Scenario-based Linux Interview Questions

1. A user is not able to ssh to a remote server, what could be the possible cause?

Ans: Multiple reasons
=> If a particular file permission is modified from 400 to 666 or 777, in this case, it'll give an error "Unprotected file". [in case of accessing Linux server from AWS]

=> vim /etc/ssh/sshd_config

- SSH might be running on a different port
- Check if SSH is listening on IPv4/IPv6.
- If the user is permitted or not (DenyUsers Tom) (AllowUsers Harry)
- Public Authentication: yes (check allowed or not if you're not using the user ID and password.)
- AuthorizedKeysFile (key file path should be proper)
- Password Authentication: no (allowed or not)

- For enhanced security: based on Kerberos (disable or enable parameters)

=> cd /var/empty/
-> ls
-> sshd (check the permission of this file has to be same as it is i.e. drwx—x—x)

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Question 2. User root has created a file (/tmp/abc) with 700 permission, you want your user Aqib to have full access to a file, how do you do this?

Answer: setfacl -m u:Aqib:rwx /tmp/abc [-m is for modify]

In the case of directory, you've to assign -r for recursive

```
[root@centOS ~]# touch /tmp/demo1
[root@centOS ~]#
[root@centOS ~]# ls -lrth | grep demo1
[root@centOS ~]# ls -lrth /tmp/| grep demo1
-rw-r--r--. 1 root root  0 Jun 18 00:16 demo1
[root@centOS ~]# chmod u+x,g-r,o-r /tmp/demo1
[root@centOS ~]#
[root@centOS ~]# ls -lrth /tmp/| grep demo1
-rwx------. 1 root root  0 Jun 18 00:16 demo1
[root@centOS ~]#
[root@centOS ~]# setfacl -m u:aqib:rwx /tmp/demo1
[root@centOS ~]#
[root@centOS ~]# ls -lrth /tmp/| grep demo1
-rwxrwx---+ 1 root root  0 Jun 18 00:16 demo1
[root@centOS ~]#
[root@centOS ~]# su - aqib
[aqib@centOS ~]$
[aqib@centOS ~]$ ls -lrth /tmp/ | grep demo1
-rwxrwx---+ 1 root root  0 Jun 18 00:16 demo1
[aqib@centOS ~]$
```

To check permission set: getfacl /tmp/abc

```
[aqib@centOS ~]$ getfacl /tmp/demo1
getfacl: Removing leading '/' from absolute path names
# file: tmp/demo1
# owner: root
# group: root
user::rwx
user:aqib:rwx
group::---
mask::rwx
other::---
```

Question 3. How will you change the default login shell for all upcoming users on Linux?

Answer: 2 main files to manage your users.

=> vim /etc/login.defs (but this file contains mail directory, min/max password age, password warning, min/max user ID, system user/group ID)

and what is encryption method for password, home directory should be created or not, umask for default users.

To manage login shell
=> vim /etc/default/useradd
Modify SHELL= /sbin/nologin

Check with grep username /etc/passwd
(you'll see /home/username:/sbin:nologin)

Question 4: After creating password less ssh access, whenever I try to log in a server it asks me for the password, While I've verified that my public key is placed on a remote server?

Answer: Check permission of file first
Execute: sss-add (to figure out that your agent is enabled and connection should be established)

Question 5: How to disable a root account?

Answer: usermod -s /sbin/nologin root (will logout root)
The account will go currently unavailable.

To addback:
sudo usermod -s /sbin/nologin root
(if you see error usermod: no changes)

Then, modify to /bin/bash
- sudo usermod -s /bin/bash root

Question 6: I have a server where httpd service is running, I want that httpd should be running on cpu core no. 2 only (CPU Affinity =2)

Answer: this means to Bind the service to specific CPU

Install httpd (yum install httpd -y)

Locate (httpd service file) (install locate package if not in server)

Optional= Install locate (yum install mlocate -y) when done updatedb

Locate httpd.service
vim /usr/lib/systemd/system/httpd.service
(under Service define CPUAffinity=2)
Restart service
Reload daemon (systemctl daemon-reload)

Question 7: After reboot ,I can see the time difference in /var/log/message and OS time.

Answer: date

Or check : cat /var/log/messages (time difference)

We've hardware time to check : hwclock (show time from bios)

date command (shows command from OS)

Reason: We could see 2 diff. Time in same OS a time as a date and time within the logs

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Question 8: I want to restart the service only if the service is already running. If the service is in a stopped state, the command should do nothing.

Answer: ps fax | grep httpd or service_name

If the service is running then stop and run

systemctl try-restart httpd (this will only restart the service only if the service is running if the service is in stopped state then it'll do nothing)

Question 9. What is the max filename allowed in Linux?

Answer: 255 characters.

Question 10- What is drop cache in Linux and how do you clear it?

Answer: cat /proc/sys/vm/drop_caches (default value = 0)

There are 3 types of cache

- To free page cache: echo1> /proc/sys/vm/drop_caches
- To free dentries and inodes: echo 2> /proc/sys/vm/drop_caches
- To free page cache, dentries & inodes: echo 3> /proc/sys/vm/drop_caches

(Usually we don't do at prod environment as this will impact our services)

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EXTRA POINTS:

To shutdown at specific time = shutdown -h 10:00 "Shutting down for maintenance"

In general executable programs/scripts should live in
/bin
/usr/bin
/sbin
/usr/sbin
or somewhere under /opt
They can also appear under => /usr/local/bin OR /usr/local/sbin
OR a directory in a user's account space => /home/student/bin

One way to locate programs is to use WHICH command => which diff OR which firefox
Note: If WHICH doesn't find the program then use WHEREIS command/utility (it looks for packages in a broader range of system directories)
Ex: whereis firefox

Navigating directories: (2:28:55)

1- pwd (present working directory)
2- pushd (show you which directory you were into before /home)
Ex: you're under /home and you run pushd /tmp => /tmp /home
3- popd (works same as cd - i.e. navigate to previous directory)

Absolute and Relative path:

Absolute Path: Starts with / (begins with root directory and follow branch by branch until it reaches the desired directory or file)
Relative Path: Starts from pwd (Never starts with /)
Note: Convenient to use Relative Path as it requires less typing

Shortcuts:
. (present directory)
.. (parent directory)
~ (your home directory)

rm -i file1 (-i will always ask for confirmation y or n to delete a file)

Section - 2

Question 1: How will you change a default user id in linux?

Answer: - useradd Aqib
- Id Aqib

[uid=1001 (aqib) gid=1001 (aqib) groups=1001 (aqib)] Need to change uid

vim /etc/login.defs

- Scroll down
- Change UID_MIN 1000 to 10000 and UID_MAX 600000
- Now if you add a new user and check the id of that user so by default it'll give max uid=65535.

Question 2: root# rm -rf /tmp/test gives error operation not permitted. Reason?

Answer: Check if chatter is implemented then it'll not get deleted.

To Apply chatter: **chatter +i /tmp/test**
To Remove chatter: **chatter -i /tmp/test**

The chattr command in Linux is a file system command which is used for changing the attributes of a file in a directory. The primary use of this command is to make several files unable to alter for users other than the superuser.

Question3: /etc/hosts (Which RPM is responsible for creating this file)

Answer: rpm -qf /etc/hosts

Question 4: Diff. b/w RPM and YUM?

Answer: yum will install with all the dependencies.

Rpm: rpm -ivh rpm-file.rpm (h = hash)

How to check dependency now: rpm -qPR rpm-file.rpm

Where,

1. -q: It is used for querying any package.
2. -p: It is used for listing the capabilities that this package gives.
3. -R: This option is used for listing the capabilities over which the package depends.

Question 5: Diff. b/w Hard Link and Soft Link?

Answer: Hard Link (the inode value will be the same and it'll not get changed)

How to create hard link:

- ln /tmp/test /etc/aqib (hard link /etc/aqib on behalf of /tmp/test)
- ll -i /etc/aqib (inode will be the same for /tmp/test and /etc/aqib)
- No matter how hardlink you created the inode value will be the same but the link count will keep on increasing.
- Removing the main file the data will not be lost.

Soft Link (the inode value will be changed)

- ln -s /tmp/test /mnt/test
- ll -i /mnt/test (the inode value will be different)
- Link will be 1 only, it'll just link to the main file.
- Removing the main file the Soft link will get broken.

Key Points:

- *Hard Links are supposed to be created in the same disk (file system)*
- *Will not span across file system cz of the same inode value.*
- *In the case of a Soft link we can span across the File system as it has different inode values.*

Question 6: What is a sticky bit?

Answer: to prevent unwanted deletion. The owner of a file or root only these 2 can delete a file. The sticky bit is implemented on the top of the directory/folders always.

- When you ll or ls you see (drwxrwxrwt) this "t" is for sticky bit.

chmod +t directory_name

Question 7: How will you check open ports on Linux Server?

Answer: netstat -tunlp

To check open ports on remote Linux Server?

Answer: nmap -A IP of remote server/DNS

Question 8: Your site is throwing 500 errors, how will you start troubleshooting?

Answer: in case of 500 means that db isn't responding.

Question 9: How will you create space on disk if it's showing 100% used?

Answer: df -Th
Go to mount path

- du -sh *
- Open which consumes space.

Question 10: What is the package of sar command and what does it do?

Answer: yum install sysstat -y

- vim /etc/sysconfig/sysstat
- Modify parameters accor to need.
- Service sysstat restart
- sar -q

*The sar command is **a standard UNIX command used to gather statistical data about the system**. With its numerous options, the sar command provides queuing, paging, TTY, and many other statistics. The sar -d option generates real-time disk I/O statistics.*

Section - 3

Question 1: What are inodes in Linux? How to find an inode associated with a file?

Answer: when we created a file it has a random number
Type= ll -li /tmp/filename (you can see the inode)

So Inode contains data and data of data

- Filesize, file permission, filedata except file name
- Filename is an indexing created towards inode.
- If indode gets deleted then the file also gets deleted.

Question 2: What is the difference between umask and ulimit?

Answer: So umask is related to file/directory permission. Whenever we create a file, umask is applied.
Whenever we see ulimit it means the no. of open files a system can have.

If we define umask 000, then if we create a file like (touch /tmp/test) when you ll /tmp/test/ you'll see the permission as[-rw-rw-rw-] it means which permission you want to revoke.

Example:

If you mention umask 777 it means you're revoking every permission so if you create a file or directory now they'll have none permission.

NOTE:

the default umask for the file is 666 and for the directory it's 777. By default execution permission isn't given to a newly created file.

Ulimit depends on no. of open files which we allow to a specific user.

Path: vi /etc/security/limits.conf (this is the file where we define soft and hard limit for no. process open, for max login, for max CPU cores we can define as type,item ,value)

Question 3: What are the process states in LInux?

Answer: top command
Tasks: running, sleeping, stopped, zombie

1. Running: Actively running.

2. Sleeping: those process which are started and waiting for an interruption to execute their tasks are known as sleeping

3. Waiting: if there's a high load on the server and there's one new process which is supposed to get executed on this OS known as waiting.

Question 4: How do you check disk usage?

Answer: df -Th

```
[aqib@centOS ~]$ df -Th
Filesystem        Type      Size  Used Avail Use% Mounted on
devtmpfs          devtmpfs  877M     0  877M   0% /dev
tmpfs             tmpfs     907M     0  907M   0% /dev/shm
tmpfs             tmpfs     907M  9.2M  898M   2% /run
tmpfs             tmpfs     907M     0  907M   0% /sys/fs/cgroup
/dev/mapper/cs-root xfs       17G  5.6G   12G  33% /
/dev/sda1         xfs     1014M  258M  757M  26% /boot
tmpfs             tmpfs     182M   40K  182M   1% /run/user/1000
```

-T show disk Type

Running: df -ik show (no. of inodes)

du -sh * (To check specific folder usage that how many files are there and how much data is stored within a single file)

```
[root@centOS /]# du -sh *
0       bin                                                     219M
boot                                                    0       dev
32M     etc                                                     45M
```

home 0 lib
0 lib64

Question 5: How do you set Linux file/directory permission?

Answer: chmod 777 /tmp/test
Or we can do (a+rwx /tmt/test1) [a =all]
U = owner
G = group
O = other
- Chmod u+rwx /tmt/test1

[Note- Same for directory as well]

To change ownership:
- Chown aqib:aqib filename [1st aqib is User and 2nd one is Group]

Question 6: What is initrd image?

Answer: cd /boot -> ll

[root@centOS aqib]# cd /boot/

```
total 217492
-rw-r--r--. 1 root root    196660 Jul 18  2022 config-4.18.0-408.el8.x86_64
drwxr-xr-x. 3 root root        17 Dec 21 17:26 efi
drwx------. 4 root root        83 Jun 14 07:32 grub2
-rw-------. 1 root root 116540409 Dec 21 18:08 initramfs-0-rescue-e72a9a28117645a18b5c158292047f26.img
-rw-------. 1 root root  53286045 Dec 21 18:26 initramfs-4.18.0-408.el8.x86_64.img
-rw-------. 1 root root  27209216 Dec 22 13:21 initramfs-4.18.0-408.el8.x86_64kdump.img
drwxr-xr-x. 3 root root        21 Dec 21 17:54 loader
lrwxrwxrwx. 1 root root        45 Dec 21 17:56 symvers-4.18.0-408.el8.x86_64.gz -> /lib/modules/4.18.0-408.el8.
86_64/symvers.gz
-rw-------. 1 root root   4388961 Jul 18  2022 System.map-4.18.0-408.el8.x86_64
-rwxr-xr-x. 1 root root  10538120 Dec 21 18:01 vmlinuz-0-rescue-e72a9a28117645a18b5c158292047f26
-rwxr-xr-x. 1 root root  10538120 Jul 18  2022 vmlinuz-4.18.0-408.el8.x86_64
```

Initramfs - Initial Ram Disk File System (which is stored and loaded in the RAM at the time of system execution)
This is an image of a Kernel which holds info. About basic drivers and devices.

Question 7: What use of /etc/passwd and /etc/shadow file?

Answer: cat /etc/passswd (stores the info. of all the users like how many users are created, where the password is set, what is the user id, group id, what is comment of user, what is home directory of user, and what is login shell of user)

Similarly
cat /etc/shadow (to check about the password info. an user, whether the password is set or not)

Question 8: What is swappiness in Linux? [Critical question]

Answer: It means once your OS is running and there is a process, so when there are multiple processes that are loaded onto your RAM, so when there's a new process upcoming, so our system swaps that process from RAM to SWAP.
This process of swapping from RAM to SWAP is known as swappiness.

NOTE: Swappiness can have a value between 0 to 100.

If the value is 0 it means that we don't prefer to have swappiness; that system should be sending processes very frequently from RAM to SWAP.

And when the value is 100 this means we want this to happen very frequently.

Question 9: What's the difference b/w CP and MV command?

Answer: when we do CP the new instance for the files gets created means a different inode number is created for the copied file. Whereas in MV the inode remains the same but make sure you MV in the same File System (/dev or /sda)

Question 10: How do you create a user with admin and without admin rights?

Answer: If you create a user or for any existing user if you assign that user in vim /etc/sudoers/ under the Service-> root then these users will be have the privilege of root users.

Question 11: What 5 commands a Linux Admin should know?

Answer:

1. Rsync

rsync or remote synchronization is a software utility for Unix-Like systems that efficiently sync files and directories between two hosts or machines. One of them being the source or the local-host from which the files will be synced, the other one being the remote-host, on which synchronization will take place. There are basically two ways in which *rsync* can copy/sync data:

- **Copying/syncing to/from another host over any remote shell like *ssh*, *rsh*.**
- **Copying/Syncing through rsync daemon using TCP.**

Rsync is famous for its delta-transfer algorithm, in which it copies only the differences between the source files present in the local-host and the existing files in the destination or the remote host.

Syntax : rsync local-file user@remote-host:remote-file

Syntax: Rsync [options] source [destination]

2. Sed

SED command in UNIX stands for stream editor and it can perform lots of functions on files like searching, find and replace, insertion or deletion. Though the most common use of SED command in UNIX is for substitution or for find and replace. By using SED you can edit files even without opening them, which is a much quicker way to find and replace something in a file, than first opening that file in VI Editor and then changing it.

- **SED is a powerful text stream editor. Can do insertion, deletion, search and replace(substitution).**
- **SED command in unix supports regular expression which allows it to perform complex pattern matching.**

3. Awk

Awk is a scripting language used for manipulating data and generating reports. The awk command programming language requires no compiling and allows the user to use variables, numeric functions, string functions, and logical operators.

AWK Operations:
(a) Scans a file line by line
(b) Splits each input line into fields
(c) Compares input line/fields to pattern
(d) Performs action(s) on matched lines

Syntax: awk options 'selection _criteria {action }' input-file > output-file

```
syedaqib@EXO-GGN-0563:~/test$ awk '{print}' employee.txt
ajay manager account 45000
sunil clerk account 25000
varun manager sales 50000
amit manager account 47000
tarun peon sales 15000
deepak clerk sales 23000
sunil peon sales 13000
satvik director purchase 80000
syedaqib@EXO-GGN-0563:~/test$
syedaqib@EXO-GGN-0563:~/test$ awk '/manager/ {print}' employee.txt
ajay manager account 45000
varun manager sales 50000
amit manager account 47000
syedaqib@EXO-GGN-0563:~/test$
```

4. Lsof

   lsof command stands for List Of Open File. This command provides a list of files that are opened. Basically, it gives the information to find out the files which are opened by which process. With one go it lists out all open files in the output console. It cannot only list common regular files but it can list a directory, a block special file, a shared library, a character special file, a regular pipe, a named pipe, an internet socket, a UNIX domain socket, and many others. it can be combined with grep command and can be used to do advanced searching and listing.

Syntax : `$lsof [option][user name]`

Ls -u aqib [list all file open by user aqib]

5. Grep

`grep` (Global Regular Expression Print) is a command-line utility used to search for specific patterns of text within files or output.
Example 1 - Search for a word in a file => grep "error" logfile.txt
Example 2 - Case Sensitive search => grep -i "error" logfile.txt

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Section - 4

Question 1: What's the port of SSH?

Answer: 22
run : netstat -tunlp

```
[root@centOS ~]# netstat -tunlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 192.168.122.1:53        0.0.0.0:*               LISTEN      1660/dnsmasq
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      1006/sshd
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      1003/cupsd
tcp6       0      0 :::111                  :::*                    LISTEN      1/systemd
tcp6       0      0 :::22                   :::*                    LISTEN      1006/sshd
```

P - PID/Program name
L - Listen State
N- convert local address into numeric value
T - TCP
U- UDP

Question 2 - What is the main configuration file of SSH?

Answer: which ssh

The below package is responsible.

```
[aqib@centOS ~]$ which ssh
/usr/bin/ssh
[aqib@centOS ~]$
[aqib@centOS ~]$ rpm -qf /usr/bin/ssh
openssh-clients-8.0p1-16.el8.x86_64
[aqib@centOS ~]$
```

If we want to know what are the file created by the above rpm:
Run: rpm -ql openssh-clients-8.0p1-16.el8.x86_64

[-ql => query list]

NOTE: SSH is both client and server.

```
[aqib@centOS ~]$ rpm -qa | grep ssh
libssh-config-0.9.6-3.el8.noarch
libssh-0.9.6-3.el8.x86_64
qemu-kvm-block-ssh-6.2.0-20.module_el8.7.0+1218+f626c2ff.1.x86_64
openssh-clients-8.0p1-16.el8.x86_64
openssh-askpass-8.0p1-16.el8.x86_64
openssh-server-8.0p1-16.el8.x86_64
openssh-8.0p1-16.el8.x86_64
[aqib@centOS ~]$
[aqib@centOS ~]$ rpm -ql openssh-server-8.0p1-16.el8.x86_64
/etc/pam.d/sshd
/etc/ssh/sshd_config
/etc/sysconfig/sshd
```

IMP: Main configuration file of SSH Server - /etc/ssh/sshd_config

For SSH Client - /etc/ssh/ssh_config

Question 3- How to modify/ change port no. of SSH?

Answer: vim /etc/ssh/sshd_config

- systemctl reload sshd
- netstat-tunlp (If you aren't able to change the port disable SELInux)

Check the logs from below path:

cat /var/log/secure (some SELinux permission should be creating the problem when we trying to change the port)

Run below commands:

1. setenforce
2. getenforce
3. setenforce 0 (disabling SELinux)
4. systemctl restart sshd
5. netstat -tunlp (you'll see SSH port has been changed)

Question 4: How to block SSH access for a single user?

Answer:
From root => vim /etc/ssh/sshd_config

Go to bottom and add => DenyUsers Username1 Username2

Reload ssh => systemctl reload sshd

Question 5: What are the types of files in Linux OS?

Answer: 7 types of files (regular, directory, symbolic link, FIFO special, block special, character special, and socket)

- ll /dev/

```
[root@centOS ~]# ll /dev/
total 0
crw-r--r--. 1 root root     10, 235 Jun 14 07:27 autofs
drwxr-xr-x. 2 root root          160 Jun 14 07:26 block
drwxr-xr-x. 2 root root           80 Jun 14 07:26 bsg
drwxr-xr-x. 3 root root           60 Jun 17 00:41 bus
lrwxrwxrwx. 1 root root            3 Jun 14 07:27 cdrom -> sr0
drwxr-xr-x. 2 root root         2720 Jun 14 07:30 char
crw-------. 1 root root       5,   1 Jun 14 07:27 console
lrwxrwxrwx. 1 root root           11 Jun 14 07:26 core -> /proc/kcore
drwxr-xr-x. 3 root root           60 Jun 17 00:41 cpu
crw-------. 1 root root     10,  62 Jun 14 07:27 cpu_dma_latency
drwxr-xr-x. 2 root root           80 Jun 14 07:26 cs
drwxr-xr-x. 6 root root          120 Jun 14 07:26 disk
brw-rw----. 1 root disk    253,   0 Jun 14 07:27 dm-0
brw-rw----. 1 root disk    253,   1 Jun 14 07:27 dm-1
drwxr-xr-x. 3 root root          100 Jun 14 07:27 dri
crw-rw----. 1 root video    29,   0 Jun 14 07:27 fb0
lrwxrwxrwx. 1 root root           13 Jun 14 07:26 fd -> /proc/self/fd
crw-rw-rw-. 1 root root       1,   7 Jun 14 07:27 full
crw-rw-rw-. 1 root root     10, 229 Jun 14 07:27 fuse
crw-------. 1 root root     10, 228 Jun 14 07:27 hpet
drwxr-xr-x. 3 root root            0 Jun 14 07:27 hugepages
crw-------. 1 root root     10, 183 Jun 14 07:27 hwrng
lrwxrwxrwx. 1 root root           12 Jun 14 07:27 initctl -> /run/initctl
drwxr-xr-x. 3 root root          220 Jun 14 07:27 input
```

C - character file
D - directory (special types of files that holds the metadata of other file and folders)
L -Link file (pointing to other file)

Question 6:

(a) How to check free space on Linux OS?

Answer: df -Th (check file system type)

(b) How to check the size of files and folders on a server?

Answer: du -sh *

To sort (asc order) - du -sh * | sort
To sort (desc order) - du -sh * | sort -rn

Question 7: How to create a file for a specific size like 100MB?

Answer: fallocate -l 100M filename

```
[root@centOS Downloads]# fallocate -l 50M testfile1
[root@centOS Downloads]# du -sh *
50M     testfile1
[root@centOS Downloads]#
```

Question 8: How to check open ports on a server? Also how to check open ports on a remote server without login?

Answer: netstat -tunlp (for your server)

nmap -A 8.8.8.8 (for remote server) [yum install nmap -y]

Section - 5

Disk Partition

How to check disk partition => fdisk -l
Every /dev you see gives you the count of disks available.

Why do we need to create a partition?
Answer: Units of data store -> bit, bytes, kb, mb, gb, tb, pb....

When you need to format a disk you're not allowed to format big chunks of data. Ex: XFS can format only 16TB of disk space as a single partition (as per RedHat regulatory). So we have to break it down to format.

3 types of partition:

- Primary (stores OS by default) [max 4 primary we can create]
- Extended
- Logical (gets created from Extended)

NOTE: You cannot create more than 4 partitions on a single disk.

IMP: Out of 4 partitions we can have 3 as Primary and rest is Extended and out of Extended we create Logical.

P	P	P	Extended L L L L L L

NOTE: Till /dev/sda3 is Primary partition rest suppose /dev/sda5 so on are logical partitions.

HOW to create a partition of a DISK?

- fdisk -l (see the partitions)
- Then chose a disk on which partition needs to be made
- Like: /dev/sda or /dev/sda1

```
[root@centOS ~]#
[root@centOS ~]#
[root@centOS ~]# fdisk /dev/mapper/cs-root

Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

The old xfs signature will be removed by a write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x626251cb.

Command (m for help): m

Help:

  DOS (MBR)
   a   toggle a bootable flag
   b   edit nested BSD disklabel
   c   toggle the dos compatibility flag

  Generic
   d   delete a partition
   F   list free unpartitioned space
   l   list known partition types
   n   add a new partition
   p   print the partition table
   t   change a partition type
   v   verify the partition table
   i   print information about a partition
```

- Press m for help
- Press n for new partition
- Press p for Primary and e for extended.

Partition type
p   primary (0 primary, 0 extended, 4 free)
e   extended (container for logical partitions)
Select (default p): e
Partition number (1-4, default 1): 1
First sector (2048-35643391, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-35643391, default 35643391): +20M

- Select partition number (1-4)
- Leave the next step as it is.
- Last Sector means choose the disk space of your partition
    - + 20M (M means MB)
    - Press w to write and exit

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): e
Partition number (1-4, default 1): 1
First sector (2048-35643391, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-35643391, default 35643391): +20M

Created a new partition 1 of type 'Extended' and of size 20 MiB.

Command (m for help): p
Disk /dev/mapper/cs-root: 17 GiB, 18249416704 bytes, 35643392 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x626251cb

Device                     Boot Start   End Sectors Size Id Type
/dev/mapper/cs-root-part1       2048 43007   40960  20M  5 Extended

Command (m for help): w
The partition table has been altered.
Failed to add partition 1 to system: Invalid argument

The kernel still uses the old partitions. The new table will be used at the next reboot.
Syncing disks.
```

Once done check fdisk -l

Now RUN:
[root@centOS ~]# partx /dev/mapper/cs-root (original disk name which parted)
NR START END SECTORS SIZE NAME UUID
1 2048 43007 40960 20M 626251cb-01

The above partx command will give you the details.

Now Format the disk and create the File System on it. (FS enables your disk to store disk)

Run : mkfs.xfs (or you can use any support FS like ext3,ext4,xfs..so on)

- mkfs.xfs /dev/sda1 [/dev/sda1 = disk you need to format]
- Lsblk (what partition/disk do we have available)
- Now make a directory for Mount Point
- mkdir /abc (any name you can take)
- mount /dev/sda1 /abc [mounting partition to mount point)

** So partition /dev/sda1 is mounted on /abc*

If we've to mount permanently the make and entry in /etc/fstab

```
#
# /etc/fstab
# Created by anaconda on Wed Dec 21 11:40:43 2022
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/cs-root     /                       xfs     defaults        0 0
UUID=069e8a0f-ee31-47b1-87ea-0f293ba76daf /boot                   xfs     defaults        0 0
/dev/mapper/cs-swap     none                    swap    defaults        0 0
~
~
~
~
```

After making an entry in /etc/fstab
Run= mount -a (all entries available within fstab will be available as the mount point).

NOTE: If your NFS server goes down then you shall not be able to unmount the disk.
Run: unmount - l (to mount forcefully) [-l = lazy]

If it's mounted permanently then you can run mount -a again to enable the disk.
