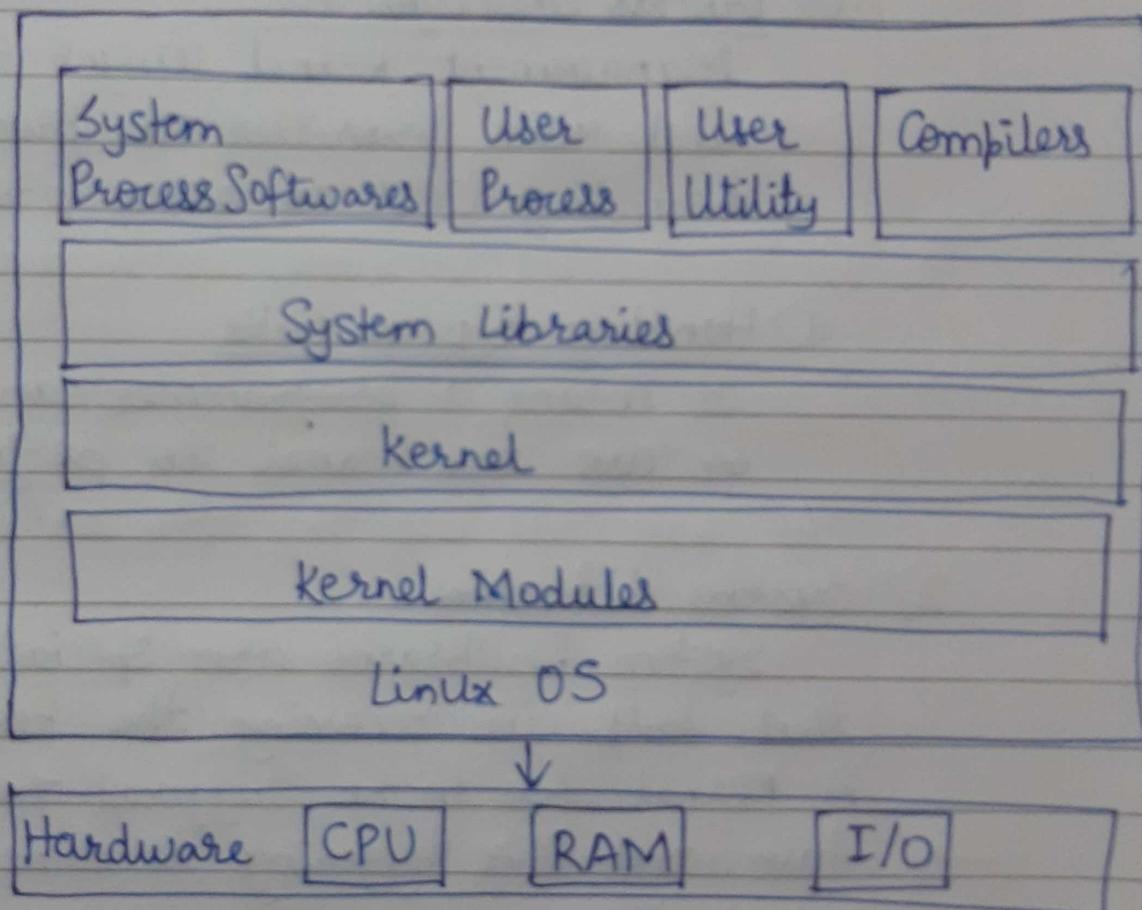


LINUX

- Linux is an open source operating system.
- The Linux OS was developed by Linus Torvalds in 1991.

Structure of Linux



1) Kernel

It is the core of the OS. It establishes communication between devices and softwares. It has 4 responsibilities.

a) Device Management

Kernel stores the data related to devices like CPU, memory device, graphic cards in the device driver.

b) Memory Management

Kernel keeps track of the used and unused memory and make sure that processes don't manipulate data of each other using virtual memory.

c) Process Management

Management kernel assigns enough time and gives priorities to processes before handing CPU to other processes.

d) Handling System Calls

It means a programmer can write a query or ask the kernel to perform a task.

2) System Libraries

System libraries are special programs that help in accessing the kernel's feature. A kernel has to be triggered to perform a task, and this triggering is done by the applications.

Programmers have developed a standard library of procedures to communicate with the kernel.

The most well-known system library for Linux is Glibc (GNU C library)

3> System Tools .

Linux OS has a set of utility tools , which are usually simple commands.

With the help of commands , you can access your files , edit and manipulate data in your directories or files , change the location of files or anything .

4> Development Tools

To update your system , these are the additional tools and libraries .

→ Why use Linux ?

1> Free and open-source Operating System .

2> It is secure .

3> Favourable choice of Developers .

4> It is a flexible OS .

5> Several Distributions

6> Fast performance .

7> Community Support is large .

8> Privacy - Linux never takes much private data.

9> Powerful Networking

10> Compatible with many file formats.

11> Less Installation time

12> Multitasking.

13> Heavily Documented for beginners

→ Linux Shell

A shell provides you with an interface with the Linux System.

Shell is an environment in which we can run commands, programs and shell scripts.

→ Linux Distros

1> Ubuntu

5> Fedora

2> Linux Mint

6> Kali Linux.

3> Debian

7> Arch Linux.

4> Red Hat Enterprise

* Set command

This command is used to set and unset certain flags or settings within the shell environment.

Set [options]

* Export command

It is used to ensure the environment variables and functions to be passed to child processes.

export -f function-name

export [options]

* Linux Directory Commands.

pwd :- (Print word directory) It displays the current working location

ls :- It will list out all the files in the folder.

cd :- (Change directory). It is used to change the directory.

mkdir :- To create a directory.

rmdir :- Remove a directory from the system.

* Commonly used commands

- 1> alias - Converts complex commands into simpler ones.
- 2> bzip2/bunzip2 - Compresses / Decompresses bzip2 file .
- 3> Cal → Displays calender .
- 4> cat -s (concatenate) → It reads data from the file and gives their content as output .
 - = Cat > → input to file (overwrites)
 - Cat → output .
 - Cat >> → append
 - Cat x.txt & y.txt > out.txt → append file .
- 5> cd → Change directory .
- 6> chgrp → Change group .
- 7> chmod → Changes permission for a file or directly .

- 8> chown → Changes the owner of a file or directory.
- 9> clear → Clears the terminal.
- 10> cp → Copies file contents from one file to another.
- 11> cut → Used to display the desired column of a file.
- 12> date → Displays the current date.
- 13> echo → Prints the typed word on terminal.
- 14> file → Displays the type of file.
- 15> find → Finds file for a particular search.
- 16> gzip /gunzip → Compresses / Decompresses a gzip file.
- 17> head → Displays the first ten lines of a file.
- 18> locate → Searches a file in the database.
- 19> ls → Lists all the files in a directory.
- 20> mkdir → Creates directory.
- 21> mv → Renames Moves directories or files.

- 22> `passwd` → Set a password for a user/group.
- 23> `pwd` → Displays the current working directory.
- 24> ~~rename~~ `mv` → Renames file (more than one)
- 25> `rm` → Removes a file.
- 26> `rmdir` → Removes a directory.
- 27> `Set` → It is used to set or unset certain flags or settings within the shell environment.
- 28> `sleep` → Waits for specified no. of seconds.
- 29> `sort` → Sorts the content in alphabetical order.
- 30> `Su` → It allows a user to run shell as another user.
- 31> `sudo` → It allows a user to start a program with the credentials of another user.
- 32> `tac` → Displays file contents in opposite order.
- 33> `tail` → Displays the last ten lines of a file.

- 34> tar → Compresses a directory .
- 35> time → Displays time taken to execute a command
- 36> touch → It creates an empty file .
- 37> type → Displays information about command type .
- 38> unset → Removes a variable from shell .
- 39> useradd → Adds user .
- 40> ~~Deletes~~ userdel → Deletes user .
- 41> usermod → Modifies the properties of a user .
- 42> vi → Opens a vi editor to write a program .
- 43> w → Displays who is logged on and what are they doing .
- 44> wc → Counts words, lines, characters .
- 45> who → Displays who is logged on the system .
- 46> whoami → Tells the name of the user .
- 47> who am i → Displays the line pointing to your current session .

- 48> exit → Used to exit from current shell.
- 49> ip → Updated version of ipconfig command.
It is used to assign an IP address, initialize an interface, disable an interface.
- 50> ssh → Used to create a remote connection through the ssh protocol.
- 51> mail → Used to send mails from the command line.

mail -s "Subject" <recipient address>
- 52> ping → (Packet Internet Groper) Used to check connectivity between two nodes, i.e. whether a server is connected.
- 53> host → Used to display the IP address for a given domain name
- 54> top → To lists all the running processes in the Linux system.
- 55> killall → To kill a process if you know the exact process name. (No need of PID)

56) pkill → It allows us to kill a process by entering the matching name of the process.

pkill java ⇒ It will kill the processes with matching name java.

57) kill → To kill a process with its PID.

kill 5296

58) ps -A → To know the PIDs of process.

59) kill -l → To see a list of signals in your system.

60) SIGNALS

SIG NAME	SIG NUMBER	USE
SIGNULL	0	NULL, check access
SIGHUP	1	Hangup
SIGINT	2	Interrupt
SIGQUIT	3	Quit
SIGKILL	9	Kill
SIGTERM	15	Terminate
SIGSTOP	24	Stop
SIGSTP	25	Stop/pause a process
SIGCONT	26	Continue a stopped process

- 61) grep → (Global Regular Expression Print)
It filters the content of a file which makes our search easy.
- 62) Comm → It compares two files or streams.
- 63) tr → (Translate) It is used to translate to uppercase and vice versa or new lines into spaces.
- 64) Uniq → To remove all the repeated lines from a file.
- 65) !! → (Pronounced as bang bang). It repeats the last typed command in your shell
- 66) ifconfig → Displays and manipulate route and network interfaces
- 67) traceroute → Network troubleshooting utility.
- 68) netstat → Display connection information.
- 69) route → Shows and manipulate IP routing table.
- 70) iwconfig → Used to configure wireless network interface.

71) hostname → To identify a network name .

72) curl or wget → To download a file from internet.

73) mte → Combines bing and tracepath into a single command .

74) whois → Will tell you the website's whois .

75) if plugstatus → Tells whether a cable is plugged or not .

* Interview Questions

1> What is LILO.

→ Linux is a boot loader for Linux. It is used to load the Linux OS into the main memory to begin its operations.

2> Is it legal to edit Linux Kernel?

→ Yes. You can edit Linux kernel because it is released under General Public License (GPL) and anyone can edit it.

3> What is the advantage of open source?

→ Open source facilities you to distribute your software, including source codes freely to anyone who is interested. So, you can add features and even debug and correct errors.

4> What are the basic components of Linux?

→ Kernel, Shells, GUIs, system utilities and application programs.

5> What is the advantage of Linux?

→ Every aspect comes with additional features, and it provides a free downloading facility for all codes.

6) Name some shells that are commonly used ?
→ bash, csh, ksh, bsh .

7) Define inode .
→ Each file is given a unique name by the operating system which is called as the inode .

8) Explain Process Id .
→ The operating system uniquely identifies each process by a unique id called as the process id(PID)

9) What is root account ? account ?
→ The root account is like system administrator account . It provides you full control of the system . You can create and maintain user accounts , assign different permission for each account .

10) What is SMTP ?
→ SMTP stands for Simple Mail Transfer Protocol . It is an internet standard for mail transmission

11) What is Samba ?
→ Samba Service is used to connect Linux machines to Microsoft network by providing Microsoft SMB support .

- 12> What is a virtual desktop ?
→ The virtual desktop is used as an alternative to minimizing and maximizing different windows on the current desktop. Virtual desktop facilitates you to open one or more programs on a clean state rather than minimizing or restoring all the needed programs.
- 13> What are the file permissions in Linux ?
→ Red Read , Wite , Execute - User can run the file .
- 14> Is Linux virus free ?
→ No, but Linux is known to have less number of viruses.