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PRACTICAL – 1

AIM : Install your choice of Linux distribution eg. Ubuntu, Fedora, Debian.

STEP 1 :
Selecting a virtual optical disk, click on the 'start' option.

STEP 2 :
Proceeding, two options i.e → Try Ubuntu and Install Ubuntu will be given select or click Install Ubuntu.

STEP 3 :
Further, it will show updates and other softwares page. Just click on 'continue' option.

STEP 4 :
Click onto 'Install Now' option.

STEP 5 :
Further, a map will be displayed on your PC screen. Avoiding it, just click onto the 'continue' option on the right hand side.

STEP 6 :
Very important page will be displayed on your which will ask you for your details and

password. After filling all the details, c
onto 'continue' option.

STEP 7:
A page will be displayed on your PC scre
asking for your password to install the
ubuntu. Filling that, just click onto the
'sign in' option.

STEP 8:
Installing and signing up successfully, y
will now see the screen of different activ
for different purposes.

B) Customize desktop environment by chan
-ng different default options like
changing default background, themes, s
-eensavers.

ACCESSING APPEARANCE SETTINGS:

→ To access Appearance Settings in Ubunt
let's click on User menu at the top
right corner, on the top Menu bar and
select System Settings...

→ A windom will pop-up with All Settin
divided into Personal Hardware and Syste

options icons. Let's first select the Appear-ance icon.

CHANGING UBUNTU THEME :

→ Ubuntu also has an option to change the Desktop theme, which is one click will change the entire way your computer looks.

→ To do that, click on the drop-down menu below the Wallpaper thumbnails, and choose between Ambiance, Radiance or High Constrast.

→ Ambiance is a light theme that looks a bit more Mac-like, while Radiance is the darker brown theme used in Ubuntu by default.

c) Screen Resolution : Ascertain the current screen resolution for your desktop.

CHANGE THE SIZE OR ROTATION OF THE SCREEN:

→ You can change how big (or how detailed) things appear on the screen by changing the screen resolution.

→ You can change which way up things appear (for example, if you have a rotating display) by changing the rotation.

i) Click the icon on the very right of the menu bar and select system Settings.

ii) Open Screen Display.

iii) If you have multiple displays and they are not mirrored, you can have different settings on each display. Select a display in the preview area.

iv) Select your desired resolution and rotation.

v) Click Apply. The new settings will be applied for 30 seconds. before reverting back. That way, if you cannot see anything with the new.

D) Time Settings Change the time zone of your system to (or New York Time)

→ If you are currently in Indian time. How does the displayed time change?

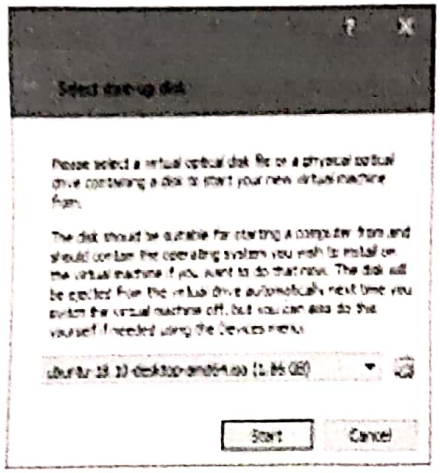
→ After noting the time change, the time zone back to your local time zone.

→ Just click on the clock on the top bar, and choose Time and Date Settings, once the Time and Date window opens, choose Manually, so you can change the time and date manually, otherwise choose your time zone from the map, and choose Auto-matic.

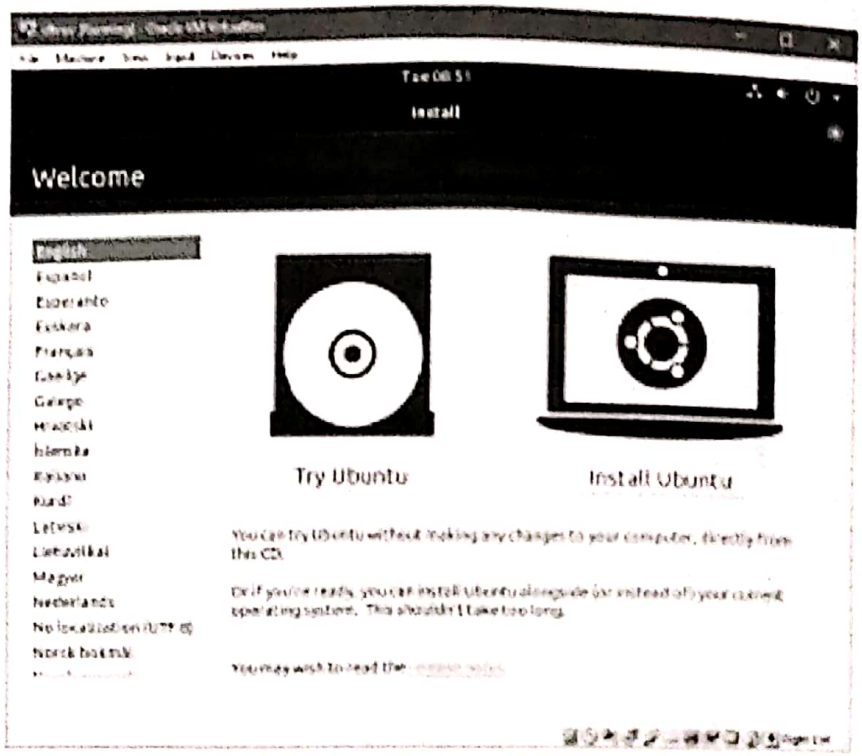
09/01

AS.

Step1



Step 2



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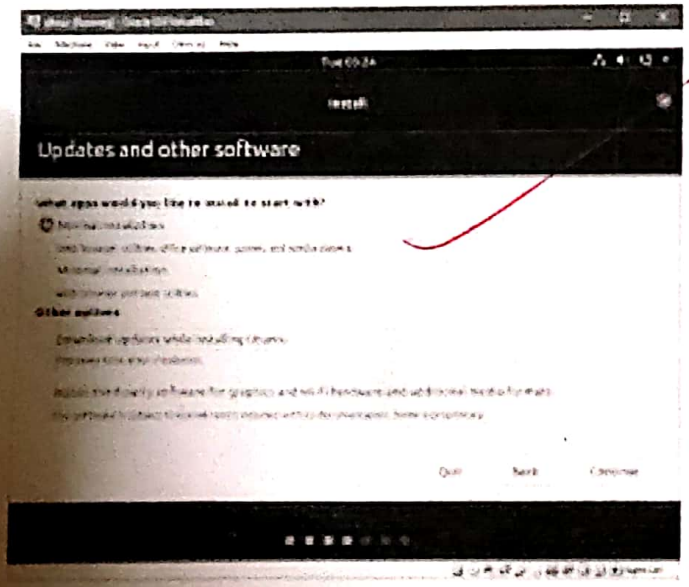
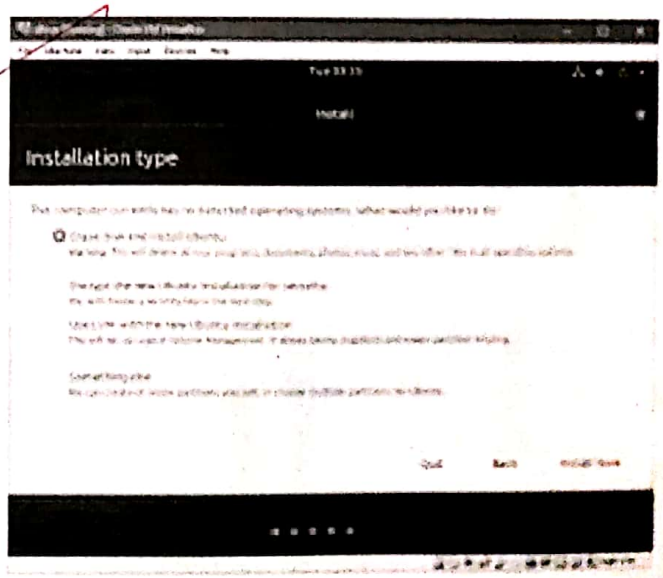
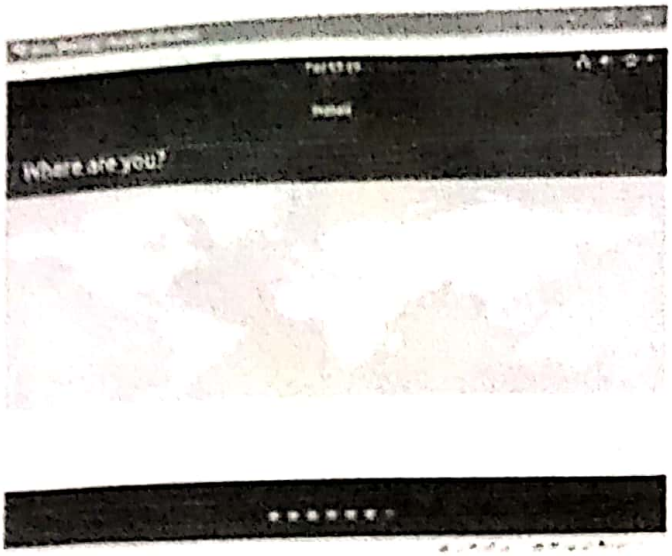


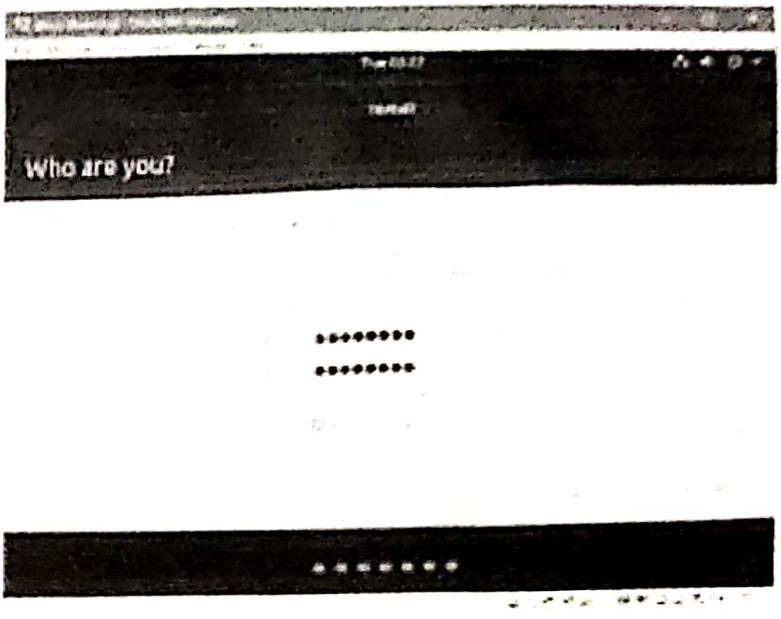
step 4



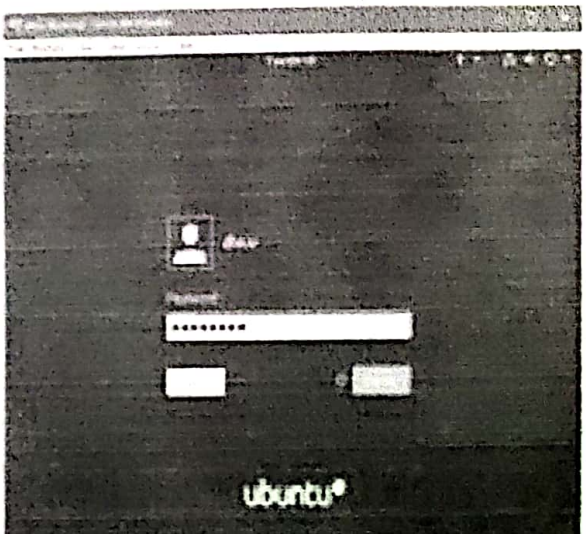
Step5



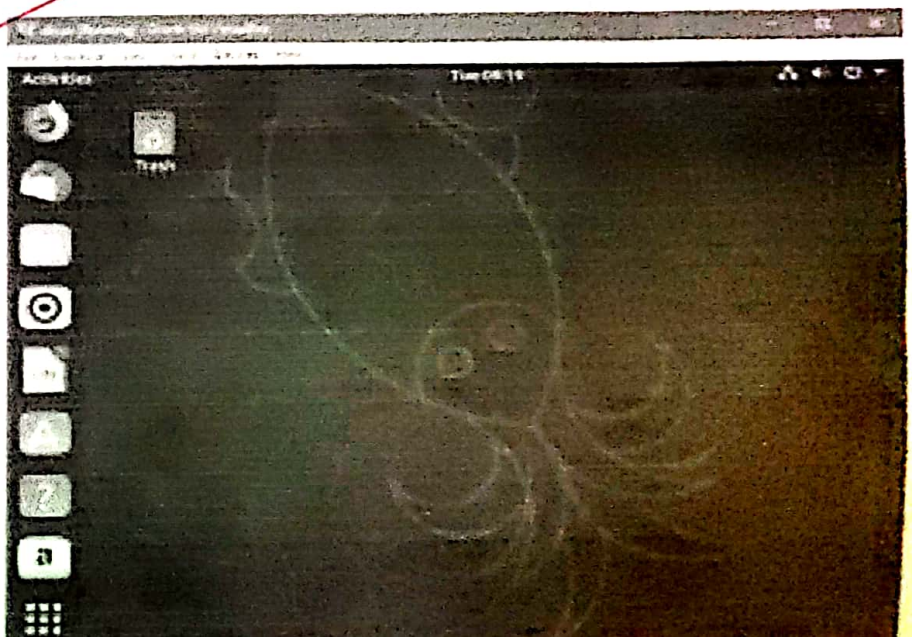
step6

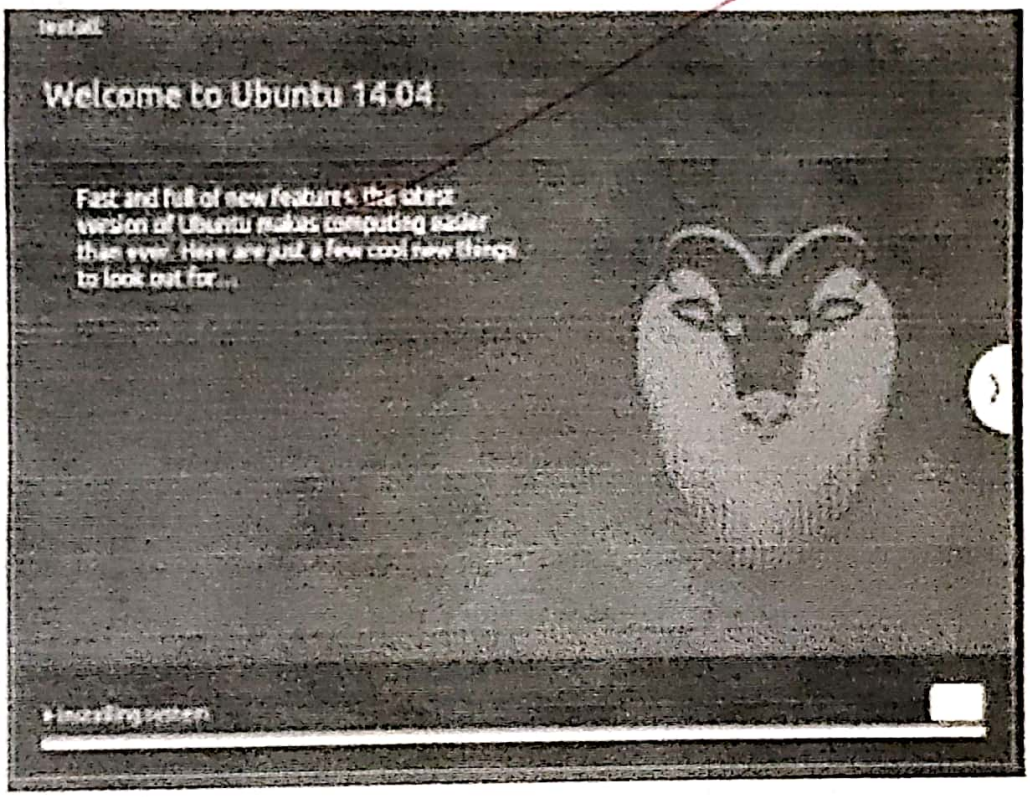


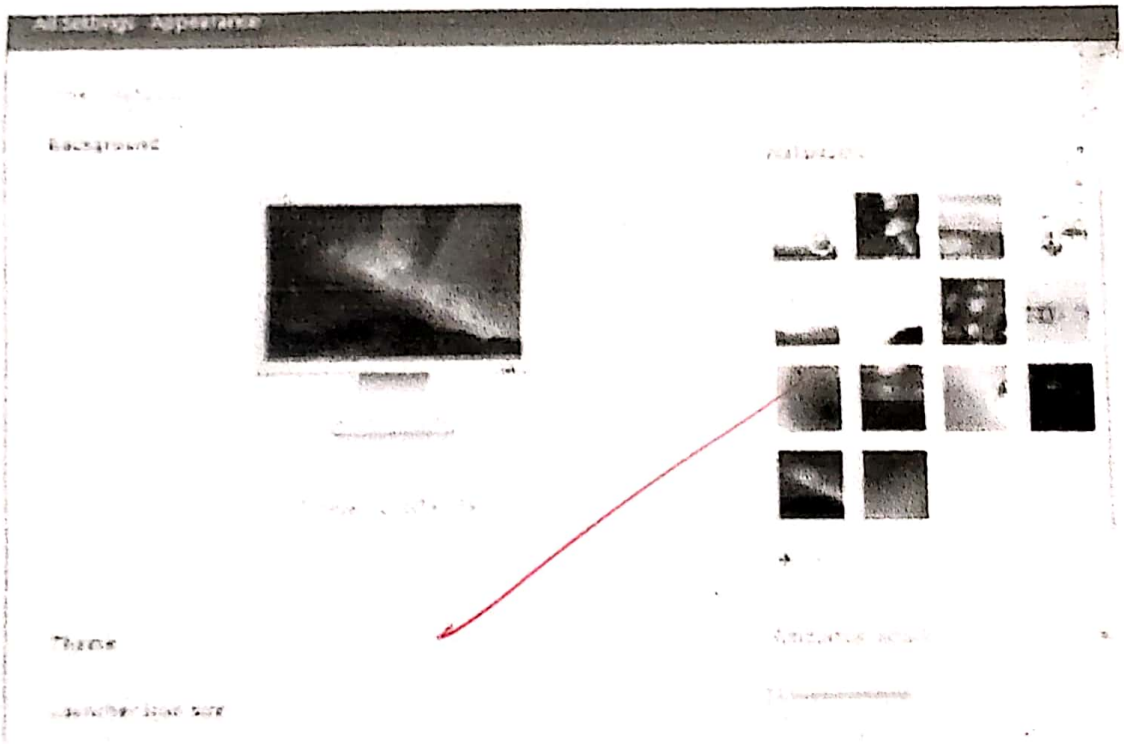
Step7



step 8







PRACTICAL – 2

AIM : Installing and removing Software

Install gcc package, Verify that it runs and then remove it.

STEP 1 : First type 'gcc -v' to know if you have already installed gcc complier or not. If the output is blank then it means that you dont have gcc installed.

STEP 2 : Type 'Sudo apt-get install gcc'. After typing the following command distribution installation will take place.

STEP 3 : Type 'sudo apt-get install build-essential'. This will install all the libraries required for c and c++ programming language.

Now to unistall gcc compiler.

In GCC 5.1.0, although there is no top level unistall target, some directories do have it, in particular gcc, so you can do:

Type: cd build / gcc
sudo make uninstall

This does not remove everything that was installed, but it removes major executables like gcc, g++, cpp... contained in that directory.

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PRACTICAL - 3

AIM : Utilization of grep, man command

DOCUMENTATION :

a) Finding info documentation : from the command line : bring up the info page for the grep command. Bring up the usage section.

→ To find info about any command 'info' command is used. The syntax of info command is "info (command name)".

We are going to find the info about the 'grep' command :

Open the terminal (ctrl + ALT + T) and type: info grep.

After typing this command following output will be displayed onto your screen.

You can also scroll through pages using (space = up) and (backspace = down) keys.

Another, more summarized form of showing info is the 'man' command. The command is same as 'info' but required data.

b) Finding man pages from the cmd line: Bring up the man page for the 'ls' command. Scroll down to the examples.

→ To use the 'man' command simply type 'man (command name)'. Now we are going to find the manual for 'ls' command. simply type: 'man ls'.

c) Finding man pages by topic 'what man pages are available that document file compression'.

→ 'Tar', 'zip' are some man pages which are available for document file compression simply type. map zip and man tar.

d) Finding man pages by section from the cmd lines bring up the man page for the print f lib function which manual page section are library function found.

→ The number corresponds to what section of the manual page is from ls user command while 8 is sysadmin stuff. The man page for man itself explain it are list the std out.

There are certain terms that have different pages in different sections (eg. 'print f as a command appears in section 1 as a 'stdlib'

function appears in section 3); in cases like that you can pass the section no. to the man before the page name to choose which on you want or use man -etc show every matching page in a row.

You can tell what section a terms falls in with 'man -k' (equivalent to apropos command) It will do substring matches too. So you need to use "term" to limit it.

e) Comman-Line Help List the available options for the mkdir command. How can you do this ?

→ $mkdir -m a=rwx directoryname.

PRACTICAL - 4

AIM : Command Line Operations.

i) Install new package on your system.

→ Sudo apt-get install [package name]

ii) Remove the package installed.

→ Sudo apt-get remove [package name]

iii) Find the password file in / using find command.

→ # find / -name password
./usr/share/doc/nss_/dap-253/pam.d/password.

./usr/bin/password
./etc/pam.d/password
./etc./password.

iv) Find the directory password file under root and one level down.

→ # find / -max depth 2 -name password.
./etc/password.

v) Find the password file under root and 2 level down.

→ # find /-maxdepth 3 -name passwo
• /usen / bin / password
• / etc / pam · d / password
• / etc / password.

vi) Find the password file between sub-directories level 2 and 4.

→ # find -maxdepth 3 - maxdepth
-name password.
• /user / bin / password
• / etc / pam.d / password.

vii) Create a symbolic link to the file you found in last step.

→ # ln -s file 1 file 2

viii) Create an empty file example.txt and m it to /tmp directory using relative p -name

→ # touch example.txt
mv example.txt / tmp

ix) Delete the file moved to / tmp in previ step by absolute method.

→ # rm /tmp/example.txt.

4) Find the location of ls, ps, bash commands.

→ # whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz
whereis ps
ps: /bin/ps /usr/share/maps: /bin/ps /usr/share/man/man1/ps.1.gz
whereis bash
bash: /bin/bash /etc/bash.bashrc /usr/share/man/man1/bash.1.gz.

09/01

PRACTICAL – 5

AIM : File Operations.

1 Explore mounted file systems on your comp-uter.

→ df – k

```
jeba@jeba-VirtualBox:~$ df -k
Filesystem     1K-blocks    Used Available Use% Mounted on
udev              494436       0    494436   0% /dev
tmpfs             102416    3676     98740   4% /run
/dev/sda1        7092728 3383372   3326024  51% /
tmpfs             512076     216    511860   1% /dev/shm
tmpfs               5120       4      5116   1% /run/lock
tmpfs             512076       0    512076   0% /sys/fs/cgroup
tmpfs             102416      48    102368   1% /run/user/1000
jeba@jeba-VirtualBox:~$
```

1.

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=494436k,nr_inodes=123609,mode=755)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=102416k,mode=755)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,releas
e_agent=/lib/systemd/systemd-cgroups-agent,name=systemd,nsroot=/)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset,nsroot
=/)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net
_cls,net_prio,nsroot=/)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids,nsroot=/)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsro
ot=/)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpua
cct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsro
ot=/)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot
=/)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio,nsroot=/
)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_even
t,nsroot=/)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsro
ot=/)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minp
roto=5,maxproto=5,direct)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
```


Q.2 What are the different ways of exploring mounted file systems on Linux?

→ mount.

Q.3 Copying text from files.

→ cp command, mv command.


```
jeba@jeba-VirtualBox:~$ ls
Desktop    Downloads    jeb    Music     Public     Videos
Documents  examples.desktop  jj   Pictures  Templates
jeba@jeba-VirtualBox:~$ cd jeb
jeba@jeba-VirtualBox:~/jeb$ cat .gg.txt
cat: .gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat >gg.txt
welcome
Linux
^C
jeba@jeba-VirtualBox:~/jeb$ touch dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jeba@jeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$
```

```
jeba@jeba-VirtualBox:~/jeb$ touch ss.txt
jeba@jeba-VirtualBox:~/jeb$ mv gg.txt ss.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$
```

Q4 Archiving and backup the work directory using tar, gzip and bzip2 commands.

→ gzip filename.txt

Bzip2 filename.txt

```
jeba@jeba-VirtualBox:/$ tar -cvf data.tar /mnn
tar: data.tar: Cannot open: Permission denied
tar: Error is not recoverable: exiting now
jeba@jeba-VirtualBox:/$ sudo tar -cvf data.tar /mnn
tar: Removing leading '/' from member names
/mnn/
/mnn/hd/
jeba@jeba-VirtualBox:/$ ls
bin   data.tar  etc         lib         mnn   opt   run   srv  usr
boot  dd        home        lost+found  mnt   proc  sbin  sys  var
cdrom dev       initrd.img  media       mnt1  root  snap  tmp  vmlinuz
jeba@jeba-VirtualBox:/$ cat data.tar
mnn/0000755000000000000000000000000013605376557010365 5ustar  rootrootmnn/hd/0000755000000
0000000000000000000013605376557010760 5ustar  rootrootjeba@jeba-VirtualBox:/$
```

```
jeba@jeba-VirtualBox:~/jeb$ bzip2 ss.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt.bz2
BZh91AY&SY`◆▯▯▯◆▯▯▯
`J◆w$5◆◆▯▯1 jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz
◆▯▯▯dd.txt+O◆I◆◆M◆◆◆◆+◆◆▯▯◆XzjebA@jeba-VirtualBox:~/jeb$
```

Q.5 Use diff command to create diff of two files.

→ diff filename1 filename2

```
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
hello world
^C
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is linux^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1d0
< hello world
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is Linux
^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1c1
< hello world
---
> this is Linux
jeba@jeba-VirtualBox:~/jeb$ gzip aa.txt
jeba@jeba-VirtualBox:~/jeb$ gzip bb.txt
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt.gz bb.txt.gz
Binary files aa.txt.gz and bb.txt.gz differ
```

```
jeba@jeba-VirtualBox:~/jeb$ cat >hi.txt
hi
hi
hi
^C
jeba@jeba-VirtualBox:~/jeb$ cat >hii.txt
hello
hello
hello
^C
jeba@jeba-VirtualBox:~/jeb$ diff -u hi.txt hii.txt >sam.patch
jeba@jeba-VirtualBox:~/jeb$ patch ,sam.patch
^C
jeba@jeba-VirtualBox:~/jeb$ patch <sam.patch
patching file hi.txt
jeba@jeba-VirtualBox:~/jeb$ cat sam.patch
--- hi.txt      2020-01-08 22:14:55.463569834 +0530
+++ hii.txt     2020-01-08 22:15:16.259898738 +0530
@@ -1,3 +1,3 @@
-hi
-hi
-hi
+hello
+hello
+hello
jeba@jeba-VirtualBox:~/jeb$
```

Q.6 Use patch command to patch a file. And analyze the patch using patch command again.

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PRACTICAL - 6

AIM : Use Environment.

A) Which account you are logged in ? How can you find out ?

→ who command and whoami

B) Display / etc / shadow file using cat command and understand the importance of shadow file. How it's different than passwd file.

→ cat / etc / shadow

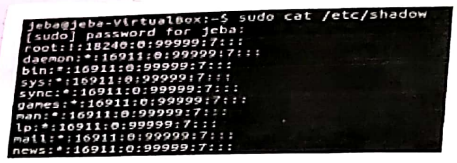
As with the passwd file, each field in the shadow file is also separated with ":" colons characters, and are as follows :

= Username, up to 8 characters. Case-sensitive usually all lowercase. A direct match to the username in the / etc / passwd file.

= Password, 13 character encrypted. A blank entry (eg. ::) indicates a password is not required to log in (usually a bad idea), and a "*" entry (eg. :*:) indicates the account has been disabled.

= The number of days (since January 1, 1970) since the password was last changed.

A)



= The number of days before password may be chan-ged (0 indicates it may be changed at any time).

= The number of days after which password must be changed. (99999 indicates user can keep his or her password unchanged for many, many years)

= The number of days to warn user of an expi-ring password (7 for a full week).

= The number of days after password expires that account is disabled.

= The number of days since January 1, 1970 that an account has been disabled.

= A reserved field for possible future use.

Each field in a password entry is separated with ":" colon characters, and are as follow-s :

= Username, up to 8 characters. Case-sensitive, usually all lowercase.

= An "x" in the password field. Passwords are stored in the "/etc/shadow" file.

=Numeric user id. This is assigned by the "adduser" script. Unix uses the field, plus the following group field, to identify which files belong to the user.

=Numeric group id. Red Hat uses group id's in a fairly unique manner for enhanced file security. Usually the group id will match the user id.

=Full name of user. I'm not sure what the maximum length for this field is, but try to keep it reasonable (under 30 characters).

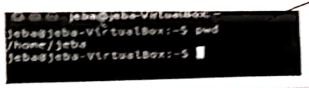
=User's home directory. Usually /home/username (eg. /home/smit). All user's personal files, web pages, mail forwarding etc. will be stored here.

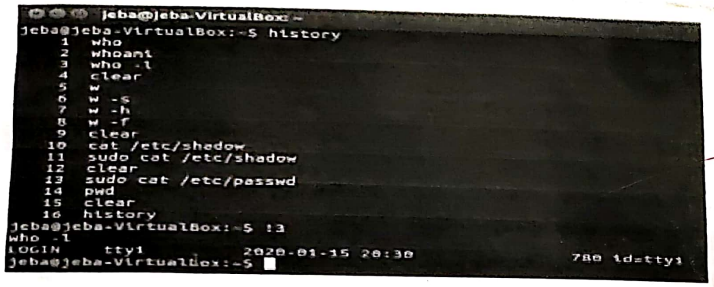
=User's "shell account". Often set to "/bin/bash" to provide access to the bash shell (my personal favorite shell).

c) Get your current working directory.

→ pwd.

c)





D) Explain different ways of getting command history, how to run previously executed command without typing it.

→ history
! line number.

E) Create alias to most commonly used comman

→ Alias command instructs to shell to repl one string with another string while execut the commands

alias label = " command "

PRACTICAL – 7

AIM : Linux Editors : Vi

Create, modify, search and navigate a file in editor.

i) Creating a file :

→ To create a file, on the terminal type vi followed by filename.

ii) Modifying the file :

→ To modify a file, on the vi editor, type 'o'.

iii) Search in a file :

→ To find a word (forward search) press / followed by the word to search.

iv) Navigate :

→ i) Movement in four directions.

ii) Word Navigation.

iii) Scrolling.

Movement in four directions.

Key	Action
k	Moves cursor up
j	Moves cursor down
h	Moves cursor left
l	Moves cursor right

Word Navigation

Key	Action
b	Moves back to the begging of the word
e	Moves forward to the end of the word
w	Moves forward to the beginning of the word
0(zero)	Move to first character of a line
$	Move to the end of line

Scrolling

Key	Action
Ctrl+f	Scrolls forward
Ctrl+b	Scrolls backward
Ctrl+d	Scrolls half page
Ctrl+u	Scrolls half page backward

Learn all essentials commands like search / replace, highlight, show line numbers.

i) Replace

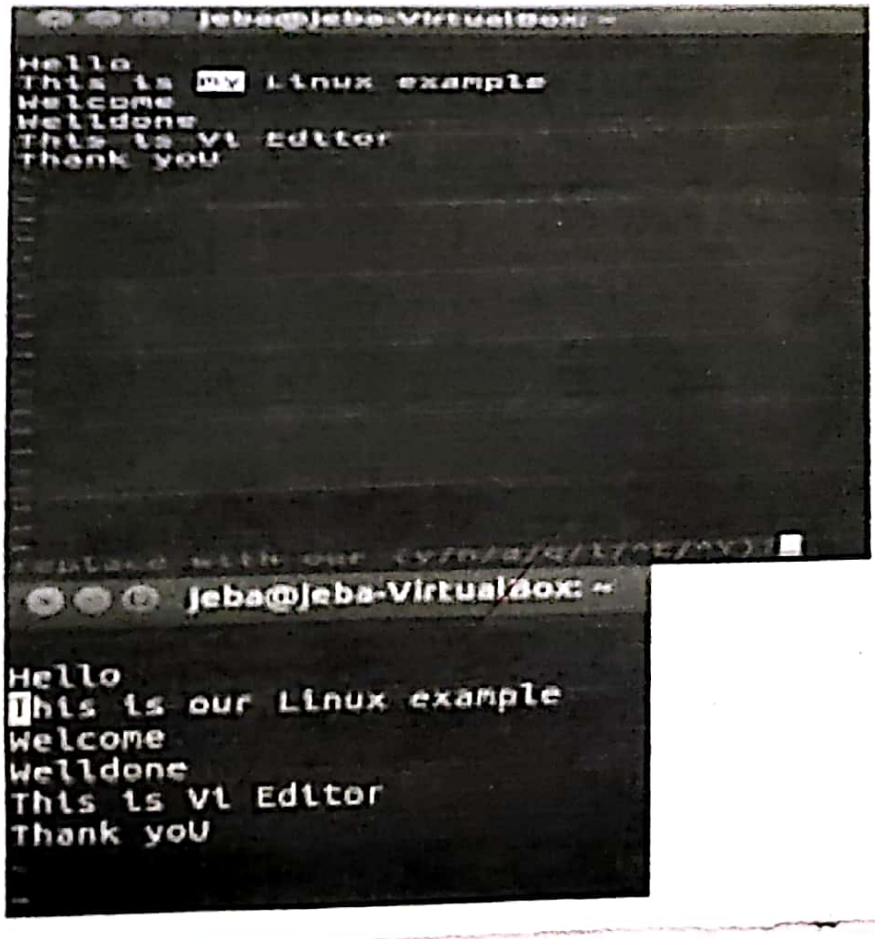
→ :/g/ word to be replaced /s// new world/ gc.

ii) Highlight

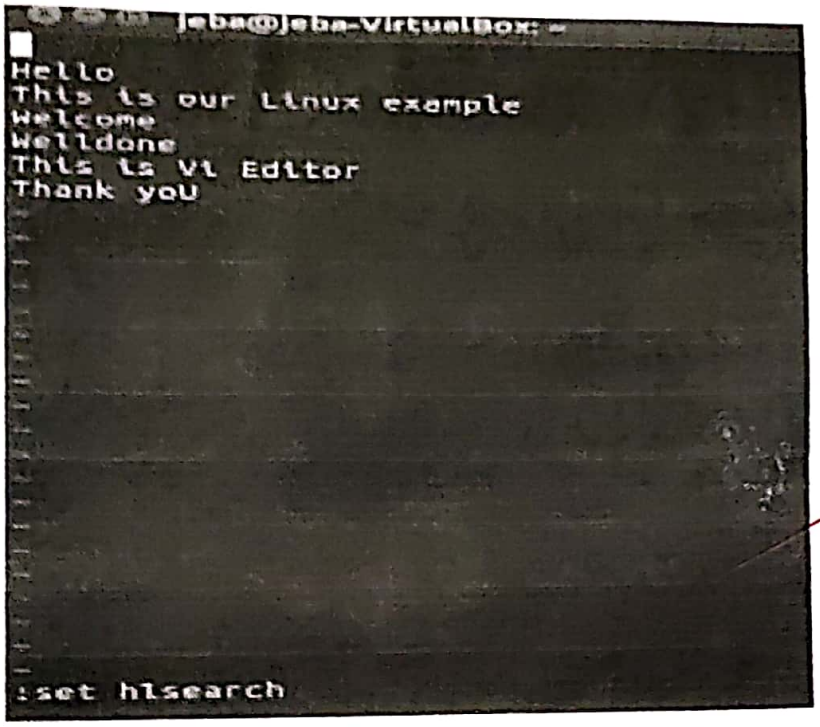
→ Use set hlsearch

iii) Show the line number.

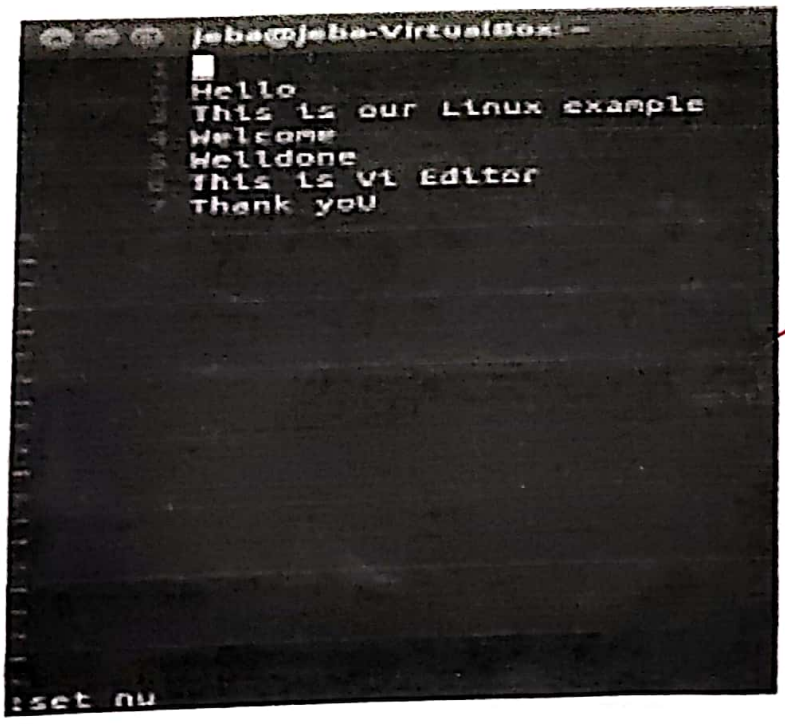
→ Use set nu.



ii)



iii)



22/01

PRACTICAL – 8

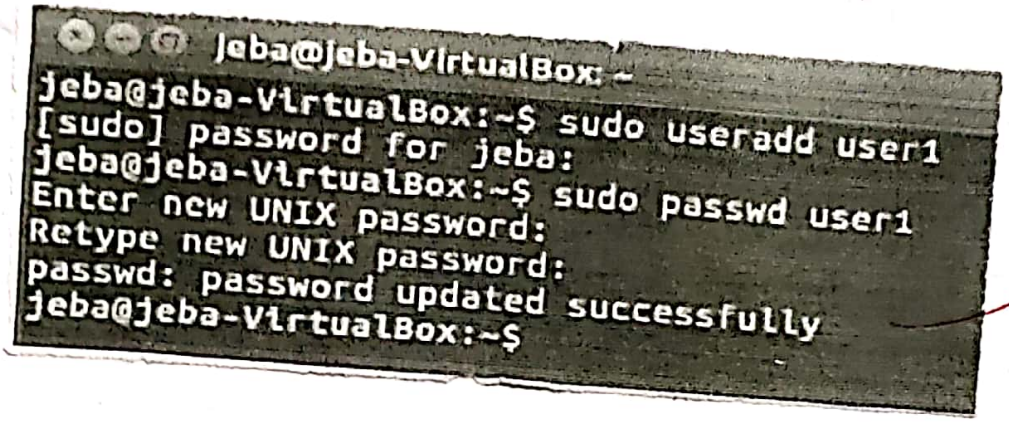
AIM : Linux Security

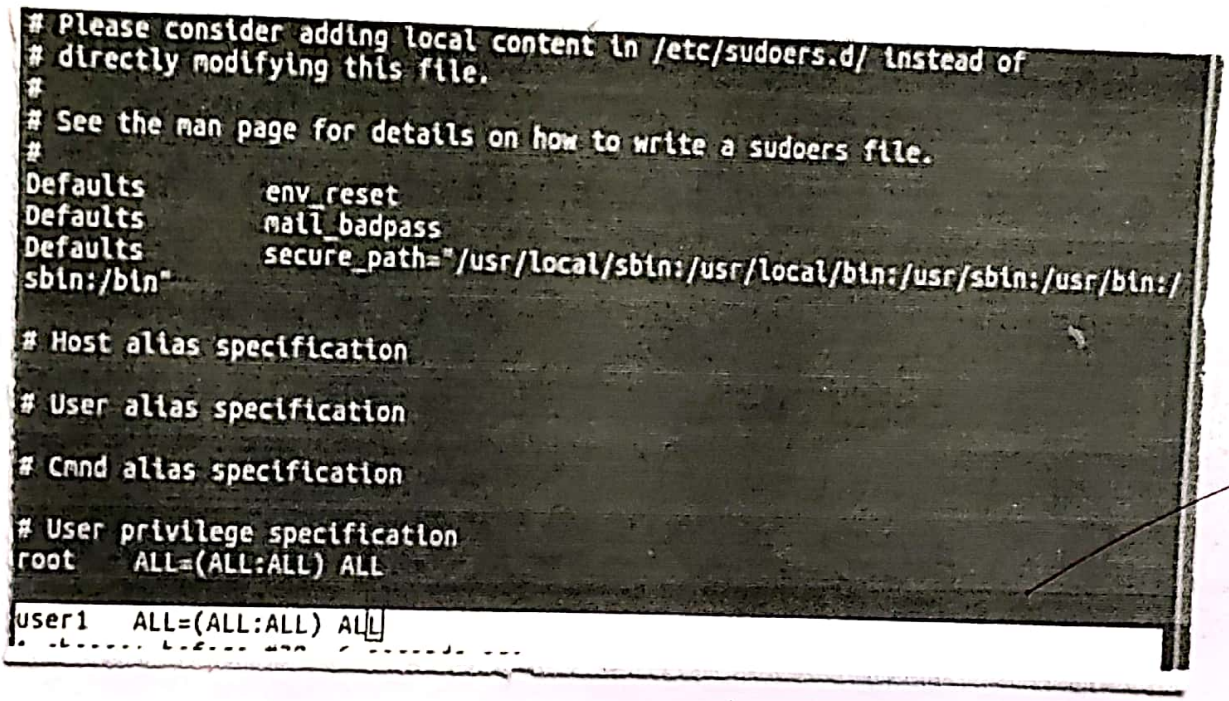
Use of sudo to change user privileges to root.

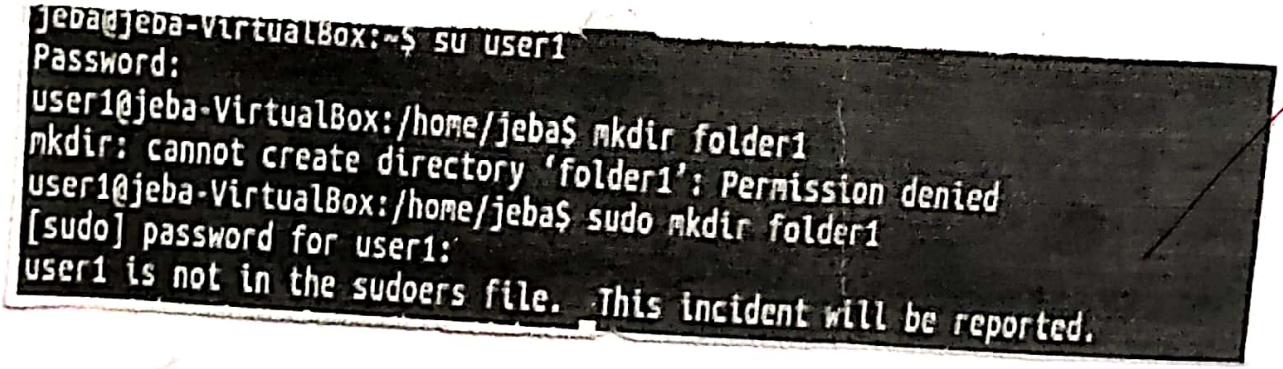
→ Create an user named user1

To give some users root privileges edit /etc/sudoers using visudo. Enter new line as highlighted below.

Identify operations that require sudo privileges.







c) Modify expiration date for new user using password ageing.

→ -E : Expiration Date

-m : Minimum number of days before password change.

-M : Number of days password is valid

-I : Account inactive

-W : Number of days of warming before a password change is required.

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                                    : Jan 20, 2020
Password expires                                        : never
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 99999
Number of days of warning before password expires       : 7
```

```
jeba@jeba-VirtualBox:~$ sudo chage user1
Changing the aging information for user1
Enter the new value, or press ENTER for the default

        Minimum Password Age [0]: 100
        Maximum Password Age [99999]: 200
        Last Password Change (YYYY-MM-DD) [2020-01-20]: 2020-01-21
        Password Expiration Warning [7]: 5
        Password Inactive [-1]:
        Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                                    : Jan 21, 2020
Password expires                                        : Aug 08, 2020
Password inactive                                       : never
Account expires                                         : Jan 31, 2020
Minimum number of days between password change          : 100
Maximum number of days between password change          : 200
Number of days of warning before password expires       : 5
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ sudo chage -E 25/01/2020 -m 10 -M 90 -I 30 -W 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                                    : Jan 21, 2020
Password expires                                        : Apr 20, 2020
Password inactive                                       : May 20, 2020
Account expires                                         : Jan 01, 2022
Minimum number of days between password change          : 10
Maximum number of days between password change          : 90
Number of days of warning before password expires       : 30
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ sudo userdel user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ su user1
No passwd entry for user 'user1'
jeba@jeba-VirtualBox:~$
```

5) Delete newly added user.

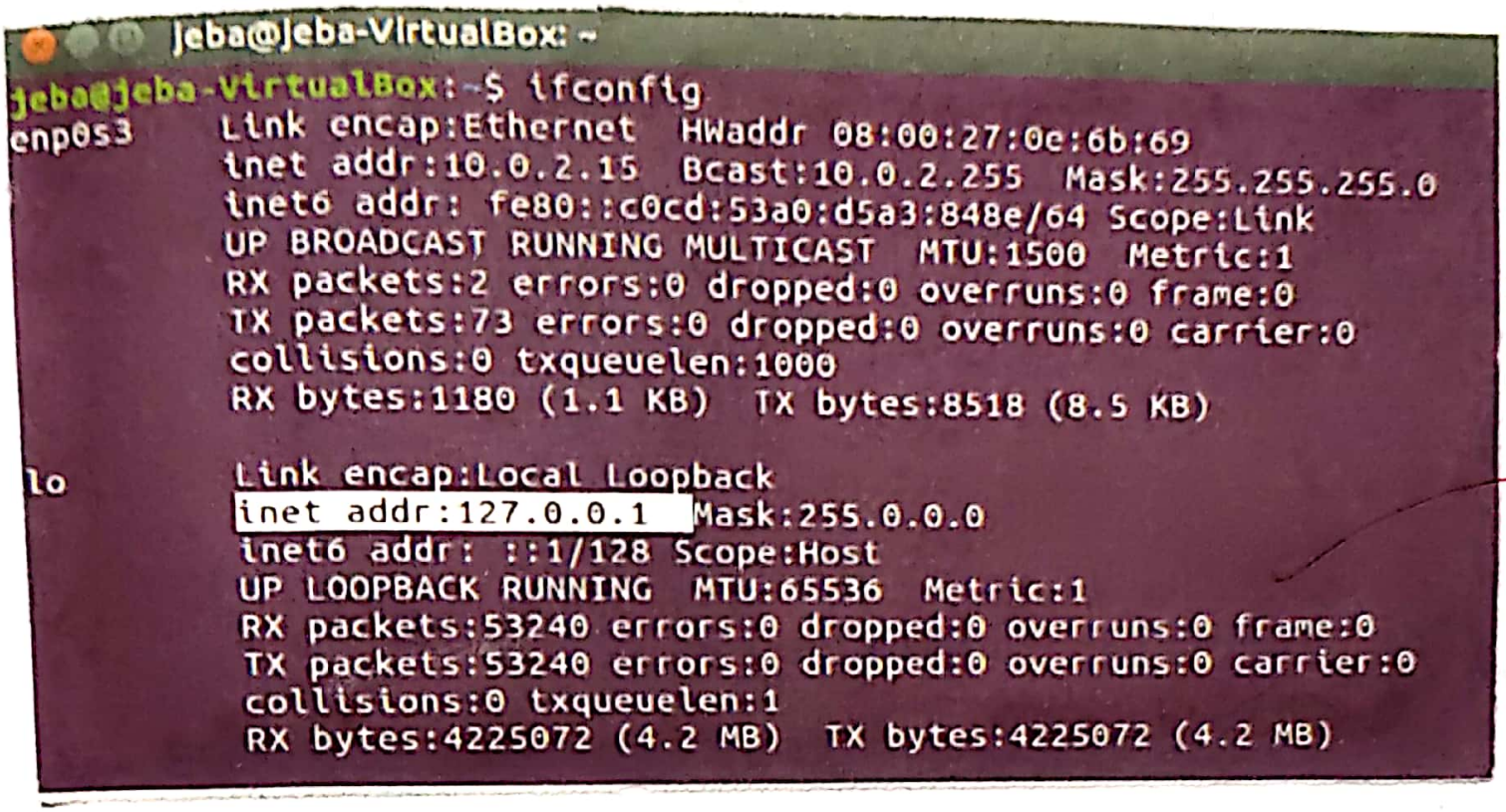
06/02

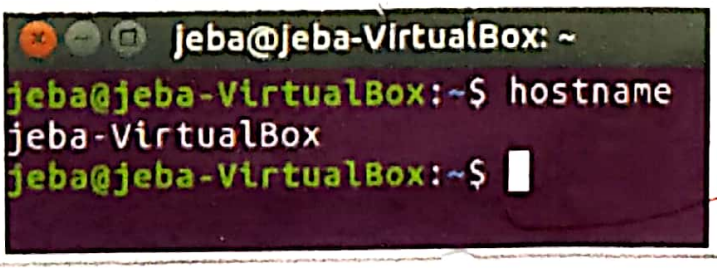
PRACTICAL – 9

AIM : Network Management.

A) Get IP address of your machine using ifconfig.

B) Get hostname of your machine.





c) Use ping to check the network connectivity to remote machines.

```
jeba@jeba-VirtualBox:~$ ping www.google.com
PING www.google.com (172.217.31.196) 56(84) bytes of data.
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=
97.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=
82.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=
84.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=
87.1 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=
93.5 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=
86.9 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=
98.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=
90.9 ms
^Z
[1]+  Stopped                 ping www.google.com
jeba@jeba-VirtualBox:~$
```

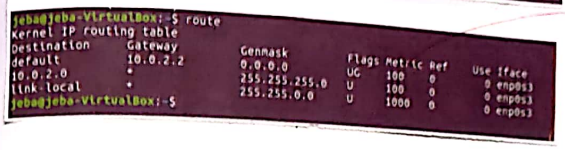
d) Use of dig command.

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ dig www.google.com

; <<>> DiG 9.10.3-P4-Ubuntu <<>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 52068
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.google.com.                        IN      A

;; ANSWER SECTION:
www.google.com.         91      IN      A       172.217.166.100

;; Query time: 152 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Mon Jan 20 22:40:06 IST 2020
;; MSG SIZE  rcvd: 59

jeba@jeba-VirtualBox:~$
```

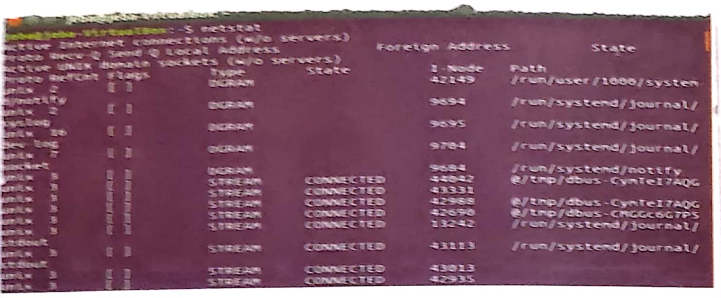
E) Troubleshooting network using traceroute, route command.

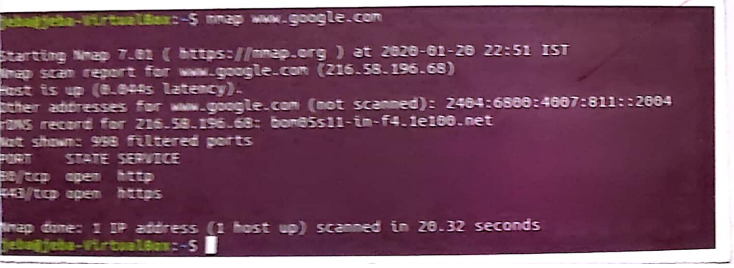
F) Use of arp command.

G) Use of host command.



1) Use of netstat command and Nmap command.





06/01

PRACTICAL-10

AIM : Shell Scripting

→ Basics of shell scripting :

a) To get a shell, you need to start a termin

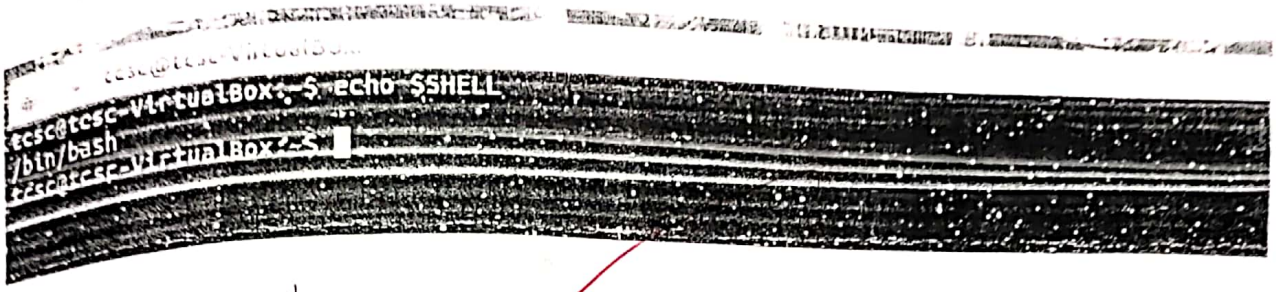
b) To see what shell you have, run :
echo $SHELL

c) In Linux, the dollar sign ($) stands for sh
variable.

d) The echo command just returns whatever
you type in.

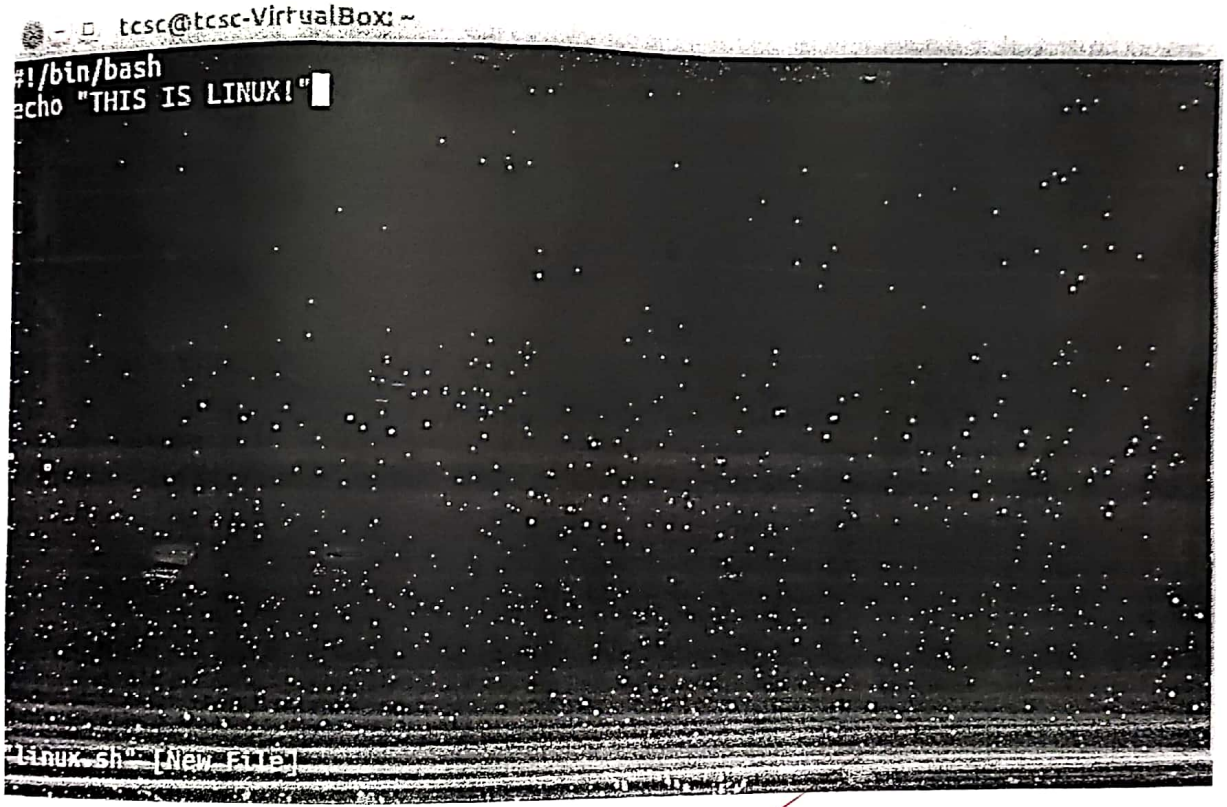
e) #!/bin/bash - It is called shebang. It is
written at the top of a shell script
and it passes the instruction to the progr
/bin/bash

Echo $SHELL

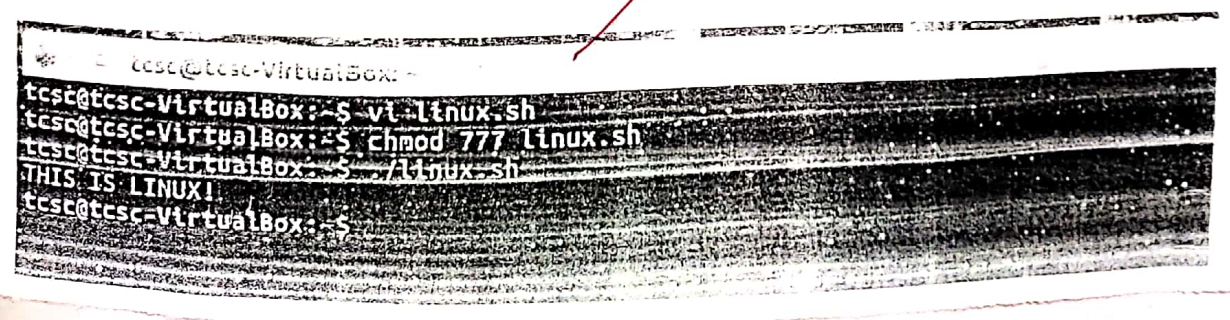


- vi filename.sh

```
#!/bin/bash
echo"THIS IS LINUX!"
```



- Chmod 777 filename.sh
  ./ filename.sh



Step to write and execute a shell script.

Shell script is just a simple text file with .sh extension, having executable permission.

a) Open terminal

b) Navigate to the place where you want to create script using cd command.

c) Touch filename.sh

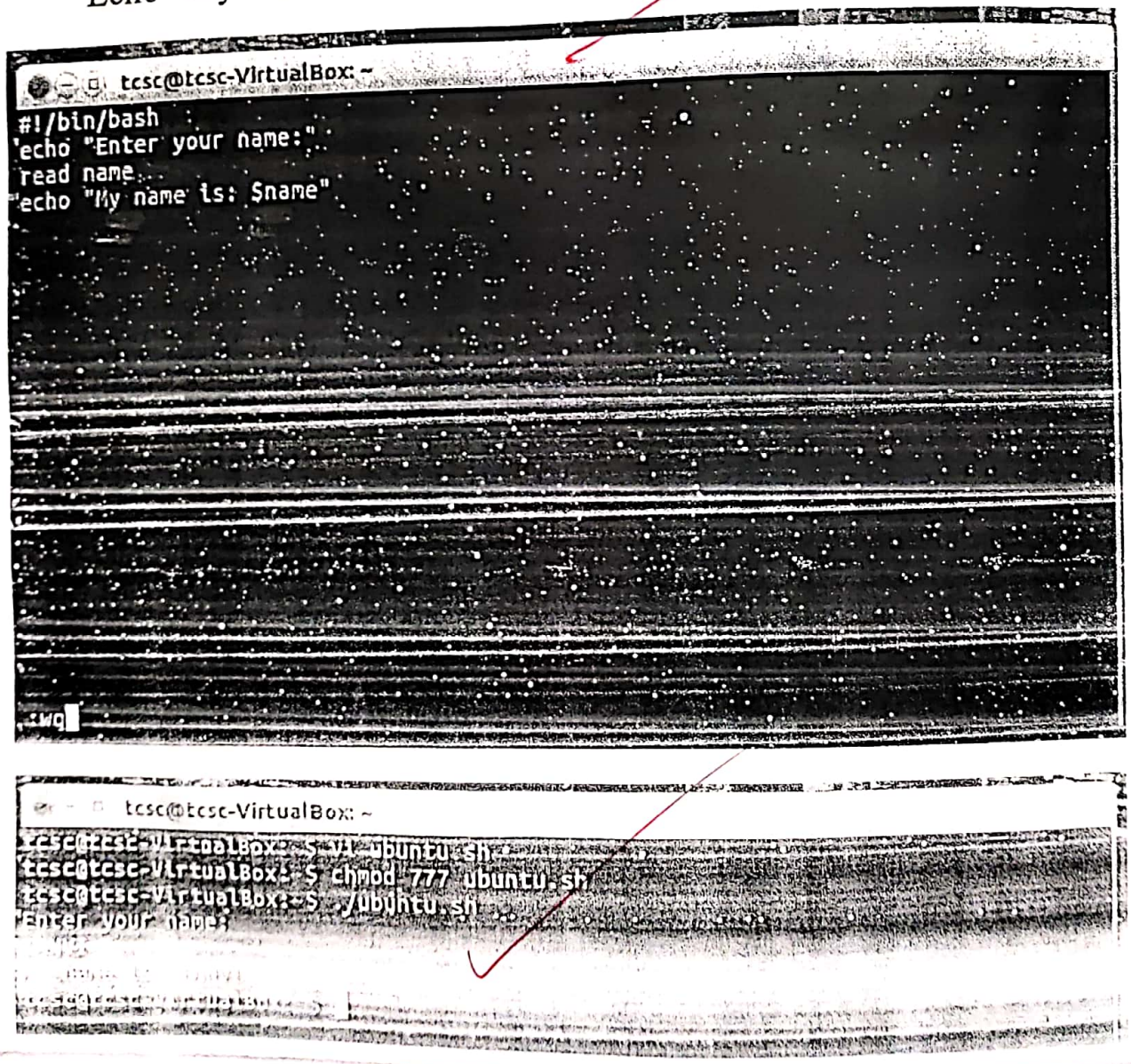
d) Vi filename.sh [You can use your favourite editor, to edit the script]

e) Chmod 777 filename.sh (for making the script executable)

f) sh filename.sh or ./filename.sh (for running the script)

Program to display your name

```
#!/bin/bash
Echo "Enter your name:"
Read name
Echo "My name is:$name"
```

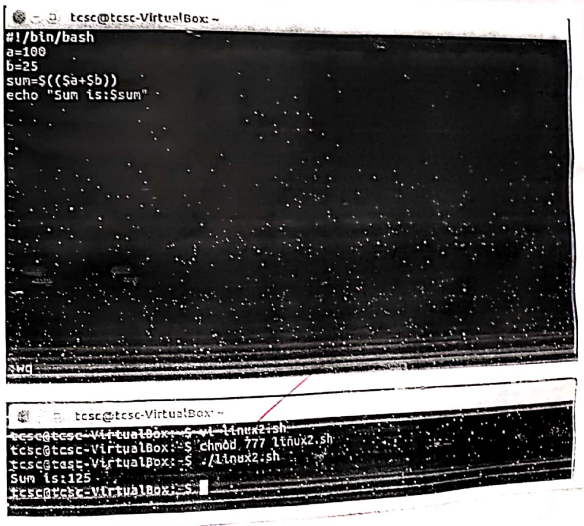


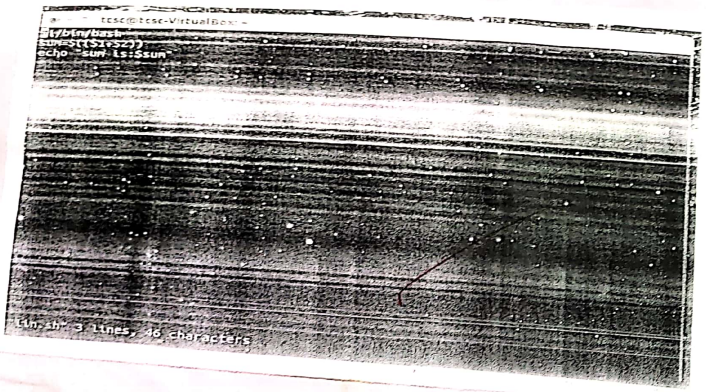
→ Program to find the sum of two variables.

Program to find the sum of two variables

vi filename.sh

```
#!/bin/bash
a=100
b=25
Sum=$(($a+$b))
Echo "sum is:$sum"
```






```
tcsc@tcsc-VirtualBox:~$ vi lin.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 lin.sh
tcsc@tcsc-VirtualBox:~$ ./lin.sh 50 70
sum is:120
tcsc@tcsc-VirtualBox:~$
```


→ Program to find the sum of two numbers (values passed during execution)

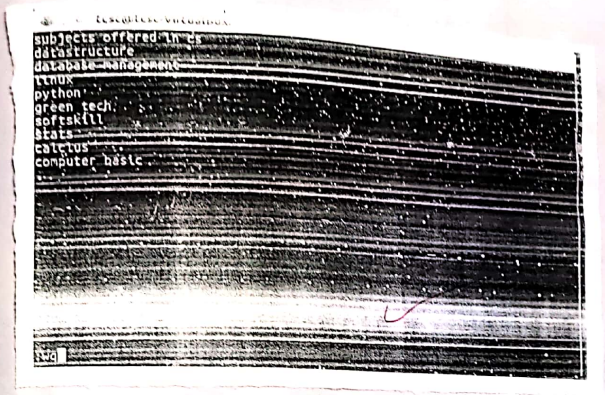
→ Sed

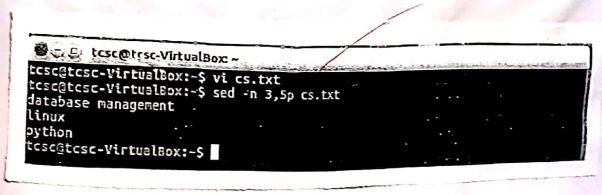
Sed command or Stream Editor is very powerful utility offered by Linux systems. It is mainly used for text substitution, find and replace but it can perform other text manipulations like insertion, deletion, search, etc. With sed, we can edit complete files without actually having to open it

Consider the following text file -

1) Displaying partial text of a file

⟹ With sed, we can view only part of a file rather than seeing whole file.





```
tcsc@tcsc-VirtualBox:~$ sed 3,5d cs.txt
subjects offered in cs
datastructure
green tech
softskill
stats
calclus
computer basic
tcsc@tcsc-VirtualBox:~$
```

```
tcsc@tcsc-VirtualBox: ~
tcsc@tcsc-VirtualBox:~$ vi linux.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 linux.sh
tcsc@tcsc-VirtualBox:~$ ./linux.sh
THIS IS LINUX!
tcsc@tcsc-VirtualBox:~$
```

```
tcsc@tcsc-VirtualBox:~$ sed -n 3,5p cs/computer/cs.txt
subjects offered in computer
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
```


2) Display all except some lines

⇒ To display all content of a file except for some portion, use option 'd'.

3) Deleting a line

⇒ To delete a line, use line number followed by 'd'.

4) Search and Replacing a string

⇒ 's' option is for searching a word.

5) Replace a string on a particular line

⇒ To replace a string on a particular line, use line number with 's' option.

6) Add a line after / before the matched string

⇒ To add a new line with some content after every pattern match, use option 'a'.

⇒ To add a new line with some content before every pattern match, use option 'i'.

```
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
```

```
subjects offered in cs
"this is linux"
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
tcsc@tcsc-VirtualBox: $
```

```
"this is linux"
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
tcsc@tcsc-VirtualBox: $
```

```
tcsc@tcsc-VirtualBox:~$ sed '/linux/c "this is linux"' cs.txt
subjects offered in cs
datastructure
database management
"this is linux"
python
green tech
softskill
stats
calclus
computer basic
```

```
tcsc@tcsc-VirtualBox:~$ sed -e 's/.*/Thanks &/' cs.txt
Thanks subjects offered in cs
Thanks datastructure
Thanks database management
Thanks linux
Thanks python
Thanks green tech
Thanks softskill
Thanks stats
Thanks calclus
Thanks computer basic
```


7) To change a whole line with matched pattern.

⇒ To change a whole line to a new line when a search pattern matches, use option 'c'

8) Appending lines.

⇒ To add some content before every line with sed, use * and & as follows.

11/02