1. Changing file permissions
    a) vi abc.txt

        This creates a temporary file in the home folder.

    b) ls –l abc.txt

        This lists the permissions of the file just created and it comes out as –rw-rw-r--.

    c) chmod a-w abc.txt

        This will make the file unwriteable  for all users.

    d) rm abc.txt

        This asks for permission to remove a write-protected file.

    e) chmod ug+w abc.txt

        This makes the file writeable again as was in b).

    f) i) chmod a+rw abc.txt

        This makes the file readable and writeable for all the users.

        ii) chmod 644 abc.txt

        Now this will make the file readable and writable for the owner and readable for everyone else.

        iii) chmod 400 abc.txt

        Now this will make the file only readable by the owner.

    g) sudo chown www-data abc.txt

        -This changes the owner to www-data which is a user specifically created for web servers.

        vi abc.txt

        - Can read the file as I have read and write permissions being a member of the group of users.

    h) mkdir input – This creates a directory

        chmod a-x input – Removes its executable permissions.

        cd input – Cannot open the directory as permission is denied

2. who and finger
    a) who

This displays the users who are currently logged into the system. Yes I am logged into the machine.

b) The logins are – tannishtha tty7 - Here I am logged into the machine

tannishtha pts/2 - Here it shows the gnome- terminal in which I am logged in.

c) finger -s tannishtha – It shows the login information related to me in a clear way.

The output is as follows –

| Login | Name | Tty | Idle | Login Time | Office | Office Phone |
|---|---|---|---|---|---|---|
| tannishtha | Tannishtha | tty7 | 3:39 | Aug 29 19:37 | | |
| tannishtha | Tannishtha | pts/0 | | Aug 29 23:15 | (:0.0) | |

3. Monitoring system usage with top and free

a) top

Processes like firefox, Xorg, gnome-terminal and other processes are running, in total 174.

b) CPU usage of firefox is 6% and memory usage is 13%. 275.8 MB is left.

c) CPU usage in ascending order – After typing top press P and then R.

CPU usage in descending order – Press P after typing top

Memory usage in ascending order- After typing top, press M and then R.

MEmeory usage in descending order – Press M after typing top

d) 2.72 GB physical memory is being used. ‘free’ command displays the used and free memory in the physical and swap memory in the system also in the buffers used by the kernel.

4. Looking at hard disk.

a) df

22 GB is free on the hard disk ( Linux is mounted on 50 GB of the hard disk, so it shows me the available space within that amount.)

b) du –ch Downloads/

This gives the total size of Downloads directory in human readable format. Size is 5.6G.

5. Finding running processes

a) ps

Running this command shows bash and ps to be running.

b) ps -ef

shows all the processes running on the machine.

c) ps -U root -u root u

This shows all the processes being run by the user root in user format.

6. Murder most foul

a) ps

kill -9 <PID of bash>

This will kill the login shell.

b) Ctrl + Alt + T

This opens a new terminal.

7. Managing jobs

a) emacs input.txt

ctrl -z

This stops the foreground process and hence we are not able to edit the file.

b) jobs

This command will list the background processes and shows that emacs input.txt is in background(stopped).

c) fg %1

This restores the file to the foreground (it has a background number of 1).

d) top&

This starts the process top in the background.

e) jobs

fg %<job number of top>

This will move top to the foreground again.

8. Finding the location of binaries, linking them and alias

a) which awk

This shows the location of awk command and it is in /usr/bin/awk.

Using 'ls -l /usr/bin/awk' , shows that it is a link.

To reach the actual binary, the following steps were followed :

- ls -l /usr/bin/awk

lrwxrwxrwx 1 root root 21 May 28  2012 /usr/bin/awk -> /etc/alternatives/awk

- ls -l /etc/alternatives/awk

lrwxrwxrwx 1 root root 13 Apr  5  2014 /etc/alternatives/awk -> /usr/bin/gawk

- ls -l /usr/bin/gawk

-rwxr-xr-x 1 root root 364536 Mar 30  2012 /usr/bin/gawk

b) The real file is at /usr/bin/gawk.

c) ln -s myLS /bin/ls

This creates a symbolic link to the ln command in the home directory.

To execute the link, first we need to put the home directory path in the PATH environment variable as PATH=$PATH:~/

Then executing myLS is easy.

d) alias -p la=”ls -a”

This creates an alias for 'ls -a'.

9. Hard vs Symbolic link

a) vi abc.txt

b) Symbolic link : ln -s abc.txt sym.txt

Hard link : ln abc.txt hard.txt

c) vi def.txt

d) After deleting abc.txt, hard.txt will work as it is a hard link.

e) Mv def.txt abc.txt

This will rename def.txt to abc.txt. Now both will work. But hard.txt will contain the original contents of abc.txt as it is a hard link and sym.txt will contain the contents of def.txt.