

Perl

- Practical Extraction and Reporting Language
 - general-purpose, high level, general-purpose, interpreted, dynamic programming language
 - invented by Larry Wall 1987 (a linguist working at NASA)
 - different versions of Perl, upcoming: Perl 6
 - links:
 - www.perl.org/ general site
 - <http://perldoc.perl.org/index-tutorials.html> tutorials

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Running Perl

- *perl [-c] fileName*
 - -c argument only checks for syntax but does not execute the script
- *perl -v*

```
-bash-3.2$ perl -v  
This is perl, v5.8.8 built for x86_64-linux-thread-multi  
Copyright 1987-2006, Larry Wall
```

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Complete documentation for Perl, including FAQ lists, should be found on this system using "man perl" or "perldoc perl". If you have access to the Internet, point your browser at <http://www.perl.org/>, the Perl Home Page.

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- Running a Perl script

- `-bash-3.2$ perl file.pl`

- or use `#!` in first line of script

- `#!/usr/bin/perl`

- perl version of “hello world”

- `print "hello world. \n";` each line must end with “.”

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- Simple Variables

- variables always use \$ sign, e.g.,

- `$i =3;`

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■ Variables, Strings and Integers

- strings specified by text in quotation marks
- strings can be concatenated by operator “.”
- integers support a range operator, e.g., 3..15

```
print 1, 2, 3..15, "\n";    # range operator
print "A", "B", "C", "\n"; # strings
$i = "A" . "B";           # concatenation operator
print "$i", "\n";
```

■ output

```
123456789101112131415
ABC
AB
```

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■ Arrays

- dynamic allocation (don't need to worry about allocation, it is done for you)
- arrays use @ symbol, e.g., @arr

```
@arr = (1,2,3,4,5);
```

This line defines the array "arr" and puts 5 values in it. Same as

```
@arr = (1..5);
```

```
print @arr[0], "\n";    prints out first element of arr
```

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■ Arrays

- array elements start with 0
- use array index to access specific element
- if only array name is printed, the entire array is printed
- using an array in a scalar operation will be interpreted as the number of elements in the array

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■ Arrays

```
@a1 = (1);           # array of 1 element
@a2 = (1,2,3,4,5);  # array of 5 elements
@a3 = (1..10);      # array of 10 elements

print @a1, " ", @a2, " ", @a3, "\n";

print @a1[0], " ", @a2[1], " ", @a3[2], "\n";

# using as scalar will yield number of items
print @a2 + @a3, "\n";
```

will result in the following output:

```
1 12345 12345678910
1 2 3
15
```

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■ Associated arrays

- rather than using index with value 0 to maximum size of array the array value can be used to access elements

```
@month{'January'} = 1;  
@month{'February'} = 2; ...
```

and so on. Then you can read in the month name and access its numeric value this way:

```
$monthnum = $month{$monthname};
```

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■ alternative way to set up array

```
%month = ("January", 1, "February", 2, "March", 3,  
          "April", 4, "May", 5, "June", 6,  
          "July", 7, "August", 8, "September", 9,  
          "October", 10, "November", 11, "December", 12);
```

The set of values that can be used in an associative array, or the keys to the array, are returned as a regular array by a call to the Perl function **keys()**:

```
@monthnames = keys(%month);
```

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■ Mathematical and Logical Operators

- similar to other languages
- +, -, *, /
- integer increments before or after value is used

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■ examples

```
$n = 2;  
print ("\$n=", $n, "\n");  
  
$n = 2 ; print ("increment after \$n=", $n++, "\n");  
$n = 2 ; print ("increment before \$n=", ++$n, "\n");  
$n = 2 ; print ("decrement after \$n=", $n--, "\n");  
$n = 2 ; print ("decrement before \$n=", --$n, "\n");
```

This script generates the following output:

```
$n=2  
increment after $n=2  
increment before $n=3  
decrement after $n=2  
decrement before $n=1
```

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■ examples

```
$n = 2;
print ("\$n+2=", $n + 2, "\n");
print ("\$n-2=", $n - 2, "\n");
print ("\$n*2=", $n * 2, "\n");
print ("\$n/2=", $n / 2, "\n");
```

This script generates the following output:

```
$n+2=4
$n-2=0
$n*2=4
$n/2=1
```

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■ examples

```
$r = 3.14; # real number
print ("\$r=", $r, "\n");

print ("\$r*2=", $r * 2, "\n"); # double
print ("\$r/2=", $r / 2, "\n"); # cut in half

print ("1 && 1 -> ", 1 && 1, "\n");
print ("1 && 0 -> ", 1 && 0, "\n");
print ("1 || 1 -> ", 1 || 1, "\n");
print ("1 || 0 -> ", 1 || 0, "\n");
```

This script generates the following output:

```
$r=3.14
$r*2=6.28
$r/2=1.57
1 && 1 -> 1
1 && 0 -> 0
1 || 1 -> 1
1 || 0 -> 1
```

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■ String Operators

- only simple operation is concatenation

```
$firstname = "Bob";  
$lastname = "Smith";  
$fullname = $firstname . " " . $lastname;  
print "$fullname\n";
```

results in the output:

```
Bob Smith
```

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■ String Operators

- several simple matching operations are available

```
if ($value =~ /abc/) { print "contains 'abc'\n"};  
$value =~ s/abc/def/;    # change 'abc' to 'def'  
$value =~ tr/a-z/A-Z/;   # translate to upper case
```

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■ Comparison Operators

Figure 4-34. Perl comparison operators.

Operation	Numeric values	String values
Equal to	==	eq
Not equal to	!=	ne
Greater than	>	gt
Greater than or equal to	>=	ge
Less than	<	lt
Less than or equal to	<=	le