Assessment - 4

Linux - Advance

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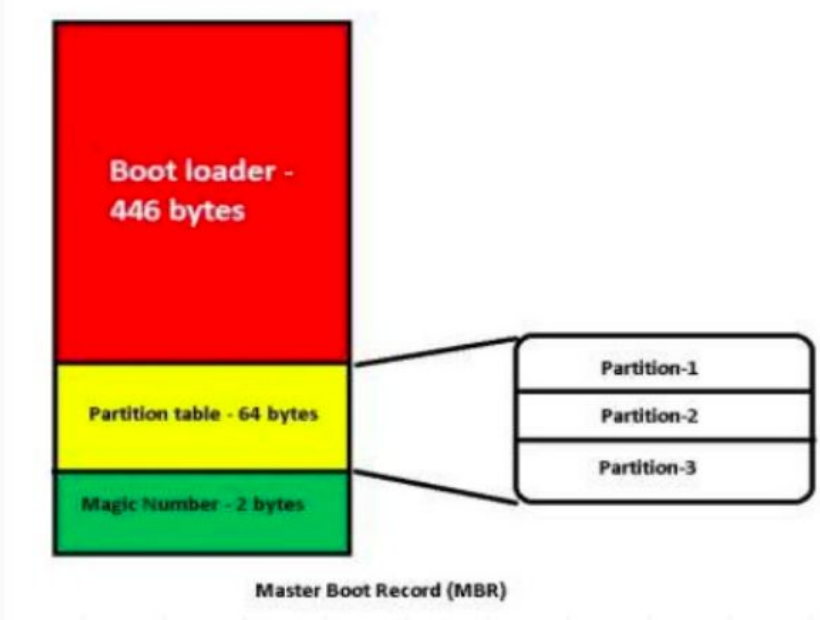
1. What is the size of MBR and what does it contains.

Ans.

The size of Master Boot Record(MBR) is 512 Bytes. It is located on the first sector of a disk. The master boot record (MBR) is a small program that is executed when a computer is booting(i.e., starting up) in order to find the OS and load it into memory.

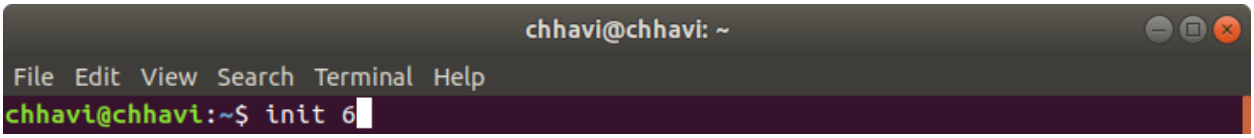


2. In which file you can write commands which you want to run whenever Linux system starts/restarts?

Ans. rc.local in /etc

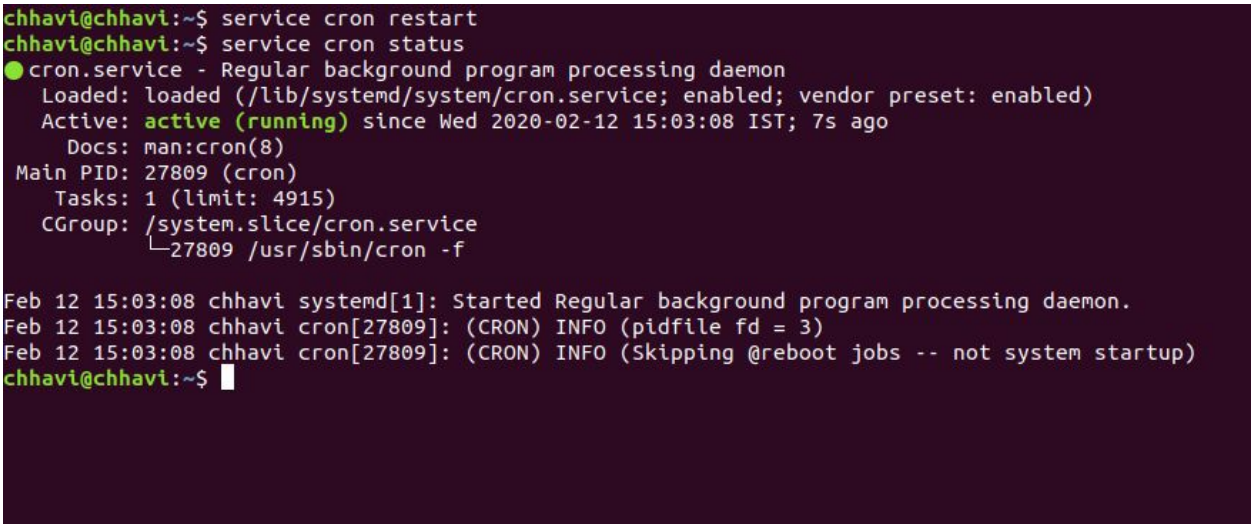
3. Reboot the system using runlevel.

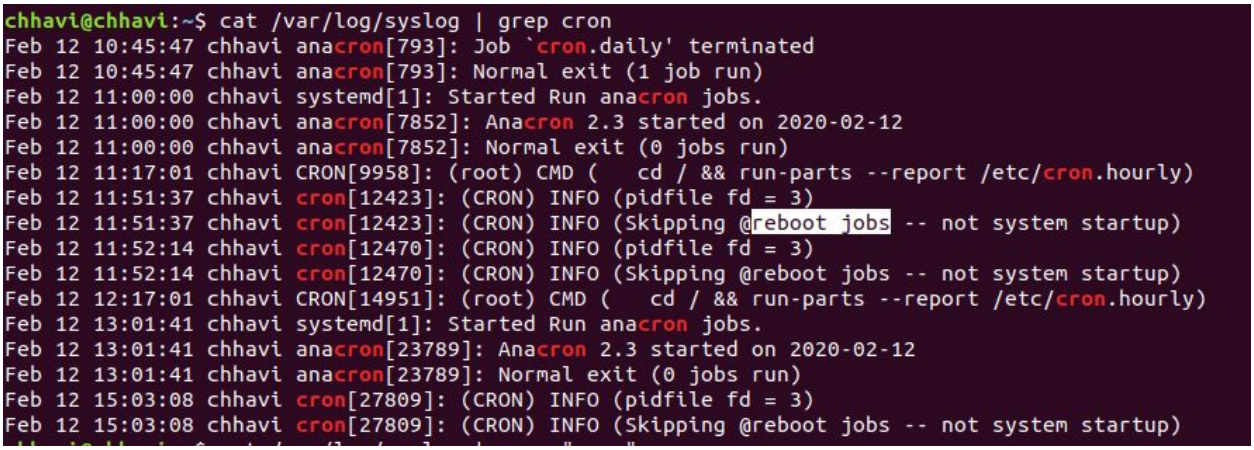
Ans.



4. Restart cron service.

Ans.





5. Create an ext4 filesystem

Ans.

mkfs.ext4 /dev/sda1

6. Mount the created filesystem on /partition directory.

Ans.

mount /dev/sda1 /partition

7. Difference between LVM and RAID.

Ans.

Sno	LVM	RAID
1.	LVM is a way in which you partition the hard disk logically	RAID is used for redundancy

2.	LVM is a disk management approach that allows us to create, extend, reduce, delete or resize the volume groups or logical volumes.	RAID is NOT any kind of Data backup solution. It's a solution to prevent one of the SPOFs (Single Point of Failure) i.e. DISK failure.
3.	A RAID device is a physical grouping of disk devices in order to create a logical presentation of one device to an Operating System for redundancy or performance or a combination of the two.	LVM is a logical layer that can be manipulated in order to create and, or expand a logical presentation of a disk device to an Operating System.
4.	RAID is either a software or a hardware technique to create data storage redundancy across multiple block devices based on required RAID levels.	LVM can be used to manage a large pool of what we call Just-a-bunch-of-Disk (JBOD) presenting them as a single logical volume and thereby create various partitions for software RAID.

8. Create a LVM

Ans.

-Select the Physical Storage Devices for LVM

$pvcreate /dev/sda1 /dev/sda2

-Create the Volume Group

$vgcreate vol_grp1 /dev/sda1 /dev/sda2

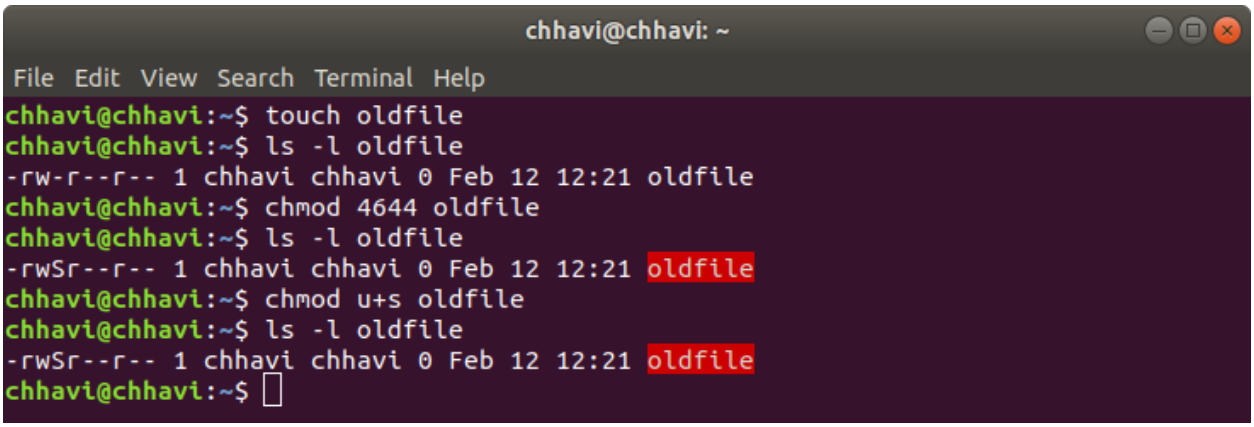
-Create Logical Volumes

$lvcreate -l 20 -n logical_vol1 vol_grp1

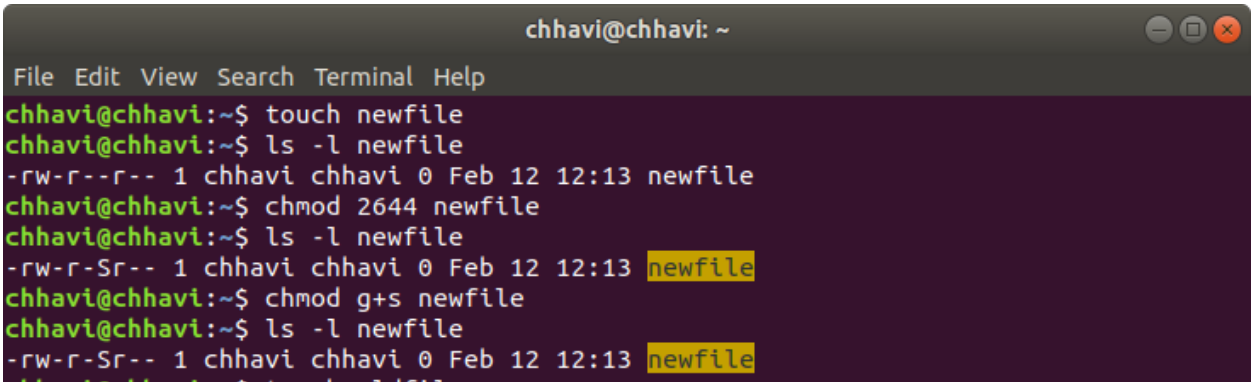
9. Set setuid and setgid on two different file.

Ans.

setuid



setgid



10. What is the use of Sticky bit.

Ans.

A sticky bit is used in case of shared directories..Sticky Bit is mainly used in order to avoid deletion of a folder and it's content by other users though they have write permissions on the folder contents. If the Sticky bit is enabled on a directory, the directory contents are deleted by only the owner who created them and the root user.

To set the Sticky Bit :

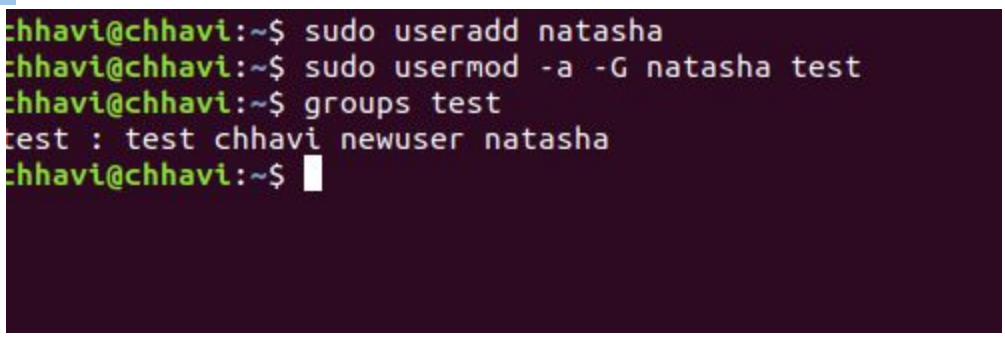
chmod +t <directory>

or

chmod 1777 <directory>

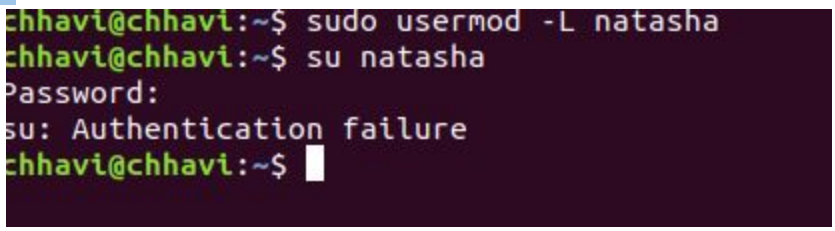
11. Create a user and add it to one secondary group.

Ans.



12. Lock this user.

Ans.



13. Give this user full access (without password).

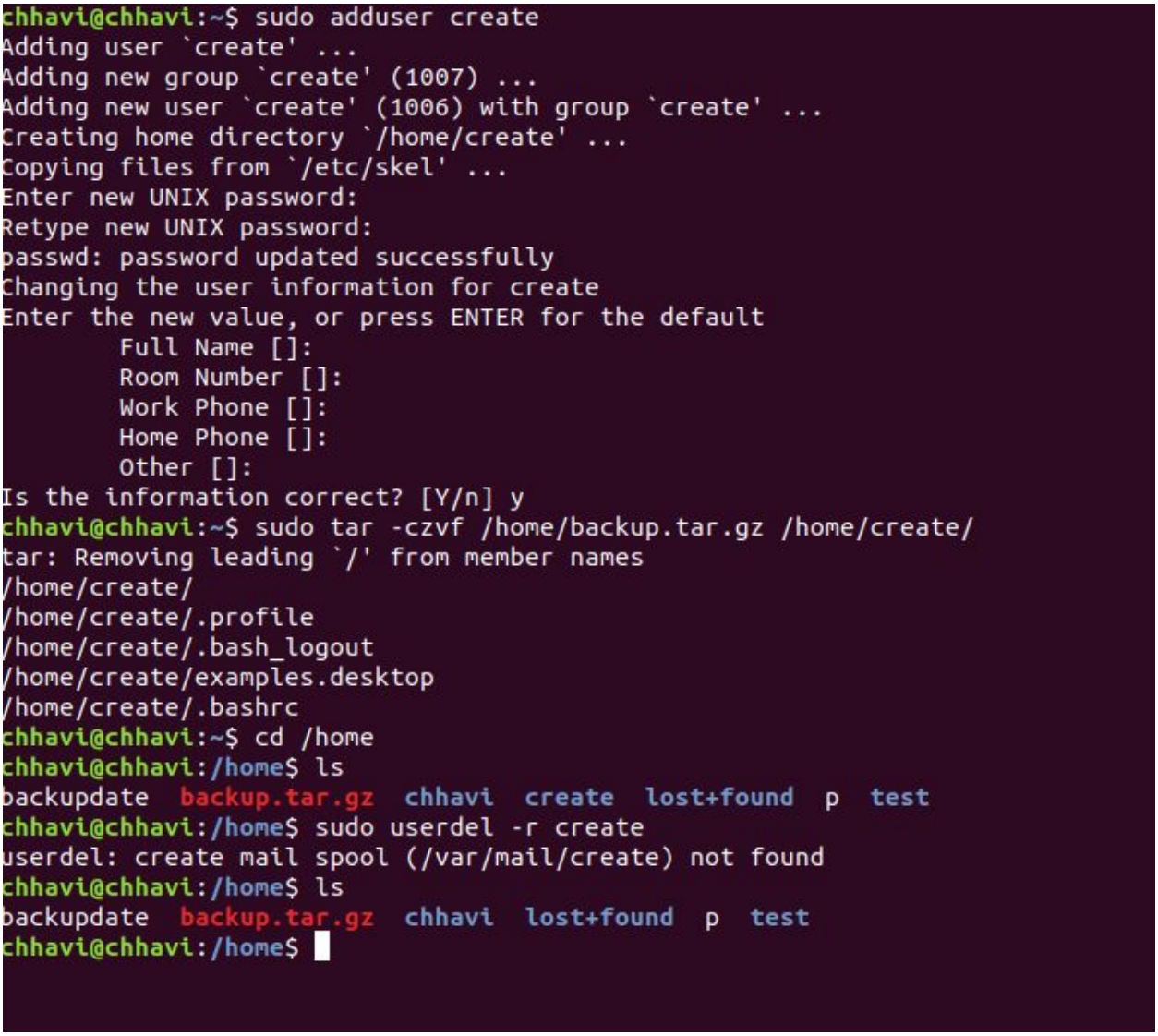
Ans.

```
#
# This file MUST be edited with the 'visudo' command as root.
#
# 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:/snap/bin"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL
test    ALL=(ALL) NOPASSWD:ALL
# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "#include" directives:

#includedir /etc/sudoers.d
~
~
~
~
~
"/etc/sudoers" [readonly] 30L, 785C
```

```
chhavi@chhavi:~$ su test
Password:
test@chhavi:/home/chhavi$ useradd neww
useradd: Permission denied.
useradd: cannot lock /etc/passwd; try again later.
test@chhavi:/home/chhavi$ sudo useradd neww
test@chhavi:/home/chhavi$
```

14. Delete the create user after taking backup of it home directory.

Ans.



15. Create a file with some content. Change all lower case letter to upper case letter and save output to another file using redirections.

Ans.

```
chhavi@chhavi:~/adlin$ cat newfile | tr '[:lower:]' '[:upper:]' > input.txt
chhavi@chhavi:~/adlin$ cat newfile
Hello Everyone!

Good Morning!

Bye!
chhavi@chhavi:~/adlin$ cat input.txt
HELLO EVERYONE!

GOOD MORNING!

BYE!
chhavi@chhavi:~/adlin$
```

16. Set nice value of a process to -1.

Ans.

```
chhavi@chhavi: ~
File  Edit  View  Search  Terminal  Help
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2020-02-12 14:47:54 IST; 2h 34min ago
     Docs: man:nginx(8)
  Process: 25382 ExecStop=/sbin/start-stop-daemon --quiet --stop --retry QUIT/5 --pidfile /run/nginx.pid (code=exited, status=0/SUCCESS)
  Process: 26942 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
  Process: 26941 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
 Main PID: 26943 (nginx)
    Tasks: 9 (limit: 4915)
   CGroup: /system.slice/nginx.service
           ├─26943 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
           ├─26944 nginx: worker process
           ├─26945 nginx: worker process
           ├─26946 nginx: worker process
           ├─26947 nginx: worker process
           ├─26948 nginx: worker process
           ├─26949 nginx: worker process
           ├─26950 nginx: worker process
           └─26951 nginx: worker process

Feb 12 14:47:54 chhavi systemd[1]: Starting A high performance web server and a reverse proxy server...
Feb 12 14:47:54 chhavi systemd[1]: Started A high performance web server and a reverse proxy server.
chhavi@chhavi:~$ ps aux | grep nginx
chhavi    8316  0.0  0.0  21536  1108 pts/1    S+   17:22   0:00 grep --color=auto nginx
root     26943  0.0  0.0 141136  1552 ?        Ss   14:47   0:00 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
www-data 26944  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26945  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26946  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26947  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26948  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26949  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26950  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
www-data 26951  0.0  0.0 143812  6356 ?        S    14:47   0:00 nginx: worker process
chhavi@chhavi:~$ renice -n  -5  -p 26943
renice: failed to set priority for 26943 (process ID): Operation not permitted
chhavi@chhavi:~$ sudo renice -n  -5  -p 26943
26943 (process ID) old priority 0, new priority -5
chhavi@chhavi:~$
```

17. Get list of all files used by “telnet”.

Ans.

```
chhavi@chhavi:~$ dpkg-query --listfiles telnet
/.
/usr
/usr/bin
/usr/bin/telnet.netkit
/usr/share
/usr/share/doc
/usr/share/doc/telnet
/usr/share/doc/telnet/BUGS
/usr/share/doc/telnet/README.gz
/usr/share/doc/telnet/README.telnet
/usr/share/doc/telnet/README.telnet.old.gz
/usr/share/doc/telnet/changelog.Debian.gz
/usr/share/doc/telnet/copyright
/usr/share/lintian
/usr/share/lintian/overrides
/usr/share/lintian/overrides/telnet
/usr/share/man
/usr/share/man/man1
/usr/share/man/man1/telnet.netkit.1.gz
/usr/share/menu
/usr/share/menu/telnet
```

18. Check if port 22 is listening using netstat and telnet command.

Ans.

```
chhavi@chhavi:~$ netstat -lntp|grep ':22'
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      -
tcp6       0      0 ::22                    :::*                    LISTEN      -
chhavi@chhavi:~$ sudo netstat -lntp|grep ':22'
[sudo] password for chhavi:
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      940/sshd
tcp6       0      0 ::22                    :::*                    LISTEN      940/sshd
chhavi@chhavi:~$ telnet 127.0.0.1 22
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is '^]'.
SSH-2.0-OpenSSH_7.6p1 Ubuntu-4ubuntu0.3
```

19. Create a cron job which runs once in a week at 23:45.

Ans.

```
chhavi@chhavi:~$ crontab -e
crontab: installing new crontab
chhavi@chhavi:~$ crontab -l
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
45 23 * * 1 /usr/bin/touch newfile.txt
chhavi@chhavi:~$
```

20. Difference between dig and traceroute

Ans.

Traceroute helps us show the path that a packet of information takes from our system to the one that we specify. It lists all the routers it passes through until it reaches the destination(or fails). Also it tells us how long each hop takes from one router to another.

Whereas in dig(domain information groper) is a network administration command-line tool for querying DNS(Domain Name System) name servers.