

MODULE 2 : LINUX

used to transit
↑ to super user

super user do switch user

Initialization

[ec2-user @ ip-172-31-81-136 ~] \$ sudo su

Normal

Private IP

You are
normal user

Gets all the
admin privileges

[root @ ip-172-31-0-234 ec2-user] #

admin

means now you are not
a user => you are admin

Basics and History of Linux

UNIX

1964 → 1969

Bell Laboratory
New Jersey

withdraw

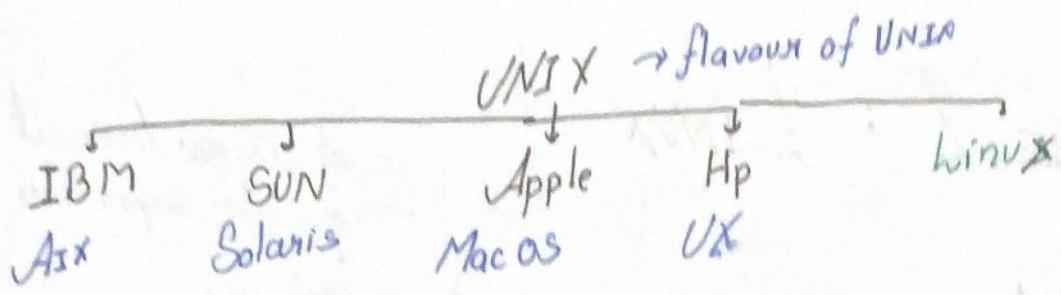
Dennis Ritchie & Ken Thompson

UNICS : Uniplexed Information & Computing Service

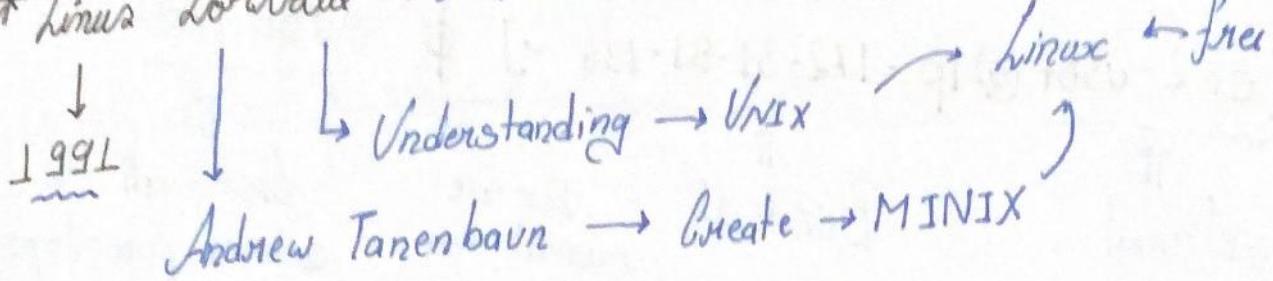
free : → 1975

UNIX V6

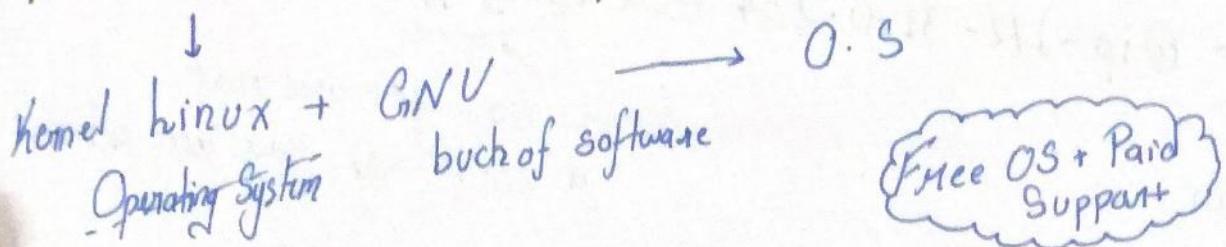
Most Popular



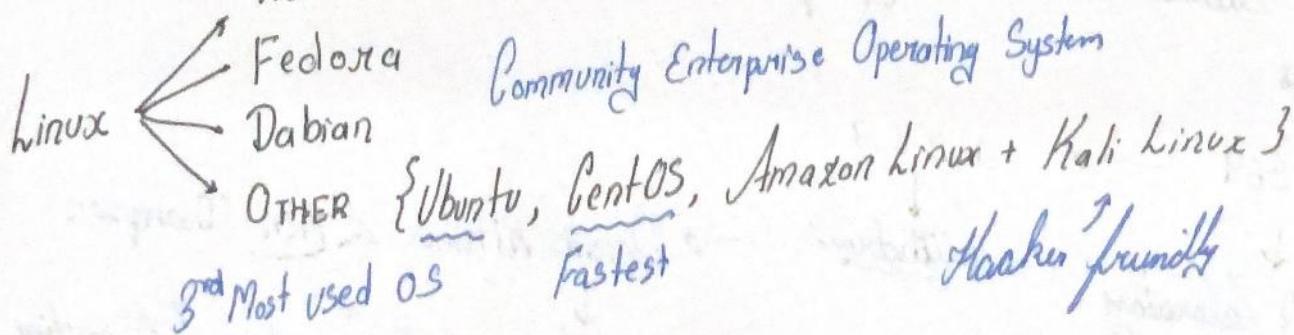
* Linus Torvalds → \$5000 is the cost //



1991-1995 Free Software movement ⇒ GNU



Red Hat Enterprise Linux (RHEL)



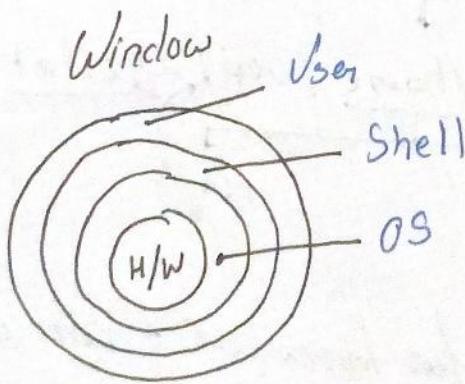
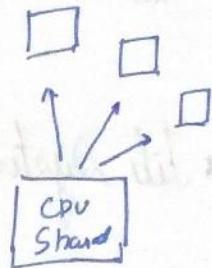
CLI Command Line Interface → Window

OS ← GUI Graphical User Interface → Linux

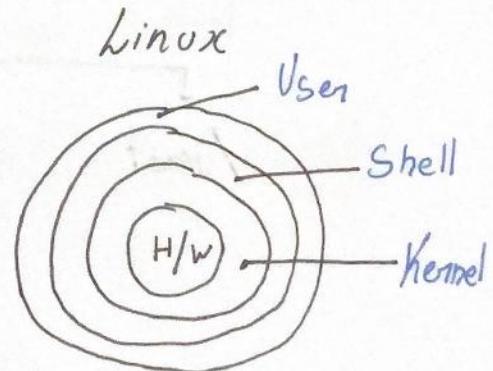
- * Linux is a Kernel not an OS.
- * Linux is not a UNIX derivative, it was written from scratch
- * Linux distribution is the Linux kernel and a collection of software that together, create an OS

⇒ Features

1. Open source
2. Secure
3. Simplified updates for all installed software
4. Light weight
5. Multiuser - Multi task
6. Multiple distribution → Redhat, Debian, Fedora

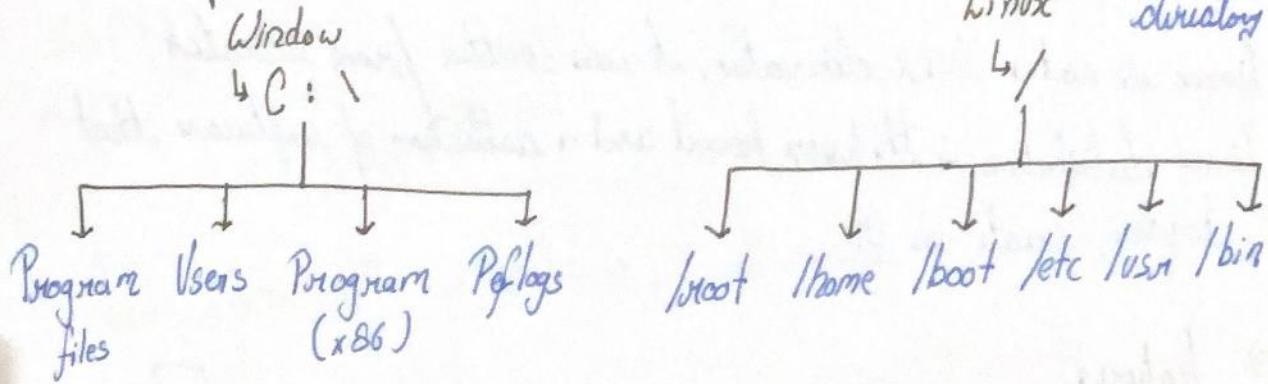


Folder
Administrator
File
Software



Directory
Root user
File
Package

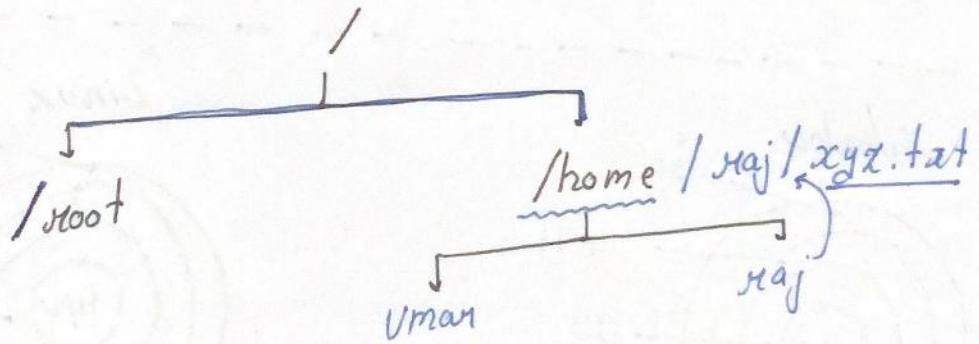
⇒ * File System Hierarchy



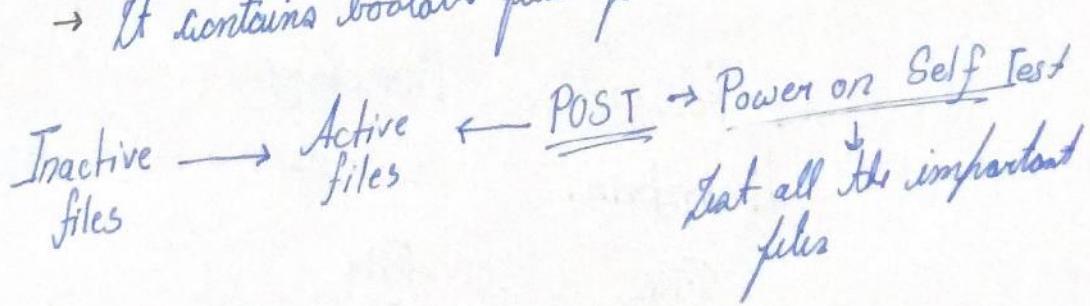
⇒ * File System Hierarchy for Linux

/home → home directory for other user

/root → home directory for root user



/boot → It contains bootable files for Linux ex → initrd



/etc → It contains all configuration files
↳ RAM, Hardisk

User → By default software are installed in this directory

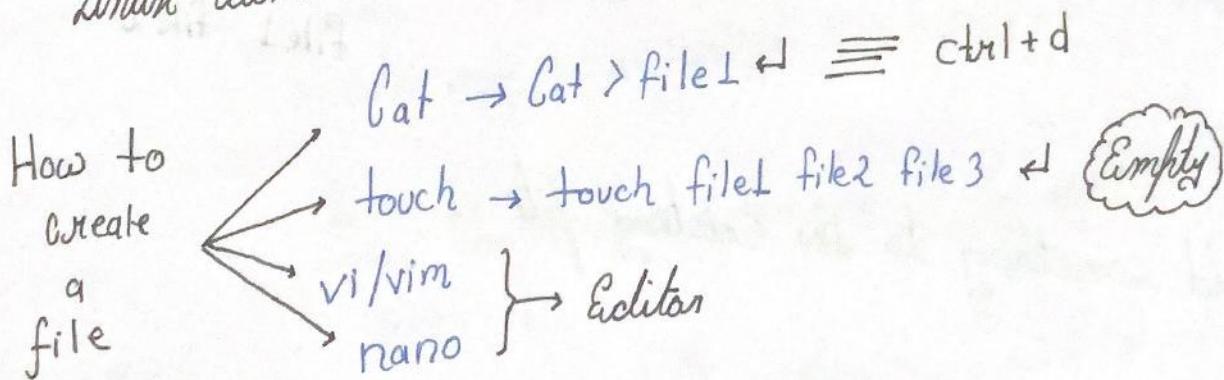
binary
↳ /bin → It contains commands used by all users

system binary
↳ /sbin → It contains commands used by only root user

/opt = optional application software package

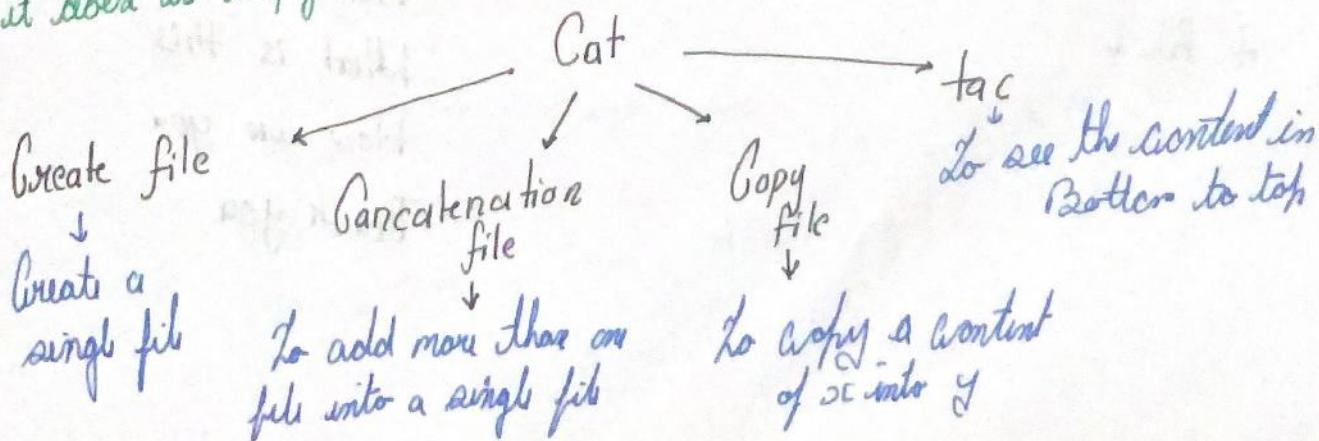
/dev → Essential device files. This include terminal devices or any devices attached to the system

⇒ * Linux command and its use cases



→ Cat Command

The cat command is one of the most universal tool, that yet all it does is copy standard input to standard output



cat > file1 ↴

Hello World

What is this

How are you

Ctrl+d

file1

ls ↴

cat file1

Hello World

What is this

How are you

cat > file2 ↴

Namaste

file1 file2

ls

// Add something to the existing file

cat >> file1 ↴

Thank you

cat file1

Hello World

What is this

How are you

Thank you

// Copy content of one file to another

```
# cat file1 file2 > all
```

file1 file2 all

```
# ls
```

```
# cat all
```

Hello World
What is this
How are you
Thank you
Namaste

Touch
Command

- >Create an Empty file
- Create multiple empty files
- Change all timestamps of a file
- update only access time of a file, modify time of a file

TimeStamp

- Access Time (last time when the file was accessed)
- touch -a
- Modify Time (last time when a file was modified)
- touch -m
- Change Time (last time when file's metadata was changed)

file1

Access time	Time	date
Modify time	time	date
Change time	time	date

stat file1

```
# touch file1  
# ls  
# touch file2 file3 file4  
# ls  
# touch file2 // Update the stat to current  
# stat file2
```

```
# stat -a file1 // Change only the access time  
# stat -m file1 // Change only the modify time  
// Change time will only modify, after actual change in metadata
```

⇒ VI Editor

- A programmer text editor
- It can be used to edit all kinds of plain text, it is specially used for editing programs mainly used for Unix programs

NOTE : :w To Save
:wq or :x To Save and Quit
:q Quit
:q! force quit, no save

'vi' is standard whereas 'nano' has to be available
depending on the linux you use

vi file a

```
i  
Hello  
Bye Bye  
-----  
insert  
csc → :wq
```

HJKL
↳ used to navigate

ls

cat filea

file a

Hello
Bye Bye

⇒ nano command

ctrl + O → ctrl + X
↳ to override & save

nano file b



ctrl + X

→ Y ↴

↑
Do you want to save

⇒ * Basic Commands

ls -l (OR) \\ For detailed listing of your files

ls -a Used to show hidden files

history Shows the command that we have used

⇒ * How to create a directory

#mkdir dir1

dir1

#ls

// Make nested directories

#mkdir -p dir1/dir2/dir3

dir1 dir2

#ls

cd dir2

↑

change directory

dir3

ls

cd.. ← Parent directory. Takes you to one directory backword

pwd ← print working directory

pwd /home/ec2-user/dir1/dir2/dir3
#[--- dir3] # cd/.. → Gets you 3 step backward

[.ec2-user]

#mkdir dir4 dir5 dir6 → Create multiple directory

// Create a hidden file in linux

touch .file1

dir1 file2

ls

dir1 file1 file2

ls -a

dir1 dir2 file1 file2

mkdir .dira

// How to copy a file ← we can use cat also

cp file1 file2 ← Data will get overwrited
Source ↗ (destination)

// for cut and paste

mv file1 file2
cut paste

// Rename ← same command ← mv

#mv file1 file 2
old-name new-name

How to remove (delete) files or directories

rmdir → This command is used to remove the specified directory (empty)

rmdir -p → Remove both the parents and child directories

rmdir -pv → Removes all the parent and sub-directories along with the verbose.

rm -rf → Remove even non-empty files & directories

rm -rpf → Removes non-empty directories including parent & sub-directories

rm -ri → Removes empty directories.

→ hostname

↳ tells you about the details machine you are using

Umars-MacBook-Air.local

hostname

→ ifloating

→ ifConfig

↳ tells you in detail about the ip address of every nodes

ifConfig

→ hostname - i <= shows specifically ip address of your pc

// If you want to know the version of OS you are using

cat /etc/os-release ≈ /etc/os-rele*

⇒ yum ⇒ yellowdog update modified

↓
package → you to install, update or remove another packages

yum install httpd ← daemon:

↓
basically apache server actually

yum install httpd -y
→ to automatically say yes whenever it needs

yum remove httpd ← Remove httpd from server

yum update httpd ← Update the given file, if exists

Now the given package is installed but it is not initialized or initiated

↓ Now we ~~as~~ have to start it

Service httpd start ← Used to start given server

Service httpd status ← Check the status of given server whether its started or not

As you now, complete your work and turned off the machine

↳ All the services will be stopped by itself

Now i want that software to install automatically
as soon as i reboot my machine again

chkconfig httpd on ← Adds automation and
opens the service by itself

chkconfig httpd off ← Turns off the automation

yum list installed ← gives a list of all the software
that is installed or not

But what if i want to check about specific
software

which chef ← tells you whether the given
software is installed or not

whoami ← tells you your role in this
instance

root

→ echo command ← used to print certain message

echo "Hello"

Hello

↓
Creating a file using echo

echo "Welcome" > file2

Insert data in this file / Create a file then insert data

welcome

cat file2

→ append in file

echo "Namaste" >> file2

Hello Welcome
Namaste

cat file2

↓
if you want to empty or delete the data of the file

echo > file2

cat file2

→ grep command ← used to find given text from
↳ same as ctrl+f the given file

grep root /etc/passwd { } → bweepp

→ sort command ← used to print the output in
alphabetical order

gs sort file

=> USER AND GROUP LINUX COMMANDS

useradd : To Create user

useradd vmar

cat /etc/passwd

⇒ groupadd : To Create group

groupadd techBatch

cat /etc/group

↳ vmar would be present } If you create a ~~user~~ group without a group
then it will create a group by itself

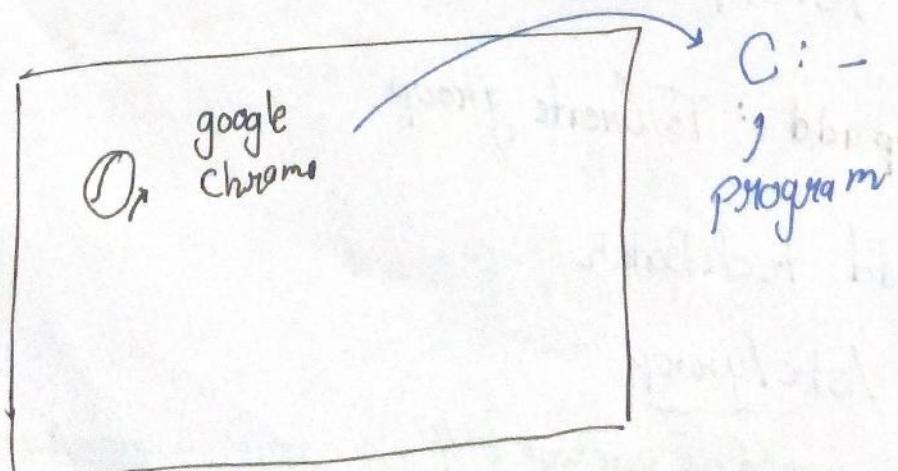
User → group (Created by itself)
group → user (No user ~~exist~~ will be there)

gpasswd -a / -M To add user into group,
to add multiple user

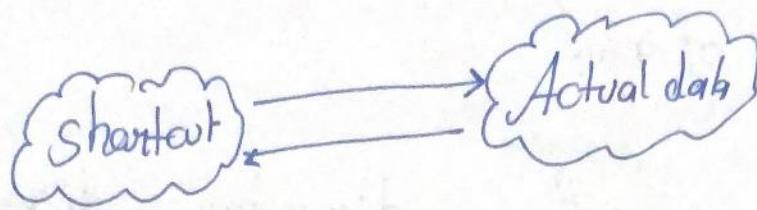
gpasswd -a ^{User} aman ^{group} techBatch
for one user only

gpasswd -M ^{all users} ajay, sameer, vijay ^{group} techBatch
for multiple user

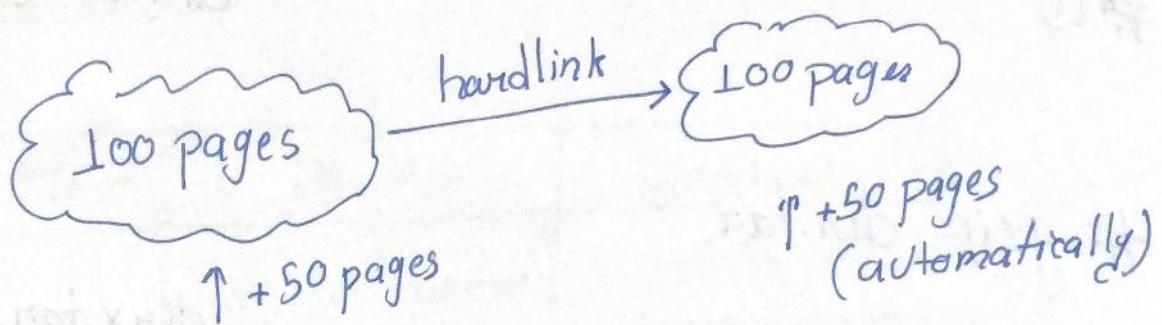
- * ln → hardlink → backup
- * ln -s → softlink → shortcut



~~JavaScript~~



```
# ln -s file1 softfile  
softfile > file1  
# ls -l
```



```
# ln file2 backupFile2  
# ls
```

* tar → Tar is an archiver used to combine multiple files into one.

↳ Works same as zip file

gzip : gzip is a compression tool used to reduce the size of a file

tar - cvf dirx.tar dirx
l14 ^{Verbose} Create ^{forcefully}

dirx/diry/dirz

ls dirx dirx.tar

gzip dirx.tar

dirx.tar.gz

ls

⇒ Recieve tar

gunzip dirx.tar.gz

dirx.tar

ls

tar - xvf dirx.tar
^{extract}

#ls

dirx

wget : wget is the non-interactive network
downloader

wget <url>

⇒ Access Modes / Permissions

Access Mode	File	Directory
r	4	To display the content
w	2	To modify
x	1	To execute the file

d rwx r-w r--

1 root root 6 July 01 04:10 dirx

touch file1

mkdir dirx

ls -l

r = Read x = Execute → .exe
w = Write

	Symbolic link			file size in bytes		Time		name of file
file	Owner or root user	Group	Others	who is the owner of file	group of file	Date		
(1)	rwx	r-x	r--		root	root	0 July 01 04:00	file1

Commands

chmod → Used to change the access mode of the file

d	rwx	r-x	r--		root	root	6 July 01 04:10	dirX
	Owner	Group	User					
	4+2+1	4+0+1	4+0+0					
	7	5	4	↓	↓	↓	⇒ 754 is its permission	

d	rwx	rwx	rwx	change mode
	7	7	7	# chmod 777 dirX
				# ls -l

Ans: — r-x — wx r-- if i want to give this permission to dirX, write the command
chmod 534 file1 ←

Ques: What does chmod 700 mean for directory dirx

Ans: d rwx ----- dirx

Ans: for chmod 536
owner ↓ group ↓ other ↓
r-x -wx rw-

Method - 2

U = user/owner

g = group

o = other

=, -, +

Initially rwx r-x r--

Ques: I want to give r-- rwx -wx

chmod U=r, g=rwx, o=wx dirx

chmod U-wx, g+w, o= wx dirx

chown → change the owner of the file or directory
chgrp → change the group of a file or dir

chown umar file1

chgrp devOps file1

ls -l

umar devOps