 code |
| Locale::Maketext::GutsLoader | Deprecated module to load Locale::Maketext utf8 code |
| Locale::Maketext::Simple | Simple interface to Locale::Maketext::Lexicon |
| Locale::Maketext::TPJ13 | Article about software localization |
| Locale::Script | Standard codes for script identification |
| Log::Message | A generic message storing mechanism; |
| Log::Message::Config | Configuration options for Log::Message |
| Log::Message::Handlers | Message handlers for Log::Message |
| Log::Message::Item | Message objects for Log::Message |
| Log::Message::Simple | Simplified interface to Log::Message |
| MIME::Base64 | Encoding and decoding of base64 strings |
| MIME::QuotedPrint | Encoding and decoding of quoted-printable strings |
| Math::BigFloat | Arbitrary size floating point math package |
| Math::BigInt | Arbitrary size integer/float math package |
| Math::BigInt::Calc | Pure Perl module to support Math::BigInt |

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| Math::BigInt::CalcEmu | Emulate low-level math with BigInt code |
| Math::BigInt::FastCalc | Math::BigInt::Calc with some XS for more speed |
| Math::BigRat | Arbitrary big rational numbers |
| Math::Complex | Complex numbers and associated mathematical functions |
| Math::Trig | Trigonometric functions |
| Memoize | Make functions faster by trading space for time |
| Memoize::AnyDBM_File | Glue to provide EXISTS for AnyDBM_File for Storable use |
| Memoize::Expire | Plug-in module for automatic expiration of memoized values |
| Memoize::ExpireFile | Test for Memoize expiration semantics |
| Memoize::ExpireTest | Test for Memoize expiration semantics |
| Memoize::NDBM_File | Glue to provide EXISTS for NDBM_File for Storable use |
| Memoize::SDBM_File | Glue to provide EXISTS for SDBM_File for Storable use |
| Memoize::Storable | Store Memoized data in Storable database |
| Module::Build | Build and install Perl modules |
| Module::Build::API | API Reference for Module Authors |
| Module::Build::Authoring | Authoring Module::Build modules |
| Module::Build::Base | Default methods for Module::Build |
| Module::Build::Bundling | How to bundle Module::Build with a distribution |
| Module::Build::Compat | Compatibility with ExtUtils::MakeMaker |

Module::Build::ConfigData

Configuration for Module::Build

Module::Build::Cookbook

Examples of Module::Build Usage

Module::Build::ModuleInfo

DEPRECATED

Module::Build::Notes

Create persistent distribution configuration modules

Module::Build::PPMMaker

Perl Package Manager file creation

Module::Build::Platform::Amiga

Builder class for Amiga platforms

Module::Build::Platform::Default

Stub class for unknown platforms

Module::Build::Platform::EBCDIC

Builder class for EBCDIC platforms

Module::Build::Platform::MPEiX

Builder class for MPEiX platforms

Module::Build::Platform::MacOS

Builder class for MacOS platforms

Module::Build::Platform::RiscOS

Builder class for RiscOS platforms

Module::Build::Platform::Unix

Builder class for Unix platforms

Module::Build::Platform::VMS

Builder class for VMS platforms

Module::Build::Platform::VOS

Builder class for VOS platforms

Module::Build::Platform::Windows

Builder class for Windows platforms

Module::Build::Platform::aix

Builder class for AIX platform

Module::Build::Platform::cygwin

Builder class for Cygwin platform

Module::Build::Platform::darwin

Builder class for Mac OS X platform

Module::Build::Platform::os2

Builder class for OS/2 platform

| | |
|---------------------------|--|
| Module::Build::Version | DEPRECATED |
| Module::Build::YAML | DEPRECATED |
| Module::CoreList | What modules shipped with versions of perl |
| Module::CoreList::Utils | What utilities shipped with versions of perl |
| Module::Load | Runtime require of both modules and files |
| Module::Load::Conditional | Looking up module information / loading at runtime |
| Module::Loaded | Mark modules as loaded or unloaded |
| Module::Metadata | Gather package and POD information from perl module files |
| Module::Pluggable | Automatically give your module the ability to have plugins |
| Module::Pluggable::Object | Automatically give your module the ability to have plugins |
| NDBM_File | Tied access to ndbm files |
| NEXT | Provide a pseudo-class NEXT (et al) that allows method redispach |
| Net::Cmd | Network Command class (as used by FTP, SMTP etc) |
| Net::Config | Local configuration data for libnet |
| Net::Domain | Attempt to evaluate the current host's internet name and domain |
| Net::FTP | FTP Client class |
| Net::NNTP | NNTP Client class |
| Net::Netrc | OO interface to users netrc file |
| Net::POP3 | Post Office Protocol 3 Client class (RFC1939) |

| | |
|--------------------|---|
| Net::Ping | Check a remote host for reachability |
| Net::SMTP | Simple Mail Transfer Protocol Client |
| Net::Time | Time and daytime network client interface |
| Net::hostent | By-name interface to Perl's built-in gethost*() functions |
| Net::libnetFAQ | Libnet Frequently Asked Questions |
| Net::netent | By-name interface to Perl's built-in getnet*() functions |
| Net::protoent | By-name interface to Perl's built-in getproto*() functions |
| Net::servent | By-name interface to Perl's built-in getserv*() functions |
| O | Generic interface to Perl Compiler backends |
| ODBM_File | Tied access to odbm files |
| Object::Accessor | Interface to create per object accessors |
| Opcode | Disable named opcodes when compiling perl code |
| POSIX | Perl interface to IEEE Std 1003.1 |
| Package::Constants | List all constants declared in a package |
| Params::Check | A generic input parsing/checking mechanism. |
| Parse::CPAN::Meta | Parse META.yml and META.json CPAN metadata files |
| Perl::OSType | Map Perl operating system names to generic types |
| PerlIO | On demand loader for PerlIO layers and root of PerlIO::* name space |
| PerlIO::encoding | Encoding layer |

| | |
|--------------------------|--|
| PerlIO::mmap | Memory mapped IO |
| PerlIO::scalar | In-memory IO, scalar IO |
| PerlIO::via | Helper class for PerlIO layers implemented in perl |
| PerlIO::via::QuotedPrint | PerlIO layer for quoted-printable strings |
| Pod::Escapes | For resolving Pod E<...> sequences |
| Pod::Functions | Group Perl's functions a la perlfunc.pod |
| Pod::Html | Module to convert pod files to HTML |
| Pod::LaTeX | Convert Pod data to formatted Latex |
| Pod::Man | Convert POD data to formatted *roff input |
| Pod::ParseLink | Parse an L<> formatting code in POD text |
| Pod::Perldoc | Look up Perl documentation in Pod format. |
| Pod::Perldoc::BaseTo | Base for Pod::Perldoc formatters |
| Pod::Perldoc::GetOptsOO | Customized option parser for Pod::Perldoc |
| Pod::Perldoc::ToANSI | Render Pod with ANSI color escapes |
| Pod::Perldoc::ToChecker | Let Perldoc check Pod for errors |
| Pod::Perldoc::ToMan | Let Perldoc render Pod as man pages |
| Pod::Perldoc::ToNroff | Let Perldoc convert Pod to nroff |
| Pod::Perldoc::ToPod | Let Perldoc render Pod as ... Pod! |
| Pod::Perldoc::ToRtf | Let Perldoc render Pod as RTF |

`Pod::Perldoc::ToTerm`
Render Pod with terminal escapes

`Pod::Perldoc::ToText`
Let Perldoc render Pod as plaintext

`Pod::Perldoc::ToTk`
Let Perldoc use Tk::Pod to render Pod

`Pod::Perldoc::ToXml`
Let Perldoc render Pod as XML

`Pod::Simple`
Framework for parsing Pod

`Pod::Simple::Checker`
Check the Pod syntax of a document

`Pod::Simple::Debug`
Put Pod::Simple into trace/debug mode

`Pod::Simple::DumpAsText`
Dump Pod-parsing events as text

`Pod::Simple::DumpAsXML`
Turn Pod into XML

`Pod::Simple::HTML`
Convert Pod to HTML

`Pod::Simple::HTMLBatch`
Convert several Pod files to several HTML files

`Pod::Simple::LinkSection`
Represent "section" attributes of L codes

`Pod::Simple::Methody`
Turn Pod::Simple events into method calls

`Pod::Simple::PullParser`
A pull-parser interface to parsing Pod

`Pod::Simple::PullParserEndToken`
End-tokens from Pod::Simple::PullParser

`Pod::Simple::PullParserStartToken`
Start-tokens from Pod::Simple::PullParser

`Pod::Simple::PullParserTextToken`
Text-tokens from Pod::Simple::PullParser

`Pod::Simple::PullParserToken`
Tokens from Pod::Simple::PullParser

`Pod::Simple::RTF`
Format Pod as RTF

| | |
|------------------------------|---|
| Pod::Simple::Search | Find POD documents in directory trees |
| Pod::Simple::SimpleTree | Parse Pod into a simple parse tree |
| Pod::Simple::Subclassing | Write a formatter as a Pod::Simple subclass |
| Pod::Simple::Text | Format Pod as plaintext |
| Pod::Simple::TextContent | Get the text content of Pod |
| Pod::Simple::XHTML | Format Pod as validating XHTML |
| Pod::Simple::XMLOutputStream | Turn Pod into XML |
| Pod::Text | Convert POD data to formatted ASCII text |
| Pod::Text::Color | Convert POD data to formatted color ASCII text |
| Pod::Text::Termcap | Convert POD data to ASCII text with format escapes |
| SDBM_File | Tied access to sdbm files |
| Safe | Compile and execute code in restricted compartments |
| Scalar::Util | A selection of general-utility scalar subroutines |
| Search::Dict | Look - search for key in dictionary file |
| SelectSaver | Save and restore selected file handle |
| SelfLoader | Load functions only on demand |
| Storable | Persistence for Perl data structures |
| Symbol | Manipulate Perl symbols and their names |
| Sys::Hostname | Try every conceivable way to get hostname |

| | |
|--|--|
| Sys::Syslog | Perl interface to the UNIX syslog(3) calls |
| Sys::Syslog::Win32 | Win32 support for Sys::Syslog |
| TAP::Base | Base class that provides common functionality to <i>TAP::Parser</i> |
| TAP::Formatter::Base | Base class for harness output delegates |
| TAP::Formatter::Color | Run Perl test scripts with color |
| TAP::Formatter::Console | Harness output delegate for default console output |
| TAP::Formatter::Console::ParallelSession | Harness output delegate for parallel console output |
| TAP::Formatter::Console::Session | Harness output delegate for default console output |
| TAP::Formatter::File | Harness output delegate for file output |
| TAP::Formatter::File::Session | Harness output delegate for file output |
| TAP::Formatter::Session | Abstract base class for harness output delegate |
| TAP::Harness | Run test scripts with statistics |
| TAP::Object | Base class that provides common functionality to all <i>TAP::*</i> modules |
| TAP::Parser | Parse <i>TAP</i> output |
| TAP::Parser::Aggregator | Aggregate <i>TAP::Parser</i> results |
| TAP::Parser::Grammar | A grammar for the Test Anything Protocol. |
| TAP::Parser::Iterator | Base class for <i>TAP</i> source iterators |
| TAP::Parser::Iterator::Array | Iterator for array-based <i>TAP</i> sources |
| TAP::Parser::Iterator::Process | Iterator for process-based <i>TAP</i> sources |

| | |
|--|---|
| TAP::Parser::Iterator::Stream | Iterator for filehandle-based TAP sources |
| TAP::Parser::IteratorFactory | Figures out which SourceHandler objects to use for a given Source |
| TAP::Parser::Multiplexer | Multiplex multiple TAP::Parsers |
| TAP::Parser::Result | Base class for TAP::Parser output objects |
| TAP::Parser::Result::Bailout | Bailout result token. |
| TAP::Parser::Result::Comment | Comment result token. |
| TAP::Parser::Result::Plan | Plan result token. |
| TAP::Parser::Result::Pragma | TAP pragma token. |
| TAP::Parser::Result::Test | Test result token. |
| TAP::Parser::Result::Unknown | Unknown result token. |
| TAP::Parser::Result::Version | TAP syntax version token. |
| TAP::Parser::Result::YAML | YAML result token. |
| TAP::Parser::ResultFactory | Factory for creating TAP::Parser output objects |
| TAP::Parser::Scheduler | Schedule tests during parallel testing |
| TAP::Parser::Scheduler::Job | A single testing job. |
| TAP::Parser::Scheduler::Spinner | A no-op job. |
| TAP::Parser::Source | A TAP source & meta data about it |
| TAP::Parser::SourceHandler | Base class for different TAP source handlers |
| TAP::Parser::SourceHandler::Executable | Stream output from an executable TAP source |

| | |
|------------------------------------|---|
| TAP::Parser::SourceHandler::File | Stream TAP from a text file. |
| TAP::Parser::SourceHandler::Handle | Stream TAP from an IO::Handle or a GLOB. |
| TAP::Parser::SourceHandler::Perl | Stream TAP from a Perl executable |
| TAP::Parser::SourceHandler::RawTAP | Stream output from raw TAP in a scalar/array ref. |
| TAP::Parser::Utils | Internal TAP::Parser utilities |
| TAP::Parser::YAMLish::Reader | Read YAMLish data from iterator |
| TAP::Parser::YAMLish::Writer | Write YAMLish data |
| Term::ANSIColor | Color screen output using ANSI escape sequences |
| Term::Cap | Perl termcap interface |
| Term::Complete | Perl word completion module |
| Term::ReadLine | Perl interface to various <code>readline</code> packages. |
| Term::UI | Term::ReadLine UI made easy |
| Term::UI::History | History function |
| Test | Provides a simple framework for writing test scripts |
| Test::Builder | Backend for building test libraries |
| Test::Builder::Module | Base class for test modules |
| Test::Builder::Tester | Test testsuites that have been built with |
| Test::Builder::Tester::Color | Turn on colour in Test::Builder::Tester |
| Test::Harness | Run Perl standard test scripts with statistics |

| | |
|-------------------------|--|
| Test::More | Yet another framework for writing test scripts |
| Test::Simple | Basic utilities for writing tests. |
| Test::Tutorial | A tutorial about writing really basic tests |
| Text::Abbrev | Abbrev - create an abbreviation table from a list |
| Text::Balanced | Extract delimited text sequences from strings. |
| Text::ParseWords | Parse text into an array of tokens or array of arrays |
| Text::Soundex | Implementation of the soundex algorithm. |
| Text::Tabs | Expand and unexpand tabs like unix expand(1) and unexpand(1) |
| Text::Wrap | Line wrapping to form simple paragraphs |
| Thread | Manipulate threads in Perl (for old code only) |
| Thread::Queue | Thread-safe queues |
| Thread::Semaphore | Thread-safe semaphores |
| Tie::Array | Base class for tied arrays |
| Tie::File | Access the lines of a disk file via a Perl array |
| Tie::Handle | Base class definitions for tied handles |
| Tie::Hash | Base class definitions for tied hashes |
| Tie::Hash::NamedCapture | Named regexp capture buffers |
| Tie::Memoize | Add data to hash when needed |
| Tie::RefHash | Use references as hash keys |

| | |
|--|---|
| <code>Tie::Scalar</code> | Base class definitions for tied scalars |
| <code>Tie::StdHandle</code> | Base class definitions for tied handles |
| <code>Tie::SubstrHash</code> | Fixed-table-size, fixed-key-length hashing |
| <code>Time::HiRes</code> | High resolution alarm, sleep, gettimeofday, interval timers |
| <code>Time::Local</code> | Efficiently compute time from local and GMT time |
| <code>Time::Piece</code> | Object Oriented time objects |
| <code>Time::Seconds</code> | A simple API to convert seconds to other date values |
| <code>Time::gmtime</code> | By-name interface to Perl's built-in gmtime() function |
| <code>Time::localtime</code> | By-name interface to Perl's built-in localtime() function |
| <code>Time::tm</code> | Internal object used by Time::gmtime and Time::localtime |
| <code>UNIVERSAL</code> | Base class for ALL classes (blessed references) |
| <code>Unicode::Collate</code> | Unicode Collation Algorithm |
| <code>Unicode::Collate::CJK::Big5</code> | Weighting CJK Unified Ideographs |
| <code>Unicode::Collate::CJK::GB2312</code> | Weighting CJK Unified Ideographs |
| <code>Unicode::Collate::CJK::JISX0208</code> | Weighting JIS KANJI for Unicode::Collate |
| <code>Unicode::Collate::CJK::Korean</code> | Weighting CJK Unified Ideographs |
| <code>Unicode::Collate::CJK::Pinyin</code> | Weighting CJK Unified Ideographs |
| <code>Unicode::Collate::CJK::Stroke</code> | Weighting CJK Unified Ideographs |
| <code>Unicode::Collate::CJK::Zhuyin</code> | Weighting CJK Unified Ideographs |

Unicode::Collate::Locale

Linguistic tailoring for DUCET via Unicode::Collate

Unicode::Normalize

Unicode Normalization Forms

Unicode::UCD

Unicode character database

User::grent

By-name interface to Perl's built-in getgr*() functions

User::pwent

By-name interface to Perl's built-in getpw*() functions

VMS::DCLsym

Perl extension to manipulate DCL symbols

VMS::Stdio

Standard I/O functions via VMS extensions

Win32

Interfaces to some Win32 API Functions

Win32API::File

Low-level access to Win32 system API calls for files/dirs.

Win32CORE

Win32 CORE function stubs

XS::APITest

Test the perl C API

XS::Typemap

Module to test the XS typemaps distributed with perl

XSLoader

Dynamically load C libraries into Perl code

version::Internals

Perl extension for Version Objects

To find out *all* modules installed on your system, including those without documentation or outside the standard release, just use the following command (under the default win32 shell, double quotes should be used instead of single quotes).

```
% perl -MFile::Find=find -MFile::Spec::Functions -Tlwe \  
  'find { wanted => sub { print canonpath $_ if /\.pm\.z/ }, \  
  no_chdir => 1 }, @INC'
```

(The -T is here to prevent '.' from being listed in @INC.) They should all have their own documentation installed and accessible via your system `man(1)` command. If you do not have a **find** program, you can use the Perl **find2perl** program instead, which generates Perl code as output you can run through perl. If you have a **man** program but it doesn't find your modules, you'll have to fix your `manpath`. See *perl* for details. If you have no system **man** command, you might try the **perldoc** program.

Note also that the command `perldoc perllocal` gives you a (possibly incomplete) list of the modules that have been further installed on your system. (The `perllocal.pod` file is updated by the standard MakeMaker install process.)

Extension Modules

Extension modules are written in C (or a mix of Perl and C). They are usually dynamically loaded into Perl if and when you need them, but may also be linked in statically. Supported extension modules include `Socket`, `Fcntl`, and `POSIX`.

Many popular C extension modules do not come bundled (at least, not completely) due to their sizes, volatility, or simply lack of time for adequate testing and configuration across the multitude of platforms on which Perl was beta-tested. You are encouraged to look for them on CPAN (described below), or using web search engines like Alta Vista or Google.

CPAN

CPAN stands for Comprehensive Perl Archive Network; it's a globally replicated trove of Perl materials, including documentation, style guides, tricks and traps, alternate ports to non-Unix systems and occasional binary distributions for these. Search engines for CPAN can be found at <http://www.cpan.org/>

Most importantly, CPAN includes around a thousand unbundled modules, some of which require a C compiler to build. Major categories of modules are:

- Language Extensions and Documentation Tools
- Development Support
- Operating System Interfaces
- Networking, Device Control (modems) and InterProcess Communication
- Data Types and Data Type Utilities
- Database Interfaces
- User Interfaces
- Interfaces to / Emulations of Other Programming Languages
- File Names, File Systems and File Locking (see also File Handles)
- String Processing, Language Text Processing, Parsing, and Searching
- Option, Argument, Parameter, and Configuration File Processing
- Internationalization and Locale
- Authentication, Security, and Encryption
- World Wide Web, HTML, HTTP, CGI, MIME
- Server and Daemon Utilities
- Archiving and Compression
- Images, Pixmap and Bitmap Manipulation, Drawing, and Graphing
- Mail and Usenet News
- Control Flow Utilities (callbacks and exceptions etc)
- File Handle and Input/Output Stream Utilities
- Miscellaneous Modules

The list of the registered CPAN sites follows. Please note that the sorting order is alphabetical on fields:

Continent | |-->Country | |-->[state/province] | |-->ftp | |-->[http]

and thus the North American servers happen to be listed between the European and the South American sites.

Registered CPAN sites

Africa

South Africa

```
http://cpan.mirror.ac.za/  
ftp://cpan.mirror.ac.za/  
http://mirror.is.co.za/pub/cpan/  
ftp://ftp.is.co.za/pub/cpan/  
ftp://ftp.saix.net/pub/CPAN/
```

Asia

China

```
http://cpan.wenzk.com/
```

Hong Kong

```
http://ftp.cuhk.edu.hk/pub/packages/perl/CPAN/  
ftp://ftp.cuhk.edu.hk/pub/packages/perl/CPAN/  
http://mirrors.geoexpat.com/cpan/
```

India

```
http://perlmirror.indialinks.com/
```

Indonesia

```
http://cpan.biz.net.id/  
http://komo.vlsm.org/CPAN/  
ftp://komo.vlsm.org/CPAN/  
http://cpan.cermin.lipi.go.id/  
ftp://cermin.lipi.go.id/pub/CPAN/  
http://cpan.pesat.net.id/
```

Japan

```
ftp://ftp.u-aizu.ac.jp/pub/CPAN  
ftp://ftp.kddilabs.jp/CPAN/  
http://ftp.nara.wide.ad.jp/pub/CPAN/  
ftp://ftp.nara.wide.ad.jp/pub/CPAN/  
http://ftp.jaist.ac.jp/pub/CPAN/  
ftp://ftp.jaist.ac.jp/pub/CPAN/  
ftp://ftp.dti.ad.jp/pub/lang/CPAN/  
ftp://ftp.ring.gr.jp/pub/lang/perl/CPAN/  
http://ftp.riken.jp/lang/CPAN/  
ftp://ftp.riken.jp/lang/CPAN/  
http://ftp.yz.yamagata-u.ac.jp/pub/lang/cpan/  
ftp://ftp.yz.yamagata-u.ac.jp/pub/lang/cpan/
```

Republic of Korea

```
http://ftp.kaist.ac.kr/pub/CPAN
ftp://ftp.kaist.ac.kr/pub/CPAN
http://cpan.mirror.cdnetworks.com/
ftp://cpan.mirror.cdnetworks.com/CPAN/
http://cpan.sarang.net/
ftp://cpan.sarang.net/CPAN/
```

Russia

```
http://cpan.tomsk.ru/
ftp://cpan.tomsk.ru/
```

Singapore

```
http://mirror.averse.net/pub/CPAN
ftp://mirror.averse.net/pub/CPAN
http://cpan.mirror.choon.net/
http://cpan.oss.eznetsols.org
ftp://ftp.oss.eznetsols.org/cpan
```

Taiwan

```
http://ftp.cse.yzu.edu.tw/pub/CPAN/
ftp://ftp.cse.yzu.edu.tw/pub/CPAN/
http://cpan.nctu.edu.tw/
ftp://cpan.nctu.edu.tw/
ftp://ftp.ncu.edu.tw/CPAN/
http://cpan.cdpa.nsysu.edu.tw/
ftp://cpan.cdpa.nsysu.edu.tw/Unix/Lang/CPAN/
http://cpan.stu.edu.tw
ftp://ftp.stu.edu.tw/CPAN
http://ftp.stu.edu.tw/CPAN
ftp://ftp.stu.edu.tw/pub/CPAN
http://cpan.cs.pu.edu.tw/
ftp://cpan.cs.pu.edu.tw/pub/CPAN
```

Thailand

```
http://mirrors.issp.co.th/cpan/
ftp://mirrors.issp.co.th/cpan/
http://mirror.yourconnect.com/CPAN/
ftp://mirror.yourconnect.com/CPAN/
```

Turkey

```
http://cpan.gazi.edu.tr/
```

Central America

Costa Rica

```
http://mirrors.ucr.ac.cr/CPAN/
ftp://mirrors.ucr.ac.cr/CPAN/
```

Europe

Austria

```
http://cpan.inode.at/
ftp://cpan.inode.at
```

<http://gd.tuwien.ac.at/languages/perl/CPAN/>
<ftp://gd.tuwien.ac.at/pub/CPAN/>

Belgium

<http://ftp.belnet.be/mirror/ftp.cpan.org/>
<ftp://ftp.belnet.be/mirror/ftp.cpan.org/>
<http://ftp.easynet.be/pub/CPAN/>
<http://cpan.weepee.org/>

Bosnia and Herzegovina

<http://cpan.blic.net/>

Bulgaria

<http://cpan.cbox.biz/>
<ftp://cpan.cbox.biz/cpan/>
<http://cpan.digsys.bg/>
<ftp://ftp.digsys.bg/pub/CPAN>

Croatia

<http://ftp.carnet.hr/pub/CPAN/>
<ftp://ftp.carnet.hr/pub/CPAN/>

Czech Republic

<ftp://ftp.fi.muni.cz/pub/CPAN/>
<http://archive.cpan.cz/>

Denmark

<http://mirrors.dotsrc.org/cpan>
<ftp://mirrors.dotsrc.org/cpan/>
<http://www.cpan.dk/>
<http://mirror.uni-c.dk/pub/CPAN/>

Finland

<ftp://ftp.funet.fi/pub/languages/perl/CPAN/>
<http://mirror.eunet.fi/CPAN>

France

<http://cpan.enstimac.fr/>
<ftp://ftp.inria.fr/pub/CPAN/>
<http://distrib-coffee.ipsl.jussieu.fr/pub/mirrors/cpan/>
<ftp://distrib-coffee.ipsl.jussieu.fr/pub/mirrors/cpan/>
<ftp://ftp.lip6.fr/pub/perl/CPAN/>
<http://mir2.ovh.net/ftp.cpan.org>
<ftp://mir1.ovh.net/ftp.cpan.org>
<ftp://ftp.oleane.net/pub/CPAN/>
<http://ftp.crihan.fr/mirrors/ftp.cpan.org/>
<ftp://ftp.crihan.fr/mirrors/ftp.cpan.org/>
<http://ftp.u-strasbg.fr/CPAN>
<ftp://ftp.u-strasbg.fr/CPAN>
<http://cpan.cict.fr/>
<ftp://cpan.cict.fr/pub/CPAN/>

Germany

```
ftp://ftp.fu-berlin.de/unix/languages/perl/
http://mirrors.softliste.de/cpan/
ftp://ftp.rub.de/pub/CPAN/
http://www.planet-elektronik.de/CPAN/
http://ftp.hosteurope.de/pub/CPAN/
ftp://ftp.hosteurope.de/pub/CPAN/
http://www.mirrorspace.org/cpan/
http://mirror.netcologne.de/cpan/
ftp://mirror.netcologne.de/cpan/
ftp://ftp.freenet.de/pub/ftp.cpan.org/pub/CPAN/
http://ftp-stud.hs-esslingen.de/pub/Mirrors/CPAN/
ftp://ftp-stud.hs-esslingen.de/pub/Mirrors/CPAN/
http://mirrors.zerg.biz/cpan/
http://ftp.gwdg.de/pub/languages/perl/CPAN/
ftp://ftp.gwdg.de/pub/languages/perl/CPAN/
http://dl.ambiweb.de/mirrors/ftp.cpan.org/
http://cpan.mirror.clusters.kg/
http://cpan.mirror.iphh.net/
ftp://cpan.mirror.iphh.net/pub/CPAN/
http://cpan.mirroring.de/
http://mirror.informatik.uni-mannheim.de/pub/mirrors/CPAN/
ftp://mirror.informatik.uni-mannheim.de/pub/mirrors/CPAN/
http://www.chemmedia.de/mirrors/CPAN/
http://ftp.cw.net/pub/CPAN/
ftp://ftp.cw.net/pub/CPAN/
http://cpan.cpantesters.org/
ftp://cpan.cpantesters.org/CPAN/
http://cpan.mirrored.de/
ftp://mirror.petamem.com/CPAN/
http://cpan.noris.de/
ftp://cpan.noris.de/pub/CPAN/
ftp://ftp.mpi-sb.mpg.de/pub/perl/CPAN/
ftp://ftp.gmd.de/mirrors/CPAN/
```

Greece

```
ftp://ftp.forthnet.gr/pub/languages/perl/CPAN
ftp://ftp.ntua.gr/pub/lang/perl/
http://cpan.cc.uoc.gr/
ftp://ftp.cc.uoc.gr/mirrors/CPAN/
```

Hungary

```
http://cpan.mirrors.enexis.hu/
ftp://cpan.mirrors.enexis.hu/mirrors/cpan/
http://cpan.hu/
```

Iceland

```
http://ftp.rhnet.is/pub/CPAN/
ftp://ftp.rhnet.is/pub/CPAN/
```

Ireland

```
http://ftp.esat.net/pub/languages/perl/CPAN/
ftp://ftp.esat.net/pub/languages/perl/CPAN/
```

<http://ftp.heanet.ie/mirrors/ftp.perl.org/pub/CPAN>
<ftp://ftp.heanet.ie/mirrors/ftp.perl.org/pub/CPAN>

Italy

<http://bo.mirror.garr.it/mirrors/CPAN/>
<http://cpan.panu.it/>
<ftp://ftp.panu.it/pub/mirrors/perl/CPAN/>

Latvia

<http://kvin.lv/pub/CPAN/>

Lithuania

<http://ftp.litnet.lt/pub/CPAN/>
<ftp://ftp.litnet.lt/pub/CPAN/>

Malta

<http://cpan.waldonet.net.mt/>

Netherlands

<ftp://ftp.quicknet.nl/pub/CPAN/>
<http://mirror.hostfuss.com/CPAN/>
<ftp://mirror.hostfuss.com/CPAN/>
<http://mirrors3.kernel.org/cpan/>
<ftp://mirrors3.kernel.org/pub/CPAN/>
<http://cpan.mirror.versatel.nl/>
<ftp://ftp.mirror.versatel.nl/cpan/>
<ftp://download.xs4all.nl/pub/mirror/CPAN/>
<http://mirror.leaseweb.com/CPAN/>
<ftp://mirror.leaseweb.com/CPAN/>
<ftp://ftp.cpan.nl/pub/CPAN/>
<http://archive.cs.uu.nl/mirror/CPAN/>
<ftp://ftp.cs.uu.nl/mirror/CPAN/>
<http://luxitude.net/cpan/>

Norway

<ftp://ftp.uninett.no/pub/languages/perl/CPAN>
<ftp://ftp.uit.no/pub/languages/perl/cpan/>

Poland

<http://piotrkosoft.net/pub/mirrors/CPAN/>
<ftp://ftp.piotrkosoft.net/pub/mirrors/CPAN/>
<http://ftp.man.poznan.pl/pub/CPAN>
<ftp://ftp.man.poznan.pl/pub/CPAN>
<ftp://ftp.ps.pl/pub/CPAN/>
<ftp://sunsite.icm.edu.pl/pub/CPAN/>
<ftp://ftp.tpnet.pl/d4/CPAN/>

Portugal

<http://cpan.dei.uc.pt/>
<ftp://ftp.dei.uc.pt/pub/CPAN>
<ftp://ftp.ist.utl.pt/pub/CPAN/>

<http://cpan.perl.pt/>
<http://cpan.ip.pt/>
<ftp://cpan.ip.pt/pub/cpan/>
<http://mirrors.nfsi.pt/CPAN/>
<ftp://mirrors.nfsi.pt/pub/CPAN/>
<http://cpan.dcc.fc.up.pt/>

Romania

<http://ftp.astral.ro/pub/CPAN/>
<ftp://ftp.astral.ro/pub/CPAN/>
<ftp://ftp.lug.ro/CPAN>
<http://mirrors.xservers.ro/CPAN/>
<http://mirrors.hostingromania.ro/ftp.cpan.org/>
<ftp://ftp.hostingromania.ro/mirrors/ftp.cpan.org/>
<ftp://ftp.iasi.roedu.net/pub/mirrors/ftp.cpan.org/>

Russia

<ftp://ftp.aha.ru/CPAN/>
<http://cpan.rinet.ru/>
<ftp://cpan.rinet.ru/pub/mirror/CPAN/>
<ftp://ftp.SpringDaemons.com/pub/CPAN/>
<http://mirror.rol.ru/CPAN/>
<http://ftp.silvernet.ru/CPAN/>
<http://ftp.spbu.ru/CPAN/>
<ftp://ftp.spbu.ru/CPAN/>

Slovakia

<http://cpan.fyxm.net/>

Slovenia

<http://www.klevze.si/cpan>

Spain

<http://osl.ugr.es/CPAN/>
<ftp://ftp.rediris.es/mirror/CPAN/>
<http://ftp.gui.uva.es/sites/cpan.org/>
<ftp://ftp.gui.uva.es/sites/cpan.org/>

Sweden

<http://mirrors4.kernel.org/cpan/>
<ftp://mirrors4.kernel.org/pub/CPAN/>

Switzerland

<http://cpan.mirror.solnet.ch/>
<ftp://ftp.solnet.ch/mirror/CPAN/>
<ftp://ftp.adwired.ch/CPAN/>
<http://mirror.switch.ch/ftp/mirror/CPAN/>
<ftp://mirror.switch.ch/mirror/CPAN/>

Ukraine

<http://cpan.makeperl.org/>

```
ftp://cpan.makeperl.org/pub/CPAN
http://cpan.org.ua/
http://cpan.gafol.net/
ftp://ftp.gafol.net/pub/cpan/
```

United Kingdom

```
http://www.mirror-service.org/sites/ftp.funet.fi/pub/languages/perl/CPAN/

ftp://ftp.mirror-service.org/sites/ftp.funet.fi/pub/languages/perl/CPAN/

http://mirror.tje.me.uk/pub/mirrors/ftp.cpan.org/
ftp://mirror.tje.me.uk/pub/mirrors/ftp.cpan.org/
http://www.mirror.8086.net/sites/CPAN/
ftp://ftp.mirror.8086.net/sites/CPAN/
http://cpan.mirror.anlx.net/
ftp://ftp.mirror.anlx.net/CPAN/
http://mirror.bytemark.co.uk/CPAN/
ftp://mirror.bytemark.co.uk/CPAN/
http://cpan.etla.org/
ftp://cpan.etla.org/pub/CPAN
ftp://ftp.demon.co.uk/pub/CPAN/
http://mirror.sov.uk.goscomb.net/CPAN/
ftp://mirror.sov.uk.goscomb.net/pub/CPAN/
http://ftp.plig.net/pub/CPAN/
ftp://ftp.plig.net/pub/CPAN/
http://ftp.ticklers.org/pub/CPAN/
ftp://ftp.ticklers.org/pub/CPAN/
http://cpan.mirrors.uk2.net/
ftp://mirrors.uk2.net/pub/CPAN/
http://mirror.ox.ac.uk/sites/www.cpan.org/
ftp://mirror.ox.ac.uk/sites/www.cpan.org/
```

North America

Bahamas

```
http://www.securehost.com/mirror/CPAN/
```

Canada

```
http://cpan.arcticnetwork.ca
ftp://mirror.arcticnetwork.ca/pub/CPAN
http://cpan.sunsite.ualberta.ca/
ftp://cpan.sunsite.ualberta.ca/pub/CPAN/
http://theoryx5.uwinnipeg.ca/pub/CPAN/
ftp://theoryx5.uwinnipeg.ca/pub/CPAN/
http://arwen.cs.dal.ca/mirror/CPAN/
ftp://arwen.cs.dal.ca/pub/mirror/CPAN/
http://CPAN.mirror.rafael.ca/
ftp://CPAN.mirror.rafael.ca/pub/CPAN/
ftp://ftp.nrc.ca/pub/CPAN/
http://mirror.csclub.uwaterloo.ca/pub/CPAN/
ftp://mirror.csclub.uwaterloo.ca/pub/CPAN/
```

Mexico

```
http://www.msg.com.mx/CPAN/  
ftp://ftp.msg.com.mx/pub/CPAN/
```

United States

Alabama

```
http://mirror.hiwaay.net/CPAN/  
ftp://mirror.hiwaay.net/CPAN/
```

Arizona

```
http://cpan.ezarticleinformation.com/
```

California

```
http://cpan.knowledgematters.net/  
http://cpan.binkerton.com/  
http://cpan.develooper.com/  
http://mirrors.gossamer-threads.com/CPAN  
http://cpan.schatt.com/  
http://mirrors.kernel.org/cpan/  
ftp://mirrors.kernel.org/pub/CPAN  
http://mirrors2.kernel.org/cpan/  
ftp://mirrors2.kernel.org/pub/CPAN/  
http://cpan.mirror.facebook.net/  
http://mirrors1.kernel.org/cpan/  
ftp://mirrors1.kernel.org/pub/CPAN/  
http://cpan-sj.viaverio.com/  
ftp://cpan-sj.viaverio.com/pub/CPAN/  
http://www.perl.com/CPAN/
```

Florida

```
ftp://ftp.cise.ufl.edu/pub/mirrors/CPAN/  
http://mirror.atlantic.net/pub/CPAN/  
ftp://mirror.atlantic.net/pub/CPAN/
```

Idaho

```
http://mirror.its.uidaho.edu/pub/cpan/  
ftp://mirror.its.uidaho.edu/cpan/
```

Illinois

```
http://cpan.mirrors.hoobly.com/  
http://cpan.uchicago.edu/pub/CPAN/  
ftp://cpan.uchicago.edu/pub/CPAN/  
http://mirrors.servercentral.net/CPAN/  
http://www.stathy.com/CPAN/  
ftp://www.stathy.com/CPAN/
```

Indiana

```
ftp://ftp.uwsg.iu.edu/pub/perl/CPAN/  
http://cpan.netnitco.net/  
ftp://cpan.netnitco.net/pub/mirrors/CPAN/  
http://ftp.ndlug.nd.edu/pub/perl/
```

<ftp://ftp.ndlug.nd.edu/pub/perl/>

Massachusetts

<http://mirrors.ccs.neu.edu/CPAN/>

Michigan

<http://ftp.wayne.edu/cpan/>

<ftp://ftp.wayne.edu/cpan/>

Minnesota

<http://cpan.msi.umn.edu/>

New Jersey

<http://mirror.datapipe.net/CPAN/>

<ftp://mirror.datapipe.net/pub/CPAN/>

New York

<http://mirrors.24-7-solutions.net/pub/CPAN/>

<ftp://mirrors.24-7-solutions.net/pub/CPAN/>

<http://mirror.cc.columbia.edu/pub/software/cpan/>

<ftp://mirror.cc.columbia.edu/pub/software/cpan/>

<http://cpan.belfry.net/>

<http://cpan.erlbaum.net/>

<ftp://cpan.erlbaum.net/CPAN/>

<http://cpan.hexten.net/>

<ftp://cpan.hexten.net/>

<ftp://mirror.nyi.net/CPAN/>

<http://mirror.rit.edu/CPAN/>

<ftp://mirror.rit.edu/CPAN/>

North Carolina

<http://www.ibiblio.org/pub/mirrors/CPAN/>

<ftp://ftp.ncsu.edu/pub/mirror/CPAN/>

Oregon

<http://ftp.osuosl.org/pub/CPAN/>

<ftp://ftp.osuosl.org/pub/CPAN/>

Pennsylvania

<http://ftp.epix.net/CPAN/>

<ftp://ftp.epix.net/pub/languages/perl/>

<http://cpan.pair.com/>

<ftp://cpan.pair.com/pub/CPAN/>

South Carolina

<http://cpan.mirror.clemson.edu/>

Tennessee

<http://mira.sunsite.utk.edu/CPAN/>

Texas

<http://mirror.uta.edu/CPAN>

Utah

<ftp://mirror.xmission.com/CPAN/>

Virginia

<http://cpan-du.viaverio.com/>
<ftp://cpan-du.viaverio.com/pub/CPAN/>
<http://perl.secsup.org/>
<ftp://perl.secsup.org/pub/perl/>
<ftp://mirror.cogentco.com/pub/CPAN/>

Washington

<http://cpan.llarian.net/>
<ftp://cpan.llarian.net/pub/CPAN/>
<ftp://ftp-mirror.internap.com/pub/CPAN/>

Wisconsin

<http://cpan.mirrors.tds.net>
<ftp://cpan.mirrors.tds.net/pub/CPAN>
<http://mirror.sit.wisc.edu/pub/CPAN/>
<ftp://mirror.sit.wisc.edu/pub/CPAN/>

Oceania**Australia**

<http://mirror.internode.on.net/pub/cpan/>
<ftp://mirror.internode.on.net/pub/cpan/>
<http://cpan.mirror.aussiehq.net.au/>
<http://mirror.as24220.net/cpan/>
<ftp://mirror.as24220.net/cpan/>

New Zealand

<ftp://ftp.auckland.ac.nz/pub/perl/CPAN/>
<http://cpan.inspire.net.nz>
<ftp://cpan.inspire.net.nz/cpan>
<http://cpan.catalyst.net.nz/CPAN/>
<ftp://cpan.catalyst.net.nz/pub/CPAN/>

South America**Argentina**

<http://cpan.patan.com.ar/>
<http://cpan.localhost.net.ar>
<ftp://mirrors.localhost.net.ar/pub/mirrors/CPAN>

Brazil

<ftp://cpan.pop-mg.com.br/pub/CPAN/>
<http://ftp.pucpr.br/CPAN>
<ftp://ftp.pucpr.br/CPAN>

<http://cpan.kinghost.net/>

Chile

<http://cpan.dcc.uchile.cl/>
<ftp://cpan.dcc.uchile.cl/pub/lang/cpan/>

Colombia

<http://www.laqee.unal.edu.co/CPAN/>

RSYNC Mirrors

mirror.as24220.net::cpan
cpan.inode.at::CPAN
gd.tuwien.ac.at::CPAN
[ftp.belnet.be::packages/cpan](ftp://belnet.be::packages/cpan)
rsync.linorg.usp.br::CPAN
rsync.arcticnetwork.ca::CPAN
CPAN.mirror.rafael.ca::CPAN
mirror.csclub.uwaterloo.ca::CPAN
theoryx5.uwinnipeg.ca::CPAN
www.laqee.unal.edu.co::CPAN
mirror.uni-c.dk::CPAN
rsync.nic.funet.fi::CPAN

rsync://distrib-coffee.ipsl.jussieu.fr/pub/mirrors/cpan/
mir1.ovh.net::CPAN
miroir-francais.fr::cpan
[ftp.crihan.fr::CPAN](ftp://crihan.fr::CPAN)
rsync://mirror.cict.fr/cpan/
rsync://mirror.netcologne.de/cpan/
[ftp-stud.hs-esslingen.de::CPAN/](ftp://stud.hs-esslingen.de::CPAN/)
[ftp.gwdg.de::FTP/languages/perl/CPAN/](ftp://gwdg.de::FTP/languages/perl/CPAN/)
cpan.mirror.iphh.net::CPAN
cpan.cpantesters.org::cpan
cpan.hu::CPAN
komo.vlsm.org::CPAN
mirror.unej.ac.id::cpan
[ftp.esat.net::pub/languages/perl/CPAN](ftp://esat.net::pub/languages/perl/CPAN)
[ftp.heanet.ie::mirrors/ftp.perl.org/pub/CPAN](ftp://heanet.ie::mirrors/ftp.perl.org/pub/CPAN)
rsync.panu.it::CPAN
cpan.fastbull.org::CPAN
[ftp.kddilabs.jp::cpan](ftp://kddilabs.jp::cpan)
[ftp.nara.wide.ad.jp::cpan/](ftp://nara.wide.ad.jp::cpan/)
rsync://ftp.jaist.ac.jp/pub/CPAN/
rsync://ftp.riken.jp/cpan/
mirror.linuxiso.kz::CPAN
rsync://mirrors3.kernel.org/mirrors/CPAN/
rsync://rsync.osmirror.nl/cpan/
mirror.leaseweb.com::CPAN
cpan.nautile.nc::CPAN
mirror.icis.pcz.pl::CPAN
piotrkosoft.net::mirrors/CPAN
rsync://cpan.perl.pt/
[ftp.kaist.ac.kr::cpan](ftp://kaist.ac.kr::cpan)
cpan.sarang.net::CPAN

```
mirror.averse.net::cpan
rsync.oss.eznetsols.org
mirror.ac.za::cpan
ftp.is.co.za::IS-Mirror/ftp.cpan.org/
rsync://ftp.gui.uva.es/cpan/
rsync://mirrors4.kernel.org/mirrors/CPAN/
ftp.solnet.ch::CPAN
ftp.ulak.net.tr::CPAN
gafol.net::cpan
rsync.mirrorservice.org::ftp.funet.fi/pub/
rsync://rsync.mirror.8086.net/CPAN/
rsync.mirror.anlx.net::CPAN
mirror.bytemark.co.uk::CPAN
ftp.plig.net::CPAN
rsync://ftp.ticklers.org/CPAN/
mirrors.ibiblio.org::CPAN
cpan-du.viaverio.com::CPAN
mirror.hiwaay.net::CPAN
rsync://mira.sunsite.utk.edu/CPAN/
cpan.mirrors.tds.net::CPAN
mirror.its.uidaho.edu::cpan
rsync://mirror.cc.columbia.edu::cpan/
ftp.fxcorporate.com::CPAN
rsync.atlantic.net::CPAN
mirrors.kernel.org::mirrors/CPAN
rsync://mirrors2.kernel.org/mirrors/CPAN/
cpan.pair.com::CPAN
rsync://mirror.rit.edu/CPAN/
rsync://mirror.facebook.net/cpan/
rsync://mirrors1.kernel.org/mirrors/CPAN/
cpan-sj.viaverio.com::CPAN
```

For an up-to-date listing of CPAN sites, see <http://www.cpan.org/SITES> or <ftp://www.cpan.org/SITES>.

Modules: Creation, Use, and Abuse

(The following section is borrowed directly from Tim Bunce's modules file, available at your nearest CPAN site.)

Perl implements a class using a package, but the presence of a package doesn't imply the presence of a class. A package is just a namespace. A class is a package that provides subroutines that can be used as methods. A method is just a subroutine that expects, as its first argument, either the name of a package (for "static" methods), or a reference to something (for "virtual" methods).

A module is a file that (by convention) provides a class of the same name (sans the .pm), plus an import method in that class that can be called to fetch exported symbols. This module may implement some of its methods by loading dynamic C or C++ objects, but that should be totally transparent to the user of the module. Likewise, the module might set up an AUTOLOAD function to slurp in subroutine definitions on demand, but this is also transparent. Only the .pm file is required to exist. See *perlsub*, *perlobj*, and *AutoLoader* for details about the AUTOLOAD mechanism.

Guidelines for Module Creation

- Do similar modules already exist in some form?

If so, please try to reuse the existing modules either in whole or by inheriting useful features into a new class. If this is not practical try to get together with the module authors to work on extending or enhancing the functionality of the existing modules. A perfect example is the plethora of packages in *perl4* for dealing with command line options.

If you are writing a module to expand an already existing set of modules, please coordinate with the author of the package. It helps if you follow the same naming scheme and module interaction scheme as the original author.

- Try to design the new module to be easy to extend and reuse.

Try to use `warnings;` (or use `warnings qw(...);`). Remember that you can add `no warnings qw(...);` to individual blocks of code that need less warnings.

Use blessed references. Use the two argument form of `bless` to bless into the class name given as the first parameter of the constructor, e.g.,:

```
sub new {
    my $class = shift;
    return bless {}, $class;
}
```

or even this if you'd like it to be used as either a static or a virtual method.

```
sub new {
    my $self = shift;
    my $class = ref($self) || $self;
    return bless {}, $class;
}
```

Pass arrays as references so more parameters can be added later (it's also faster). Convert functions into methods where appropriate. Split large methods into smaller more flexible ones. Inherit methods from other modules if appropriate.

Avoid class name tests like: `die "Invalid" unless ref $ref eq 'FOO'`. Generally you can delete the `eq 'FOO'` part with no harm at all. Let the objects look after themselves! Generally, avoid hard-wired class names as far as possible.

Avoid `$r->Class::func()` where using `@ISA=qw(... Class ...)` and `$r->func()` would work.

Use `autosplit` so little used or newly added functions won't be a burden to programs that don't use them. Add test functions to the module after `__END__` either using `AutoSplit` or by saying:

```
eval join(' ', <main::DATA>) || die $@ unless caller();
```

Does your module pass the 'empty subclass' test? If you say `@SUBCLASS::ISA = qw(YOURCLASS);` your applications should be able to use `SUBCLASS` in exactly the same way as `YOURCLASS`. For example, does your application still work if you change: `$obj = YOURCLASS->new();` into: `$obj = SUBCLASS->new();` ?

Avoid keeping any state information in your packages. It makes it difficult for multiple other packages to use yours. Keep state information in objects.

Always use **-w**.

Try to use `strict;` (or use `strict qw(...);`). Remember that you can add `no strict qw(...);` to individual blocks of code that need less strictness.

Always use **-w**.

Follow the guidelines in *perlstyle*.

Always use **-w**.

- Some simple style guidelines

The *perlstyle* manual supplied with Perl has many helpful points.

Coding style is a matter of personal taste. Many people evolve their style over several years as they learn what helps them write and maintain good code. Here's one set of assorted suggestions that seem to be widely used by experienced developers:

Use underscores to separate words. It is generally easier to read `$var_names_like_this` than `$VarNamesLikeThis`, especially for non-native speakers of English. It's also a simple rule that works consistently with `VAR_NAMES_LIKE_THIS`.

Package/Module names are an exception to this rule. Perl informally reserves lowercase module names for 'pragma' modules like `integer` and `strict`. Other modules normally begin with a capital letter and use mixed case with no underscores (need to be short and portable).

You may find it helpful to use letter case to indicate the scope or nature of a variable. For example:

```
$ALL_CAPS_HERE    constants only (beware clashes with Perl vars)
$Some_Caps_Here   package-wide global/static
$no_caps_here     function scope my() or local() variables
```

Function and method names seem to work best as all lowercase. e.g., `$obj->as_string()`.

You can use a leading underscore to indicate that a variable or function should not be used outside the package that defined it.

- Select what to export.

Do NOT export method names!

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

Exports pollute the namespace of the module user. If you must export try to use

`@EXPORT_OK` in preference to `@EXPORT` and avoid short or common names to reduce the risk of name clashes.

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

(It is actually possible to get private functions by saying: `my $subref = sub { ... }; &$subref`; . But there's no way to call that directly as a method, because a method must have a name in the symbol table.)

As a general rule, if the module is trying to be object oriented then export nothing. If it's just a collection of functions then `@EXPORT_OK` anything but use `@EXPORT` with caution.

- Select a name for the module.

This name should be as descriptive, accurate, and complete as possible. Avoid any risk of ambiguity. Always try to use two or more whole words. Generally the name should reflect what is special about what the module does rather than how it does it. Please use nested module names to group informally or categorize a module. There should be a very good reason for a module not to have a nested name. Module names should begin with a capital letter.

Having 57 modules all called `Sort` will not make life easy for anyone (though having 23 called `Sort::Quick` is only marginally better :-). Imagine someone trying to install your module alongside many others. If in any doubt ask for suggestions in `comp.lang.perl.misc`.

If you are developing a suite of related modules/classes it's good practice to use nested classes with a common prefix as this will avoid namespace clashes. For example:

`Xyz::Control`, `Xyz::View`, `Xyz::Model` etc. Use the modules in this list as a naming guide.

If adding a new module to a set, follow the original author's standards for naming modules and the interface to methods in those modules.

If developing modules for private internal or project specific use, that will never be released to the public, then you should ensure that their names will not clash with any future public module. You can do this either by using the reserved `Local::*` category or by using a category name that includes an underscore like `Foo_Corp::*`.

To be portable each component of a module name should be limited to 11 characters. If it

might be used on MS-DOS then try to ensure each is unique in the first 8 characters. Nested modules make this easier.

- Have you got it right?

How do you know that you've made the right decisions? Have you picked an interface design that will cause problems later? Have you picked the most appropriate name? Do you have any questions?

The best way to know for sure, and pick up many helpful suggestions, is to ask someone who knows. `Comp.lang.perl.misc` is read by just about all the people who develop modules and it's the best place to ask.

All you need to do is post a short summary of the module, its purpose and interfaces. A few lines on each of the main methods is probably enough. (If you post the whole module it might be ignored by busy people - generally the very people you want to read it!)

Don't worry about posting if you can't say when the module will be ready - just say so in the message. It might be worth inviting others to help you, they may be able to complete it for you!

- README and other Additional Files.

It's well known that software developers usually fully document the software they write. If, however, the world is in urgent need of your software and there is not enough time to write the full documentation please at least provide a README file containing:

- A description of the module/package/extension etc.
- A copyright notice - see below.
- Prerequisites - what else you may need to have.
- How to build it - possible changes to Makefile.PL etc.
- How to install it.
- Recent changes in this release, especially incompatibilities
- Changes / enhancements you plan to make in the future.

If the README file seems to be getting too large you may wish to split out some of the sections into separate files: `INSTALL`, `Copying`, `ToDo` etc.

- Adding a Copyright Notice.

How you choose to license your work is a personal decision. The general mechanism is to assert your Copyright and then make a declaration of how others may copy/use/modify your work.

Perl, for example, is supplied with two types of licence: The GNU GPL and The Artistic Licence (see the files `README`, `Copying`, and `Artistic`, or *perl/gpl* and *perl/artistic*). Larry has good reasons for NOT just using the GNU GPL.

My personal recommendation, out of respect for Larry, Perl, and the Perl community at large is to state something simply like:

```
Copyright (c) 1995 Your Name. All rights reserved.  
This program is free software; you can redistribute it and/or  
modify it under the same terms as Perl itself.
```

This statement should at least appear in the README file. You may also wish to include it in a `Copying` file and your source files. Remember to include the other words in addition to the Copyright.

- Give the module a version/issue/release number.

To be fully compatible with the `Exporter` and `MakeMaker` modules you should store

your module's version number in a non-my package variable called `$VERSION`. This should be a positive floating point number with at least two digits after the decimal (i.e., hundredths, e.g, `$VERSION = "0.01"`). Don't use a "1.3.2" style version. See *Exporter* for details.

It may be handy to add a function or method to retrieve the number. Use the number in announcements and archive file names when releasing the module (ModuleName-1.02.tar.Z). See `perldoc ExtUtils::MakeMaker.pm` for details.

- How to release and distribute a module.

It's good idea to post an announcement of the availability of your module (or the module itself if small) to the `comp.lang.perl.announce` Usenet newsgroup. This will at least ensure very wide once-off distribution.

If possible, register the module with CPAN. You should include details of its location in your announcement.

Some notes about ftp archives: Please use a long descriptive file name that includes the version number. Most incoming directories will not be readable/listable, i.e., you won't be able to see your file after uploading it. Remember to send your email notification message as soon as possible after uploading else your file may get deleted automatically. Allow time for the file to be processed and/or check the file has been processed before announcing its location.

FTP Archives for Perl Modules:

Follow the instructions and links on:

<http://www.cpan.org/modules/00modlist.long.html>
<http://www.cpan.org/modules/04pause.html>

or upload to one of these sites:

<https://pause.kbx.de/pause/>
<http://pause.perl.org/>

and notify `<modules@perl.org>`.

By using the WWW interface you can ask the Upload Server to mirror your modules from your ftp or WWW site into your own directory on CPAN!

Please remember to send me an updated entry for the Module list!

- Take care when changing a released module.

Always strive to remain compatible with previous released versions. Otherwise try to add a mechanism to revert to the old behavior if people rely on it. Document incompatible changes.

Guidelines for Converting Perl 4 Library Scripts into Modules

- There is no requirement to convert anything.

If it ain't broke, don't fix it! Perl 4 library scripts should continue to work with no problems. You may need to make some minor changes (like escaping non-array `@`'s in double quoted strings) but there is no need to convert a `.pl` file into a Module for just that.

- Consider the implications.

All Perl applications that make use of the script will need to be changed (slightly) if the script is converted into a module. Is it worth it unless you plan to make other changes at the same time?

- Make the most of the opportunity.

If you are going to convert the script to a module you can use the opportunity to redesign the

interface. The guidelines for module creation above include many of the issues you should consider.

- The pl2pm utility will get you started.

This utility will read *.pl files (given as parameters) and write corresponding *.pm files. The pl2pm utilities does the following:

- Adds the standard Module prologue lines
- Converts package specifiers from ' to ::
- Converts die(...) to croak(...)
- Several other minor changes

Being a mechanical process pl2pm is not bullet proof. The converted code will need careful checking, especially any package statements. Don't delete the original .pl file till the new .pm one works!

Guidelines for Reusing Application Code

- Complete applications rarely belong in the Perl Module Library.
- Many applications contain some Perl code that could be reused.
Help save the world! Share your code in a form that makes it easy to reuse.
- Break-out the reusable code into one or more separate module files.
- Take the opportunity to reconsider and redesign the interfaces.
- In some cases the 'application' can then be reduced to a small fragment of code built on top of the reusable modules. In these cases the application could invoked as:

```
% perl -e 'use Module::Name; method(@ARGV)' ...  
or  
% perl -mModule::Name ...      (in perl5.002 or higher)
```

NOTE

Perl does not enforce private and public parts of its modules as you may have been used to in other languages like C++, Ada, or Modula-17. Perl doesn't have an infatuation with enforced privacy. It would prefer that you stayed out of its living room because you weren't invited, not because it has a shotgun.

The module and its user have a contract, part of which is common law, and part of which is "written". Part of the common law contract is that a module doesn't pollute any namespace it wasn't asked to. The written contract for the module (A.K.A. documentation) may make other provisions. But then you know when you use `RedefineTheWorld` that you're redefining the world and willing to take the consequences.