PERFORMANCE

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Computer Journal

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SEMESTER II **UID No.** _____

Class FYBSc - CS **Roll No.** 1852 **Year** 2019 - 2020

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who has worked for the year 2019 - 2020 in the Computer Laboratory.

Teacher In-Charge

Head of Department

Date : _____

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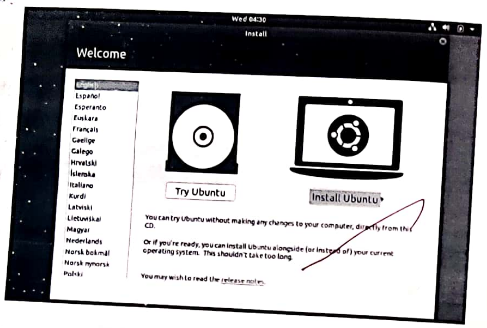
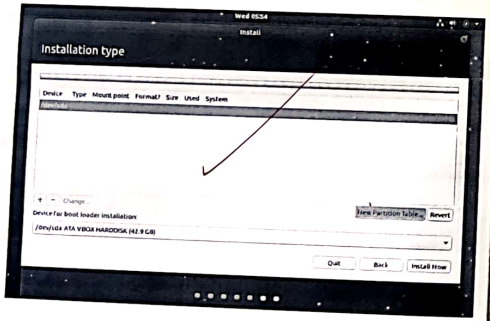


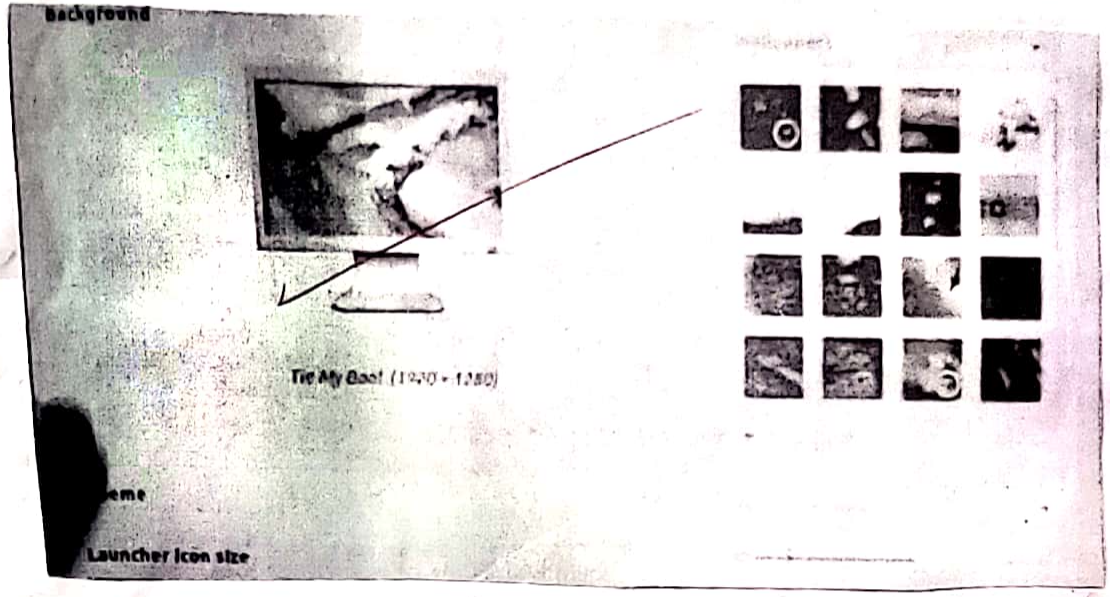


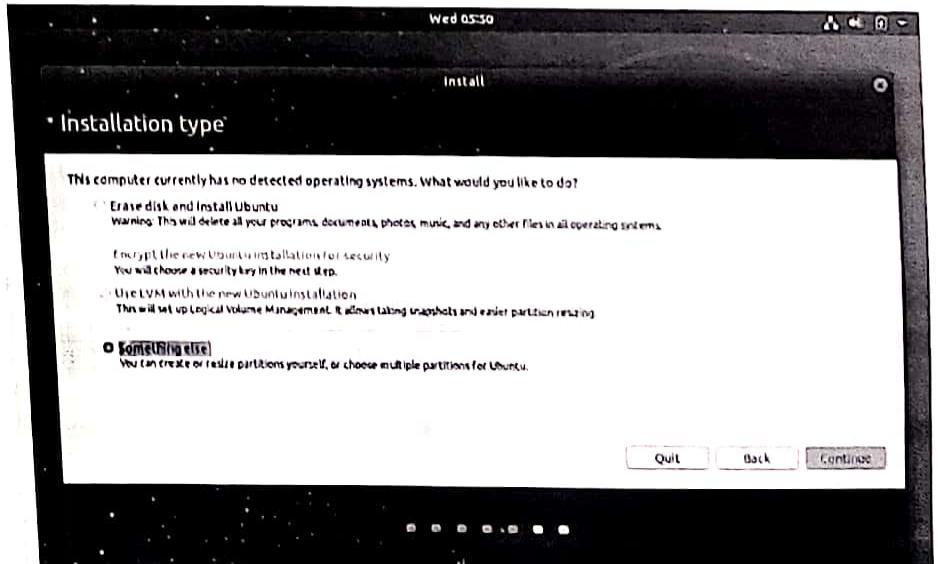
* PRACTICAL - 01 *

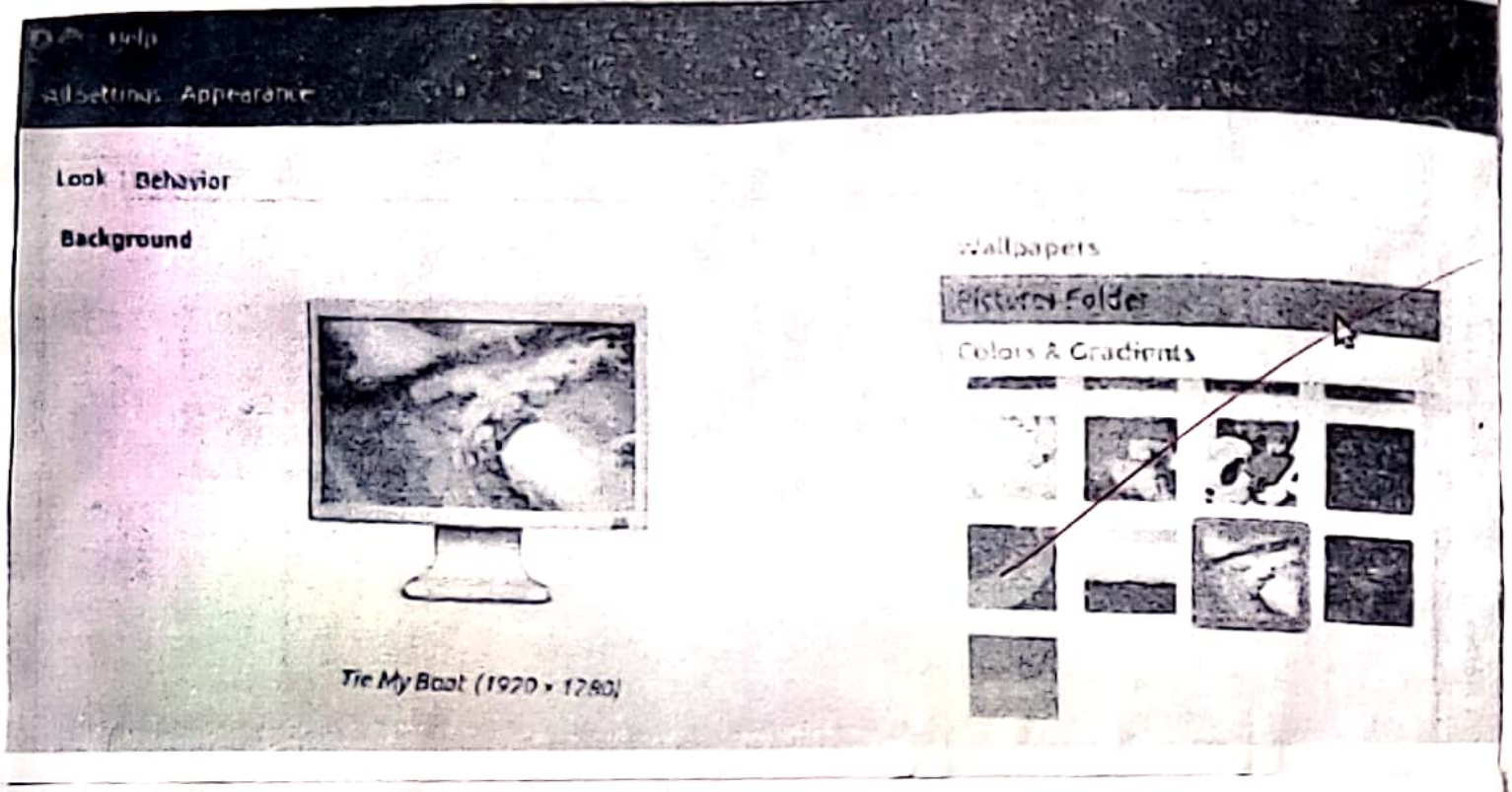
AIM :- i) Install your choice of linux distribution eg. linux, fedora.
ii) Customize desktop environment by changing different default options like changing default background, themes, screensavers.
iii) Screen Resolutions.
iv) Time settings.

PROCEDURE (i) :

Step 1 : Install virtual box.
Step 2 : Open virtual box : ie double click application.
Step 3 : click yes (new). Its a blue box in the upper left column of the virtual box windows.
Step 4 : Enter a name of your virtual machine. Type whatever variable should be its name & it should be in single quotes.
Step 5 : Select linux as the type & scrool down & click ubuntu 64 bit.
Step 6 : Click next & select the amt of ram through use.
Step 7 : The click on next on the bottom of the menu.
Step 8 : Create your VM virtual hard drive which will be used to store your VM program.
Step 9 : click create, next & again next.
Step 10 : Create an amt of space to be used & click next.
Step 11 : Make sure your ubantu is downloading & you can work on it.







* Time settings change the time zone of your system.

- If you are currently in Indian time, then the display time change.
- Then noting the time change, change the time zone back to your local time zone.
- Just click on the clock on the top bar, & click Time & Date settings and the time & Date window opens, choose manually, so you can change the time & Date manually, otherwise change choose your time zone from the map, & choose Automatic.

PRACTICAL - 2

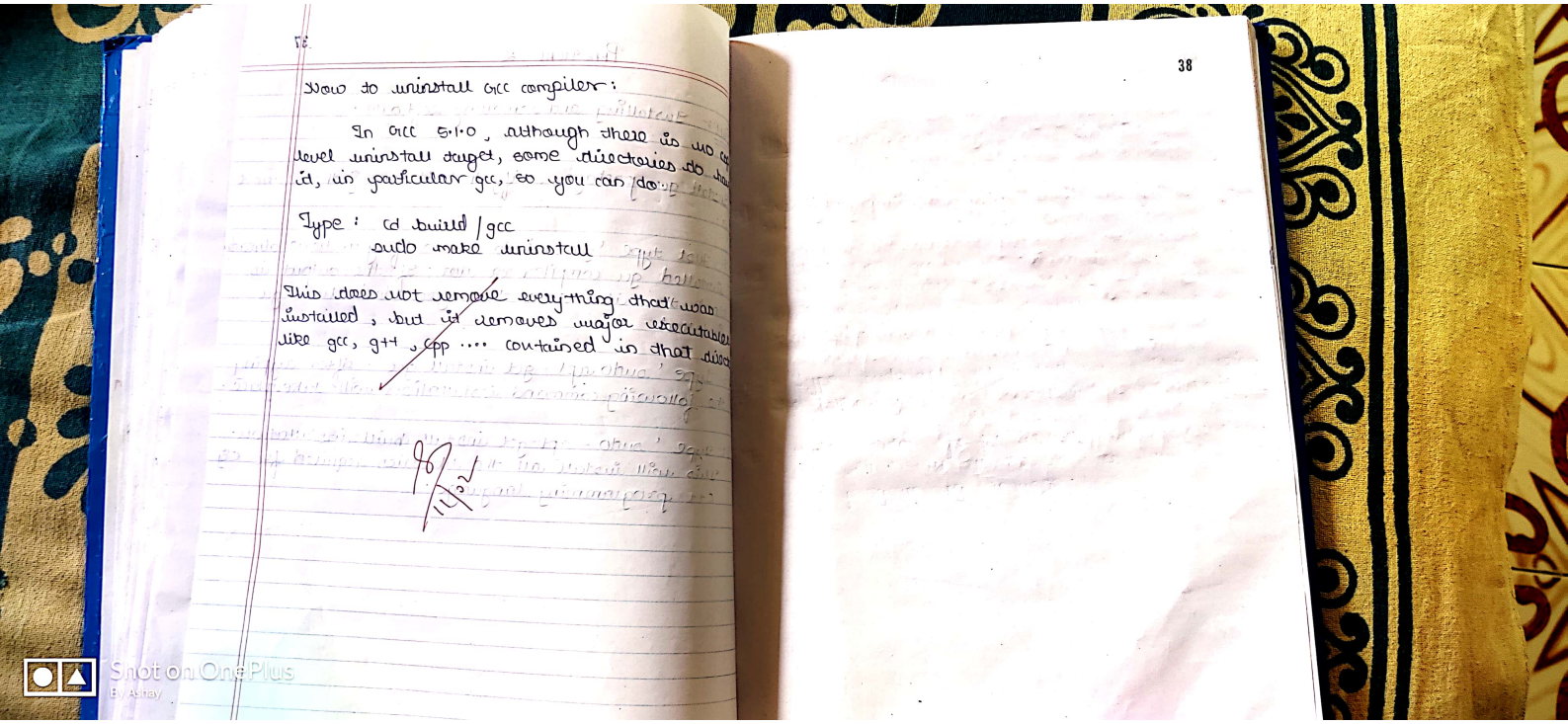
AIM :- Installing and removing software.

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

Step1 :- First type 'gcc -v', to know if you have already installed gcc compiler or not. If the output is blank than it means that you don't have gcc installed.

Step2 :- Type 'sudo apt-get install gcc'. After typing the following command installation will take place.

Step3 :- Type 'sudo - apt-get install build installation'. This will install all the libraries required for C & C++ programming language.



How to uninstall GCC compiler:

In GCC 5.1.0, although there is no
level uninstall target, some directories do ha
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 dire

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PRACTICAL- 3

Aim:- Utilization of grep man commands

Documentation:

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

Ans: 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) & type: info grep.

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

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

Another are 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.
Bring up the man page is command scroll down to the example section.

Ans] To use the 'man' command simply type 'man (command name)'.
How we are going to find the manual for 'ls' command.
Simply type : 'man LS'

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

Ans: 'Tar', 'zip' are some man pages which are available for document file compression.
Simply type : 'man zip'
man tar

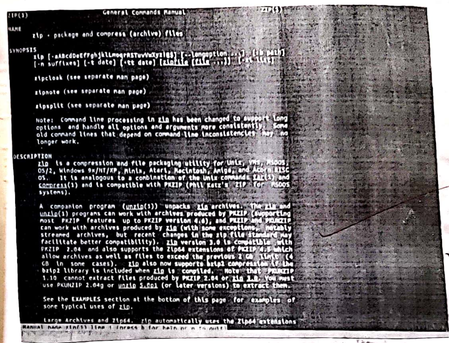

tar - an archiving utility

SYNOPSIS

Traditional usage

UNIX-style usage

GNU-style usage


ZIP(1) General Commands Manual ZIP(1)

NAME
zip - package and compress (archive) files

SYNOPSIS
zip [-aABcdDeEfFghjklLmoqrRSTuvVwXyz!@$] [--longoption ...] [-b path] [-n suffixes] [-t date] [-tt date] [zipfile [file ...]] [-xi list]

zipcloak (see separate man page)

zipnote (see separate man page)

zipsplit (see separate man page)

Note: Command line processing in zip has been changed to support long options and handle all options and arguments more consistently. Some old command lines that depend on command line inconsistencies may no longer work.

DESCRIPTION
zip is a compression and file packaging utility for Unix, VMS, MSDOS, OS/2, Windows 9x/NT/XP, Minix, Atari, Macintosh, Amiga, and Acorn RISC OS. It is analogous to a combination of the Unix commands tar(1) and compress(1) and is compatible with PKZIP (Phil Katz's ZIP for MSDOS systems).

A companion program (unzip(1)) unpacks zip archives. The zip and unzip(1) programs can work with archives produced by PKZIP (supporting most PKZIP features up to PKZIP version 4.6), and PKZIP and PKUNZIP can work with archives produced by zip (with some exceptions, notably streamed archives, but recent changes in the zip file standard may facilitate better compatibility). zip version 3.0 is compatible with PKZIP 2.04 and also supports the Zip64 extensions of PKZIP 4.5 which allow archives as well as files to exceed the previous 2 GB limit (4 GB in some cases). zip also now supports bzip2 compression if the bzip2 library is included when zip is compiled. Note that PKUNZIP 1.10 cannot extract files produced by PKZIP 2.04 or zip 3.0. You must use PKUNZIP 2.04g or unzip 5.0p1 (or later versions) to extract them.

See the EXAMPLES section at the bottom of this page for examples of some typical uses of zip.

Large Archives and Zip64. zip automatically uses the Zip64 extensions

d] finding man pages by section from the comd line bring up the man page for the printf lib. function which manual page section are library function found.

→ The no. corresponds to what section of the manual page is from; 1 is user command, while 8 is sysadmin stuff. The man page format itself explain it & list the std out.

MANUAL SECTIONS
The standard sections of the manual include:

1 User Commands
2 System Calls
3 C library functions
4 Devices and Special Files
5 File formats and conventions
6 Games et. al.
7 Miscellaneous
8 System administration tools and Daemons

Distributions customize the manual section to their specifics, which often include additional sections.

```
$ man 1 printf
$ man 3 printf
$ man -a printf
$ man -k "printf"
printf              (1)  - format and print data
printf              (1p) - write formatted output
printf              (3)  - formatted output conversion
printf              (3p) - print formatted output
printf [builtins]   (1)  - bash built-in commands, see bash(1)
```

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a) Finding man pages by the section from the cmd lines bring up the man pages from the printf lib function. which manual page section are library fn found:

The number corresponds to what section of the manual page is from; 1 is user command while 8 is sysadmin stuff. The man page for man; itself explain it. Eg list the std out.

There are certain terms that have different pages in different sections (eg. 'printf' as a command appears in section 1 as a stdlib function appears in section 3); in case like that you can pass the section no to the man before the page name to choose which on you want or use man -a to show every matching page in a row.

You can tell what section a term fall in with 'man -k' equivalent to apropos command. need to use " term" to limit it.

11/01

PRACTICAL-4

Command line operations :-

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 passwd file in / using find command
✓ # find / -name passwd
- /usr/share/doc/nss_db-253/pam.d/pas
- /usr/bin/passwd
- /etc/pam.d/passwd
- /etc/passwd

find the directory passwd file under root & ou level down.

✓ # find / -maxdepth 3 -mindepth -name pas
- /usr/bin/passwd
- /etc/pam.d/passwd

d) create a symbolic link to the file you found in 1st step.
✓ # ln -s file1 file2

e) create an empty file example.txt move it to

touch example.txt
mv example.txt /tmp

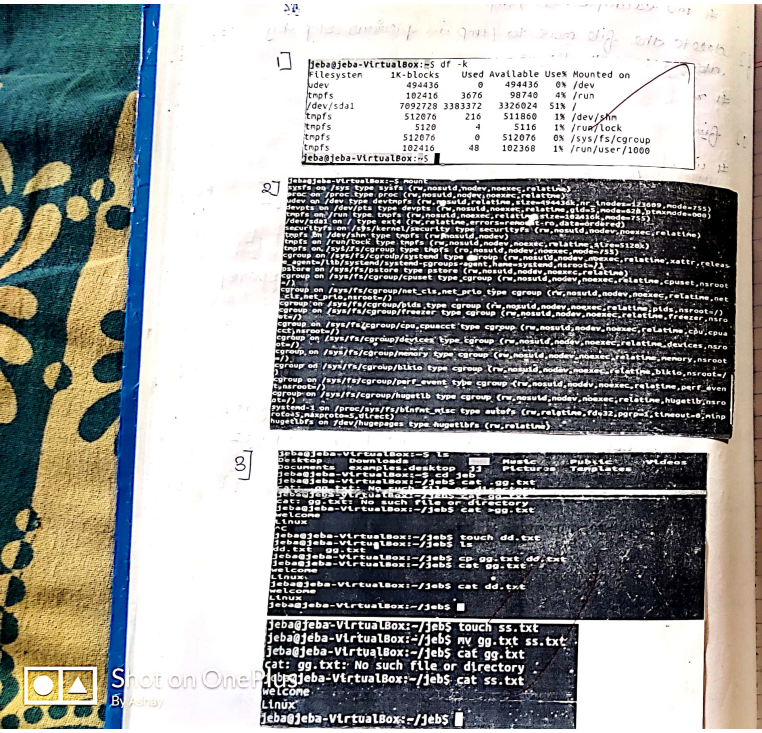
f] delete the file move to /tmp in previous step by absolute method.
rm /tmp/example.txt

g] find the location of ls, ps, bash command
which ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz

where is ps
ps: /bin/ps /usr/share/maps: /bin/ps /usr/share/
man/man1/ps.1.gz

where is bash
bash: /bin/bash /etc/bash.bashrc /usr/share/
man/man1/bash.1.gz

11/01



1]

```
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:~$
```

2]

```
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,release_agent=/lib/systemd/systemd-cgroups-agent,name=systemd)
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)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net_cls,net_prio)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minproto=5,maxproto=5,direct)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
```

3]

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

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


PRACTICAL - 5.

Operations.

Explore mounted file systems on your computer.
df -k

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

Copying text from files.
cp command, mv command

Archiving and backups the work directory using tars
gzip & gzip2 command.
gzip filename.txt
bzip2 filename.txt

Use diff command to creat diff of two files.
diff filename1 filename2

Use patch command to patch a file. And analyze the patch using patch command line.

4]

```
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 [illegible]
J w$S [illegible] 1 jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz
[illegible] d.txt [illegible] Xzjeba@jeba-VirtualBox:~/jeb$
```

5]

```
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
```

6]

```
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 22:15:16.259888738 +0530
@@ -1,3 +1,3 @@
-hi
-hi
-hi
+hello
+hello
+hello
jeba@jeba-VirtualBox:~/jeb$
```


PRACTICAL - 6

* Use Environment *

a) which ammount you are logged in? How do you find?

→ 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 character, and are as follow

- Username, up to 8 character. Case - sensitive, usually all lowercase. A direct match to the username in the /etc/passwd file.
- Passwd, 13 character encrypted. A blank entry indicates a password is not required to log in (usually a bad idea), and a "*" entry (eg. :*:) indicates the account has been disabled.
- The no. of days since the password was last changed.
- The number of days before password may be changed.
- The number of days after which password must be changed.
- The number of days to warn user of an expiring password
- The number of days after password expires that acc 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 passwd entry is separated with ":" colon char. and are as follows :

- Username, up to 8 characters · Case-sensitive, usually lowercase ·
- An "x" in the password field · Passwords are stored in "/etc/shadow" file ·
- Numeric user id · This is assigned by the "adduser" script Unix uses this field, plus the following group field, to identify which files belong to the user ·
- Numeric group id · Red Hat uses group id in a fairly unique manner for enhanced file security · Usually the gid will match the user id
- Full name of user · I'm not sure what the max. length for this field is, but try to keep it reasonable ·
- User's home directory · Usually /home/username · All user's personal files, web pages, mail forwarding etc.

C] Get your current working directory.
↳ pwd ·

D] Explore 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 commands ·
↳ Alias command instructs the shell to replace one string with another string while executing the command ·
alias label = "command".

A]

```
jeba@jeba-VirtualBox:~$ who
jeba     tty7         2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba
jeba@jeba-VirtualBox:~$ who -l
LOGIN    tty1         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: 0.78, 0.79, 0.38
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
jeba     tty7     :0               20:32    4:28   0.19s  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  0.67s  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   9.08s  0.33s /sbin/upstart --user
```

B]

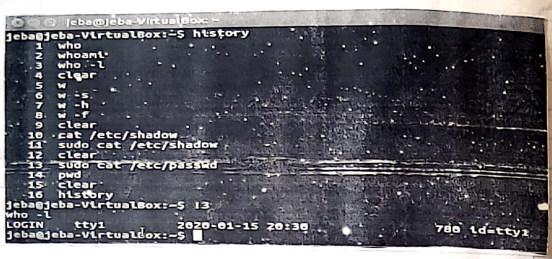
```
[sudo] password for jeba:
root:!:18240:0:99999:7:::
daemon:*:16911:0:99999:7:::
bin:*:16911:0:99999:7:::
sys:*:16911:0:99999:7:::
sync:*:16911:0:99999:7:::
games:*:16911:0:99999:7:::
man:*:16911:0:99999:7:::
lp:*:16911:0:99999:7:::
mail:*:16911:0:99999:7:::
news:*:16911:0:99999:7:::
```

```
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:/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
```

C]

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

D]



E]

PRACTICAL :- 7.

a] create, modify, search & navigate a file editor.

i> creating a file.

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

ii> modifying the file:

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

iii> search a file:

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

iv> navigate:

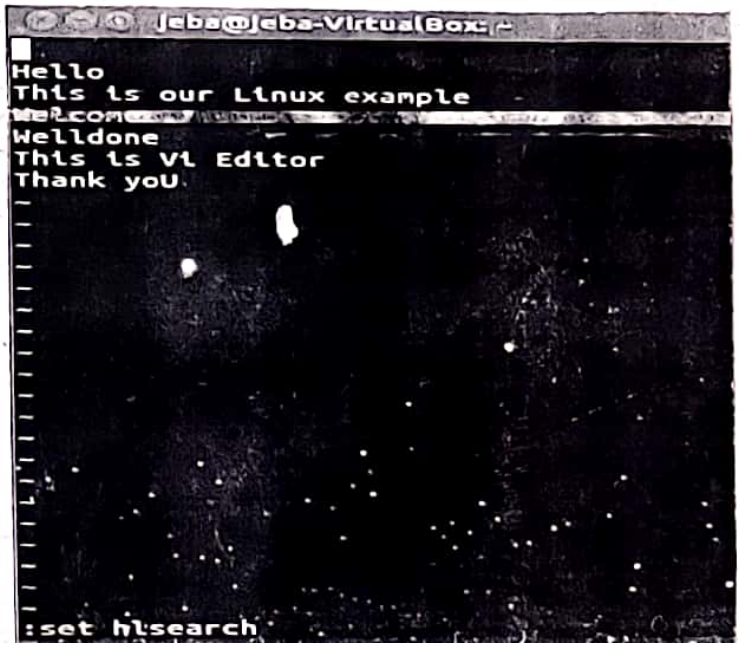
→ Movement in four direction.

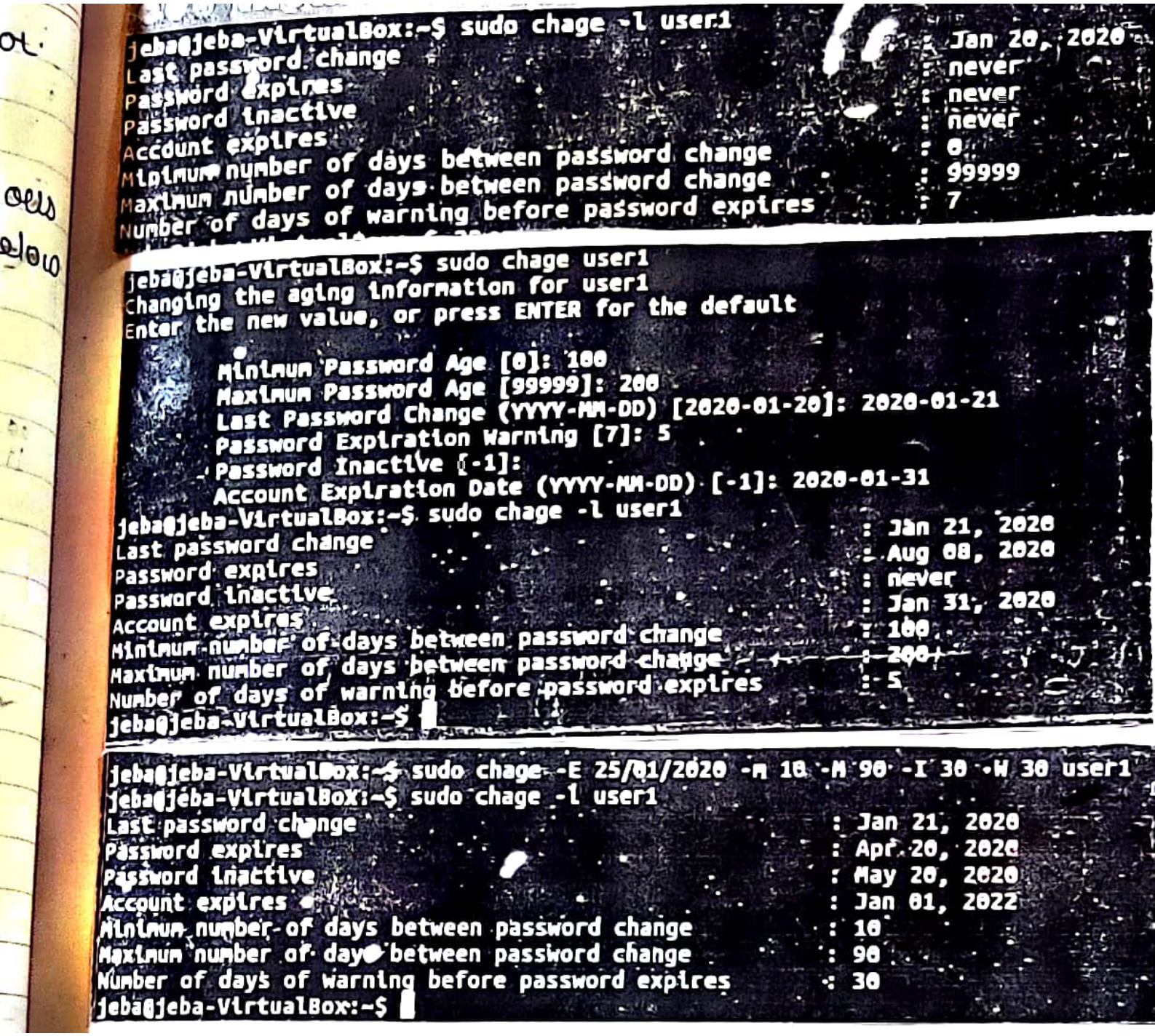
KEY	Action
k	Moves cursor up
j	Moves cursor down
h	Moves cursor left
l	Moves cursor right

word navigation:-

ii] Height

Use set hlsearch





```
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:~$
```

PRACTICAL - 9

a] 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)
```

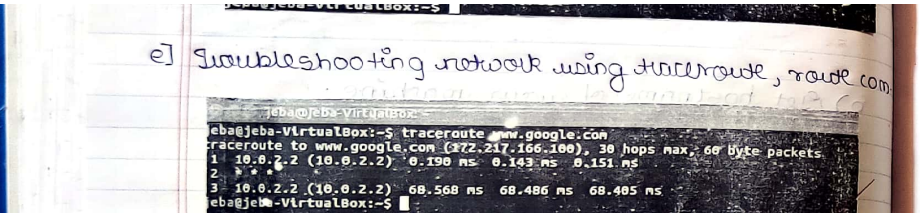
b) Get hostname of your machine.

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

c] Use ping to check network connectivity to ie. 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
```

e] Troubleshooting network using traceroute, route com



PRACTICAL-10

AIM :- Shell scripting.

Basics of shell scripting.

a) To get a shell, you need to start a terminal.
b) To see what shell you have, run: echo $SHELL
c) In Linux, the dollar sign ($) stands for shell variable
d) To 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 program /bin/bash.

Step to write & 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
e) chmod 777 filename.sh
f) sh filename.sh or ./filename.sh

Program to display your name.

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

```
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:~$
```

tcsc@tcsc-VirtualBox: ~

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

tcsc@tcsc-VirtualBox: ~

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

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

```
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
tcsc@tcsc-VirtualBox:~$
```

```
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
```


1) Search and Replacing a string.
'g' option is for searching a word.

2) Replace a string on a particular line.
To replace a string on a particular line, use line number with 's' option.

3) 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'.

4) 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'.

5) Appending lines.
To add some content before every line with sed, use ^ $ and & as follows.