

## PRACTICAL - 01

Aim - Install your choice of Linux distribution  
eg:- Ubuntu, fedora, debian.

\* Ubuntu : Ubuntu is a free and open source Software based on debian, Ubuntu is officially released under 3 edition desktop, server, union.

All the edition can be runned on the computer alone or a virtual machine.

It is a popular open source Software for cloud computing with support of open stack.

~~Steps for installing ubuntu in a virtual machine.~~

S1: Select a virtual optical or a physical device to start Ubuntu in your virtual machine. Space given to it is 1.8 Gb.

S2: Select the language of your choice and click on 'Install Ubuntu'. You can also 'try Ubuntu' for free on computer device from this co.

es

S4: While configuring installing we need to click 'Erase disk and install Ubuntu'. This step will delete all type.

S5: In this you only needs to choose the location for the disk to work on ubuntu.

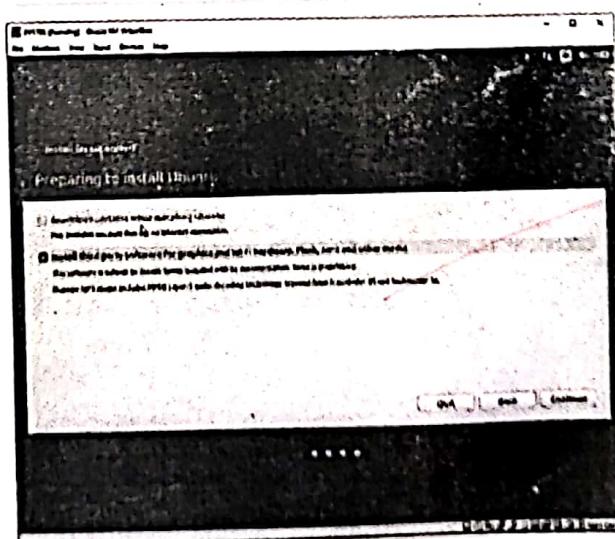
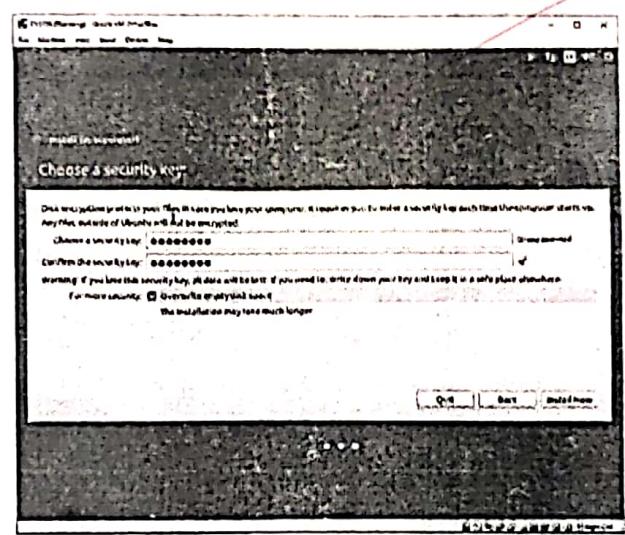
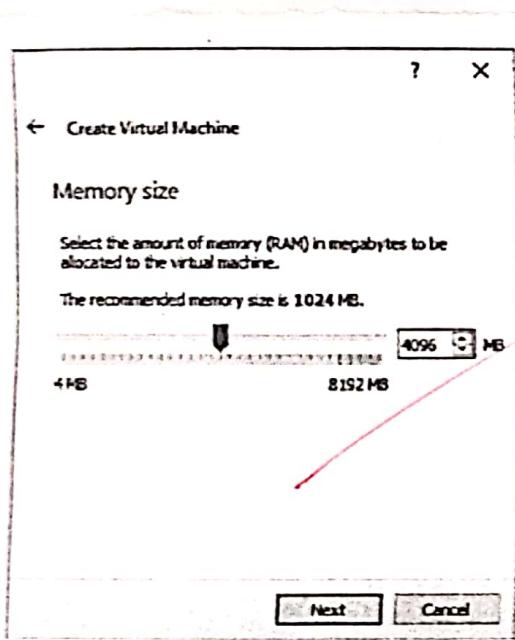
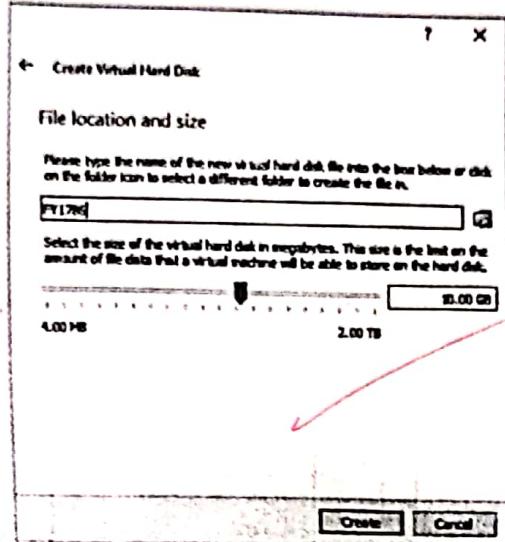
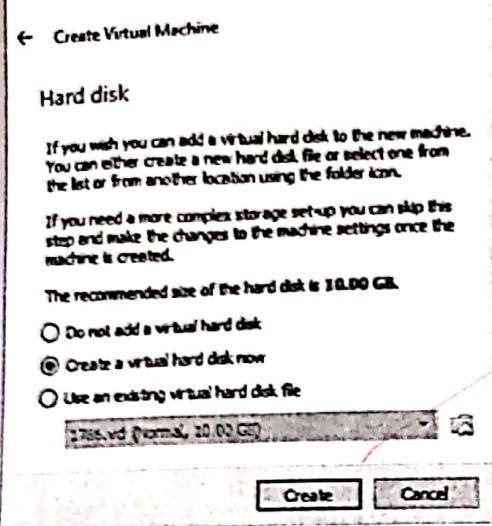
S6: In this type you need to choose username & password for the login in ubuntu & then click on continue.

S7: Here you simple need to enter password again and it is done.

S8: Type name of virtual disk and recommend size to be given is 2048 MB or 276 B.

Therefore, now the virtualization is ready to use.

Therefore, now the virtualization is ready to use.



6) Customize desktop environment by changing different default option like changing screen savers.

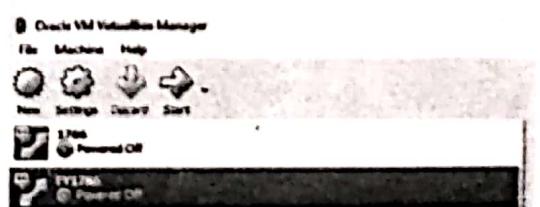
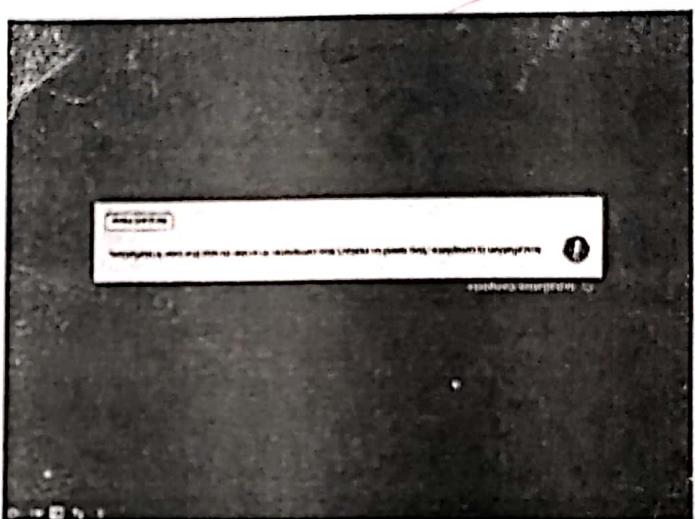
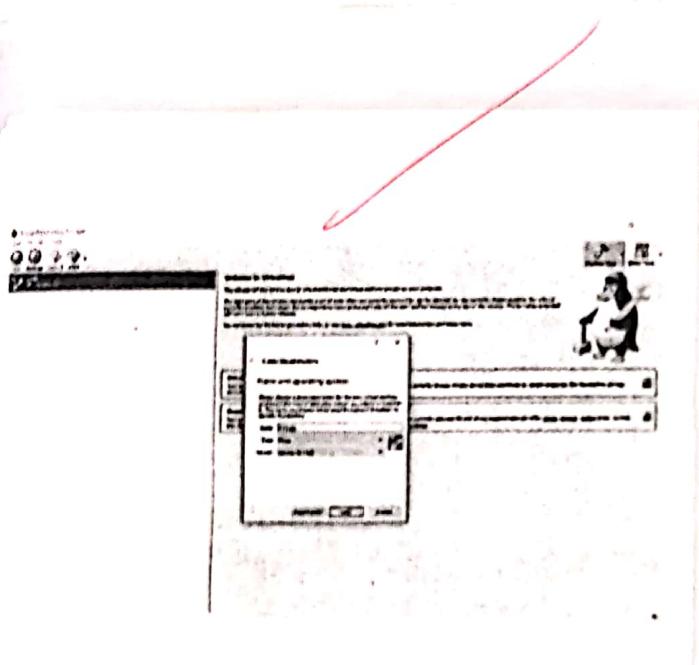
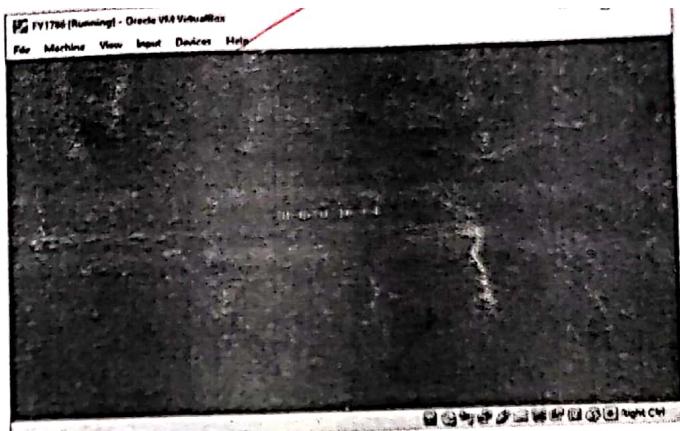
Accessing appearance setting:

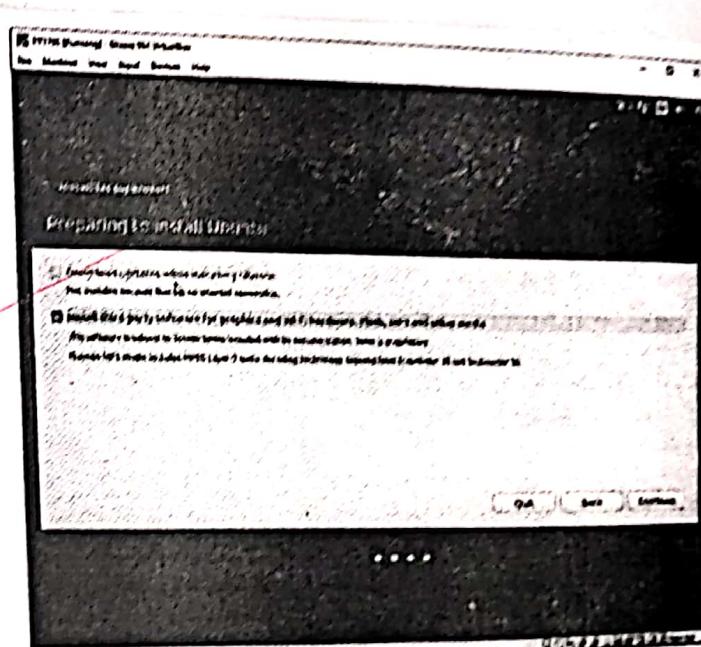
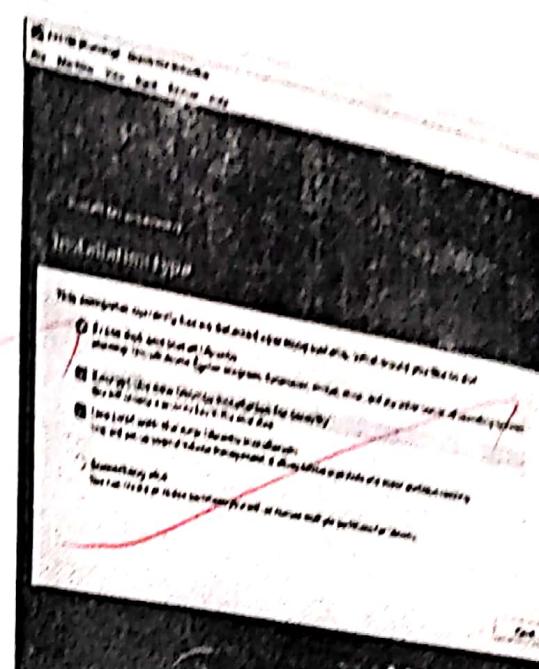
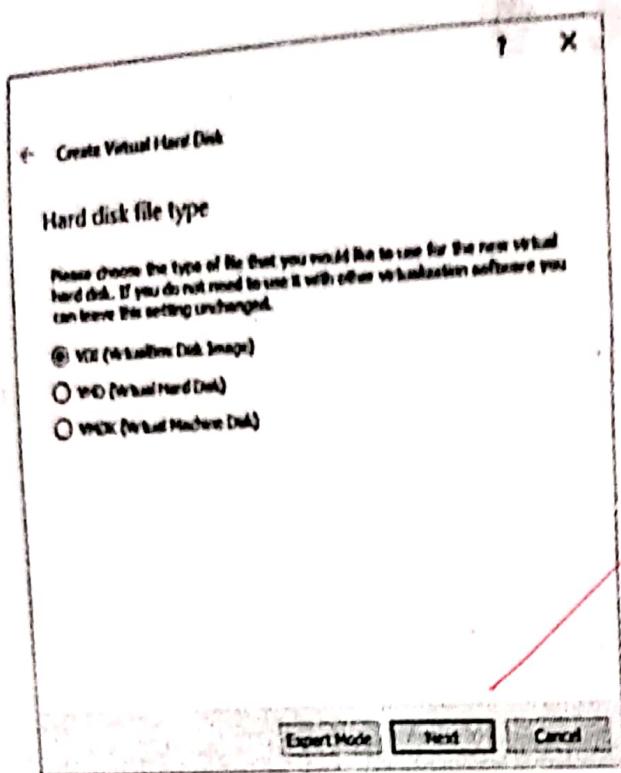
\* Changing wallpaper picture:-

- 1] On the left side of background part, you can see your current wallpaper.
- 2] On the right side is part where we can select one of Ubuntu wallpaper, clicking on any thumbnail our wallpaper will be changed.
- 3) If you made want to select wallpaper from your Picture folder, click the drop-down menu above thumbnails & select the picture folder.
- 4) You will see all the pictures in your Picture folder as thumbnail; where you can select them as your wallpaper.

To add wallpaper that is in another folder, just click the plus icon below the thumbnails and then in pop-up window select the path to our custom folder & choose the picture inside of it.

- c) Screen Resolution: Ascertaining the current screen resolution for your desktop.
- Changes the size or rotation of screen.
- 1) You can change how big or how detailed things appear on the screen by changing the screen resolution.
- 2) You can change which way up things appear by changing the rotation.
- 3) Click the icon on the very end of the menu bar and select settings.
- 4) Open screen display.
- 5) If you have multiple display & they are not mirrored, you can have different setting on each display.





d) Time setting change the time zone of your system to (or NYT)

1) If you are currently in Indian time how does the displayed time change?

2) After noting the time change back to your local time zone.

3) Just click on the clock on the top bar & choose Time & date settings.

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8.8

## PRACTICAL : 2

Aim: Installing & removing Software

a) Install package, verify that it runs & then remove it.

Step 1: First type 'gcc -v' know if you have already installed gcc compiler or not, that you don't have gcc installed.

Step 2: Type sudo apt-get install gcc. After typing the following command 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 uninstall GCC compiler?

In GCC 5.0, although there is no ~~present~~ uninstall target. Some directions, so you can do.

Type `cd built/gcc`

then `sudo make uninstall`

This does not remove everything like gcc, g++, obj, contained in that directory.

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7/3/17

## PRACTICAL : 3

Aim: Utilization of grep, man commands.

→ Documentation:

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

Ans: To find info about any command 'info' command is used the syntax of info command in info (command).

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

→ Open terminal. (Ctrl+Alt+T)

→ You can also scroll through page using (Space = up) & key.

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

- b) finding man pages from the cmd line  
scroll down to the example section.
- Ans: To use the man command simply type <sup>36</sup> 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  
Ans: 'tar', 'zip' are some pages available for document file compression  
Simply : man zip

Tar(1)

tar - an archiving utility

Synopsis

Traditional usage

tar { a | c | d | x | t | u | z } [options]

UNIX Style usage

tar -A [OPTIONS] ARCHIVE ARCHIVE

tar - C [-F ARCHIVE] [OPTIONS] [FILE...]

- d) finding man pages by section from the cmd line bring up the man page for the printf function.

The number corresponds to what section of the manpage is from; 8 is user command while 8 is sysadmin & stuff. The manpage for itself. Explain it & list the cmd.

8/23/01

## PRACTICAL 4

Command Line Operation

a) Install new package on your system.  
Sudo apt-get install [package name]

b) Remove the package installed

Sudo apt-get remove (Package name)

c) Find the password file in using / find command

\* # find / - name password

- /usr/share/doc/nss-cldap

- 255 (Pam.d / password)

- /usr/bin/passwd

- etc/pam.d / Password

- etc / Password

# find the directory password file under root & one level down

# find name / - max depth  
2-name password

- /etc / password

58

find the password file under  
and level down

# find / - maxdepth 3 - name  
password

- /usr/bin/passwd

- /etc/pam.d/passwd

# find - max depth 3 - name  
password

- /usr/bin/passwd

- /etc/pam.d/passwd

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

# ln -s file /file?

Create an empty file example  
& move it to /tmp directory  
using relative path name.

# touch example.txt

# mv example.txt /tmp

f) delete the file moved to /tmp in previous step by absolute method.

# rm /tmp /example.txt

g) find the location of ls, ps, bash commands.

# whereis ls

ls: /bin /s /user /share /man  
 /man /ls -l.gz

# whereis ps

ps: bin /ps /usr /share /man /ps /  
 /usr /share /man /man /ps /gz,

# whereis bash

bash: /bin /bash /etc /bash /bashrc /  
 /usr /share /man /man /bash /gz

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## PRACTICAL : 5

Aim :

i) Explore mounted file system on computer.

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
udev	494436	0	494436	0%	/dev
tmpfs	162416	3676	96740	4%	/run
/dev/sda1	7892728	3383372	3326824	51%	/
tmpfs	512876	216	511668	1%	/dev/shm
tmpfs	5120	4	5116	1%	/run/lock
tmpfs	512876	0	512876	0%	/sys/fs/cgroup
tmpfs	162416	48	162368	1%	/run/user/1000

2) What are the different ways of exploring mounted file system on Linux?

Ans: mount

40

```
jeb@jeb-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 (rw,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/lib/systemd/systemd-cgroups-agent,name=systemd,nsroot=/)
pstree on /sys/fs/pstree type pstree (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,nsroot=/)
cgrpup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsroot=/)
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_event,nsroot=/)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsroot=/)
'systemd-1' on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)
hugetlbfss on /dev/hugepages type hugetlbfss (rw,relatime)
```

### 3) Copying text from files .

Ans: cp command, mv command

```
jeba@jeba-VirtualBox: ~ $ ls
Desktop  Downloads  Music  Public  Videos
Documents  examples.desktop  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$
```

4) Archiving and backup the work done using tar, gzip and bzip2 commands  
Ans: `gzip filename.txt`

Ans: ~~g3ip~~ g3ip filename.txt

```
jeba@jeba-VirtualBox:~/jeb$ bzip2 ss.txt  
jeba@jeba-VirtualBox:~/jeb$ ls  
dd.txt  
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt.bz2  
BZh91AY&SY00000000  
'Jew$S00000001 jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt  
jeba@jeba-VirtualBox:~/jeb$ ls  
..  
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz  
00000d.txt+0eI+M.....+00000Xz jeba@jeba-VirtualBox:~/jeb$
```

5) Use diff commands to create diff of two files  
Ans: diff file1 filename2.

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

c) Use Patch command to patch file. And analyze the patch using patch command again

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

99  
730

## PRACTICAL - 6

a)

### Use Environment

- 1) Which account you are logged in?  
How do you find out?

Ans: who command & whoami

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

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

Ans: cat /etc/shadow

Ans with the password file, each field in the shadow file is also separated with ":" colon characters - & are as follows

- Username, up to 8 characters. Case-sensitive, usually all lower. A direct match to the 'username' in etc/pwd file
- Password, 13 character encrypted. Blank entry (eg::) or a "\*" entry (eg.:\*:) indicates the account has been disabled.
- The number of days (since January 1, 1970) since the password was last changed.
- The number of days before password may be changed (0 indicate it may change at any time)
- The number of days after which password must be changed (gggggg indicates user can keep his/her password unchanged for many years).
- The number of days to warn user of an expiring password (7, for full week)
- The number of days after password expires that an account is disabled.
- The number of days since January 1, 1970 account is disabled.
- A reserved file for possible future use.

```
jeba@jeba-VirtualBox: ~ $ sudo cat /etc/shadow
[sudo] password for jeba:
root::18240:0:99999:7:::
daemon::16911:0:99999:7:::
bin::16911:0:99999:7:::
sys::16911:0:99999:7:::
sync::16911:0:99999:7:::
games::16911:0:99999:7:::
man::16911:0:99999:7:::
lp::16911:0:99999:7:::
mail::16911:0:99999:7:::
news::16911:0:99999:7:::
```

Each field in passwd entry is separated with ":" colon character & are as follows

- Username up to 8 characters. Case sensitive, usually all lowercase.
- An "x" in the password field. Password are stored in the "/etc/shadow" file
- Numeric user id. This assigned "address" script. Unix uses this field, plus the following group field, to identify which files belong to user.
- Numeric group id. Red Hat uses group id in a fairly unique manner for enhanced file security. Usually the group id will match the user id.
- User's home directory. Usually, home 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).

```
jeba@jeba-VirtualBox: $ sudo cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/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:mail:/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
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
```

e) Get your current working directory  
Ans : pwd.

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

d) Explore different ways of getting command history , how to run previous executed command without typing it.

Ans: History ! line number

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox: $ .history
1 who
2 whoami
3 who -l
4 clear
5 N
6 w -s
7 w -h
8 w -f :
9 clear
10 cat /etc/shadow
11 sudo cat /etc/shadow
12 clear
13 sudo cat /etc/passwd
14 pwd
15 clear
16 history
jeba@jeba-VirtualBox: $ !3
wha -l .
LOGIN . tty1 2020-01-15 20:30
jeba@jeba-VirtualBox: $ !
```

e) Create Alias to most commonly used command

Ans: alias label \* = "command"

```
jeba@jeba-VirtualBox: $ alias m="mkdir new"
jeba@jeba-VirtualBox: $ m
jeba@jeba-VirtualBox: $ ls
:.. .. desktop examples new Pictures Videos
jeba@jeba-VirtualBox: $
```

# PRACTICAL : 7

- i) Create, modify, Search & navigate a file in editor.
- ii) Creating a file  
To create a file on the terminal type 'vi' followed by filename.
- iii) To modify a file on the vi editor type '0'.
- iv) Search in file:  
To find a word press / followed by word to search.
- v) Navigate:
- | Key | Action          |
|-----|-----------------|
| k   | Moves cursor up |
| j   | down            |
| h   | left            |
| i   | Right.          |

## Word Navigation

Key	Action
b	moves back to beginning of word
e	moves forward to the end of word
w	moves forward to beginning of word.
0 (zero)	moves to first character of line
\$	move to end of line.

## Scolling & Inserting Action

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

b) Learn all essential commands like `g`, `/Replace`, `highlight`, `show line numbers`.

i) Replace

Syntax: `19/word to be replaced /S// new word`

```
Jeba@Jeba-VirtualBox ~
Hello
This is my Linux example
Welcome
Welldone
This is Vi Editor
Thank you
:
:g/mys/our/gc
```

Scanned with CamScanner

Java with CR

Android 22 2011

```
jeba@jeba-VirtualBox: ~
Hello
This is my Linux example
Welcome
Welldone
This is vi editor
Thank you
```

```
jeba@jeba-VirtualBox: ~
Hello
This is our Linux example
Welcome
Welldone
This is vi Editor
Thank you
```

34

iii) Highlight  
use set hisearch

```
jeba@jeba-VirtualBox: ~
netto
This is our Linux example
welcome
welldone
This is vi editor
thank you

asset htsearch
```

999) Show the line number  
use set nu

```
jeba@jeba-VirtualBox: ~
[ ] ~
Hello
This is our "Linux" example
welcome
welldone
This is vi "Editor"
thank you;
```

# PRACTICAL 8

## LINUX SECURITY

a)

use of Sudo to change user privilege to root  
create an user named user1

```
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: $
```

```
# Please consider adding local content in /etc/sudoers.d/ instead of  
# directly modifying this file.  
#  
# See the man page for details on how to write a sudoers file.  
#  
Defaults env_reset  
Defaults mail_badpass  
Defaults secure_path=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin/  
/sbin:/bin  
# Host alias specification  
# User alias specification  
# Cmnd alias specification  
# User privilege specification  
root    ALL=(ALL:ALL) ALL  
  
user1  ALL=(ALL:ALL) ALL
```

b) Identify operations that require sudo privilege.

```
jeba@jeba-VirtualBox: ~$ su user1  
Password:  
user1@jeba-VirtualBox: /home/jeba$ mkdir folder1  
mkdir: cannot create directory 'folder1': Permission denied  
user1@jeba:VirtualBox: /home/jeba$ sudo mkdir folder1  
[sudo] password for user1:  
user1 is not in the sudoers file. This incident will be reported.
```

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

Modify expiration date for new user using password ageing.

```
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: $
```

- 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 warning before a password change is required.

d) Delete newly added 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: $
```

~~18  
23/10~~

5A

## PRACTICAL : 9 NETWORK MANAGEMENT.

a) Get IP addresses of your machine using ipconfig

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox: $ ipconfig
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)
```

b) Get hostname of your machine,

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox: $ hostname
jeba-VirtualBox
jeba@jeba-VirtualBox: $
```

c) USE ping to check the network connectivity to remote machine 48

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=
97.1 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
...
[1]+  Stopped                  ping www.google.com
```

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:
; EDNS4 versions: 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.

### Troubleshooting network using traceroute, route command

```
jeba@jeba-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (172.217.100.100), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  6.199 ms  0.143 ms  0.151 ms
 2  * *
 3  10.0.2.2 (10.0.2.2)  63.568 ms  68.436 ms  68.405 ms
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ route
Kernel IP routing table
Destination     Gateway      Genmask      Flags Metric Ref    Use Iface
default        10.0.2.2  0.0.0.0      UG    100    0        0 enp0s3
10.0.2.0       *            255.255.255.0 U     100    0        0 enp0s3
link-local     *            255.255.0.0  U     1000   0        0 enp0s3
jeba@jeba-VirtualBox:~$
```

## f) Use of arp command

```
jeba@jeba-VirtualBox:~$ arp
Address          HWtype  HWaddress          Flags Mask           Iface
10.0.2.2        ether   52:54:00:c2:35:00  C     00:00:00:00:00:00  enp0s3
```

## g) Use of host command

### g) Use of host command

```
jeb@jeba-VirtualBox: $ host -v
host 9.10.3-P4-Ubuntu
jeb@jeba-VirtualBox: $
```

## b) Use of netstat command & Nmap command

```
jeb@jeba-VirtualBox: $ nmap www.google.com
Starting Nmap 7.01 ( https://nmap.org ) at 2020-01-20 22:51 IST
Nmap scan report for www.google.com (216.58.196.68)
Host is up. (0.04s latency).
Other addresses for www.google.com (not scanned): 2404:6800:4007:811::2004
rDNS record for 216.58.196.68: bom05s1f-in-f4.1e100.net
Not shown: 998 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https

Nmap done: 1 IP address (1 host up) scanned in 20.32 seconds
jeb@jeba-VirtualBox: $
```

```
jeb@jeba-VirtualBox: ~
jeb@jeba-VirtualBox: $ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
Active UNIX domain sockets (w/o servers),
Proto RefCnt Flags       Type            State      I-Node Path
unix  2      [ ]        DGRAM           42149  /run/user/1000/system
d/notify
unix  2      [ ]        DGRAM           9694   /run/systemd/journal/
syslog
unix  10     [ ]        DGRAM           9695   /run/systemd/journal/
dev-log
unix  7      [ ]        DGRAM           9704   /run/systemd/journal/
socket
unix  3      [ ]        DGRAM           9684   /run/systemd/notifier
unix  3      [ ]        STREAM           CONNECTED  44042  @/tmp/dbus-Cymt0l7AQG
unix  3      [ ]        STREAM           CONNECTED  88331  @/tmp/dbus-Cymt0l7AQG
unix  3      [ ]        STREAM           CONNECTED  42986  @/tmp/dbus-CMGGcog7H5
unix  3      [ ]        STREAM           CONNECTED  42690  @/tmp/dbus-CMGGcog7H5
unix  3      [ ]        STREAM           CONNECTED  13242  /run/systemd/journal/
stdout
unix  3      [ ]        STREAM           CONNECTED  43113  /run/systemd/journal/
stderr
unix  3      [ ]        STREAM           CONNECTED  43013  "
unix  3      [ ]        STREAM           CONNECTED  42935  "
```

# Practical - 10

- \* Aim : Shell Scripting
- \* Basic of Shell Scripting
  - To get a shell, you need to start a terminal.
  - ~~#!/bin/bash - It is called Shell~~
  - It is written at the

Echo.

```
tcsc@tcsc-VirtualBox: ~
tcsc@tcsc-VirtualBox: ~$ echo $SHELL
/bin/bash
tcsc@tcsc-VirtualBox: ~$
```

1)

- vi filename.sh
- ~~#!/bin/bash~~
- ~~echo "This is Linux!"~~

chmod 777 filename.sh  
./filename.sh

```
tcsc@tcsc-VirtualBox:~$ vi /bin/bash
tcsc@tcsc-VirtualBox:~$ echo "THIS IS LINUX!"
```

2) linux.sh [New File]

Step to write & execute a shell script

- Open terminal
- Navigate
- Touch filename.sh
- chmod 777 filename.sh
- Sh filename.sh or ./filename.sh.

```
tcsc@tcsc-VirtualBox:~$ vi linux2.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 linux2.sh
tcsc@tcsc-VirtualBox:~$ ./linux2.sh
Sum is:125
tcsc@tcsc-VirtualBox:~$
```

Program to display your name

```
#!/bin/bash  
echo "Enter your name".  
read name.  
echo "My name is $ name"
```

3)

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

4)

```
tcsc@tcsc-VirtualBox:~$  
#!/bin/bash  
echo "Enter your name:"  
read name  
echo "My name is: $name"
```

vi filename.sh

#!/bin/bash

a=100

b=25

Sum=\$((a+b))

Echo "sum is : \$

```
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:~$
```

```
tcsc@tcsc-VirtualBox:~$ vi /bin/bash
#!/bin/bash
a=100
b=25
sum=$((a+b))
echo "sum is:$sum"
:q
```

- 3) deleting a line
13. To delete a line , use ~~line~~ no follow by 'd'
- 4) Search and replacing a string  
'S' option

```
tcsc@tcsc-VirtualBox:~$ vi lin.sh
#!/bin/bash
sum=$(( $1 + $2 ))
echo "sum is:$sum"
)
"lin.sh" 3 lines, 46 characters
```

```
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:~$
```

- 5) Replace a string on a particular line to replace a string on a particular line, use vi no with 'g' option.

6) Add a line after / before  
matched string. 52

To add a new line with some content.

```
tcsc@tcsc-VirtualBox: ~  
subjects offered in cs  
datastructure  
database management  
linux  
python  
green tech  
softskill  
stats  
calculus  
computer basic  
  
)) :wq
```

To add a new line with some content  
~~Pattern woption'i'~~

```
tcsc@tcsc-VirtualBox: ~  
tcsc@tcsc-VirtualBox: ~$ vi cs.txt  
tcsc@tcsc-VirtualBox: ~$ sed -n 3,5p cs.txt  
database management  
linux  
python  
tcsc@tcsc-VirtualBox: ~$
```

7) To change a whole line  
with matched pattern.

25

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

12)

```
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:~$
```

13) ~~What are the subjects offered in computer?~~

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

14) computer basic

```
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
```

15) computer basic

To change a whole line to  
a new line when search  
Pattern matches, use option  
'c'.

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

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

Q) Appending line with sed, use \* 51  
and & as follow.

```
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
```

18)

```
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
```

19)

  
11/02