

Day-07 Part - 1 Linux File System Hierarchy

- * / (forward slash) : starting point of all directories , every directories comes under this directory.
"I would use this directory to lookup at other directories".
- * /home : It contains secondary user's home directory.
"I would use this directory to add new developers (users) and provide them their personal space".
- * /root : It is the home directory for root user (superuser).
"I would use this directory to store private admin level data".
- * /etc : "Editable Configuration files" — contains files that controls how OS and installed application behave.
E.g. → /etc/passwd → stores user account information.
/etc/fstab → defines how & where disk drives and partitions should be mounted automatically at startup.
"I would use this directory for knowing disk mounting purpose".

- * /var: It stores frequently changing data. It contains:
 - /var/log file → stores system log files generated by OS and other applications.

"If service is down & need to check error logs, I would use this directory."

- * /tmp: It contains temporary files created by users and system. These files automatically delete when system reboot.
 - "I would use this directory for temporary storage (test scripts)."

- * /bin: It contains binary executables essential for system to function.
 - "I would use this for basic commands knowledge".

- * /usr/bin: "User System Resource" — contains installed programs & libraries.
 - "I would use this to check installed software libraries".

* /opt : It is used to store add-on applications software packages that are not part of core OS & are not managed by default package manager.

"To add software from third-party vendors".

```
king@mail:/$ ls
afs  boot  etc  lib   media  opt  root  sbin  sys  usr
bin  dev   home lib64 mnt   proc  run   srv   tmp  var

king@mail:/$ ls -l
total 28
dr-xr-xr-x.  2 root root  6 Apr  2 2025 afs
lrwxrwxrwx.  1 root root  7 Apr  2 2025 bin -> usr/bin
dr-xr-xr-x.  5 root root 4096 Aug 22 2025 boot
drwxr-xr-x.  20 root root 3380 Feb 22 15:59 dev
drwxr-xr-x. 137 root root 8192 Feb 22 15:59 etc
drwxr-xr-x.  4 root root  30 Feb 21 23:09 home
lrwxrwxrwx.  1 root root  7 Apr  2 2025 lib -> usr/lib
lrwxrwxrwx.  1 root root  9 Apr  2 2025 lib64 -> usr/lib64
drwxr-xr-x.  2 root root  6 Apr  2 2025 media
drwxr-xr-x.  2 root root  6 Apr  2 2025 mnt
drwxr-xr-x.  2 root root  6 Apr  2 2025 opt
dr-xr-xr-x. 266 root root  0 Feb 22 15:58 proc
dr-xr-x---.  4 root root 4096 Oct 13 23:08 root
drwxr-xr-x.  46 root root 1240 Feb 22 16:17 run
lrwxrwxrwx.  1 root root  8 Apr  2 2025 sbin -> usr/sbin
drwxr-xr-x.  2 root root  6 Apr  2 2025 srv
dr-xr-xr-x. 13 root root  0 Feb 22 15:59 sys
drwxrwxrwt. 17 root root 4096 Feb 22 16:17 tmp
drwxr-xr-x. 12 root root 144 Aug 22 2025 usr
drwxr-xr-x. 20 root root 4096 Aug 22 2025 var

king@mail:/$ █
```

Feb 22 16:20

king@mail:/

```
king@mail:/$ ls etc
adjtime
aliases
alsa
alternatives
anacrontab
asound.conf
at.deny
audit
authselect
avahi
bash_completion.d
bashrc
bindresvport.blacklist
binfmt.d
bluetooth
brlapi.key
brltty
brltty.conf
centos-release
chromium
chrony.conf
cifs-utils
cockpit
colord
containers
credstore
credstore.encrypted
cron.d
cron.daily
cron.deny
cron.hourly
firefox
firewalld
flatpak
fonts
foomatic
fprintd.conf
fstab
fuse.conf
fwupd
gcrypt
gdm
geoclue
glvnd
gnome-remote-desktop
gnupg
GREP_COLORS
groff
group
group-
grub2.cfg
grub.d
gshadow
gshadow-
gss
host.conf
hosts
hp
inittab
inputrc
ipp-usb
mailcap
makedumpfile.conf.sample
man_db.conf
mcelog
microcode_ctl
mime.types
mke2fs.conf
modprobe.d
modules-load.d
motd
motd.d
mtab
multipath
nanorc
netconfig
NetworkManager
networks
nftables
nginx
nsswitch.conf
nvme
openldap
opt
os-release
ostree
PackageKit
pam.d
paperspecs
passwd
passwd-
pbm2ppa.conf
samba
sane.d
sasl2
security
selinux
services
sestatus.conf
setroubleshoot
sgml
shadow
shadow-
shells
skel
smartmontools
s-nail.rc
sos
speech-dispatcher
ssh
ssl
sssd
statetab.d
subgid
subgid-
subuid
subuid-
sudo.conf
sudoers
sudoers.d
sudo-ldap.conf
sysconfig
sysctl.conf
```

```
king@mail:/$ ls -l etc
total 1340
-rw-r--r--. 1 root          root          16 Aug 22 2025 adjtime
-rw-r--r--. 1 root          root          1529 Nov 29 2023 aliases
drwxr-xr-x. 3 root          root          65 Aug 22 2025 alsamixer
drwxr-xr-x. 2 root          root          4096 Aug 29 18:35 alternatives
-rw-r--r--. 1 root          root          541 Aug 12 2025 anacrontab
-rw-r--r--. 1 root          root          55 Jun 26 2025 asound.conf
-rw-r--r--. 1 root          root          1 Jun 30 2025 at.deny
drwxr-x---. 4 root          root          100 Aug 22 2025 audit
drwxr-xr-x. 3 root          root          4096 Aug 22 2025 authselect
drwxr-xr-x. 4 root          root          71 Aug 22 2025 avahi
drwxr-xr-x. 2 root          root          80 Aug 22 2025 bash_completion.d
drwxr-xr-x. 2 root          root          2709 Nov 29 2023 bashrc
-rw-r--r--. 1 root          root          535 Oct 29 2024 bindresvport.blacklist
drwxr-xr-x. 2 root          root          6 Aug 15 2025 binfmt.d
dr-xr-xr-x. 2 root          root          61 Aug 22 2025 bluetooth
-rw-r-----. 1 root          brlapi         33 Aug 22 2025 brlapi.key
drwxr-xr-x. 7 root          root          84 Aug 22 2025 brltty
-rw-r--r--. 1 root          root          30583 Oct 30 2024 brltty.conf
-rw-r--r--. 1 root          root          36 Jul 22 2025 centos-release
drwxr-xr-x. 3 root          root          36 Aug 22 2025 chromium
-rw-r--r--. 1 root          root          1382 Oct  8 2024 chrony.conf
drwxr-xr-x. 2 root          root          26 Aug 22 2025 cifs-utils
drwxr-xr-x. 4 root          root          66 Aug 22 2025 cockpit
drwxr-xr-x. 2 colord        colord         6 Aug 22 2025 colord
drwxr-xr-x. 7 root          root          134 Aug 22 2025 containers
drwxr-----. 2 root          root          6 Aug 15 2025 credstore
drwxr-----. 2 root          root          6 Aug 15 2025 credstore.encrypted
drwxr-xr-x. 2 root          root          21 Aug 22 2025 cron.d
drwxr-xr-x. 2 root          root          6 Oct 29 2024 cron.daily
-rw-r--r--. 1 root          root          0 Aug 12 2025 cron.deny
```

```
drwxr-x---  3 root      root          119 Aug 22  2025 firewalld
drwxr-xr-x  3 root      root          23 Aug 22  2025 flatpak
drwxr-xr-x  3 root      root          38 Aug 22  2025 fonts
drwxr-xr-x  2 root      root          28 Aug 22  2025 foomatic
-rw-r--r--  1 root      root          20 Feb 21  2025 fprintd.conf
-rw-r--r--  1 root      root          615 Aug 22  2025 fstab
-rw-r--r--  1 root      root          38 Jun 24  2024 fuse.conf
drwxr-xr-x  4 root      root          64 Aug 22  2025 fwupd
drwxr-xr-x  2 root      root          6 Apr 29  2025 gcrypt
drwxr-xr-x  6 root      root          91 Aug 22  2025 gdm
drwxr-xr-x  3 root      root          40 Aug 22  2025 geoclue
drwxr-xr-x  3 root      root          26 Aug 22  2025 glvnd
drwxr-xr-x  2 gnome-remote-desktop gnome-remote-desktop  6 Aug 22  2025 gnome-remote-desktop
drwxr-xr-x  2 root      root          6 Oct 29  2024 gnupg
-rw-r--r--  1 root      root          94 Oct 29  2024 GREP_COLORS
drwxr-xr-x  4 root      root          40 Aug 22  2025 groff
-rw-r--r--  1 root      root          858 Feb 21 23:09 group
-rw-r--r--  1 root      root          871 Feb 21 23:09 group-
lrwxrwxrwx  1 root      root          22 Jul 31  2025 grub2.cfg -> ../../boot/grub2/grub.cfg
drwx-----  2 root      root          4096 Aug 22  2025 grub.d
-----  1 root      root          696 Feb 21 23:09 gshadow
-----  1 root      root          705 Feb 21 23:09 gshadow-
drwxr-xr-x  3 root      root          20 Aug 22  2025 gss
-rw-r--r--  1 root      root          9 Nov 29  2023 host.conf
-rw-r--r--  1 root      root          16 Aug 29 18:52 hostname
-rw-r--r--  1 root      root          384 Nov 29  2023 hosts
drwxr-xr-x  2 root      root          24 Aug 22  2025 hp
-rw-r--r--  1 root      root          490 Aug 15  2025 inittab
-rw-r--r--  1 root      root          943 Nov 29  2023 inputrc
drwxr-xr-x  3 root      root          40 Aug 22  2025 ipp-usb
drwxr-xr-x  2 root      root          20 Aug 22  2025 iproute2
drwxr-xr-x  2 root      root          25 Aug 22  2025 iscsi
-rw-r--r--  1 root      root          20 Jul 22  2025 issue
```

Feb 22 16:24

king@mail:/

```
king@mail:/$ du -sh /var/log/* 2 > /dev/null | sort -h | tail -5
du: cannot read directory '/var/log/audit': Permission denied
du: cannot read directory '/var/log/chrony': Permission denied
du: cannot read directory '/var/log/gdm': Permission denied
du: cannot read directory '/var/log/nginx': Permission denied
du: cannot read directory '/var/log/private': Permission denied
du: cannot read directory '/var/log/samba': Permission denied
du: cannot read directory '/var/log/speech-dispatcher': Permission denied
du: cannot read directory '/var/log/sssd': Permission denied
du: cannot access '2': No such file or directory
king@mail:/$ sudo du -sh /var/log/* 2 > /dev/null | sort -h | tail -5
[sudo] password for king:
du: cannot access '2': No such file or directory
king@mail:/$ sudo du -sh /var/log/* 2 > /dev/null | sort -h | tail -5
576K  /var/log/boot.log-20260218
3.7M  /var/log/audit
3.9M  /var/log/messages
4.3M  /var/log/messages-20260218
6.5M  /var/log/anaconda
king@mail:/$ cat /etc/hostname
mail.test.local
king@mail:/$ ls -la
total 28
dr-xr-xr-x.  18 root root  235 Aug 22  2025 .
dr-xr-xr-x.  18 root root  235 Aug 22  2025 ..
dr-xr-xr-x.   2 root root    6 Apr  2  2025 afs
lrwxrwxrwx.   1 root root    7 Apr  2  2025 bin -> usr/bin
dr-xr-xr-x.   5 root root 4096 Aug 22  2025 boot
drwxr-xr-x.  20 root root 3380 Feb 22 15:59 dev
drwxr-xr-x. 137 root root 8192 Feb 22 15:59 etc
drwxr-xr-x.   4 root root   30 Feb 21 23:09 home
lrwxrwxrwx.   1 root root    7 Apr  2  2025 lib -> usr/lib
```