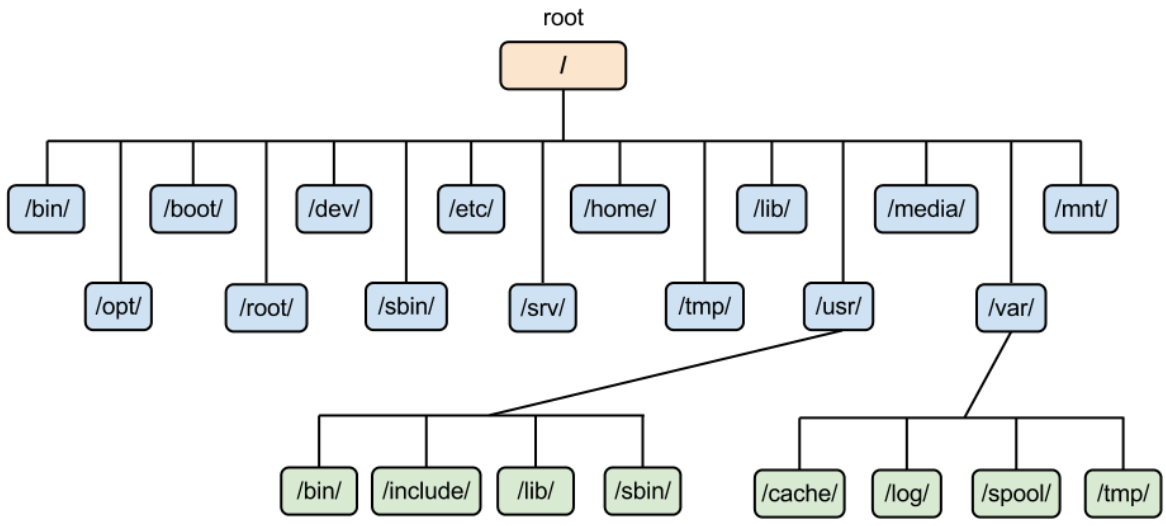
History Of Linux

- Linux came from a Unix family, Linux is a free and open-source software operating system, which Linus Torvalds developed in September 1991. I
- n 1991, Linus Torvalds was a student at the University of Helsinki, Finland, USA.
- He developed the first code of Linux 0.01 and post it on the Minix newsgroup on 17 Sep 1991, his code become so popular people encouraged him to develop new code and he was led to develop new code and release the first “official” version of Linux, version 0.02 on October 5, 1991.
- Today many year pass and Linux become one of the most popular operating systems. Today 90% fastest Supercomputers out of 500 run on Linux variants including the top 10.

Linux File System Hierarchy

- In Linux everything is represented as a file including a hardware program, the files are stored in a directory, and every directory contains a file with a tree structure. That is called File System Hierarchy.
- Linux uses single rooted, inverted tree-like structure.
- Root Directory represents with / (forward slash) It is a top-level directory in Linux.



/

- The base of the Linux directory is the root. This is the starting point of FSH. Every directory arises from the root directory. It is represented by a forward slash (/).
- If someone says to look into the slash directory, they refer to the root directory.

/root

- It is the home directory for the root user (superuser).

/bin → User Binaries

- Contains binary executable.
- Common Linux commands you need to use in single-user modes are located under this directory.
- Commands used by all the users of the system are located here.

/sbin → SystemBinaries

- Just like /bin, /sbin also contains binary executables.
- But, the linux commands located under this directory are used typically by system aministrator, for system maintenance purpose.
- For example: iptables, reboot, fdisk, ifconfig, swapon

/dev → Device Files

- it contains hardware device files, Contains device files.
- These include terminal devices, usb, or any device attached to the system.
- For example: /dev/tty1, /dev/usbmon0

/var→ Variable Files

- The variable data files such as log files are located in the /var directory.

- File contents that tend to grow are located in this directory. > This includes
  - /var/log: System log files generated by OS and other applications.
  - /var/lib: Contains database and package files.
  - /var/mail: Contains Emails.
  - /var/tmp: Contains Temporary files needed for reboot.

/mnt→ Mount Directory

- This directory is used to mount a file system temporarily.

/media→ Removable Media Devices

- The /media directory contains subdirectories where removable media devices inserted into the computer are mounted.

/usr→ User Binaries

- The /usr directory contains applications and files used by users, as opposed to applications and files used by the system.

/etc → Configuration files

- It contains all configuration files of server
- The core configuration files are stored in the /etc directory. It controls the behavior of an operating system or application. This directory also contains startup and shutdown program scripts that are used to start or stop individual programs.

/boot → Boot Loader Files

- The /boot directory contains the files needed to boot the system
- For Example : the GRUB boot loader's files and your Linux kernels are stored here.

/opt → Optional Applications

- The opt directory is used for installing the application software from thirdparty vendors that are not available in the Linux distribution. Usually, the software code is stored in the opt directory and the binary code is linked to the bin directory so that all users can run that software.

/home → Home Directory

- It contains secondary users home directory.

/tmp → Temporary Files

- Directory that contains temporary files created by system and users.
- Files under this directory are deleted when system is rebooted.

## Basic Commands

#pwd → it shows the present working directory

#ls → it shows available files and directory list in the present working directory.

#uname → it shows the name of the kernel (OS)

#uname -r → it shows version of the kernel

#cd → it use for change directory

#clear → it use for clear screen

#whoami → it show currently login user name

#history → it show list of previously used commands

#date → it show time and date

## Create file or directory

1. To create single directory
   #mkdir /Mayank

2. To create multiple directory
   #mkdir test1 test2 test3

3. To create directory path (directory inside directory)

   #mkdir -p /mayank/test/devops
   -p is used if parent directory doesn't exist it creates them.

4. To create number of directory

   #mkdir /student {1…10}

## Create file

Touch:

- Touch command is use for create empty file, we can't write data in a file, can't edit or save file.

  1. Create single file with touch command
     #touch notes

  2. Create multilpe file
     #touch python react

  3. Create number of files
     #touch books {1…10}

## For copy and paste

Cp :

- cp command is used for copy and paste file or directory
- Syntax: #cp Options
- -r for recursive
- -v for verbose
- -f for forcefully

1. To copy file
   #cp -rvf /root/anaconda-ks.cfg /home

2. To copy all data which start form D alphabet
   #cp -rvf /root/D* /home

## For remove file & directory

1. To delete file or directory
   #rm -rvf /india/pune

## For move or rename file & directory

1. To move file or directory
   #mv /home/Mayank/root/desktop

2. To rename file or directory
   #mv dev devops

## User Management

1. To create user account

#useradd Mayank

2. To create user account password

#password Mayank

3. To switch user account

#su Mayank

4. logout from user account

#exit

Or Press “Ctrl + D” key

5. To Delete user account
   #userdel Mayank

6. Change user login Name
   #usermod -l new username old username
   -l stands for login name

## Group Management

A group is a collection of user accounts that is very use full to administrators for managing and applying permission to a number of users.

1. To add Group account

   groupadd group_name

2. For check group account property

   cat /etc/group | grep group_name

3. For check group admin property

   cat /etc/gshadow | grep group_name

4. For Delete group Account

   groupdel group_name

5. For add single member in group

   usermod -aG group_name username

6. For add multiple member in group

   gpasswd -M user1,user2,user3 group_name

7. For remove group member

   gpasswd -d username group_name

8. For make group admin

gpasswd -A username group_name