

L E C 1

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why Linux?

devOps

- ⇒ deployment
- ⇒ light weight
- ⇒ security
- ⇒ easier
- ⇒ dealing with big data
- ⇒ open source (free)



→ open Source

- paid
- Can access Source Code

→ Free /open Source

- Free
- Can access Source Code
- can modify and distribute these modifications

Most free /open Source software is covered under a public License . The most common public license is the (GNU) General Public License (GPL)

Example :. Firefox ⇒ has GNU Public License GPL so it's approved
what is the advantages of being an open Source ?

- marketing
- free testing
- bug fixing
- Can create Enterprise features
- maintenance is paid (for companies ex: bank)
-

- Unix time Stamp 1-1-1970.
- kernel → Core of the operating system .
- In 1991 Linus Torvalds created Linux kernel .
- There are many flavors so that each associated with different Hardware .

Unix flavors :-

- IBM → AIX
- Sun → Solaris
- Hewlett-Packard → HP/UX
- Silicon Graphics → IRIX

⇒ All operate in a same manner

→ Unix first version created in Bell Labs in 1969

- In 1991 Linus Torvalds created Linux kernel

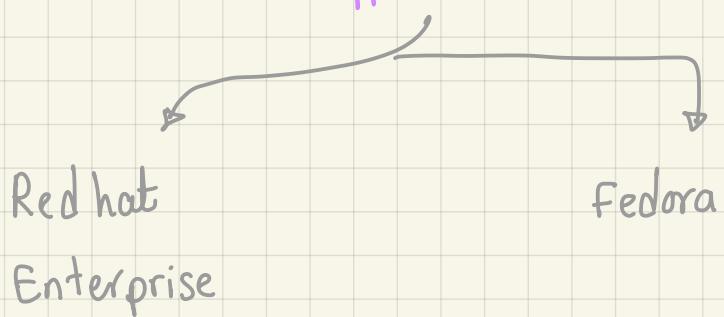
→ In 1992 Linux and GNU developers worked to integrate GNU components with Linux to make a fully functional and free operating system

• sudo apt install cal

• sudo apt install tree

• Redhat was found on 26/3/1993

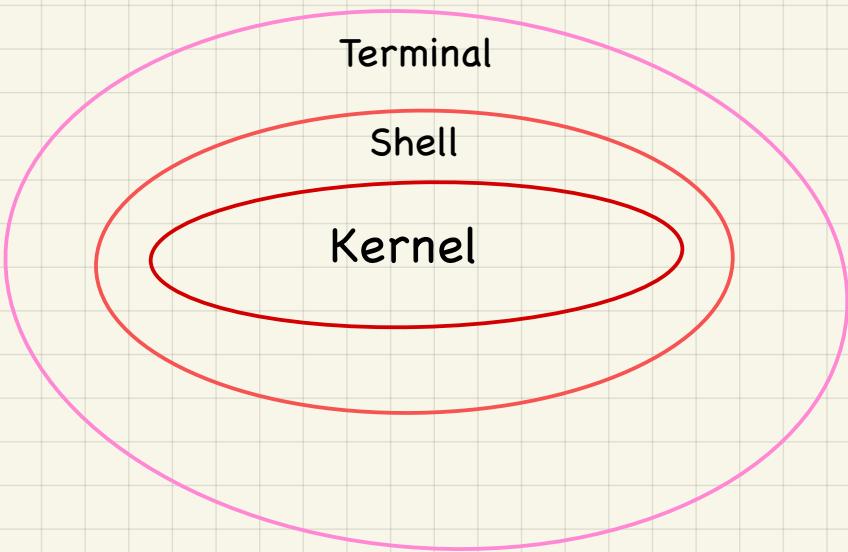
• Redhat Linux first appearance was in 1994



* centos same as Redhat but removed any features or logos

Types of installation :-

- ① Automated installation
- ② Graphical installation
] → needs flash memory
- ③ Remote installation → connected to network



Zsh → Linux & windows

kernel → Core of operating system
 → contains drivers for hardware
 → it loads into RAM when the machine boots and stays resident in RAM until the machine powers off

shell → translating the instructions and command from terminal to kernel
 → bash is the most commonly used shell on Linux
 → provides an interface by which the user can communicate with the kernel

from terminal →
to kernel

Terminal → between user and the shell

* there are a lot of shells:-

- ① Bourne shell (sh)
- ② Korn shell (ksh)
- ③ C shell (csh)
- ④ Bourne Again shell (bash)

Commands

Command is done in which Argument

Syntax \Rightarrow Command

[options]

[Arguments]

+ Customize Command behavior

* / → is the root → first thing

* any command or any software is a file located in /bin

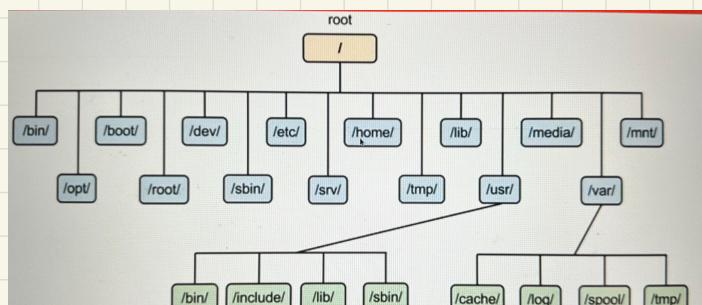
* if these command or software used by administrator you will find it in /sbin/ or /usr/sbin/

↳ s stands for super user

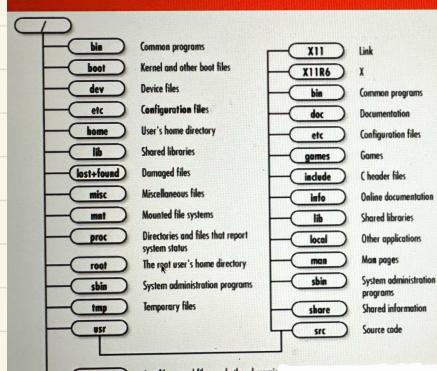
* /etc/ → has configurations (user files) ex.: username & passwd

* /home/ → each user has home directory has his data

* /mnt/ → the data of external disk or USB connected



Directories



- Pathnames
 - ▶ Absolute pathname
 - ▶ Relative pathname

→ # → is used for comments in the terminal

cd /home/noha → will not be done

→ if cd .. in / it will do nothing

→ cd - → will return you back to where you were (Go back) to where I was

→ only cd or cd ~ → will led you to home/israa/ → direct

→ ls home / israa / Pictures / Screenshots /
ls Pictures / Screenshots
ls ~/ Pictures / Screenshots

} the same

→ ls -a → show all including hidden files & folders

→ Inside home

- .. → Refer to current directory location
- .. → refer to (have) parent directory location

ls -l → prints files with whole information about files & folder

ls -F → shows folders as myfolder/ not myfolder

ls -ld Desktop/ ⇒ drwxr- ... etc (all information but just for specific folder not all)

ls -R ⇒ Recursion

↳ show file:
folders and files

and displays the content of each folder within it

↳ is equal to tree /pictures (has better visualization)

cat → read file content

more → as cat but the size of screen only

↳ space page by page
↳ ↓↑ line by line

tree (vs) cat
↳ displays content

- head /etc/passwd → print first 10 lines in file
- tail /etc/passwd → print last 10 lines in file
- head -n1 /etc/passwd → reads first line in file
- tail -n5 /etc/passwd → reads last 5 lines in file

Mega Character :-

- ls -l *t All files & directories ends with t
- ls -l t* All files & directories starts with t
- ls -l ??t 3 characters the 3rd is t
- * Zero or more characters
- ? single character

- ls [ab]* starts with a or b
- ls ab* starts with ab
- ls [a-f]* starts with any char from a to f

Copy & paste :-

- cp israa mycv ⇒ will over write the data
- cat mycv ⇒ will print the content in israa also
- cp -i israa mycv ⇒ will ask if you want to over write or not
cat mycv
- to copy file in folder → first create the folder or will create it as file
- ex cp israa cvs

`cp -r cvs ai_cv` \Rightarrow if ai_cv available
 ↴ will copy cvs and its content
 ↴ if not
 ↴ will just copy the content

Rename :-

`mv israa mycv` \Rightarrow just rename

-i

preventing
from over write

Remove :-

`rm file_name` \Rightarrow delete file

`rm dir folder_name` \Rightarrow if folder is empty

`rm -r folder_name` \Rightarrow if folder is not empty

Linux | Unix | man |



important

Chapters
in manual

1 - 5 - 8 \rightarrow administration

Commands

file Configuration

man ls → show info about ls

man -k passwd → show commands

whatis cp → cp(1) - copy files

one line description

chapter

brief info

cp --help → detailed info from manual

man man → info about manual

sleep 5000 → sleep for

man 5 passwd ⇒ reads data from

man passwd ⇒ reads from chapter 5

To move to
home directory:-

① cd /home/user1

② cd ..

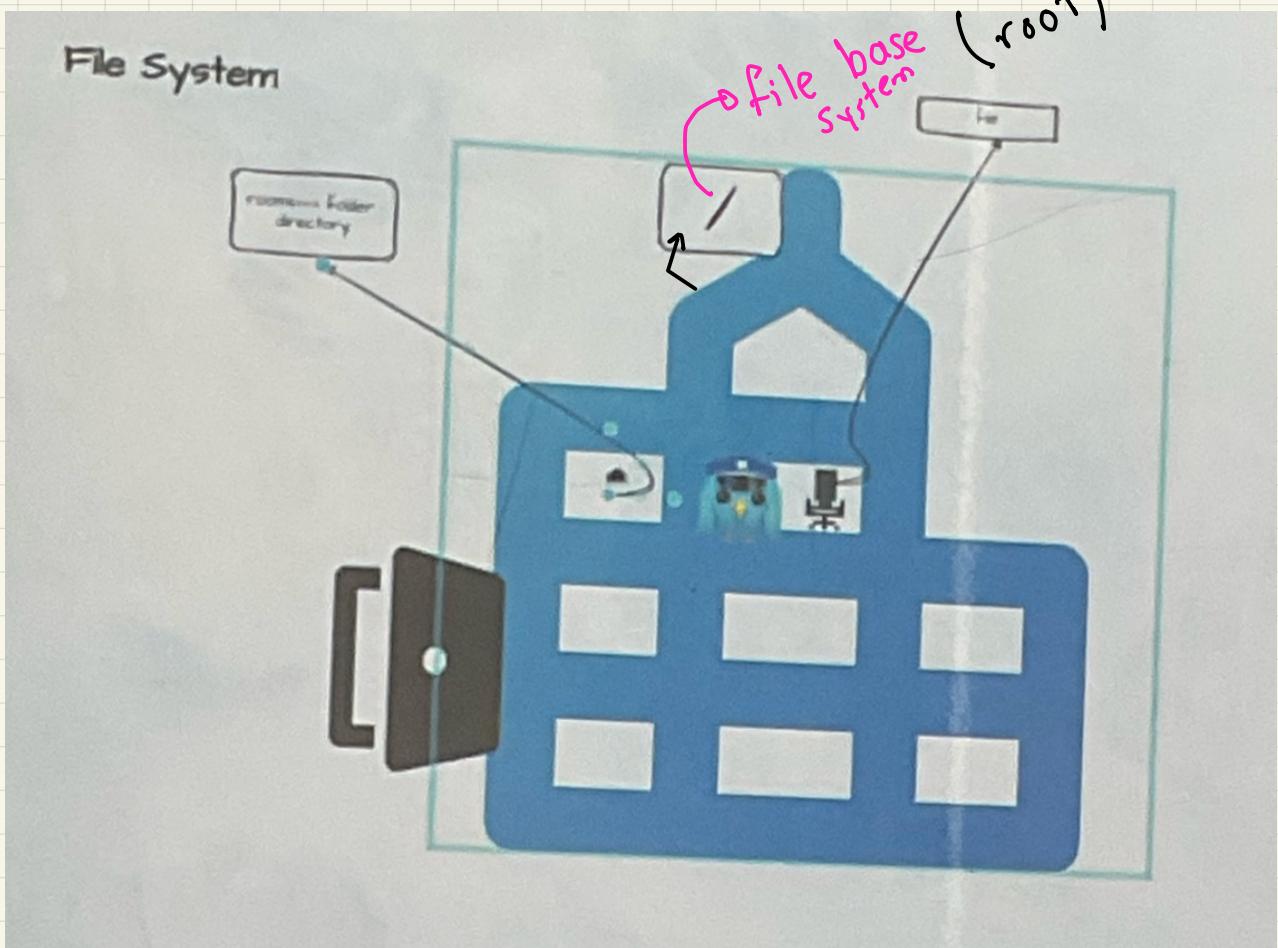
③ cd ~

④ cd -

Interrupt

ctrl + C

ctrl + Z



→ sbin → supervisor bin

→ etc → users Configuration (passwords of users)

→ in home we can find files by the name of users

→ boot has the kernel and other boot files → failure
in boot causes failure in the whole system

- Linux don't need extensions

- "mkdirectory^{abc}" then touch^{abc} \Rightarrow no thing will happen

- touch abc then mkdir abc \rightarrow error

- no extensions in linux

- the importance (need) of extensions is giving extra features

manual page consists of:-

- Name

- syntax of the command

- description

- files

- known bugs and errors

- other commands related to this one

- Author

- options

- * man -k passwd \rightarrow where did passwd located in manual

- * whatis cp \rightarrow give you information about cp command

- * cp --help \rightarrow give you more detailed information

ctrl + C

\hookrightarrow end the current operation with no return to continue

ctrl + Z

\hookrightarrow end the current operation but with the ability to go back

Commands Used

uname → Linux

uname -n → user

uname -a → Linux user

date → date of the day

cal

cal 2024

touch myfile

date ; cal ; uname

whoami

pwd → print current working directory

cd → change directory

tree

ls -R

ls -a

ls -F

cp -i file1 file2 → -i prevent from over writing (ask you)

whatis cp

cp --help

man -k passwd

man man

sleep 5000

System info

TASK

* ls -ld dir1

drwxr-xr-x 2 fatma 51237 May 29 16:06 dir1



Can be

d:- directory

- :- file

c:- device file reads or write character by character ex:- keyboard

b:- block device file such as USB_drive or hard disk

S:- Socket \Rightarrow used for communication between different programs
on the same computer or over a network

P:- special file that acts as a pipeline allowing processes to
communicate with each other

I :- Represents an inode without any associated data blocks used
in a special file systems (unCommon)

D:- Door \Rightarrow found in some Unix like systems such as Solaris

\Leftrightarrow A special inter-process communication file \Rightarrow

Not common in Linux