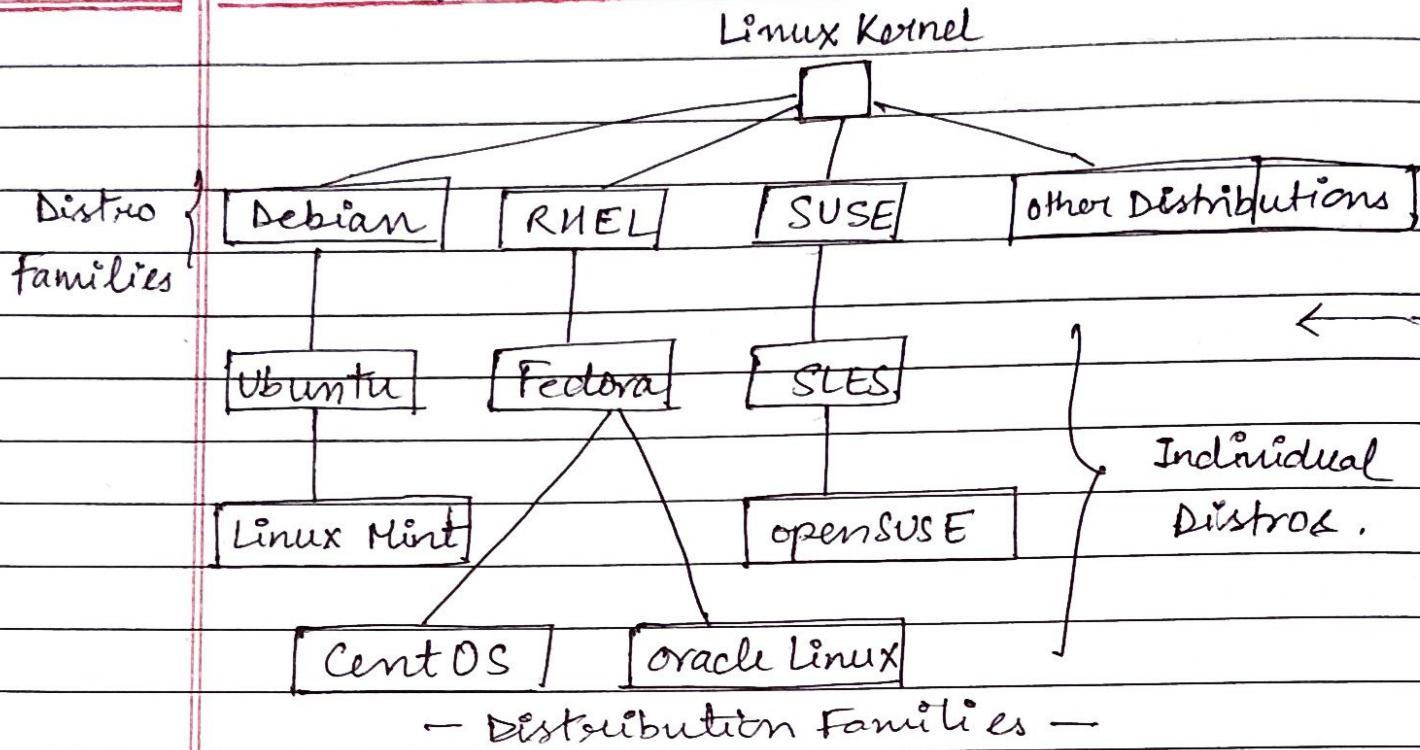


An operating System

Linux Kernel



- * Key Facts about the Red Hat Family .
 - > Fedora an upstream testing platform
 - > CentOS is a close clone of RHEL
 - > Intel x86, Arm, Itanium, PowerPC
 - > Yum package manager.
 - > Widely used by enterprise.

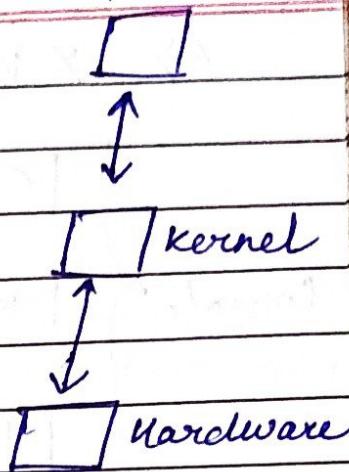
- * Key Facts about the SUSE Family .
 - > SLES is upstream for openSUSE.
 - > RPM - based zypper package manager
 - > YaST for system admin purpose
 - > Widely used in retail.

- * Key Facts about the Debian Family
 - > Debian family is upstream for Ubuntu
 - > DPKG - based APT package manager
 - > Widely used for cloud deployments
 - > GNOME - based but differs visually.

TERMINOLOGIES -

1) KERNEL : The brain of the linux OS
Controls the hardware and makes
the hardware interact with the
application.

Ex:- Linux kernel.

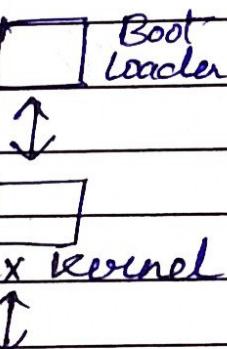


2) DISTRIBUTION : Its a collection
of programs combined with linux kernel
to make up a linux-based OS.

Ex:- RHEL, Fedora, Ubuntu, Gentoo.

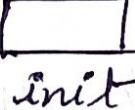
3) BOOTLOADER : Program that boots
the operating systems
Loads the kernel of OS.

Ex:- GRUB and ISO LINUX



4) SERVICE : Its a program that
runs as a bg process.

httpd web server



init

httpd FTP Server

named Name Server

dhcpcd DHCP
server

Ex:- httpd, nfsd, ntpd, ftpd and named

5) FILE SYSTEM :

Method for storing file system
and organising files
in Linux.

Ex: FAT, ext 3, 4 etc → Hard Disk Drive

user data

file system

user data
File System

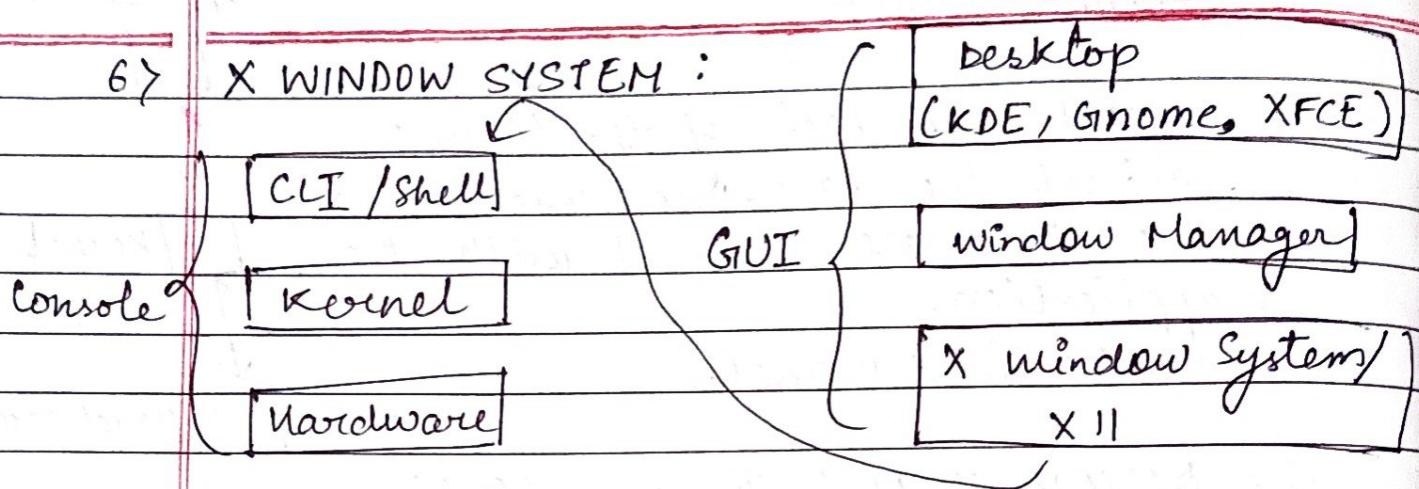
Raw Partition

Raw Partition

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6) X WINDOW SYSTEM :



Provides the standard toolkit and protocol to build graphical UI are nearly all linux system.

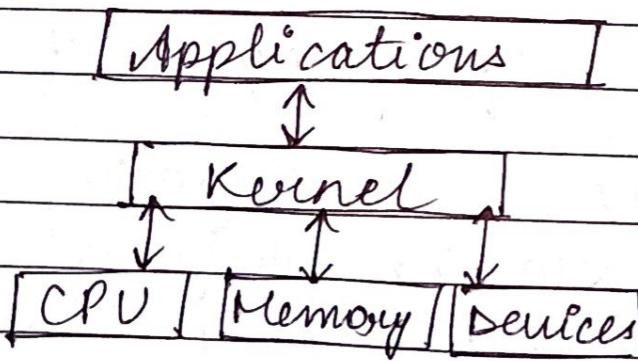
7) DESKTOP ENVIRONMENT: GUI on top of the OS.

Ex:- GNome, KDE, Fluxbox.

8) COMMAND LINE: Interface for typing commands on top of the OS.

9) SHELL: Command line interpreter that interprets the command line input and instructs the OS, to perform any necessary tasks and commands.

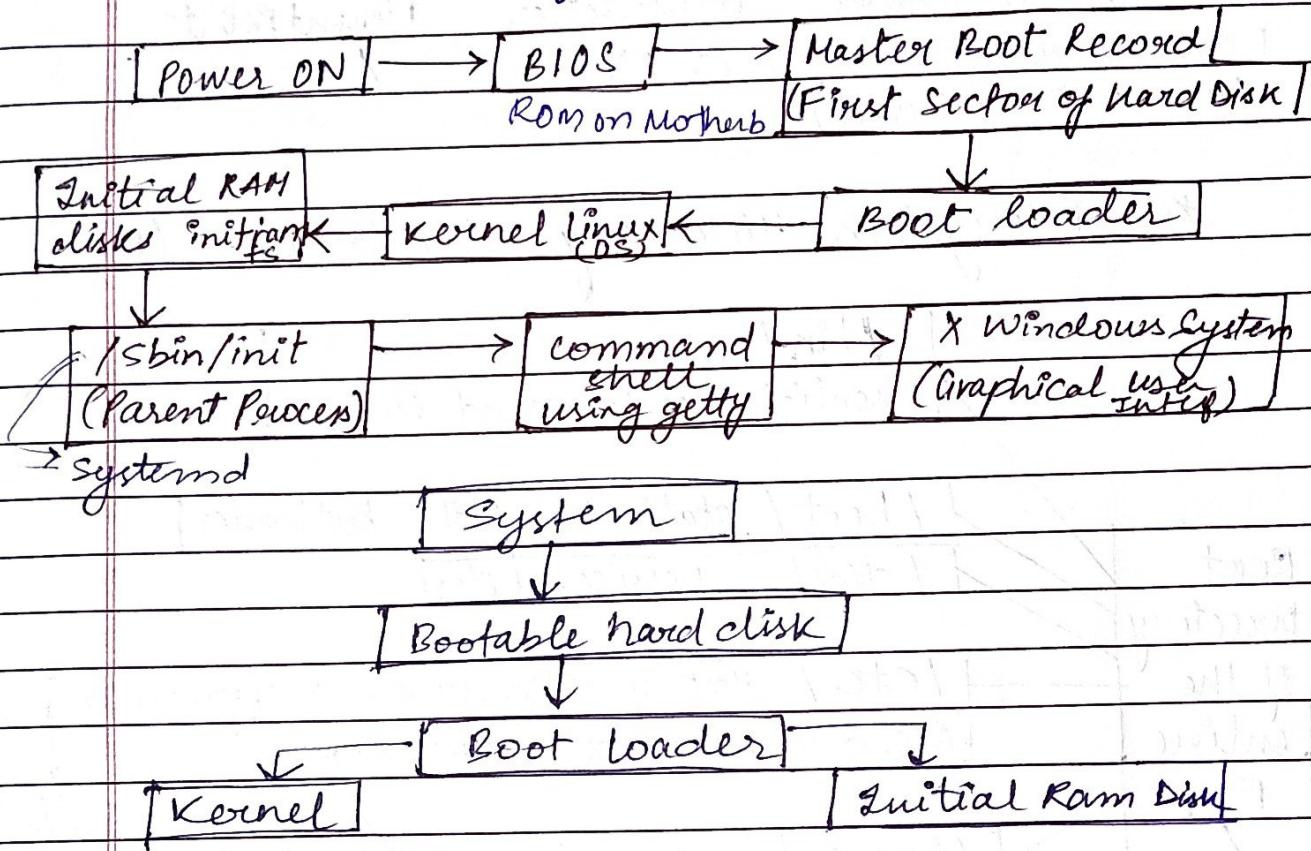
Ex:- bash, tc shell, and zshell (zsh)



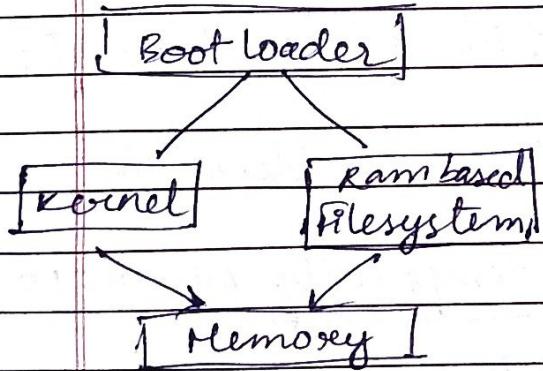
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- ✗ Linux is a multitasking OS.
- ✗ Accesses features through files.
- ✗ Linux borrows from UNIX.



* File Systems Supported by Linux



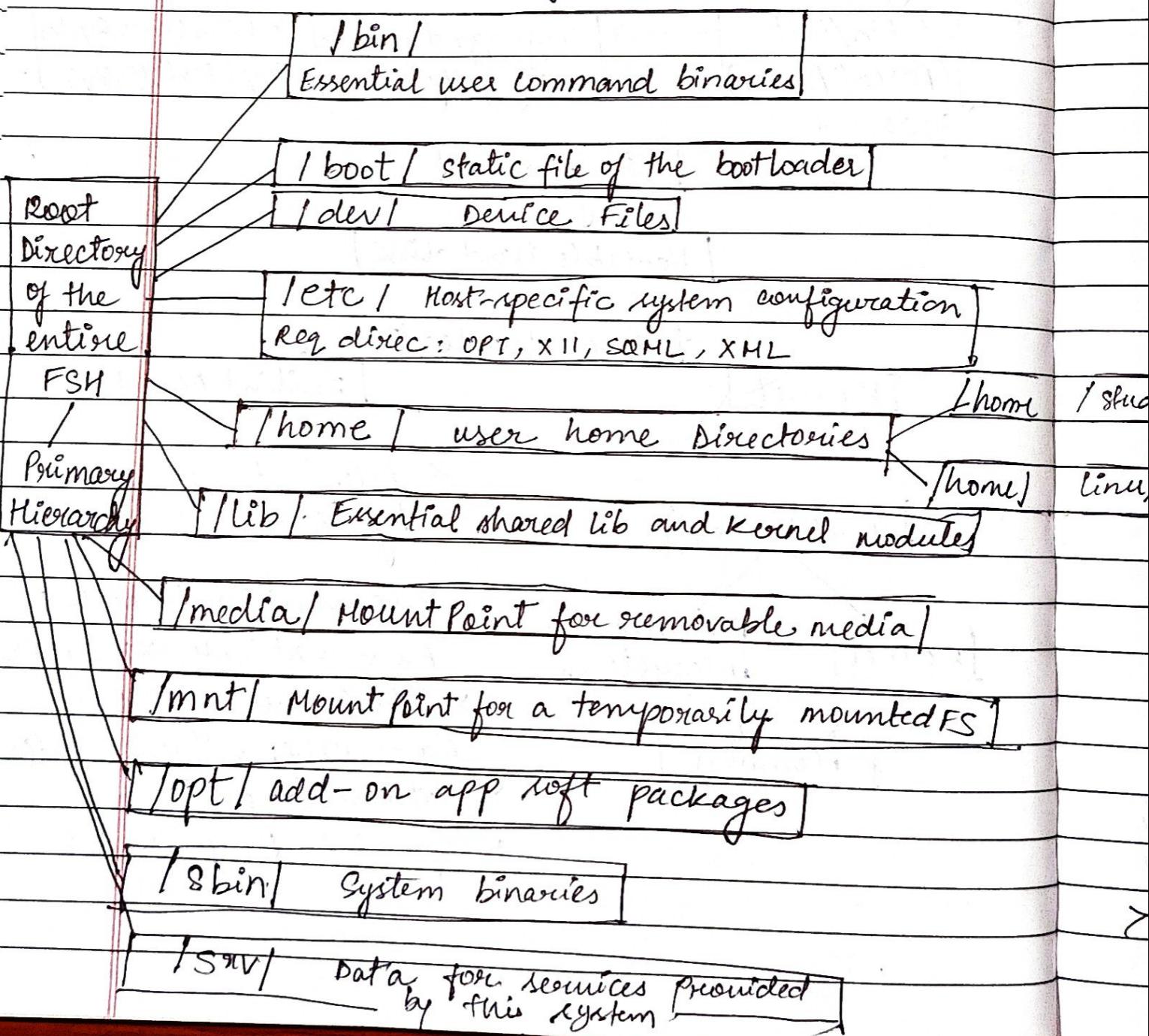
- > Conventional Disk FS
Ex - ext3, 4, XFS, JFS
- > Flash storage FS
Ex - ubifs, jffs2, yaffs
- > Database FS
- > Special Purpose FS

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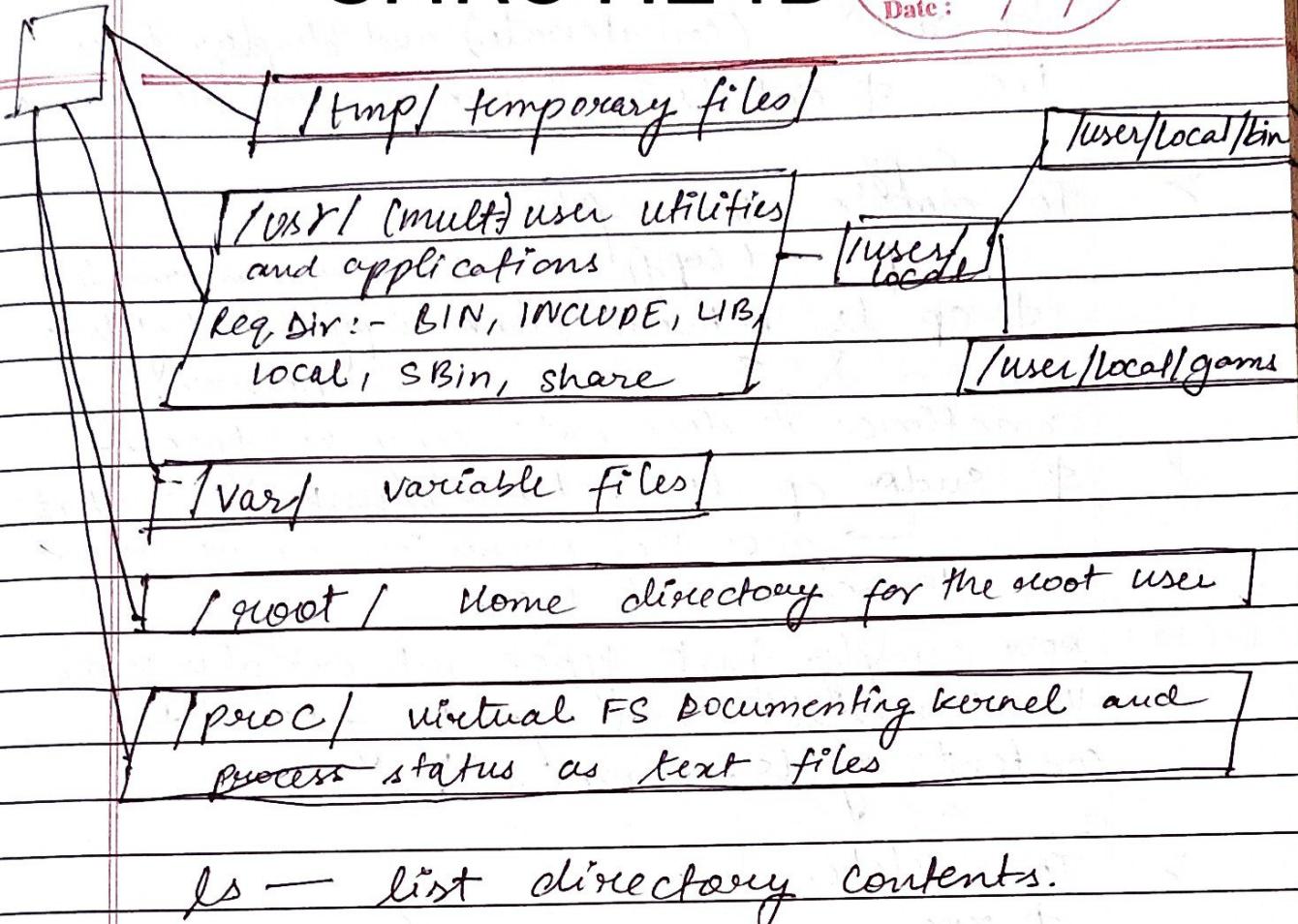
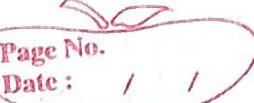
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Comparison b/w File systems in W/L

	Windows	Linux
Partition	Disk 1	/dev/sda1
File System Type	NTFS/VFAT	EXT3/4 XFS/BTRFS...
Mounting Parameters	Drive Letter	Mount Point
Base Folder (where OS is stored)	C:\	/

* File system Hierarchy Standards - (FHS)

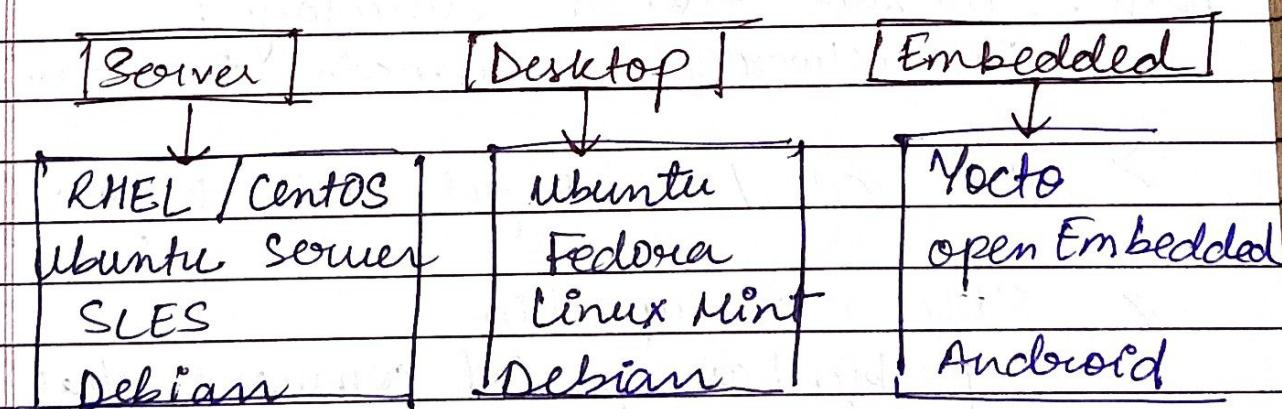


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home /student/ ↴
home/student/tutor

home) linuxgym



> command ⇒ if you forgot who you are
use ⇒ \$ whoami

the command we use to list files is itself a file.

> to open any file

\$ cat (concatenate) and display files
i.e. \$ cat (ls) → some random file name

> To copy

To delete this file

\$ cp (copy) any random file

\$ cp ls networkchunk copy content of ls to
networkchunk.

Sometimes it does not copy so type -

\$ sudo cp ls networkchunk present
gives the permission or we assume
to be a root user.

Now simply just type networkchunk on
the terminal and you'll get all the
content of ls. command!

> To delete ls -

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\$ rm

removes file or stuffs.

\$ rm ls or \$ sudo rm ls

Now:- \$ ls

bash: No such file or directory !

but networkchunk remains the same.

> use cd / - to get back to your root

* Sbin or Superbin

Superbin has special commands that only
administrators would use, to administer
the system.

> to go inside superbin use -

\$ cd sbin

Administrator commands -

- > \$ sudo adduser Superben
to add a new user.

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/usr/bin are same as /usr/sbin

- > \$ which ls — to know in which it is in
whether in /bin or /usr/bin:
└─ /usr/bin/ls
- > \$ which cat
└─ /usr/bin/cat

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- > To get back to the user directory use -
cd ..

- > home :- \$ cd home user's saved files
home is where every user lives inside.
\$ ls
superben user 86527
\$ cd superben
\$ ls

└─ Desktop Documents Downloads Postman Templates

- > Root :- looking inside a root directory
\$ sudo ls root
Desktop Downloads Music Public temp webroot
Documents go Pictures Templates Videos.

- * Even devices in our system are files -
hard drive, printers, Cd roms.

- > \$ cd dev
\$ ls
- devices /dev - essential
 device files
→ gives all the devices stuffs

5) /etc \$ cd etc

host-specific system-wide configuration files

- contains configuration files required by all programs
- This also contains startup and shutdown shell scripts used to start/stop individual programs.
- Ex:- /etc/resolv.conf, /etc/logrotate.conf

6) /lib

libraries essential for the binaries in /bin/ and /sbin/.

- library filenames are either ld* or lib*.so*

7) /media :

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Mount Points for removable media such as CD-ROM

- Temporary mount directory for removable devices.

Ex:- /media/cdrom for CD-Rom :

/media/floppy for floppy drives

/media/cdrecorder for CD writer.

8) /mnt (drives you might mount manually)

Temporary mounted filesystems

- Temp mount directory where sysadmins can mount filesystems.

* both /media and /mnt do the same thing.

usb gets mounted on media file automatically.

a) /opt

- optional application software packages.
- contains add-on applications from individual vendors
- add-on applications should be installed under either /opt/ or /opt/sub-directory

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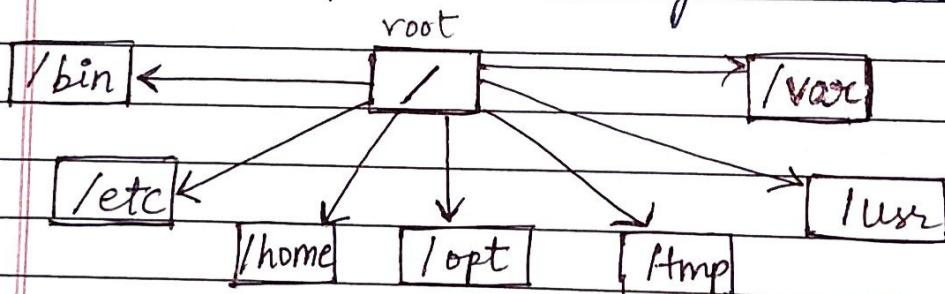
Types of files in linux Systems

1) General Files - It is also called ordinary files. may be an image, video, program or simple text file.

These types of files can be in ASCII or binary format. most commonly used file in linux system.

2) Directory Files - These type of files are a warehouse for other file types. It may be a directory file within a directory (subdirectory).

3) Device Files - In a windows like OS, files are stored in different folders on different data drives like C: D: E: whereas in the Linux / Unix OS files are stored in a tree-like structure starting with the root directory as shown.



* Basic Shell Commands in Linux :-

A shell is a special user program that provides an interface to the user to use OS services.

Shell accepts human-readable commands from the user and converts them into something which the kernel can understand.

It is a command language interpreter that executes commands from the I/O devices such as keyboards or from files.

- The shell gets started when the user logs in or starts the terminal.

1) Displaying the file contents on the terminal

* Cat

used to concatenate the files . gives o/p on the standard o/p

\$ cat Languages

=
java
python
c++

* more : filter for paging through texts one screenful at a time.

* less : used to viewing the files instead of opening allows backward as well as forward movement.

* Terminal emulator -

A program that will let us use the terminal in a graphical way, or graphical environment.

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