**Red Hat Certification System Administrator**

# Linux Architecture

The kernel is linked directly to the hardware components. The shell is a higher level than the kernel and we have the highest level that is the closest to the user which is the user interface.

# Check status of services

**systemctl** **status** sshd : This command will check the status of the service sshd which is the service responsible for remote connections.

# Check ip address

**ip addr** : To see the interfaces and ip addresses.

# Relative path vs Absolute path

Absolute path is when we start from the root directory and pass to another directory (/home/elie)

♣ Commands are case sensitive

# Open a file and write in it

**cat >** firstFile

Here we can write some text but if there were some info in the file before it will be overridden.

**cat >>** firstFile

Here we will not override we will just add.

**cat -n >>** firstFile

Will add the number for each line

# Traverse between directories

**cd -** : Go to the last directory.

**cd ~** : Go to home directory.

# Work with directories

**mkdir -p** 1/2/3/4 : Here we created 4 direcotires nested in each other so the the directory 1 is the first parent.

**mkdir** {2008..2021}-{01..12}

**rmdir 6/ :** Removes the directory 6 but in condition that the directory is empty otherwise we should add the parameter **-f**

**rmdir -rf** 4/ : ‘r’ means recursif so here it will delete nested directories. We can also add the **-i** that will ask for confirmation before deleting.

# Check the history of commands

**history** : Show all executed commands and each command will be listed on a line with the number of the command, let’s say I want to execute the command of the line 71 I can do : **!71**

**!!** : Will execute the last command

**history -c** : Will delete the history

# Check info about machine and os

**uname -a**

# File ownership

Owner : Group : World : Path

4 read (r)

2 write (w)

1 execute (x)

7 = 4+2+1

6 = 4+2

**ls -l** file ou **ll** file:

- rw- rw- r--

The - determines a file or directory or link.

**chmod** 554 file : Will give the following access rules for the file.

**chmod +x** : Add execute permission to owner and group of file.

**chmod u+rw** : Add r/w to user.

**chmod -R+x** : Add execute permissions to files and directories permissions recursively.

**chmod g-rw** : Removes read and write for group

**chown** root file : Change the owner group of file so root is owner of group

**chown** root : root file : Changes the owner and group of file.

**chgrp** root : file : Change the group to root for the file.

# Work with files

**touch** file-‘date +%d-%M-%Y’

Result : file-4-12-2021

**touch** file{1..100}.txt

Here we will create files going from 1 to 100

# Copy some files

**cp** .txt Downloads

Will copy all text files to the Downloads directory.

**cp -pv** file Downloads/

The ‘-p’ is used to preserve parameters so for example the modification date of the copied file will be same as before copying. The ‘-v’ means verbose which will show us a sentence explaining what happened.

**cp -R** Desktop/ Downloads/

The ‘-R’ is used to copy a directory.

**scp** backup.tar.gz root@192.168.2.140:/opt/ : Will copy file to opt directory on the remote server.

# Move some files

**mv** file othernamefile : Renames the file.

**mv** file Downloads/ : Moves to Downloads.

# List some files

**ls -m** /home/elie : ‘-m’ is used to list files separated with a comma. Usually used when exporting.

**ls -r** : list subdirectories also.

**less** : Display file content 1 page at a time

# Create a link

**ln -s** Kenlm/LICENSE : Create link to that file with same name

# Compare two files

**diff** file1 file2 : Verify if two files are equal

# Output some data

**head** : By default, prints first 10 lines of file

**head -n** 15 : First 15 lines

**tail** : last 10 lines

# Arithmetic expression

**echo $**((7+3)) : Will output 10

# Brace expansion

**echo** abc{elie,joe}xyz : Will output 2 things : abceliexyz and abcjoexyz

**echo** {090..100} : 090 091 092 … 100

**echo** a{A{1,2},B{3,4}}b : aA1b aA2b aB3b aB4b

# Work with echo

**echo $**{USER} : Will output the value of the variable USER

**echo \**$USER : Outputs \USER

**echo** my name is \\$USER : Will output my name is elie because the \\ will cancel the one the other.

# Work with partitions

**df -h** : Will show us partitions and directories with some details.

**du -sh** /etc/\* : Shows directories size inside of etc directory.

# Work with users

**who** : Used to see the users currently logged.

# Work with processes

**ps -aux** : Show all running processes.

**ps -U** elie : Show the processes running by the user elie.

# Get help for a certain command

**ls --help**

**man ls**

# Search for files

**locate** or **find** : Locate is faster but need database update. Find is used when we know where the file is located.

**updatedb** : Will do a database update

**find** /home/ **-i -name** “file1” : The ‘-i’ will ignore the case sensitive.

**locate -i** fil : If you know a fragment of file

**locate -ib** fil : Without the ‘-b’ it will take the path as a search parameter so it will output everything in it. The ‘-b’ will force to use the last thing we wrotes in the command.

# Archieve and compress

**tar -cvzf** backup.tar.gz : Will extract the file

# Redirection of errors

Standard input : 0

Standard output : 1

Standard error : 2

**ls** /root 2**>** /temp/errors : Will insert the error line into errors file and the ‘2’ refers to the standard error value.

**find** /etc **-name** passwd **>** /tmp/output 2 **>** /tmp/error : Will redirect the output file to /tmp/output and if there is an error, the /tmp/error will be filled with the error line.

**ls** /home/aravi **>>** /tmp/errors 2 **>** &1 : The **>>** will let insert multiple things instantly so here we insert the output and the error if there is one.