

# Linux Shell : Scripting with Bash/Ksh

## Presentation

**Objectives** : Master the basics of bash/ksh scripting under Linux.

**Who can benefit** : Anyone.

**Prerequisites** : Knowledge of another operating system.

**Learning technique** : Clear, theoretical course content divided into lessons and extensive LABS available on-line 24/24 7/7.

**Duration** : 21 hours.

**Instructor** : Certified **LPI**.

**Student Progression** : Student progression is monitored both in terms of effective course duration and in terms of student comprehension using self-assessment tests.

**Resources** : RHEL 7 or Debian 8 or Ubuntu 16.04 or SLES 12 Virtual Appliance.

## Cursus

- **Text Manipulation Tools**
  - Manipulating Text Files
    - Regular Expressions
      - BREs
      - EREs
    - Text-search Utilities
      - The grep Command
        - Command Line Switches
      - The egrep Command
        - Command Line Switches
      - The fgrep Command
      - LAB #1 - Using grep, egrep and fgrep
    - The Stream EDitor SED
      - Command Line Switches

- LAB #2 - Using sed
- The Text Processor AWK
  - Presentation
  - Field Separation
  - Conditions
    - A regular expression applied to a record
    - A regular expression applied to a field
    - Comparisons
    - Logical Operators
    - Built-in Variables
  - Awk Scripts
  - The printf function
  - Control Statements
    - if
    - for
    - while
    - do-while
  - Command Line Switches
  - LAB #3 - Using awk
- Other Useful Commands
  - The expand Command
    - Command Line Switches
  - La Commande unexpand
    - Command Line Switches
  - The cut command
    - Command Line Switches
  - The uniq Command
    - Command Line Switches
  - The tr Command
    - Command Line Switches
  - The paste Command
    - Command Line Switches
  - The split Command
    - Command Line Switches

- The diff Command
  - Command Line Switches
- The cmp Command
  - Command Line Switches
- The patch Command
  - Command Line Switches
- The strings Command
  - Command Line Switches
- The comm Command
  - Command Line Switches
- The head Command
  - Command Line Switches
- The tail Command
  - Command Line Switches
- LAB #4 - Use the grep, tr and cut to extract your IP address from the output of ifconfig
- **Commands:** stty, date, who, df, free, whoami, pwd, cd, ls, touch, echo, cp, file, cat, mv, mkdir, rmdir, rm, sort, more, find, su, locate, updatedb, whereis, which, uptime, w, uname, du, lsmod, modprobe, rmmod, modinfo, clear, exit, logout, sleep, grep, egrep, fgrep, sed, awk, tr, paste, cut, split, diff, cmp, uniq, patch, strings, comm, od, head, tail, wall, screen.

- **Command Line Interface**

- The Shell
- /bin/bash
  - Internal And External Commands
  - Aliases
  - The Prompt
  - The history Command
  - The TAB key
  - Metacharacters
    - The \* Metacharacter
    - The ? Metacharacter
    - The [] Metacharacter
    - The extglob Option
    - ?(expression)
    - \*(expression)

- +(expression)
  - @(expression)
  - !(expression)
- Protecting Metacharacters
- Exit Status
- Redirections
- Pipes
- Command Substitution
- Conditional Command Execution
- Environment Variables
  - Principal Variables
  - Internationalisation and Localisation
  - Special Variables
  - The env Command
- Bash Shell Options
  - noclobber
  - noglob
  - nounset
- Basic Shell Scripting
  - Execution
    - Code de retour
    - The IFS Variable
  - The test Command
    - Testing Files
      - LAB #1
    - Testing Strings
      - LAB #2
    - Testing Numbers
      - LAB #3
    - Expressions
      - LAB #4
    - Testing the User Environment
      - LAB #5

- The [[ expression ]] Command
  - LAB #6
- Shell Operators
  - LAB #7
- The expr Command
  - Maths
  - Comparisons
  - Logic
    - LAB #8
  - The let Command
    - Maths
    - Comparisons
    - Logic
    - Binary
      - LAB #9
  - Control Structures
    - If
    - case
    - Loops
      - for
      - while
        - Example
    - Start-up Scripts
    - LAB #10
      - ~/.bash\_profile
      - ~/.bashrc

◦ **Commands:** type, alias, unalias, chsh, history, wc, tee, set, vi, script, read, test, expr, let, if, case, for, while.

## • Scripting Workshop

- LAB #1 - Automating User Management
  - The **create\_user** function
  - The **modif\_user** function
  - The **show\_user** function
  - The **create\_list\_user** function

- The **create\_group** function
- The **modif\_group** function
- The **delete\_group** function
- The **show\_group** function
- Creating a menu
- LAB #2 - Automating Backups,
  - The **archive\_rep** function
  - The **restore\_rep** function
  - The **show\_archive** function
  - The **compress\_archive** function
  - The **decompress\_archive** function
  - Managing errors

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