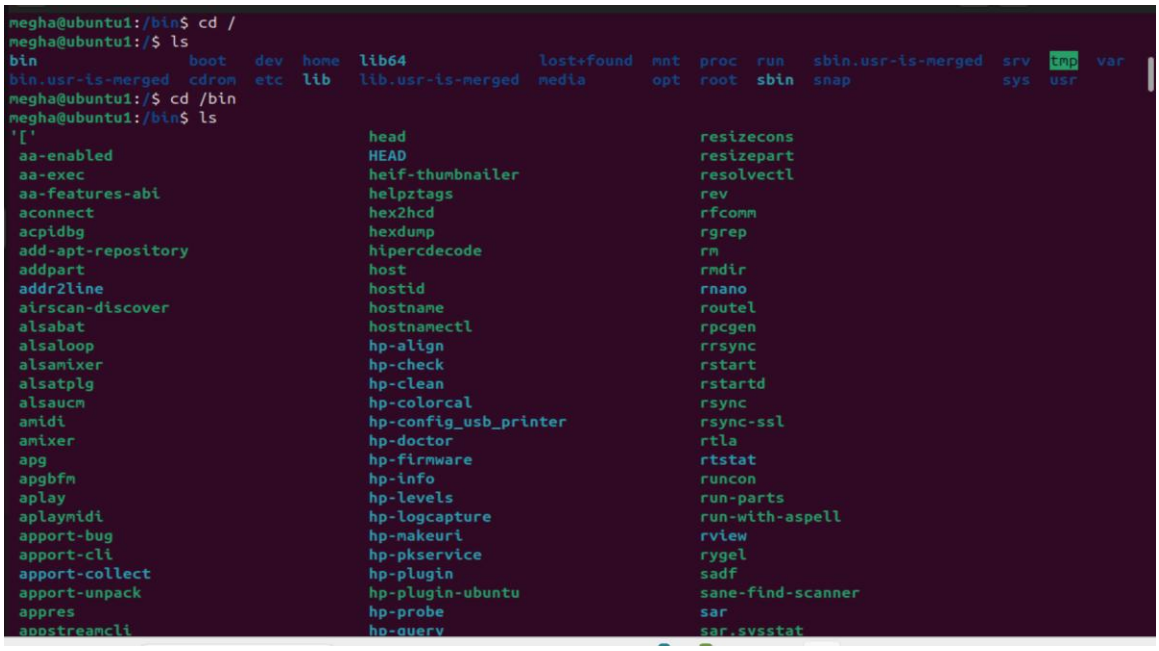
# Linux File System & Command Demonstration

## Home Directory & Basic Commands

This screenshot shows the use of basic Linux commands like pwd, ls, and cd. The pwd command displays the present working directory. The ls command lists files and directories, while cd is used to navigate between directories.

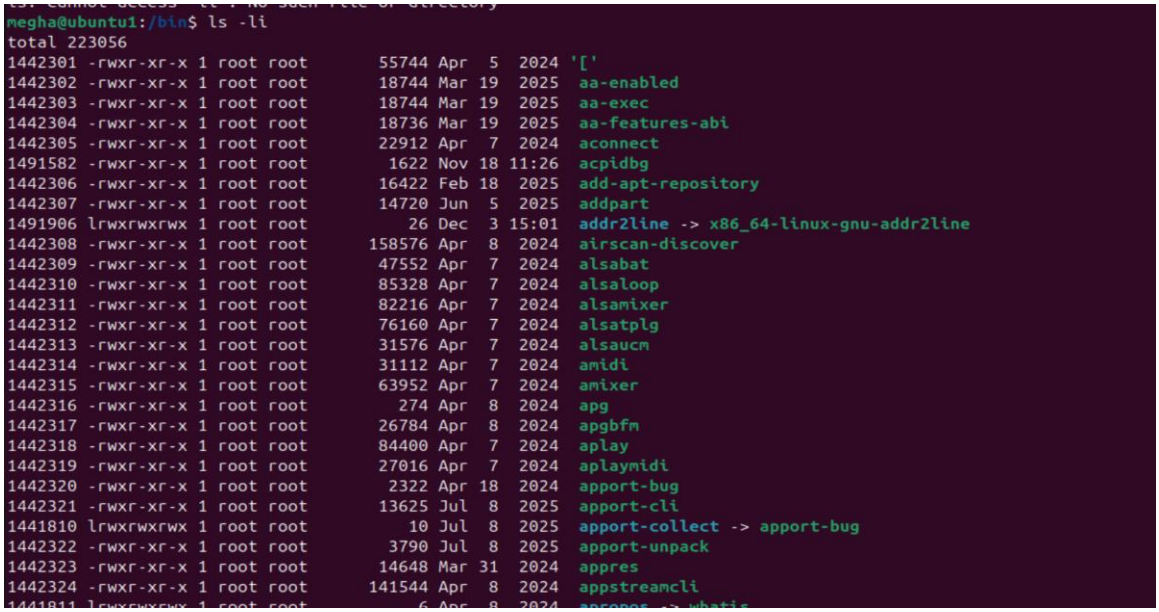

## Root Directory Structure

This screenshot explains the Linux root (/) directory. Directories such as /bin, /etc, /home, /tmp, and /var are system directories. Each directory has a specific purpose in the Linux operating system.



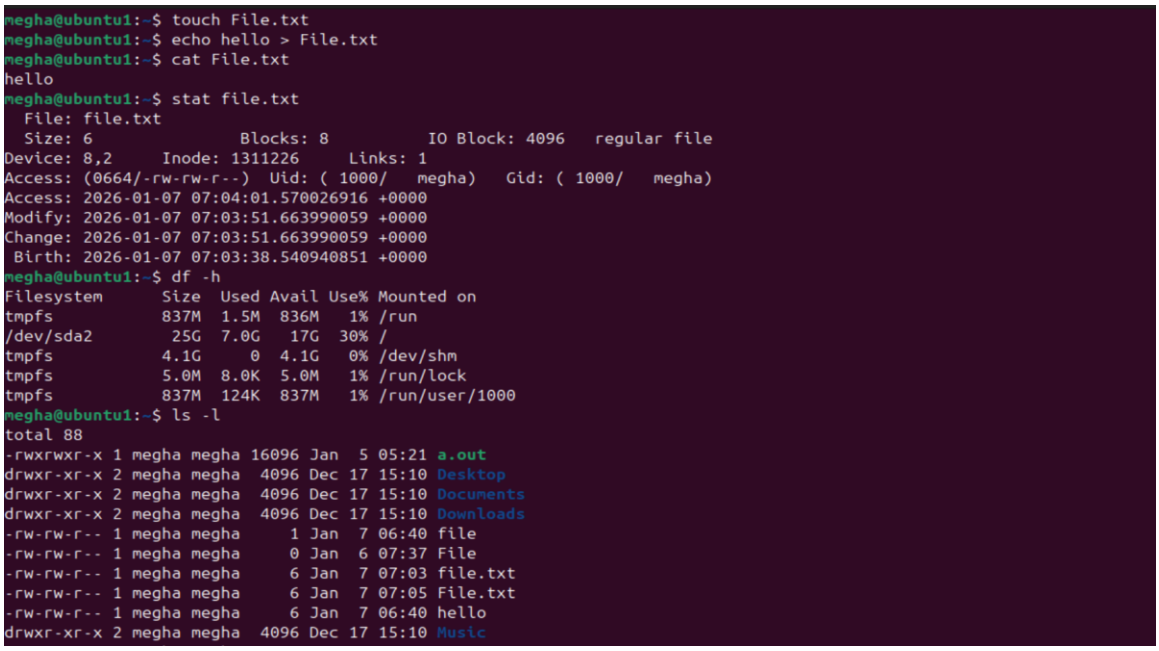

## /bin Directory & Inodes

The /bin directory contains essential binary executable commands like ls, cp, rm, and cat. The ls -li command displays inode numbers, permissions, ownership, and file size.



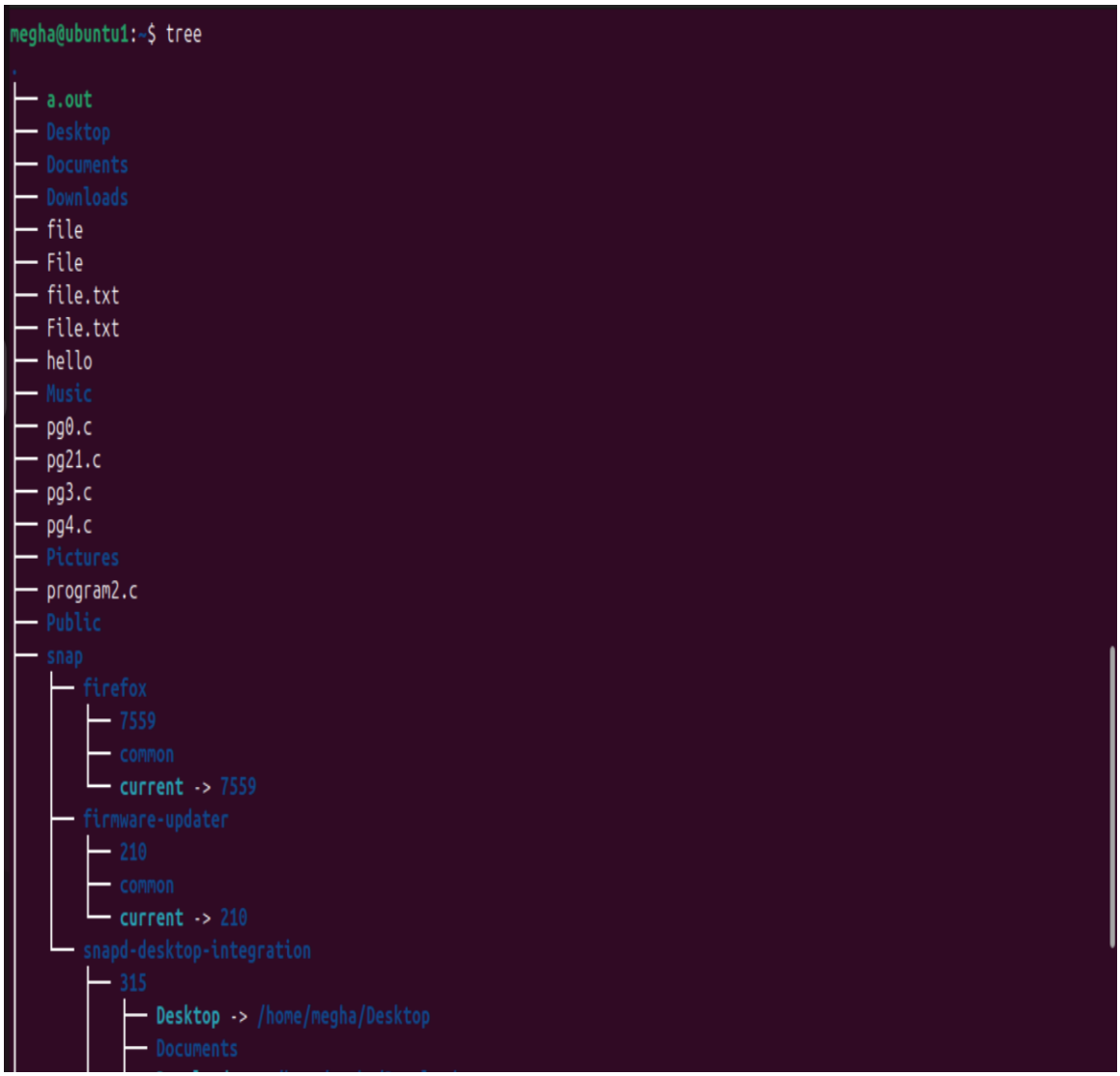

## File Creation & File Information

This screenshot demonstrates file creation using touch and writing data using echo. The stat command displays detailed information about a file including inode number, size, permissions, and timestamps.




## Tree Command & Directory Hierarchy

The tree command displays directories and subdirectories in a hierarchical structure. It helps visualize the file system layout and symbolic links.




## /var and Log Files

The /var directory stores variable data such as log files. System logs like syslog, auth.log, and dmesg help in system monitoring and troubleshooting.


## /tmp and /boot Directories

The /tmp directory stores temporary files created by the system and users. The /boot directory contains boot loader files, kernel images, and initrd files required during system startup.

```
megha@ubuntu1:/var$ cd /var/log
megha@ubuntu1:/var/log$ ls
alternatives.log  cloud-init.log         dmesg.1.gz      gdm3             openvpn            unattended-upgrades
apport.log        cloud-init-output.log  dmesg.2.gz      gpu-manager.log  private            vboxpostinstall.log
apt               cups                   dmesg.3.gz      hp               README             wtmp
auth.log          cups-browsed           dmesg.4.gz      installer        speech-dispatcher
boot.log          dist-upgrade           dpkg.log        journal          sssd
bootstrap.log     dmesg                  faillog         kern.log         syslog
btmp              dmesg.0                fontconfig.log  lastlog          sysstat
megha@ubuntu1:/var/log$ cd /
megha@ubuntu1:/$  cd /temp
bash: cd: /temp: No such file or directory
megha@ubuntu1:/$ cd /tmp
megha@ubuntu1:/tmp$ ls
snap-private-tmp
systemd-private-e328f98ce54c496395a741036d6b60b5-colord.service-pVM2Qy
systemd-private-e328f98ce54c496395a741036d6b60b5-ModemManager.service-xXQNd6
systemd-private-e328f98ce54c496395a741036d6b60b5-polkit.service-xEHRAh
systemd-private-e328f98ce54c496395a741036d6b60b5-power-profiles-daemon.service-AALYSU
systemd-private-e328f98ce54c496395a741036d6b60b5-switcheroo-control.service-OUg2Hp
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-logind.service-pMLVlt
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-oomd.service-GWrnZk
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-resolved.service-qjyVz2
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-timesyncd.service-hsTPoY
systemd-private-e328f98ce54c496395a741036d6b60b5-upower.service-mMd57r
megha@ubuntu1:/tmp$ cd /boot
megha@ubuntu1:/boot$ ls
config-6.14.0-37-generic  initrd.img-6.14.0-37-generic  memtest86+ia32.efi  System.map-6.14.0-37-generic  vmlinuz.old
grub                      initrd.img.old                memtest86+x64.bin   vmlinuz
initrd.img                memtest86+ia32.bin            memtest86+x64.efi   vmlinuz-6.14.0-37-generic
megha@ubuntu1:/boot$ cd /
```

## /dev Directory

The /dev directory contains device files representing hardware and virtual devices. Examples include storage devices, terminals, and random number generators.

```
megha@ubuntu1:/$ cd /tmp
megha@ubuntu1:/tmp$ ls
snap-private-tmp
systemd-private-e328f98ce54c496395a741036d6b60b5-colord.service-pVM2Qy
systemd-private-e328f98ce54c496395a741036d6b60b5-ModemManager.service-xXQNd6
systemd-private-e328f98ce54c496395a741036d6b60b5-polkit.service-xEHRAh
systemd-private-e328f98ce54c496395a741036d6b60b5-power-profiles-daemon.service-AALYSU
systemd-private-e328f98ce54c496395a741036d6b60b5-switcheroo-control.service-OUg2Hp
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-logind.service-pMLVlt
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-oomd.service-GWrnZk
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-resolved.service-qjyVz2
systemd-private-e328f98ce54c496395a741036d6b60b5-systemd-timesyncd.service-hsTPoY
systemd-private-e328f98ce54c496395a741036d6b60b5-upower.service-mMd57r
megha@ubuntu1:/tmp$ cd /boot
megha@ubuntu1:/boot$ ls
config-6.14.0-37-generic  initrd.img-6.14.0-37-generic  memtest86+ia32.efi  System.map-6.14.0-37-generic  vmlinuz.old
grub                      initrd.img.old                memtest86+x64.bin   vmlinuz
initrd.img                memtest86+ia32.bin            memtest86+x64.efi   vmlinuz-6.14.0-37-generic
megha@ubuntu1:/boot$ cd /
megha@ubuntu1:/$ cd /dev
megha@ubuntu1:/dev$ ls
autofs           fuse       loop4         random    tty10  tty28  tty45  tty62      ttyS20  udmabuf      vcsa4
block            hidraw0    loop5         rfkill    tty11  tty29  tty46  tty63      ttyS21  uhid         vcsa5
bsg              hpet       loop6         rtc       tty12  tty3   tty47  tty7       ttyS22  uinput       vcsa6
btrfs-control    hugepages  loop7         rtc0      tty13  tty30  tty48  tty8       ttyS23  urandom      vcsu
bus              hwrng      loop8         sda       tty14  tty31  tty49  tty9       ttyS24  userfaultfd  vcsu1
cdrom            i2c-0      loop9         sda1      tty15  tty32  tty5   ttyprintk  ttyS25  userio       vcsu2
char             initctl    loop-control  sda2      tty16  tty33  tty50  ttyS0      ttyS26  vboxguest    vcsu3
console          input      mapper        sg0       tty17  tty34  tty51  ttyS1      ttyS27  vboxuser     vcsu4
core             kmsg       mcelog        sg1       tty18  tty35  tty52  ttyS10     ttyS28  vcs          vcsu5
cpu              log        mem           shm       tty19  tty36  tty53  ttyS11     ttyS29  vcs1         vcsu6
cpu_dma_latency  loop0      mqueue        snapshot  tty2   tty37  tty54  ttyS12     ttyS3   vcs2         vfio
```