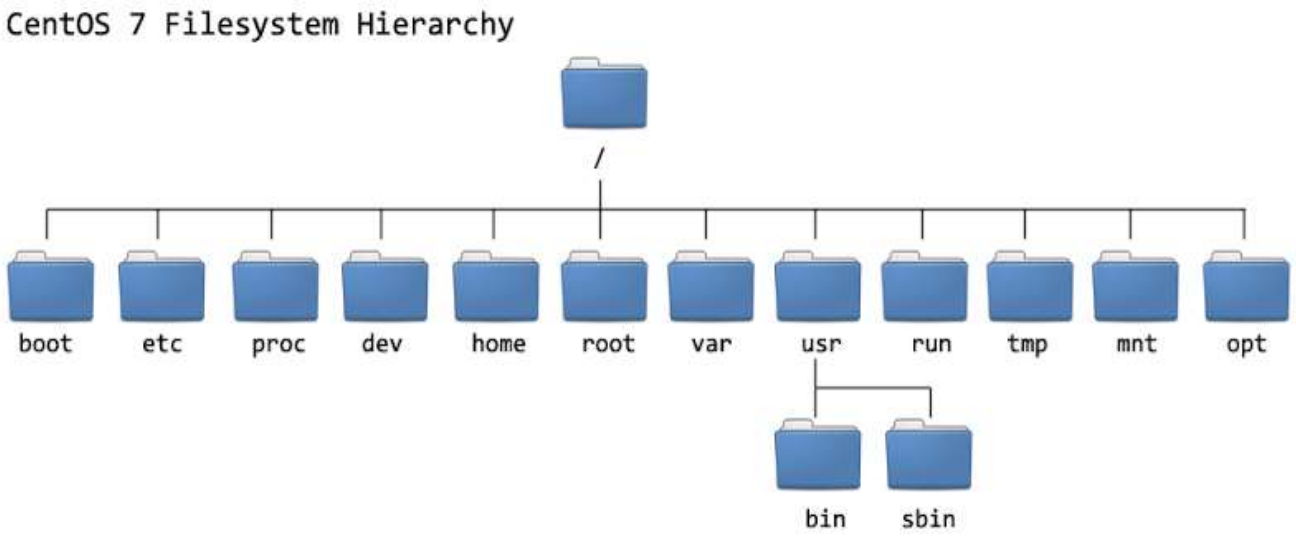
DIRECTORY STRUCTURE OF LINUX:



/bin/ - Essential user command binaries

/boot/ - Static files of the boot loader

/dev/ - Storage device info

/etc/ - System configuration (secure directories)

/home/ - User home directories

/lib/ - Essential shared libraries and kernel modules

/media/ - Mount point from removable disk

/mnt/ - Mount point for a temporarily mounted file system

/opt/ - Add-on-applications software packages

/sbin/ - System binaries

/srv/ - Data for service provided by this system

/tmp/ - Temporary files

/usr/ - Multi-user utilities and apps

/var/ - Variable files-Home dir for HTTP and FTP

/root/ - Home directory for the root user

/proc/ - Virtual file system documenting kernel and process status as text files.

Basic Commands

To check system configuration

lscpu ; to get cpu detail

#hostname: to get hostname

free -m : to check RAM

fdisk -l | grep sd : to check number of HD

ifconfig : to check network / IP s cv

1) # pwd : to check present working directory

2)# ls : to list the content

3) #whoami, who, id : to check current user login info

4) #cal : calender --- cal MM YYYY

eg: # cat 11 2019, # cal 2019, #cal 1947, #cal 04 1520

5) #uname -a , uname -r : to check system full info

6) # cat /etc/redhat-release -:to check red hat version

7) #whatis, man, --help : to get the help of any command

8) #du, df - to check disk usage and free space

eg: # du /home/deepak

df /home/deepak

09) #hostname or # hostnamectl : to get hostname

hostnamectl set-hostname myserver1 : to change hostname

10) #date : to check date and time

eg: # date , # date +%d

11) #init 0, #halt, #poweroff : to shutdown

12) #init 6, #reboot, press ctrl+alt+del : to restart

13) #eject, eject -t : to in or out optical media

14) # history : to check history of used commands

history 12 : to show history of last 12 commands only

history > file1: to store the history result in a new file

history -c : to delete history

HISTTIMEFORMAT="%d/%m/%y %T " : to see the history with date and time

15)# ifconfig : to check all network interface

16) # nmtui : to configure IP address

ifdown eno16777736

ifup eno16777736

ifconfig eno16777736

17) # free -m : to check memory status

18)# top : to see cpu and memory usage

19) #kill : to kill PID

20) #sar 1 3 : to check cpu status 3 times within one second

21)# su : to switch to super user or # su deepak : to switch to other user

22)#su - : to switch to super user but getting /root as home directory bydefault

23)# uptime : to check how long server is started

24)#which, whereis command : to check the location of command script

25)# clear : to clear the screen

26)# fdisk -l : to check all connected storage and partition or # df -h

27)#passwd username :changing password of user

28) #ping IP or hostname : to check the communication

29) #nslookup hostname : to get IP

30) ctrl+c or q : to cancel running process

Working with files and Directories

#mkdir dirname : To create a directory/folder.

#cd dirname : To go to inside the directory.

#mkdir dir1 dir2 dir3 : To create multiple dir at a time

mkdir -p /india/delhi/chandni

#cd / : To come in root level.

#cd ~ : To come to user level.

#cd .. : come one step back.

#touch filename : To create empty file.

#cat >filename : To create a file.

.....

..... Write ur text normally

Now press " ctrl+d " - To save.

#cat filename : To see the file contents.

#more filename : Showing content of file one screen at a time (Sequentially)

Eg: #more /root/install.log

head filename : Showing content of top portion only

tail filename : Showing content of bottom portion only

echo " tiger" > file1 : to insert content in a file without opening it but old content will be removed

echo " tiger" >> file1 : to insert content in a file without opening it.

cat file1 file2 > file3 : To combine content of two file and insert in new file

#rm filename : To remove a file.

#rm –f filename : To remove a file without asking permissions.

#cp : To copy the file and dir.

#cp source-path/file-name dest-path/ : To copy and paste for files

mv source-path/file-name dest-path/ : To cut and paste for files

mv old-file-name new-file-name : To rename the file/folder name.

#sort : to show content of file in sorted form (only for viewing)

Eg:
sort filename : to show from a-----z
#sort -r filename : to show from z-----a
sort file1 file 2 : show sorting content from both file
sort file1 >sort.txt : saving the sorted result in a new file.

SED : To replace the content of a file

To replace test with example in myfile.txt

```
# sed 's/test/example/g' myfile.txt
```

s - substitute
g - global (changes to be done in all lines)

To replace test with example in myfile.txt and print the output in a new file

```
sed 's/test/example/g' myfile.txt > newfile.txt -- only display

sed -i  's/test/example/g' myfile.txt > newfile.txt -- change in same file
```

Replacing string on a specific line number

 # sed '3 s/unix/linux/' myfile.txt

Deleting lines from a particular file

Syntax:

sed 'nd' filename.txt

Example:

sed '5d' filename.txt

Deleting last line from a particular file

sed '$d' filename.txt

locate

#locate filename : To find something in entire OS

Note: Sometime locate command do not show anything then use # updatedb and use locate command again

find : to find from specific location

find /home -name deepak.txt

#rm –r dirname : To remove a directory/folder.

#rm –rf dirname : To remove a directory/folder without asking confirmaton

rm -rf * : to delete all

rm -f *.mp3 : to delete all .mp3 files

rm -rf file* : remove all words related with file text

#cp –r [dir-source-path] [dir-destination-path] : To copy and paste for dir

#mv [dir-source-path] [dir-destination-path] : To cut and paste for dir

#wc : To see how many characters/words/lines are used in file.

wc -c file-name

wc -w file-name

wc -l file-name

ls /home | wc -l : show number of content in that dir.

ls command examples

#ls –a : To show all

ls –a /* - to show / contend with subdirectory

#ls –r : To show all but in reverse alphabetic order

#ls -i filename/dirname : to show inode number

ls -l filename/dirname : to show long format + associated permissions

ls -lh filename/dirname : to show long format + associated permissions(human readable format)

ls -t filename/dirname : to show which created first(based on time)

ls -R : to list in tree format

ls -s : list file size

ls - S : sort by file size

ls -X : to show by extension name

ls -d */ : display only directories

ls *.txt : to list only .txt files

ls [dk]* : to show only dir/file which initial is d and k

ls [d-k]* : to show all dir/file between d and k

ls [!dk]* : to show all dir/file except which initial is d and k

ls > file1 : to store the result of ls in a new file

FILE EDITING IN LINUX:

1) vi 2) vim 3) emacs 4) pico 5) nano 6) lime

For eg:

#vi filename

[press i]

Write your text normally

[press esc]

:x (or) :wq -> to save and exit.

:q! -> Exit without saving.

Compression - Decompression

Using tar command

tar command syntax

tar -cvf [destination-file-name.tar] [source-files or directories]
tar -tvf archive-file.tar
tar -xvf archive-file.tar
The option **c** creates archive or tarball from the supplied files or directories

The option **v** displays the progress of archiving process at the command prompt.

The option **f** specifies the file or device name. it instructs the tar command to store the output data to the specified device or file.

The option **t** lists the contents of archive or tarball.

The option **x** extracts the archive

touch file1 file2 file3 file4

To compress

tar -cvf data.tar file1 file2 file3 : to compress

#tar -tvf data.tar : to see the content of compressed tar file

tar -xvf data.tar : to decompress

tar -cvf data.tar -C /home/deepak/folder1 : to extract in specified path

File Permission

chmod : to change the permissions of a file or directory. Use ls -l to see the permission settings.

Permission group:

1. Owner
2. Group
3. All Other Users

Permissions representation:

1st digit represent owner

2nd digit represent group

3rd digit represent all other users

Permission types

Read – 4

Write – 2

Execute – 1

Null permission (access denied) – 0

7 -> 4+2+1 -> read+write+execute

6 -> 4+2 ->read+write

5 -> 4+1->read+execute

4 -> 4 -> read

0 -> none (no rights)

Example:

To set permission:

#chmod 763 test

To give full permission to all:

#chmod 777 test

To give permission only for users:

#chmod 700 test

Package Management

How to install any feature ?

Ans: #yum install telnet

How to uninstall any feature ?

Ans: # yum remove telnet

Display list of updated software (security fix)

Type the following command at shell prompt:

```
# yum list updates
```

Task: List all installed packages

List all installed packages, enter:

```
# rpm -qa
```

```
# yum list installed
```

Find out if httpd package installed or not, enter:

```
# rpm -qa | grep httpd*
# yum list installed httpd
```

Check for and update specified packages

```
# yum update {package-name-1}
```

To check for and update httpd package, enter:

```
# yum update httpd
```

Task: Search for packages by name

Search httpd and all matching perl packages, enter:

```
# yum list  {package-name}
# yum list httpd
# yum list perl*
```

Task: Install the specified packages [RPM(s)]

Install package called httpd:

```
# yum install {package-name-1}  {package-name-2}
# yum install httpd
```

Task: Display the list of available packages

```
# yum list all
```

USER ACCOUNT AND GROUP ACCOUNT

USER ACCOUNT:

Command line:

#useradd username : To add a user

#passwd username : To set password

#ls /home/ : To check user created or not

#userdel username : To delete the username

#userdel –r username : To delete the user as well as his saved data or his entire profile

GROUP ACCOUNT:

Command line:

#groupadd groupname : To add a group

#groupdel groupname : To delete the group

gpasswd –a user2 groupname Adding a user in a group

 # gpassword -M ram,ram1,ram2 accounts : adding multiple users to a group

3) With newly user account a group name of same user name is also created and they are linked with each other.

Q-* How to see all created user/group in a file or Where these all created users and group are stored ?

Ans : # cat /etc/passwd - for users

#cat /etc/group - for group

Q-* How to see encrypted password of all created users ?

Ans : # cat /etc/shadow

Q: How to assign root priviledge to any normal user ?

Ans: 1) log on through root user.

2) # visudo

```
root    ALL=(ALL)   ALL
newusername    ALL=(ALL)  ALL

or
newusername2    ALL=(ALL)     NOPASSWD: ALL
```

For group

```
% wheel    ALL=(ALL)   ALL
% sales    ALL=(ALL)   ALL
```

add this newuser here then save and exit

Now in other terminal log on with newuser

$ sudo mkdir /india

type password of newuser

$ sudo systemctl stop firewalld

How to lock and Unlock user

passwd -l deepak ------ to lock

cat /etc/shadow | grep deepak

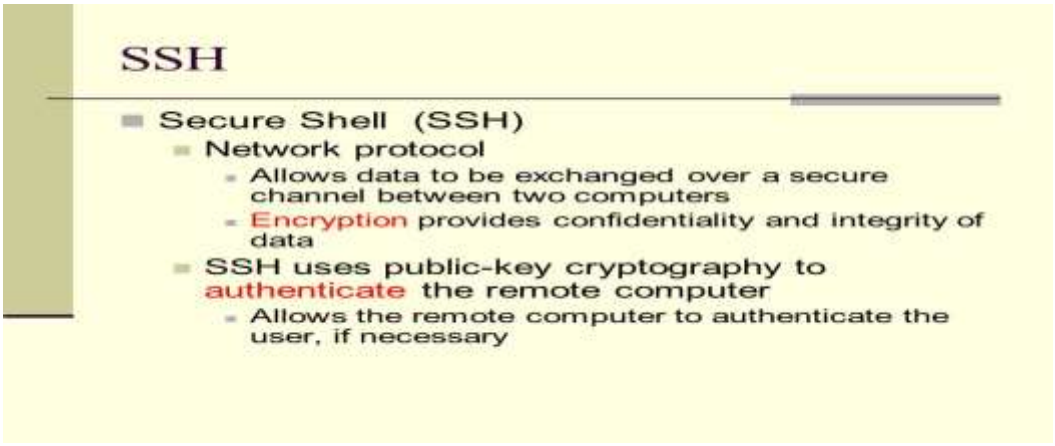
deepak : !! now shadow password

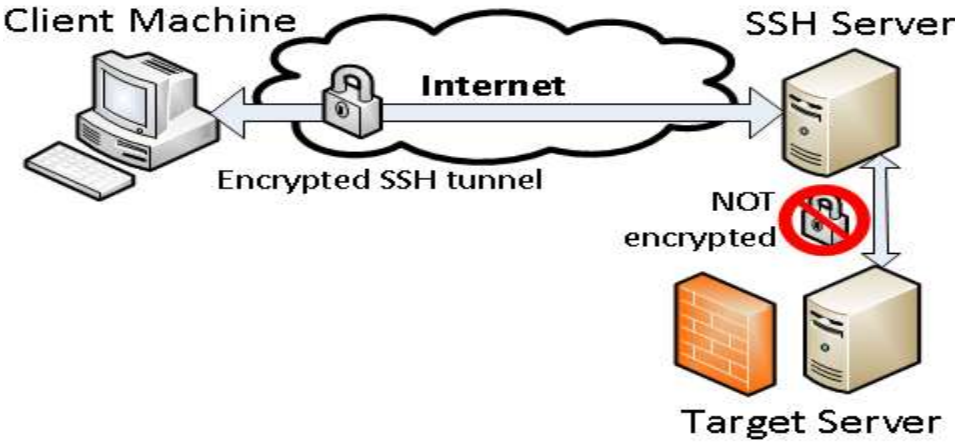
two exclamation mark (!!) before the encrypted password which means that the password has been locked

passwd -u deepak --- to unlock

SSH-SECURE SHELL

It is same like telnet connection but it is secure connection.





Ssh server:

#Systemctl start sshd

Systemctl enable sshd

Turn off firewall

Systemctl stop firewalld

Systemctl enable firewalld

useradd deepak

passwd deepak

Ssh client:

#ssh root@serverIP

or

#ssh deepak@192.168.5.1

Run any command on server without login(user password require)

#ssh root@192.168.5.1 mkdir /root/india

ssh root@192.168.5.1 ls /root/

To configure passwordless login

In client PC

ssh-keygen

ssh-copy-id deepak@server-IP

type deepak user password

How to check

ssh deepak@192.168.5.1

you should be able to log on without asking any password