

## NAME

UNIVERSAL - base class for ALL classes (blessed references)

## SYNOPSIS

```
$is_io      = $fd->isa("IO::Handle");
$is_io      = Class->isa("IO::Handle");

$does_log   = $obj->DOES("Logger");
$does_log   = Class->DOES("Logger");

$sub        = $obj->can("print");
$sub        = Class->can("print");

$sub        = eval { $ref->can("fandango") };
$ver        = $obj->VERSION;

# but never do this!
$is_io      = UNIVERSAL::isa($fd, "IO::Handle");
$sub        = UNIVERSAL::can($obj, "print");
```

## DESCRIPTION

UNIVERSAL is the base class from which all blessed references inherit. See *perlobj*.

UNIVERSAL provides the following methods:

```
$obj->isa( TYPE )
CLASS->isa( TYPE )
eval { VAL->isa( TYPE ) }
```

Where

TYPE

is a package name

\$obj

is a blessed reference or a package name

CLASS

is a package name

VAL

is any of the above or an unblessed reference

When used as an instance or class method (`$obj->isa( TYPE )`), `isa` returns *true* if `$obj` is blessed into package `TYPE` or inherits from package `TYPE`.

When used as a class method (`CLASS->isa( TYPE )`, sometimes referred to as a static method), `isa` returns *true* if `CLASS` inherits from (or is itself) the name of the package `TYPE` or inherits from package `TYPE`.

If you're not sure what you have (the `VAL` case), wrap the method call in an `eval` block to catch the exception if `VAL` is undefined.

If you want to be sure that you're calling `isa` as a method, not a class, check the invocant with blessed from *Scalar::Util* first:

```
use Scalar::Util 'blessed';
```

```
if ( blessed( $obj ) && $obj->isa("Some::Class") {  
    ...  
}
```

```
$obj->DOES( ROLE )
```

```
CLASS->DOES( ROLE )
```

DOES checks if the object or class performs the role `ROLE`. A role is a named group of specific behavior (often methods of particular names and signatures), similar to a class, but not necessarily a complete class by itself. For example, logging or serialization may be roles.

DOES and `isa` are similar, in that if either is true, you know that the object or class on which you call the method can perform specific behavior. However, DOES is different from `isa` in that it does not care *how* the invocant performs the operations, merely that it does. (`isa` of course mandates an inheritance relationship. Other relationships include aggregation, delegation, and mocking.)

By default, classes in Perl only perform the UNIVERSAL role, as well as the role of all classes in their inheritance. In other words, by default DOES responds identically to `isa`.

There is a relationship between roles and classes, as each class implies the existence of a role of the same name. There is also a relationship between inheritance and roles, in that a subclass that inherits from an ancestor class implicitly performs any roles its parent performs. Thus you can use DOES in place of `isa` safely, as it will return true in all places where `isa` will return true (provided that any overridden DOES *and* `isa` methods behave appropriately).

```
$obj->can( METHOD )
```

```
CLASS->can( METHOD )
```

```
eval { VAL->can( METHOD ) }
```

`can` checks if the object or class has a method called `METHOD`. If it does, then it returns a reference to the sub. If it does not, then it returns *undef*. This includes methods inherited or imported by `$obj`, `CLASS`, or `VAL`.

`can` cannot know whether an object will be able to provide a method through AUTOLOAD (unless the object's class has overridden `can` appropriately), so a return value of *undef* does not necessarily mean the object will not be able to handle the method call. To get around this some module authors use a forward declaration (see *perlsub*) for methods they will handle via AUTOLOAD. For such 'dummy' subs, `can` will still return a code reference, which, when called, will fall through to the AUTOLOAD. If no suitable AUTOLOAD is provided, calling the coderef will cause an error.

You may call `can` as a class (static) method or an object method.

Again, the same rule about having a valid invocant applies -- use an `eval` block or `blessed` if you need to be extra paranoid.

```
VERSION ( [ REQUIRE ] )
```

VERSION will return the value of the variable `$VERSION` in the package the object is blessed into. If `REQUIRE` is given then it will do a comparison and die if the package version is not greater than or equal to `REQUIRE`.

VERSION can be called as either a class (static) method or an object method.

## WARNINGS

**NOTE:** `can` directly uses Perl's internal code for method lookup, and `isa` uses a very similar method and cache-ing strategy. This may cause strange effects if the Perl code dynamically changes `@ISA` in any package.

You may add other methods to the UNIVERSAL class via Perl or XS code. You do not need to use UNIVERSAL to make these methods available to your program (and you should not do so).

## EXPORTS

None by default.

You may request the import of three functions (`isa`, `can`, and `VERSION`), however it is usually harmful to do so. Please don't do this in new code.

For example, previous versions of this documentation suggested using `isa` as a function to determine the type of a reference:

```
use UNIVERSAL 'isa';

$yes = isa $h, "HASH";
$yes = isa "Foo", "Bar";
```

The problem is that this code will *never* call an overridden `isa` method in any class. Instead, use `reftype` from *Scalar::Util* for the first case:

```
use Scalar::Util 'reftype';

$yes = reftype( $h ) eq "HASH";
```

and the method form of `isa` for the second:

```
$yes = Foo->isa("Bar");
```