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Lecture 9

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Shell options

-v Print shell input lines as they are read.
-x Print commands and their arguments as they are executed.
-c STRING Read and execute commands from STRING after processing the options, then exit.

```
bash -c help
bash -c 'help set'
```

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Shell programming

```
$ cat > hello
echo Hello word!
^D
$ sh hello        -v
Hello word!
$ chmod +x hello
$ ./hello
Hello word!
```

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Parameters

Variable	Bourne-Shell	C-Shell	Korn-Shell, Bash, Pdksh, Zsh
Number of arg-s	$#	$#argv	$#
All arg-s	$*	$*,$argv*, $argv[*]	$*,$@ (preserve whitespaces and quoting)
N argument	$n	$n,argv[n]	$n,$[n]
Prog. name	$0	$0	$0
Last argument		$argv[$#argv]	

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Conditions and switches

B: if *list*; then *list*; [else *list*;] fi
C: if *list*; then *list*; [else if *list*; then *list*;] ... [else *list*;] endif
K: if *list*; then *list*; [elif *list*; then *list*;] ... [else *list*;] fi

B: case *word* in *pattern* [| *pattern*] ...) *list* ;; *) *list* ;; ... esac
C: switch (*word*) case *pattern*: *list* breaksw default: *list* breaksw endsw

Basic logical operators

$? – exit value of the last run command

true – return 0
false – return not 0

prog1 && prog2
prog1 || prog2

B: if list; then list; [elif list; then list;] ... [else list;] fi
C: if (list) then list; [else if (list) then list;] ... [else list;] endif

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Test

test EXPR *or* [EXPR]

Expressions:

-n STR | STR – STR is not zero

-z STR – STR is zero

! EXPR – EXPR is false

EXPR1 -a EXPR2 – AND

EXPR1 -o EXPR2 – OR

STRING1 = STRING2 – the strings are equal

STRING1 != STRING2 – the strings are not equal

INT1 -eq|ge|gt|le|lt|ne INT2 – INT1 and INT2 cmparison

-f FILE – FILE exists and is a regular file

-d FILE – FILE exists and is a directory

-L FILE – FILE exists and is a symbolic link

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Loops

B: while *list*; do *list*; done
C: while (*list*) *list*; end

B: until *list*; do *list*; done

B: for *name* in *word* ...; do *list* ; done
C: foreach *name* (*word* ...) *list* ; end

break [n], continue [n]

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Case switch

case word in [[(] pattern [| pattern] ...) list ;;] ...
esac

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Functions

[function] *name* () {*list*}

return [n]

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Useful functions

basename – strip directory and suffix from filenames
dirname – strip non-directory suffix from file name
echo – display a line of text
eval – execute expression by the shell
exec – replace the shell by command
read – read string from stdin to variable
readonly -- variables are marked readonly
shift – shift parameters
sleep – delay execution for a specified amount of time

which, type – which command?