EX.NO:1B

DATE:

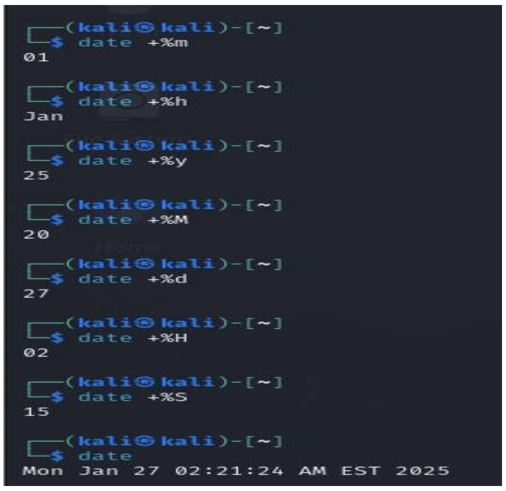
BASIC LINUX COMMANDS

1.1 GENERAL PURPOSE COMMANDS

1. The 'date' command:

The date command displays the current date with day of week, month, day, time (24 hours clock) and the year.

SYNTAX: $ date



```
┌──(kali㉿kali)-[~]
└─$ date +%m
01

┌──(kali㉿kali)-[~]
└─$ date +%h
Jan

┌──(kali㉿kali)-[~]
└─$ date +%y
25

┌──(kali㉿kali)-[~]
└─$ date +%M
20

┌──(kali㉿kali)-[~]
└─$ date +%d
27

┌──(kali㉿kali)-[~]
└─$ date +%H
02

┌──(kali㉿kali)-[~]
└─$ date +%S
15

┌──(kali㉿kali)-[~]
└─$ date
Mon Jan 27 02:21:24 AM EST 2025
```

The date command can also be used with following format.

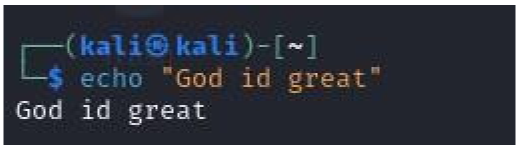
Format	Purpose	Example
+ %m	To display only month	$ date + %m
+ %h	To display month name	$ date + %h
+ %d	To display day of month	$ date + %d
+ %y	To display last two digits of the year	$ date + %y
+ %H	To display Hours	$ date + %H
+ %M	To display Minutes	$ date + %M
+ %S	To display Seconds	$ date + %S

2. The echo'command:

The echo command is used to print the message on the screen.

SYNTAX: $ echo

EXAMPLE: $ echo “God is Great”



```
┌──(kali㉿kali)-[~]
└─$ echo "God id great"
God id great
```

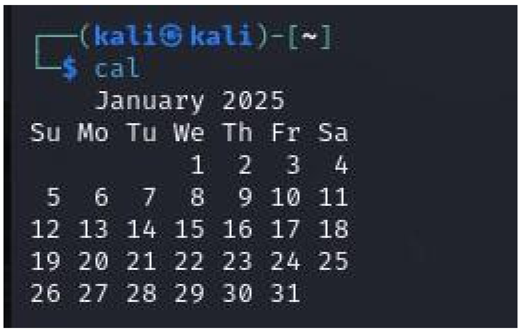
3. The ‘cal’ command: The cal command displays the specified month or year of the calendar

SYNTAX: $ cal [month]

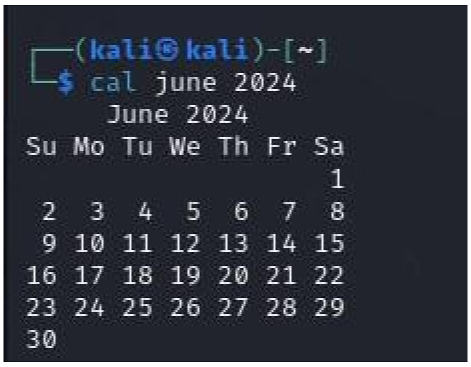
[year]

EXAMPLE:

$ cal Jan 2012



```
┌──(kali㉿kali)-[~]
└─$ cal
    January 2025
Su Mo Tu We Th Fr Sa
          1  2  3  4
 5  6  7  8  9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
```



```
┌──(kali㉿kali)-[~]
└─$ cal june 2024
     June 2024
Su Mo Tu We Th Fr Sa
                   1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30
```

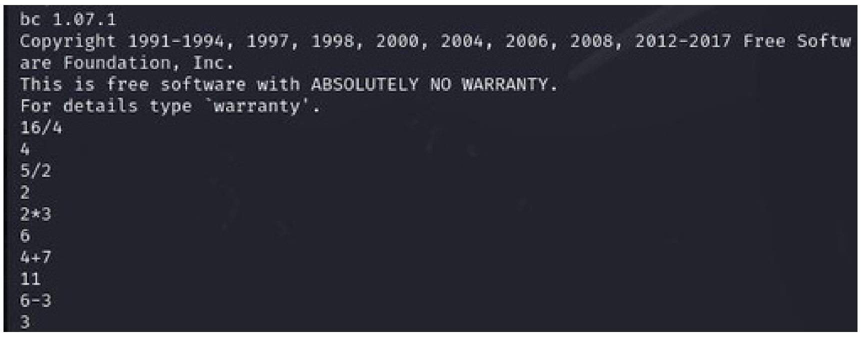
4. The ‘bc’ command: Unix offers an online calculator and can be invoked by the command bc.

SYNTAX: $ bc

EXAMPLE: bc –l

16/4

5/2

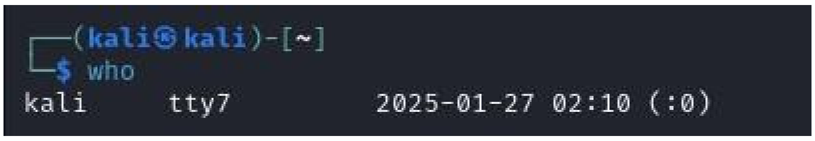


```
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Softw
are Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
16/4
4
5/2
2
2*3
6
4+7
11
6-3
3
```

5. The ‘who’ command

The who command is used to display the data about all the users who are currently logged into the system.

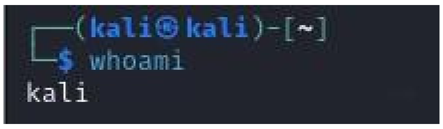
SYNTAX: $ who



```
┌──(kali㉿kali)-[~]
└─$ who
kali     tty7         2025-01-27 02:10 (:0)
```

6. The ‘who am i’ command : The who am i command displays data about login details of the user.

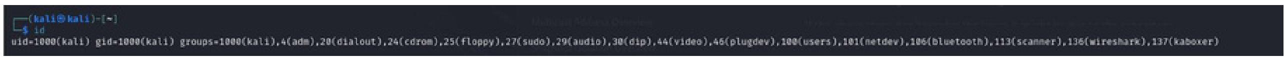
SYNTAX: $ who am i



```
┌──(kali㉿kali)-[~]
└─$ whoami
kali
```

7. The ‘id’ command :The id command displays the numerical value corresponding to your login.

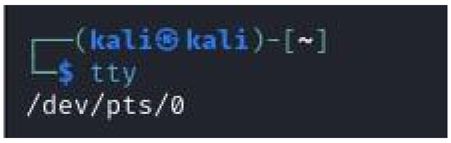
SYNTAX: $ id



```
┌──(kali㉿kali)-[~]
└─$ id
uid=1000(kali) gid=1000(kali) groups=1000(kali),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),29(audio),30(dip),44(video),46(plugdev),100(users),101(netdev),106(bluetooth),113(scanner),136(wireshark),137(kaboxer)
```

8. The ‘tty’ command : The tty (teletype) command is used to know the terminal name that we are using.

   SYNTAX: $ tty



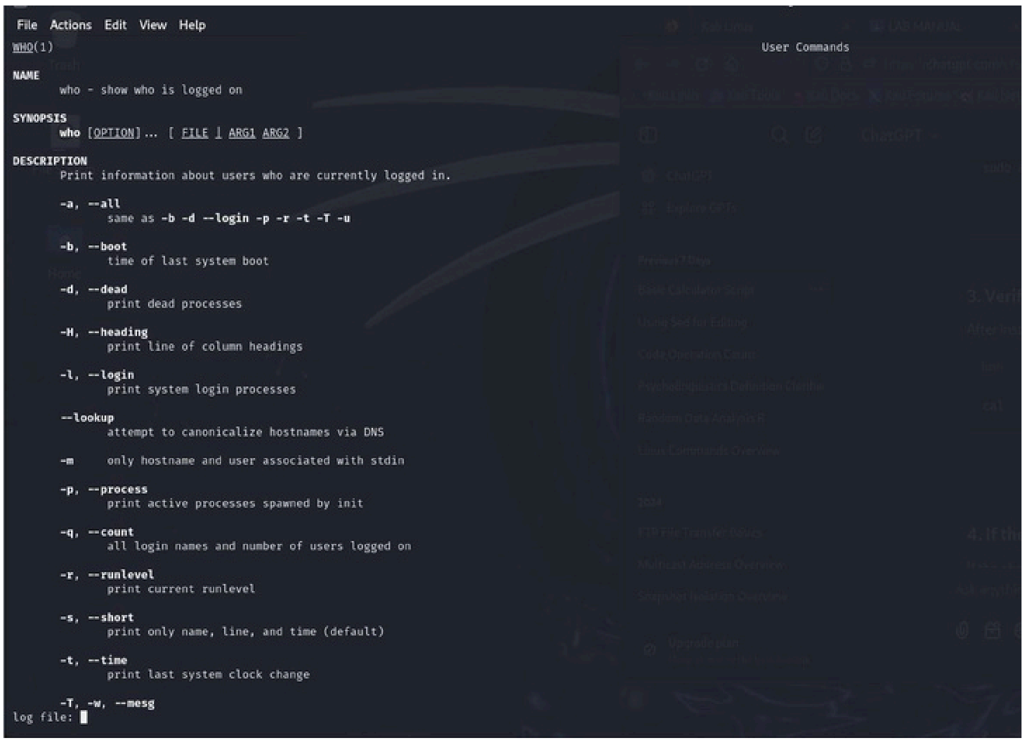
```
┌──(kali㉿kali)-[~]
└─$ tty
/dev/pts/0
```

9. The ‘clear’ command :The clear command is used to clear the screen of your terminal.

SYNTAX: $ clear

10. The ‘man’ command :The man command gives you complete access to the Unix commands.

SYNTAX: $ man [command]

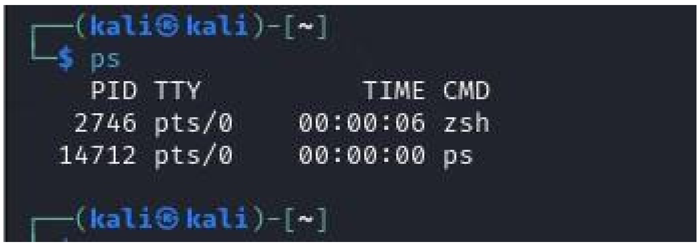


```
WHO(1)                                  User Commands

NAME
       who - show who is logged on

SYNOPSIS
       who [OPTION]... [ FILE | ARG1 ARG2 ]

DESCRIPTION
       Print information about users who are currently logged in.

       -a, --all
              same as -b -d --login -p -r -t -T -u

       -b, --boot
              time of last system boot

       -d, --dead
              print dead processes

       -H, --heading
              print line of column headings

       -l, --login
              print system login processes

       --lookup
              attempt to canonicalize hostnames via DNS

       -m     only hostname and user associated with stdin

       -p, --process
              print active processes spawned by init

       -q, --count
              all login names and number of users logged on

       -r, --runlevel
              print current runlevel

       -s, --short
              print only name, line, and time (default)

       -t, --time
              print last system clock change

       -T, -w, --mesg
log file: █
```

11. The ‘ps’ command

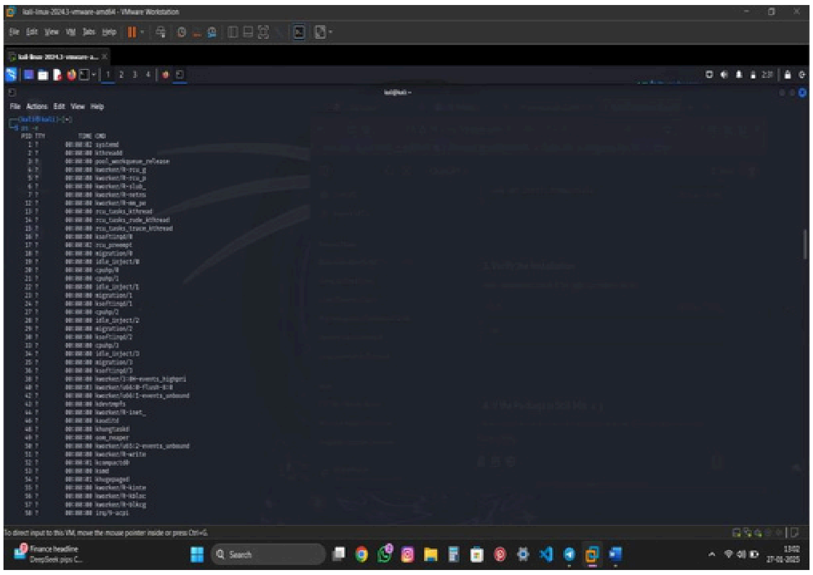
The ps command is used to the process currently alive in the machine with the 'ps' (process status) command, which displays information about process that are alive when you run the command. 'ps;' produces a snapshot of machine activity.

SYNTAX: $ ps
EXAMPLE: $ ps



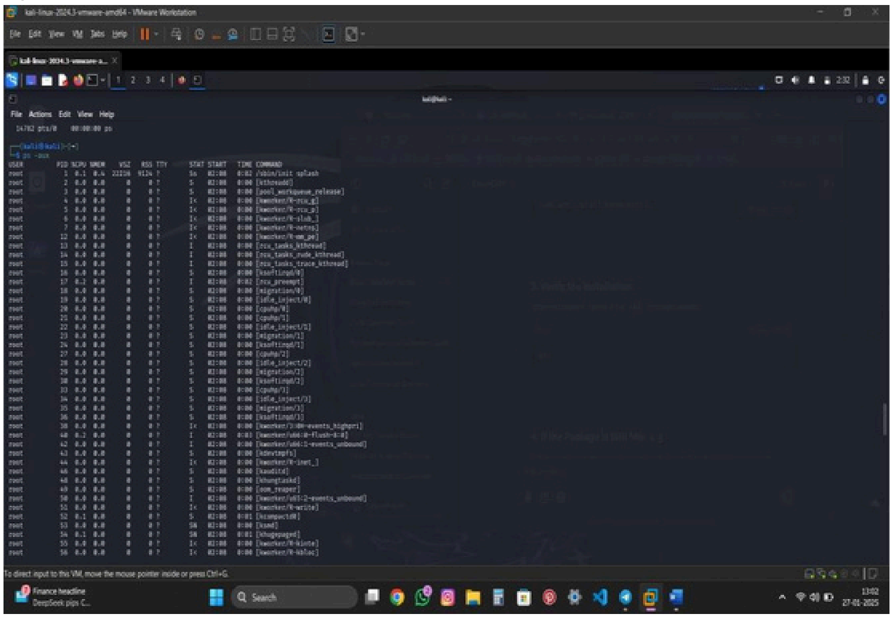
```
┌──(kali㉿kali)-[~]
└─$ ps
    PID TTY          TIME CMD
   2746 pts/0    00:00:06 zsh
  14712 pts/0    00:00:00 ps

┌──(kali㉿kali)-[~]
```

$ ps –e



```
┌──(kali㉿kali)-[~]
└─$ ps -e
    PID TTY          TIME CMD
      1 ?        00:00:02 systemd
      2 ?        00:00:00 kthreadd
      3 ?        00:00:00 pool_workqueue_release
      4 ?        00:00:00 kworker/R-rcu_g
      5 ?        00:00:00 kworker/R-rcu_p
      6 ?        00:00:00 kworker/R-slub_
      7 ?        00:00:00 kworker/R-netns
     12 ?        00:00:00 kworker/R-mm_pe
     13 ?        00:00:00 rcu_tasks_kthread
     14 ?        00:00:00 rcu_tasks_rude_kthread
     15 ?        00:00:00 rcu_tasks_trace_kthread
     16 ?        00:00:00 ksoftirqd/0
     17 ?        00:00:02 rcu_preempt
     18 ?        00:00:00 migration/0
     19 ?        00:00:00 idle_inject/0
     20 ?        00:00:00 cpuhp/0
     21 ?        00:00:00 cpuhp/1
     22 ?        00:00:00 idle_inject/1
     23 ?        00:00:00 migration/1
     24 ?        00:00:00 ksoftirqd/1
     27 ?        00:00:00 cpuhp/2
     28 ?        00:00:00 idle_inject/2
     29 ?        00:00:00 migration/2
     30 ?        00:00:00 ksoftirqd/2
     33 ?        00:00:00 cpuhp/3
     34 ?        00:00:00 idle_inject/3
     35 ?        00:00:00 migration/3
     36 ?        00:00:00 ksoftirqd/3
     38 ?        00:00:00 kworker/3:0H-events_highpri
     40 ?        00:00:01 kworker/u64:0-flush-8:0
     42 ?        00:00:00 kworker/u64:1-events_unbound
     43 ?        00:00:00 kdevtmpfs
     44 ?        00:00:00 kworker/R-inet_
     46 ?        00:00:00 kauditd
     48 ?        00:00:00 khungtaskd
     49 ?        00:00:00 oom_reaper
     50 ?        00:00:00 kworker/u65:2-events_unbound
     51 ?        00:00:00 kworker/R-write
     52 ?        00:00:01 kcompactd0
     53 ?        00:00:00 ksmd
     54 ?        00:00:01 khugepaged
     55 ?        00:00:00 kworker/R-kinte
     56 ?        00:00:00 kworker/R-kbloc
     57 ?        00:00:00 kworker/R-blkcg
     58 ?        00:00:00 irq/9-acpi
```

$ps -aux



```
  14702 pts/0    00:00:00 ps

┌──(kali㉿kali)-[~]
└─$ ps -aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.1  0.4  22216  9124 ?        Ss   02:00   0:02 /sbin/init splash
root           2  0.0  0.0      0     0 ?        S    02:00   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    02:00   0:00 [pool_workqueue_release]
root           4  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-rcu_g]
root           5  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-rcu_p]
root           6  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-slub_]
root           7  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-netns]
root          12  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-mm_pe]
root          13  0.0  0.0      0     0 ?        I    02:00   0:00 [rcu_tasks_kthread]
root          14  0.0  0.0      0     0 ?        I    02:00   0:00 [rcu_tasks_rude_kthread]
root          15  0.0  0.0      0     0 ?        I    02:00   0:00 [rcu_tasks_trace_kthread]
root          16  0.0  0.0      0     0 ?        S    02:00   0:00 [ksoftirqd/0]
root          17  0.2  0.0      0     0 ?        I    02:00   0:02 [rcu_preempt]
root          18  0.0  0.0      0     0 ?        S    02:00   0:00 [migration/0]
root          19  0.0  0.0      0     0 ?        S    02:00   0:00 [idle_inject/0]
root          20  0.0  0.0      0     0 ?        S    02:00   0:00 [cpuhp/0]
root          21  0.0  0.0      0     0 ?        S    02:00   0:00 [cpuhp/1]
root          22  0.0  0.0      0     0 ?        S    02:00   0:00 [idle_inject/1]
root          23  0.0  0.0      0     0 ?        S    02:00   0:00 [migration/1]
root          24  0.0  0.0      0     0 ?        S    02:00   0:00 [ksoftirqd/1]
root          27  0.0  0.0      0     0 ?        S    02:00   0:00 [cpuhp/2]
root          28  0.0  0.0      0     0 ?        S    02:00   0:00 [idle_inject/2]
root          29  0.0  0.0      0     0 ?        S    02:00   0:00 [migration/2]
root          30  0.0  0.0      0     0 ?        S    02:00   0:00 [ksoftirqd/2]
root          33  0.0  0.0      0     0 ?        S    02:00   0:00 [cpuhp/3]
root          34  0.0  0.0      0     0 ?        S    02:00   0:00 [idle_inject/3]
root          35  0.0  0.0      0     0 ?        S    02:00   0:00 [migration/3]
root          36  0.0  0.0      0     0 ?        S    02:00   0:00 [ksoftirqd/3]
root          38  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/3:0H-events_highpri]
root          40  0.2  0.0      0     0 ?        I    02:00   0:01 [kworker/u64:0-flush-8:0]
root          42  0.0  0.0      0     0 ?        I    02:00   0:00 [kworker/u64:1-events_unbound]
root          43  0.0  0.0      0     0 ?        S    02:00   0:00 [kdevtmpfs]
root          44  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-inet_]
root          46  0.0  0.0      0     0 ?        S    02:00   0:00 [kauditd]
root          48  0.0  0.0      0     0 ?        S    02:00   0:00 [khungtaskd]
root          49  0.0  0.0      0     0 ?        S    02:00   0:00 [oom_reaper]
root          50  0.0  0.0      0     0 ?        I    02:00   0:00 [kworker/u65:2-events_unbound]
root          51  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-write]
root          52  0.1  0.0      0     0 ?        S    02:00   0:01 [kcompactd0]
root          53  0.0  0.0      0     0 ?        SN   02:00   0:00 [ksmd]
root          54  0.1  0.0      0     0 ?        SN   02:00   0:01 [khugepaged]
root          55  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-kinte]
root          56  0.0  0.0      0     0 ?        I<   02:00   0:00 [kworker/R-kbloc]
```

12. The 'uname' command

The uname command is used to display relevant details about the operating system on the standard output.

m-> Displays the machine id (i.e., name of the system hardware)

-n -> Displays the name of the network node. (host name)

-r -> Displays the release number of the operating system.

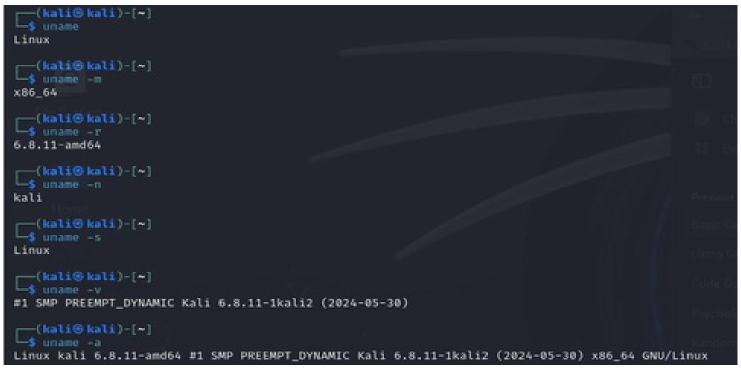
-s -> Displays the name of the operating system (i.e. system name)

-v > Displays the version of the operating system.

-a -> Displays the details of all the above five options.

SYNTAX: $ uname [option]

EXAMPLE: $ uname -a



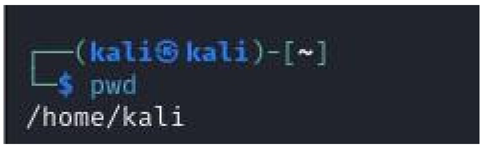
```
┌──(kali㉿kali)-[~]
└─$ uname
Linux

┌──(kali㉿kali)-[~]
└─$ uname -m
x86_64

┌──(kali㉿kali)-[~]
└─$ uname -r
6.8.11-amd64

┌──(kali㉿kali)-[~]
└─$ uname -n
kali

┌──(kali㉿kali)-[~]
└─$ uname -s
Linux

┌──(kali㉿kali)-[~]
└─$ uname -v
#1 SMP PREEMPT_DYNAMIC Kali 6.8.11-1kali2 (2024-05-30)

┌──(kali㉿kali)-[~]
└─$ uname -a
Linux kali 6.8.11-amd64 #1 SMP PREEMPT_DYNAMIC Kali 6.8.11-1kali2 (2024-05-30) x86_64 GNU/Linux
```

1.2 DIRECTORY COMMANDS

1. The 'pwd' command:

The pwd (print working directory) command displays the current working directory.

SYNTAX: $ pwd

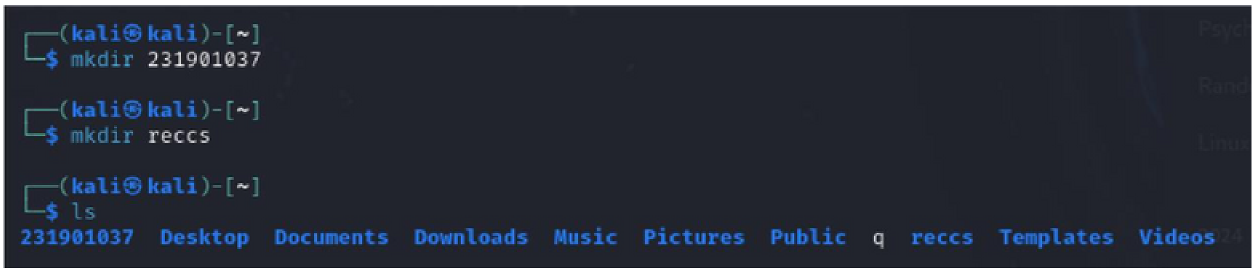


```
┌──(kali㉿kali)-[~]
└─$ pwd
/home/kali
```

2. The 'mkdir' command: The mkdir is used to create an empty directory in a disk.

SYNTAX: $ mkdir dirname

EXAMPLE: $ mkdir receee



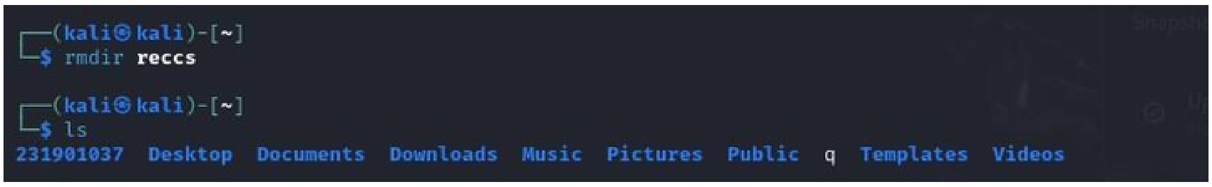
```
┌──(kali㉿kali)-[~]
└─$ mkdir 231901037

┌──(kali㉿kali)-[~]
└─$ mkdir reccs

┌──(kali㉿kali)-[~]
└─$ ls
231901037  Desktop  Documents  Downloads  Music  Pictures  Public  q  reccs  Templates  Videos
```

3. The 'rmdir' command:

The rmdir is used to remove a directory from the disk. Before removing a directory, the directory must be empty (no files and directories).

SYNTAX: $ rmdir dirname

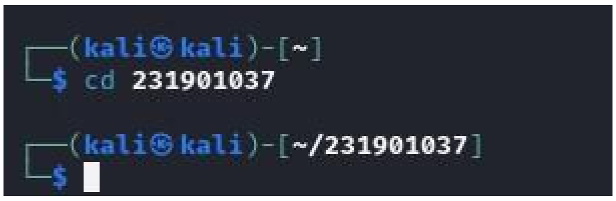
EXAMPLE: $ rmdir receee



```
┌──(kali㉿kali)-[~]
└─$ rmdir reccs

┌──(kali㉿kali)-[~]
└─$ ls
231901037  Desktop  Documents  Downloads  Music  Pictures  Public  q  Templates  Videos
```

4. The ‘cd’ command: The cd command is used to move from one directory to another.
   SYNTAX: $ cd dirname

   EXAMPLE: $ cd receee



```
┌──(kali㉿kali)-[~]
└─$ cd 231901037

┌──(kali㉿kali)-[~/231901037]
└─$ 
```

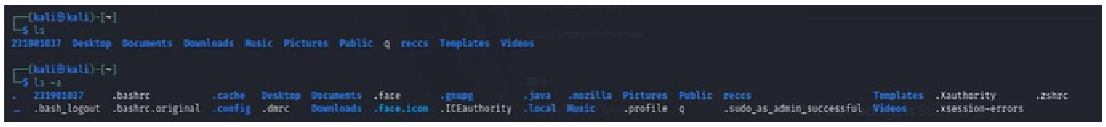
5. The ‘ls’ command: The ls command displays the list of files in the current working directory.

SYNTAX: $ ls

EXAMPLE: $ ls

$ ls –l

$ ls –a



```
┌──(kali㉿kali)-[~]
└─$ ls
231901037  Desktop  Documents  Downloads  Music  Pictures  Public  q  reccs  Templates  Videos

┌──(kali㉿kali)-[~]
└─$ ls -a
.   231901037     .bashrc           .cache   Desktop  Documents  .face       .gnupg         .java   .mozilla  Pictures  Public  reccs                       Templates  .Xauthority      .zshrc
..  .bash_logout  .bashrc.original  .config  .dmrc    Downloads  .face.icon  .ICEauthority  .local  Music     .profile  q       .sudo_as_admin_successful  Videos     .xsession-errors
```

1.3 FILE HANDLING COMMANDS

1. The ‘cat’ command:

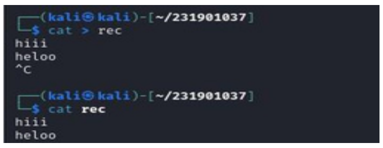
   The cat command is used to create a file. SYNTAX: $ cat > filename

   EXAMPLE: $ cat > rec

2. The ‘Display contents of a file’ command:

   The cat command is also used to view the contents of a specified file. SYNTAX:

   $ cat filename

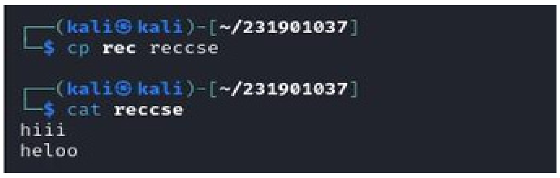


```
┌──(kali㉿kali)-[~/231901037]
└─$ cat > rec
hiii
heloo
^C

┌──(kali㉿kali)-[~/231901037]
└─$ cat rec
hiii
heloo
```

3. The 'cp' command: The cp command is used to copy the contents of one file to another and copies the file from one place to another.

SYNTAX: $ cp oldfile newfile

EXAMPLE: $ cp cse ece



```
┌──(kali㉿kali)-[~/231901037]
└─$ cp rec reccse

┌──(kali㉿kali)-[~/231901037]
└─$ cat reccse
hiii
heloo
```

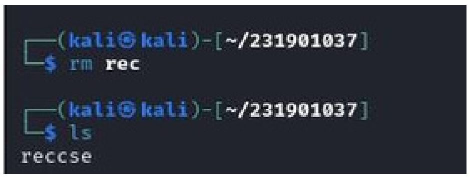
4. The 'rm' command: The rm command is used to remove or erase an existing file

SYNTAX: $ rm filename

EXAMPLE: $ rm rec

$ rm –f rec

Use option –fr to delete recursively the contents of the directory and its subdirectories.



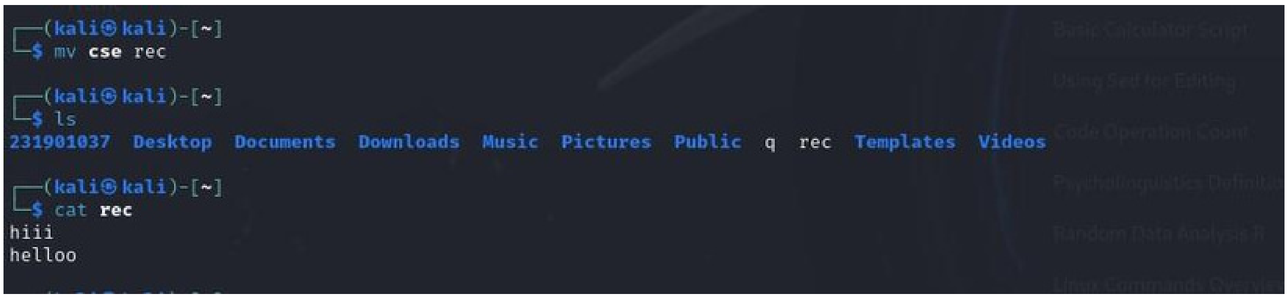
```
┌──(kali㉿kali)-[~/231901037]
└─$ rm rec

┌──(kali㉿kali)-[~/231901037]
└─$ ls
reccse
```

5. The 'mv' command:

The mv command is used to move a file from one place to another. It removes a specified file from its original location and places it in specified location.

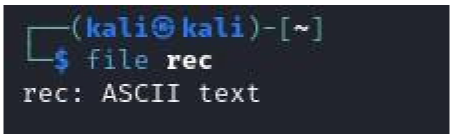
SYNTAX: $ mv oldfile newfile

EXAMPLE: $ mv cse eee



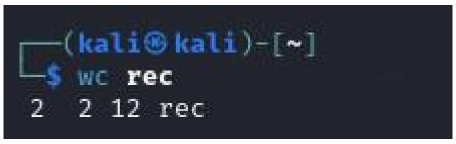
```
┌──(kali㉿kali)-[~]
└─$ mv cse rec

┌──(kali㉿kali)-[~]
└─$ ls
231901037  Desktop  Documents  Downloads  Music  Pictures  Public  q  rec  Templates  Videos

┌──(kali㉿kali)-[~]
└─$ cat rec
hiii
helloo
```

6. The 'file' command: The file command is used to determine the type of file.
   SYNTAX: $ file filename



```
┌──(kali㉿kali)-[~]
└─$ file rec
rec: ASCII text
```

7. “wc command” : The wc command is used to count the number of words, lines and characters in a file.
SYNTAX: $ wc filename
EXAMPLE: $ wc receee



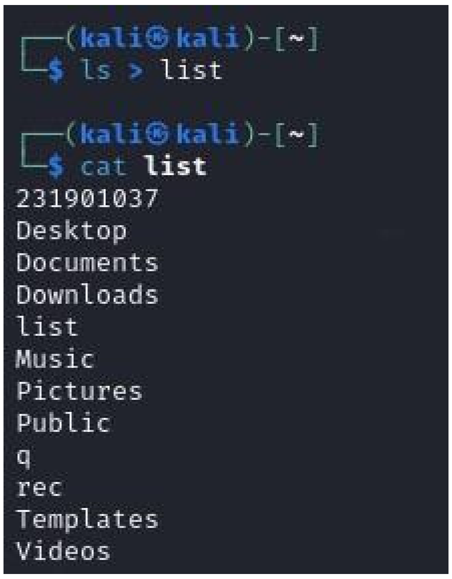
```
┌──(kali㉿kali)-[~]
└─$ wc rec
 2  2 12 rec
```

8. The ‘Directing output to a file’ command:

The ls command lists the files on the terminal (screen). Using the redirection operator ‘>’ we can send the output to file instead of showing it on the screen.

SYNTAX: $ ls > filename

EXAMPLE: $ ls > cseeee



```
┌──(kali㉿kali)-[~]
└─$ ls > list

┌──(kali㉿kali)-[~]
└─$ cat list
231901037
Desktop
Documents
Downloads
list
Music
Pictures
Public
q
rec
Templates
Videos
```

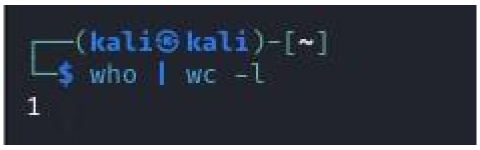
9. The ‘pipes’ command:

The Unix allows us to connect two commands together using these pipes. A pipe (|) is an mechanism by which the output of one command can be channeled into the input of another command. SYNTAX: $ command1 | command2 EXAMPLE: $ who | wc -l

10. The ‘tee’ command:

While using pipes, we have not seen any output from a command that gets piped into another command. To save the output, which is produced in the middle of a pipe, the tee command is very useful. SYNTAX: $ command | tee filename

EXAMPLE: $ who | tee sample | wc -l



```
┌──(kali㉿kali)-[~]
└─$ who | wc -l
1
```

11. The 'Metacharacters of unix' command:

Metacharacters are special characters that are at higher and abstract level compared to most of other characters in Unix. The shell understands and interprets these metacharacters in a special way.

* - Specifies number of characters

?- Specifies a single character

[ ]- used to match a whole set of file names at a command line.

! – Used to Specify Not EXAMPLE:

$ ls r** - Displays all the files whose name begins with 'r'

$ ls ?kkk - Displays the files which are having 'kkk', from the second characters irrespective of the first character.

$ ls [a-m] – Lists the files whose names begins alphabets from 'a' to 'm'

$ ls [!a-m] – Lists all files other than files whose names begins alphabets from 'a' to 'm' 12. The 'File permissions' command:

File permission is the way of controlling the accessibility of file for each of three users namely Users, Groups and Others.

There are three types of file permissions are available, they are

r-read
w-
write
x-
execute

The permissions for each file can be divided into three parts of three bits each.

First three bits	Owner of the file
Next three bits	Group to which owner of the file belongs
Last three bits	Others

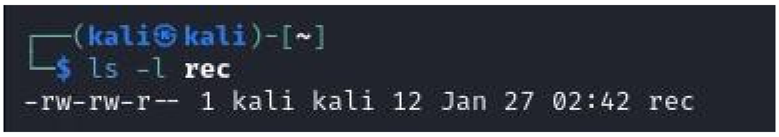
EXAMPLE: $ ls college

-rwxr-xr-- 1 Lak std 1525 jan10 12:10 college

Where,

-rwx The file is readable, writable and executable by the owner of the file.

Lak Specifies Owner of the file. r-x Indicates the absence of the write permission by the Group owner of the file. Std Is the Group Owner of the file. r-- Indicates read permissions for others.



```
┌──(kali㉿kali)-[~]
└─$ ls -l rec
-rw-rw-r-- 1 kali kali 12 Jan 27 02:42 rec
```

13. The 'chmod' command:

The chmod command is used to set the read, write and execute permissions for all categories of users for file.

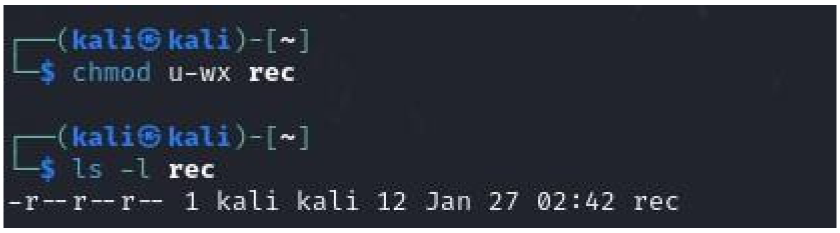
SYNTAX: $ chmod category operation permission file

Category	Operation	permission
u-users	+ assign	r-read
g-group	-Remove	w-write
o-others	= assign absolutely	x-execute
a-all		

EXAMPLE:

$ chmod u –wx college

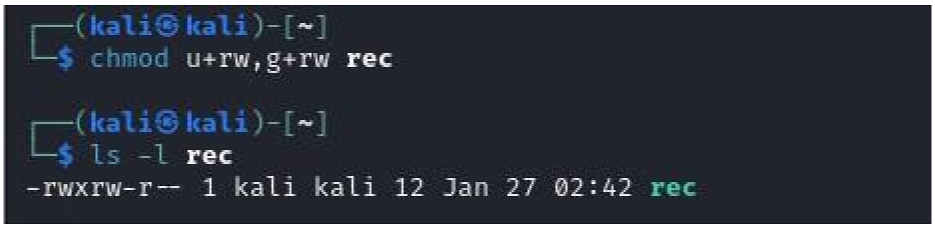
Removes write & execute permission for users for 'college' file.



```
┌──(kali㉿kali)-[~]
└─$ chmod u-wx rec

┌──(kali㉿kali)-[~]
└─$ ls -l rec
-r--r--r-- 1 kali kali 12 Jan 27 02:42 rec
```

$ chmod u +rw, g+rw college

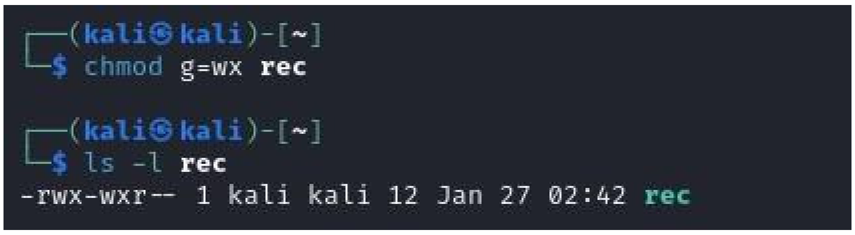
Assigns read & write permission for users and groups for 'college' file.



```
┌──(kali㉿kali)-[~]
└─$ chmod u+rw,g+rw rec

┌──(kali㉿kali)-[~]
└─$ ls -l rec
-rwxrw-r-- 1 kali kali 12 Jan 27 02:42 rec
```

$ chmod g=wx college

Assigns absolute permission for groups of all read, write and execute permissions for 'college' file.



```
┌──(kali㉿kali)-[~]
└─$ chmod g=wx rec

┌──(kali㉿kali)-[~]
└─$ ls -l rec
-rwx-wxr-- 1 kali kali 12 Jan 27 02:42 rec
```

14. The 'Octal Notations' command:

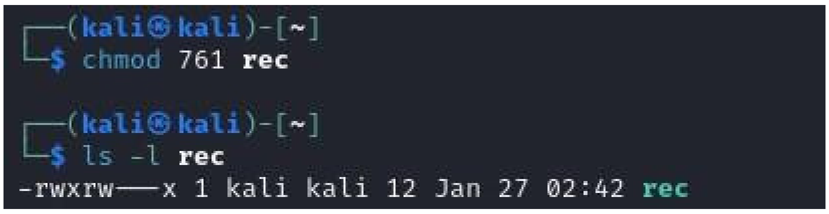
The file permissions can be changed using octal notations also. The octal notations for file permission are

$ chmod 761 college

Read permission	4
Write permission	2

Execute permission	1

Assigns all permission to the owner, read and write permissions to the group and only executable permission to the others for 'college' file.



```
┌──(kali㉿kali)-[~]
└─$ chmod 761 rec

┌──(kali㉿kali)-[~]
└─$ ls -l rec
-rwxrw---x 1 kali kali 12 Jan 27 02:42 rec
```

1.4 GROUPING COMMANDS

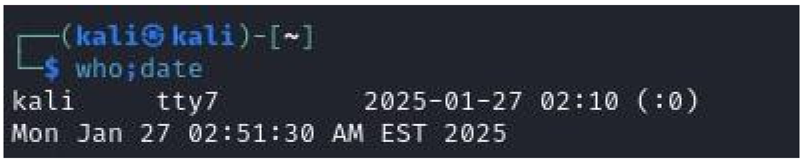
1. The 'semicolon' command:

The semicolon(;) command is used to separate multiple commands at the command line.

SYNTAX:

$command1;command2;command3................;commandn

EXAMPLE: $ who;date

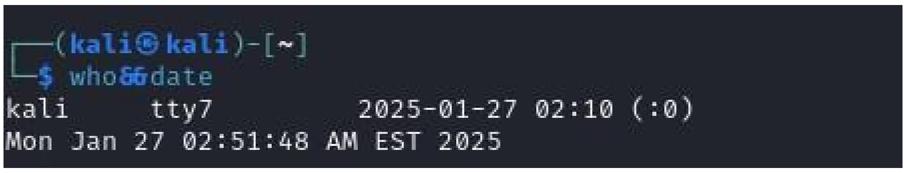


```
┌──(kali㉿kali)-[~]
└─$ who;date
kali     tty7         2025-01-27 02:10 (:0)
Mon Jan 27 02:51:30 AM EST 2025
```

2. The '&&' operator:

The '&&' operator signifies the logical AND operation in between two or more valid Unix commands.It means that only if the first command is successfully executed, then the next command will executed.

SYNTAX: $ command1 && command && command3................&&commandn
EXAMPLE: $ who && date



```
┌──(kali㉿kali)-[~]
└─$ who&&date
kali     tty7         2025-01-27 02:10 (:0)
Mon Jan 27 02:51:48 AM EST 2025
```

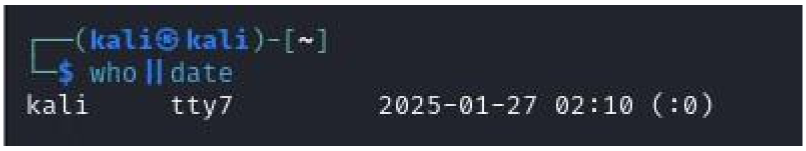
3. The '||' operator:

The '||' operator signifies the logical OR operation in between two or more valid Unix commands.It means, that only if the first command will happen to be un successfully,it will continue to execute next commands.

SYNTAX: $ command1 || command ||

command3................||commandn

EXAMPLE: $ who || date



```
┌──(kali㉿kali)-[~]
└─$ who || date
kali     tty7         2025-01-27 02:10 (:0)
```

1.5 FILTERS

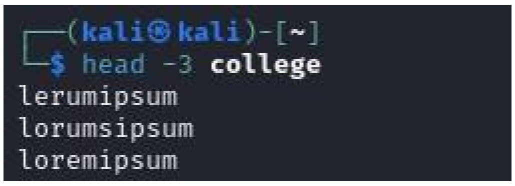
1. The head filter

It displays the first ten lines of a file.

SYNTAX: $ head filename

EXAMPLE: $ head college Display the top ten lines.

$ head -5 college Display the top five lines.



```
┌──(kali㉿kali)-[~]
└─$ head -3 college
lerumipsum
lorumsipsum
loremipsum
```

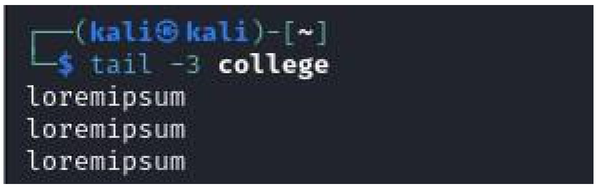
2. The tail filter

It displays ten lines of a file from the end of the file. SYNTAX:

$ tail filename

EXAMPLE: $ tail college Display the last ten lines.

$tail -5 college Display the last five lines.

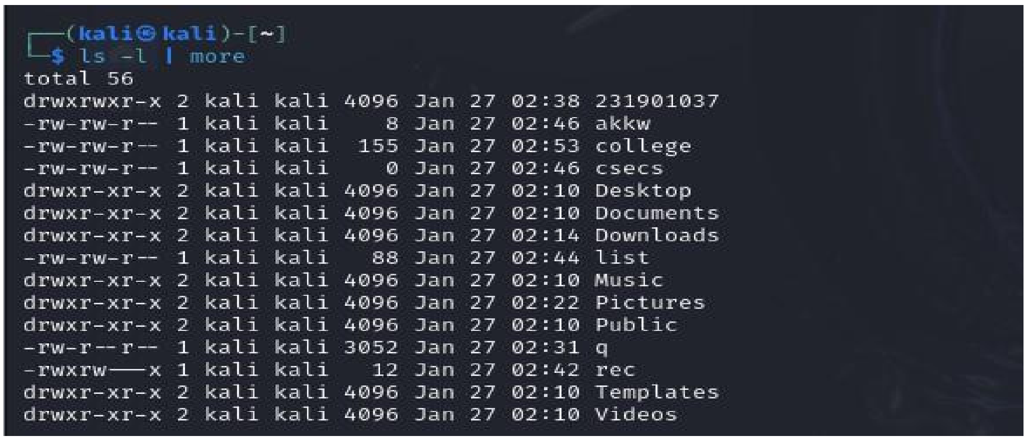


```
┌──(kali㉿kali)-[~]
└─$ tail -3 college
loremipsum
loremipsum
loremipsum
```

3. The more filter:

The pg command shows the file page by page.

SYNTAX: $ ls –l | more



```
┌──(kali㉿kali)-[~]
└─$ ls -l | more
total 56
drwxrwxr-x 2 kali kali 4096 Jan 27 02:38 231901037
-rw-rw-r-- 1 kali kali    8 Jan 27 02:46 akkw
-rw-rw-r-- 1 kali kali  155 Jan 27 02:53 college
-rw-rw-r-- 1 kali kali    0 Jan 27 02:46 csecs
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Desktop
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Documents
drwxr-xr-x 2 kali kali 4096 Jan 27 02:14 Downloads
-rw-rw-r-- 1 kali kali   88 Jan 27 02:44 list
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Music
drwxr-xr-x 2 kali kali 4096 Jan 27 02:22 Pictures
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Public
-rw-r--r-- 1 kali kali 3052 Jan 27 02:31 q
-rwxrw---x 1 kali kali   12 Jan 27 02:42 rec
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Templates
drwxr-xr-x 2 kali kali 4096 Jan 27 02:10 Videos
```

4. The ‘grep’ command:

This command is used to search for a particular pattern from a file or from the standard input and display those lines on the standard output. “Grep” stands for “global search for regular expression.”

SYNTAX: $ grep [pattern] [file_name]

EXAMPLE: $ cat> student

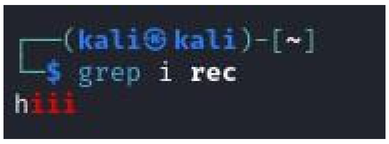
Arun cse

Ram ece

Kani cse

$ grep “cse” student

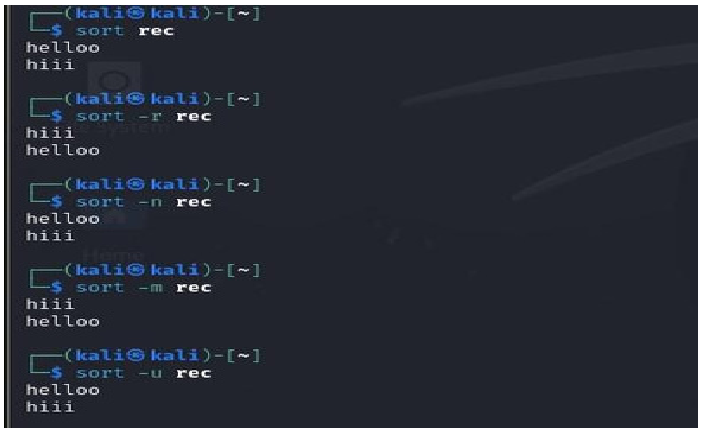
Arun cse Kani cse



```
┌──(kali㉿kali)-[~]
└─$ grep i rec
hiii
```

5. The ‘sort’ command: The sort command is used to sort the contents of a file. The sort command reports only to the screen, the actual file remains unchanged.
SYNTAX: $ sort filename EXAMPLE: $ sort college OPTIONS:

Command	Purpose
Sort –r college	Sorts and displays the file contents in reverse order
Sort –c college	Check if the file is sorted
Sort –n college	Sorts numerically
Sort –m college	Sorts numerically in reverse order
Sort –u college	Remove duplicate records
Sort –l college	Skip the column with +1 (one) option.Sorts according to second column



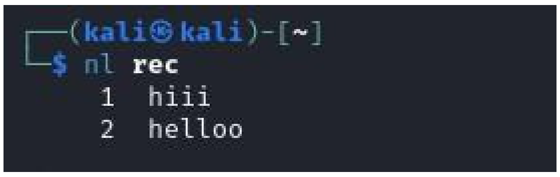
```
┌──(kali㉿kali)-[~]
└─$ sort rec
helloo
hiii

┌──(kali㉿kali)-[~]
└─$ sort -r rec
hiii
helloo

┌──(kali㉿kali)-[~]
└─$ sort -n rec
helloo
hiii

┌──(kali㉿kali)-[~]
└─$ sort -m rec
hiii
helloo

┌──(kali㉿kali)-[~]
└─$ sort -u rec
helloo
hiii
```

6. The ‘nl’ command:

The nl filter adds lines numbers to a file and it displays the file and not provides access to edit but simply displays the contents on the screen.

SYNTAX: $ nl filename

EXAMPLE: $ nl college



```
┌──(kali㉿kali)-[~]
└─$ nl rec
     1  hiii
     2  helloo
```

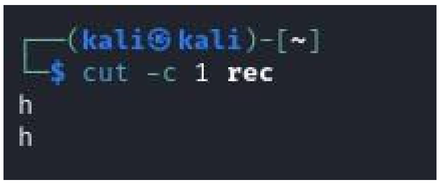
7. The ‘cut’ command:

We can select specified fields from a line of text using cut command.
SYNTAX:

$ cut -c filename

EXAMPLE: $ cut -c college OPTION:

-c – Option cut on the specified character position from each line.



```
┌──(kali㉿kali)-[~]
└─$ cut -c 1 rec
h
h
```

1.5 OTHER ESSENTIAL COMMANDS

1. free

Display amount of free and used physical and swapped memory system.

synopsis- free

[options]

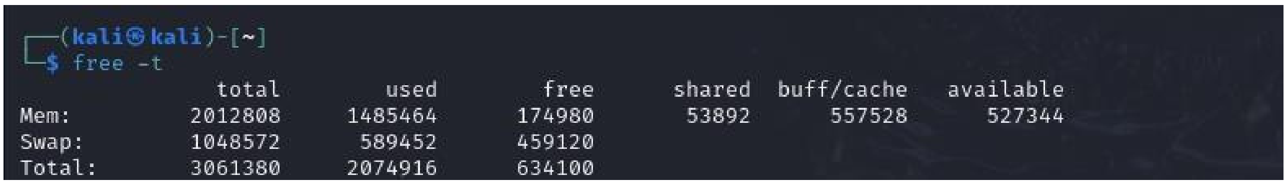
example

[root@localhost ~]# free -t total used free shared buff/cache available Mem:

4044380 605464 2045080

148820 1393836 3226708 Swap: 2621436 0 2621436

Total: 6665816 605464 4666516



```
┌──(kali㉿kali)-[~]
└─$ free -t
               total        used        free      shared  buff/cache   available
Mem:         2012808     1485464      174980       53892      557528      527344
Swap:        1048572      589452      459120
Total:       3061380     2074916      634100
```

2. top

It provides a dynamic real-time view of processes in the

system. synopsis- top [options]

example

[root@localhost ~]# top top - 08:07:28 up

24 min, 2 users, load average: 0.01, 0.06,

0.23 Tasks: 211 total, 1 running, 210

sleeping, 0 stopped, 0 zombie

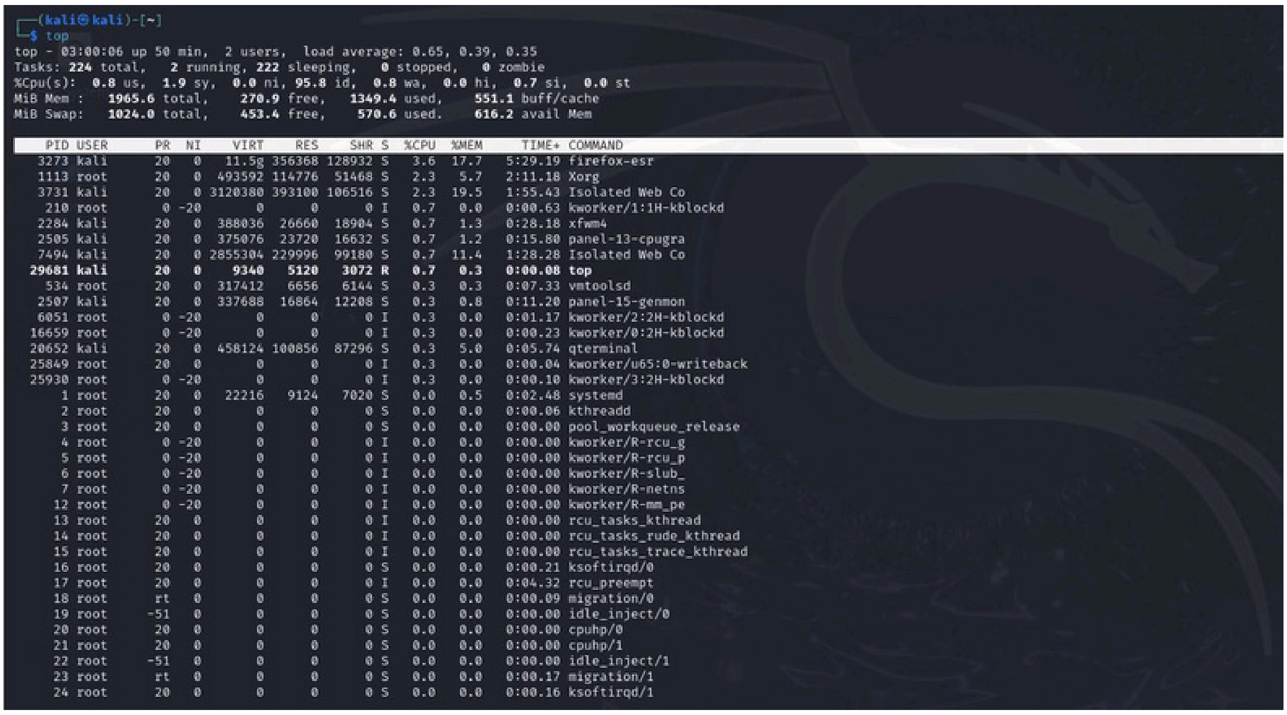
%Cpu(s): 0.8 us, 0.3 sy, 0.0 ni, 98.9 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

KiB Mem : 4044380 total, 2052960 free, 600452 used, 1390968 buff/cache KiB
Swap:
2621436 total, 2621436 free, 0 used. 3234820 avail Mem PID USER PR

NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND

1105 root 20 0 175008 75700 51264 S 1.7 1.9 0:20.46 Xorg 2529 root

20 0 80444 32640 24796 S 1.0 0.8 0:02.47 gnome-term



```
┌──(kali㉿kali)-[~]
└─$ top
top - 03:00:06 up 50 min,  2 users,  load average: 0.65, 0.39, 0.35
Tasks: 224 total,   2 running, 222 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.8 us,  1.9 sy,  0.0 ni, 95.8 id,  0.8 wa,  0.0 hi,  0.7 si,  0.0 st
MiB Mem :   1965.6 total,    270.9 free,   1349.4 used,    551.1 buff/cache
MiB Swap:   1024.0 total,    453.4 free,    570.6 used.    616.2 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   3273 kali      20   0   11.5g 356368 128932 S   3.6  17.7   5:29.19 firefox-esr
   1113 root      20   0  493592 114776  51468 S   2.3   5.7   2:11.18 Xorg
   3731 kali      20   0 3120380 393100 106516 S   2.3  19.5   1:55.43 Isolated Web Co
    210 root       0 -20       0      0      0 I   0.7   0.0   0:00.63 kworker/1:1H-kblockd
   2284 kali      20   0  388036  26660  18904 S   0.7   1.3   0:28.18 xfwm4
   2505 kali      20   0  375076  23720  16632 S   0.7   1.2   0:15.80 panel-13-cpugra
   7494 kali      20   0 2855304 229996  99180 S   0.7  11.4   1:28.28 Isolated Web Co
  29681 kali      20   0    9340   5120   3072 R   0.7   0.3   0:00.08 top
    534 root      20   0  317412   6656   6144 S   0.3   0.3   0:07.33 vmtoolsd
   2507 kali      20   0  337688  16864  12208 S   0.3   0.8   0:11.20 panel-15-genmon
   6051 root       0 -20       0      0      0 I   0.3   0.0   0:01.17 kworker/2:2H-kblockd
  16659 root       0 -20       0      0      0 I   0.3   0.0   0:00.23 kworker/0:2H-kblockd
  20652 kali      20   0  458124 100856  87296 S   0.3   5.0   0:05.74 qterminal
  25849 root      20   0       0      0      0 I   0.3   0.0   0:00.04 kworker/u65:0-writeback
  25930 root       0 -20       0      0      0 I   0.3   0.0   0:00.10 kworker/3:2H-kblockd
      1 root      20   0   22216   9124   7020 S   0.0   0.5   0:02.48 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.06 kthreadd
      3 root      20   0       0      0      0 S   0.0   0.0   0:00.00 pool_workqueue_release
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-slub_
      7 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-netns
     12 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/R-mm_pe
     13 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
     14 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
     15 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
     16 root      20   0       0      0      0 S   0.0   0.0   0:00.21 ksoftirqd/0
     17 root      20   0       0      0      0 I   0.0   0.0   0:04.32 rcu_preempt
     18 root      rt   0       0      0      0 S   0.0   0.0   0:00.09 migration/0
     19 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
     20 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     21 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
     22 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
     23 root      rt   0       0      0      0 S   0.0   0.0   0:00.17 migration/1
     24 root      20   0       0      0      0 S   0.0   0.0   0:00.16 ksoftirqd/1
```

3. ps

It reports the snapshot of current processes synopsis- ps [options]

example : [root@localhost ~]# ps -e

```
 PID TTY TIME CMD
1 ? 00:00:03 systemd
2 ? 00:00:00 kthreadd
3 ? 00:00:00 ksoftirqd/0
```

4. vmstat

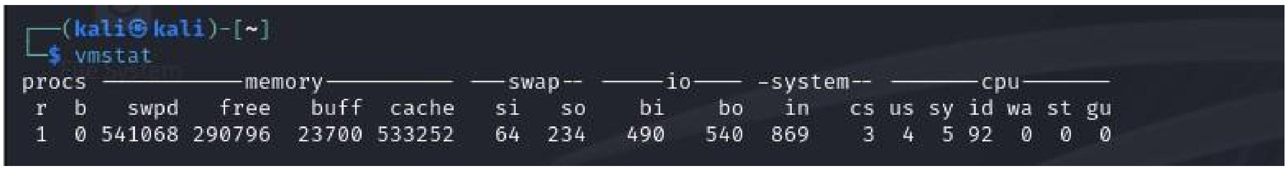
It reports virtual memory

statistics synopsis-

vmstat [options]

example

```
 [root@localhost ~]# vmstat procs -----------memory--
-------- ---swap-- ----io---- -system-- ------cpu---- r b
swpd free buff cache si so bi bo in cs us sy id wa st 0 0
0 1879368 1604 1487116 0 0 64 7 72 140 1 0 97 1 0
```



```
┌──(kali㉿kali)-[~]
└─$ vmstat
procs ───────────memory─────────── ──swap-- ─────io──── -system-- ───────cpu───────
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st gu
 1  0 541068 290796  23700 533252   64  234   490   540  869    3  4  5 92  0  0  0
```

5. df

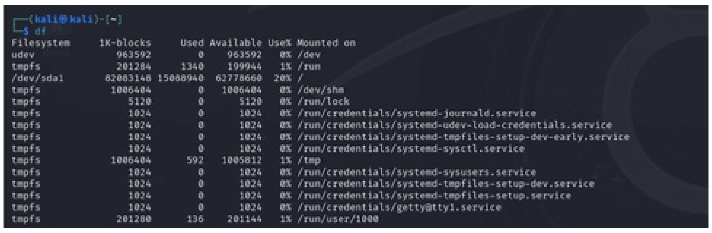
It displays the amount of disk space available in file-system. Synopsis-

df [options]

example [root@localhost ~]# df

```
 Filesystem 1K-blocks Used Available Use% Mounted on
 devtmpfs 2010800 0 2010800 0% /dev tmpfs 2022188 148 2022040 1% /dev/shm
tmpfs
```

2022188 1404 2020784 1% /run /dev/sda6 487652 168276 289680 37% /boot



```
┌──(kali㉿kali)-[~]
└─$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev              963592        0    963592   0% /dev
tmpfs             201284     1340    199944   1% /run
/dev/sda1       82083148 15088940  62778660  20% /
tmpfs            1006404        0   1006404   0% /dev/shm
tmpfs               5120        0      5120   0% /run/lock
tmpfs               1024        0      1024   0% /run/credentials/systemd-journald.service
tmpfs               1024        0      1024   0% /run/credentials/systemd-udev-load-credentials.service
tmpfs               1024        0      1024   0% /run/credentials/systemd-tmpfiles-setup-dev-early.service
tmpfs               1024        0      1024   0% /run/credentials/systemd-sysctl.service
tmpfs            1006404      592   1005812   1% /tmp
tmpfs               1024        0      1024   0% /run/credentials/systemd-sysusers.service
tmpfs               1024        0      1024   0% /run/credentials/systemd-tmpfiles-setup-dev.service
tmpfs               1024        0      1024   0% /run/credentials/systemd-tmpfiles-setup.service
tmpfs               1024        0      1024   0% /run/credentials/getty@tty1.service
tmpfs             201280      136    201144   1% /run/user/1000
```

6. ping

It is used verify that a device can communicate with another on network. PING stands

for Packet Internet Groper. synopsis- ping [options]

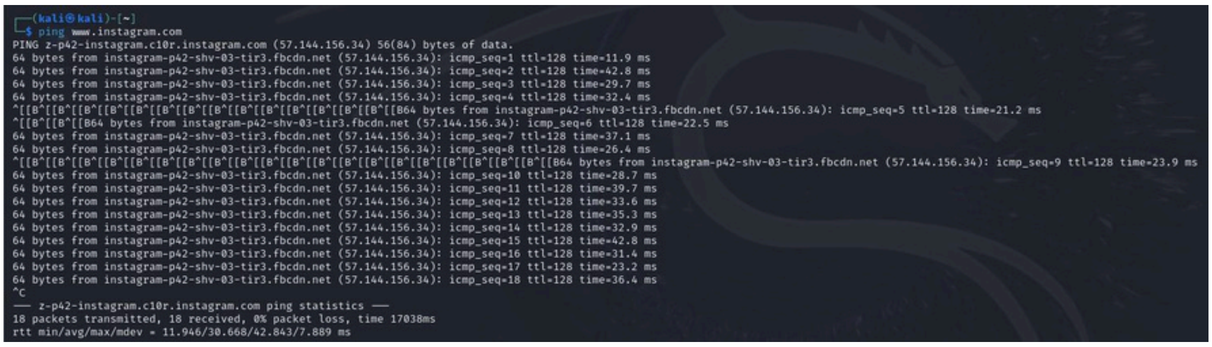
[root@localhost ~]# ping 172.16.4.1 PING 172.16.4.1 (172.16.4.1)

56(84) bytes of data. 64 bytes from 172.16.4.1: icmp_seq=1 ttl=64

time=0.328 ms

64 bytes from 172.16.4.1: icmp_seq=2 ttl=64 time=0.228 ms

64 bytes from 172.16.4.1: icmp_seq=3 ttl=64
time=0.264 ms 64 bytes from 172.16.4.1:
icmp_seq=4 ttl=64 time=0.312 ms ^C
--- 172.16.4.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3000ms rtt
min/avg/max/mdev = 0.228/0.283/0.328/0.039 ms



```
┌──(kali㉿kali)-[~]
└─$ ping www.instagram.com
PING z-p42-instagram.c10r.instagram.com (57.144.156.34) 56(84) bytes of data.
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=1 ttl=128 time=11.9 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=2 ttl=128 time=42.8 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=3 ttl=128 time=29.7 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=4 ttl=128 time=32.4 ms
^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=5 ttl=128 time=21.2 ms
^[[B^[[B^[[B64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=6 ttl=128 time=22.5 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=7 ttl=128 time=37.1 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=8 ttl=128 time=26.4 ms
^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B^[[B64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=9 ttl=128 time=23.9 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=10 ttl=128 time=28.7 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=11 ttl=128 time=39.7 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=12 ttl=128 time=33.6 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=13 ttl=128 time=35.3 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=14 ttl=128 time=32.9 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=15 ttl=128 time=42.8 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=16 ttl=128 time=31.4 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=17 ttl=128 time=23.2 ms
64 bytes from instagram-p42-shv-03-tir3.fbcdn.net (57.144.156.34): icmp_seq=18 ttl=128 time=36.4 ms
^C
--- z-p42-instagram.c10r.instagram.com ping statistics ---
18 packets transmitted, 18 received, 0% packet loss, time 17038ms
rtt min/avg/max/mdev = 11.946/30.668/42.843/7.889 ms
```

7. ifconfig

It is used configure network interface.

synopsis- ifconfig [options]

example

[root@localhost ~]# ifconfig

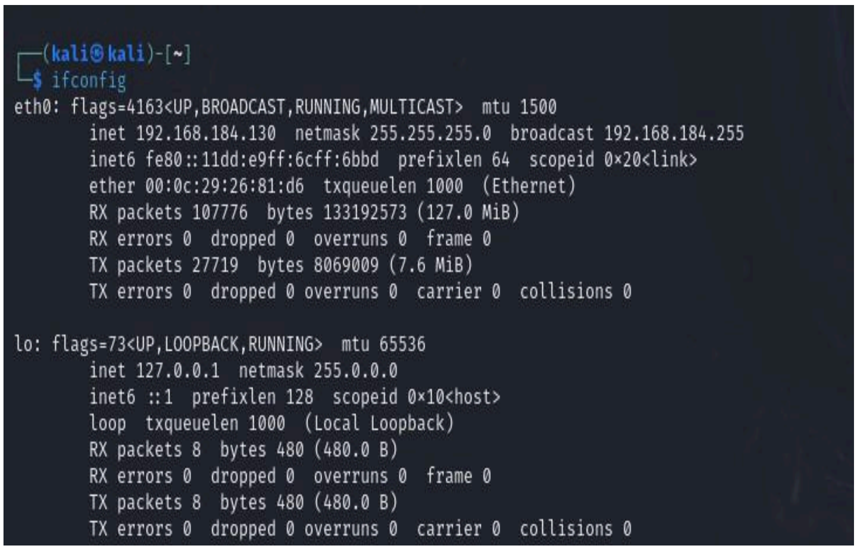
enp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu
1500 inet 172.16.6.102 netmask 255.255.252.0 broadcast
172.16.7.255 inet6 fe80::4a0f:cfff:fe6d:6057 prefixlen
64 scopeid 0x20<link> ether
48:0f:cf:6d:60:57 txqueuelen 1000 (Ethernet)

RX packets 23216 bytes 2483338 (2.3 MiB)

RX errors 0 dropped 5 overruns 0 frame 0

TX packets 1077 bytes 107740 (105.2 KiB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0



```
┌──(kali㉿kali)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.184.130  netmask 255.255.255.0  broadcast 192.168.184.255
        inet6 fe80::11dd:e9ff:6cff:6bbd  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:26:81:d6  txqueuelen 1000  (Ethernet)
        RX packets 107776  bytes 133192573 (127.0 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 27719  bytes 8069009 (7.6 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 8  bytes 480 (480.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8  bytes 480 (480.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

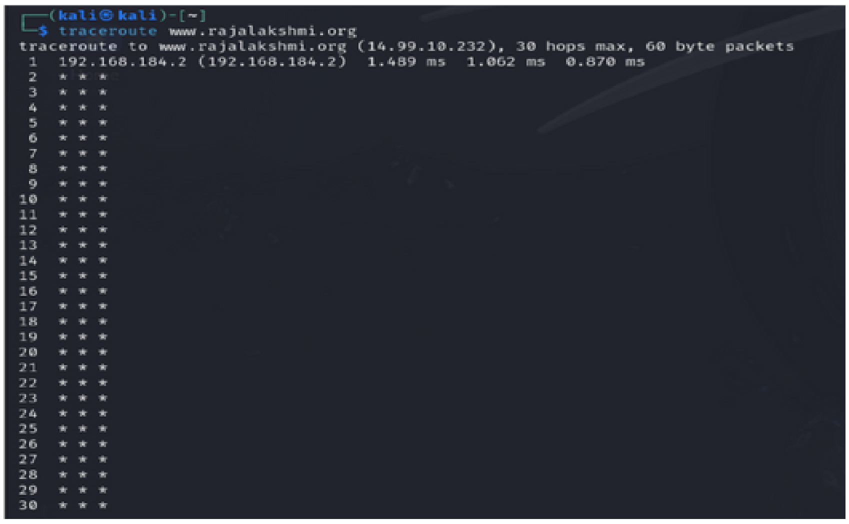
8. traceroute

It tracks the route the packet takes to reach the destination.

synopsis- traceroute

[options] example

[root@localhost ~]# traceroute www.rajalakshmi.org
traceroute to www.rajalakshmi.org (220.227.30.51), 30
hops max, 60 byte
packets 1 gateway (172.16.4.1) 0.299 ms 0.297 ms 0.327 ms
2 220.225.219.38 (220.225.219.38) 6.185 ms 6.203 ms 6.189
ms



```
┌──(kali㉿kali)-[~]
└─$ traceroute www.rajalakshmi.org
traceroute to www.rajalakshmi.org (14.99.10.232), 30 hops max, 60 byte packets
 1  192.168.184.2 (192.168.184.2)  1.489 ms  1.062 ms  0.870 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

RESULT:

Hence, basic linux commands are executed successfully