

Linux Advanced Session

Q1.What is the size of MBR and what does it contains.

Boot loader is stored in the first sector of a hard disk, the Master Boot Record, or MBR provides address to the Grub loader.

The MBR (Master Boot Record) is 512 bytes.

1. 446 bytes Bootloader
2. 64 bytes (4 * 16 bytes) Partition Tables

Q2.In which file you can write commands which you want to run whenever Linux system starts/restarts?

```
@reboot sh /home/jay/script.sh
```

Q3.Restart cron service.

```
jay@Jay-Patel:~$ sudo systemctl restart cron.service
jay@Jay-Patel:~$ sudo systemctl status cron.service

● cron.service - Regular background program processing daemon
   Loaded: loaded (/lib/systemd/system/cron.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-02-11 22:31:02 IST; 5s ago
     Docs: man:cron(8)
    Main PID: 11162 (cron)
      Tasks: 1 (limit: 4915)
   CGroup: /system.slice/cron.service
           └─11162 /usr/sbin/cron -f

Feb 11 22:31:02 Jay-Patel systemd[1]: Started Regular background program processing daemon.
Feb 11 22:31:02 Jay-Patel cron[11162]: (CRON) INFO (pidfile fd = 3)
Feb 11 22:31:02 Jay-Patel cron[11162]: (CRON) INFO (Skipping @reboot jobs -- not system startup)
jay@Jay-Patel:~$
jay@Jay-Patel:~$
```

Q4.Create an ext4 filesystem

```
loop13      7:13    0  14.8M    1 loop  /snap/gnome-characters/399
loop14      7:14    0   3.7M    1 loop  /snap/gnome-system-monitor/51
loop16      7:16    0  91.3M    1 loop  /snap/core/8592
sda          8:0      0 931.5G    0 disk
├─sda1       8:1      0 286.1G    0 part  /home
├─sda2       8:2      0    1K     0 part
├─sda3       8:3      0 1023K     0 part
├─sda4       8:4      0    5G     0 part
├─sda5       8:5      0 95.4G     0 part  /opt
└─sda6       8:6      0 59.6G     0 part  [SWAP]
nvme0n1     259:0    0 238.5G    0 disk
└─nvme0n1p1 259:1    0 238.5G    0 part  /
jay@Jay-Patel:~$
```

```
/bin/bash 70x18
[-O feature[,...]] [-r fs-revision] [-E extended-option[,...]]
[-t fs-type] [-T usage-type] [-U UUID] [-e errors_behavior] [-
z undo_file]
[-jnvDFSv] device [blocks-count]
jay@Jay-Patel:~$ sudo mkfs.ext4 -L jay /dev/sda4
mke2fs 1.44.1 (24-Mar-2018)
Discarding device blocks: done
Creating filesystem with 1310720 4k blocks and 327680 inodes
Filesystem UUID: 584da182-1784-4fea-96f7-4ef304dc9935
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736

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

jay@Jay-Patel:~$
```

Q5. Mount the created filesystem on /partition directory.

```
loop16      7:16    0   91.3M    1 loop  /snap/core/8592
sda          8:0     0  931.5G    0 disk
├─sda1       8:1     0  286.1G    0 part  /home
├─sda2       8:2     0     1K    0 part
├─sda3       8:3     0  1023K    0 part
├─sda4       8:4     0     5G    0 part  /media/jay123
├─sda5       8:5     0   95.4G    0 part  /opt
├─sda6       8:6     0   59.6G    0 part  [SWAP]
nvme0n1     259:0    0  238.5G    0 disk
├─nvme0n1p1 259:1    0  238.5G    0 part  /
jay@Jay-Patel:~ $
```

```
jay@Jay-Patel:~ $ sudo mkfs.ext4 -L jay /dev/sda4
mkfs2fs 1.44.1 (24-Mar-2018)
Discarding device blocks: done
Creating filesystem with 1310720 4k blocks and 327680 inodes
Filesystem UUID: 584da182-1784-4fea-96f7-4ef304dc9935
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736
Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
jay@Jay-Patel:~ $
```

```
jay@Jay-Patel:media $ ls
jay
jay@Jay-Patel:media $ cd jay/
jay@Jay-Patel:jay $ ls
jay@Jay-Patel:jay $ ls
jay@Jay-Patel:jay $ ll
total 8
drwxr-x---+ 2 root root 4096 Feb  8 17:55 ./
drwxr-xr-x  3 root root 4096 Jan 27 21:17 ../
jay@Jay-Patel:jay $ cd ..
jay@Jay-Patel:media $
jay@Jay-Patel:media $ mkdir jay123
mkdir: cannot create directory 'jay123': Permission denied
jay@Jay-Patel:media $ sudo mkdir jay123
[sudo] password for jay:
jay@Jay-Patel:media $
jay@Jay-Patel:media $ sudo mount /dev/sda4 /media/jay123
jay@Jay-Patel:media $
```

Q6. Create a user and add it to one secondary group.

```
jay@Jay-Patel:~ $ man useradd
jay@Jay-Patel:~ $ sudo useradd -m -s /bin/bash -G test demouser
[sudo] password for jay:
jay@Jay-Patel:~ $ passwd demouser
passwd: You may not view or modify password information for demouser.
jay@Jay-Patel:~ $ sudo passwd demouser
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
jay@Jay-Patel:~ $
jay@Jay-Patel:~ $
jay@Jay-Patel:~ $
```

```
bluetooth:x:113:
rtkit:x:114:
ssh:x:115:
lpadmin:x:116:
whoopsie:x:117:
scanner:x:118:saned
saned:x:119:
pulse:x:120:
pulse-access:x:121:
avahi:x:122:
colord:x:123:
geoclue:x:124:
gdm:x:125:
jay:x:1000:
sambashare:x:126:
test:x:1001:demouser
mysql:x:127:
demouser:x:1002:
jay@Jay-Patel:~ $
```

Q7. Lock this user.

```
jay@Jay-Patel:~ $ sudo usermod -L demouser
jay@Jay-Patel:~ $
```

```
test:$6$jgap2Pw4$JRU8WSECLiwyZ/yWmScu8yVJV2L51FuxV10jw0bsRDdcqBQTRg5E82
XuV5bxbh71/pz7J5gxQGnNN7JXeeiNHk0:18303:0:99999:7:::
mysql:!:18305:0:99999:7:::
demouser:!:56$4w/ovGWG$SfB/QX6LfD04DbHPiLRGU/pNS7vV3Wfav21313XG5zt4xtemF
xeQstPF0zenVesK4aW.Nr9NgALQn8JD9hzzg/:18305:0:99999:7:::
jay@Jay-Patel:~ $
```

Q8. Give this user full access (without password).

```
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:$PATH"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) 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:

#include /etc/sudoers.d

Password:
demouser@Jay-Patel:~$ sudo apt-get update
Hit:1 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7
kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security/main i386 Packa
ges [437 kB]
Hit:7 http://archive.canonical.com bionic InRelease
Get:8 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Pack
ages [636 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/main Translatio
n-en [208 kB]
Hit:6 https://packagecloud.io/slacktechnologies/slack/debian jessie InR
elease
Fetched 1,369 kB in 3s (399 kB/s)
Reading package lists... Done
demouser@Jay-Patel:~$ sudo useradd patel
demouser@Jay-Patel:~$
```

Q9. Delete the created user after taking backup of its home directory.

```
demouser@Jay-Patel:~$ sudo tar -cvzf demouserdir.tar /home/demouser | sudo userdel -r demouser
[sudo] password for jay:
tar: Removing leading '/' from member names
userdel: demouser mail spool (/var/mail/demouser) not found
```

Q10.Create a file with some content. Change all lower case letter to upper case letter and save output to another file using redirections.

```
jay@Jay-Patel:~ $ tr '[:lower:]' '[:upper:]' < lowercase.txt > uppercase.txt
jay@Jay-Patel:~ $ cat uppercase.txt
123
DEMOUSER
DEMOUSERDIR.TAR
DESKTOP
DOCUMENTS
DOWNLOADS
EX6.TXT
EXAMPLES.DESKTOP
EXERCISE
F1..10.TXT
HELLO123.TXT
HELLO.TXT
JAY
JAY123
JAY12344
JAY12345
JAY123.TXT
LINUX_ASSGINMENT
LOWERCASE.TXT
MEM1.TXT
MUSIC
PICTURES
PUBLIC
SAKET
SCRIPT.SH
TARBALL1.TAR
TARBALL.TAR
TEMPLATES
UPPERCASE.TXT
VIDEOS
jay@Jay-Patel:~ $
```

Q11.Set nice value of a process to -1.

```
jay@Jay-Patel:~ $ sudo renice -n -1 14911
[sudo] password for jay:
14911 (process ID) old priority 0, new priority -1
jay@Jay-Patel:~ $
```

```
[sudo] password for jay:
14911 (process ID) old priority 0, new priority -1
jay@Jay-Patel:~ $
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
14611	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/5:1
14653	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/2:1
14891	jay	20	0	29820	5084	3416	S	0.0	0.0	0:00.01	bash
14911	jay	19	-1	21252	2820	2500	S	0.0	0.0	0:00.07	watch
15163	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/1:2
15346	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/7:1
15359	root	20	0	467532	28992	23324	S	0.0	0.2	0:01.40	php-fpm7.2
15360	www-data	20	0	552540	49420	38116	S	0.0	0.3	0:01.17	php-fpm7.2
15361	www-data	20	0	549672	42696	33372	S	0.0	0.3	0:00.17	php-fpm7.2
15951	jay	20	0	370780	8468	6772	S	0.0	0.1	0:03.22	gvfsd-network

Q12. Get list of all files used by “telnet”.

```
jay@Jay-Patel:~ $ sudo find / -name telnet
etc/alternatives/telnet
find: '/run/user/1000/gvfs': Permission denied
var/lib/dpkg/alternatives/telnet
usr/bin/telnet
usr/share/doc/telnet
usr/share/lintian/overrides/telnet
usr/share/menu/telnet
jay@Jay-Patel:~ $
```

Q13. Check if port 22 is listening using netstat and telnet command.

```
jay@Jay-Patel:~ $ ss -tulpn | grep 22
tcp    LISTEN  0      128          0.0.0.0:22      0.0.0.0:*
tcp    LISTEN  0      128          [::]:22       [::]:*
jay@Jay-Patel:~ $
jay@Jay-Patel:~ $ 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

Protocol mismatch.
Connection closed by foreign host.
jay@Jay-Patel:~ $ 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
█
```

Q14.Create a cron job which runs once in a week at 23:45.

```
@reboot sh /home/jay/script.sh  
45 23 * * * sudo cat /var/log/nginx/access.log >> /home/jay/nginx.txt  
jay@Jay-Patel:~ $
```