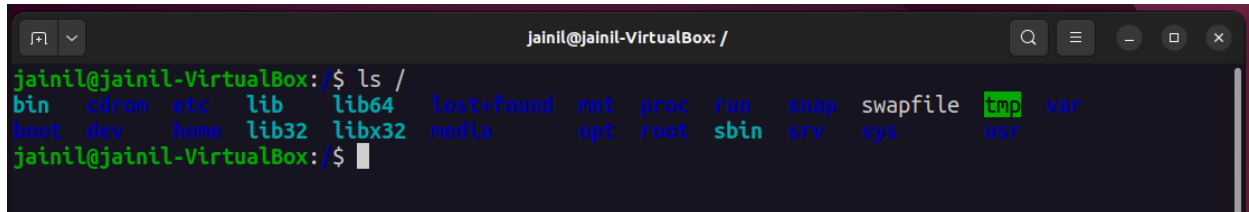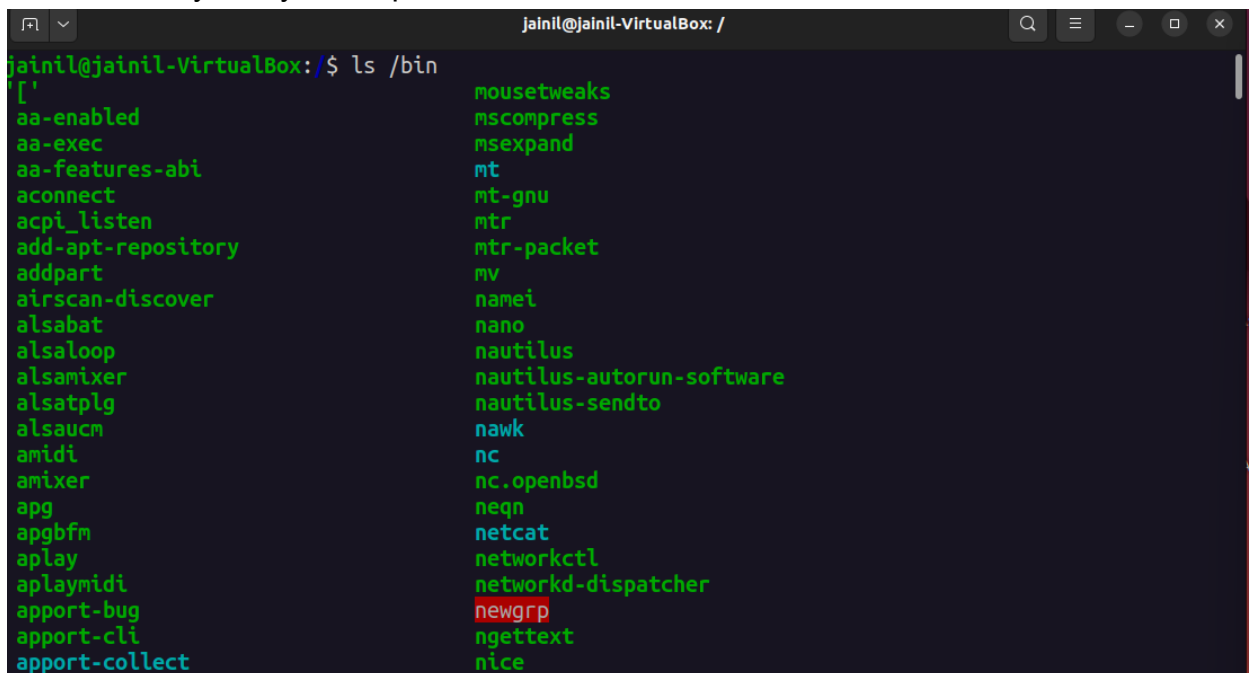# TASK 4

Linux file systems are organized in a hierarchical structure that starts with the root directory denoted by a forward slash `/` . Within this file system, various directories and files are organised to serve different purposes. `ls` command list of directory contents. Here are some common directories and their associated functions:

1. **/ (Root Directory)**: The root directory is the top-level directory in the Linux file system. Everything in Linux is organized under this directory.
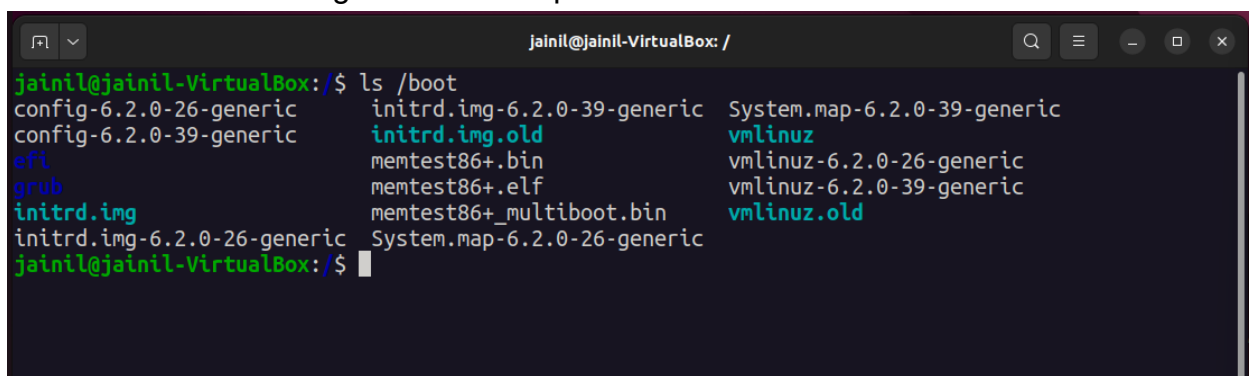

2. **/bin (Binary)**: This directory contains essential binary executables (commands) required for system boot and repair. These executables are available to all users and are necessary for system operation.
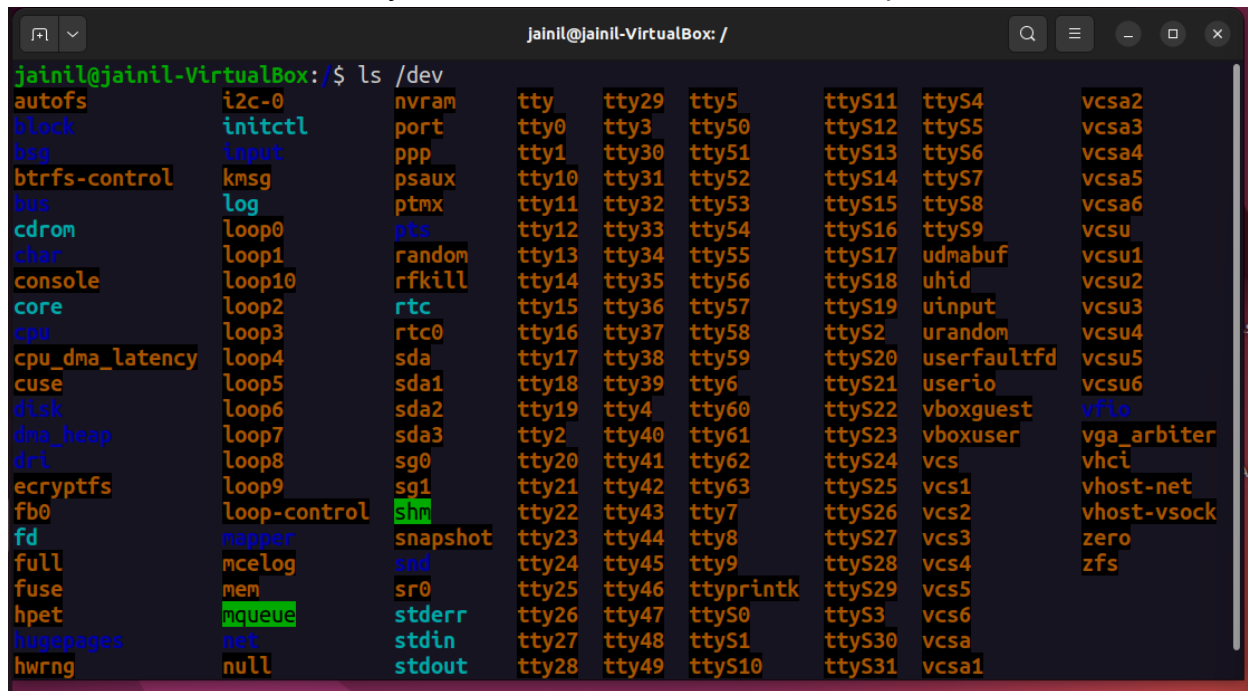

3. **/boot**: This directory contains the bootloader configuration and the Linux kernel. It's crucial for the initial stages of the boot process.
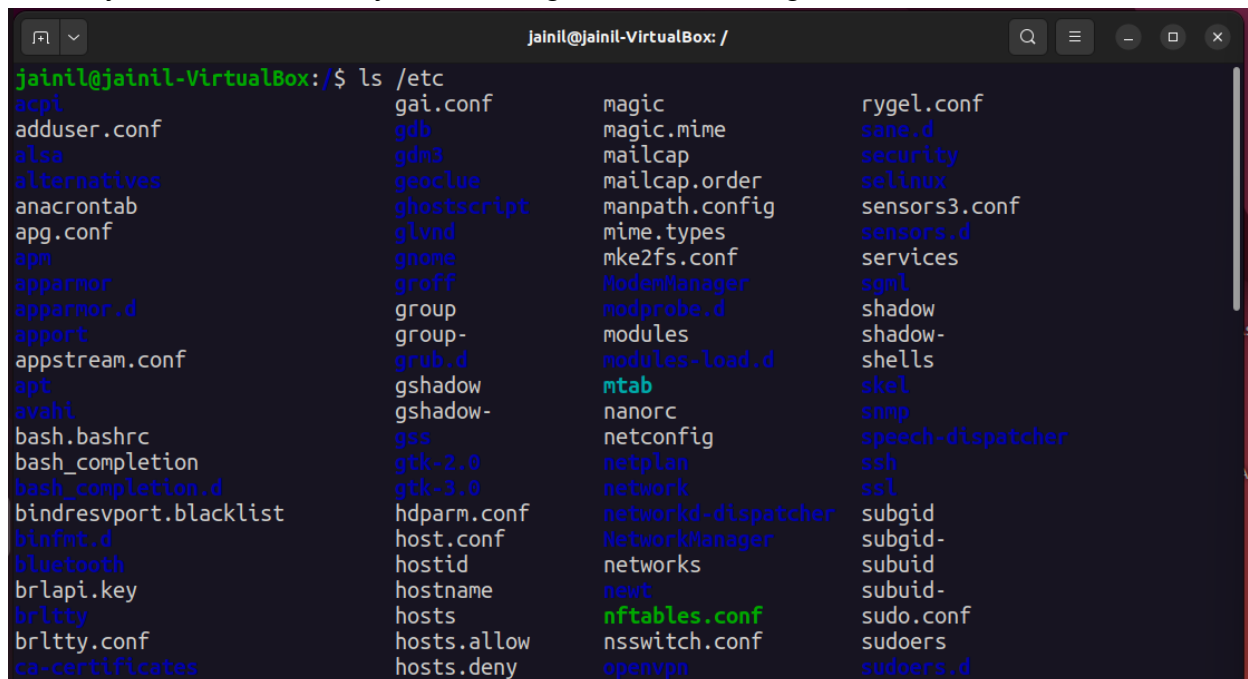
4. **/dev (Device)**: This directory contains special device files that represent hardware devices connected to the system, such as disks, terminals, or printers.
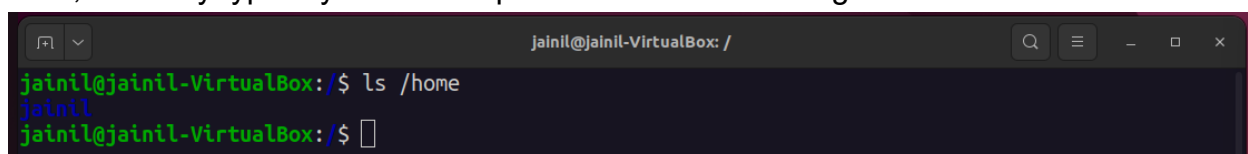
```
jainil@jainil-VirtualBox:/$ ls /dev
autofs            i2c-0          nvram      tty     tty29   tty5      ttyS11   ttyS4       vcsa2
block             initctl        port       tty0    tty3    tty50     ttyS12   ttyS5       vcsa3
bsg               input          ppp        tty1    tty30   tty51     ttyS13   ttyS6       vcsa4
btrfs-control     kmsg           psaux      tty10   tty31   tty52     ttyS14   ttyS7       vcsa5
bus               log            ptmx       tty11   tty32   tty53     ttyS15   ttyS8       vcsa6
cdrom             loop0          pts        tty12   tty33   tty54     ttyS16   ttyS9       vcsu
char              loop1          random     tty13   tty34   tty55     ttyS17   udmabuf     vcsu1
console           loop10         rfkill     tty14   tty35   tty56     ttyS18   uhid        vcsu2
core              loop2          rtc        tty15   tty36   tty57     ttyS19   uinput      vcsu3
cpu               loop3          rtc0       tty16   tty37   tty58     ttyS2    urandom     vcsu4
cpu_dma_latency   loop4          sda        tty17   tty38   tty59     ttyS20   userfaultfd vcsu5
cuse              loop5          sda1       tty18   tty39   tty6      ttyS21   userio      vcsu6
disk              loop6          sda2       tty19   tty4    tty60     ttyS22   vboxguest   vfio
dma_heap          loop7          sda3       tty2    tty40   tty61     ttyS23   vboxuser    vga_arbiter
dri               loop8          sg0        tty20   tty41   tty62     ttyS24   vcs         vhci
ecryptfs          loop9          sg1        tty21   tty42   tty63     ttyS25   vcs1        vhost-net
fb0               loop-control   shm        tty22   tty43   tty7      ttyS26   vcs2        vhost-vsock
fd                mapper         snapshot   tty23   tty44   tty8      ttyS27   vcs3        zero
full              mcelog         snd        tty24   tty45   tty9      ttyS28   vcs4        zfs
fuse              mem            sr0        tty25   tty46   ttyprintk ttyS29   vcs5
hpet              mqueue         stderr     tty26   tty47   ttyS0     ttyS3    vcs6
hugepages         net            stdin     tty27   tty48   ttyS1     ttyS30   vcsa
hwrng             null           stdout    tty28   tty49   ttyS10    ttyS31   vcsa1
```

5. **/etc (Etcetera)**: This directory contains system-wide configuration files and scripts. It's where you'll find files for system settings, network configuration, and more.

```
jainil@jainil-VirtualBox:/$ ls /etc
acpi                    gai.conf        magic               rygel.conf
adduser.conf            gdb             magic.mime          sane.d
alsa                    gdm3            mailcap             security
alternatives            geoclue         mailcap.order       selinux
anacrontab              ghostscript     manpath.config      sensors3.conf
apg.conf                glvnd           mime.types          sensors.d
apm                     gnome           mke2fs.conf         services
apparmor                groff           ModemManager        sgml
apparmor.d              group           modprobe.d          shadow
apport                  group-          modules             shadow-
appstream.conf          grub.d          modules-load.d      shells
apt                     gshadow         mtab                skel
avahi                   gshadow-        nanorc              snmp
bash.bashrc             gss             netconfig           speech-dispatcher
bash_completion         gtk-2.0         netplan             ssh
bash_completion.d       gtk-3.0         network             ssl
bindresvport.blacklist  hdparm.conf     networkd-dispatcher subgid
binfmt.d                host.conf       NetworkManager      subgid-
bluetooth               hostid          networks            subuid
brlapi.key              hostname        newt                subuid-
brltty                  hosts           nftables.conf       sudo.conf
brltty.conf             hosts.allow     nsswitch.conf       sudoers
ca-certificates         hosts.deny      openvpn             sudoers.d
```

6. **/home**: This is the location of user home directories. Each user has a subdirectory here, and they typically store their personal files and settings.

```
jainil@jainil-VirtualBox:/$ ls /home
jainil
jainil@jainil-VirtualBox:/$
```

7. **/lib (Library)**: Essential shared libraries needed by the system and applications are stored here.

8. **/media**: Removable media, such as USB drives or optical discs, are typically mounted in subdirectories under /media when they're inserted.

9. **/mnt (Mount)**: Historically used as a temporary mount point for mounting file systems, though /media is commonly used for this purpose today.

10. **/opt (Optional)**: This directory is often used for optional, third-party software packages. Some applications install in subdirectories under /opt.

11. **/proc (Process)**: This is a virtual file system that provides information about currently running processes and system status.

12. **/root**: This is the home directory for the superuser (root). The root user is the administrative user with the highest privileges.

13. **/run**: This directory holds system runtime data, such as process IDs and socket files. It is often a tmpfs file system that is cleared at boot.

14. **/bin (System Binary)**: Similar to /bin, but it contains binary executables that are typically used for system maintenance and repair.

15. **/srv (Service)**: This directory can be used for data and service-specific files. For example, web server data might be located under /srv.

16. **/sys (System)**: A virtual file system that exposes kernel information and configuration settings.

17. **/tmp (Temporary)**: A directory for temporary files that are not intended to be preserved across reboots. It's often used for storing temporary data by applications.

18. **/usr (User System Resources)**: This directory contains user data and program files. It's subdivided into /usr/bin, /usr/lib, /usr/share, etc.

19. **/var (Variable)**: This directory contains variable data, including log files, spool directories, and temporary files generated by system and applications.