

Scalar values “typecast” to boolean values

Many of Perl’s control structures look for a boolean value. Perl doesn’t have an explicit “boolean” type, so instead we use the following “typecasting” rules for scalar values:

- If a scalar is a number, then 0 is treated as false, and any other value is treated as true.
- If a scalar is a string, then “0” and the empty string are treated as false, and any other value as true.
- If a scalar is not defined, it is treated as false.



If elsif else

Note that both `elsif` and `else` are optional, but curly brackets are never optional, even if the block contains one statement.

```
if (COND)
{
}
[elsif
{
}]*
[else
{
}]
```



if-elsif-else examples

if example:

```
if($answer == 12)
{
    print "Right -- one year has twelve months!\n";
}
```



if-elsif-else examples

if/else example:

```
if($answer == 12)
{
  print "Right -- one year has twelve months!\n";
}
else
{
  print "No, one year has twelve months!\n";
}
```



if-elsif-else examples

if-elsif-else example:

```
if($answer < 12)
{
    print "Need more months!\n";
}
elsif($answer > 12)
{
    print "Too many months!\n";
}
else
{
    print "Right -- one year has twelve months!\n";
}
```



if-elsif-else examples

if-elsif-elsif example:

```
if($a eq "struct")
{
}
elsif($a eq "const")
{
}
elsif($a ne "virtual")
{
}
```



You can test to see if a variable has a defined value with `defined()`:

```
if(!defined($a))
{
    print "Use of undefined value is not wise!";
}
```



The while construction

```
while(<boolean>
{
  <statement list>
}
```

As with `if-elsif-else`, the curly brackets are not optional.



while examples

```
while (<STDIN>
{
    print;
}
```

[You might note that we are using the implicit variable `$_` in this code fragment.]



until control structure

```
until(<boolean>)  
{  
  <statement list>  
}
```

The `until` construction is the opposite of the `while` construction since it executes the `<statement list>` **until** the `<boolean>` test becomes true.



until example

```
#!/usr/bin/perl -w
# 2006 09 20 -- rdl script22.pl
use strict;
my $line;
until(! ($line=<STDIN>))
{
    print $line;
}
```



for control structure

```
for(<init>; <boolean test>; <increment>)  
{  
  <statement list>  
}
```

Very similar to the C construction. The curly brackets again are not optional.



for example

```
for($i = 0; $i<10; $i++)
{
  print "\$i * \$i = " . $i*$i . "\n";
}
```



Lists and Arrays

- A list in Perl is an ordered collection of scalars.
- An array in Perl is a variable that contains an ordered collection of scalars.



- Can represent a list of scalar values
- General form:
(<scalar1>, <scalar2>, ...)



Examples

```
(0, 1, 5)      # a list of three scalars that are numbers
('abc', 'def') # a list of two scalars that are strings
(1, 'abc', 3)  # can mix values
($a, $b)       # can have values determined at runtime
()             # empty list
```



You can also use the “quoted words” syntax to specify list literals:

```
('apples', 'oranges', 'bananas')  
qw/ apples oranges bananas /  
qw! apples oranges bananas !  
qw( apples oranges bananas )  
qw< apples oranges bananas >
```



- You can use the range operator “..” to create list elements.
- Examples:

```
(0..5)          #  
(0.1 .. 5.1)   # same since truncated (not {\tt floor()}!)  
(5..0)         # evals to empty list  
(1,0..5,'x' x 10) # can use with other types...  
($m..$n)       # can use runtime limits
```



Array variables

- Arrays are declared with the “@” character.

```
my @a;  
my @a = ('a', 'b', 'c');
```

- Notice that you don't have to declare an array's size.



Arrays and scalars

- Arrays and scalars are in separate name spaces, so you can have two different variables \$a and @a.
- Mnemonically, “\$” does look like “S”, and “a” does resemble “@”.

