# A Quick Guide To PERL

This is a Quick reference Guide for PERL 5.8.6 programming. Perl definition is given by its creator, Larry Wall: “Perl is a language to get your job done” and he added “There is more than one way to do it”!
This guide is not exhaustive, its purpose is to give a few essential reminder to the Perl syntax, but basic knowledge of Perl programming is required.

To find help about a Perl function or keyword use perldoc:

```
perldoc -f split
perldoc -q FAQkeyword
```

For more information about Perl in general see:
`http://www.perl.org`

**References**
For more information on Perl syntax you can refer to O’Reilly’s book “Programming Perl, 3rd edition”.

**Structure of a Perl script**

| | |
|---|---|
| `#!/usr/bin/perl` | first line of a Perl script* |
| `...` | |
| *`statement list`* | |
| `...` | |
| `exit 0;` | last line (optional) |
| | |
| *`which perl` | gives the path to the Perl executable (could be /usr/local/bin/perl) |

**Variables Scalars ($)**
In Perl the variables are not strictly typed (no integer, char, float, reference, objects etc...) This is a strength and a weakness of Perl.

| | |
|---|---|
| `$var = “any content”;` | assign a string |
| `$value = 42;` | assign a number |
| `($a,$b,$c)=(41,42,”Jo”);` | assign several scalars at once |
| `($lt,$rt)=($rt,$lt);` | swap values |
| `my $var;` | declare a variable as local lexically |
| `our $var;` | declare a variable as global lexically |
| `local $var;` | declare a variable as local dynamically |

**Variables Arrays (or Lists) (@)**
Array or lists is an indexed collection of values, the first index starts at position zero.

| | |
|---|---|
| `@var=(“aa”,”bb”,”cc”);` | assign an array of 3 elements |
| `print $var[0];` | print scalar “aa” |
| `print $var[1];` | print scalar “bb” |
| `push(@var, $new);` | add an element to @var (right) |
| `$getr=pop(@var);` | remove last element of @var (right) |
| `unshift(@var, $new);` | add an element to @var (left) |
| `$getl=shift(@var);` | remove first element of @var (left) |
| `@rvar=reverse(@var);` | return the reverse order of the elements of @var |
| `@svar=sort(@var);` | return the sorted elements of @var (string sort) |
| `split(/PATTERN/, $var);` | change a string to a list of elements split by a ‘PATTERN’ |
| `join(“MOTIF”, @var);` | join elements of @var with a ‘MOTIF’ to form a single string |
| `$size = @var;` | $size contains the number of elements of the array @var |

**Variables Hashes (%)**
A hash is a structure where a key is associated to a value

| | |
|---|---|
| `%var = (“red”=>x0000FF,`<br>`“blue”=>xFF0000,`<br>`“green”=>x00FF00);` | assign values to 3 hash elements |
| `print $var{“red”};` | contain value x0000FF = 255 |
| `$var{“yellow”}=xFFFF00;` | add a new hash element |
| `@ex = %var;` | convert hash to array |
| `%var = @ex;` | convert array to hash |
| | |
| `print keys(%var);` | give the list of keys for the %var |
| `print values(%var);` | give the list of values for the %var |
| `print each(%var);` | same as values |
| `delete $var{“yellow”}` | delete the hash element |

**Special Variables**
Perl has a large collection of special variables. Here is a short extract.

| | |
|---|---|
| `$_` | default input |
| `@_` | in a subroutine contains the list of arguments |
| `$$` | process ID |
| `$/` | record separator (default = \n) |
| `$@` | eval error or exception |
| `@ARGV` | contain arguments of the command-line |
| `$ARGV[0]` | first argument |
| `%ENV` | contain environment variables |
| `@INC` | contain list of directories for modules to import |

**Control Operators**

| | |
|---|---|
| `&& \|\| !` | logical AND, OR and NOT |
| `< > <= >= != == <=>` | numerical comparison |
| `lt gt le ge ne eq cmp` | string comparison |

Example:

```
if ($var == 42) { print “$var is numeric”;}
elsif ($var eq “XLII”) { print “$var is a string”;}
else {print “$var is not equal to 42”;}
```

Generally:

| | |
|---|---|
| `if (`*`expr1`*`) {`<br>`  `*`statement list1`*<br>`}` | if *`expr1`* is true execute *`list1`* |
| `elsif (`*`expr2`*`) {`<br>`  `*`statement list2`*<br>`}` | else if *`expr2`* is true execute *`list2`* (can have many elseif) |
| `else {`<br>`  `*`statement list3`*<br>`}` | else executes *`list3`* |
| | |
| *`statement`* `if (`*`expr`*`)` | reverse if, execute *`statement`* if *`expr`* is true (also with unless, while, until) |
| `unless(`*`expr`*`) {`<br>`  `*`statement list`*<br>`}` | execute *`statement`* unless *`expr`* is true, handle elsif and else (like if) |

Loops

| | |
|---|---|
| `while(`*`expr`*`) {`<br>`  `*`statement list`*<br>`}` | repeat *`statement`* while *`expr`* is true |
| `do {`<br>`  `*`statement list`*<br>`} until(`*`expr`*`)` | repeat *`statement`* until *`expr`* is true |
| `for(`*`init; expr; incr`*`){`<br>`  `*`statement list`*<br>`}` | repeat *`statement`* a certain number of times |
| `last;` | end loops (while, for, etc...) |
| `next;` | jump to next item in the loop |
| `redo;` | restart loop with current item |

Example: prints 1 to 10

```
for($i=1;$i<=10;$i++){
    print “$i\n”;
}
```

Example: prints each element of array @list

```
foreach $index (@list){
    print $index;
}
```

Subroutines, example:

```
sub add_it {              create a subroutine
     local ($a,$b)=@_;    get arguments
     $var = $a+$b;        sum the values
     return $var;         return the result
}
$result = &add_it(3,5);   call subroutine with arguments,
                          $result contains 8.
```

## File Operators

```
open HANDLE, filename     open a file Handler
close HANDLE              close a file Handler
```

Example:

```
open (FH, "filename");    open file filename for reading
while (<FH>) {            read each record (line) and store in $_
     $text .= $_;         concatenate $_ in $text
}
close(FH);                close filehandle, $text contains the
                          content of file filename

open(FH, ">filename");    open filename for output in write
open(FH, ">>filename");   open filename for output in
                          concatenate
```

Example:

```
open(FH, "ls -l |");      pipe allow to grab command-line
                          output
while (<FH>) {            read and store the output of "ls -l"
     $filelist .= $_;
}
```

Special Handlers

```
<STDIN>                   read from standard input (usually
                          keyboard)
<STDOUT>                  write to standard output (usually
                          screen)
<STDERR>                  write to standard error (usually
                          screen)
```

## File Tests

```
if (-e $filename) { open(READ, $filename); }
```

Some possible tests:

```
-r                        readable
-w                        writable
-x                        executable
-o                        belong to user
-e                        exist
-z                        zero size (file exist)
-s                        nonzero size
-f                        file
-d                        directory
-l                        symlink
-T                        text file
-A                        accessed in days
@var=stat($filename);     get full info on files
```

## String Functions

```
$var="my"x4;              $var contains "mymymymy"
$new=$var.$var;           concatenate 2 strings
$var.=$new;               assign & concatenate, same as
                          $var=$var.$new;
chop($var);               delete last char of $var
chomp($var);              delete \n if last char of $var
$c=substr($var,3,5);      get 5 characters of string $var
                          starting from position 3.
print "Hello world\n";     print a string
printf("%10s %4d %5.2f\n", $s,$i,$r);
                          similar as "C/C++" print
                          formatting
```

## System calls

```
system("ls -l");          execute a system command and
                          continue the current Perl script
exec("rm tmp");           execute a system command and
                          quit the current Perl script
```

## Regular Expressions

Please use the QuickGuide to Perl Regular Expressions in the same series.

## Perl modules

```
http://www.cpan.org       CPAN repository for Perl
                          modules.

use Mymodule;             preload a module or pragma at
                          compilation time
require Mymodule;         preload a module at execution
                          time
```

Perl looks for the real name of the module "Mymodule.pm"

This document was written and designed by Laurent Falquet and Vassilios Ioannidis from the Swiss EMBnet node and being distributed by P&PR Publications Committee of EMBnet.

EMBnet - European Molecular Biology Network - is a bioinformatics support network of bioinformatics support centers situated primarily in Europe. Most countries have a national node which can provide training courses and other forms of help for users of bioinformatics software.

You can find information about your national node from the EMBnet site:

**http://www.embnet.org/**



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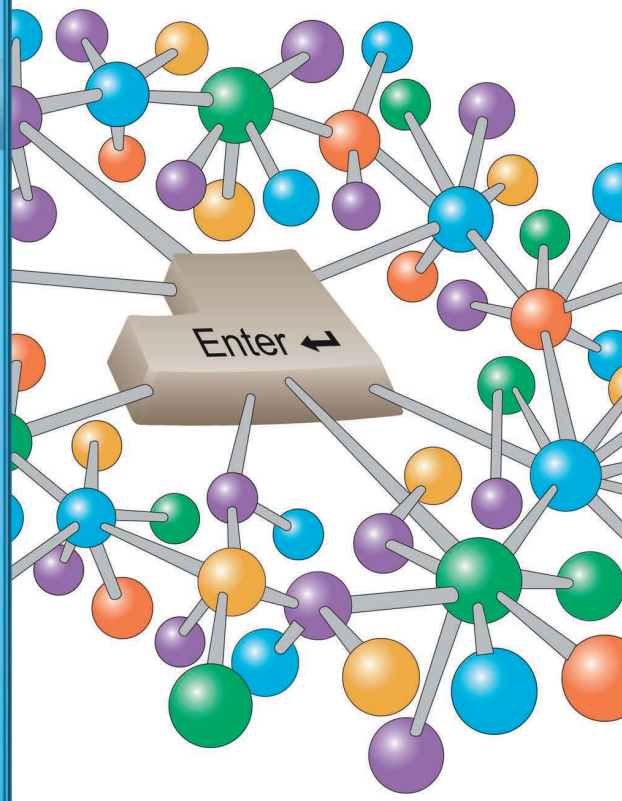


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