

## NAME

AutoLoader - load subroutines only on demand

## SYNOPSIS

```
package Foo;
use AutoLoader 'AUTOLOAD'; # import the default AUTOLOAD subroutine

package Bar;
use AutoLoader;           # don't import AUTOLOAD, define our own
sub AUTOLOAD {
    ...
    $AutoLoader::AUTOLOAD = "...";
    goto &AutoLoader::AUTOLOAD;
}
```

## DESCRIPTION

The **AutoLoader** module works with the **AutoSplit** module and the `__END__` token to defer the loading of some subroutines until they are used rather than loading them all at once.

To use **AutoLoader**, the author of a module has to place the definitions of subroutines to be autoloaded after an `__END__` token. (See *perldata*.) The **AutoSplit** module can then be run manually to extract the definitions into individual files *auto/funcname.al*.

**AutoLoader** implements an AUTOLOAD subroutine. When an undefined subroutine is called in a client module of **AutoLoader**, **AutoLoader**'s AUTOLOAD subroutine attempts to locate the subroutine in a file with a name related to the location of the file from which the client module was read. As an example, if *POSIX.pm* is located in */usr/local/lib/perl5/POSIX.pm*, **AutoLoader** will look for perl subroutines **POSIX** in */usr/local/lib/perl5/auto/POSIX/\*.al*, where the *.al* file has the same name as the subroutine, sans package. If such a file exists, AUTOLOAD will read and evaluate it, thus (presumably) defining the needed subroutine. AUTOLOAD will then `goto` the newly defined subroutine.

Once this process completes for a given function, it is defined, so future calls to the subroutine will bypass the AUTOLOAD mechanism.

### Subroutine Stubs

In order for object method lookup and/or prototype checking to operate correctly even when methods have not yet been defined it is necessary to "forward declare" each subroutine (as in `sub NAME;`). See "SYNOPSIS" in *perlsub*. Such forward declaration creates "subroutine stubs", which are placeholders with no code.

The **AutoSplit** and **AutoLoader** modules automate the creation of forward declarations. The **AutoSplit** module creates an 'index' file containing forward declarations of all the **AutoSplit** subroutines. When the **AutoLoader** module is 'use'd it loads these declarations into its callers package.

Because of this mechanism it is important that **AutoLoader** is always `used` and not `required`.

### Using AutoLoader's AUTOLOAD Subroutine

In order to use **AutoLoader**'s AUTOLOAD subroutine you *must* explicitly import it:

```
use AutoLoader 'AUTOLOAD';
```

### Overriding AutoLoader's AUTOLOAD Subroutine

Some modules, mainly extensions, provide their own AUTOLOAD subroutines. They typically need to check for some special cases (such as constants) and then fallback to **AutoLoader**'s AUTOLOAD for the rest.

Such modules should *not* import **AutoLoader**'s AUTOLOAD subroutine. Instead, they should define their own AUTOLOAD subroutines along these lines:

```
use AutoLoader;
use Carp;

sub AUTOLOAD {
    my $sub = $AUTOLOAD;
    (my $constname = $sub) =~ s/.*:://;
    my $val = constant($constname, @_ ? $_[0] : 0);
    if ($! != 0) {
        if ($! =~ /Invalid/ || ${!EINVAL}) {
            $AutoLoader::AUTOLOAD = $sub;
            goto &AutoLoader::AUTOLOAD;
        }
        else {
            croak "Your vendor has not defined constant $constname";
        }
    }
    *$sub = sub { $val }; # same as: eval "sub $sub { $val }";
    goto &$sub;
}
```

If any module's own AUTOLOAD subroutine has no need to fallback to the AutoLoader's AUTOLOAD subroutine (because it doesn't have any AutoSplit subroutines), then that module should not use **AutoLoader** at all.

### Package Lexicals

Package lexicals declared with `my` in the main block of a package using **AutoLoader** will not be visible to auto-loaded subroutines, due to the fact that the given scope ends at the `__END__` marker. A module using such variables as package globals will not work properly under the **AutoLoader**.

The `vars` pragma (see "*vars*" in *perlmod*) may be used in such situations as an alternative to explicitly qualifying all globals with the package namespace. Variables pre-declared with this pragma will be visible to any autoloader routines (but will not be invisible outside the package, unfortunately).

### Not Using AutoLoader

You can stop using AutoLoader by simply

```
no AutoLoader;
```

### AutoLoader vs. SelfLoader

The **AutoLoader** is similar in purpose to **SelfLoader**: both delay the loading of subroutines.

**SelfLoader** uses the `__DATA__` marker rather than `__END__`. While this avoids the use of a hierarchy of disk files and the associated open/close for each routine loaded, **SelfLoader** suffers a startup speed disadvantage in the one-time parsing of the lines after `__DATA__`, after which routines are cached. **SelfLoader** can also handle multiple packages in a file.

**AutoLoader** only reads code as it is requested, and in many cases should be faster, but requires a mechanism like **AutoSplit** be used to create the individual files. *ExtUtils::MakeMaker* will invoke **AutoSplit** automatically if **AutoLoader** is used in a module source file.

### Forcing AutoLoader to Load a Function

Sometimes, it can be necessary or useful to make sure that a certain function is fully loaded by AutoLoader. This is the case, for example, when you need to wrap a function to inject debugging

code. It is also helpful to force early loading of code before forking to make use of copy-on-write as much as possible.

Starting with AutoLoader 5.73, you can call the `AutoLoader::autoload_sub` function with the fully-qualified name of the function to load from its `.a/` file. The behaviour is exactly the same as if you called the function, triggering the regular `AUTOLOAD` mechanism, but it does not actually execute the autoloader function.

## CAVEATS

AutoLoaders prior to Perl 5.002 had a slightly different interface. Any old modules which use **AutoLoader** should be changed to the new calling style. Typically this just means changing a `require` to a `use`, adding the explicit `'AUTOLOAD'` import if needed, and removing **AutoLoader** from `@ISA`.

On systems with restrictions on file name length, the file corresponding to a subroutine may have a shorter name than the routine itself. This can lead to conflicting file names. The *AutoSplit* package warns of these potential conflicts when used to split a module.

AutoLoader may fail to find the autosplit files (or even find the wrong ones) in cases where `@INC` contains relative paths, **and** the program does `chdir`.

## SEE ALSO

*SelfLoader* - an autoloader that doesn't use external files.

## AUTHOR

`AutoLoader` is maintained by the perl5-porters. Please direct any questions to the canonical mailing list. Anything that is applicable to the CPAN release can be sent to its maintainer, though.

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