Executing the examples

A file (linux_basics_training.tar.gz) is available containing most of the examples that are being used in the 'Linux intro' session.

This file can be downloaded from: https://franklbvp.github.io/linux_intro/

Note: the file can downloaded from within a linux environment with the `wget` command:

- Create a directory in your home folder
  `mkdir training`
- Step into this directory
  `cd training`
- Get the tar.gz file
  `wget https://github.com/franklbvp/linuxintro/raw/master/docs/linux_basics_training.tar.gz`
- Unpack the content with the `tar` command:
  `tar xzf linux_basics_training.tar.gz`

Several directories are available and the examples are stored as shell scripts (`.sh` files)

Most of the scripts can be executed without errors with the `bash` command:
`bash filename.sh`

Or you can take a peek into the file and check the different commands being used with the `cat` command: `cat filename.sh`

HANDS-ON: introduction, get started with the terminal

Task	Command
1. Open a terminal to run the command line	Virtual machine: Open the VM and play Linux Check the Applications menu Show applications -> Terminal WSL: Open terminal Linux on Windows MacOS: Open a terminal
2. Identify yourself	`whoami`
3. Identify your shell	`echo $SHELL`

4. Check the kernel version
 	
Check the system distribution
	`uname -r`
	
	`uname -a`

5. Check the hostname of the system you are working on	`hostname`
6. Check the time	`date`
7. Print the Working Directory i.e. the current folder you are working in	`pwd`

HANDS-ON: command line basics

Task	Command
1. Display the list of your files and directories	`ls`

2. Check more options about the ls command and
 	
display all files
	`ls --help`
	`man ls`
	`info ls`
	
	`ls -a`

3. Clear the screen	`clear`

4. Compare the information given by different kinds of help about pwd command	`whatis pwd`
	`help pwd`
	`man pwd`
	`info pwd`

5. Review a few used commands with arrow up/down and compare with output from history	`history`
	`!!`
	`!<num>`

6. Print the history Highlight some command from the list test right mouse click to copy/paste	`history`
7. Exit the shell	`exit`

HANDS-ON: file system basics

Task	Command
1. cd to 'file_system' directory (after expanding the examples file)	`cd file_system (or use tab autocompletion)`

2. Display all files
Get more information
list all files starting with 'li'
	`ls -a`
	`ls -al`
	`ls li*`

3. Clear the screen	`clear`
4. Go to directory 'dir1' check the current directory	`cd dir1` `pwd`
5. Go back to the previous directory (several possibilities)	`cd -` `cd ..`

6. Go to the root directory
check the content of this directory
Go to your home directory
	`cd /`
	`ls`
	`cd ~`

7. Exit the shell	`exit`

HANDS-ON: Working with files and directories

Task	Command
1. Make a directory called CourseLinux in your home directory	`mkdir CourseLinux`
• Create an empty file (my_file) in the directory CourseLinux	`touch CourseLinux/my_file`
• Make a directory called test in CourseLinux directory	`mkdir CourseLinux/test`
• Make a directory called test1 in CourseLinux directory	`mkdir CourseLinux/test1`
• Rename test1 into test2	`mv CourseLinux/test1 CourseLinux/test2`
• Copy the file my_file to the created 'CourseLinux/test' directory	`cp -r -v -i CourseLinux/my_file CourseLinux/test/`
• Change the filename of my_file to my_data.txt in CourseLinux/test directory	`mv CourseLinux/test/my_file CourseLinux/test/my_data.txt`
• Create a symbolic link called mylink2file to CourseLinux/test/my_data.txt in your home directory	`ln -s CourseLinux/test/my_data.txt mylink2file`
• Display mylink2file	`cat mylink2file`
• Remove CourseLinux/test/my_data.txt	`rm -i CourseLinux/test/my_data.txt`
• Try to display again mylink2file	`cat mylink2file`
2. Clear the screen	`clear`
• Go to CourseLinux directory	`cd CourseLinux` `wget https://raw.githubusercontent`

• Download the file https://raw.githubusercontent.com/hpcleuven/Linux-intro/master/tabel.dat and https://raw.githubusercontent.com/hpcleuven/Linux-intro/master/matstats.log	`.com/hpcleuven/Linux-intro/master/tabel.dat`
	
	`wget https://raw.githubusercontent.com/hpcleuven/Linux-intro/master/matstats.log`

• Show the content of the file tabel.dat and matstats.log	`cat tabel.dat` (or `less tabel.dat` or `more tabel.dat`) `less matstats.log` (or `more matstats.log`)
• Show the last part and the first part of matstat.log (show 30 lines)	`tail -30 matstats.log` `head matstats.log`
• List the files of the directory in less	`ls -al | less`

HANDS-ON: More file handling

Task	Hint
1. Clear the screen	`clear`
• List the CourseLinux directory	`ls ~/CourseLinux`
• Archive the CourseLinux directory	`tar -cvf course.tar CourseLinux/`
• Archive and gzip the CourseLinux directory	`tar -czvf ico.tar.gz CourseLinux/`

• Create a new directory newtest under CourseLinux and unpack the archive into it	`mkdir newtest`
	`cd newtest`
	`cp ../ico.tar.gz .`
	`tar -xzvf ico.tar.gz` (or `tar -xvf ico.tar`)

2. Go to 'CourseLinux' directory	`cd ~/CourseLinux`

• Create a directory 'testfiles', create in it a file 'file1' containing a few numbers	`mkdir testfiles`
	`cd testfiles`
	`touch file1`
	`nano file1`

• Copy file1 into file2, remove the user write permission to file2, edit file2, print the files and permissions in testfiles directory	`cp file1 file2`
	`chmod u-w file2`
	`ls -la`

• Try to edit file2 and add some numbers. Does it work?	`nano file2`

Change the permissions of the directory 'testfiles': remove write access for the user, print the files and permissions in the current directory	`cd ..`
	`chmod u-w testfiles`
	`ls -la`

• Try to copy file1 in that directory to a file file3. What happens?	`cp testfiles/file1 testfiles/file3`
• Remove read all the access to testfiles for the others, print the files and permissions in the current directory	`chmod o-rwx testfiles` `ls -la`
• Try to list the files in testfiles directory.	`ls testfiles`

• Remove read access for the user for testfiles directory, print the files and permissions in the current directory	`chmod u-r testfiles` `ls -la`
• Try to list the files in testfiles directory. What happens?	`ls testfiles`
• Go to the testfiles directory and go back one level up	`cd testfiles` `cd ..`
• Remove read access for the user for testfiles directory, print the files and permissions in the current directory	`chmod u-x testfiles` `ls -la`
• Try to go to the testfiles directory. What happens?	`cd testfiles`

HANDS-ON: More commands

Task	Hint
Start the Terminal	
3. Show the path of gcc command	`which gcc`
• Check the path of libraries for gcc command	`whereis gcc|grep lib`
• Display the current user	`whoami`
• Display the sentence “I like Linux” with “I” removed and letters converted into capital letters	`echo "I like Linux" | tr -d 'I'|tr a-z A-Z`
• Run the command line calculator and check the result of 1/2 • Do the same but display 2 digits	`bc` within bc type `1/2` (enter will show the result) change the display format with `scale=2` (confirm with enter) type again `1/2` (enter will display the correct value) to exit bc type `quit`
• Save date to file date.txt	`date > date.txt`
• Add another line displaying the date into date.txt file	`date >> date.txt`
• Copy the date.txt into date1.txt file	`cp date.txt date1.txt`
• Add the text “I like Linux” to date1.txt file	`echo "I like Linux" >> date1.txt`
• Add the text “And I do not” to date.txt file	`echo "And I do not" >> date.txt`
• Display the information about changes between date.txt and date1.txt files	`diff date.txt date1.txt`
• Check the disk usage of CourseLinux directory	`du –kah CourseLinux`
• Count words and lines in date.txt file	`wc date.txt`

HANDS-ON: Processes

Task	Hint
• Clear the screen	`clear`
• Check the processes running	`ps -aux`
• Start the nano editor (from the command line)	`nano`
• Open a second terminal	
• Search there for the process id of the nano editor	in a new terminal: `ps -aux | grep nano`
• Kill the editor	`kill <pid>`
• Start xeyes in background	`xeyes &`