

Lab : Learning basic Linux commands

OS Used: Kali Linux (2022.4)

1.1. Command Name: ls Syntax: ls [option] [directory]

1.2. Usage: The ls command lists files and directories within the file system, and shows detailed information about them.

1.3 Commands Used:

❑ \$ls => It lists all the unhidden files and directories within current directory

❑ \$ls OSLab => It lists all the files and directories of OSLab directory

❑ \$ls -l OSLab => It lists files in long listing format which includes:

—The file type.

—The file permissions.

—Number of hard links to the file.

—File owner.

—File group.

—File size.

—Date and Time.

—File name.

Output:

```
(Rajani@kali)-[~]
$ ls
Desktop  Downloads  myfile.txt  OSLab  Public  Videos
Documents Music      nano.8518.save  Pictures  Templates

(Rajani@kali)-[~]
$ ls OSLab
myReport.txt.save

(Rajani@kali)-[~]
$ ls -l OSLab
total 4
-rw-r--r-- 1 Rajani Rajani 6 Apr 20 11:28 myReport.txt.save
```

2.1 Command Name: cd Syntax: cd[directory]

2.2 Usage: The "cd" command is used to change the current working directory in Linux. It is a very basic but essential command that is used frequently in command-line operations

2.3 Commands Used:

❑ **cd Documents:** Change to a directory called "Documents" that is located in the current directory.

❑ **cd .. :** Change to the parent directory (i.e., the directory one level up from the current

directory).

❑ **cd /:** Change to the root directory.

❑ **cd ~:** Change to your home directory.

❑ **cd -:** Change to the previous directory that you were in.

Output:

```
(Rajani@kali)-[~]
$ cd OSLab/
(Rajani@kali)-[~/OSLab]
$ cd ..
(Rajani@kali)-[~]
$ cd /
(Rajani@kali)-[/]
$ cd ~
(Rajani@kali)-[~]
$ cd -
/
```

3.1 Command Name: grep Syntax: grep [options] pattern [files]

3.2 Usage: grep is a command-line utility for searching text patterns in one or more files.

3.3 Commands Used:

❑ **grep "pattern" filename:** Search for the specified pattern in the file named filename

❑ **grep "pattern" file1 file2 file3:** Search for the specified pattern in the files file1, file2, and file3.

❑ **grep -r "pattern" directory:** Search for the specified pattern in all files in the specified directory and its subdirectories.

❑ **grep "pattern" filename | more:** Search for the specified pattern in the file named filename and display the matching lines one page at a time.

❑ **grep -n "pattern" filename:** Search for the specified pattern in the file named filename and display the matching lines along with their line numbers.

❑ **grep -c "pattern" filename:** Search for the specified pattern in the file named filename and display the total number of matches.

Output:

```

(Rajani@kali)-[~]
└─$ grep "files" myfile.txt
It is a folder which contains detail about files, files

(Rajani@kali)-[~]
└─$ grep -n "contains" myfile.txt
2:It is a folder which contains detail about files, files

(Rajani@kali)-[~]
└─$ grep -c "about" myfile.txt
1

```

4.1 Command Name: su/sudo Syntax: sudo [options] command

4.2 Usage: The sudo command in Linux allows a user with administrative privileges to execute a command or program as another user, usually the root user.

4.3 Commands Used:

- ❑ **sudo su:** Runs commands or programs with elevated privileges.
- ❑ **sudo -i:** Stimulates initial login environment settings, such as the user's home directory.
- ❑ **sudo -s:** starts a shell with elevated privileges.
- ❑ **sudo apt-get update:** This command updates the package list on a Debian-based system, such as Ubuntu.
- ❑ **sudo usermod -aG groupname username:** This command adds the user to the specified

```

(Rajani@kali)-[~]
└─$ sudo su
[sudo] password for Rajani:
(Rajani@kali)-[/home/Rajani]
└─$ sudo -i
(Message from Kali developers)

This is a minimal installation of Kali Linux, you likely
want to install supplementary tools. Learn how:
= https://www.kali.org/docs/troubleshooting/common-minimum-setup/

(Run: "touch ~/.hushlogin" to hide this message)
(Rajani@kali)-[~]
└─$ sudo -s
(Rajani@kali)-[~]
└─$ sudo apt-get update
Get:1 http://kali.cs.nycu.edu.tw/kali kali-rolling InRelease [41.2 kB]
Get:2 http://kali.cs.nycu.edu.tw/kali kali-rolling/main amd64 Packages [19.3 MB]
Get:3 http://kali.cs.nycu.edu.tw/kali kali-rolling/main amd64 Contents (deb) [44.5 MB]
Get:4 http://kali.cs.nycu.edu.tw/kali kali-rolling/contrib amd64 Packages [116 kB]
Get:5 http://kali.cs.nycu.edu.tw/kali kali-rolling/contrib amd64 Contents (deb) [172 kB]
Get:6 http://kali.cs.nycu.edu.tw/kali kali-rolling/non-free amd64 Packages [217 kB]
Get:7 http://kali.cs.nycu.edu.tw/kali kali-rolling/non-free amd64 Contents (deb) [927 kB]
Fetched 65.2 MB in 55s (1.178 kB/s)
Reading package lists ... Done

(Rajani@kali)-[~]
└─$ sudo usermod -aG Lanichhane Rajani
usermod: group 'Lanichhane' does not exist

```

5.1 Command Name: pwd Syntax: pwd

5.2 Usage: Prints the current working directory.

5.3 Commands Used:

- ❖ **pwd:** Prints the absolute pathname of the current working directory.

- ❖ **pwd -L:** Prints the logical pathname of the current working directory, which may contain symbolic links. This is the default behavior of the pwd command.
- ❖ **pwd -P:** Prints the physical pathname of the current working directory, which does not contain symbolic links. This is useful when you need to know the actual location of a file or directory, rather than its symbolic link location.
- ❖ **pwd --help:** Displays the help message for the pwd command, which includes a brief description of the command and a list of available options.
- ❖ **pwd --version:** Displays the version of the pwd command.

greOutput:

```
(root@kali)-[~]
# pwd
/root

(root@kali)-[~]
# pwd -L
/root

(root@kali)-[~]
# pwd --help
pwd: bad option: -h

(root@kali)-[~]
# pwd -h
pwd: bad option: -h
```

6.1 Command Name: mv Syntax: mv [options] source destination

6.2 Usage: Used to move or rename files and directories.

6.3 Commands Used:

- ❖ **mv olddir newdir:** Renames the directory named OSlab to OSreport.
- ❖ **mv oldfile.txt newfile.txt:** Renames the file named oldfile.txt to newfile.txt

```
(Rajani@kali)-[~]
$ mv lab.txt lab1.txt

(Rajani@kali)-[~]
$ ls
Desktop  Downloads  lab2.txt  nano.8518.save  Pictures  Templates
Documents  lab1.txt  Music    OSReport       Public    Videos
```

7.1 Command Name: cp Syntax: cp [options] source_file destination

7.2 Usage: Used to move or rename files and directories.

7.3 Commands Used:

- ❖ **cp files1 files2:** Copying file1 content to another file i.e., files2.
- ❖ **cp files1 /home/kali/Desktop/files2:** Copying file1 content to another file i.e. located on Desktop files2.
- ❖ **cp -r folder1/ folder2/:** Copy directory in a Linux.

```

(Rajani@kali)-[~]
$ ls
Desktop  Downloads  lab2.txt  nano.8518.save  Pictures  Templates
Documents  lab1.txt  Music  OSReport  Public  Videos

(Rajani@kali)-[~]
$ cp lab1.txt lab2.txt

(Rajani@kali)-[~]
$ cp lab1.txt /home/kali/Desktop/report.txt
cp: cannot stat '/home/kali/Desktop/report.txt': Permission denied

(Rajani@kali)-[~]
$ sudo su
[sudo] password for Rajani:
(Root@kali)-[/home/Rajani]
# cp lab1.txt /home/Rajani/Desktop/report.txt

(Root@kali)-[/home/Rajani]
# cp -r OS/Lab/
cp: missing destination file operand after 'OS/Lab/'
Try 'cp --help' for more information.

```

8.1 Command Name: rm Syntax: rm [options] file1 file2 file3...

8.2 Usage: Used to remove files and directories.

8.3 Commands Used:

- ❖ \$ rm text: Deleting single files only.
- ❖ \$ rm -rf *.txt: Deleting entire file format using wild cards.
- ❖ \$ rmdir folder1/: Deleting single folder only

Output:

```

(Rajani@kali)-[~]
$ ls
archive.tar  directory2  Downloads  my_directory  nano.8518.save  Pictures  Templates
Desktop      directory3  lab.txt    myfile.tar    OSReport        Public    Videos
directory1   Documents  Music      myfile.txt     os.txt          rajani.txt

(Rajani@kali)-[~]
$ rm rajani.txt

(Rajani@kali)-[~]
$ rmdir OSReport
rmdir: failed to remove 'OSReport': Directory not empty

(Rajani@kali)-[~]
$ rm -rf*.txt
rm: invalid option -- '*'
Try 'rm --help' for more information.

(Rajani@kali)-[~]
$ ls
archive.tar  directory2  Downloads  my_directory  nano.8518.save  Pictures  Videos
Desktop      directory3  lab.txt    myfile.tar    OSReport        Public
directory1   Documents  Music      myfile.txt     os.txt          Templates

```

9.1 Command Name: mkdir Syntax: mkdir [options] directory_name(s)

9.2 Usage: Used to create directories.

9.3 Commands Used:

- ❖ mkdir my_directory: Creates a directory named my_directory in the current directory.
- ❖ mkdir directory1 directory2 directory3: Creates three directories named directory1, directory2, and directory3 in the current directory.
- ❖ mkdir -m 777 my_directory: Creates a directory with specific permissions.

Output:

```
(Rajani@kali)-[~]
$ ls
Desktop  Documents  Downloads  Music  nano.8518.save  OSReport  Pictures  Public  Templates  Videos

(Rajani@kali)-[~]
$ mkdir my_directory

(Rajani@kali)-[~]
$ mkdir directory1 directory2 directory3

(Rajani@kali)-[~]
$ mkdir -m 777 my_directory
mkdir: cannot create directory 'my_directory': File exists

(Rajani@kali)-[~]
$ ls
Desktop  directory2  Documents  Music  nano.8518.save  Pictures  Templates  Videos
directory1  directory3  Downloads  my_directory  OSReport  Public
```

10.1 Command Name: chmod Syntax: chmod [options] mode file(s)

10.2 Usage: Changes the permissions of files and directories.

10.3 Commands Used:

- ❖ \$ chmod 755 filename: Changes file permissions to allow read, write, and execute access for the owner, and read and execute access for everyone else

```
(Rajani@kali)-[~]
$ chmod 777 rajani.txt

(Rajani@kali)-[~]
$ ls
Desktop  directory2  Documents  Music  nano.8518.save  Pictures  rajani.txt  Videos
directory1  directory3  Downloads  my_directory  OSReport  Public  Templates
```

11.1 Command Name: cat Syntax: cat [OPTION]... [FILE]...

11.2 Usage: Displays the contents of one or more files in the terminal.

11.3 Commands Used:

- ❖ cat lab.txt: displays the contents of a single file called "lab.txt"

Output:

```
(Rajani@kali)-[~]
$ cat lab.txt

(Rajani@kali)-[~]
$
```

12.1 Command Name: chown Syntax: chown [OPTION]... [OWNER][:GROUP] FILE...

12.2 Usage: Changes the ownership of a file or directory.

12.3 Commands Used:

- ❖ chown newowner filename: Change the owner of a file to a new user.

```
(Rajani@kali)-[~]
$ chown newowner lab.txt
chown: invalid user: 'newowner'

(Rajani@kali)-[~]
$
```

13.1 Command Name: echo Syntax: echo [OPTION]... [STRING]...

13.2 Usage: prints text or variables to the terminal.

13.3 Commands Used:

- ❖ echo "Hello, World!": prints the text "Hello, World!".
- ❖ echo \$name: prints the value of a variable to the terminal using the "\$" symbol followed by the name of the variable

```
(Rajani@kali)-[~]
$ echo "Hello, Rajani"
Hello, Rajani

(Rajani@kali)-[~]
$ echo $rajani
```

14.1 Command Name: wc Syntax: wc [options] [files]

14.2 Usage: Stands for "word count," and counts the number of lines, words, and characters in a file. **14.3 Commands Used:**

❑ **wc -l -w -c myfile.txt:** displays the number of lines, words, and bytes in the

"myfile.txt" file.

Output:

```
(Rajani@kali)-[~]
$ wc -l -w -c myfile.txt
 4  32 165 myfile.txt

(Rajani@kali)-[~]
$
```

15.1 Command Name: man Syntax: man [options] [command or topic]

15.2 Usage: Stands for "manual," and displays the documentation for a specific command or topic.

15.3 Commands Used:

❑ **man ls:** Displays the manual page for the "ls" command, which is used to list the contents of a directory.

❑ **man 5 passwd:** Displays the manual page for the "passwd" file format, which is used to store user account information and "5" option specifies that we want to view the manual page for the file format (as opposed to the "passwd" command itself).

Output:

```
LS(1)                                User Commands                                LS(1)

ls - list directory contents

SYNOPSIS
  ls [OPTION]... [FILE]...

DESCRIPTION
  List information about the FILES (the current directory by default).  Sort entries alphabetically if none of -eFlowMR nor --sort is specified.
  Mandatory arguments to long options are mandatory for short options too.

  -a, --all
      do not ignore entries starting with .
  -A, --almost-all
      do not list implied . and ..
  --author
      with -l, print the author of each file
  -b, --escape
      print C-style escapes for nongraphical characters
  --block-size=SIZE
      with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below
  -d, --ignore-backups
      do not list implied entries ending with ~
  -C
      with -lt: sort by, and show, ctime (time of last modification of file status information); with -li: show ctime and sort by name; otherwise: sort by time, newest first
  -c
      list entries by columns
  --color[=WHEN]
      color the output WHEN; see Info below
  -d, --directory
      list directories themselves, not their contents
  -D, --dired
      generate output designed for Emacs' dired mode

Manual page LS(1) line 3 (press h for help or q to quit)
```

16.2 Usage: Built-in command that displays a list of previously executed commands in the current shell session.

16.3 Commands Used

❑ **history 10:** displays the last 10 commands executed in the current shell session.

❑ **History -a:** ensures that the current session's commands are saved to the history file when the session is terminated.


```

(Rajani@kali)-[~]
$ history 10
83  clear
84  echo "Hello, Rajani"
85  echo $rajani
86  clear
87  wc -l -w -c lab.txt
88  touch myfile.txt
89  clear
90  wc -l -w -c myfile.txt
91  clear
92  history 10

(Rajani@kali)-[~]
$ history -a

```

17.1 Command Name: clear Syntax: clear

17.2 Usage: clears the terminal screen and often clears the screen of any previous output or text that may be cluttering the terminal.

17.3 Commands Used:

□ **Clear:** When this command is executed, it will clear the terminal screen and move the cursor to the top left corner.

Output:

```

(Rajani@kali)-[~]
$ history 10
83  clear
84  echo "Hello, Rajani"
85  echo $rajani
86  clear
87  wc -l -w -c lab.txt
88  touch myfile.txt
89  clear
90  wc -l -w -c myfile.txt
91  clear
92  history 10

(Rajani@kali)-[~]
$ history -a

```

18.1 Command Name: touch Syntax: touch [OPTIONS] FILENAME

18.2 Usage: Creates a new file or update the modification time of an existing file.

18.3 Commands Used:

- **touch myfile.txt:** Creates a new file called "myfile.txt".
- **touch -d "2022-12-31 23:59:59" myfile.txt:** Specifies a particular date and time for the file's modification time, you would use the "-d" option like this.

Output:

```
(Rajani@kali)-[~]
$ touch os.txt

(Rajani@kali)-[~]
$ touch -d "2023-04-21 7:45:00" os.txt

(Rajani@kali)-[~]
$ ls
Desktop  directory2  Documents  lab.txt  my_directory  nano.8518.save  os.txt
directory1  directory3  Downloads  Music    myfile.txt    OSReport       Pictures
```

19.1 Command Name: locate Syntax: locate [OPTIONS] PATTERN

19.2 Usage: Searches for files and directories in the system.

19.3 Commands Used:

❑ **locate example:** Searches for all files and directories that contain the word "example" in their name.

❑ **locate -i EXAMPLE:** To perform a case-insensitive search, you would use the "-i" option like this.

Output:

```
(Rajani@kali)-[~]
$ ls
Desktop  directory2  Documents  lab.txt  my_directory  nano.8518.save  os.txt  Public  Templates
directory1  directory3  Downloads  Music    myfile.txt    OSReport       Pictures  rajani.txt  Videos

(Rajani@kali)-[~]
$ locate OSReport
/var/lib/plocate/plocate.db: No such file or directory

(Rajani@kali)-[~]
$ locate -i OSReport
/var/lib/plocate/plocate.db: No such file or directory
```

20.1 Command Name: netstat Syntax: varies depending on the platform or operating system you are using.

20.2 Usage: Displays active network connections, routing tables, and various network statistics. **20.3**

Commands Used:

❑ **netstat -a:** displays all active network connections.

❑ **netstat -au:** displays active UDP connections.

Output:

```

(Rajani@kali) ~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address         State
tcp        0      0 10.0.2.15:bootpc      10.0.2.2:bootps        ESTABLISHED
rawm       0      0 [::]:1pvc1             [::]:1                   7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node      Path
unix 3      [ ]         STREAM     CONNECTED    16962
unix 3      [ ]         STREAM     CONNECTED    16903
unix 3      [ ]         STREAM     CONNECTED    16668
unix 3      [ ]         STREAM     CONNECTED    17050      /run/user/1001/at-spi-bus_0
unix 2      [ ]         DGRAM      CONNECTED    16701
unix 3      [ ]         DGRAM      CONNECTED    15526
unix 3      [ ]         STREAM     CONNECTED    16947      /run/user/1001/bus
unix 3      [ ]         STREAM     CONNECTED    16738
unix 3      [ ]         STREAM     CONNECTED    18455      /run/systemd/journal/stdout
unix 3      [ ]         STREAM     CONNECTED    17052      @/tmp/.X11-unix/X0
unix 3      [ ]         STREAM     CONNECTED    16855      /run/systemd/journal/stdout
unix 3      [ ]         STREAM     CONNECTED    16960
unix 2      [ ACC ]      STREAM     LISTENING    16124      /tmp/.X11-unix/X0
unix 3      [ ]         STREAM     CONNECTED    16946
unix 3      [ ]         STREAM     CONNECTED    16324
unix 3      [ ]         STREAM     CONNECTED    15850      /run/user/1001/bus
unix 3      [ ]         STREAM     CONNECTED    16917      /run/systemd/journal/stdout
unix 2      [ ]         DGRAM      CONNECTED    15694
unix 3      [ ]         DGRAM      CONNECTED    13829
unix 3      [ ]         STREAM     CONNECTED    16946
unix 3      [ ]         STREAM     CONNECTED    16619      /run/systemd/journal/stdout
unix 3      [ ]         STREAM     CONNECTED    17607
unix 3      [ ]         STREAM     CONNECTED    1604
unix 3      [ ]         STREAM     CONNECTED    16795
unix 3      [ ]         STREAM     CONNECTED    15851      /run/user/1001/bus
unix 3      [ ]         LISTENING  16977      /tmp/ssh-xxxxXxOv9aac9/agent
unix 2      [ ]         STREAM     CONNECTED    16958      @/tmp/.X11-unix/X0
unix 2      [ ACC ]      STREAM     LISTENING    16050      /tmp/.ICE-unix/738
unix 3      [ ]         STREAM     CONNECTED    15936
unix 2      [ ]         DGRAM      CONNECTED    17080
unix 3      [ ]         STREAM     CONNECTED    15955      @/tmp/.X11-unix/X0
unix 3      [ ]         STREAM     CONNECTED    15998
unix 3      [ ]         STREAM     CONNECTED    18902

```

21.1 Command Name: df Syntax: df [options] [file system]

21.2Usage: displays information about the file system disk space usage.

21.3 Commands Used:

- **df**: Displays information about all mounted file systems.
- **df -h**: Displays information about file systems in a human-readable format.

Output:

```

(Rajani@kali)-[~]
$ df
Filesystem            1K-blocks    Used Available Use% Mounted on
udev                  976152      0    976152   0% /dev
tmpfs                 202876      924    201952   0% /run
/dev/sda1             82083148 13557840 64309760 18% /
tmpfs                1014376      0    1014376   0% /dev/shm
tmpfs                 5120         0     5120     0% /run/lock
tmpfs                 202872      80     202792   1% /run/user/1001

(Rajani@kali)-[~]
$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            954M   0 954M   0% /dev
tmpfs          199M 924K 198M   1% /run
/dev/sda1       79G   13G   62G  18% /
tmpfs          991M   0 991M   0% /dev/shm
tmpfs           5.0M   0 5.0M   0% /run/lock
tmpfs          199M  80K 199M   1% /run/user/1001

(Rajani@kali)-[~]
$ █

```

22.1 Command Name: du Syntax: du [options] [file or directory]

22.2Usage: Estimates file space usage.

22.3 Commands Used:

- ▢ **du filename:** displays the size of a file or directory.
- ▢ **du directory:** displays the size of a directory and its contents.

Output:

```
(Rajani@kali)-[~]
$ ls
Desktop  directory2  Documents  lab.txt  my_directory  nano.8518.save  os.txt  Public  Templates
directory1  directory3  Downloads  Music  myfile.txt  OSReport  Pictures  rajani.txt  Videos

(Rajani@kali)-[~]
$ du myfile.txt
4      myfile.txt

(Rajani@kali)-[~]
$ du OSReport
8      OSReport/OSLab
12     OSReport

(Rajani@kali)-[~]
$
```

23.1 Command Name: uname Syntax: uname [options]

23.2 Usage: Used to print system information.

23.3 Commands Used:

❑ **uname -a:** display the system information.

❑ **uname -s:** display the kernel name.

Output:

```
(Rajani@kali)-[~]
$ uname -a
Linux kali 6.0.0-kali3-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.0.7-1kali1 (2022-11-07) x86_64 GNU/Linux

(Rajani@kali)-[~]
$ uname -s
Linux

(Rajani@kali)-[~]
$
```

24.1 Command Name: passwd Syntax: passwd [options] [username]

24.2 Usage: Used to change a user's password.

24.3 Commands Used:

❑ **passwd:** Changes the current user's password.

Output:

```
(Rajani@kali)-[~]
$ passwd
Changing password for Rajani.
Current password: 
```

25.1 Command Name: useradd Syntax: useradd [options] username

25.2 Usage: Used to create a new user account.

25.3 Commands Used:

❑ **useradd username:** Creates a new user account.

❑ **useradd -c "User account for John Smith" username:** Creates a new user account with a comment.

Output:

```
(root@kali)-[~]
# useradd OS

(root@kali)-[~]
# useradd -c "OS lab report writing" OS
useradd: user 'OS' already exists

(root@kali)-[~]
# useradd -c "OS lab report writing" OSLab

(root@kali)-[~]
#
```

26.1 Command Name: userdel Syntax: userdel [options] username

26.2 Usage: Used to delete a user account.

26.3 Commands Used:

❑ **userdel username:** Deletes a user account.

Output:

```
(root@kali)-[~]
# useradd OS

(root@kali)-[~]
# useradd -c "OS lab report writing" OS
useradd: user 'OS' already exists

(root@kali)-[~]
# useradd -c "OS lab report writing" OSLab

(root@kali)-[~]
# userdel OS

(root@kali)-[~]
#
```

27.1 Command Name: apt-get Syntax: sudo apt-get [options]

[command][package_name(s)]

27.2Usage: Used to manage packages on a Debian-based system.

27.3 Commands Used:

❏ **sudo apt-get install vim:** Installs the vim text editor.

Output:

```
(Rajani@kali)-[~]
└─$ sudo apt-get install vim
[sudo] password for Rajani:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  binutils-mingw-w64-i686 binutils-mingw-w64-x86_64 ettercap-common ettercap-graphical figlet finger
  gcc-mingw-w64-base gcc-mingw-w64-i686-win32 gcc-mingw-w64-1686-win32-runtime gcc-mingw-w64-x86_64-win32
  gcc-mingw-w64-x86_64-win32-runtime libaio1 libapache2-mod-php liblinear4 liblua5.1-2 liblua5.1-common
  lua-lpeg medusa mingw-w64-common mingw-w64-i686-dev mingw-w64-x86_64-dev nmap-common oracle-instantclient-ba
  python-odf-doc python-odf-tools python-tables-data python3-aioredis python3-apscheduler python3-bottleneck
  python3-git python3-gitdb python3-numexpr python3-odf python3-pandas python3-pandas-lib python3-pefile
  python3-pyexploitdb python3-pyfiglet python3-pyshodan python3-qrcode python3-quamash python3-smmmap
  python3-tables python3-tables-lib python3-tld python3-yaswfp rwho rwhod sparta-scripts toilet-fonts wapiti
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  vim-common vim-runtime vim-tiny
Suggested packages:
  ctags vim-doc vim-scripts indent
Recommended packages:
```

28.1 Command Name: ping Syntax: ping [options] destination

28.2Usage: It is a tool that sends packets of data to a specific network host or IP address and measures the response time.

28.3 Commands Used:

❏ **ping 8.8.8.8:** To ping the Google DNS server at IP address 8.8.8.8, we can use this

command.

Output:

```
(Rajani@kali)-[~]
└─$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
From 10.0.2.2 icmp_seq=1 Destination Net Unreachable
From 10.0.2.2 icmp_seq=2 Destination Net Unreachable
From 10.0.2.2 icmp_seq=3 Destination Net Unreachable
From 10.0.2.2 icmp_seq=4 Destination Net Unreachable
From 10.0.2.2 icmp_seq=5 Destination Net Unreachable
From 10.0.2.2 icmp_seq=6 Destination Net Unreachable
From 10.0.2.2 icmp_seq=7 Destination Net Unreachable
From 10.0.2.2 icmp_seq=8 Destination Net Unreachable
From 10.0.2.2 icmp_seq=9 Destination Net Unreachable
From 10.0.2.2 icmp_seq=10 Destination Net Unreachable
From 10.0.2.2 icmp_seq=11 Destination Net Unreachable
From 10.0.2.2 icmp_seq=12 Destination Net Unreachable
From 10.0.2.2 icmp_seq=13 Destination Net Unreachable
```

29.1 Command Name: find Syntax: find [path] [expression]

29.2Usage: Used to search for files and directories in a specified location based on various criteria such as file name, file size, date modified, and permissions.

29.3 Commands Used:

❏ **find . -name "*.txt" -type f -print:** Find all files in the current directory and its subdirectories with

the extension .txt

Output:

```
(Rajani@kali)-[~]
$ find . -name "*.txt" -type f -print
./lab.txt
./mozilla/firefox/dtnc5jde.default-esr/SiteSecurityServiceState.txt
./mozilla/firefox/dtnc5jde.default-esr/AlternateServices.txt
./mozilla/firefox/dtnc5jde.default-esr/pkcs11.txt
./rajani.txt
./OSReport/Lab1.txt
./OSReport/OSLab/myfile.txt
./OSReport/Lab2.txt
./Desktop/report.txt
./os.txt
./myfile.txt
```

30.1 Command Name: head Syntax: head [options] [filename]

30.2 Usage: used to print the first lines of a file.

30.3 Commands Used:

□ **head -n 10 filename.txt:** Print the first 10 lines of a file.

Output:

```
(Rajani@kali)-[~]
$ head -n 5 myfile.txt
It is a place where a set of file will be stored.
It is a folder which contains detail about files, files
size, and time when they are created and last
modified.
```

31.1 Command Name: rename Syntax rename [options] 's/pattern/replacement/' file(s):

31.2 Usage: Used to batch rename multiple files at once by specifying a pattern to match and a replacement string.

31.3 Commands Used:

Output:

```
(Rajani@kali)-[~]
$ rename 's/\.txt$/\.md/' *.txt
Command 'rename' not found, did you mean:
command 'vrename' from deb libverilog-perl
command 'arename' from deb arename
command 'mrename' from deb mrename
command 'hrename' from deb hfsutils
command 'prename' from deb rename
command 'krename' from deb krename
Try: sudo apt install <deb name>
```

32.1 Command Name: tail Syntax: tail [options] [file]

32.2 Usage: Used to display the last part of a file or stream.

32.3 Commands Used:

- ❑ **tail myfile.txt:** Displays the last 10 lines of a file.
- ❑ **tail -c 100 myfile.txt:** Display the last 100 bytes of a file.

Output:

```
(Rajani@kali)-[~]
└─$ ls
Desktop  directory2  Documents  lab.txt  my_directory  nano.8518.save  os.txt  Public  Templates
directory1  directory3  Downloads  Music  myfile.txt  OSReport  Pictures  rajani.txt  Videos

(Rajani@kali)-[~]
└─$ tail myfile.txt
It is a place where a set of file will be stored.
It is a folder which contains detail about files, files
size, and time when they are created and last
modified.

(Rajani@kali)-[~]
└─$ tail -c 100 myfile.txt
which contains detail about files, files
size, and time when they are created and last
modified.
```

33.1 Command Name: tac Syntax: tac [options] [file]

33.2 Usage: Used to display the contents of a file in reverse order, that is, the last line is displayed first and so on.

33.3 Commands Used:

- ❑ **tac myfile.txt:** Display the contents of a file in reverse order.
- ❑ **grep "pattern" myfile.txt | tac:** Using tac with grep, we can search for a pattern in a file and display the matching lines in reverse order.

Output:

```
(Rajani@kali)-[~]
└─$ tac myfile.txt
modified.
size, and time when they are created and last
It is a folder which contains detail about files, files
It is a place where a set of file will be stored.

(Rajani@kali)-[~]
└─$ grep "OS Report" myfile.txt | tac
```

34.1 Command Name: comm Syntax: comm [options] file1 file2

34.2 Usage: Used to compare two sorted files line by line and display the lines that are unique to each file as well as the lines that are common to both files.

34.3 Commands Used:

- ❑ **comm myfile.txt lab.txt:** Compare two sorted files and display the lines that are unique to each file.
- ❑ **comm -12 myfile.txt lab.txt:** Compare two sorted files and display only the lines that are unique to both files.

Output:

```
(Rajani@kali)-[~]
$ comm myfile.txt lab.txt
It is a place where a set of file will be stored.
comm: file 1 is not in sorted order
It is a folder which contains detail about files, files
size, and time when they are created and last
modified.
comm: input is not in sorted order

(Rajani@kali)-[~]
$ comm -12 myfile.txt lab.txt
comm: file 1 is not in sorted order
comm: input is not in sorted order
```

35.1 Command Name: cut **Syntax:** cut [options] [file]

35.2 Usage: Used to extract sections from each line of a file or from the output of another command.

35.3 Commands Used:

- ❑ **cut -f1 myfile.txt:** Extract the first field from a file, using the tab character as the delimiter.
- ❑ **cut -c5-7 myfile.txt:** Extract the characters in positions 5, 6, and 7 from each line of a file.

Output:

```
(Rajani@kali)-[~]
$ cut -f1 myfile.txt
It is a place where a set of file will be stored.
It is a folder which contains detail about files, files
size, and time when they are created and last
modified.

(Rajani@kali)-[~]
$ cut -c5-7 myfile.txt
s a
s a
, a
fie
```

36.1 Command Name: sort **Syntax:** sort [options] [file]

36.2 Usage: Used to sort lines of text in a file or from the output of another command.

36.3 Commands Used:

- ❑ **sort myfile.txt:** Sort the lines of a file in alphabetical order.
- ❑ **sort -r myfile.txt:** Sort the lines of a file in reverse alphabetical order.

Output:

```

(Rajani@kali)-[~]
$ sort myfile.txt
It is a folder which contains detail about files, files
It is a place where a set of file will be stored.
modified.
size, and time when they are created and last

(Rajani@kali)-[~]
$ sort -r myfile.txt
size, and time when they are created and last
modified.
It is a place where a set of file will be stored.
It is a folder which contains detail about files, files

```

37.1 Command Name: date **Syntax:** date [options] [+FORMAT]

37.2 Usage: Used to display or set the date and time of the system clock.

37.3 Commands Used:

□ **date:** Displays the current date and time in the default format.

□ **date -u:** Display the current date and time in UTC.

Output:

```

(Rajani@kali)-[~]
$ date
Sat Apr 22 10:17:08 AM EDT 2023

(Rajani@kali)-[~]
$ date -u
Sat Apr 22 02:17:21 PM UTC 2023

(Rajani@kali)-[~]
$

```

39.1 Command Name: time **Syntax:** time [options] command

39.2 Usage: Used to measure the execution time of a command or program.

39.3 Commands Used:

□ **time ls:** displays the execution time of the ls command and the output of the command.

□ **time sleep 5:** displays the execution time of the command.

Output:

```

(Rajani@kali)-[~]
$ time ls
Desktop  directory2  Documents  lab.txt  my_directory  nano.8518.save
directory1  directory3  Downloads  Music    myfile.txt    OSReport

real    0m0.010s
user    0m0.004s
sys     0m0.005s

(Rajani@kali)-[~]
$ time sleep 5

real    0m5.027s
user    0m0.003s
sys     0m0.007s

```

40.1 Command Name: host **Syntax:** host [options] name

40.2 Usage: Used to perform DNS lookups and display information about DNS records for a given domain name or IP address.

40.3 Commands Used:

❑ **host example.com:** displays the IP address of the domain name example.com.

Output:

```
(Rajani@kali)-[~]
$ host google.com
google.com has address 142.250.193.238
google.com has IPv6 address 2404:6800:4002:81d::200e
google.com mail is handled by 10 smtp.google.com.
```

41.1 Command Name: wget **Syntax:** wget [options] URL

41.2 Usage: Used to download files from the Internet using various protocols, such as HTTP, HTTPS, and FTP. **41.3 Commands Used:**

❑ **wget <http://example.com/file.zip>:** downloads the file file.zip from the website example.com and save it in the current directory.

Output:

```
(Rajani@kali)-[~]
$ wget http://google.com/file.zip
--2023-04-22 21:54:55-- http://google.com/file.zip
Resolving google.com (google.com)... 142.250.193.238, 2404:6800:4002:81d::200e
Connecting to google.com (google.com)|142.250.193.238|:80... connected.
HTTP request sent, awaiting response... 404 Not Found
2023-04-22 21:54:55 ERROR 404: Not Found.
```

42.1 Command Name: id **Syntax:** id [options] [username]

42.2 Usage: Used to display information about a user or group.

42.3 Commands Used:

❑ **id:** displays information about the current user, including the UID, GID, and supplementary group IDs.

❑ **id -u username:** displays the UID for the user with the username 'username'.

Output:

```
(Rajani@kali)-[~]
$ id
uid=1001(Rajani) gid=1002(Rajani) groups=1002(Rajani),27(sudo)

(Rajani@kali)-[~]
$ id -u Rajani
1001
```

43.1 Command Name: ps **Syntax:** ps [options]

43.2 Usage: Used to display information about running processes.

43.3 Commands Used:

❑ **ps -ef:** Shows all processes running on the system with detailed information.

Output:

```
(Rajani@kali)-[~]
$ ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1        0  0  10:02 ?        00:00:01 /sbin/init splash
root           2        0  0  10:02 ?        00:00:00 [kthreadd]
root           3        2  0  10:02 ?        00:00:00 [rcu_gp]
root           4        2  0  10:02 ?        00:00:00 [rcu_par_gp]
root           5        2  0  10:02 ?        00:00:00 [slub_flushwq]
root           6        2  0  10:02 ?        00:00:00 [netns]
root           8        2  0  10:02 ?        00:00:00 [kworker/0:0H-events_highpri]
root          10        2  0  10:02 ?        00:00:00 [mm_percpu_wq]
root          11        2  0  10:02 ?        00:00:00 [rcu_tasks_kthread]
root          12        2  0  10:02 ?        00:00:00 [rcu_tasks_rude_kthread]
root          13        2  0  10:02 ?        00:00:00 [rcu_tasks_trace_kthread]
root          14        2  0  10:02 ?        00:00:00 [ksoftirqd/0]
root          15        2  0  10:02 ?        00:00:01 [rcu_preempt]
```

44.1 Command Name: top **Syntax:** top

44.2 Usage: Provides real-time information about the system's processes and resource usage.

44.3 Commands Used:

❑ **top -d 5 -n 10:** Shows the system's CPU and memory usage, as well as the most resource-intensive processes, updated every 5 seconds for a total of 10 iterations.

Output:

```
Mem Mem : 1981.2 total, 964.2 free, 568.6 used, 448.4 buff/cache
Mem Swap: 1024.0 total, 1024.0 free, 0.0 used, 1265.6 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
 576 root        20   0  347900 101340 55652 S   1.8   5.0   0:39.36 Xorg
 961 Rajani     20   0  203964 31612 18256 S   1.2   1.6   0:17.33 panel-13-cpugra
 866 Rajani    20   0  152916  2792  2316 S   0.6   0.1   0:12.82 VBoxClient
 915 Rajani    20   0  932060 104608 76912 S   0.6   5.2   0:12.00 xfwm4
 964 Rajani    20   0  423956 30320 20496 S   0.6   1.5   0:08.01 panel-15-genmon
 965 Rajani    20   0  665876 47132 34008 S   0.4   2.3   0:02.14 panel-16-pulsea
 14 root        20   0      0      0      0 S   0.2   0.0   0:00.17 ksoftirqd/0
 15 root        20   0      0      0      0 I   0.2   0.0   0:02.18 rcu_preempt
 6371 root       20   0      0      0      0 I   0.2   0.0   0:00.26 kworker/0:0-events
 6465 root       20   0      0      0      0 I   0.2   0.0   0:00.47 kworker/1:2-mm_percpu_wq
 6674 Rajani    20   0  466004 104804 86036 S   0.2   5.2   0:01.73 qterminal
 1 root        20   0  167488 12028  8892 S   0.0   0.6   0:01.68 systemd
 2 root        20   0      0      0      0 S   0.0   0.0   0:00.02 kthreadd
 3 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_gp
 4 root        0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
```

45.1 Command Name: kill **Syntax:** kill [options] PID

45.2 Usage: Used to terminate a process.

45.3 Commands Used:

❑ **kill 201279:** Terminates a process with the process ID 201279.

Output:

```
(Rajani@kali)-[~]
$ firefox &
[1] 4631

(Rajani@kali)-[~]
$ [GFX1-]: Unrecognized feature ACCELERATED_CANVAS2D
Missing chrome or resource URL: resource://gre/modules/UpdateListener.jsm
Missing chrome or resource URL: resource://gre/modules/UpdateListener.sys.mjs

(Rajani@kali)-[~]
$ kill 4631

(Rajani@kali)-[~]
$ Exiting due to channel error.
Exiting due to channel error.
Exiting due to channel error.
Exiting due to channel error.
Exiting due to channel error.
```

46.1 Command Name: pkill **Syntax:** pkill [options] pattern

46.2 Usage: Sends signals to processes based on their name or other attributes.

46.3 Commands Used:

❑ **pkill -15 firefox:** Terminate multiple processes at once, so it should be used with.

Output:

```
(Rajani@kali)-[~]
$ pkill -15 firefox

(Rajani@kali)-[~]
$ Exiting due to channel error.
```

47.1 Command Name: killall **Syntax:** killall [options] name

47.2 Usage: Sends signals to processes based on their name.

47.3 Commands Used:

❑ **killall process_name:** Terminates multiple processes in one stroke.

Output:

```
(Rajani@kali)-[~]
$ firefox &
[2] 6413

(Rajani@kali)-[~]
$ killall firefox
firefox: no process found
[2]+  Done                  firefox
```

48.1 Command Name: bg **Syntax:** bg [job_spec]

48.2Usage: Used to move a suspended job to the background, allowing other jobs to be run in the foreground.

48.3 Commands Used:

- **bg:** moves the most recently suspended job to the background, simply type.
- **bg %firefox:** moves the job whose command line contains the word "firefox" to the background.

Output:

```
(Rajani@kali)-[~]  
$ bg  
bash: bg: job 1 already in background  
  
(Rajani@kali)-[~]  
$ bg %firefox  
bash: bg: job 1 already in background
```

49.1 Command Name: fg **Syntax:** fg [job_spec]

49.2Usage: Used to move a suspended or background job to the foreground, allowing it to continue running and receive input from the user.

49.3 Commands Used:

- **fg:** moves the most recently suspended or backgrounded job to the foreground.

Output:

```
(Rajani@kali)-[~]  
$ fg  
firefox
```

50.1 Command Name: tar **Syntax:** tar [options] [archive-name] [files or directories to be archived]

50.2Usage: Used to create, manipulate, and extract tar archives in Linux.

50.3 Commands Used:

- **tar -cvf archive.tar mydir:** Creates a new archive file called archive.tar containing a directory called mydir.

❑ **tar -xvf archive.tar:** Extracts the contents of an existing archive file called archive.tar in the current directory.

Output:

```
(Rajani@kali)-[~]
$ tar -cvf archive.tar mydir
tar: mydir: Cannot stat: No such file or directory
tar: Exiting with failure status due to previous errors

(Rajani@kali)-[~]
$ tar -xvf archive.tar
```

51.1 Command Name: gzip **Syntax:** gzip [options] [file1] [file2] [...]

51.2 Usage: popular compression utility in Linux that is used to compress and decompress files.

51.3 Commands Used:

❑ **gzip file.txt:** Compresses a file called file.txt and creates a new compressed file called file.txt.gz.

❑ **gzip -d file.txt.gz:** Decompresses a file called file.txt.gz and create a new file called file.txt.

Output:

```
(Rajani@kali)-[~]
$ gzip myfile.txt

(Rajani@kali)-[~]
$ gzip -d myfile.txt.gz

(Rajani@kali)-[~]
$ ls
archive.tar  directory2  Downloads  my_directory  nano.8518.save
Desktop      directory3  lab.txt    myfile.tar     OSReport
directory1   Documents  Music      myfile.txt     os.txt
```

52.1 Command Name: ip **Syntax:** ip [options] [object] [command] [arguments]

52.2 Usage: powerful utility in Linux used for network configuration and management.

52.3 Commands Used:

❑ **ip addr show:** displays information about all network interfaces on the system.

❑ **ip addr show eth0:** displays detailed information about a specific network interface.

Output:

```

(Rajani@kali)-[~]
$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:b1:9d:67 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
        valid_lft 83564sec preferred_lft 83564sec
    inet6 fe80::a3d3:423:4b1f:2380/64 scope link noprefixroute
        valid_lft forever preferred_lft forever

(Rajani@kali)-[~]
$ ip addr show eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:b1:9d:67 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
        valid_lft 83549sec preferred_lft 83549sec
    inet6 fe80::a3d3:423:4b1f:2380/64 scope link noprefixroute
        valid_lft forever preferred_lft forever

```

53.1 Command Name: w **Syntax:** w [options]

53.2 Usage: Used to display information about the currently logged-in users and their processes.

53.3 Commands Used:

❑ **w:** displays a list of currently logged-in users, along with the time they logged in, the current time, and how long they've been logged in, simply run the w command with no options.

Output:

```

(Rajani@kali)-[~]
$ w
10:51:06 up 48 min, 1 user, load average: 0.30, 0.18, 0.12
USER   TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
Rajani  tty7     :0                10:03   48:18   1:16   0.42s xfce4-session

```