



NETWORK LAB RECORD



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RMCA B 27

Basic Linux Commands

1) PWD (Print Working Word)

Used to find the path of the current working directory

Absolute path Which is basically a path of all the directories that start with a forward slash(\)

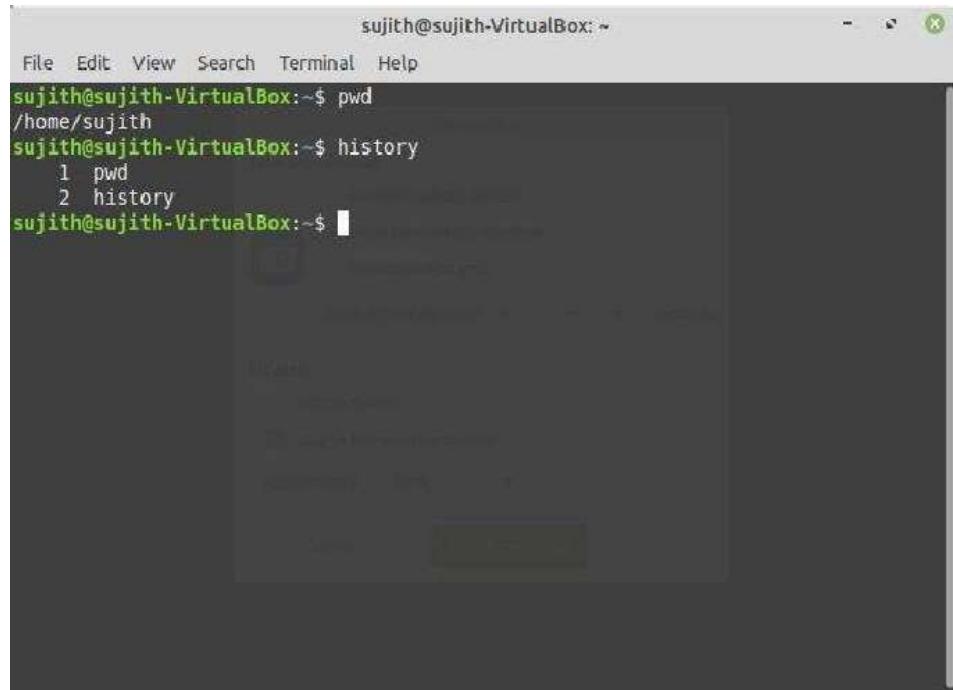
```
sujith@suji...:~$ pwd  
/home/sujith  
sujith@suji...:~$
```

→ Relative path defined as the path related to the present working directory
From root directory

2) History

→ To review the commands, you have entered before

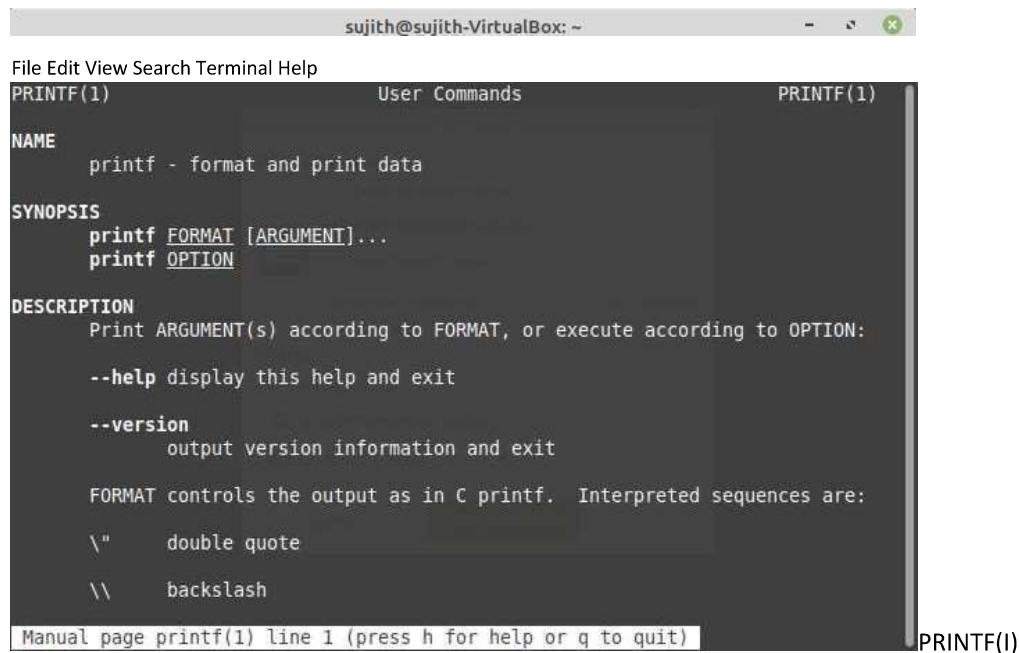
File Edit View Search Terminal



```
sujith@sujith-VirtualBox:~$ pwd
/home/sujith
sujith@sujith-VirtualBox:~$ history
 1 pwd
 2 history
sujith@sujith-VirtualBox:~$
```

3) Man

→ Shows the manual instruction of the tail command →
Man, man to start learning about man utility



```
sujith@sujith-VirtualBox:~$ man printf
printf(1)                               User Commands                               printf(1)

NAME
    printf - format and print data

SYNOPSIS
    printf FORMAT [ARGUMENT]...
    printf OPTION

DESCRIPTION
    Print ARGUMENT(s) according to FORMAT, or execute according to OPTION:
        --help display this help and exit
        --version
            output version information and exit
    FORMAT controls the output as in C printf.  Interpreted sequences are:
        \"      double quote
        \\      backslash

```

4) cd

- To navigate through the Linux files and directories
- Cd ... (to move one directory up)
- Cd (to go straight to the home folder)
- + Cd - (to move to a previous directory)

```
sujith@sujith-VirtualBox: —
File Edit View Search Terminal Help
sujith@sujith-VirtualBox:~/Desktop/raman$ pwd
/home/sujith/Desktop/raman
sujith@sujith-VirtualBox:~/Desktop/raman$ ls
ramans ramans.txt
sujith@sujith-VirtualBox:~/Desktop/raman$ cd ~
sujith@sujith-VirtualBox:~$ pwd
/home/sujith
sujith@sujith-VirtualBox:~$
```

- Used to view the content of the directory
- LS —R (Will list all the files in the sub directory)
- LS —a (long listing)
- LS —al (will show hidden files)

```
sujith@sujith-VirtualBox: —
```

— ⌛ ✎ Help

File Edit View Search Terminal

```
sujith@sujith-VirtualBox:~/Desktop/raman$ pwd  
/home/sujith/Desktop/raman  
sujith@sujith-VirtualBox:~/Desktop/raman$ ls  
ramans ramans.txt  
sujith@sujith-VirtualBox:~/Desktop/raman$ cd ~  
sujith@sujith-VirtualBox:~$ pwd  
/home/sujith  
sujith@sujith-VirtualBox:~$
```

6) Mkdir

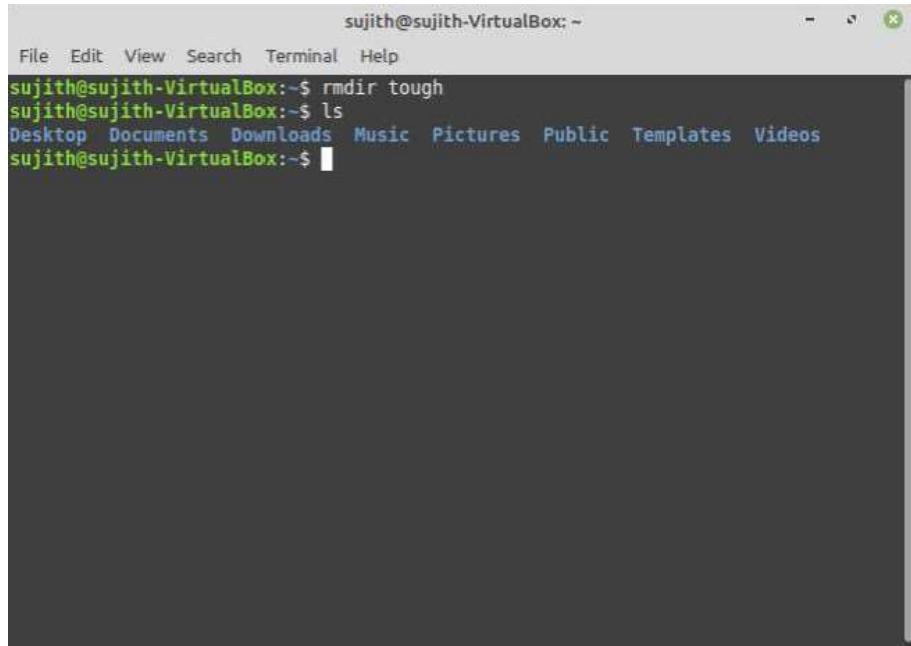
- To make a new directory
- Mkdir —p (to create a directory in between two existing directory)

07

```
sujith@sujith-VirtualBox:~$ sujith@sujith-VirtualBox:~$ mkdir tough  
sujith@sujith-VirtualBox:~$ ls  
Desktop Downloads Pictures Templates Videos  
Documents Music Public tough  
sujith@sujith-VirtualBox:~$
```

7)rmdir

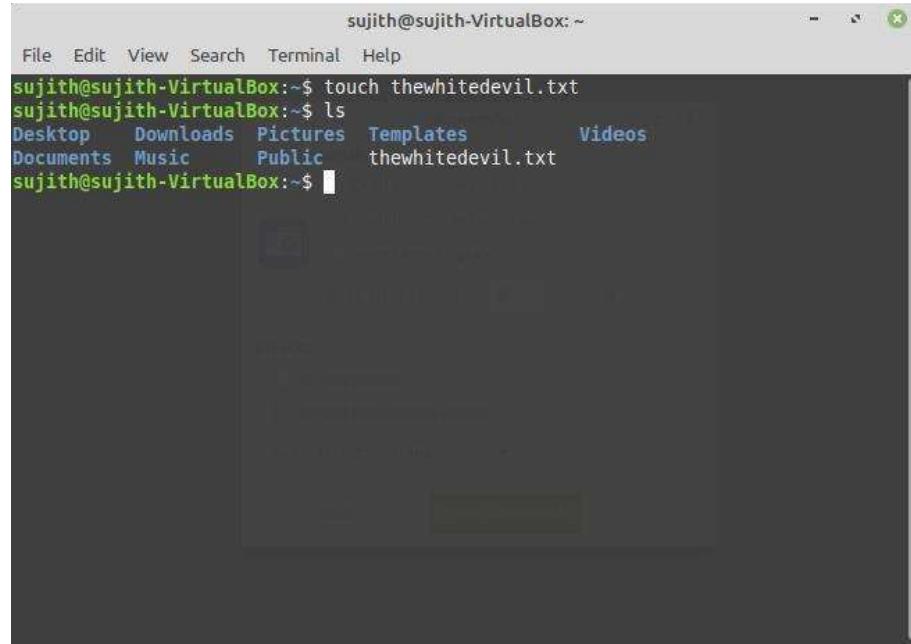
—+ To delete a directory (only allows you to delete empty directories)



A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal area shows the following command and its output:
sujith@sujith-VirtualBox:~\$ rmdir tough
sujith@sujith-VirtualBox:~\$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
sujith@sujith-VirtualBox:~\$ █

8)touch

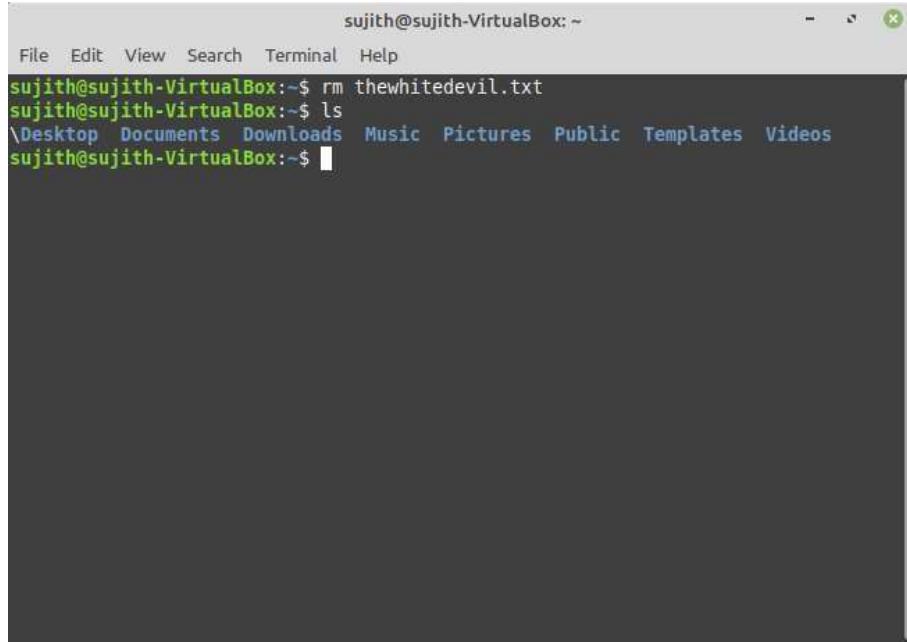
—Y To create a blank new file



A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal area shows the following command and its output:
sujith@sujith-VirtualBox:~\$ touch thewhitedevil.txt
sujith@sujith-VirtualBox:~\$ ls
Desktop Downloads Pictures Templates Videos
Documents Music Public thewhitedevil.txt
sujith@sujith-VirtualBox:~\$ █

9)rm

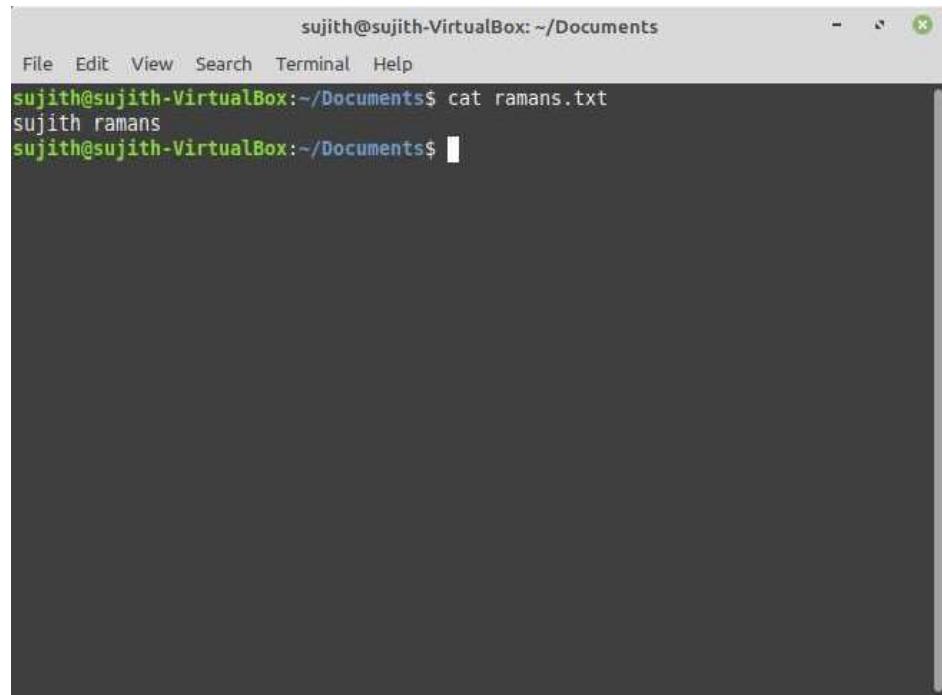
- To delete directories and the contents within them
- Rm —r (to delete directory) → Rm filename (to remove a file)



A screenshot of a terminal window titled "sujith@sujith-VirtualBox:~". The window has a standard OS X-style title bar with icons for minimize, maximize, and close. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The main terminal area shows the following command-line session:
sujith@sujith-VirtualBox:~\$ rm thewhitedevil.txt
sujith@sujith-VirtualBox:~\$ ls
\Desktop\ Documents\ Downloads\ Music\ Pictures\ Public\ Templates\ Videos
sujith@sujith-VirtualBox:~\$
The terminal window is set against a dark background.

10)cat

- + List the content of a file
- Cat >filename(create a new file)
- + Cat filenamel file name2>filename3(join two files and store the output)
- Y Cat filename tr a-z A-Z



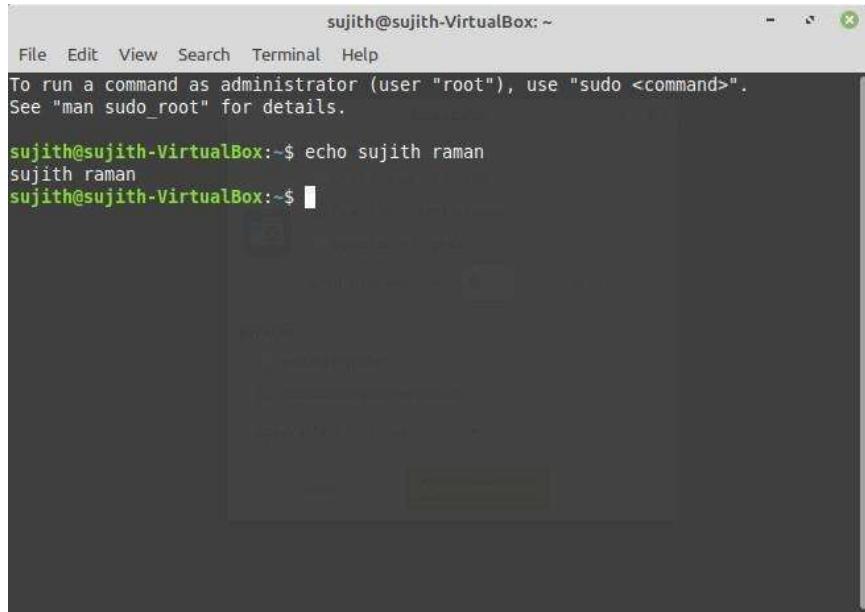
A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~/Documents". The window has a standard title bar with icons for minimize, maximize, and close. Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal shows the command "cat ramans.txt" being run, followed by its output: "Sujith ramans". The prompt "sujith@sujith-VirtualBox:~/Documents\$ " is visible at the bottom right.

```
sujith@sujith-VirtualBox:~/Documents$ cat ramans.txt
Sujith ramans
sujith@sujith-VirtualBox:~/Documents$
```

BASIC LINUX COMMANDS

1. echo

The echo command is used to move some data into a file.

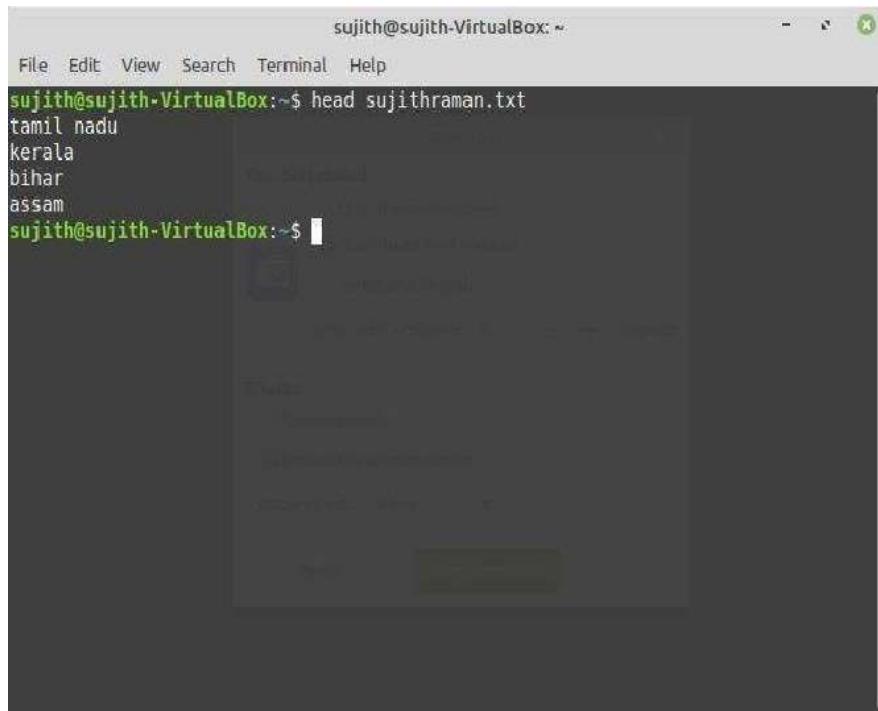


A screenshot of a Linux terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal shows the command "echo sujith raman" being run, followed by the output "sujith raman". The prompt "sujith@sujith-VirtualBox:~\$" is visible at the bottom.

```
sujith@sujith-VirtualBox:~$ echo sujith raman
sujith raman
sujith@sujith-VirtualBox:~$
```

2. head

The head command is used to view the first lines of any text file. By default, it will show the first ten lines, but you can change this number to your liking.

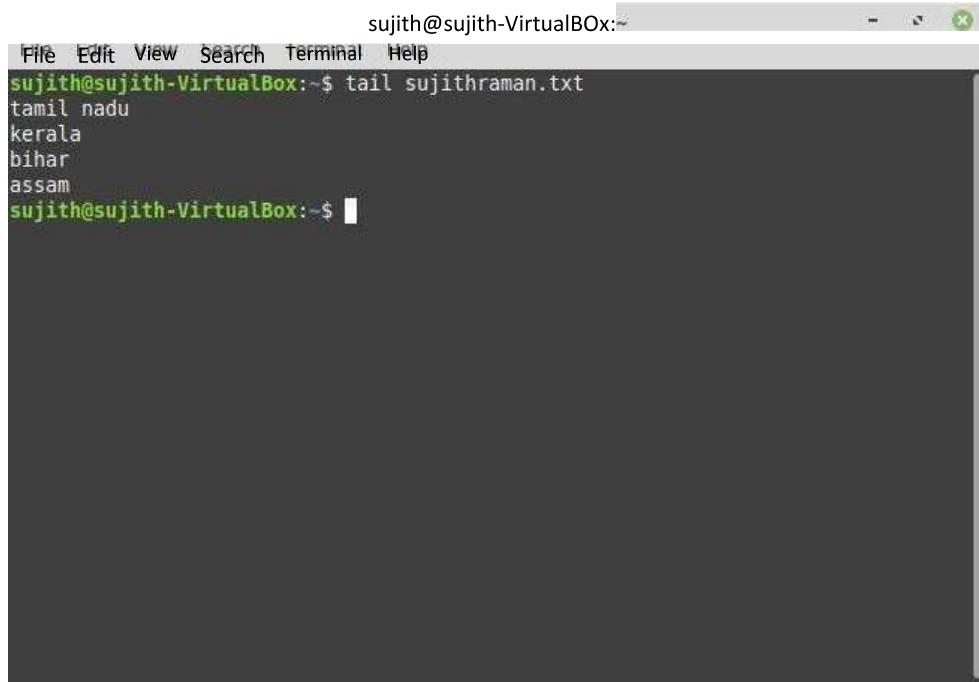


A screenshot of a Linux terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. Below the title bar is a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area of the terminal shows the command "head sujithraman.txt" being run, followed by the output "tamil nadu", "kerala", "bihar", and "assam". The prompt "sujith@sujith-VirtualBox:~\$" is visible at the bottom.

```
sujith@sujith-VirtualBox:~$ head sujithraman.txt
tamil nadu
kerala
bihar
assam
sujith@sujith-VirtualBox:~$
```

3. tail

The tail command will display the last ten lines of a text file.

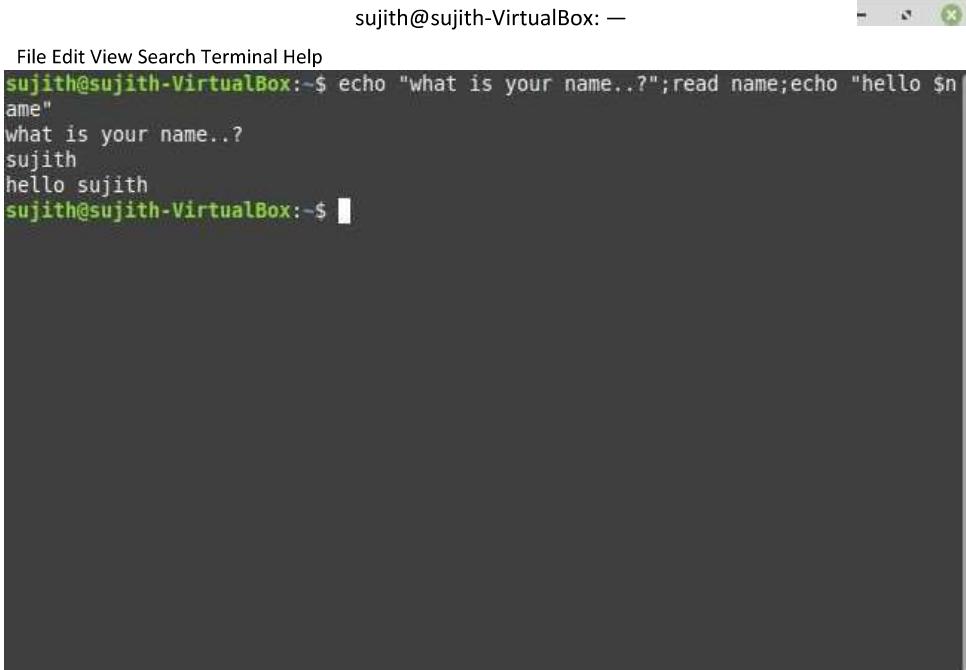


A screenshot of a terminal window titled "sujith@suji...". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The main area shows the command "tail sujithraman.txt" followed by its output: "tamil nadu", "kerala", "bihar", and "assam". The terminal prompt "sujith@suji..." is visible at the bottom.

```
File Edit View Search Terminal Help
sujith@suji...:~$ tail sujithraman.txt
tamil nadu
kerala
bihar
assam
sujith@suji...:~$
```

4. read

The read command reads the contents of a line into a variable. The read command can be used with and without arguments.



A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~". The window contains the following text:

```
File Edit View Search Terminal Help
sujith@sujith-VirtualBox:~$ echo "what is your name..?";read name;echo "hello $name"
what is your name..?
sujith
hello sujith
sujith@sujith-VirtualBox:~$
```

sujith@sujith-VirtualBox:~\$ echo "what is your name, , ? " ; read name; echo

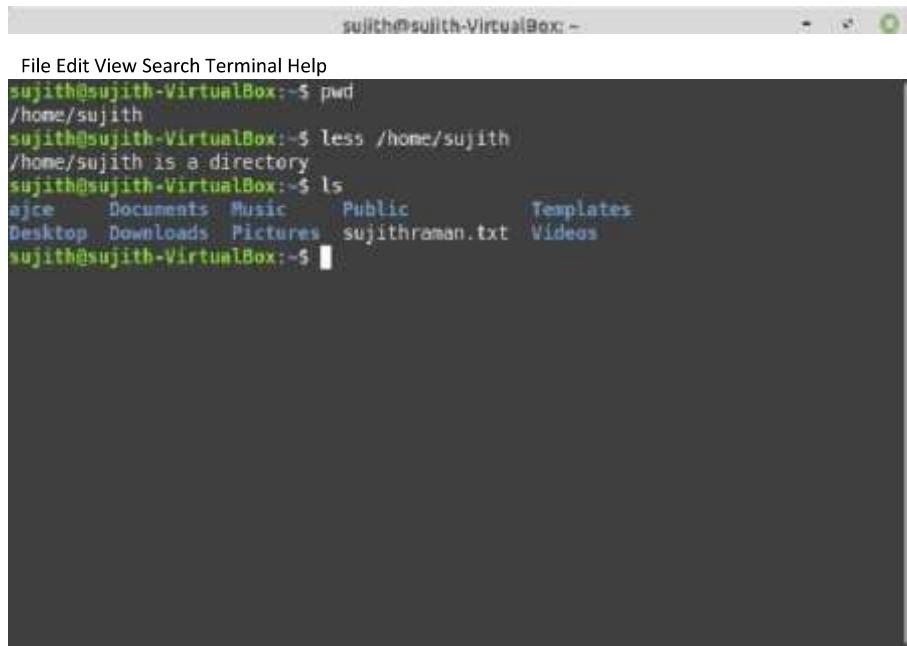
5. more

The more command is used to view the text files in the command prompt, displaying one screen at a time in case the file is large. The more command also allows the user to scroll up and down through the page.

```
sujith@sujith-VirtualBox:~$ sujith@sujith-VirtualBox:~$ more -d sujithraman.txt  
tamil nadu  
kerala  
bihar  
assam  
sujith@sujith-VirtualBox:~$
```

6. less

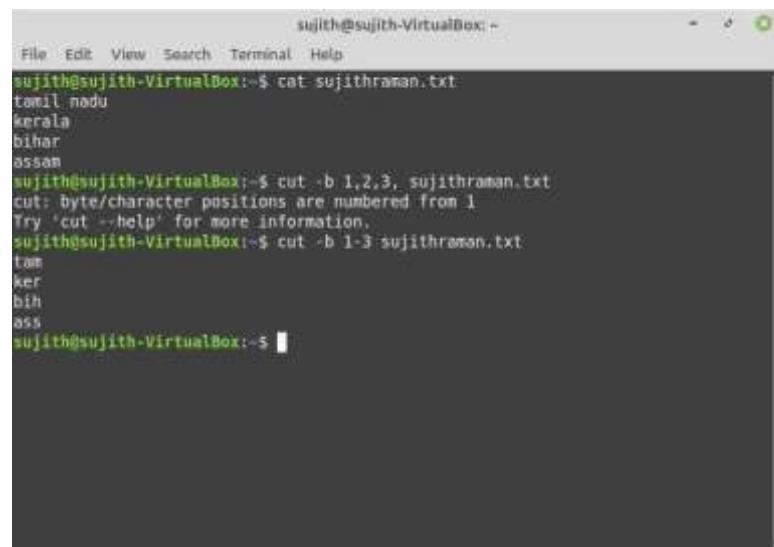
Less command is linux utility which can be used to read contents of text file one page(one screen) per time.



The screenshot shows a terminal window with the title "sujith@sujith-VirtualBox: ~". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The command "less /home/sujith" is run, displaying the directory listing of "/home/sujith". The listing includes "ajce", "Documents", "Music", "Public", "Templates", "Desktop", "Downloads", "Pictures", "sujithraman.txt", and "Videos". The terminal prompt "sujith@sujith-VirtualBox: ~" is visible at the bottom.

7. cut

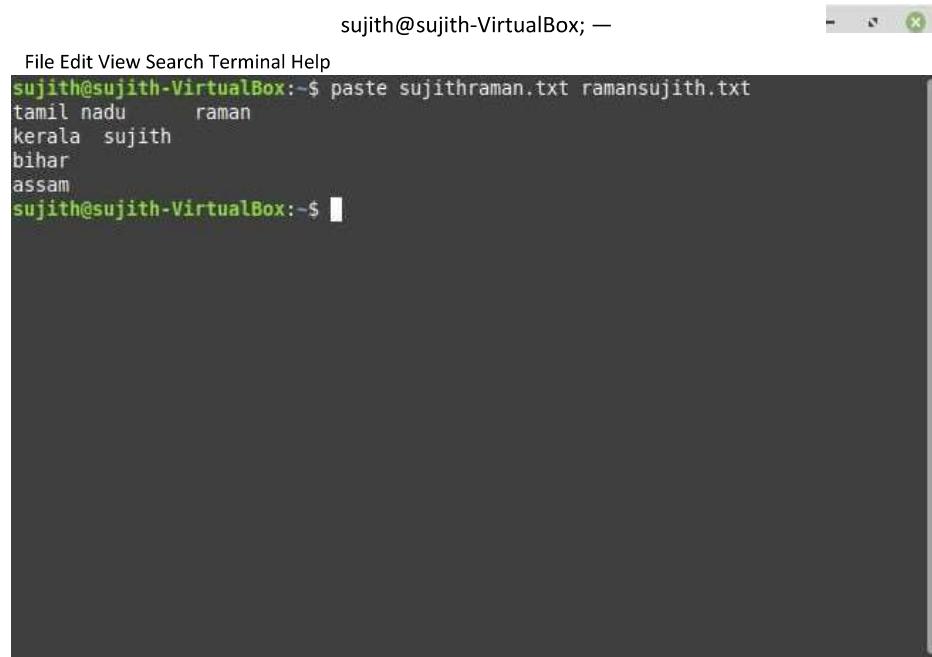
The cut command is used for cutting out the sections from each line of files and writing the result to standard output. It can be used to cut parts of a line by byte position, character and field



The screenshot shows a terminal window with the title "sujith@sujith-VirtualBox: ~". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The command "cat sujithraman.txt" is run, displaying the file content: "tamil", "nodu", "kerala", "bihar", "assam". The command "cut -b 1,2,3, sujithraman.txt" is run, resulting in the output: "tom", "ker", "bih", "ass". The terminal prompt "sujith@sujith-VirtualBox: ~" is visible at the bottom.

8. paste

It is used to join files horizontally (parallel merging) by outputting lines consisting of lines from each file specified, separated by tab as delimiter, to the standard output.

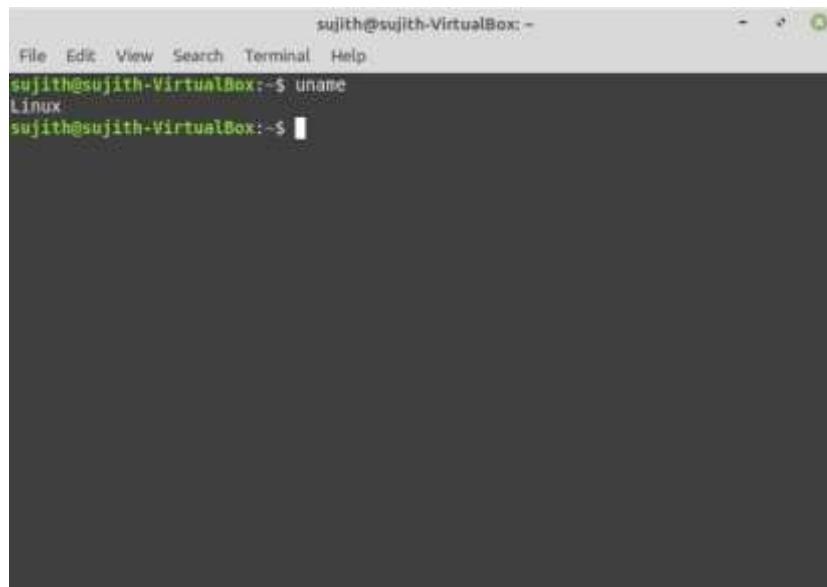


A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal itself shows the command \$ paste sujithraman.txt ramansujith.txt followed by its output:

```
sujith@sujith-VirtualBox:~$ paste sujithraman.txt ramansujith.txt
tamil nadu      raman
kerala   sujith
bihar
assam
sujith@sujith-VirtualBox:~$
```

9. uname

The uname command, short for Unix Name, will print detailed information about your Linux system like the machine name, operating system, kernel, and so on.



A screenshot of a terminal window titled "sujith@sujith-VirtualBox: ~". The window has a standard title bar with icons for minimize, maximize, and close. The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal shows the command \$ uname followed by its output:

```
sujith@sujith-VirtualBox:~$ uname
Linux
sujith@sujith-VirtualBox:~$
```

◎ groupadd :

- groupadd command creates a new group account using the values specified on the command line and the default values from the system.

#groupadd student

```
(raman㉿kali)-[~]
$ groupadd usrgrp
groupadd: group 'usrgrp' already exists

(raman㉿kali)-[~]
$ groups
raman cdrom floppy sudo audio dip video plugdev netdev bluetooth scanner kaboxer

(raman㉿kali)-[~]
$ groups raman
raman : raman cdrom floppy sudo audio dip video plugdev netdev bluetooth scanner kaboxer

(raman㉿kali)-[~]
```

② groupdel:

groupdel command is used to delete a existing group. It will delete all entry that refers to the group, modifies the system account files, and it is handled by superuser or root user.

```
(raman㉿kali)-[~]
$ sudo groupdel sujith

(raman㉿kali)-[~]
$ cat /etc/group
zsh: no such file or directory: cat /etc/group

(raman㉿kali)-[~]
$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
```

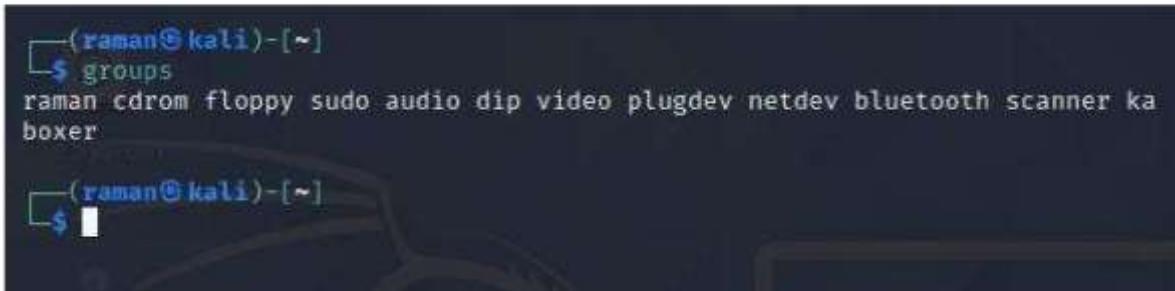
@ usermod:

usermod command is used to change the properties of a user in Linux through the commandline 🎨 command-line utility that allows you to modify a user's login information

```
💡 # userrnod --help e  
#usermod -u 2000 Tom  
      Rall usermod -c "hello"  
raman zsh: command not found : sudo  
  
( raman@ kali sudo usermod -c  
  "hello" raman  
  
( raman@ kali  
$ cat /etc/passwd root: x : 0 : 0 : root: / root:  
/usr/bin/zsh_daemon : x : 1: 1: daemon : /usr/sbin :  
/usr/sbin/nologin bin: x : 2 bin: / bin:  
/usr/sbin/nologin sys: x : 3 23: sys : /dev :  
/usr/sbin/nologin /bin: /bin/sync games: x :5 : 60 :  
games : /usr/games : /usr/sbin/nologin man : x : 6 :  
12 :man : /var/cache/man : /usr/sbin/nologin lp : x:  
7 : 7 :lp /var/spool/lpd : /usr/sbin/nologin mail : x :  
8 : 8:mai1 : /var/mail : /usr/sbin/nologin news : x : 9  
: 9 : news : /var/spool/news : /usr/sbin/nologin  
uucp : x : 10: 10 : uucp /var/spool/uucp :  
/usr/sbin/nologin proxy: x: 13 : 13 : proxy : /bin :  
/usr/sbin/nologin v,vm-data : x : 33 : 33 : / var/vmq  
: /usr/sbin/nologin
```

groups:

```
💡 print the groups a user is in  
💡 #groups alice
```



```
(raman㉿kali)-[~]  
└─$ groups  
raman cdrom floppy sudo audio dip video plugdev netdev bluetooth scanner ka  
boxer
```

```
#groups alice
```

e groupmod:

```
💡 The groupmod command modifies the definition of the specified group by  
modifying the appropriate entry in the group database.
```

💡 # groupmod -n group1 group2

```
(raman㉿kali)-[~]
└─$ groupmod -n newusergrp usrgrp
groupmod: Permission denied.
groupmod: cannot lock /etc/group; try again later.

(raman㉿kali)-[~]
└─$ sudo groupmod -n newusergrp usrgrp

(raman㉿kali)-[~]
└─$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
```

⌚ chmod:

💡 To change directory permissions of file/ Directory in Linux.

#chmod whowhatwhich file/directory 💡 chmod
+rwx filename // To add permissions.

💡 chmod -rwx directoryname // To remove permissions.

💡 chmod +x filename #chmod g-rwx test #chmod O-r test
e chmod -wx filename //To allow executable permissions.
#chmod U+x test // to take out write and executable permissions.

```
[~] (raman㉿kali)-[~]
$ sudo chmod g+rw myfile.txt
[sudo] password for raman:

[~] (raman㉿kali)-[~]
$ chmod g+rw myfile.txt

[~] (raman㉿kali)-[~]
$ chmod +rwx myfile.txt

[~] (raman㉿kali)-[~]
$ ls -l myfile.txt
-rwxrwxr-x 1 raman raman 0 Aug 13 19:51 myfile.txt

[~] (raman㉿kali)-[~]
$ sudo chmod g+rw myfile.txt

[~] (raman㉿kali)-[~]
$ chmod g+rw myfile.txt

[~] (raman㉿kali)-[~]
$ ls -l myfile.txt
-rwxrwxr-x 1 raman raman 0 Aug 13 19:51 myfile.txt

[~] (raman㉿kali)-[~]
```

e ps:

The ps command, short for Process Status, is a command line Utility that is used to display or view information related to the processes running in a Linux system.

PID — This is the unique process ID

TTY — This is the type of terminal that the user is logged in to

TIME — This is the time in minutes and seconds that the process has been running

CMD — The command that launched the process #ps -a

```
[~] (raman㉿kali)-[~]
$ ps
   PID TTY      TIME CMD
 1045 pts/0    00:00:04 zsh
 1589 pts/0    00:00:00 ps

[~] (raman㉿kali)-[~]
```

⌚ chown:

The chown command allows you to change the user and/or group ownership of a given file, directory.

↳ #chown Tom Test

```
↳ $ sudo chown raman myfile.txt  
[sudo] password for raman:  
  
↳ (raman㉿kali)-[~]  
↳ $ chown raman myfile.txt  
  
↳ (raman㉿kali)-[~]  
↳ $ ls -l myfile.txt  
-rwxrwxr-x 1 raman raman 0 Aug 13 19:51 myfile.txt  
  
↳ (raman㉿kali)-[~]  
↳ $
```

⌚ id:

id command in Linux is used to find out user and group names and numeric ID's (UID or group ID) of the current User or any other user in the server. List out all the groups a user belongs to. Display security context of the current user

```
↳ (raman㉿kali)-[~]  
↳ $ id  
uid=1000(raman) gid=1000(raman) groups=1000(raman),24(cdrom),25(floppy),27(sudo),29(audio),30(dip),44(video),46(plugdev),109(netdev),118(bluetooth),133(scanner),142(kaboxer)  
  
↳ (raman㉿kali)-[~]  
↳ $
```

@ top:

top command is used to show the Linux processes. It provides a dynamic realtime view of the running system. Usually, this command shows the summary information of the system and the list of processes or threads which are currently managed by the Linux Kernel.

```
top      up  o nun,    user,    oa average:  
Tasks: 140 total,        1 running, 139 sleeping,          stopped,    ø zombie  
%Cpu(s): 1.1 us, 3.0 sy,           ni, 93.9 id,       1.1     ø.ø hi,           0.8 si, ø.  
Mia Men .      1990.1 total,   1173.4 free,    405.2 used,    411.5 buff/cache  
Mia Swap :    975.ø total,    975.0 free,          used.    1432.2 avail  
                           Mem  
 PID USER      PR      VIRT      RES      SHR s %CPU %MEM      TIME*  
 475 root      20    277996    79320    38420 s  5.0  3.9  0:21.20  
 1650 raman    20    330808    40576    32512 s    7  2-0  0:00.33  
 833 raman    20      o    388940    83764    59880 s   1.3  4.1  0.ø 07—47
```

786	raman	20	156908	2860	2408 s	0.3	0.1	o .• 03.91
851	raman	20	235108	21276	14732 s	0.3	1.0	o .• <u>00.</u> 49
896	raman	20	514652	40928	31364 s	0.3	2.0	o .• 00. 94
967	raman	20	404188	42100	34252 s	0.3	2.1	0: 00. 36
995	raman	20	403632	85232	68040 s	0.3	4.2	0: 03.03
1	root	20	102528	11352	8572 s			0: 05 .22
2	root	20			s		0.0	o : 00.00
3	root	o -20			o 1			o: 00-00
4	root	-20			o 1			o:00.00
6	root	-20			1			o: 00 .00
8	root	-20			o 1			o: 00.00
9	root	20			o s		o .	37
10	root	20			1		o .	37
11	root				o s	0.0		0: 00.02
12	root	20			1			0: 00.60
13	root	20			s			o: 00.00
15	root	20			o s			o: 00.00

e wc:

wc stands for word count.

Used for counting purpose.

It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.



A terminal session on a Kali Linux system (raman㉿kali) demonstrating the use of the wc command. The user creates two text files, myfile.txt and myfile2.txt, containing specific text. Then, they use various options of the wc command to count lines, words, and bytes for each file individually and together.

```
#wc state.txt 6 8 54 state.txt
#wc state.txt capital.txt
wc -l state.txt
wc -w state.txt capital.txt
wc -c state.txt
wc -m state.txt
(raman㉿kali)-[~]
$ cat myfile.txt
hello everyone
hope u all safe
stay home stay safe

(raman㉿kali)-[~]
$ cat myfile2.txt
hai hello

(raman㉿kali)-[~]
$ wc myfile.txt
3 10 52 myfile.txt

(raman㉿kali)-[~]
$ wc myfile2.txt
1 2 10 myfile2.txt

(raman㉿kali)-[~]
$ wc -l myfile.txt
3 myfile.txt

(raman㉿kali)-[~]
$ wc -w myfile.txt myfile2.txt
10 myfile.txt
2 myfile2.txt
12 total
```

@ Tar:

'The Linux 'tar' stands for tape archive, is used to create Archive and extract the Archive files ' Linux tar command to create compressed or uncompressed Archive files •

Options:

- c : Creates Archive
- x : Extract the archive
- f : creates archive with given filename
- t: displays or lists files in archived file
- u: archives and adds to an existing archive file
- v: Displays Verbose Information

- A : Concatenates the archive files
- z : zip, tells tar command that creates tar file using gzip
- j : filter archive tar file using tbzip
- W : Verify a archive file
- r : update or add file or directory in already existed .tar file

```
#tar cf archive.tar state.txt capital.txt //create archive file
#ls archive.tar
#tar tf /archive.tar // list contents of tar archive file
```

Extract an archive created with tar

```
#mkdir backup
#cd backup
#tar xf/home/meera/Documents/Meera_Linux/archive.tar
```

➤ Compression Types gzip(z),bzip2(j), xz(J) #tar czf /abc.tar.gz
/etc #tar cjf /abcd.tar.bz2 /etc

```
#tar cJf /abcde.tar.xz /etc
```

➤ Extract an archive

```
#mkdir backup1
#cd backup1
#tar xzf /abc.tar.gz
#mkdir backup2
#cd backup2
#tar xjf /abcd.tar.bz2
#mkdir backup3
#cd backup3
#tar xJf /abcde.tar.xz
```

Bzip2



```
(raman@kali)-[~]
$ ls
Desktop  Downloads  f1.txt.xz  myfile2.txt  Pictures  Template
Documents  f2.txt.gz  Music      myfile.txt   Public    Videos

(raman@kali)-[~]
$ |
```

gzip

ramati'& ka

Desktop	fl . txt	Music	Pictures	Videos
Documents	€2 . txt	myfi1e2 . txt	Public	üdownloads
	myfile.txt	Downloads	€3 txt	f4 txt
	Templates			

```
(raman@  
$ gzip fl . txt f2. txt  
(raman@  
Desktop Music Pictures Videos  
Documents myfi1e2 . txt Public  
Downloads f3.txt f4.txt myfile.txt Templates  
(raman@  
$ gzip -c fl . txt f2 . txt gzip.' fl .txt.  
No such file or directory  
(raman@ kali)-  
$ gzip -c fl . txt . Ez  
Leafl txt . gz++++OiKd N30++(a \ 1  
Leafl txt . gz++++OiKd N30++(a \  
(raman@ kali)$  
gzip -d f2 . txt .  
zip f2 . txt already exists do you wish to overwrite  
•
```

```
(raman@  
Desktop music Pictures Videos  
Documents fm.txt myfi1e2. txt Public  
Downloads f3.txt f4.txt myfile.txt Templates  
( raman@  
$ xz f2.txt  
( raman@ f3 . txt  
xz: f3etxt.xz: File exists  
( raman@ kali)-1-  
1 f4 . txt  
( raman@ kali) f3 . txt  
f3.txt. gz  
(raman@ kali)-1-1  
Desktop myfile.txt Templates  
Documents Pictures Videos  
Downloads f3.txt f4.txt myfile2. txt Public  
( raman@ kali)-  
expr
```

The expr command evaluates a given expression and displays its corresponding output. It is used for:

Basic operations like addition, subtraction, multiplication, division, and modulus on integers.

Evaluating regular expressions, string operations like substring, length of strings etc.

Performing operations on variables inside a shell script

```
#expr      10      +      2
[~]$(raman@kali)~$ expr 12 + 10
22
[~]$(raman@kali)~$ expr 12 / 10
1
[~]$(raman@kali)~$ expr 12 - 10
2
[~]$(raman@kali)~$ chmod g+rw myfile.txt
```

raman;\$ ka

@ Redirections & Piping :

A pipe is a form of redirection to send the output of one command/program/process to another command/program/process for further processing.

Pipe is used to combine two or more commands, the output of one command acts as input to another command, and this command's output may act as input to the next command and so on.

```
#ls -l | wc -l
```

```
#cat /etc/passwd.txt | head -7 | tail -5
```

```
[~]$(raman@kali)~$ cat /etc/myfile.txt | head -55 | tail -3
cat: /etc: Is a directory
hello everyone
hope u all safe
stay home stay safe
```

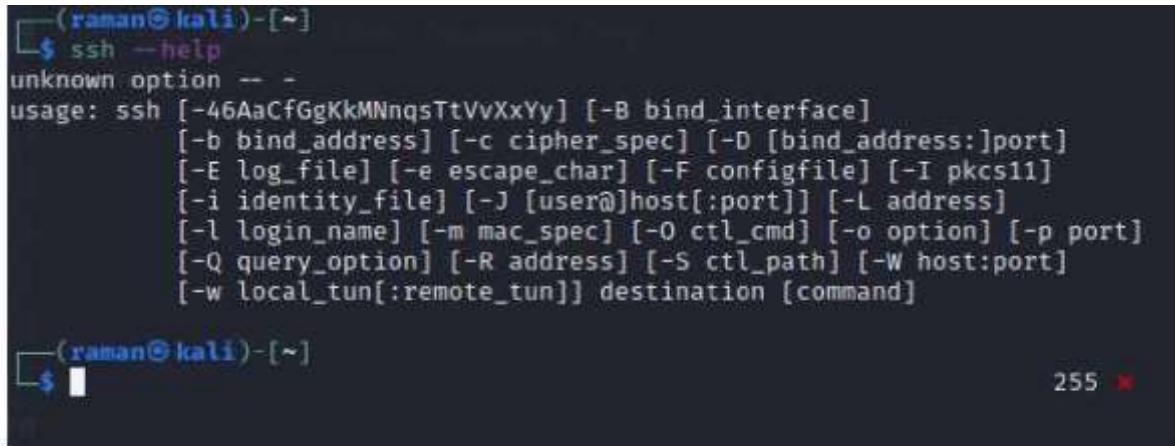
@ ssh stands for "Secure Shell".

It is a protocol used to securely connect to a remote server/system.

ssh is secure in the sense that it transfers the data in encrypted form between the host and the client.

It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.

```
#ssh user_name@host(IP/Domain_name)  
#ssh -X root@server1.example.com
```



(raman㉿kali)-[~]\$ ssh --help
unknown option -- -
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
 [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
 [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
 [-i identity_file] [-J [user@]host[:port]] [-L address]
 [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
 [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
 [-w local_tun[:remote_tun]] destination [command]

(raman㉿kali)-[~]\$ 255 ✘

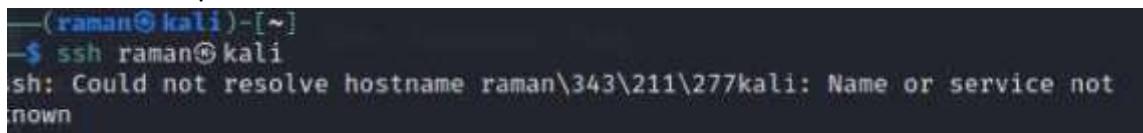
⑤ scp

- ↳ SCP (secure copy) is a command-line utility that allows you to securely copy files and directories between two locations.
- ↳ With scp, you can copy a file or directory:
- ↳ From your local system to a remote system.
- ↳ From a remote system to your local system.
- ↳ Between two remote systems from your local system.

Remote file system locations are specified in format

[user@]host:/path Syntax:

```
scp[OPTION][user@]SRC_HOST:file1 [user@]DEST_HOST:file2  
$scp/etc/yum.config/etc/hosts ServerX:/home/student  
$scp ServerX:/etc/hostname /home/student
```



```
(raman㉿kali)-[~]$ ssh raman@kali  
sh: Could not resolve hostname raman\343\211\277kali: Name or service not known
```

@ ssh-keygen ssh-keygen command to generate a public/private authentication key pair. Authentication keys allow a user to connect to a remote system without supplying a password. Keys must be generated for each user separately. If you generate key pairs as the root user, only the root can use the keys.

```
$ssh-keygen -t rsa
```

```
(raman㉿kali)-[~]
$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/raman/.ssh/id_rsa): rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in rsa
Your public key has been saved in rsa.pub
The key fingerprint is:
SHA256:JFwFlREEQSaj1hRlkLvcsmrw1Tkw13JKttZ/knRskDk raman@kali
The key's randomart image is:
+---[RSA 3072]---+
          OX%=
          . =.*..
          = 0 ...
          . o+ = o E
          .SX B +
          . = 0 . . .
          o . + . o +
          o .       + .
          ...
          ... o
+---[SHA256]---+
(raman㉿kali)-[~]
$ ssh-keygen
```

@ ssh-copy-id

The `ssh-copy-id` command allows you to install an SSH key on a remote server's authorized keys.

This command facilitates SSH key login, which removes the need for a password for each login, thus ensuring a password-less, automatic login process.

 \$ssh-copy-id username@remote_host

Create six files with name of the form songX.mp3

```
[root@Rack1 ~]# $ touch song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3 song7.mp3
```

Create six files with name of the form pic.mp3

```
$ touch pic3.jpg pic4.jpg pic7.jpg
```

Create six files with name of the form filmX.mp3

```
'-s touch mov1.mp4 mov2.mp4 mov3.mp4 mov4.mp4 mov5.mp4 mov6.mp4 mov7.mp4
```

From your home directory, move the song files into your music subdirectory, the snapshot files into your pictures subdirectory, and the movie files into videos subdirectory.

```
(raman@kali)-[~]
$ mv *.mp3 ./Music/
(raman@kali)-[~]
$ mv *.jpg ./Pictures/
mv: target './Pictures/' is not a directory
(raman@kali)-[~]
$ mv *.jpg ./Pictures/
(raman@kali)-[~]
```

In your home directory, create three subdirectories for organizing your files. Call these directories friends, family, and work. Create all three with one command

'—s mkdir -C' (friends , family,work)

Copy song files to the friends folder and snap files to family folder.

S cp /home/raman/Music pic1.jpg pica.jpg pic3.jpg pic4.jpg pic5.jpg pic6.jpg pic7.jpg /home/raman/family/

Attempt to delete both family and friends projects with a single rmdir command.

ls rmdir {friends,family}

Use another command that will succeed in deleting both the family and friends folder.

S rmdir {friends,family}

Redirect a long listing of all home directory files, including hidden, into a file named allfiles.txt.

Confirm that the file contains the listing.

```
(raman@kali)-[~]
$ ls -a > allfiles.txt
```

In the command window, display today's date with day of the week, month, date and year

(raman@e-; ka

LS date

Tuesday 17 August 2021

PM 1ST

Add the user vaishak

LS sudo useradd vaishak

[sudo] password for raman:

Confirm that Juliet has been added by examining the /etc/passwd file

(raman•-'! kaL1,-t")

S cat /etc/passwd | grep vaishak v 1001 :1002
 /home/_:/bin/sh

Use the passwd command to initialize vaishak password

```
S sudo passwd vaishak  
[sudo] password for raman;  
New password: Retype new  
password:  
passwd: password updated successfully
```

Create a supplementary group called johny with a group id of 30000

```
(raman@kali:~)
```

```
Sudo groupadd -E 30000 johny
```

Create a supplementary group called artists

```
(raman@kali:~)  
LS sudD  
upadd nger
```

Confirm that johny and singer have been added by examining the /etc/group file.

```
(raman@kali:~)  
$ id vaishak  
uid=1001(vaishak) gid=1002(vaishak) groups=1002(vaishak),30000(johny)
```

Add arun and babu to the johny group.

```
(raman@kali:~)  
$ sudo useradd arun  
(raman@kali:~)  
$ sudo useradd kannan  
(raman@kali:~)  
$ sudo useradd babu
```

Add kannan, Dolly and elvis to the singer group

```
$ sudcv useradd dolly  
( raman@ kali)• -1-1 sudo  
useradd el vis
```

(raman@ kali)• -1-1

I do useradd el vis

Verify the supplemental group memberships by examining the /etc/group file.

```
sslh:x:128:nm-  
openvpn:x:129:•nm-  
openconnect:x:130:  
pulse:x:131:pulse-  
access:x:132:scanner:
```

x : 133 : saned , raman
saned : x : 134 :
sambashare: x : 135 :
inetsim: x : 136 : colord :
x : 137 : geoclue: x :
138: lightdm: x : 139 :
kpadmins : x :140 :
raman : x : lØØØ : vboxsf
: x : 141 :
kaboxer: x : 142: raman ,
root systemd-coredump : x
: 999 : newusergrp : x :
1001: vaishak : x : 1002:
vaishak singer: x : :
sujith: x : 3ØØØ2: arun : x :
1ØØ3 : kannan : x : 1004:

Attempt to remove user Dolly.

(raman&	
S sudo userdel	0011y

IPCONFIG

```
C:\> C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DELL>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Ethernet adapter Ethernet 3:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::d13d:2d53:6ab3:9379%22
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 3:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 4:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::dd2e:2348:9299:3d9f%21
    IPv4 Address. . . . . : 192.168.1.101
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::b6cd:27ff:fee7:5825%21
                                         192.168.1.1

C:\Users\DELL>
```

NETSTAT

C:\WINDOWS\system32\cmd.exe - netstat

C:\Users\DELL>netstat

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:1548	SUJITH:5354	ESTABLISHED
TCP	127.0.0.1:5354	SUJITH:1548	ESTABLISHED
TCP	192.168.1.101:1432	bom07s16-in-f3:https	ESTABLISHED
TCP	192.168.1.101:4563	bom12s21-in-f10:https	TIME_WAIT
TCP	192.168.1.101:4741	bom07s16-in-f3:https	ESTABLISHED
TCP	192.168.1.101:4742	a-0001:https	ESTABLISHED
TCP	192.168.1.101:4743	40.100.137.50:https	ESTABLISHED
TCP	192.168.1.101:4744	20.190.146.32:https	ESTABLISHED
TCP	192.168.1.101:4745	13.107.246.58:https	ESTABLISHED
TCP	192.168.1.101:4746	13.107.12.254:https	ESTABLISHED
TCP	192.168.1.101:4747	13.107.3.254:https	ESTABLISHED
TCP	192.168.1.101:4748	204.79.197.222:https	ESTABLISHED

NETSTAT -A

```

'P_Y-J C:\WINDOWS\system32\cmd.exe - netstat
C : Wsers\DELL7\netstat -3
      Active Connections
      Proto Local Address          Foreign Address        State
      TCP   8.8.8.13S              SUJITH:8             LISTENING
      TCP   8.8.8.44$              SUJITH:8             LISTENING
      TCP   8.8.8.1536             SUJITH:8             LISTENING
      TCP   8.8.8.1537 TCP         SUJITH:8             LISTENING
          8.8.8.1538
      TCP   8.8.8.1539 TCP         SUJITH:8             LISTENING
          8.8.8.1548 TCP
          8.8.8.1542
      TCP   8.8.8
          SUJITH:8             LISTENING
      TCP   8.8.8.8:S3S7 TCP       SUJITH:8             LISTENING
          8.8.8.8:7878
      TCP   8.8.8.8:7588          SUJITH:8             LISTENING
      TCP   127 .8. 1 : 1S48        SUJITH: 5354           ESTABLISHED
      TCP   127 .8. 1 : S3S4        SUJITH:8             LISTENING
      TCP   127 .8. 1 : S3S4        SUJITH: 1548           ESTABLISHED
      TCP   127 .8. 1 : 5939        SUJITH:8             LISTENING
      TCP   192 .158. 1 . 181 : 139
          bom87s15- in-f3 : https ESTABLISHED     fna      -
          whatsapp- shv-84-fmaa1 : https ESTABLISHED
          bom12s89-in -fl : https ESTABLISHED
          48.188.137.    https ESTABLISHED
          13 . 187 . 12 . 254: https ESTABLISHED
          13 . 187 . 246.58: https ESTABLISHED
          13 . 187 . 245.254: https ESTABLISHED
          284.79. 197 . 222 : https ESTABLISHED
          a-8881.● https ESTABLISHED
          48.188.137. se: https TIME
          28.198.146.32 : https TIME
          192 . 158. 1 . 181 : 3742
          192 . 158. 1 . 181 : 3743
          192 . 158. 1 . 181 : 3744
          192 . 158. 1 . 181 : 3745
          192 . 158. 1 . 181 : 3745

```

IFCONFIG LINUX

```
(raman㉿kali)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
      inet6 fe80::a00:27ff:fe24:c7a4 prefixlen 64 scopeid 0x20<link>
        ether 08:00:27:24:c7:a4 txqueuelen 1000 (Ethernet)
          RX packets 4 bytes 930 (930.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 14 bytes 1332 (1.3 KiB)
          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 12 bytes 556 (556.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 12 bytes 556 (556.0 B)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

IFCONFIG -A

```
S ifconfig -3 etho•. BROADCAST, mtu 1500 inet 10 .0.2.15 netmask
255.255 .255.0 broadcast 10.0.2.255 inet6 fe80 aøo:27ff; fe24 ;c7a4
prefixlen 64 scopeid ether txqueuelen 1000 (Ethernet) RX packets 9
bytes 1566 (1.5 Kia)

RX errors 0 dropped 0 overruns 0 frame 0
TX packets 22 bytes 1944 (1.8 Kia)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

o; , LOOPBACK, RUNNING> mtu 65536 inet 127 .ø.ø.l net-
      mask 255.ø.ø .ø inet6 prefixlen 128 scopeid loop
      txqueueUen 1 øøø (Local Loopback) RX packets 12
      bytes 556 (556.0 B)
      RX errors 0 dropped 0 overruns 0 frame ø
      TX packets 12 bytes 556 (556.0 B)
      TX errors 0 dropped 0 overruns 0 carrier    collisions 0
```

IFCONFIG -S

```
(raman㉿kali)-[~]
$ ifconfig -s
Iface      MTU     RX-OK RX-ERR RX-DRP RX-OVR     TX-OK TX-ERR TX-DRP TX-OVR Flg
eth0      1500      9     0     0     0          22     0     0     0     0 BMRU
lo       65536     12     0     0     0          12     0     0     0     0 LRU

(raman㉿kali)-[~]
$
```

IFCONFIG -V

```
(raman㉿kali)-[~]
$ ifconfig -v
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
      inet6 fe80::a00:27ff:fe24:c7a4 prefixlen 64 scopeid 0x20<link>
        ether 08:00:27:24:c7:a4 txqueuelen 1000 (Ethernet)
          RX packets 9 bytes 1566 (1.5 KiB)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 22 bytes 1944 (1.8 KiB)
          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 12 bytes 556 (556.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 12 bytes 556 (556.0 B)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

IFCONFIG -HELP

```
(ral'lan@, kali) - [~]
ifConfig --heUp Usage :
ifconfig [add
[del
[[-]broadcast           [[-]pointöpoint
[netmask                [dstaddr            [tunnel
[outfill               [keepalive
[hw <                  <address>] [mtu <NN>]
[ [-]trailers] [[-]arp] [[-]allmulti]
[multicast] [ promisc]
[mem_start              [io_addr            [irq
[txqueuelen
[ [-]dynamic
[up down]

<HWZ Hardware Type.
List of possible hardware types.
loop (Local Loopback) slip (Serial Line IP) CSLip (VJ Serial Line IP) slip6 (6-bit Serial Line IP)
Cslip6 (VJ 6-bit Serial Line IP) adaptive (Adaptive Serial Line IP) ash (Ash) ether (Ethernet) ax25
(AMPR AX .25) netrom (AMPR NET/ROM) rose (AMPR ROSE) tunnel (IPIP Tunnel) ppp (point-to-point protocol) hdlc ((Cisco)-HDLC) lapb (LAP8) arcnet (ARCnet) dlc (Frame Relay DLCI) frad
(Frame Relay Access Device) sit (IPv6-in—IPv4) fddi (Fiber Distributed Data Interface) hippi
(HIPPI) irda (IrLAP) ec (Econet) x25 (generic X.25) eui64 (Generic EUI—64)
```

Address family. Default: inet

List of possible address families:

unix (UNIX Domain) inet (DARPA Internet) inet6 (IPv6)
ax25 (AMPR AX.25) netrom (AMPR NET/ROM) rose
(AMPR ROSE) ipx (Novell IPX) ddp (Appletalk OOP) ec
(Econet) ash (Ash) x25 (CCITT X.25)

NETSTAT LINUX

```
( rar.lan'@) kali )-t—] —S netstat -3 ctive Internet connections (servers and
established) roto Recv-Q Send-Q Local Address          Foreign Address  Sta te dp
      0 10.e.2.15:bootpc      10.0.2.2:bootps ESTABLISHED
•aw6 ctive UNIX domain sockets (servers and established) roto RefCnt Flags Type State 1-Node Path ni x 2 19354
/run/user/1000/systemd/notify n1X 2 ACC STREAM LISTENING 17232 a/ tmp/. XII-unix/X0 ni x 2 ACC STREAM
LISTENING 19357 /run/user/1000/systemd/private ni x 2 ACC STREAM LISTENING 19365 /run/user/1000/bus ni x 2
ACC STREAM LISTENING 19366 /run/user/leee/gnupg/s.dirmngr ni x 2 ACC STREAM LISTENING 19367 /run/user /
1000/gnupg/S. gpg-agent . browser ni x 2 ACC STREAM LISTENING 19368 /run/user/1000/gnupg/S. gpg-agent .extra
ni x 2 ACC STREAM LISTENING 19369 /run/user/1000/gnupg/S. gpg-agent ssh ni x 2 ACC STREAM LISTENING 19370
/run/user/1000/gnupg/S. gpg-agent n1X 2 ACC STREAM LISTENING 19371 /run/user/looe/pulse/native ni x 2 ACC
STREAM LISTENING 19826 a/tmp/. ICE-unix/743 n1X 3      12009 /run/systemd/notify ni x 2 ACC STREAM LISTENING
12012 /run/systemd/private n1X 2 ACC STREAM LISTENING 12014 /run/ systemdb/userdb/io. system. DynamicU s
n1X 2      12025 /run/systemd/journal/syslog ni x 2 [ ACC STREAM LISTENING 12027 /run/systemd/fsck.progress ni x
12 12031 /run/systemd/journal/dev—log ni x 2 [ ACC STREAM LISTENING 12033 /run/systemd/journal/stdout ni x
      12035 /run/systemd/journal/socket ni x 2 ACC SEQPACKET LISTENING 12037 /run/udev/control n1X 2 ACC
STREAM LISTENING 13936 /run/systemd/journal/io. system. journal ni x 2 ACC STREAM LISTENING 19659 /tmp/ssh-
rrvOm9eh3irx/agent .743 n1X 2 ACC STREAM LISTENING 19827 /tmp/. ICE-unix/743 ni x 2 ACC STREAM LISTENING
17233 /tmp/.X11-unix/X0 ni x 2 ACC STREAM LISTENING 15077 /run/dbus/system_bus_socket n1X 2 ACC STREAM
LISTENING 19763 a/tmp/dbus-n09SbSqNn9 ni x 3 STREAM CONNECTED 20439 "ni x STREAM CONNECTED 21017
```

raman@ kali

\$ netstat

Active Internet connections (w/o servers)

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
udp	0	15:bootpc			

Active UNIX domain sockets (w/o servers)

Proto	RefCnt	Flags	Type	State
-------	--------	-------	------	-------

unix 2

unlx 3 DG RAM

urux 2 DG RAM

unlx 12

unlx 5

3 STREAM CONNECTED

unlx 3 STREAM CONNECTED

unlx STREAM CONNECTED

unlx 3 STREAM CONNECTED

unlx 3	STREAM	CONNECTED
unlx	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
3	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
un1X 3	STREAM	CONNECTED
unlx	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
unl\ 3	STREAM	CONNECTED
unlx 3	STREAM	CONNECTED
un1X 3	STREAM	CONNECTED
1-Node	22294	
19354	21436	
12009	20593	
12025	20437	
12031		ESTABLISHED
12035	Path	
20439	/ run/user/1000/systemd/notify	
<u>21017</u>	/ run/systemd/notify	
19638	/run/systemd/journal/syslog	
22344	/ run/systemd/ journal/dev-log / run/systemd/ journal/ socket	
21538		
20594		
20431	a/tmp/ .X11-unix/X0 /run/user/1000/bus a/ tmp / d bus-n09SbSqNn9	
21014	a/tmp/dbus-n09SbSqNn9	
19627		
<u>22342</u>	/ run/systemd/ journal/stdout a/tmp/. ICE-unix/743	
21440		
20587	/run/user/1000/bus /run/user/1000/bus	
20433		
21018	a/ tmp/dbus-n09SbSqNn9	
19541	/run/user/1000/bus	
<u>22341</u>		
21439	/run/user/1000/bus /run/user/1000/bus	
20590		
20434	a/tmp/ .X11-unix/X0	
19540		

NETSTAT S

(raman@ kali
S netstat -s
Forwarding: 2
24 total packets received
1 with invalid addresses
forwarded incoming
packets discarded
23 incoming packets delivered
23 requests sent out

Icmp :
ICNP messages received 0
input ICNP message failed
ICMP input histogram:
ICNP messages sent
ICNP messages failed ICMP
output histogram:

TCP:
4 active connection openings
passive connection openings failed
connection attempts connection
resets received connections
established
8 segments received
8 segments sent out
segments retransmitted bad
segments received resets sent

Udp:
12 packets received
0 packets to unknown port
received packet receive errors 15
packets sent receive buffer
errors send buffer errors
IgnoredMu1ti: 3

TRACERT

```
C:\Users\DELL>tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
                [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                  Do not resolve addresses to hostnames.
    -h maximum_hops     Maximum number of hops to search for target.
    -j host-list        Loose source route along host-list (IPv4-only).
    -w timeout          Wait timeout milliseconds for each reply.
    -R                 Trace round-trip path (IPv6-only).
    -S srcaddr          Source address to use (IPv6-only).
    -4                 Force using IPv4.
    -6                 Force using IPv6.

C:\Users\DELL>
```

Tracert S

```
C:\Users\DELL>tracert -S
A value must be supplied for option -S.

C:\Users\DELL>tracert -D
-D is not a valid command option.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
                [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                  Do not resolve addresses to hostnames.
    -h maximum_hops     Maximum number of hops to search for target.
    -j host-list        Loose source route along host-list (IPv4-only).
    -w timeout          Wait timeout milliseconds for each reply.
    -R                 Trace round-trip path (IPv6-only).
    -S srcaddr          Source address to use (IPv6-only).
    -4                 Force using IPv4.
    -6                 Force using IPv6.

C:\Users\DELL>
```

Tracert j

```
: \Users\DELL>tracert -j target name or
address must be specified.
```

Usage: tracert [-h maximum_hops] [-j host-list] [-w timeout] [-R] [-S srcaddr] [-4] [-6] target_name

ptions :

- d Do not resolve addresses to hostnames .
- h maximum_hops maximum number of hops to search for target .
- j host-list** Loose source route along host-list (IPv4-on1y) .
- w timeout Wait timeout milliseconds for each reply.
- Trace round-trip path (IPv6-on1y) .
- s srcaddr Source address to use (IPv6-on1y). Force using IPv4.
- 6 Force using IPv6.

: \Users\DELL>tracert -w value must
be supplied for option -w.

: \Users\DELL>tracert -W

-W is not a valid command option.

Usage: tracert [-h maximum_hops] [-j host-list] [-w timeout] [-R] [-S srcaddr] [-4] [-6] target_name

ptions :

- d Do not resolve addresses to hostnames .
- h maximum_hops maximum number of hops to search for target .
- j host-list** Loose source route along host-list (IPv4-on1y) .
- w timeout Wait timeout milliseconds for each reply.
- Trace round-trip path (IPv6-on1y) .
- s srcaddr Source address to use (IPv6-on1y). Force using IPv4.
- 6 Force using IPv6.

Tracert

```
C:\Users\DELL>tracert -R
A target name or address must be specified.

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
                [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                  Do not resolve addresses to hostnames.
    -h maximum_hops     Maximum number of hops to search for target.
    -j host-list        Loose source route along host-list (IPv4-only).
    -w timeout          Wait timeout milliseconds for each reply.
    -R                  Trace round-trip path (IPv6-only).
    -S srcaddr          Source address to use (IPv6-only).
    -4                  Force using IPv4.
    -6                  Force using IPv6.

C:\Users\DELL>
```

Route

```
C : \Users\DELL>route manipulates
network routing tables.

ROUTE [-p] [-4] [-5] command [destination]
        [MASK netmask] [gateway] [METRIC metric] [IF interface]

Clears the routing tables of all gateway entries. If this is used in
conjunction with one of the commands, the tables are cleared
prior to running the command.

-p When used with the ADD command, makes a route persistent across boots
of the system. By default, routes are not preserved when the
system is restarted. Ignored for all other commands, which always
affect the appropriate persistent routes.

-4      Force using Ipv4. -5
        Force using IPv5.

command      One of these:
            PRINT      Prints a route
            Adds       Adds a route
            DELETE    Deletes a route
            CHANGE    modifies an existing route

destination   Specifies the host .
MASK         Specifies that the next parameter is the •netmask• value. netmask
            Specifies a subnet mask value for this route entry If not specified, it
            defaults to 255.255.255. gateway      Specifies gateway.

interface     the interface number for the specified route.

METRIC       specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star •s• ), or the gateway argument may be omitted.
```

If Dest contains a or ? , it is treated as a shell pattern, and only matching destination routes are printed. The matches any string, and • ? • matches any one char. Examples: 157.*.1, 157 . % 127 . % .

Pattern match is only allowed in PRINT command .

nslookup

C:

```
C:\Users\DELL>nslookup google.com
Server: www.huaweiimobilewifi.com
Address: 192.168.1.1

Non-authoritative answer:
Name: google.com
Addresses: 2404:6800:4009:826::200e
          142.250.195.46
```

```
C:\Users\DELL>
```

Route -n

```
Users DELL>route -n
Manipulates network routing tables .

ROUTE [-p] [-4|-6] command [destination]
          [MASK netmask] [gateway] [METRIC metric] [IF interface]

      Clears the routing tables of all gateway entries . If this is
      used in conjunction with one of the commands, the
      tables are cleared prior to running the command.

      -p When used with the ADD command, makes a route persistent across boots of
          the system. By default, routes are not preserved when the system
          is restarted. Ignored for all other commands which always affect
          the appropriate persistent routes .

      -4      Force using IPv4.
      Force using IPv6.

command      One of these:
      PRINT Prints a route Adds a
              route
      DELETE Deletes a route
      CHANGE modifies an existing route
      destination Specifies the host .

      MASK      Specifies that the next parameter is the netmask' value.
      netmask    Specifies a subnet mask value for this route
      entry. If not specified, it defaults to 255 . 255 . 255 . 255.
      gateway   Specifies gateway.

      interface the interface number for the specified route.

      METRIC    specifies the metric, ie. cost for the destination.

      11 symbolic names used for destination are looked up in the network database file
      NETWORKS. The symbolic names for gateway are looked up in the host name
      database file HOSTS_.

      If the command is PRINT or DELETE. Destination or gateway can be a wildcard
      (wildcard is specified as a star * or the gateway argument may be omitted
      if Dest contains a * or ? , it is treated as a shell pattern, and only matching
      destination routes are printed. The * matches any string, and . * ?
      matches any one char. Examples; 157.*.1, 157 . 127 . * , .
      altern match is only allowed in PRINT command .
```

Route -cn

-cn

C :

Manipulates network routing tables.

ROUTE [-41 -6] command [destination]

[MASK netmask] [gateway] [METRIC metric] [IF interface]

Clears the routing tables of all gateway entries. If this is used in conjunction with one of the commands, the tables are cleared prior to running the command .

-p

When used with the ADD command, makes a route persistent across boots of the system. By default, routes are not preserved when the system is restarted. Ignored for all other commands, which always affect the appropriate persistent routes.

Force using IPv4.

-6

Force using IPv6.

command

One of these:

PRINT Prints a route

Adds a route

DELETE Deletes a route

CHANGE modifies an existing route

destination Specifies the host .

MASK Specifies that the next parameter is the 'netmask' value.

netmask Specifies a subnet mask value for this route entry.

If not specified, it defaults to 255 . 255 . 255 . 255.

gateway Specifies gateway.

interface the interface number for the specified route.

METRIC specifies the metric, ie. cost for the destination .

All symbolic names used for destination are looked up in the network database file NETWORKS. The symbolic names for gateway are looked up in the host name database file IOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard, (wildcard is specified as a star) , or the gateway argument may be omitted.

If Dest contains a or ? , it is treated as a shell pattern, and only matching destination routes are printed. The ' matches any string, and matches any one char. Examples: 157.*.1, 157 . % 127 . %

ping

Wsers KDELL>ping

Usage: ping [-t] [-n count] [-l size] [-i TTL] [-v TOS]

[-r count] [-s count] [[-j host-list] | [-k host-list]]

C :

[-w timeout] [-R] [-S srcaddr] [-c compartment]
[-6] target_name

Options :

	Ping the specified host until stopped.
	To see statistics and continue - type Control-Break;
	To stop - type Control-C.
	Resolve addresses to hostnames .
-n count	Number of echo requests to send.
size	Send buffer size.
	Set Don't Fragment flag in packet (IPv4-on1y)
1 TTL	Time To Live.
-v TOS	Type Of Service (IPv4-on1y. This setting has been deprecated and has no effect on the type of service field in the IP Header)
-r count	Record route for count hops (IPv4-on1y)
-s count	Timestamp for count hops (IPv4-on1y) .
host-list	Loose source route along host-list (IPv4-on1y)
-k host-list	Strict source route along host-list (IPv4-on1y)
-w timeout	Timeout in milliseconds to wait for each reply. Use routing header to test reverse route also (IPv6-on1y) Per RFC 5895 the use of this routing header has been deprecated. Some systems may drop echo requests if this header is used.
-S srcaddr	Source address to use. compartment Routing compartment identifier.
-p	Ping a Hyper-V Network Virtualization provider address . Force using IPv4. Force using IPv6.

Ping It 8.8.8.8

C:

```
C:\Users\DELL>ping /t  
IP address must be specified.  
  
C:\Users\DELL>ping 8.8.8.8  
  
Pinging 8.8.8.8 with 32 bytes of data:  
Reply from 8.8.8.8: bytes=32 time=52ms TTL=115  
Reply from 8.8.8.8: bytes=32 time=73ms TTL=115  
Reply from 8.8.8.8: bytes=32 time=63ms TTL=115  
Reply from 8.8.8.8: bytes=32 time=57ms TTL=115  
  
Ping statistics for 8.8.8.8:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 52ms, Maximum = 73ms, Average = 61ms  
  
C:\Users\DELL>
```

Getmac

```
C:\Users\DELL>getmac

Physical Address      Transport Name
=====
6C-2B-59-40-16-1E    Media disconnected
56-15-41-78-B1-FF    \Device\Tcpip_{F37024D7-8CDB-41CB-8EF3-D19F33CA816F}
0A-00-27-00-00-16    \Device\Tcpip_{FC602120-329F-4F93-BBF4-AD496F146CB1}

C:\Users\DELL>
```

ARP

Displays and modifies the IP-to-Physical address translation tables used by address resolution protocol (ARP) .

ARP -s inet_addr eth_addr [if_addr]

ARP -d inet_addr [if_addr]

ARP -a [inet_addr] [-N if_addr]

Displays current ARP entries by interrogating the current protocol data. If inet_addr is specified, the IP and Physical addresses for only the specified computer are displayed . If more than one network interface uses ARP, entries for each ARP table are displayed.

-g Same as -a.

Displays current ARP entries in verbose mode. All invalid entries and entries on the loop-back interface will be shown . inet_addr Specifies an internet address.

-N if_addr Displays the ARP entries for the network interface specified by if_addr.

-d Deletes the host specified by inet_addr. inet_addr may be wildcarded with to delete all hosts.

Adds the host and associates the Internet address inet_addr with the Physical address eth_addr. The Physical address is given as 6 hexadecimal bytes separated by hyphens. The entry is permanent .

eth_addr Specifies a physical address.

if_addr If present, this specifies the Internet address of the interface whose address translation table should be modified. If not present, the first applicable interface will be used .

Example :

```
> arp -s 157 . SS .85.212 ee-aa-ee-62-c6-eg         . Adds a static entry
```

> arp -a

. Displays the arp table.

Systeminfo

C : \Users\DELL>systeminfo

Host Name:	SUJITH
OS Name:	microsoft Windows 18 Home Single Language
OS Version:	18.8. 19844 N/A Build 19844
OS manufacturer:	microsoft Corporation
OS Configuration	Standalone Workstation
OS Build Type:	multiprocessor Free
Registered Owner:	DELL
Registered Organization:	N/A
product ID:	88327-35116-23847 -AAOEm
Original Install Date:	25-11-2828,
System Boot Time:	13-89-2821,
System manufacturer:	Dell Inc.
System model	Inspiron 3576
System Type:	x64-based PC
processor(s)	1 processor(s) Installed. [81]: Intel(R) Family 6 model 142 Stepping 18 GenuineIntel N2
BIOS Version	Dell Inc. 1.1e.0, 09-01-2828
Windows Directory:	C:\WINDOWS
System Directory:	
Boot Device:	\Device\HarddiskVolume1
System Locale:	en-us;English (United States)
Input Locale:	
Time Zone:	(UTC+05 : 38) Chennai, Kolkata, Mumbai, New Delhi
Total Physical memory:	8,857 mg
Available Physical memory:	1,818 ms
Virtual memory:	Virtual memory: 9,337 ms
Virtual memory:	Available: 2,588 mg
Virtual memory:	In Use: 6,749 mb
Page File Location(s)	C:\pagefile.sys
Domain :	WRKGROUP
Logon Server:	

Hotfix(s)	12	Hotfix(s)
Installed.		
KBSØØ4331		
[82] : KB456283Ø		
[83] : KB4S8Ø325		
[84] : KB4584229		
[85] : {84586864 [86] :		
KB4S9317S KB4S98481		
[88] : KB5ØØØ736		
{85883791		
KBSØØSØ33		

Pathping

```
C:\Users\DELL>pathping

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n]
                [-p period] [-q num_queries] [-w timeout]
                [-4] [-6] target_name

Options:
    -g host-list      Loose source route along host-list.
    -h maximum_hops  Maximum number of hops to search for target.
    -i address        Use the specified source address.
    -n               Do not resolve addresses to hostnames.
    -p period         Wait period milliseconds between pings.
    -q num_queries   Number of queries per hop.
    -w timeout        Wait timeout milliseconds for each reply.
    -4               Force using IPv4.
    -6               Force using IPv6.

C:\Users\DELL>
```

Nbtstat

```
C :\Users
Displays protocol statistics and current TCP/IP connections using NBT (NetBIOS over
TCP/IP).

NBTSTAT [ [-a RemoteName] [-A IP address]
          [-RR]           [interval] ]
          (adapter status) Lists the remote machine's name table given its name
-A      (Adapter status) Lists the remote machine's name table given its
```

IP address.

(cache) Lists NBT's cache of remote [machine] names and their IP addresses

-n (names) Lists local NetBIOS names

(resolved) Lists names resolved by broadcast and via WINS

(Reload) Purges and reloads the remote cache name table

(Sessions) Lists sessions table with the destination IP addresses

(sessions) Lists sessions table converting destination IP addresses to computer NETBIOS names .

-RR (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh

RemoteName Remote host machine name.

IP address Dotted decimal representation of the IP address.

interval Redisplays selected statistics, pausing interval seconds between each display. press Ctrl+C to stop redisplaying statistics.

Ping linux

—t ramam.' KaliJ-t—j
—S ping

ING O (127.0.0.1) 56(84) bytes of data.

bytes from 127.0.0.1 . icmp_seq=1 ttl=64 time=0.022 ms
bytes 127.0.0.1 . 1 icmp_seq=2 ttl=64 time=0.036 ms
bytes from 127.0.0.1 . icmp_seq=3 ttl=64 time=0.035 ms
bytes 127.0.0.1 . icmp_seq=4 ttl=64 time=0.034 ms bytes
from 127.0.0.1 . icmp_seq=5 ttl=64 time=0.034 ms bytes
from 127.0.0.1 . icmp_seq=6 ttl=64 time=0.035 ms bytes
from 127.0.0.1 . 1 icmp_seq=7 ttl=64 time=0.036 ms
bytes from 127.0.0.1 . icmp_seq=8 ttl=64 time=0.036 ms
bytes from 127.0.0.1 . icmp_seq=9 ttl=64 time=0.034 ms bytes
from 127.0.0.1 . icmp_seq=10 ttl=64 time=0.032 ms bytes
from 127.0.0.1 . icmp_seq=11 ttl=64 time=0.032 ms bytes
from 127.0.0.1 . 1 icmp_seq=12 ttl=64 time=0.032 ms bytes

```
12 ttl=64 time--0.037 ms bytes f rom 127.0.0.1 .
lcmp_seq--13 ttl=64 time=0.033 ms bytes f rom 127.0.0.1
lcmp_seq=14 ttl=64 time--0.043 ms bytes f rom 127.0.0.1
lcmp_seq--15 ttl=64 time--0.036 ms bytes f rom 127.0.0.1 .
lcmp_seq--16 ttl=64 time=0.037 ms bytes f
rom 127.0.0.1 . lcmp_seq-17 ttl=64 time--0.00 ms bytes
127.0.0.1 lcmp_seq=18 ttl=64 time--0.037 ms bytes f rom
127.0.0.1 . lcmp_seq-19 ttl=64 time= ms bytes f rom
127.0.0.1 . lcmp_seq=20 ttl=64 time=0.033 ms bytes f
rom 127.0.0.1 . lcmp_seq=21 ttl=64 time=0.036 ms bytes
127.0.0.1 . lcmp_seq=22 ttl=64 time=0.045 ms bytes
127.0.0.1 . lcmp_seq=23 ttl=64 time=9.035 ms bytes
127.0.0.1 . 1 cmp_seq=24 ttl=64 time=0.041 ms bytes
127.0 lcmp_seq=25 ttl=64 time=0.038 ms bytes 127.0.0.1
. lcmp_seq=26 ttl=64 time=0.036 ms bytes 127.0.0.1 .
lcmp_seq=27 ttl=64 time=0.034 ms bytes 127.0.0.1 .
lcmp_seq=28 ttl=64 time=0.033 ms bytes 127.0.0.1 .
lcmp_seq=29 ttl=64 time=0 . 14146 ms bytes from 127
.0.0.1 . 30 ttl=64 time=0.036 ms
```

```
root@kali:~# ping -c ping:
option -requires an argument
```

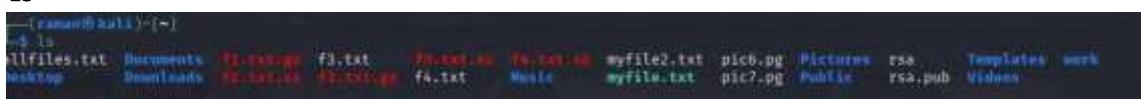
Usage ping

[options]

Options:

	dns name -or ip address
-a	use audible ping
	use adaptive ping
-B	sticky source address
-c <count>	stop after <count> replies
-D	print timestamps
-d	use SO DEBUG socket option
	flood
-h	print help and exit
-I	either interface name or address seconds between sending each packet
-L	suppress loopback of multicast packets
-1	send -qreload> number of packages while waiting replies
-m cmark>	tag the packets going out
-N <pmtud opt>	define mtu -discovery, can be one of
-n	no dns name resolution
-o	report outstanding replies
-p	epattern> contents -of padding byte
-q	quiet output
-Q etcClass>	use quality of service etcClass> bits
-s	use <size> as number of data bytes to be sent
-S	use <socket> as SO SND8UF socket -option value
-t	define time to live
-U print user- to—user latency verbose output	print version and exit reply
	wait in seconds
-W	time -to wait for response

LS



Sudo apt update

File Actions Edit View Help

```
(raman@ kali
LS sudo apt update
[sudo] password for raman:
Ign:1 http://repo.mongodb.org/apt/debian buster/mongodb.org/5.0 InRelease
Hit:2 http://repo.mongodb.org/apt/debian buster/mongodb.org/5.0 Release
Get:3 http://ftp.harukasan.org/kali kali-rolling InRelease [30.5 kB]
Get:5 http://ftp.harukasan.org/kali kali-rolling/main amd64 Packages [17.9 MB]
Get:6 http://ftp.harukasan.org/kali kali-rolling/contrib amd64 Packages [108 kB]
Get:7 http://ftp.harukasan.org/kali kali-rolling/non-free amd64 Packages [209 kB]
Fetched 18.3 MB in 1min 46s (173 kB/s)
Reading package lists      Done
Building dependency tree
Reading state information   Done
1486 packages can be upgraded. Run 'apt list --upgradable' to see them.

sudo apt install apache2
```

```
S sudo apt install apache2
Reading package lists .
Done building dependency tree
Reading state information
Done
apache2 is already the newest version (2.4.48-4).
apache2 set to manually installed.
```

0 upgraded, 0 newly installed, 0 to remove and 1486 not upgraded.

```
sudo systemctl status apache2
```

```
-$ sudo systemctl status apache2
apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor
             Active: active (running) since wed 2021-09-29 09:43:11 IST; 4s ago
               Docs: https://httpd.apache.org/docs/2.4/
             Process: 1431 ExecStart=/usr/sbin/apachectl start (code=exited, status
            Main PID: 1442 (apache2)
```

```
Tasks : 6 (limit: 2309)
Memory : 17 . 9M
CGroup : 'system. s lice/apache2 . service
          1442 /usr/sbin/apache2 -k start
          1444 /usr/sbin/apache2 -k start
          1445 /usr/ sbin/apache2 —k start
          1446 /usr/sbin/apache2 —k start
          1447 /usr/sbin/apache2 -k start
          1448 /usr/sbin/apache2 •k start
```

ep 29 09; 43.●04 kali systemd[1] : Starting The Apache HTTP Server ep 29 09: 43:05 kali systemd[1]: Started The Apache ATTP Server.

sud0 apt install apache2

(ramanS kali)-C—]

S sado apt install apache2 Reading package lists Done guilding dependency tree Reading state information Done apache2 is already the newest version (2.4.4&-4). apache2 set to manually installed .

upgraded, newly installed, to remove and 1436 not upgraded.

—1 r aman.:?*

\$ sudo apt install mariadb—server mariadb—client 130

Reading package lists Done

Building dependency tree

Reading state information Done

The following package was automatically installed and is no longer required

libreadline5

Use 'sudo apt autoremove• to remove it.

The following additional packages will be installed:

default-mysql-server galera-4 mariadb-client—lø .5

mariadb-client-core-1ø,5 mariadb—common

mariadb-server-core—1ø.5 Suggested packages :

mailx mariadb-test netcat-openbsd

The following packages will be REMOVED:

galera—3 mariadb-client-1ø,3 mariadb-client-core—1ø,3 mariadb-server-10,3 mariadb-server-core-1ø,3 The

```
following NEW packages will be installed: galera-4  
mariadb-client mariadb-client-10.5 mariadb-server  
mariadb-server-10.5
```

```
The following packages will be upgraded: default-mysql-server  
mariadb-common
```

```
2 upgraded, 7 newly installed, 5 to remove and 1483 not upgraded.
```

```
Need to get 14.0 MB of archives.
```

```
After this operation, 11.7 MB disk space will be freed.
```

```
Do you want to continue? [Y/n] y
```

```
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 mariadb-  
common all 1:10.5.12-1 [36.3 kB] Get:2 http://ftp.harukasan.org/kali kali-  
rolling/main amd64 default-mysql-server all 1.0.7 [3,712 kB]
```

```
(ramao@i kali
```

```
$ systemctl status apache2 apache2.service - The  
Apache HTTP Server  
Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor  
Active: active (running) since wed 2021-09-29 15:15:01 IST; 1 day ago  
Docs: https://httpd.apache.org/docs/2.4/
```

```
Process : 1431 ExecStart=/usr/sbin/apachectl start (code=exited, status  
main PID: 1442 (apache2)
```

```
Tasks 6 (limit: 9309)
```

```
memory 17
```

```
CGroup : /system.slice/apache2.service  
1442 /usr/sbin/apache2 -k start  
1444 /usr/sbin/apache2 -k start  
1445 /usr/sbin/apache2 -k start  
1446 /usr/sbin/apache2 -k start  
1447 /usr/sbin/apache2 -k start  
1448 /usr/sbin/apache2 -k start
```

```
ep kali systemd[1]: Starting The Apache HTTP Server  
29 kali systemd[1]: Started The Apache HTTP Server.
```

```
sudo systemctl status mysql mariadb.service  
- MariaDB 10.5.12 database server  
Loaded: loaded (/lib/systemd/system/mariadb.service; disabled; vendor preset: disabled)
```

Active: inactive (dead)

Docs: man
<https://mariadb.com/kb/en/library/systemd/>

```
S sudo apt install mariadb-server mariadb-client          130
Reading package lists      Done
Building dependency tree
Reading state information  Done
The following package was automatically installed and is no longer required
  libreadline5
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed: default-
mysql-server galera-4 mariadb-client-10.5 mariadb-client-
core-10.5 mariadb-common mariadb-server-10.5 mariadb-
server-core-10.5 Suggested packages:
  mailx mariadb-test netcat-openbsd
The following packages will be REMOVED:
  galera-3 mariadb-client-10.3 mariadb-client-core-
10.3 mariadb-server-10.3 mariadb-server-core-10.3 The
following NEW packages will be installed:
  galera-4 mariadb-client mariadb-client-10.5 mariadb-client-core-10.5 mariadb-
server mariadb-server-10.5
The following packages will be upgraded:
  mysql-server mariadb-common
Q. Explain the steps for the installation Of ansible with your own
screenshots.
```

Install ansible sudo apt install ansible --version

```
lists. . . dependency tree Keeding state i he additional packages be installed: pytmn3-crypto
pytmn3se python3-x.1tgdict

cowsay sshpass python-lockfile-docker python-numpy&ir-docs
    packages be installed:
ansible ieee-data python-drgcomplete python-aes-crypto pythrm3-dnspython' python3-jnepath python3-kerberos
    pythum3-IOCKfile pythWn3-netaddr python3-neo-auth           pythony-reqes!
upgr.dG,, 16     installed, to      55 not upgra&d. to get
    7492 kB/9643 kg of archives.
uter this 90-2     of      disk      will be you *ant to [Y/n] Y
```

```

I http:// focal/universé ansible http : // archive.ubuntu.com/ubuntu      kB1
  pythoro-arecomplete
    http://archive.ubuntu.ron/ubuntu          amd6a          all
    4 htto "archive.ubuntu.COß/ubuntu focal/universe amd6-4 python' -kerberos
      kB1
      lbuildl [22.6 km

5 http                  fotol/øain amd6a          all      2.8.ø•1 (ldØ3
  focal 'universe      pythony•libcloud
  http-//archive.ubuntu.ccw/ubuntu
  http://archive.ubuntu.ccw/ubuntu          amd6Z
  http:/archive_ubuntu_«m/ubuntu
  http:/archive_ubuntu_«m/ubuntu          all      1.1.e•l [19,6
  http:/archive_ubuntu_«m/ubuntu          all      all e. 12.0-2 [11.9 kg]
  http:/archive_ubuntu_«m/ubuntu          all      B]
  http:/archive_ubuntu_«m/ubuntu          all      3 -a-lbuildl [139 kB3

(12.6 kd] a—dba  all e. 3.0-2 [21.7 kB1 kB in      kd/s) melectine previously unselected øae.kage python*-eryøto.

Reading database      33017 files and           installed.)
  Eng Inpacking e   ing   -m3•crypto
  Ing Inp«king e Lect in e (2.6.1•13uEumtu2) .
  Inparkine
  ing r —eparing In
  packing
  Hng
  t
  o
  u
  n
  p
  a
  c
  k
  p
  y
  t
  h

  unpack   pytt-m3-
  hpy•trm (1 _ 16 _ø
  Itwildl)  previously
  Lmselected pac*age
  to unpack _ ieee-
  data
  —
  previously
  unselected package
  to unpack .
  pytiujn3-netoddr     (e.
  to unpack
  previcwslv           pvthcm3-argæplete_
  to unpack __
  7.19-3) . previously

```

Q. Execute tcpdump and its options on your own system, and submit the output screenshot as a document.

Install tcpdump sudo apt update && sudo apt

install tcpdump

```
sudo apt update && sudo apt install tcpdump
```

```
Get:l http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
```

```
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
```

```
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
```

```
Get:a http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
```

Fetched 328 kB in 4s (86.0 kB/s)

Reading package lists. . . Done

Building dependency tree

Reading state information. . . Done

55 packages Can be upgraded . Run ' apt list -upgradable ' to see them.

Reading package lists... Done

Building dependency tree
Reading state information. Done
tcpdump is already the newest version (4.9.3-4).

upgraded, newly installed, to remove and 55 not upgraded.

Execute tcpdump

```
root@LAPTOP-4D3BA010:~# sudo tcpdump
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 202144 bytes
12:34:40.186592 IP LAPTOP-4D3BA010.eshome.net.netbios-ns > 172.18.175.255.netbios-ns: UDP, length 58
12:34:40.187261 IP 172.18.169.231.38546 > LAPTOP-4D3BA010.eshome.net.domain: 63073+ PTR? 255.175.18.172.in-addr.arpa. (45)
12:34:40.189689 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:40.190261 IP6 LAPTOP-4D3BA010.eshome.net.adns > ff02::fb.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:40.855288 IP LAPTOP-4D3BA010.eshome.net.netbios-ns > 172.18.175.255.netbios-ns: UDP, length 58
12:34:40.891418 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:40.892118 IP6 LAPTOP-4D3BA010.eshome.net.adns > ff02::fb.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:41.105938 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:41.106744 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:41.107261 IP LAPTOP-4D3BA010.eshome.net.netbios-ns > 172.18.175.255.netbios-ns: UDP, length 58
12:34:41.888354 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:41.888970 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 255.175.18.172.in-addr.arpa.local. (51)
12:34:41.905623 IP LAPTOP-4D3BA010.eshome.net.domain > 172.18.169.231.38546: [REDACTED] 0/0/0 (45)
12:34:41.896882 IP 172.18.169.231.38909 > LAPTOP-4D3BA010.eshome.net.domain: 23834+ PTR? 1.168.18.172.in-addr.arpa. (43)
12:34:41.897378 IP LAPTOP-4D3BA010.eshome.net.domain > 172.18.169.231.35608: 23834- 1/0/0 PTR LAPTOP-4D3BA010.eshome.net. (188)
12:34:41.898538 IP 172.18.169.231.46789 > LAPTOP-4D3BA010.eshome.net.domain: 44649+ 231.169.18.172.in-addr.arpa. (45)
12:34:41.899948 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:41.900487 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:42.176257 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:42.176900 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:42.899180 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:42.891668 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:43.172228 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:43.172857 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 231.169.18.172.in-addr.arpa.local. (51)
12:34:43.176838 IP LAPTOP-4D3BA010.eshome.net.domain > 172.18.169.231.44789: [REDACTED] 0/0/0 (45)
12:34:43.177237 IP 172.18.169.231.34382 > LAPTOP-4D3BA010.eshome.net.domain: 21194+ PTR? 251.0.0.224.in-addr.arpa. (42)
12:34:43.179187 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:43.179732 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:43.245682 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:43.245993 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:44.109575 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:44.190351 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:44.251943 IP LAPTOP-4D3BA010.eshome.net.adns > 224.0.0.251.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
12:34:44.252691 IP6 LAPTOP-4D3BA010.adns > ff02::fb.adns: 0 PTR (Q)? 251.0.0.224.in-addr.arpa.local. (48)
```

tcpdump -D

-\$ tcpdump -D

1. eth0 [Up, Running]
- 2.10 [Up, Running, Loopback]
- 3.any (Pseudo-device that captures on all interfaces) [Up. Running]
- 4.bluetooth-monitor (Bluetooth Linux monitor) [none]
- 5.nflog (Linux netfilter log (NFLOG) interface) [none]
- 6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
- 7.dummy0 [none]
- 8.tunl0 [none]
- 9.sit0 [none]
- Z0. bond0 [none]

```
$ sudo tcpdump -i enp2s0
tcpdump: enp2s0: No such device exists (SIOCGIFHWADDR:
No such device)
```

Sudo tcpdump -c 5

```
[root@LAPTOP-4C1B40] ~ $ sudo tcpdump -c 5
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on veth0, link-type EN10MB (Ethernet), capture size 262144 bytes
12:39:29.377292 IP LAPTOP-4D78A01Q.mshome.net.49545 > 192.168.255.255.1900: [TCP], length: 173
12:39:29.377268 IP 172.18.109.231.42220 > LAPTOP-4D78A01Q.mshome.net.domain: 9149: PTR? 250.255.255.299.in-addr.arpa. (46)
12:39:29.379026 IP LAPTOP-4D78A01Q.mshome.net.mdns > 224.0.0.251.mdns: 0 PTR (QRY) 250.255.255.299.in-addr.arpa.local. (52)
12:39:29.379293 IPNE LAPTOP-4D78A01Q.mshome.net.mdns > 192.168.1.1.mdns: 0 PTR (QRY) 250.255.255.299.in-addr.arpa.local. (52)
12:39:29.379580 IP LAPTOP-4D78A01Q.mshome.net.mdns > 224.0.0.251.mdns: 0 PTR (QRY) 250.255.255.299.in-addr.arpa.local. (52)
> packets captured:
96 packets received by filter
01 packets dropped by kernel
```

1. vi

```
[root@LAPTOP-4C1B40 ~] $ vi raman.sh
[root@LAPTOP-4C1B40 ~] $ user@user-VirtualBox:~/Desktop$ vi biod.sh
[root@user-VirtualBox:~/Desktop$ cat vi biod.sh
cat: vi: No such file or directory

echo enter your name
read sujithj
echo enter college name
read amal jyothi college
echo Name:$name
echo college:$amal jyothi college
```

```
user@User-VirtualBox:~/Desktop$ ls -l biod.sh
-rw-rw-r-- 1 user user 135 Oct  2 22:44 biod.sh
user@User-VirtualBox:~/Desktop$ chmod +x biod.sh
user@User-VirtualBox:~/Desktop$ ls -l biod.sh
-rwxrwxr-x 1 user user 135 Oct  2 22:44 biod.sh
user@User-VirtualBox:~/Desktop$ ./biod.sh
enter your name
; Terminal
enter college name
amal jyothi college
Name:
college:amal jyothi college
```

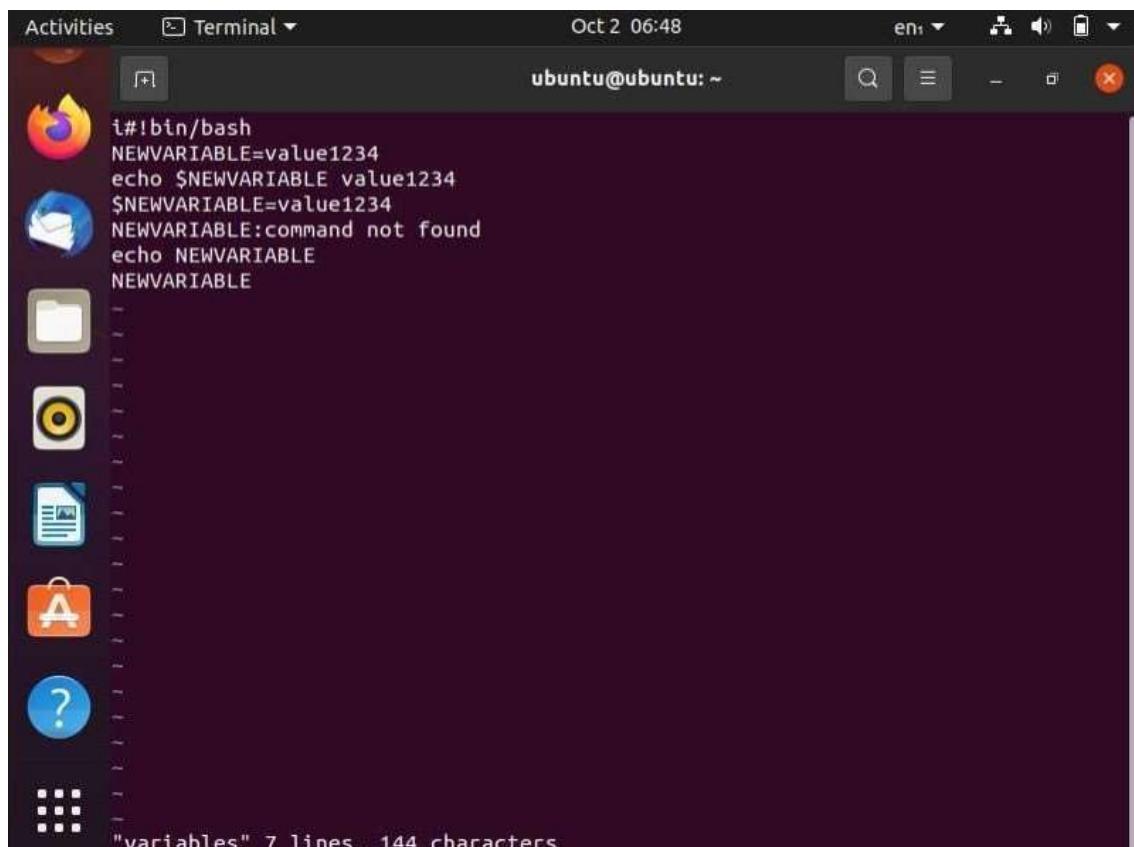


```
ubuntu@ubuntu:~$ ./profile.sh
./profile.sh: line 1: #!/bin/bash: No such file or directory
Enter your name
sruthy
Ubuntu@ubuntu:~$ vi profile.sh
ubuntu@ubuntu:~$ ./profile.sh
./profile.sh: line 1: #!/bin/bash: No such file or directory
Enter your name
Sruthy
Ubuntu@ubuntu:~$ vi profile.sh
ubuntu@ubuntu:~$
```

2. Write a shell script to set a value for a variable and display it on command line interface.

Activities Terminal Oct 2 06:45 en: ▾

```
ubuntu@ubuntu:~$ vi variables
ubuntu@ubuntu:~$ vi variables
ubuntu@ubuntu:~$ cat variables.sh
cat: variables.sh: No such file or directory
ubuntu@ubuntu:~$ cat variables
#!/bin/bash
NEWVARIABLE=value1234
echo $NEWWVARIABLE value1234
$NEWWVARIABLE=value1234
NEWVARIABLE:command not found
echo NEWVARIABLE
NEWVARIABLE
ubuntu@ubuntu:~$ ls -l variables
-rw-rw-r-- 1 ubuntu ubuntu 144 Oct  2 06:42 variables
ubuntu@ubuntu:~$ chmod +x variables
ubuntu@ubuntu:~$ ls -l variables
-rwxrwxr-x 1 ubuntu ubuntu 144 Oct  2 06:42 variables
ubuntu@ubuntu:~$ ./variables
./variables: line 1: #!/bin/bash: No such file or directory
value1234 value1234
./variables: line 4: value1234=value1234: command not found
./variables: line 5: NEWVARIABLE:command: command not found
NEWVARIABLE
./variables: line 7: NEWVARIABLE: command not found
ubuntu@ubuntu:~$
```

A screenshot of a Ubuntu desktop environment. On the left, there's a vertical dock with icons for the Dash, Home, Applications, and Help. The main area shows a terminal window titled "Terminal". The terminal has a dark background and contains the following text:

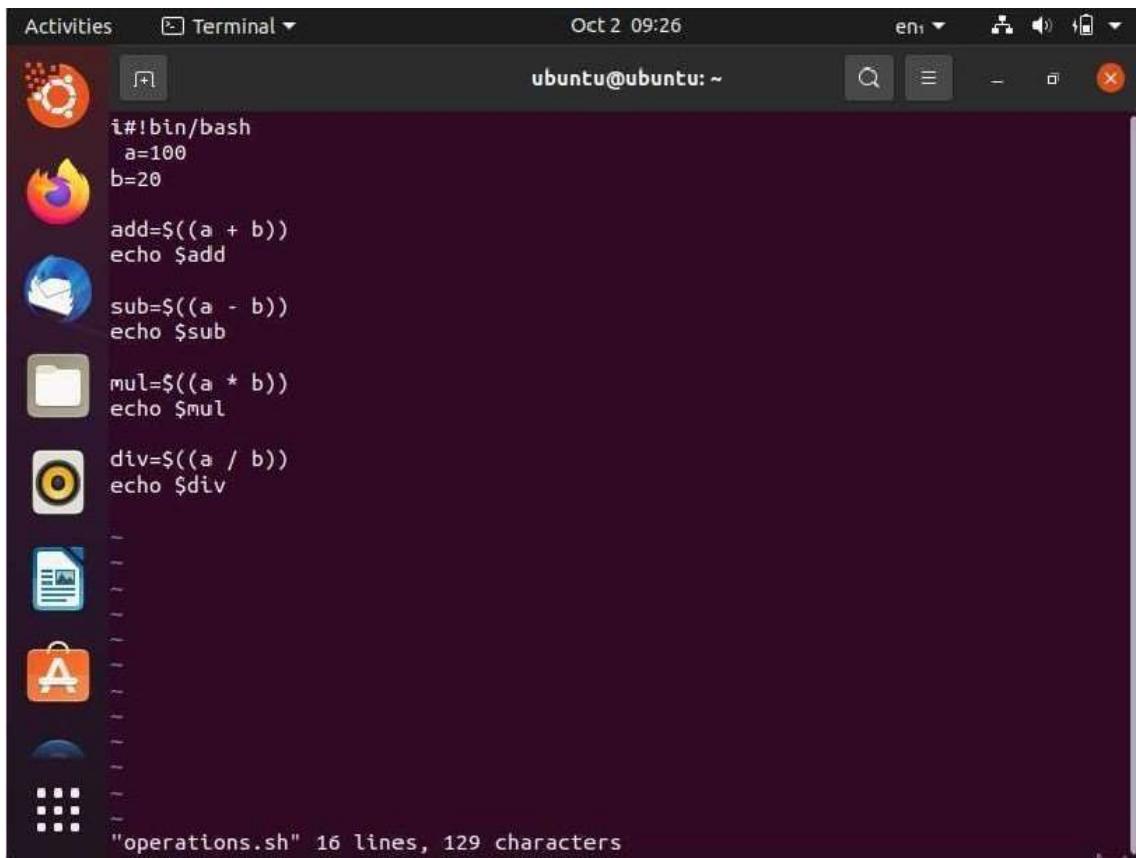
```
i#!bin/bash
NEWVARIABLE=value1234
echo $NEWWVARIABLE value1234
$NEWWVARIABLE=value1234
$NEWWVARIABLE:command not found
echo NEWVARIABLE
NEWWVARIABLE
variables" 7 lines, 144 characters
```

3. Write a shell script to perform addition, substration, multiplication, division with two numbers that is accepted from user.

Activities

Terminal ● oct2

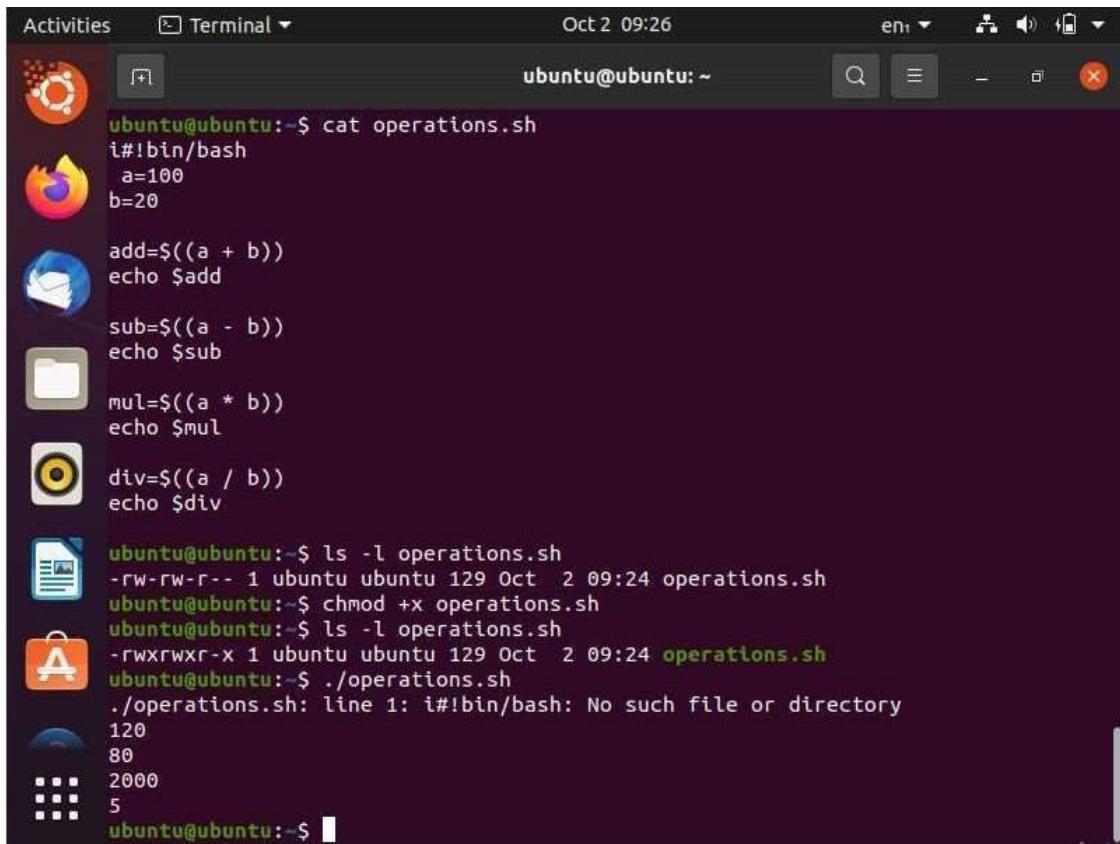
ubuntu@ubuntu:



A screenshot of a terminal window on an Ubuntu desktop environment. The window title is "Terminal". The status bar shows the date and time as "Oct 2 09:26" and the user as "enri". The terminal prompt is "ubuntu@ubuntu: ~". The terminal content displays a shell script named "operations.sh" with the following code:

```
i#!bin/bash
a=100
b=20
add=$((a + b))
echo $add
sub=$((a - b))
echo $sub
mul=$((a * b))
echo $mul
div=$((a / b))
echo $div
```

The terminal also shows the file statistics at the bottom: "operations.sh" 16 lines, 129 characters.



The image shows a screenshot of an Ubuntu desktop environment. In the top left, there's a dock with icons for Dash, Home, Activities, and Terminal. The terminal window is open and titled 'Terminal'. The status bar at the top indicates it's Oct 2 09:26, the language is en, and battery level is 74%. The terminal content is as follows:

```
Activities Terminal ▾ Oct 2 09:26 en 74%
ubuntu@ubuntu:~$ cat operations.sh
#!/bin/bash
a=100
b=20

add=$((a + b))
echo $add

sub=$((a - b))
echo $sub

mul=$((a * b))
echo $mul

div=$((a / b))
echo $div

ubuntu@ubuntu:~$ ls -l operations.sh
-rw-rw-r-- 1 ubuntu ubuntu 129 Oct  2 09:24 operations.sh
ubuntu@ubuntu:~$ chmod +x operations.sh
ubuntu@ubuntu:~$ ls -l operations.sh
-rwxrwxr-x 1 ubuntu ubuntu 129 Oct  2 09:24 operations.sh
ubuntu@ubuntu:~$ ./operations.sh
./operations.sh: line 1: i#!bin/bash: No such file or directory
120
80
2000
5
ubuntu@ubuntu:~$
```

4. Write a shell script to check the value of a given number and display whether the number is found or not.

Activities

Terminal • oct2

ubuntu@ubuntu:

Activities Terminal Oct 2 10:05 ene

```
echo "Enter a number"
read no
i=1
ans=0
while [ $i -le $(($no / 2)) ]
do
if [[ $(($no%i)) -eq 0 ]]
then ans=$(($ans + i))
fi
i=$((i + 1))
done
if [ $no -eq $ans ]
then
echo "$no is perfect"
else
echo "no is not perfect"
fi
ubuntu@ubuntu:~$ ls -l number.sh
-rwxrwxr-x 1 ubuntu ubuntu 233 Oct  2 09:42 number.sh
ubuntu@ubuntu:~$ chmod +x number.sh
ubuntu@ubuntu:~$ ls -l number.sh
-rwxrwxr-x 1 ubuntu ubuntu 233 Oct  2 09:42 number.sh
ubuntu@ubuntu:~$ ./number.sh
./number.sh: line 1: i#!/bin/bash: No such file or directory
Enter a number
7
./number.sh: line 6: [: missing `]'
no is not perfect
ubuntu@ubuntu:~$
```

ubuntu@ubuntu:

5. Write a shell script to display current date, calendar.

The screenshot shows a terminal window titled "Terminal" with the status bar indicating "Oct 2 10:12" and "en1". The terminal content is as follows:

```
ubuntu@ubuntu:~$ vi calender.sh
ubuntu@ubuntu:~$ cat calender.sh
#!/bin/bash

echo "Today is $(date)"
echo ""

echo "Calender :"
cal

ubuntu@ubuntu:~$ ls -l calender.sh
-rw-rw-r-- 1 ubuntu ubuntu 68 Oct  2 10:11 calender.sh
ubuntu@ubuntu:~$ chmod +x calender.sh
ubuntu@ubuntu:~$ ./calender.sh
./calender.sh: line 1: i#!bin/bash: No such file or directory
Today is Sat Oct  2 10:12:06 UTC 2021

./calender.sh: line 6: echoCalender :: command not found
          October 2021
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
ubuntu@ubuntu:~$
```

Activities Terminal Oct 2 10:12 en1



i#!bin/bash
echo "Today is \$(date)"
echo ""
echo"Calender :"
cal

"calender.sh" 8 lines, 68 characters

6. Write a shell script to check a number is even or odd.

```
Activities Terminal Oct 2 10:21 en: ubunto@ubuntu: ~
ubunto@ubuntu:~$ vi even.sh
ubunto@ubuntu:~$ cat even.sh
#!/bin/bash
read -p "Enter a number: " number
if [ $(($number%2)) -eq 0 ]
then
echo "Number is even."
else
echo "Number is odd."
fi
ubunto@ubuntu:~$ ls -l even.sh
-rw-rw-r-- 1 ubuntu ubuntu 131 Oct  2 10:18 even.sh
ubunto@ubuntu:~$ chmod +x even.sh
ubunto@ubuntu:~$ ls -l even.sh
-rwxrwxr-x 1 ubuntu ubuntu 131 Oct  2 10:18 even.sh
ubunto@ubuntu:~$ ./even.sh
./even.sh: line 1: i#!/bin/bash: No such file or directory
Enter a number: 88
Number is even.
ubunto@ubuntu:~$ 67
67: command not found
```

Activities

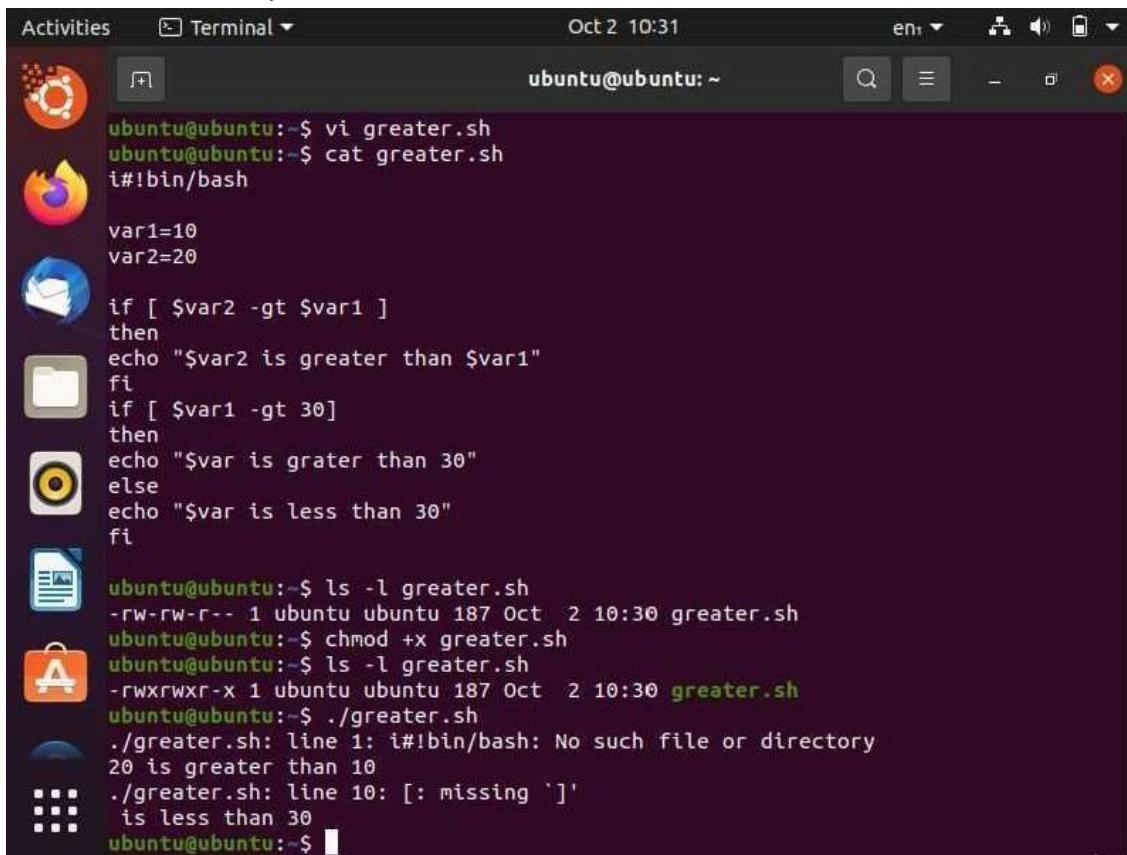
Terminal

oct2

ubuntu@ubuntu:

ubuntu@ubuntu: ~

7. Write a shell script to check a number is greater than, less than or equal to another number.

A screenshot of an Ubuntu desktop environment. In the top left, there's a dock with icons for the Dash, Home, Applications, and Dash to Dock. The main area shows a terminal window titled "Terminal". The terminal has a dark background and contains the following text:

```
Activities Terminal Oct 2 10:31
ubuntu@ubuntu: ~
ubuntu@ubuntu:~$ vi greater.sh
ubuntu@ubuntu:~$ cat greater.sh
#!/bin/bash

var1=10
var2=20

if [ $var2 -gt $var1 ]
then
echo "$var2 is greater than $var1"
fi
if [ $var1 -gt 30]
then
echo "$var is grater than 30"
else
echo "$var is less than 30"
fi

ubuntu@ubuntu:~$ ls -l greater.sh
-rw-rw-r-- 1 ubuntu ubuntu 187 Oct  2 10:30 greater.sh
ubuntu@ubuntu:~$ chmod +x greater.sh
ubuntu@ubuntu:~$ ls -l greater.sh
-rwxrwxr-x 1 ubuntu ubuntu 187 Oct  2 10:30 greater.sh
ubuntu@ubuntu:~$ ./greater.sh
./greater.sh: line 1: i#!bin/bash: No such file or directory
20 is greater than 10
./greater.sh: line 10: [: missing ']'
is less than 30
ubuntu@ubuntu:~$
```

8. Write a shell script to find sum of first 10 numbers.

Activities

Terminal

oct2

```
Activities Terminal Oct 2 10:42 oct2
Activities Terminal Oct 2 10:42 oct2
ubuntu@ubuntu: ~
ubuntu@ubuntu:~$ vi first.sh
ubuntu@ubuntu:~$ cat first.sh
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
    read num
    sum=$((sum + num))
    i=$((i + 1))
done
echo $sum

ubuntu@ubuntu:~$ ls -l first.sh
-rw-rw-r-- 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ chmod +x first.sh
ubuntu@ubuntu:~$ ls -l first.sh
-rwxrwxr-x 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ ./first.sh
./first.sh: line 1: i#!bin/bash: No such file or directory
Enter Size(N)
10
Enter Numbers
1
2
3
```

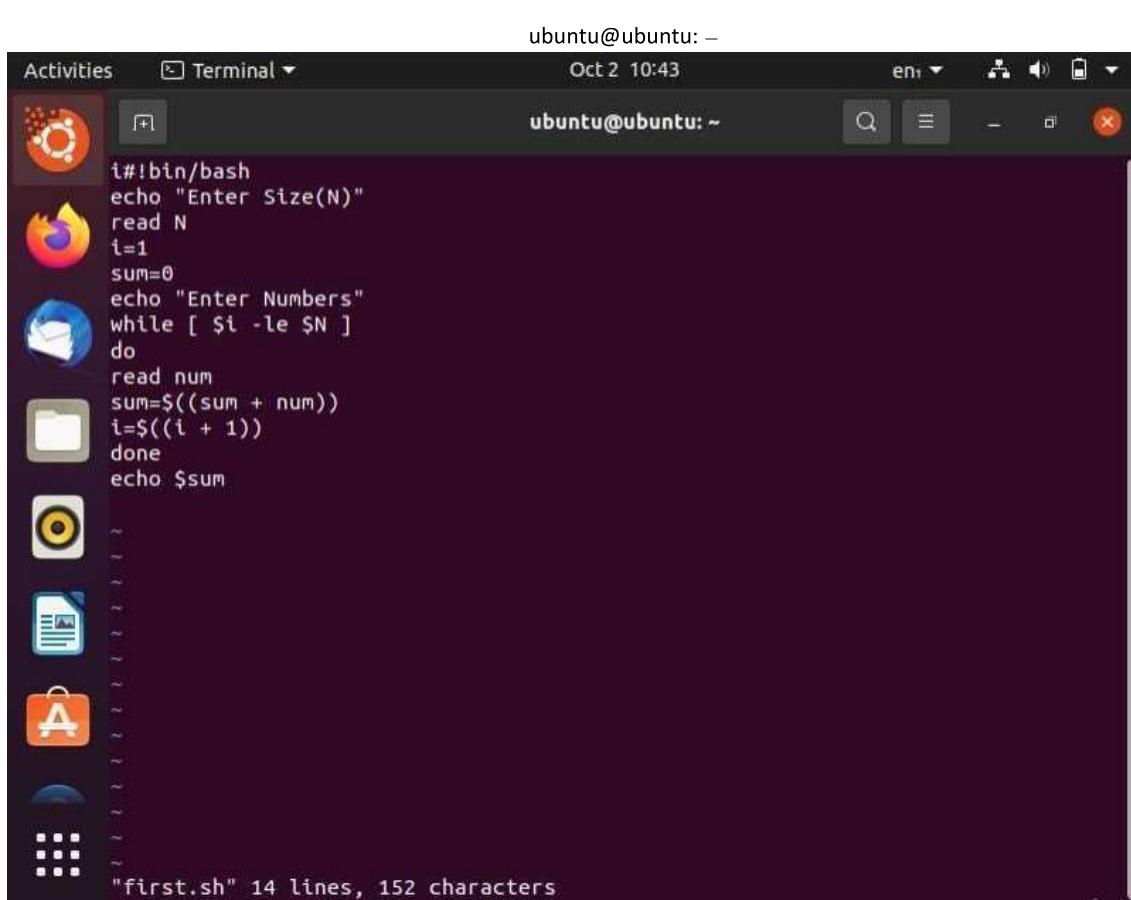
Activities

Terminal

oct2 11:02

ubuntu@ubuntu: ~

```
Activities Terminal Oct 2 10:42 en1
do
read num
sum=$((sum + num))
i=$((i + 1))
done
echo $sum
ubuntu@ubuntu:~$ ls -l first.sh
-rw-rw-r-- 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ chmod +x first.sh
ubuntu@ubuntu:~$ ls -l first.sh
-rwxrwxr-x 1 ubuntu ubuntu 152 Oct  2 10:40 first.sh
ubuntu@ubuntu:~$ ./first.sh
./first.sh: line 1: i#!bin/bash: No such file or directory
Enter Size(N)
10
Enter Numbers
1
2
3
4
5
6
7
8
9
10
55
ubuntu@ubuntu:~$
```



9. Write a shell script to find the sum, average and the product of the four integers entered.

Activities

Terminal

oct2 11:02

ubuntu@ubuntu: ~

```
Activities Terminal Oct 2 11:02 en: ~
ubuntu@ubuntu:~$ vi integers.sh
ubuntu@ubuntu:~$ cat integers.sh
#!/bin/bash
echo Enter four integers with space between
read a b c d
sum='expr $a + $b + $c + $d'
avg ='expr $sum / 4'
dec='expr $sum % 4'
dec='expr \($a \* 1000 \) /4'
product='expr $a \* $b \* $c \* $d'
echo Sum=$sum
echo Average=$avg.$dec
echo Product=$product

ubuntu@ubuntu:~$ ls -l integers.sh
-rw-rw-r-- 1 ubuntu ubuntu 268 Oct  2 10:59 integers.sh
ubuntu@ubuntu:~$ chmod +x integers.sh
ubuntu@ubuntu:~$ ls -l integers.sh
-rwxrwxr-x 1 ubuntu ubuntu 268 Oct  2 10:59 integers.sh
ubuntu@ubuntu:~$ ./integers.sh
./integers.sh: line 1: i#!bin/bash: No such file or directory
Enter four integers with space between
3
./integers.sh: line 5: avg: command not found
Sum=expr $a + $b + $c + $d
Average=.expr \($a \* 1000 \) /4
Product=expr $a \* $b \* $c \* $d
ubuntu@ubuntu:~$
```

Activities Terminal oct2 11:02
Activities Terminal Oct 2 11:03 en1
ubuntu@ubuntu: ~

```
#!/bin/bash
echo Enter four integers with space between
read a b c d
sum='expr $a + $b + $c + $d'
avg ='expr $sum / 4'
dec='expr $sum % 4'
dec='expr \($a \* 1000 \) /4'
product='expr $a \* $b \* $c \* $d'
echo Sum=$sum
echo Average=$avg.$dec
echo Product=$product
```

~
~
~
~
~
~
~
~
~
~
~
~
integers.sh 12 lines, 268 characters

10. Write a shell program to find the smallest of three numbers.

Activities

Terminal

oct2 11:02

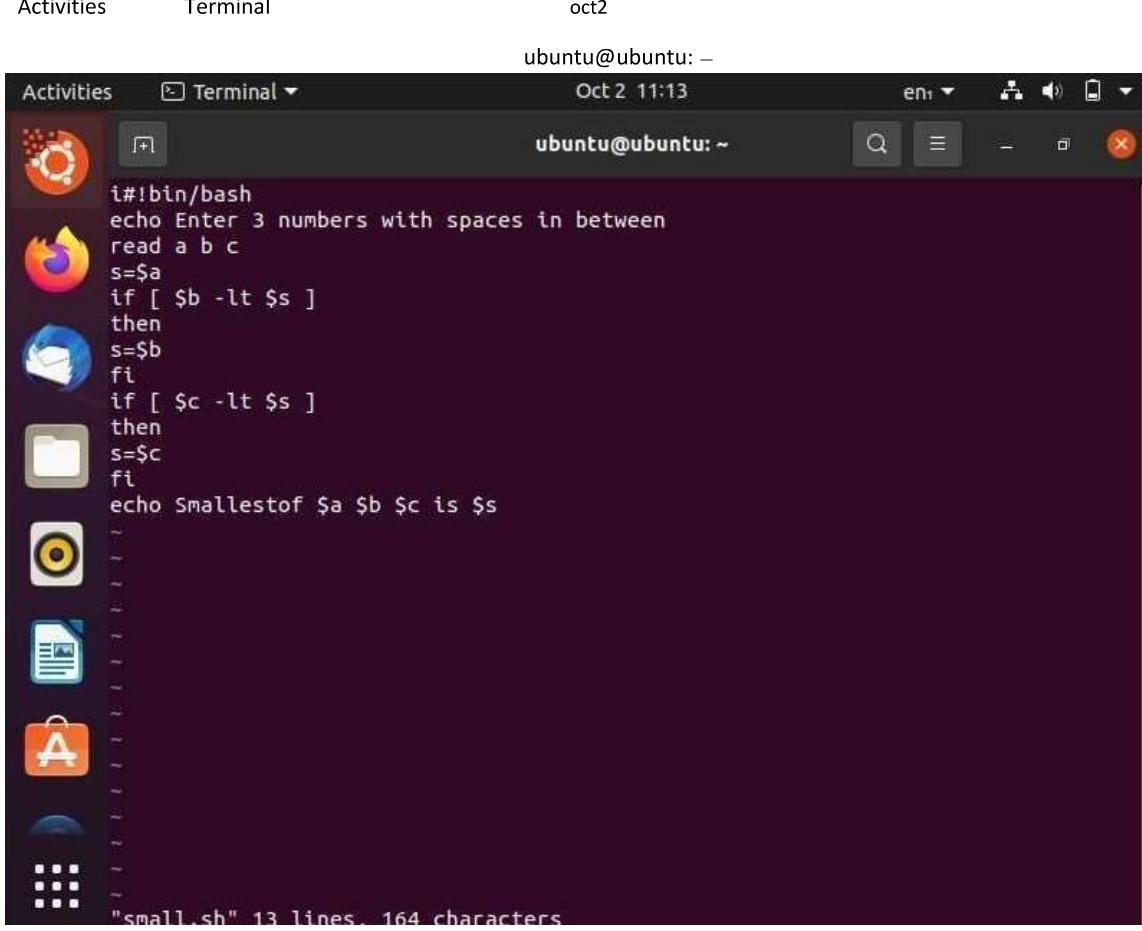
ubuntu@ubuntu: -

Oct 2 11:12

enj ▾

1

```
ubuntu@ubuntu:~$ vi small.sh
ubuntu@ubuntu:~$ cat small.sh
#!/bin/bash
echo Enter 3 numbers with spaces in between
read a b c
s=$a
if [ $b -lt $s ]
then
s=$b
fi
if [ $c -lt $s ]
then
s=$c
fi
echo Smallest of $a $b $c is $s
ubuntu@ubuntu:~$ ls -l small.sh
-rw-rw-r-- 1 ubuntu ubuntu 164 Oct  2 11:10 small.sh
ubuntu@ubuntu:~$ chmod +x small.sh
ubuntu@ubuntu:~$ ls -l small.sh
-rwxrwxr-x 1 ubuntu ubuntu 164 Oct  2 11:10 small.sh
ubuntu@ubuntu:~$ ./small.sh
./small.sh: line 1: i#!bin/bash: No such file or directory
Enter 3 numbers with spaces in between
3
./small.sh: line 5: [: -lt: unary operator expected
./small.sh: line 9: [: -lt: unary operator expected
Smallest of 3 is 3
ubuntu@ubuntu:~$ ./small.sh
./small.sh: line 1: i#!bin/bash: No such file or directory
```



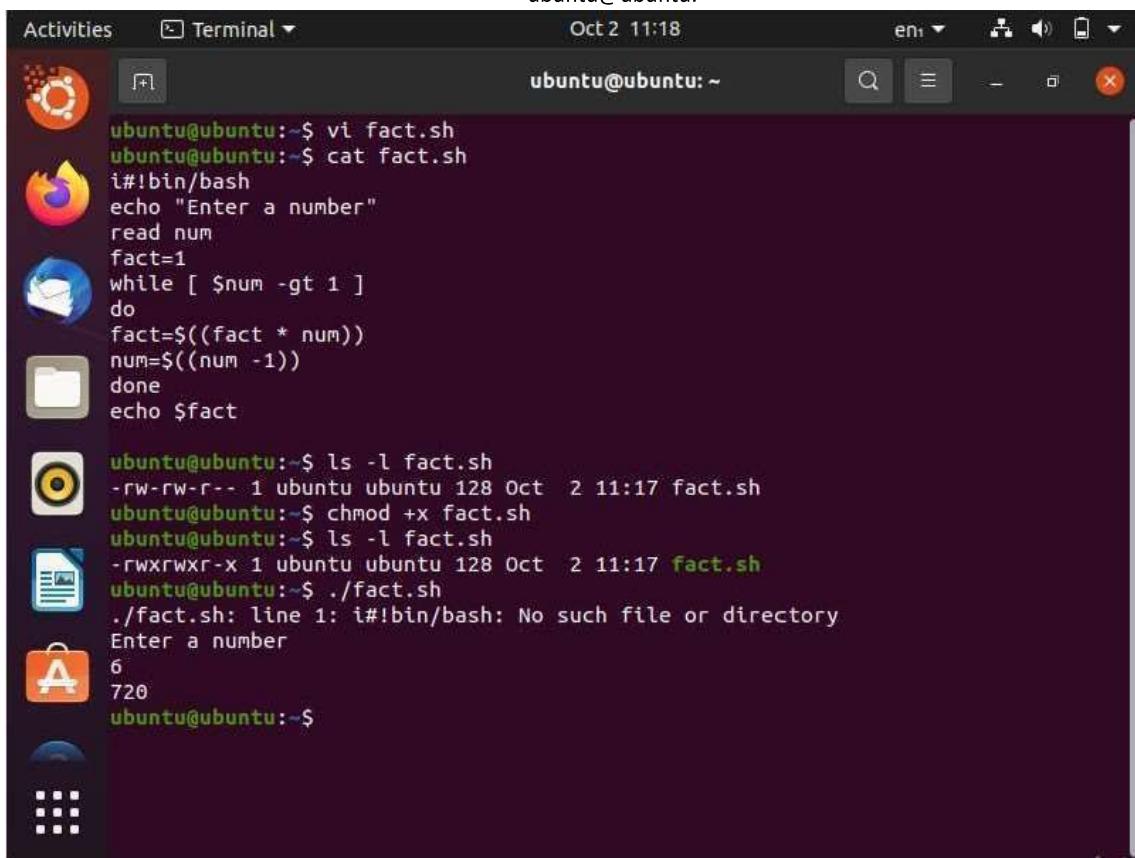
11. Write a shell program to find factorial of given number.

Activities

Terminal

oct2

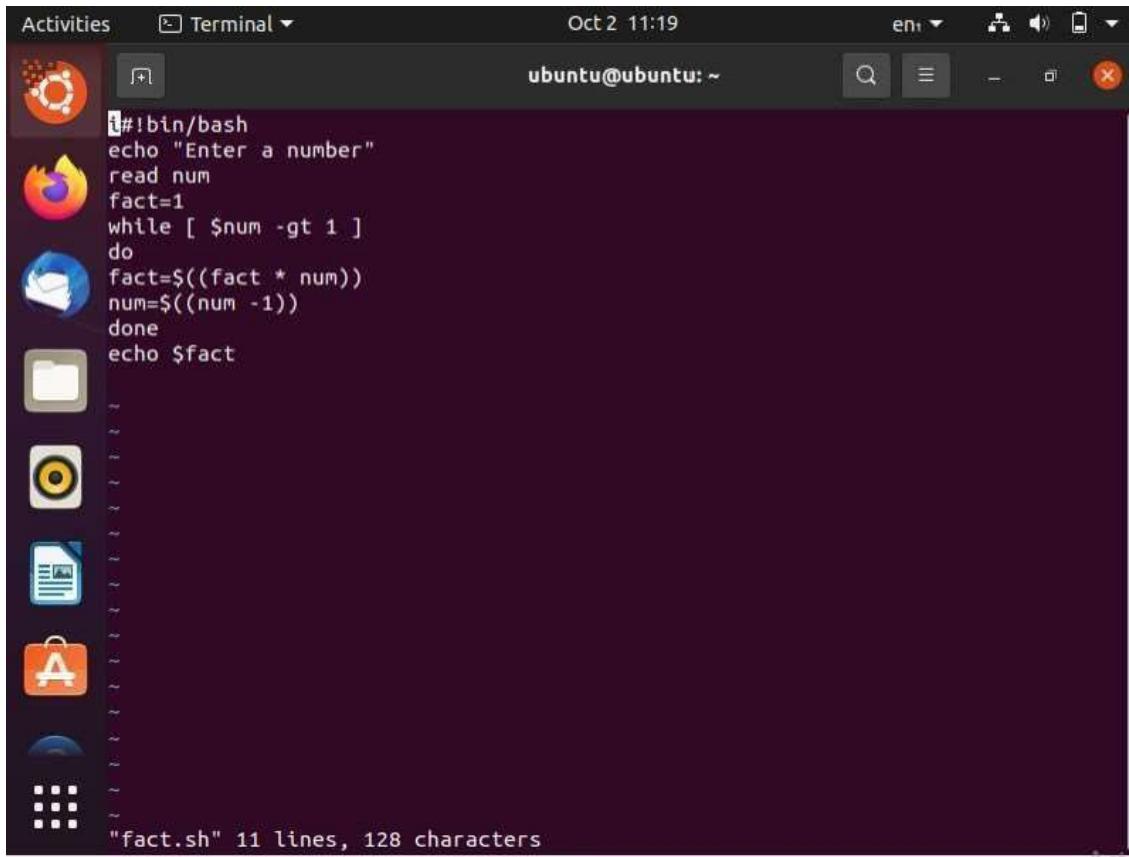
ubuntu@ubuntu: ~



The screenshot shows a standard Ubuntu desktop environment with a Unity interface. A terminal window is open in the top panel, displaying a shell session. The user has created a script named 'fact.sh' using vi, which calculates the factorial of a given number. The user then chmods the script to executable and runs it, entering '6' as the input. The output shows the factorial of 6 is 720.

```
ubuntu@ubuntu:~$ vi fact.sh
ubuntu@ubuntu:~$ cat fact.sh
#!/bin/bash
echo "Enter a number"
read num
fact=1
while [ $num -gt 1 ]
do
fact=$((fact * num))
num=$((num -1))
done
echo $fact

ubuntu@ubuntu:~$ ls -l fact.sh
-rw-rw-r-- 1 ubuntu ubuntu 128 Oct  2 11:17 fact.sh
ubuntu@ubuntu:~$ chmod +x fact.sh
ubuntu@ubuntu:~$ ls -l fact.sh
-rwxrwxr-x 1 ubuntu ubuntu 128 Oct  2 11:17 fact.sh
ubuntu@ubuntu:~$ ./fact.sh
./fact.sh: line 1: i#!bin/bash: No such file or directory
Enter a number
6
720
ubuntu@ubuntu:~$
```



A screenshot of an Ubuntu desktop environment. On the left, there's a dock with icons for the Dash, Terminal, Home, Applications, and Help. The main area shows a terminal window titled "Terminal". The terminal has a dark background and contains the following text:

```
#!/bin/bash
echo "Enter a number"
read num
fact=1
while [ $num -gt 1 ]
do
fact=$((fact * num))
num=$((num -1))
done
echo $fact
```

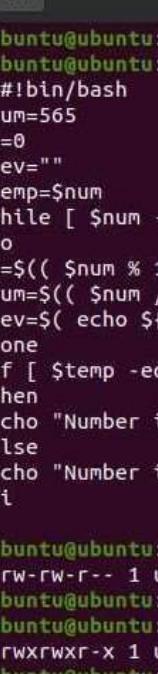
Below the code, there are several tilde (~) symbols indicating hidden files. At the bottom of the terminal window, it says "fact.sh" 11 lines, 128 characters.

12. Write a shell program to check a number is palindrome or not.

Terminal

oct2 ubuntu@ubuntu:

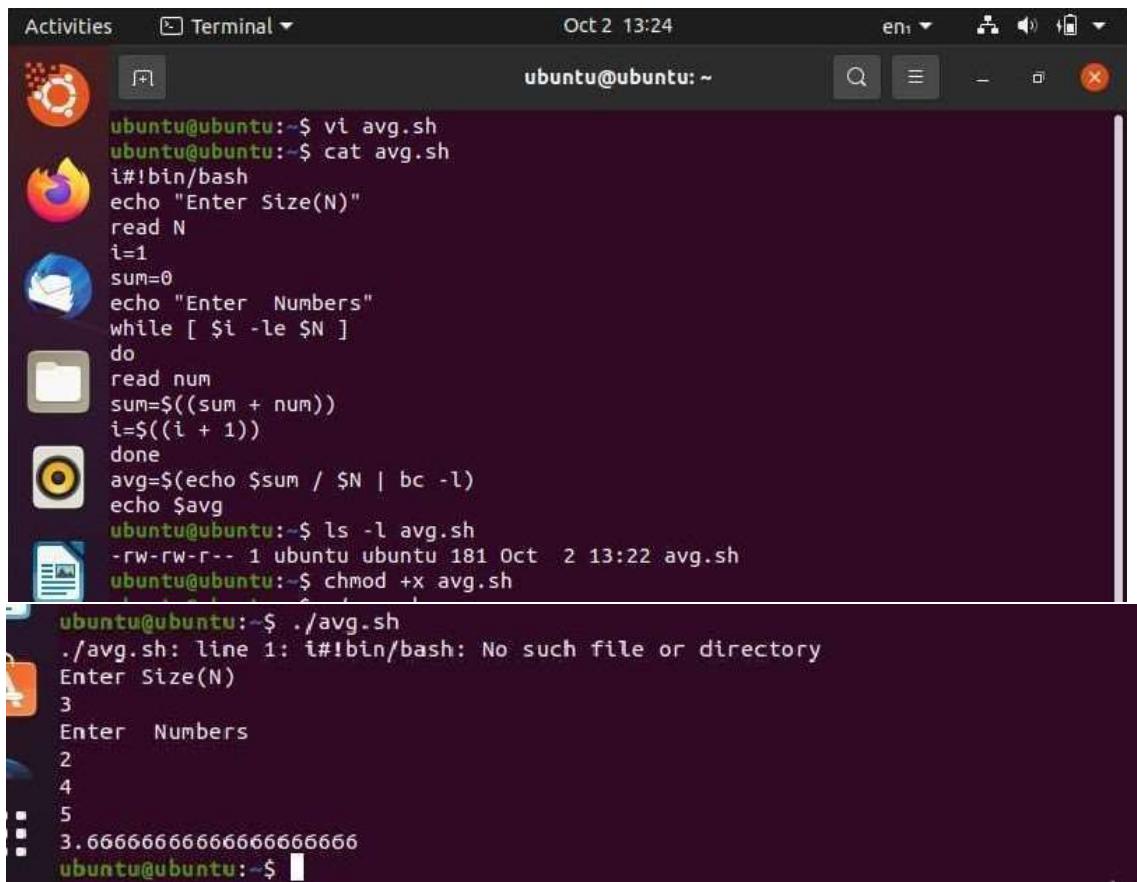
Activities Terminal Oct 2 13:10 en1



```
ubuntu@ubuntu:~$ vi pal.sh
ubuntu@ubuntu:~$ cat pal.sh
#!/bin/bash
num=565
s=0
rev=""
temp=$num
while [ $num -gt 0 ]
do
s=$(( $num % 10 ))
num=$(( $num / 10 ))
rev=$( echo ${rev}${s} )
done
if [ $temp -eq $rev ];
then
echo "Number is palindrome"
else
echo "Number is NOT palindrome"
fi

ubuntu@ubuntu:~$ ls -l pal.sh
-rw-rw-r-- 1 ubuntu ubuntu 232 Oct  2 13:09 pal.sh
ubuntu@ubuntu:~$ chmod +x pal.sh
ubuntu@ubuntu:~$ ls -l pal.sh
-rwxrwxr-x 1 ubuntu ubuntu 232 Oct  2 13:09 pal.sh
ubuntu@ubuntu:~$ ./pal.sh
./pal.sh: line 1: #!/bin/bash: No such file or directory
Number is palindrome
ubuntu@ubuntu:~$
```

13. Write a shell script to find the average of the numbers entered in command line.

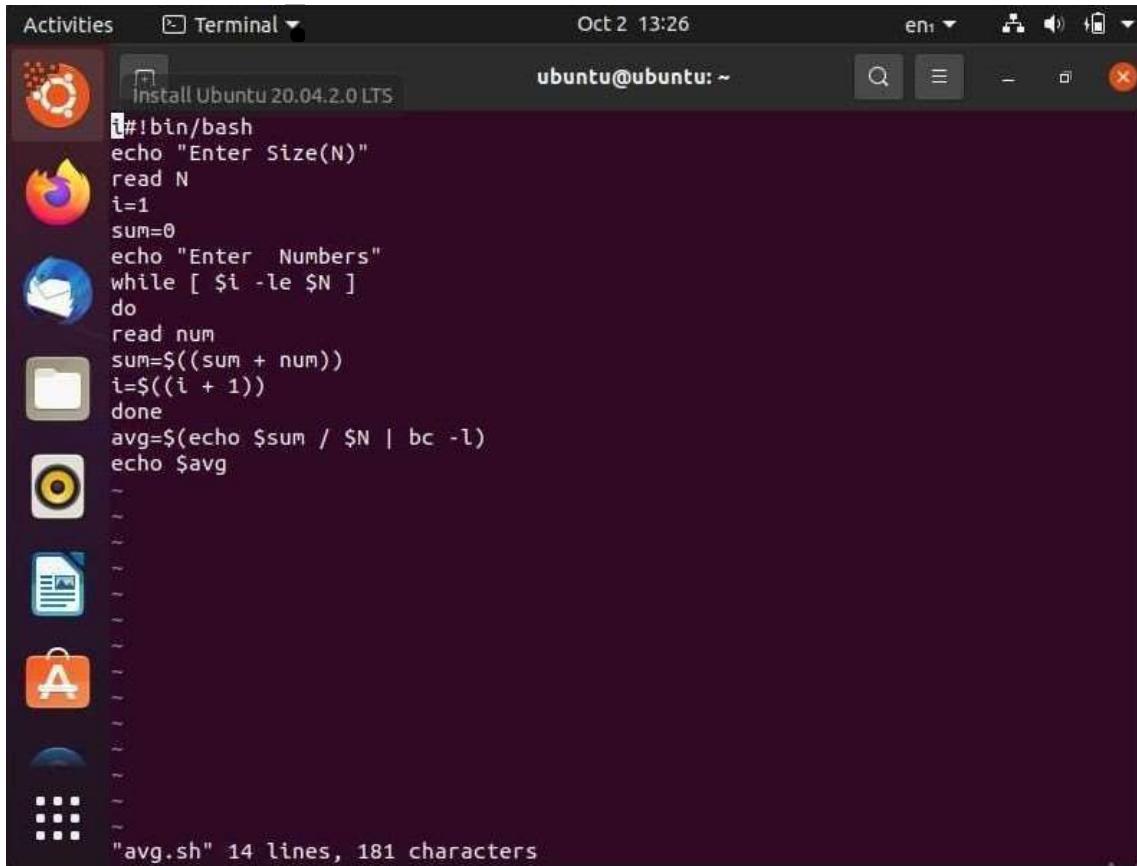


The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Terminal" and the date and time are "Oct 2 13:24". The user is "ubuntu@ubuntu: ~". The terminal content shows the creation and execution of a shell script named "avg.sh".

```
ubuntu@ubuntu:~$ vi avg.sh
ubuntu@ubuntu:~$ cat avg.sh
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
read num
sum=$((sum + num))
i=$((i + 1))
done
avg=$(echo $sum / $N | bc -l)
echo $avg
ubuntu@ubuntu:~$ ls -l avg.sh
-rw-rw-r-- 1 ubuntu ubuntu 181 Oct  2 13:22 avg.sh
ubuntu@ubuntu:~$ chmod +x avg.sh
ubuntu@ubuntu:~$ ./avg.sh
./avg.sh: line 1: i#!/bin/bash: No such file or directory
Enter Size(N)
3
Enter Numbers
2
4
5
3.66666666666666666666666666666666
ubuntu@ubuntu:~$
```

Terminal

oct2 ubuntu@ubuntu:



The image shows a terminal window on an Ubuntu desktop environment. The title bar says "Terminal". The status bar at the top right shows "Oct 2 13:26" and "ubuntu@ubuntu: ~". The terminal window contains a shell script named "avg.sh". The script reads a number of integers from the user, calculates their sum, and then prints the average. The script is as follows:

```
#!/bin/bash
echo "Enter Size(N)"
read N
i=1
sum=0
echo "Enter Numbers"
while [ $i -le $N ]
do
    read num
    sum=$((sum + num))
    i=$((i + 1))
done
avg=$(echo $sum / $N | bc -l)
echo $avg
```

At the bottom of the terminal, it shows the command "avg.sh" has 14 lines and 181 characters.

14. Write a shell program to find the sum of all the digits in a number.

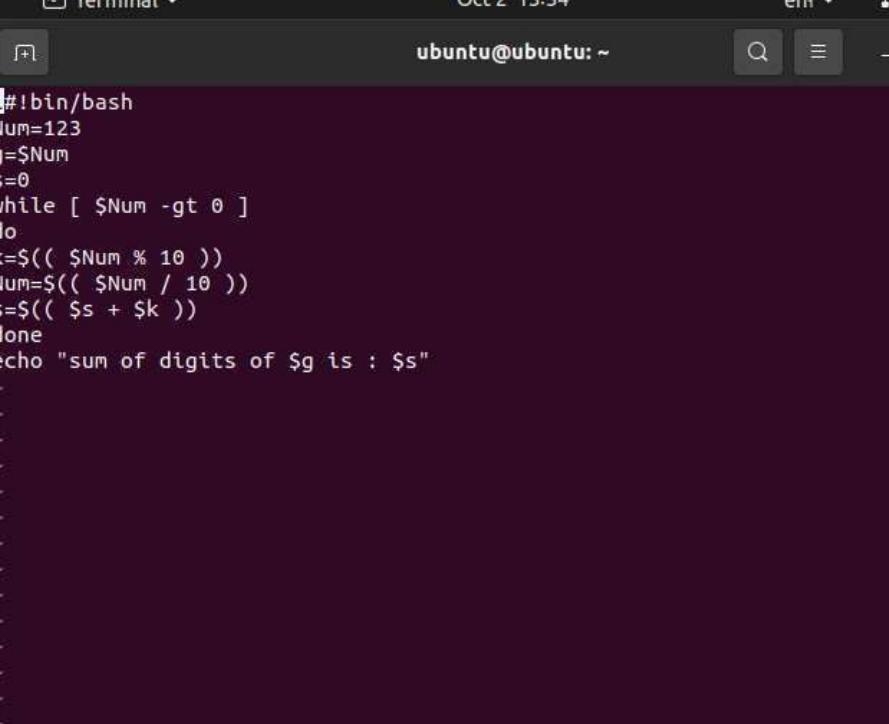
Terminal

oct2

ubuntu@ubuntu: ~

```
Activities Terminal Oct 2 13:33 en1
[+]
ubuntu@ubuntu:~$ vi sum.sh
ubuntu@ubuntu:~$ cat sum.sh
#!/bin/bash
Num=123
g=$Num
s=0
while [ $Num -gt 0 ]
do
k=$(( $Num % 10 ))
Num=$(( $Num / 10 ))
s=$(( $s + $k ))
done
echo "sum of digits of $g is : $s"
ubuntu@ubuntu:~$ ls -l sum.sh
-rw-rw-r-- 1 ubuntu ubuntu 153 Oct  2 13:32 sum.sh
ubuntu@ubuntu:~$ chmod +x sum.sh
ubuntu@ubuntu:~$ ls -l sum.sh
-rwxrwxr-x 1 ubuntu ubuntu 153 Oct  2 13:32 sum.sh
ubuntu@ubuntu:~$ ./sum.sh
./sum.sh: line 1: i#!bin/bash: No such file or directory
sum of digits of 123 is : 6
ubuntu@ubuntu:~$
```

Terminal oct2
Activities Terminal ▾ ubuntu@ubuntu: ~ Oct 2 13:34 en1 ▾



The screenshot shows a standard Ubuntu desktop environment. A terminal window is open in the foreground, displaying a shell script named 'sum.sh'. The script reads a number from a variable 'Num' (set to 123), initializes a sum 's' to 0, and then enters a loop where it repeatedly calculates the remainder ('k') and quotient ('Num') of the number divided by 10, adding 'k' to 's' until 'Num' becomes 0. Finally, it prints the total sum. Below the terminal, the desktop background is visible, showing icons for various applications like the Dash, Home, and Dash to Dock.

```
#!/bin/bash
Num=123
g=$Num
s=0
while [ $Num -gt 0 ]
do
k=$(( $Num % 10 ))
Num=$(( $Num / 10 ))
s=$(( $s + $k ))
done
echo "sum of digits of $g is : $s"
```

"sum.sh" 11 lines, 153 characters

15. Write a shell program to check whether given year is leap year or not.

Terminal

oct2

ubuntu@ubuntu: -

Activities Terminal Oct 2 13:46 ene

```
ubuntu@ubuntu:~$ vi year.sh
ubuntu@ubuntu:~$ cat year.sh
#!/bin/bash
echo -n "Enter year (YYYY) : "
read y
a = `expr $y%4'
b = `expr $y%100'
c = `expr $y%400'
if [ $a -eq 0 -a $b -ne 0 -o $c -eq 0 ]
then
echo "$y is leap year"
else
echo "$y is not leap year"
fi

ubuntu@ubuntu:~$ ls -l year.sh
-rw-rw-r-- 1 ubuntu ubuntu 206 Oct  2 13:45 year.sh
ubuntu@ubuntu:~$ chmod +x year.sh
ubuntu@ubuntu:~$ ls -l year.sh
-rwxrwxr-x 1 ubuntu ubuntu 206 Oct  2 13:45 year.sh
ubuntu@ubuntu:~$ ./year.sh
./year.sh: line 1: #!/bin/bash: No such file or directory
Enter year (YYYY) : 2024
./year.sh: line 4: a: command not found
./year.sh: line 5: b: command not found
./year.sh: line 6: c: command not found
./year.sh: line 7: [: too many arguments
2024 is not leap year
```

Terminal

oct2

ubuntu@ubuntu: ~

Docker installation on Windows 10

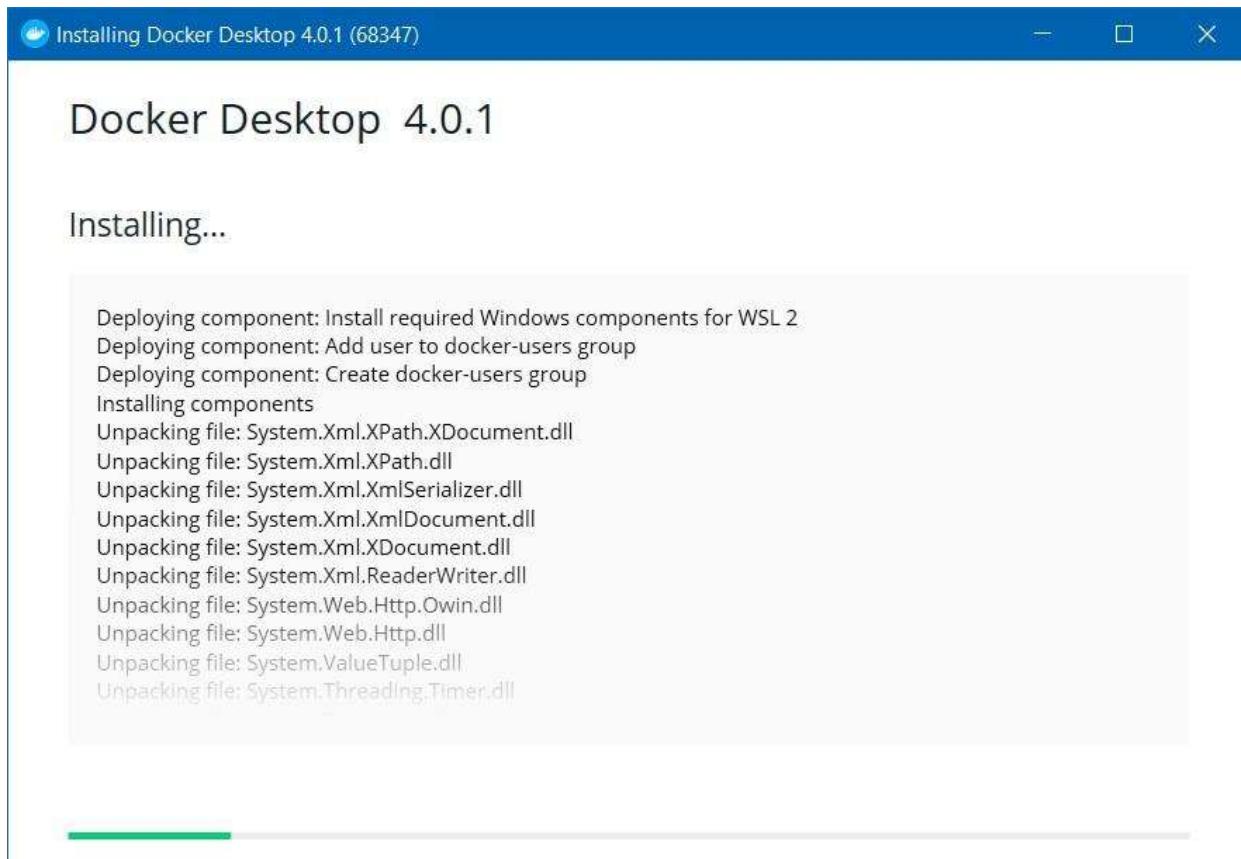
Step-I

Download Docker desktop Installer for Windows from
<https://desktop.docker.com/win/main/amd64/Docker%20Desktop%20Installer.exe>



Step-II

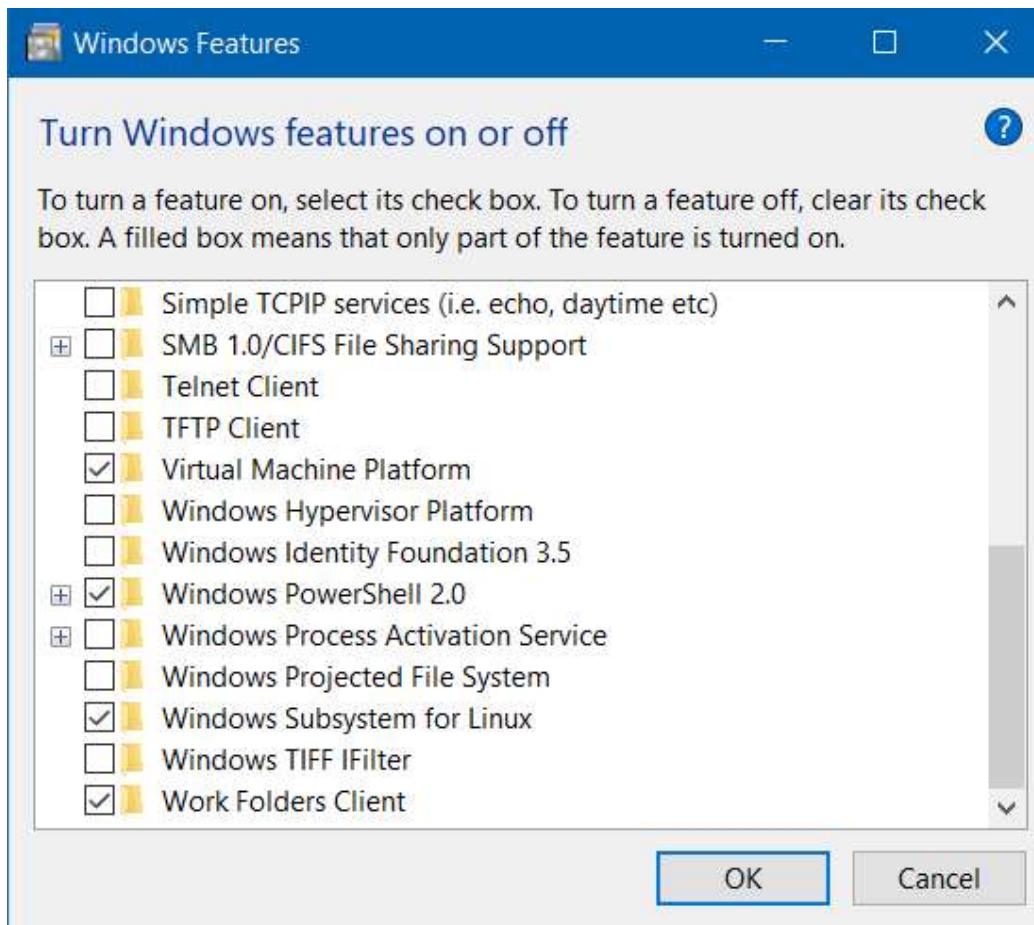
Open the .exe file and follow the steps after clicking install button.



Step-III

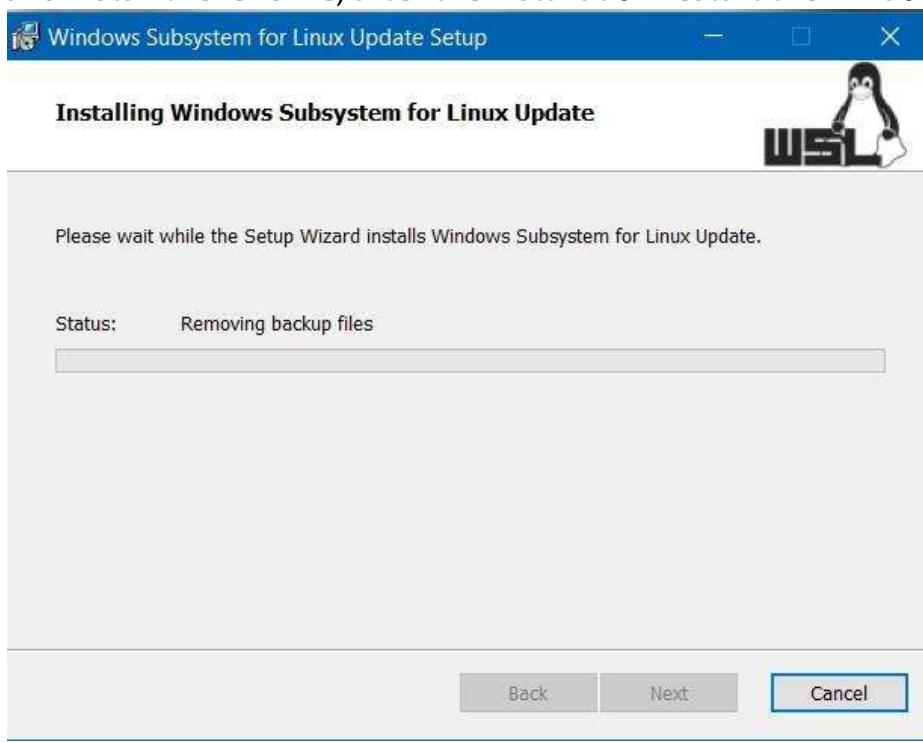
Once installed go to programs and features and click turn on windows features on or off

Scroll to the bottom and select windows subsystem for Linux



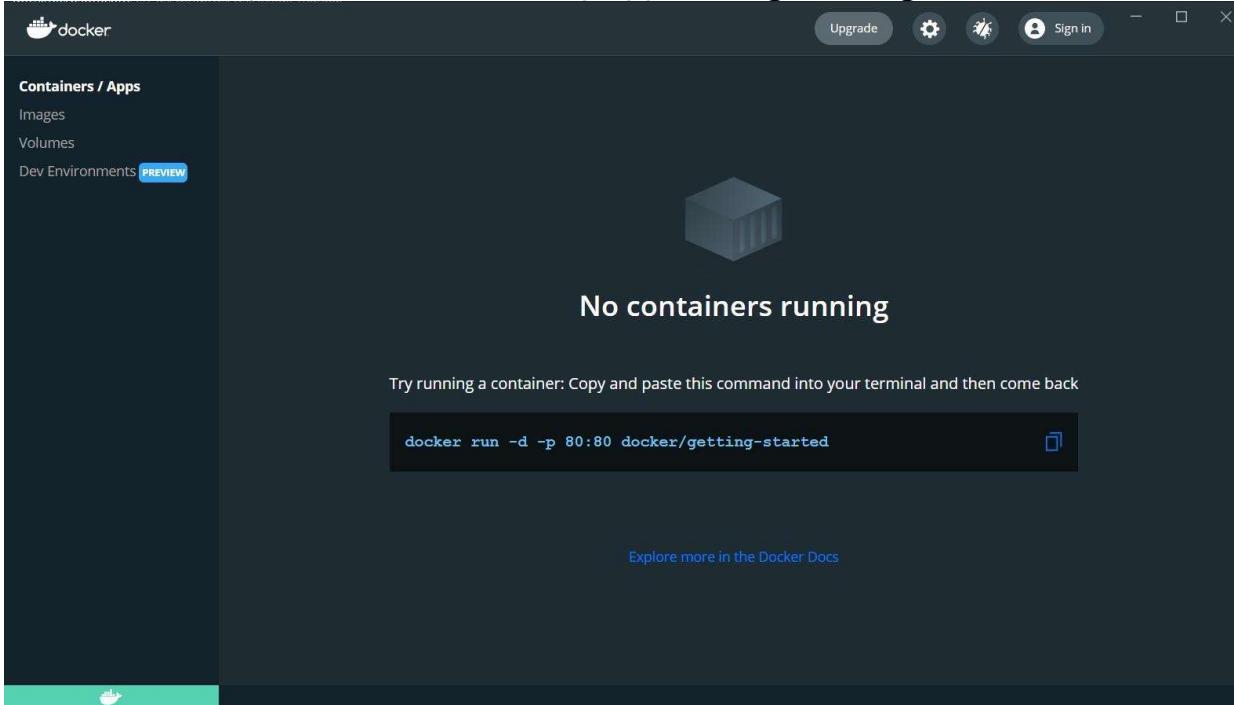
Step-IV

If any WSL 2 error occurs download windows subsystem for linux update package and install the .exe file, after the installation restart the windows device.



Step-V

Once installed, open the docker desktop app, and signin using the dockerID



Step-VI

Now pull any image from docker hub using the docker pull command in the command prompt (eg: docker pull ubuntu)

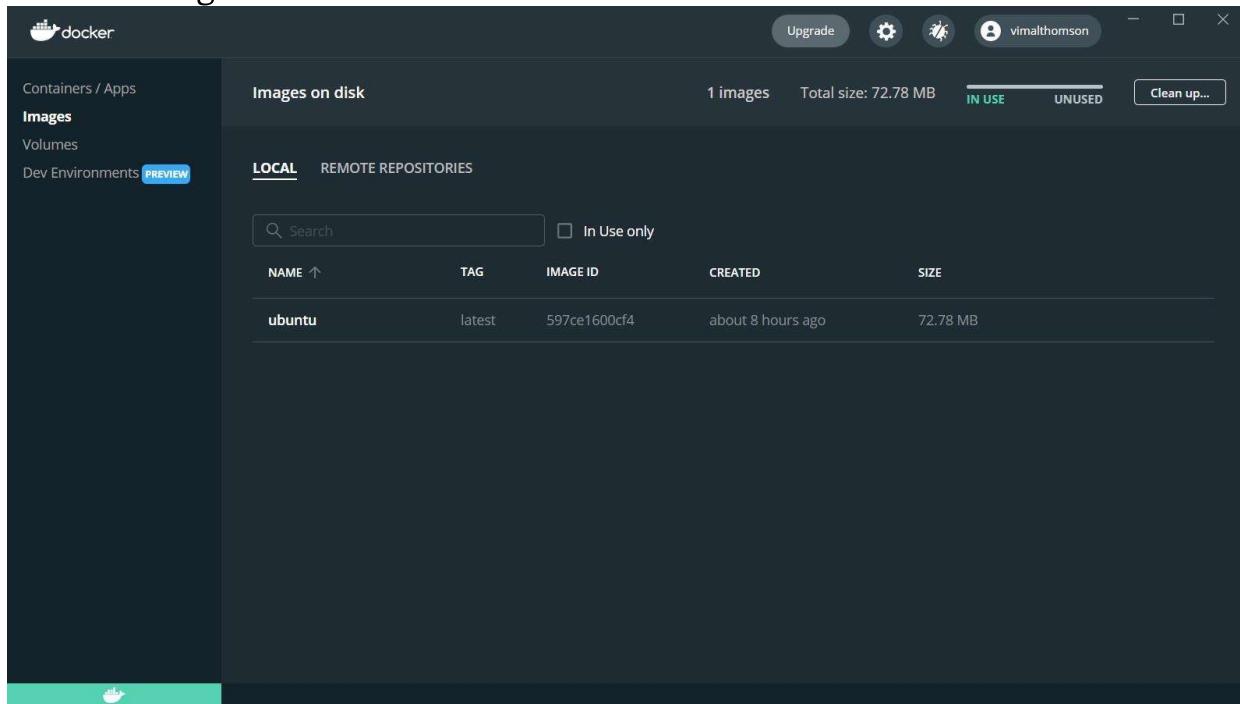
```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1081]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
docker: Error response from daemon: Get "https://registry-1.docker.io/v2/": dial tcp: lookup registry-1.docker.io on 192.168.65.5:53: no such host.
See 'docker run --help'.

C:\Windows\system32>docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
f3ef4ff62e0d: Pull complete
Digest: sha256:65de08a8dabf289ef114053ab32f79e0c333a4fbfa1fe3778bb13ae921a7849b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest

C:\Windows\system32>
```

Now in the images tab an image of ubuntu will be displayed, we can run the ubuntu instance using the cli.



The screenshot shows the Docker desktop application interface. The left sidebar has tabs for 'Containers / Apps', 'Images' (which is selected), 'Volumes', and 'Dev Environments' (with a 'PREVIEW' badge). The main area is titled 'Images on disk' and shows '1 images' with a total size of '72.78 MB'. There are two filter buttons: 'IN USE' (highlighted in blue) and 'UNUSED'. A 'Clean up...' button is also present. Below these filters, there are two tabs: 'LOCAL' (selected) and 'REMOTE REPOSITORIES'. A search bar and an 'In Use only' checkbox are located above the table. The table has columns: NAME, TAG, IMAGE ID, CREATED, and SIZE. One row is listed: 'ubuntu' with tag 'latest', image ID '597ce1600cf4', created 'about 8 hours ago', and size '72.78 MB'.

NAME	TAG	IMAGE ID	CREATED	SIZE
ubuntu	latest	597ce1600cf4	about 8 hours ago	72.78 MB

Wireshark installation

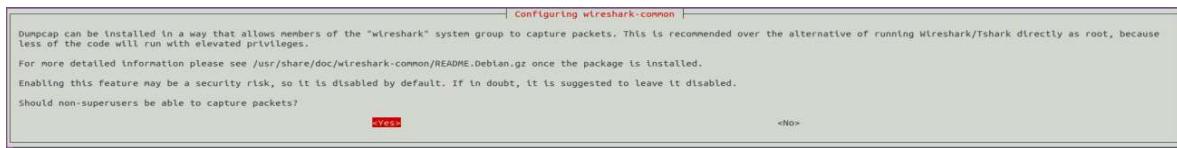
1. Command: sudo apt-get install wireshark

```
vimalthomson@vimal-thomson:~$ sudo apt-get install wireshark
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libnvidia-cfg1-460 libnvidia-common-460 libnvidia-gl-460 libnvidia-ifr1-460 libva-wayland2 libx11-xcb1:i386 libxnvctrl0 nvidia-compute-utils-460 nvidia-kernel-xserver-xorg-video-nvidia-460
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbuss libqt5gui5 libqt5multimedia5 libqt5multimedia5-plugins libqt5printsupport5 libqt5svg5 libqt5widgets5 libsmi2lql libspandsp2 libwireshark-data libwireshark13 libwiretap10 libwireshark-common wireshark-qt
Suggested packages:
qt5-image-formats-plugins qtwaylands snmp-mibs-downloader geoipupdate geoip-database geoip-database-extra libjs-leaflet
The following NEW packages will be installed:
libdouble-conversion3 libpcre2-16-0 libqt5core5a libqt5dbuss libqt5gui5 libqt5multimedia5 libqt5multimedia5-plugins libqt5printsupport5 libqt5svg5 libqt5widgets5 libsmi2lql libspandsp2 libwireshark-data libwireshark13 libwiretap10 libwireshark wireshark-common wireshark-qt
0 upgraded, 27 newly installed, 0 to remove and 342 not upgraded.
Need to get 32.6 MB of archives.
After this operation, 162 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libdouble-conversion3 amd64 3.1.5-4ubuntu1 [37.9 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal/main amd64 libpcre2-16-0 amd64 10.34-7 [181 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libqt5core5a amd64 5.12.8+dfsg-0ubuntu1 [2,005 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 libqt5dbuss amd64 5.12.8+dfsg-0ubuntu1 [208 kB]
```

2. Command: sudo dpkg-reconfigure wireshark-common

```
vimalthomson@vimal-thomson:~$ sudo dpkg-reconfigure wireshark-common
vimalthomson@vimal-thomson:~$ █
```

3. Command: Select Yes and press enter



4. Open wireshark from the applist

