2. Allocate drive space

- Use this checkbox to choose whether you had like to install Ubuntu alongside another operating system, delete your existing operating

c. Allocate drive space:

→ i. Use the checkboxes to choose whether you like to Install ubuntu alongside an OS., delete your existing O.S. and it with ubuntu alongside another O.s
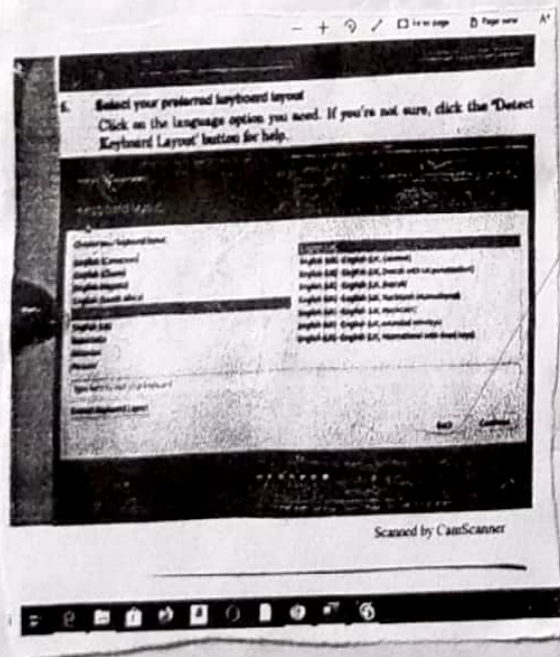
d) Begin the installation

→ i. Depending on your previous selections can now verify that you have ch the way you would like to install Ubuntu.

? The installation process will begin when click the Install Now.

3. Ubuntu need about 4.5GB to install so a few extra GB to allow for your fi

e) Selection your updates

→ i. If you're connected to the internet this shou
b) done automatically check your local
is set count to click for ward to proceed.
your time zone

6. Select your preferred keyboard layout

Click on the language option you need. If you're not sure, click the 'Detect Keyboard Layout' button for help.

6. Select your preferred keyboard layout

Click on the language option you need. If you're not sure, click the 'Detect Keyboard Layout' button for help.
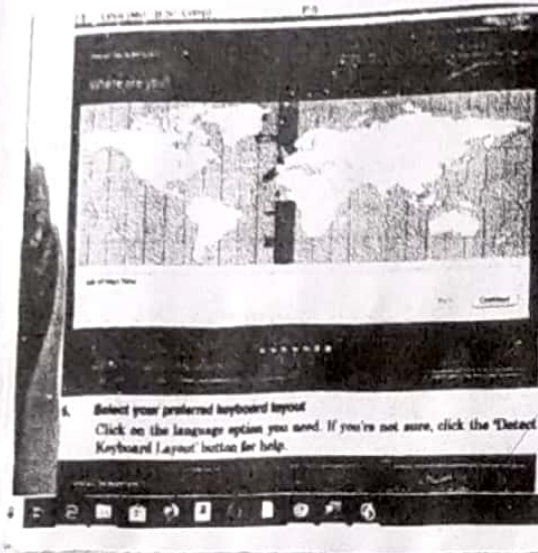
* Change the size or rotation of the screen

→1. You can change how big things are on the screen, by changing the screen resolution.
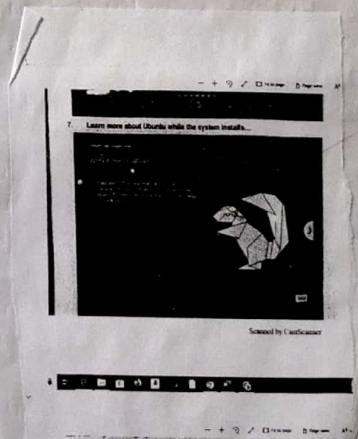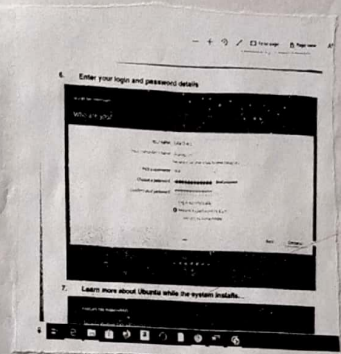
2. You can change which way up things appear by changing the rotation.

1) Click on the icon on the very right of the menu bar & select system settings

2) Open screen display

3) Select your desired resolution & rotation

4) Click apply the new setting will be applied for 30 seconds before reverting back. That way, if you cannot see anything with the new.

Aim:- Installing and removing software

Install gcc packages, verify that it runs and then remove it.

Step 1: First type 'gcc -v' to known if you have already installed gcc compiler or not If the output is blank then it means that you don't have gcc installed

Step 2:- Type 'sudo apt-get install gcc' After typing the foll command installation will take place.

Step 3:- Type 'sudo apt-get get install build essential'. This will install all the libraries required for c & c++ programming languages

Now to uninstall GCC completely?

In GCC 5.1.0 although there ...
top level uninstall target, some dir...
do have it, inparticular gcc, so you
can do

Type :   cd build / gcc
           sudo make uninstall

This does not remove everything th...
was installed, but it removed
major executable like g++, cpp, 1 oth...
in that directories.

Practical-1

Aim:- Utilization of grep commands

Documentation:-

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

b). To find info about any command info commands used. The syntax 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 o/p on your screen.

You can also scroll through your pages using (space + up) & back page = dow(keys) More summarizes form of showing info is the 'man'. The command is same as info but required data.

Output:- This is the info menu. A few usef
info commands 'q' quits:

(?) list all the info commands
(h) starts the info tutorial.
(m) Text into KETU visits. The text inf
(b) Firstly man pages from the end
    line. Bring up the man page fo
    the 'ls' command scroll down to
    the eg. section.

b) To use the 'man' command simply ty
man command name O'
Now we are going to find for the
manual ls command simply type
'man ls'.

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

Ans:) 'Tax', 'zip' are some man pages which
are available for door file compression
simple type : man zip
             man tar
name -> zip - packages and compre
(archive) files.

---

synposis -> zipdote (see separate man page)
           ziphote ("   "   "   ")
           zipsplit ("   "   "   ")   60

use -> ① add -> update existing entries &
       add new files
     ② update -> upadate existing entries if newer
       on file system.
     ③ freshen (f) -> update existing entries of
       an archive if never in file
       system.

man ls :-
Output :- Name + ls - list directories context
          synopsis -> ls [OPTION] --- [File] -

Description:
       - a , - - all
       donot ignore entries standing with
       - A , - - almost - all
       donot list implied , and - -
       - b , - - escape
       print c - style escape for non graphic
       characters
delete (- d) -> select entries in an existing archive
                & ddete them
copy (-u) -> select entries in an existing archive
             & copy them to a new folder.

printf (built-ins) [0] - bash - builtin command

see bash (1)

you can tell what section a item falls in
with 'man -k' equivalent to apropos
command. It will be substring matches too.
so you need to use 'tam' ^ for to limit.

Command line help list the available
options for the mkdir command.

* How can you do this?

> $ mkdir -- m a=

Practical 4:

Aim :- Command line operations.

A] Install new package on your system :-

→ Sudo : apt— gee get install (Package name)

2) B] Remove the package install :

Sudo apt — get remove (Package name)

C] Find the passwd line in 'user' using find command

find /— name pass wd

- /usr / share / doc / nsc /dap-2 53 /pand/p
- /un / bin / Pass wd
- /etc / pand / Pass wd
- /etc / Pass wd

Find the directory passwd file when next one level down

find / man dept 2 - name passwd
- /etc / P ass wd

Find the pseudo code in root 2 level down
find /— max depth 3 — name pass wd.
- /root /bin /pass wd
- /etc /pand /passwd
- /etc /passwd

Find the passwd file bin / sub-directories level 2

find — max depth 3 — maxdepth 5 — name passwd.
- /un /bin /pass wd
- /etc /pand /passwd.

Create a symbollic link to the file you found in next step
Ln - s file 1 , file 2.

Create an empty file 'example .txt' more it to /tmp directory using relative pathname
touch example .txt
mv example .txt

delete the file moved ino /temp in previous method using absolute method.
rm /tmp / example .txt.

Aim :- File operations

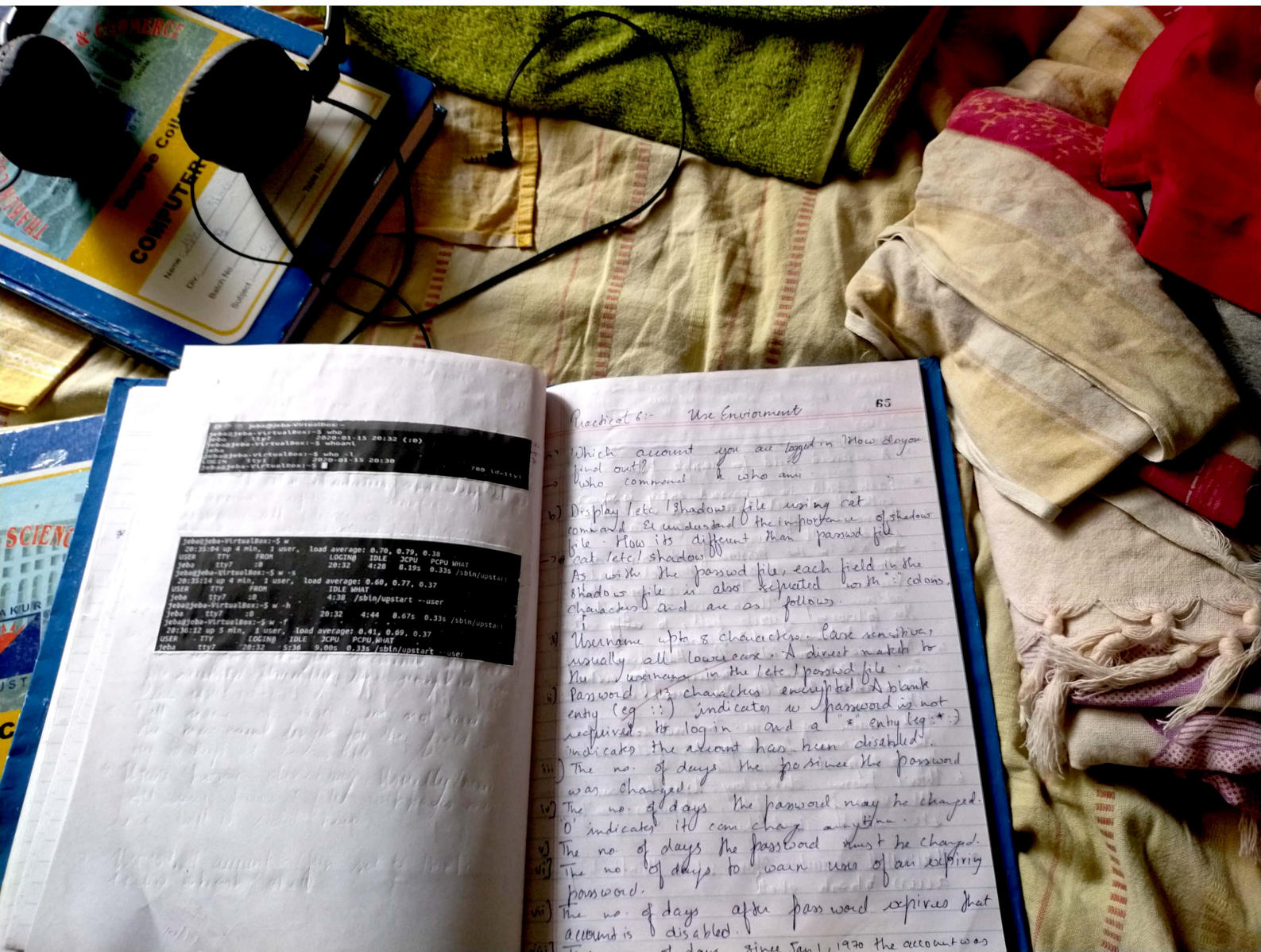plore mounted file system on your computer

f - k

```
Ans: df-k

jebajjeba-VirtualBox -] df
Filesystem    1K-blocks    Used Available Use% mounted on
...
jebajjeba-VirtualBox -]
```

hat are the different ways of exploring
unted file system on linux
ount.

diff command to create diff of two files.
diff filename1 filename2.

```
jeba@...rtualBox:~/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
```

patch command to patch a file and analyse
patch using command again

```
...ualBox:~/jeb$ cat >hi.txt
```

```
jeba@jeba-VirtualBox ~
jeba@jeba-VirtualBox:~$ who
jeba         tty7         2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba@jeba-VirtualBox:~$ who -l 2020-01-15 20:30
LOGIN        tty1                                    780 id-tty1
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ w
 20:35:04 up 4 min,  1 user,  load average: 0.70, 0.79, 0.38
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
jeba     tty7     :0               20:32    4:28   8.19s  0.33s /sbin/upstart
jeba@jeba-VirtualBox:~$ w -s
 20:35:14 up 4 min,  1 user,  load average: 0.60, 0.77, 0.37
USER     TTY      FROM                       IDLE WHAT
jeba     tty7     :0                         4:38  /sbin/upstart --user
jeba@jeba-VirtualBox:~$ w -h
jeba     tty7     :0               20:32    4:44   8.67s  0.33s /sbin/upstart --user
jeba@jeba-VirtualBox:~$ w -f
 20:36:12 up 5 min,  1 user,  load average: 0.41, 0.69, 0.37
USER     TTY      LOGIN@   IDLE   JCPU   PCPU WHAT
jeba     tty7     20:32    5:36   9.00s  0.33s /sbin/upstart --user
```

Practical 6:-   Use Enviroment   65

Which account you are logged in ? how do you
find out ? → who am i
Who command

b) Display /etc/shadow file using cat
command & understand the importance of shadow
file. How its different than passwd file.
cat /etc/shadow

As with the passwd file, each field in the
shadow file is also seperated with ':' colons.
characters and are as follows.

i) Username upto 8 characters. Case sensitive,
usually all lowercase. A direct match to
the username in the /etc/passwd file.
ii) Password 13 characters encrypted. A blank
entry (eg ::) indicates w password is not
required to login and a "*" entry (eg :*:)
indicates the account has been disabled.
iii) The no. of days the positive the password
was changed.
iv) The no. of days the password may be changed.
'0' indicates it can change anytime.
v) The no. of days the password must be changed.
vi) The no. of days to warn user of an expiring
password.
vii) The no. of days after password expires that
account is disabled.
viii) days since Jan 1, 1970 the account was

```
jeba-VirtualBox:~$ sudo cat /etc/passwd
:0:0:root:/root:/bin/bash
:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
2:2:bin:/bin:/usr/sbin/nologin
3:3:sys:/dev:/usr/sbin/nologin
:4:65534:sync:/bin:/bin/sync
x:5:60:games:/usr/games:/usr/sbin/nologin
6:12:man:/var/cache/man:/usr/sbin/nologin
7:7:lp:/var/spool/lpd:/usr/sbin/nologin
:8:8:mail:/var/mail:/usr/sbin/nologin
:9:9:news:/var/spool/news:/usr/sbin/nologin
:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
x:13:13:proxy:/bin:/usr/sbin/nologin
ta:x:33:33:www-data:/var/www:/usr/sbin/nologin
:x:34:34:backup:/var/backups:/usr/sbin/nologin
:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
```

get your current working directory

pwd

```
jeba@jeba-VirtualBox ~
jeba@jeba-VirtualBox:~$ pwd
/home/jeba
jeba@jeba-VirtualBox:~$
```

xplore different ways of getting command history
ow to run previously executed command without trying it
history
! line-number.

Create , modify , search & navigate a file in editor

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

Modifying Modifying the file
To modify a file on the vi editors , type 'o'

Search in a file
To find a word press / followed by the word to search

Navigate :
Movement in 4 directions.

Key	Action
K	Moves cursor up
j	Moves cursor down
h	Moves cursor left
L	Moves cursor right.

Word Navigation

```
⊗ ⊙ ⊕  jeba@jeba-VirtualBox ~
Hello
This is our Linux example
Welcome
Welldone
This is Vi Editor
Thank you
~
~
~
~
~
~
~
~
~
~
~
~
~
~
:set hlsearch
```

Show the line number

Use **set nu**

```
⊗ ⊙ ⊕  jeba@jeba-VirtualBox: ~
  1
  2  Hello
  3  This is our Linux example
  4  Welcome
  5  Welldone
  6  This is Vi Editor
  7  Thank you
~
~
~
~
~
~
~
~
~
~
~
:set nu
```

Practical 8 :- Linux Security

a) Use of sudo to change user privileges to root.

→ Create an user named user 1.

```
○○○  jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ sudo useradd user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ sudo passwd user1
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
jeba@jeba-VirtualBox:~$
```

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

```
# Please consider adding local content in /etc/sudoers.d/ instead of
```

```
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:~$
```

E - Expiration date

m - minimum no. of days before password change

M - No. of days password is valid.

I - Account inactive

W - No. of days of warning before password change is
required.

d) Delete Newly add user :-

```
⊗⊝⊙  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:~$
```

Practical 9:-   71

Get IP address of your machine using ifconfig

```
jeba@jeba-VirtualBox: ~

jeba@jeba-VirtualBox:~$ ifconfig
enp0s3    Link encap:Ethernet  HWaddr 08:00:27:0e:6b:69
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::c0cd:53a0:d5a3:848e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2 errors:0 dropped:0 overruns:0 frame:0
          TX packets:73 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1180 (1.1 KB)  TX bytes:8518 (8.5 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:53240 errors:0 dropped:0 overruns:0 frame:0
          TX packets:53240 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:4225072 (4.2 MB)  TX bytes:4225072 (4.2 MB)
```

rouble shooting network using traceroute command.

Troubleshooting network using traceroute, route command

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (172.217.166.100), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.190 ms  0.143 ms  0.151 ms
 2  * * *
 3  10.0.2.2 (10.0.2.2)  68.568 ms  68.486 ms  68.405 ms
jeba@jeba-VirtualBox:~$
```

use of arp command

Practical 10:-

Aim :- Shell Scripting

Basics of shell scripting

) To get a shell you need to start a
terminal
) To see what shell you have run :
echo $ shell SHELL
) In linux the '$' sign stands for shell
variable

) The echo command returns whatever you type
in
) #!/bin/bash - It is called she-bang. It is
written at a top of shell script and passes
instruction to the program /bin/bash
Echo $ shell

rogram to display your name

-!/bin /bash

ho "Echo your name"

ead name

ho "My name is : $name"

```
t/bin/bash
echo "Enter your name:"
read name
echo :My name is: $name"
```

```
tcsc@tcsc-VirtualBox: ~
tcsc@tcsc-VirtualBox:~$ vi ubuntu.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 ubuntu.sh
tcsc@tcsc-VirtualBox:~$ ./ubuntu.sh ·
Enter your name:
TANVI
My name is: TANVI
tcsc@tcsc-VirtualBox:~$
```

Program to find sum of 2 variables

i filename.sh

! /bin /bash

=100

=25

um = $(($a + $b))

echo " sum is: $sum"

```
tcsc@tcsc-VirtualBox:~$ sed 's/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'

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

4) Replace a string on a particular line
→ To replace a string on particular line use line no. with 's' option.

```
tcsc@tcsc-VirtualBox:~$ sed '6 s/cs/computer system /' cs.txt
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calclus
computer basic
```

3) Deleting a line
→ To delete a line, use line no followed by 'd'.

5) Add a line after / before the matched string.
→ To add a line after / before some content use option a