Linux

→ It is Open Source Operating System.

- Open Source → Source code is open
- Operating System → handle memory, devices etc... { Provide common services for comp. programs }

→ Linux distribution ⇒ Operating System based on Linux kernel.

- example ⇒ Linux mint, Kali Linux, Ubuntu

Terminal {Similar to Command prompt for windows}

username@ComputerName:~$

~ → home directory

⇒ pwd (Print working directory) → Absolute path

⇒ cat Path to the file {Read the Content of the file}

⇒ ls {to Know all the files inside present directory}

⇒ ls -l {More details about the directories}

⇒ ls -a {Shows regular as well hidden file}

⇒ clear {Clears the screen, terminal}

⇒ ls -la {Hidden + detailed}

{In linux it is also called dot files → Their name starts with dot.}

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★ Navigating and Working with files

cd Directory name {Change directory}

cd .. {go back to previous directory}

cd {back to home no matter where you are},

mkdir foldername {Create directory in current directory}

mkdir → make, directory

rmdir foldername {remove directory}

rmdir → remove, directory

touch filename {Creates a file if file of such name does not exist}.

rm filename {remove file}

rm → remove

CP Filename to copy filename to paste
{Copy the file & paste it}

mv filename Destination path
{Moves a file}
↳ You can even change name here

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★ Searching and Comparing

grep Keyword filename.
{Points the line in the file which has this Keyword and highlight it for us}

diff file1 file2 {Points the difference between the two files.}

Passwd {To change password}

Varible name = Content of Varible {Creates a Varible with that Varible name and contain the content after '=' sign.}

echo thing to disple {echo just display the thing given to it}

⇒ echo $Varible name {display Content of the Varible.}

info Command name {gives information about the Command}

★ Saving results to a file

~~Command name~~ {Creates a file with the filename and save the results in that file}
Command name > file name

Command name >> file name {Append the results of the command to the filename}

of the Command.

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* File Permissions

- In the beginning indicates that it is file
d In the beginning indicates that it is directory.

r ⇒ read
w ⇒ write
x ⇒ execute

Example: - rwx rw- r--

- rwx → Owner Permission
- rw- → Group Permission
- r-- → Normal User

{Indicate it is a file}

u ⇒ User
g ⇒ group
o ⇒ Other people

Chmod (u/g/o) (+/-) (r/w/x) filename.

- (u/g/o): for what group you want to change permission
- (+/-): what permission you want to give or take
- (r/w/x)

Chmod num1 num2 num3 filename.

- num3 → Permission for other people
- num2 → " " group
- num1 → " " user

0 → No
1 → execute
2 → write
3 → read
6 → read + write
7 → read + write + execute

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★ Compress and Extract tar and gz file

filename with Space in terminal

→ Aditya Shaiwastava ✗

↓

Aditya\ Shaiwastava\ ✓

gzip filename

{To zip a file with .gz}

gunzip filename.gz

{Unzips the file}

for multiple file

tar cvf tarfileName.tar file1 file2

{Ziping multiple file}

tar xvf tarfileName.tar

{extrating .tar file}

★ To edit a file

gedit filename

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★ Install Software with APT

Sudo apt-get update

{Updates the apt-get tool}

{Allows us to run with Administration Privlages}

Sudo apt-get install name of package

{Installs the package}

---

ls -l

{Number of directories within the directory for file it is 1}

Owner

Group

Date of creation

Time of Creation

filename

`-rw- -rw- -r--  2  aditya  aditya  60  Aug  6  16:35  File1`

- This can be either '-' or 'd'.
  - '-' ⇒ file
  - 'd' ⇒ directory
- rw- → Owner permission
- rw- → Group permission
- r-- → Others permission
- 60 → {Size of the file. In case of directory it is page size (4096 bytes)}

r ⇒ read
w ⇒ write
x ⇒ execute

★ Partitie

Linux { /dev/s

Pa

/dev/sda1

* File System ⇒ Et and

next begins.

example ⇒ N

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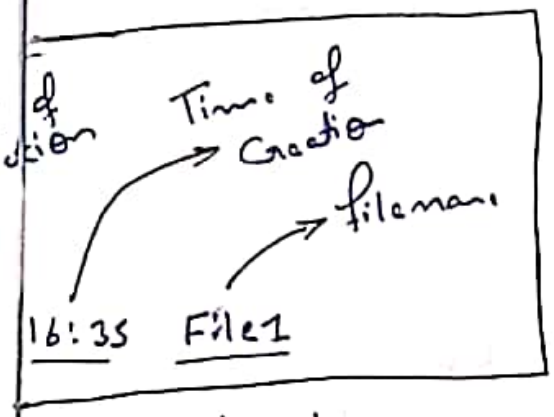
★ Partitioning

Linux { /dev/sda , /dev/sdb etc... }

Partitioned

/dev/sda1 /dev/sda2 Unallocated

file System ⇒ It Controls how data is stored and retrieved.



⇒ Without a file system, Information placed in a storage medium would be one large body of data with no way to tell where one piece of information stops and the next begins.

Example ⇒ NTFS , FAT32 , ext2, ext3 , ext4

ext2, ext3 → { used on Linux alot }

ext4 → { newer file system }

NTFS, FAT32 → { File System Compatible with all operating system. Linux, Mac, Windows }

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★ Shell Script

#!/bin/sh ← This Command tell, when you are running this file, run it in shell

← for adding Command

⇒ Write any valid bash Command.

⇒ for running Shell Script ⇒ bash fileName.

★ Environment Variables

→ It is a dynamic-named value that can affect the way running processes will behave on a Computers.

Example: LANG, PATH etc.

↓

This Variable contains a colon (:) Separated list of directories in which your System looks for executable files

⇒ env Command displays all the environment Variables.

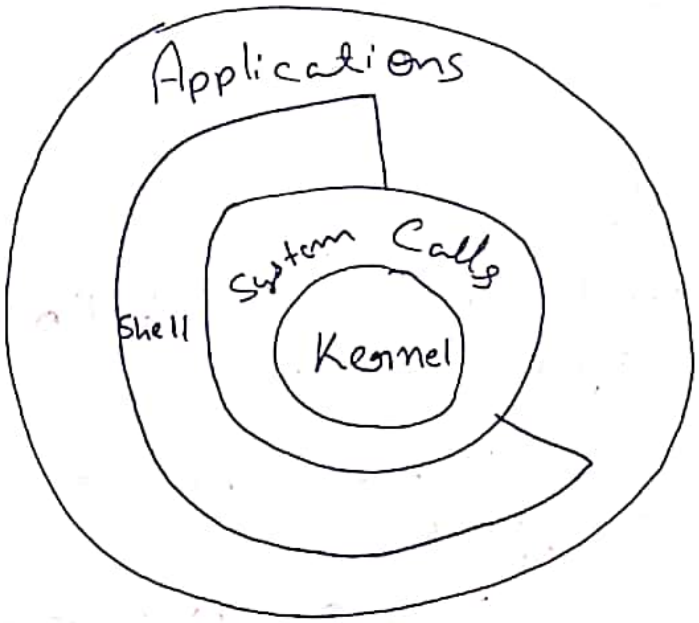
Deleting Variable

Unset VariableName

UNIX → LINUX

{MIT Bell labs} {Danish Computer}

★ Architecture of Linux OS



Kernel (written in C)

- → Heart of OS.
- → Manages hardware devices like disks, memory, Network, USB device etc..
- → It also manages users process etc.

⇒ **System calls** are the standard library calls which queries the Kernel for specific need.

eg:- 1) time 2) access file from a disk
3) access packet in network device
4) Stat a user submitted process
5) Kill a process.

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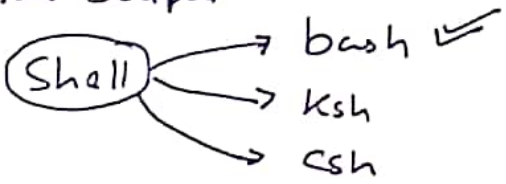
Shell

→ It is user interface which is used to run command line programs or utilites.

→ Shell calls the Kernal system calls to get the output.



★ User

⇒ Different user have districtions on which file they can access.

⇒ They is always a Super user whose name is root.

↳ It can do anything.

⇒ Adding a new user :-

Sudo useradd username

Sudo passwd username

↳ To set password for the new user.

★ Group

⇒ Group is an easy way to set privileges for entire set of peoples.

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⇒ To Create Group

Sudo groupadd groupname

⇒ To add a user to group

Sudo usermod -a -G groupname username

-a → append { It means we are just adding the user to that group

-g means change the primary group to this new group }

⇒ To delete user:

→ Sudo userdel username

★ Setup and Connect to SSH Server

SSH username@IPaddress

→ { Now you are connected to the Server as the username specified with the IP address }

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★ SSH Key Authentication

⇒ Password authentication is probably the worst authentication.

Private Key
→ It will stay on our own PC.

Public Key
→ This is which will be uploaded to the Server.

⇒ To generate SSh Key

```
ssh-keygen -t rsa
```

→ This will generate both the Public and private Key.

⇒ To copy the public key that we generated to the Server:

```
ssh-copy-id root@ServerIP
```

★ SFTP → Secure FTP

```
Sftp username@IP address
```

⇒ All of web page file should be in html directory.

www
Var
root

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put file address of your own computer
→ Make sure you are on correct directory on host computer.
{Uploading file}

get filename Location on our comp.
{To download file}

Ping IP address
→ used to check connection to the network

Snaps

⇒ Snap is universal package format created by ubuntu.

Vim

Command mode ⇒ :q → to quit editing

:w → write the current state to the file

:wq → Save & exit

:q! → quit with Saving

:set number → To number the text file

⇒ Press i to go into insert mode.

⇒ Press Esc to go back to Command mode

dd ⇒ to delete a line

U ⇒ Undo your last option

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Ctrl + ন ⇒ নতুন

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