ADVANCE-LINUX

Ques 1:- What is the size of MBR and what does it contains

Ans 1:- Size of an MBR is 512 bytes & it contains the information of the first sector of the hard disk where the operating system is located and access ram.It also contains master partition table.

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

Ans 2:- .profile

Ques 3:- Reboot the system using runlevel.

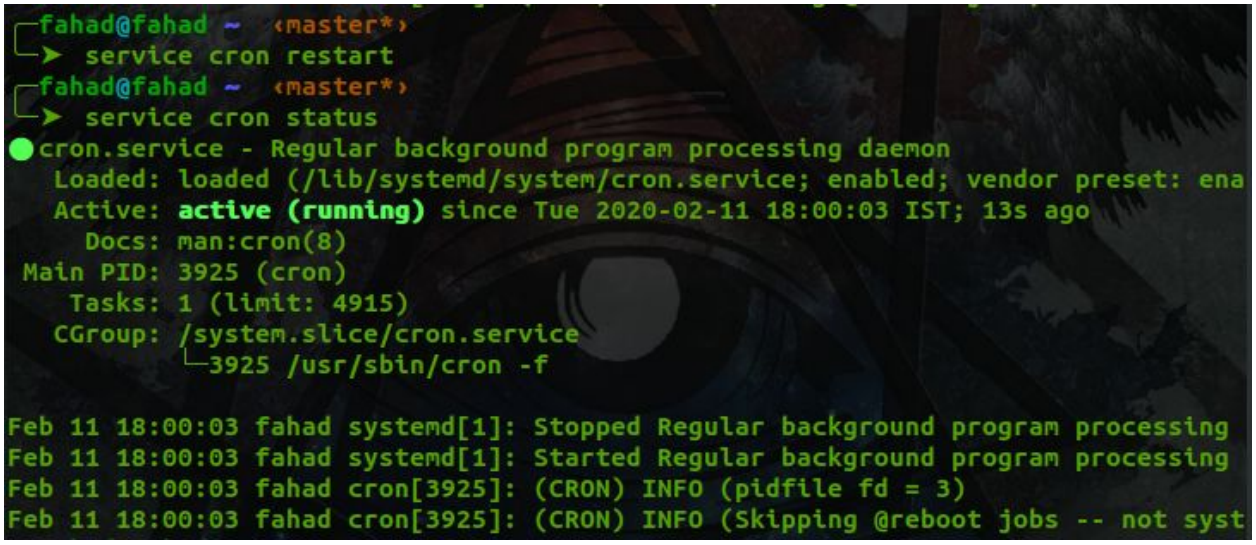
Ans 3:- **init 6** runlevel is use to restart the system

Runlevels define what tasks can be accomplished in the current state (or runlevel) of a Linux system

- 0- Halt
- 1- Single user mode (recovery)
- 2- Debian/Ubuntu default
- 3- RHEL/Fedora/SUSE text mode
- 4- free
- 5- RHEL/Fedora/SUSE graphical mode
- 6- reboot

Ques 4:- Restart cron service.

Ans :-



Ques 5:- Create an ext4 filesystem

Ans :- First we have to create a partition by **sudo fdisk /dev/sda**

```
fahad@fahad ~ (master*)
➤ sudo fdisk /dev/sda

Welcome to fdisk (util-linux 2.31.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): n
Partition type
   p   primary (1 primary, 1 extended, 2 free)
   l   logical (numbered from 5)
Select (default p): p
Partition number (3,4, default 3):
First sector (781250560-1953525167, default 781250560):
Last sector, +sectors or +size{K,M,G,T,P} (781250560-781252605, default 781252605):

Created a new partition 3 of type 'Linux' and of size 1023 KiB.

Command (m for help): n
Partition type
   p   primary (2 primary, 1 extended, 1 free)
   l   logical (numbered from 5)
Select (default p):

Using default response p.
Selected partition 4
First sector (1101561856-1953525167, default 1101561856):
Last sector, +sectors or +size{K,M,G,T,P} (1101561856-1953525167, default 1953525167): +10G

Created a new partition 4 of type 'Linux' and of size 10 GiB.
```

Now we have to list all the partition by pressing **p**

```
Command (m for help): p
Disk /dev/sda: 931.5 GiB, 1000204886016 bytes, 1953525168 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x30c6e8e4

Device     Boot      Start        End    Sectors   Size Id Type
/dev/sda1             2048  781250559 781248512 372.5G 83 Linux
/dev/sda2        781252606 1101561855 320309250 152.8G  5 Extended
/dev/sda3        781250560  781252605      2046  1023K 83 Linux
/dev/sda4       1101561856 1122533375  20971520    10G 83 Linux
/dev/sda5        781252608  976562175 195309568  93.1G 83 Linux
/dev/sda6        976564224 1101561855 124997632  59.6G 82 Linux swap / Solaris

Partition 2 does not start on physical sector boundary.

Partition table entries are not in disk order.
```

Now to write and exit type **w**

To create a file system of **ext4** we have to type command **mkfs.ext4 <partition name>**

```
fahad@fahad ~  ‹master*›
➤ sudo mkfs.ext4 /dev/sda4
mke2fs 1.44.1 (24-Mar-2018)
Discarding device blocks: done
Creating filesystem with 2621440 4k blocks and 655360 inodes
Filesystem UUID: 33569d98-0ceb-41a6-a319-788d605cc3d7
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
```

Ques 6:- Mount the created filesystem on /partition directory.

Ans 6:- First we have to make a directory in **/mnt** folder by **sudo mkdir /mnt/fahad**

```
fahad@fahad ~  ‹master*›
➤ sudo mkdir /mnt/fahad
```

Then we have to run mount command like **mount /dev/sda4 /mnt/fahad**

We can check the mount by **mount | grep fahad**

```
fahad@fahad ~  ‹master*›
➤ sudo mount /dev/sda4 /mnt/fahad
fahad@fahad ~  ‹master*›
➤ mount | grep fahad
/dev/sda4 on /mnt/fahad type ext4 (rw,relatime,data=ordered)
```

Ques 7. Difference between LVM and RAID.

Ans 7.

Difference between RAID and LVM

S.No.	RAID	LVM
1.	RAID is used for redundancy.	LVM is a way in which you partition the hard disk logically and it contains its own advantages.
2.	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 that can be anipulated in order to create and, or expand a logical presentation of a disk device to an Operating System.
3.	RAID is a way to create a redundant or striped block device with redundancy using other physical block devices.	LVM usually sits on top of RAID blocks or even standard block devices to accomplish the same result as a partitioning, however it is much more flexible than partitions. You can create multiple volumes crossing multiple physical devices, remove physical devices without loosing data, resize the volumes, create snapshots, etc
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 is a software tool to manage large pool of storage devices making them appear as a single manageable pool of storage resource. 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.
5.	RAID is NOT any kind of Data backup solution. Its a solution to prevent one of the SPOFs (Single Point of Failure) i.e. DISK failure. By configuring RAID you are just providing an emergency substitute for the Primary disk. It NEVER means that you have configured DATA backup.	LVM is a disk management approach that allows us to create, extend, reduce, delete or resize the volume groups or logical volumes.

Ques 8:- Create a LVM

Ans 8:- To create a Logical Volume first we have to make a physical volume by **sudo pvcreate /dev/sda4** to see the volume **sudo pvdisplay**

Then we have to create the volume group by

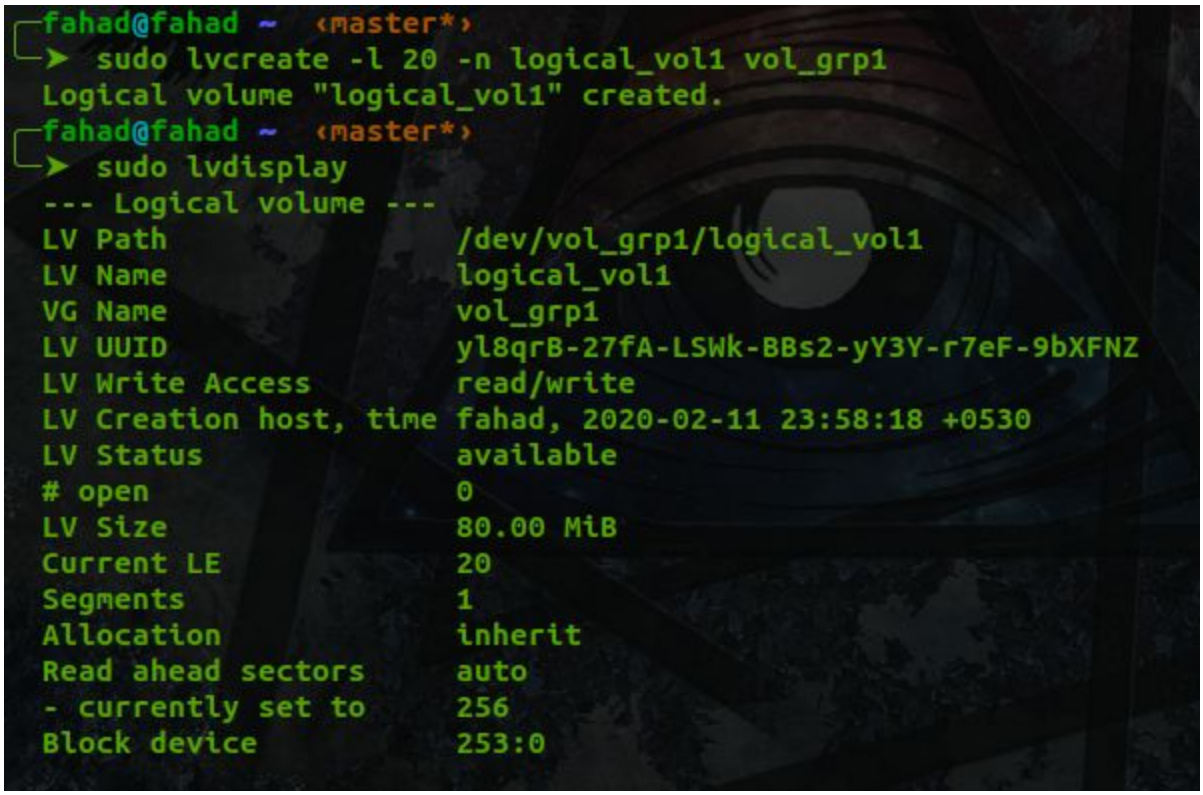
sudo vgcreate vol_grp1 /dev/sda4

Then we have to create the Logical volume by

sudo lvcreate -l 20 -n logical_vol1 vol_grp1

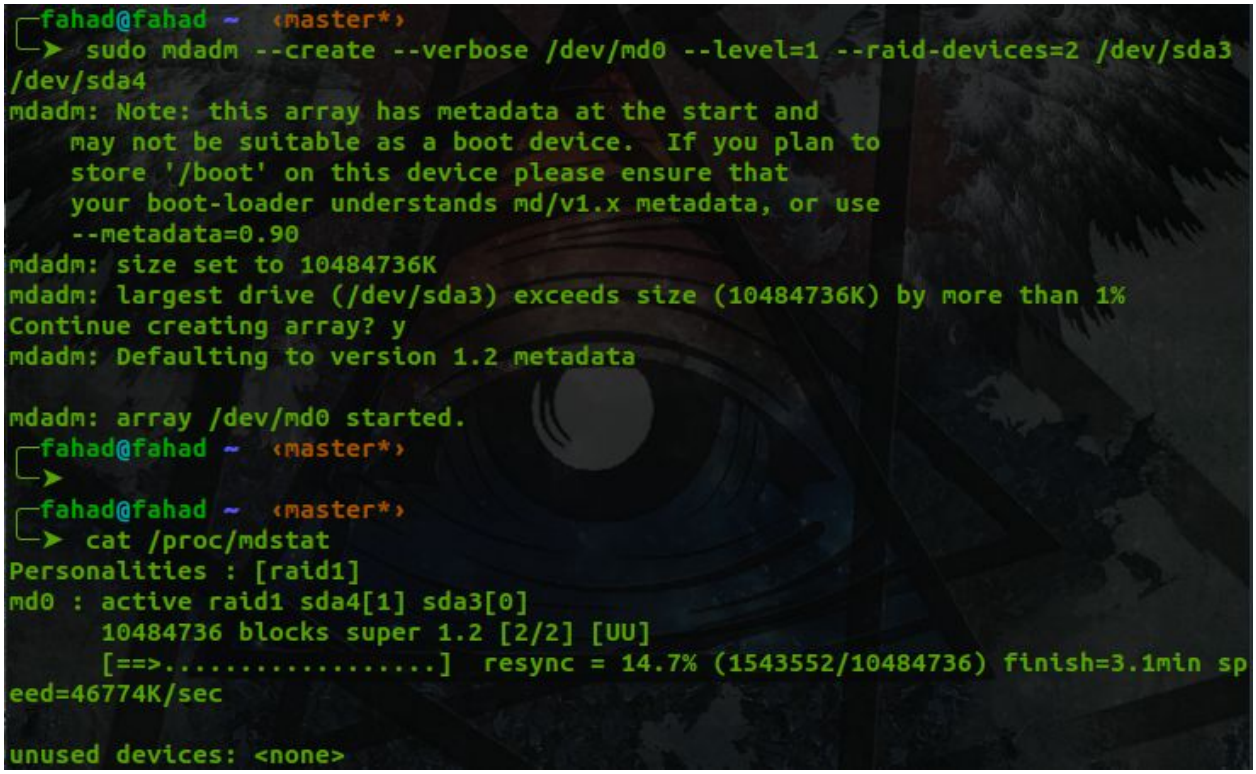
To see the Logical volume we have to run command

sudo lvdisplay



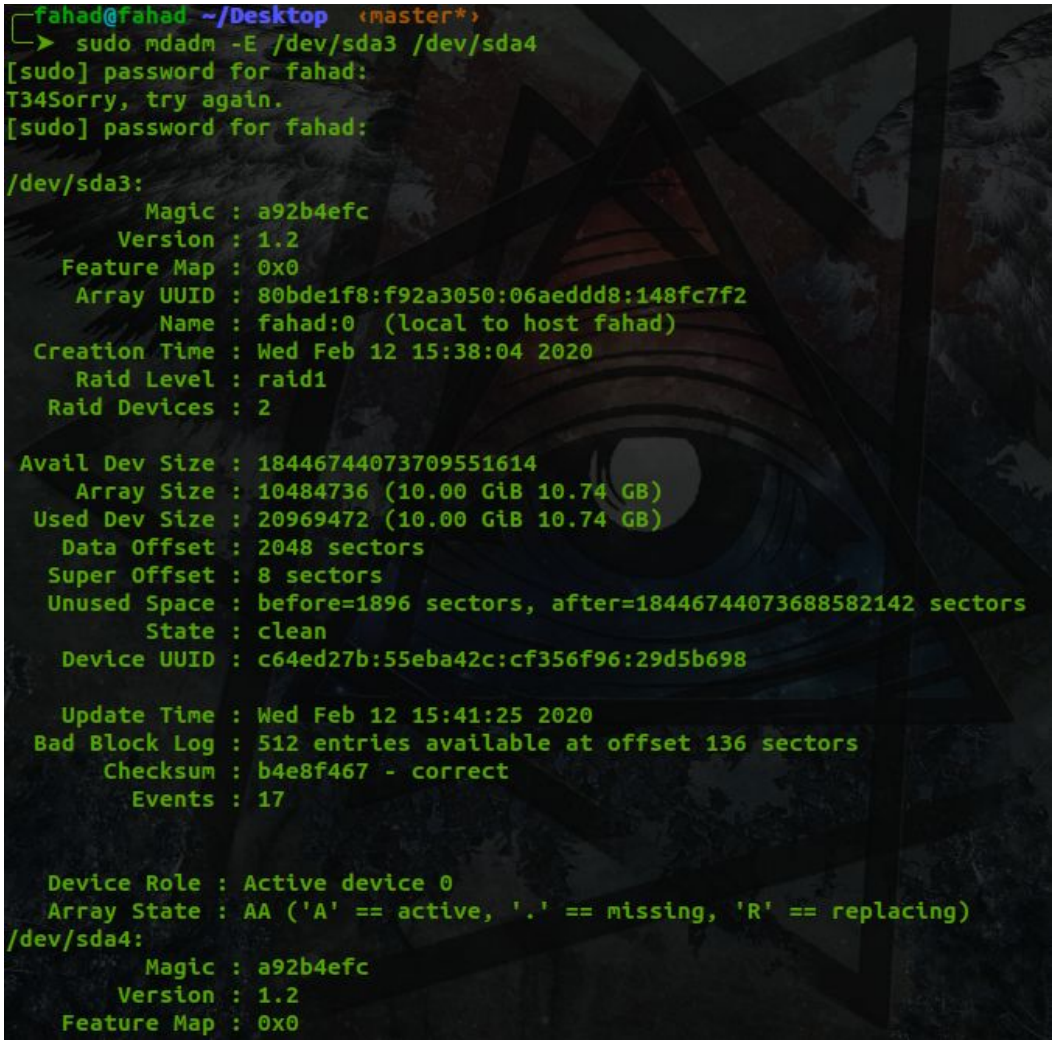
Ques 9:- Create a RAID1 device

Ans 9:-



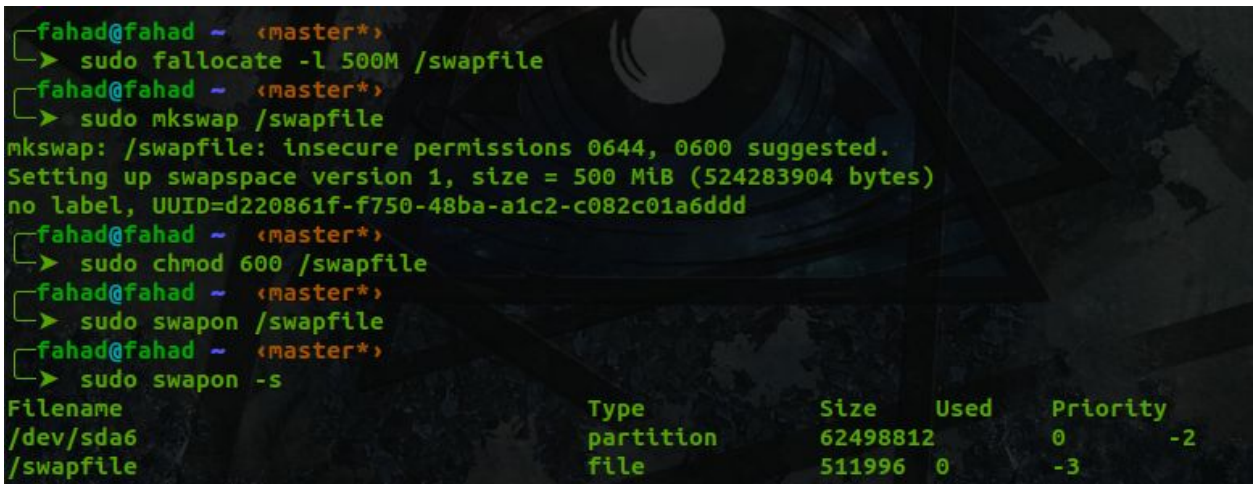
To check raid devices types

➔ #mdadm -E /dev/sda3 /dev/sda4
#mdadm --detail /dev/md0



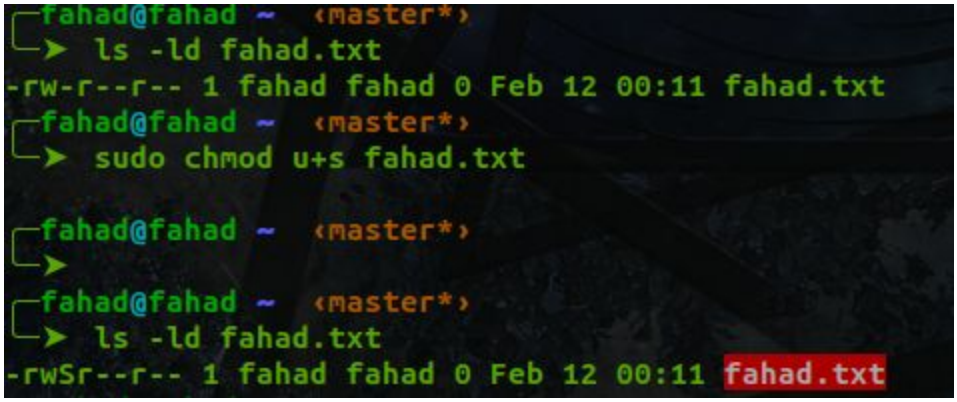
Ques 10:- Create a swapfile of 500Mb

Ans 10:-

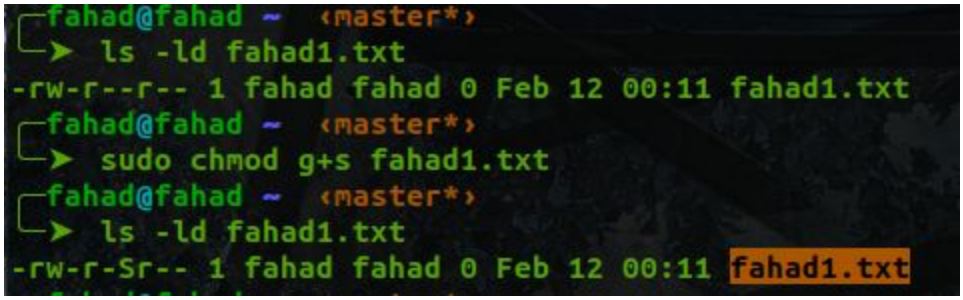


Ques 11:- Set setuid and setgid on two different file

Ans 11:- To **setuid** run command **sudo chmod u+s fahad.txt**



To **setgid** run command **sudo chmod g+s fahad1.txt**



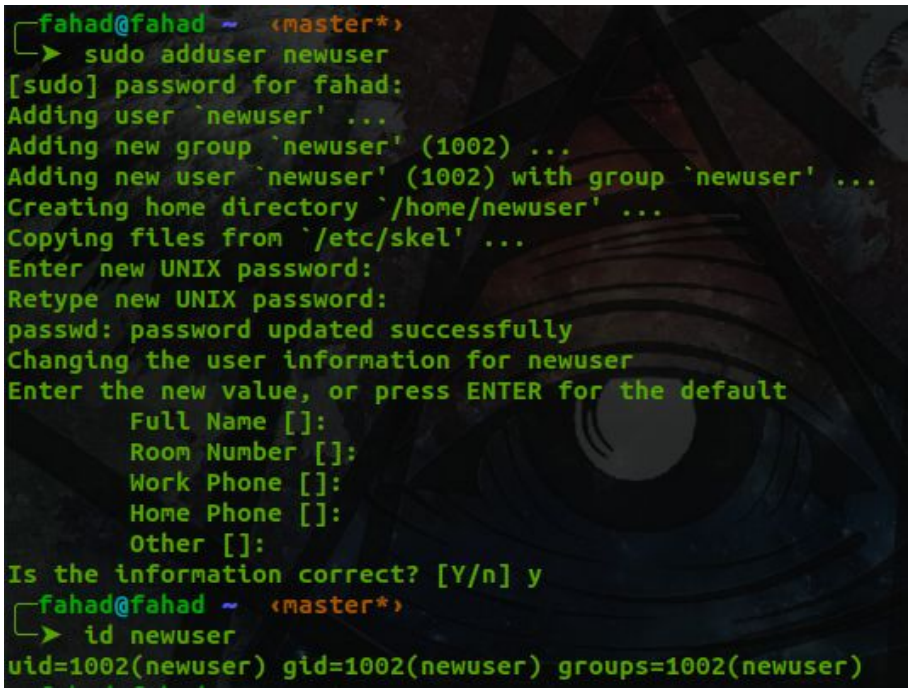
Ques 12:-What is the use of Sticky bit.

Ans 12:-Sticky bit is used on directories where each user have write permissions but only on their files, not on others.

An example of sticky bit is /tmp where each user can write its data but cannot write other user's files.

Ques 13:- Create a user and add it to one secondary group

Ans 13:- first we have to create a user with **sudo adduser newuser**

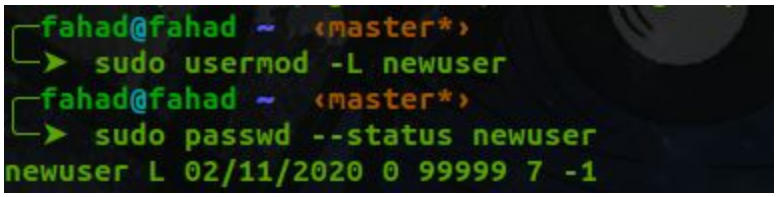


Here we can see that the user is added to newuser group

By usermod -G <secondary group> <username> it will add the secondary group to the user

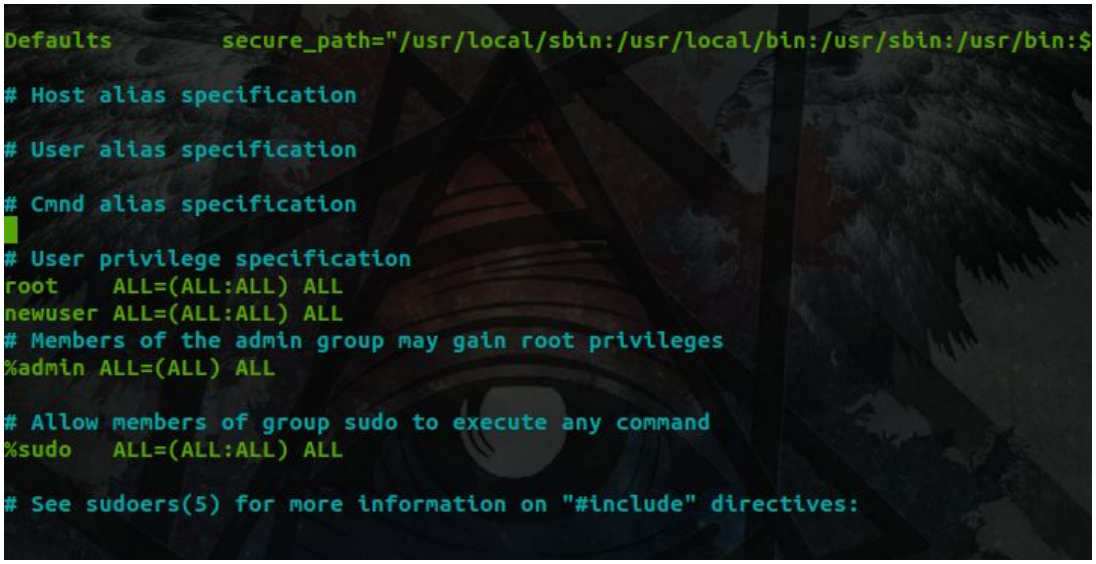
Ques 14:- Lock this user.

Ans 14:- sudo usermod -L newsuser now if we have to check the status of the user we type **sudo passwd --status newuser**

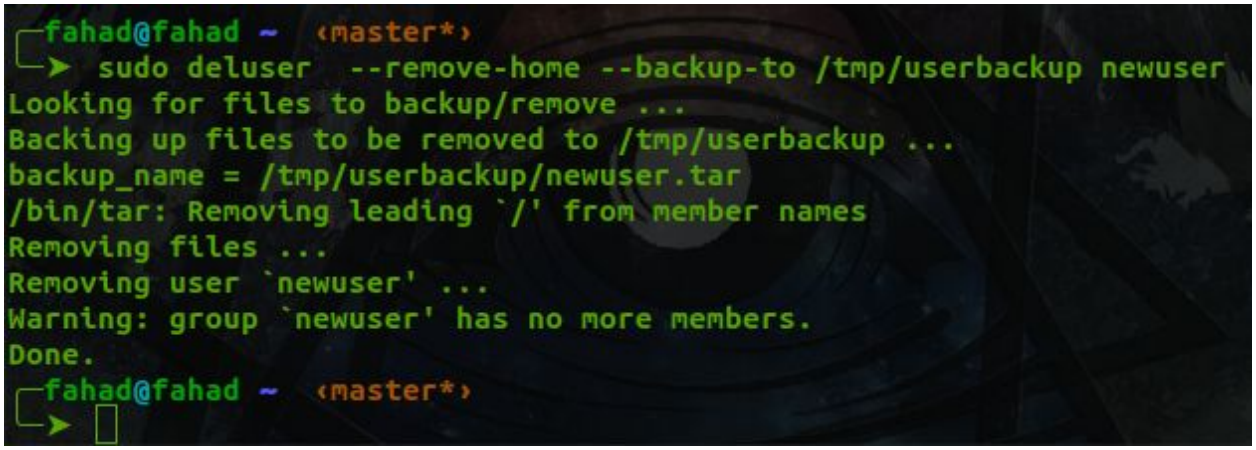


Ques 15:- Give this user full access (without password).

Ans 15:- By specifying the user in to the **sudoers** file we and setting all permission to **ALL** we can give full access to user

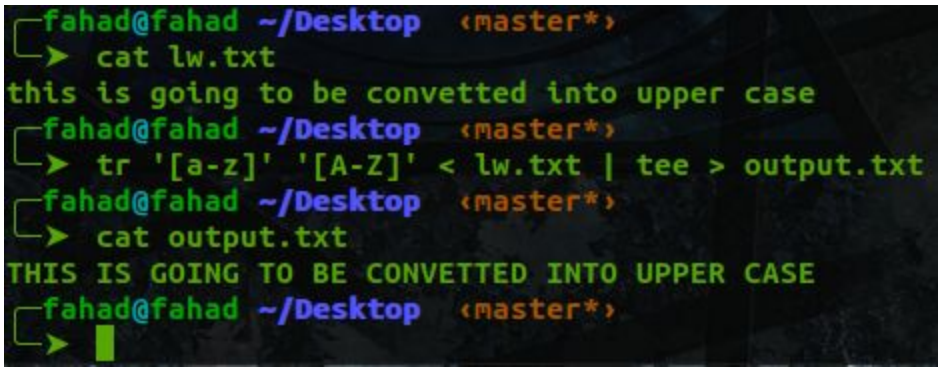


Ques 16:-Delete the create user after taking backup of it home directory.
Ans 16:- By using deluser --remove -home --backup -to /tmp/userbackup newuser its backup is being stored in the **/tmp/userbackup/newuser.tar** file.



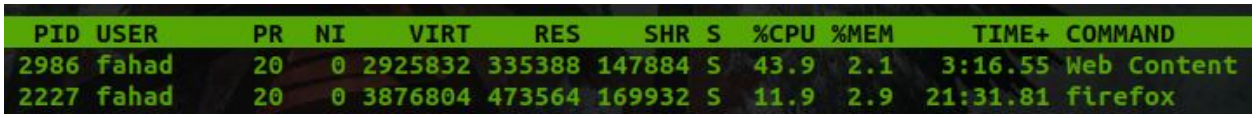
Ques 17:- Create a file with some content. Change all lower case letter to upper case letter and save output to another file using redirections.

Ans 17:- tr command is use to convert the text



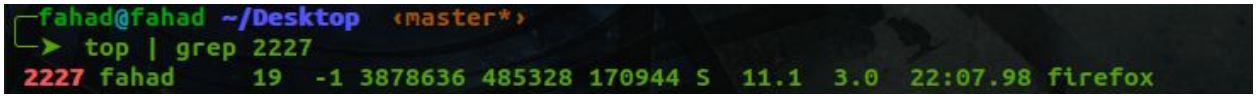
Ques 18:- Set nice value of a process to -1.

Ans :- first we have to list the processes with the **top** command



Run command

Renice -n -1 -p 2227 -u fahad it will change the nice value to **-1**



Ques 19:-Get list of all files used by "telnet".

Ques 20:- Check if port 22 is listening using netstat and telnet command.

```
fahad@fahad ~/Desktop ‹master*›
➤ 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
```

Ans 20:-<USING TELNET> telnet <host IP> <port no.> if the port is down it won't allow to connect

```
fahad@fahad ~/Desktop ‹master*›
➤ telnet 192.168.0.106 22
Trying 192.168.0.106...
Connected to 192.168.0.106.
Escape character is '^]'.
SSH-2.0-OpenSSH_7.6p1 Ubuntu-4ubuntu0.3
```

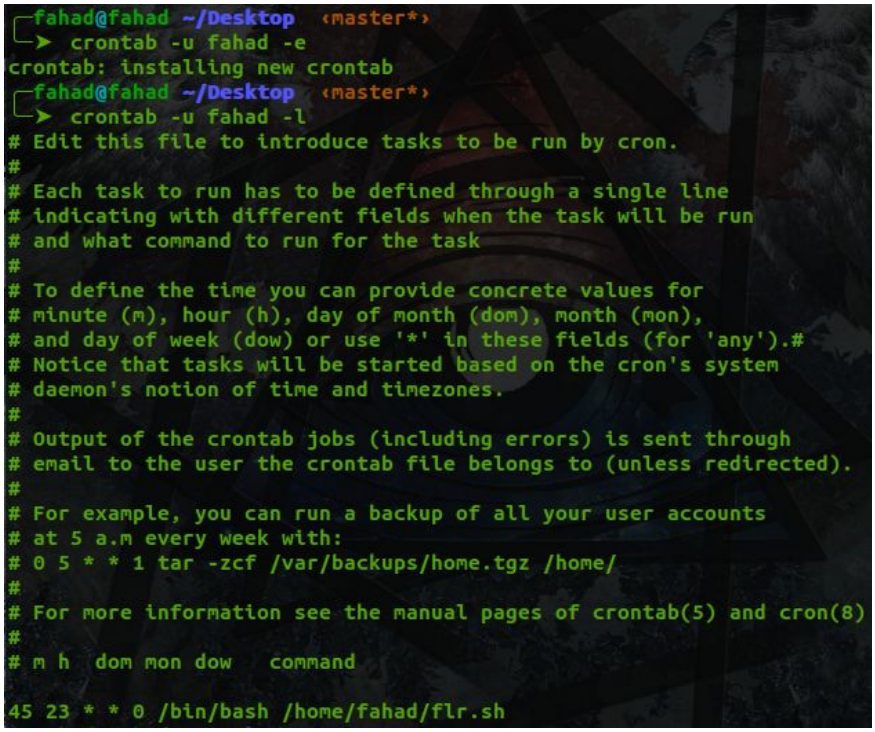
<USING NETSTAT> sudo netsat -plnt | grep 22 it tells wether the port is listening or not

```
fahad@fahad ~/Desktop ‹master*›
➤ sudo netstat -plnt | grep 22
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      1070/sshd

tcp6       0      0 :::22                   :::*                    LISTEN      1070/sshd
```

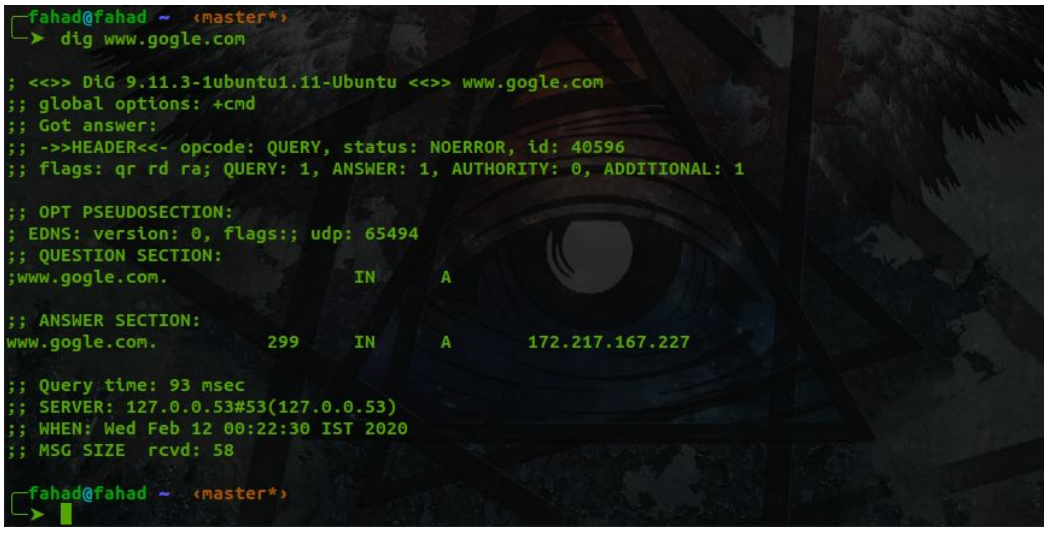
Ques 21:- Create a cron job which runs once in a week at 23:45.

Ans 21:- crontab -u fahad -e for creating the crontab



Ques 22:- Difference between dig and traceroute

Ans 22:- Dig is a DNS lookup utility. It performs DNS lookups and displays the answers that are returned from the name servers that were queried.



Traceroute tracks the route packets taken from an IP network on their way to a given host. It utilizes the IP protocol's time to live (TTL) field and attempts to elicit an ICMP TIME_EXCEEDEDresponse from each gateway along the path to the host.


fahad@fahad ~ ‹master*›
traceroute www.google.com
traceroute to www.google.com (172.217.166.196), 30 hops max, 60 byte packets
1 * * *
2 * * *
3 * * *
4 72.14.208.49 (72.14.208.49) 8.051 ms 8.048 ms 9.570 ms
5 * * *
6 172.253.67.98 (172.253.67.98) 9.757 ms 64.233.175.100 (64.233.175.100) 7.788 ms 209.85.252.44 (209.85.252.44) 5.076 ms
7 66.249.95.75 (66.249.95.75) 6.187 ms 74.125.243.98 (74.125.243.98) 7.009 ms 66.249.95.75 (66.249.95.75) 4.486 ms
8 del03s13-in-f4.1e100.net (172.217.166.196) 4.139 ms 4.095 ms 108.170.251.113 (108.170.251.113) 7.844 ms
fahad@fahad ~ ‹master*›