1. User and Group Management

- `useradd` - **Add a new user**

- `usermod` - **Modify user account**

- `userdel` - **Delete a user**

- `groupadd` - **Add a new group**

- `groupdel` - **Delete a group**

- `chgrp` - **Change group ownership of a file**

- `passwd` - **Change user password**

- `Who` - **Who is logged in**

2. File and Directory Management

- `ls` - **List directory contents**

- `cd` - **Change directory**

- `pwd` - **Print working directory**

- `mkdir` - **Make a new directory**

- `rmdir` - **Remove a directory**

- `rm` - **Remove files or directories**

- `cp` - **Copy files or directories**

- `mv` - **Move or rename files or directories**

- **touch - Create empty files**

- **find - Search for file in a directory hierarchy**

- **locate- Find files by name**

3. File Management

- `cat` **- Concatenate and display file contents**

- `more` **- View file content page by page**

- `less` **- View file content with navigation**

- `head` **- View the first part of a file**

- `tail` **- View the last part of a file**

- `nano` **- Text editor to edit files**

- `vi` **- Text editor to edit files**

- `touch` **- Create an empty file or update file timestamp**

- `ln` **- Create hard or symbolic links**

- `file` **- Determine file type**

- `stat` **- Display file or file system status**

- `find` **- Search for files in a directory hierarchy**

- `locate` **- Find files by name (using a database)**

- `updatedb` - **Update the database used by** `locate`

- `xargs` - **Build and execute command lines from standard input**

4. File Permissions and Ownership

- `chmod` - **Change file permissions**

- `chown` - **Change file owner and group**

- `chgrp` - **Change group ownership**

- `umask` - **Set file creation mask**

- `getfacl` - **Get file access control lists (ACL)**

- `setfacl` - **Set file access control lists (ACL)**

- `ls -l` - **List files with detailed permissions, owner, and group**

- `stat` - **Display file or file system status**

- `acl` - **View or modify Access Control Lists (ACL) on files**

5. Disk Management

- `df` - **Display free disk space**

- `du` - **Estimate file space usage**

- `fdisk` - **Partition table manipulator**

- `parted` - **A tool for creating and managing disk partitions**

- `lsblk` - List information about block devices

- `blkid` - Find or display block device attributes

- `mount` - Mount a file system

- `umount` - Unmount a file system

- `mkfs` - Create a file system

- `fsck` - Check and repair file systems

- `tune2fs` - Adjust tunable file system parameters

- `resize2fs` - Resize an ext2, ext3, or ext4 file system

- `lvcreate` - Create a logical volume

- `vgcreate` - Create a volume group

- `pvcreate` - Prepare a physical volume for LVM

- `lsattr` - List file attributes on a file system

- `chattr` - Change file attributes on a file system

6. Process Management

- `ps` - Display current processes

- `top` - Display dynamic process information

- `htop` - Interactive process viewer

- `kill` - **Terminate a process by ID**

- `killall` - **Kill all processes by name**

- `bg` - **Resume a suspended process in the background**

- `fg` - **Bring a process to the foreground**

- `nice` - **Set process priority**

- `renice` - **Change the priority of running processes**

- `jobs` - **List active jobs**

- `pgrep` - **Search for processes by name or other attributes**

- `pkill` - **Kill processes by name or other attributes**

- `pstree` - **Display processes in a tree format**

- `lsof` - **List open files and the processes that opened them**

- `strace` - **Trace system calls and signals**

- `timeout` - **Run a command with a time limit**

- `watch` - **Execute a program periodically and show output**

7. Network Management

- `ifconfig` - **Display and configure network interfaces**

- `ip a` - **Show all network interfaces and their IPs**

- `ip r` - **Display the routing table**

- `ip link set <interface> up/down` - **Enable or disable a network interface**

- `ping <host>` - **Send ICMP echo request to check connectivity**

- `traceroute <host>` - **Trace the route packets take to a network host**

- `netstat -tulnp` - **Show open ports and listening services**

- `ss -tulnp` - **Display socket statistics and listening services**

- `hostname -I` - **Show the system's IP address**

- `dig <domain>` - **Query DNS records**

- `nslookup <domain>` - **Lookup DNS details**

- `whois <domain>` - **Get domain registration details**

- `curl -I <URL>` - **Fetch HTTP headers from a website**

- `wget <URL>` - **Download files from the web**

- `scp <file> user@host:/path` - **Securely copy files over SSH**

- `rsync -avz <src> <dest>` - **Sync files between local and remote locations**

- `tcpdump -i eth0` - **Capture network packets on an interface**

- `nmap <IP>` - **Scan a network for open ports**

8. System and Monitoring

- `uptime` - **Show system uptime and load average**

- `dmesg` - **Print system boot and hardware logs**

- `free -m` - **Display memory usage in MB**

- `vmstat` - **Report system performance statistics**

- `iostat` - **Display CPU and disk I/O statistics**

- `mpstat` - **Show CPU usage per core**

- `top` - **Display dynamic process and system information**

- `htop` - **Interactive process and resource monitoring**

- `sar -u 5 10` - **Monitor CPU usage at 5-second intervals**

- `iotop` - **Display disk read/write usage per process**

- `lsof` - **List open files by processes**

- `watch -n 2 <command>` - **Run a command every 2 seconds**

- `journalctl -xe` - **View system logs with extended details**

- `systemctl status <service>` - **Check the status of a service**

- `service <service> status` - **View service status (legacy systems)**

- `df -h` - **Show disk space usage in a human-readable format**

- `du -sh <directory>` - **Display the size of a directory**

- `ps aux --sort=-%mem` - **List processes sorted by memory usage**

- `netstat -tulnp` - **Show active network connections and listening services**

9. Text Processing

- `cat <file>` - Display file contents

- `tac <file>` - Display file contents in reverse order

- `head -n <num> <file>` - Show the first \<num\> lines of a file

- `tail -n <num> <file>` - Show the last \<num\> lines of a file

- `tail -f <file>` - Continuously display new lines in a file

- `grep '<pattern>' <file>` - Search for a pattern in a file

- `grep -r '<pattern>' <directory>` - Recursively search for a pattern in a directory

- `awk '{print $1, $2}' <file>` - Process and extract columns from a file

- `sed 's/old/new/g' <file>` - Replace text in a file

- `cut -d':' -f1 <file>` - Extract specific fields from a file

- `sort <file>` - Sort file contents

- `uniq <file>` - Remove duplicate lines from a file

- `wc -l <file>` - Count lines in a file

- `wc -w <file>` - Count words in a file

- `wc -c <file>` - Count bytes in a file

- `tr 'a-z' 'A-Z' <file>` - Convert lowercase to uppercase

- `diff <file1> <file2>` - Compare two files line by line

- `cmp <file1> <file2>` - Compare two files byte by byte

- `tee <file>` - Read from standard input and write to both a file and standard output

10. Package Management

For Debian-based systems (Ubuntu, Debian)

- `apt update` - Update package lists

- `apt upgrade` - Upgrade all installed packages

- `apt install <package>` - Install a package

- `apt remove <package>` - Remove a package

- `apt purge <package>` - Remove a package and its config files

- `dpkg -i <package>.deb` - Install a `.deb` package

- `dpkg -r <package>` - Remove a package installed via `dpkg`

- `dpkg -l` - List installed packages

- `apt-cache search <package>` - Search for a package

- `apt autoremove` - Remove unnecessary packages

- `apt clean` - Clear the package cache

For RHEL-based systems (CentOS, Rocky Linux, AlmaLinux, Fedora)

- `yum update` - Update installed packages (for older systems)

- `dnf update` - Update installed packages (for newer systems)

- `yum install <package>` - Install a package

- `dnf install <package>` - Install a package (newer distros)

- `yum remove <package>` - Remove a package

- `dnf remove <package>` - Remove a package (newer distros)

- `rpm -ivh <package>.rpm` - Install an `.rpm` package

- `rpm -e <package>` - Remove an installed `.rpm` package

- `yum list installed` - List installed packages

- `dnf list installed` - List installed packages (newer distros)

- `yum search <package>` - Search for a package

- `dnf search <package>` - Search for a package (newer distros)

- `yum clean all` - Clean cached package data

11. Archive and Compression

Working with tar files

- `tar -cvf archive.tar <files>` - Create a tar archive

- `tar -xvf archive.tar` - Extract a tar archive

- `tar -tvf archive.tar` - List files in a tar archive

- `tar -czvf archive.tar.gz <files>` - Create a compressed tar.gz archive

- `tar -xzvf archive.tar.gz` - Extract a tar.gz archive

- `tar -cJvf archive.tar.xz <files>` - Create a tar.xz archive

- `tar -xJvf archive.tar.xz` - Extract a tar.xz archive

Working with zip files

- `zip archive.zip <files>` - Create a zip archive

- `unzip archive.zip` - Extract a zip archive

- `unzip -l archive.zip` - List contents of a zip file

- `zip -r archive.zip <directory>` - Zip a directory

Working with gzip & bzip2

- `gzip <file>` - Compress a file using gzip

- `gunzip <file>.gz` - Decompress a gzip file

- `bzip2 <file>` - Compress a file using bzip2

- `bunzip2 <file>.bz2` - Decompress a bzip2 file

12. Shutdown and Reboot

- `shutdown -h now` - Shutdown the system immediately

- `shutdown -h +10` - Shutdown the system in 10 minutes

- `shutdown -h 22:00` - **Schedule shutdown at 10:00 PM**

- `shutdown -c` - **Cancel a scheduled shutdown**

- `poweroff` - **Immediately power off the system**

- `halt` - **Halt the system**

- `reboot` - **Reboot the system immediately**

- `shutdown -r now` - **Reboot the system immediately**

- `shutdown -r +5` - **Reboot the system in 5 minutes**

- `systemctl reboot` - **Reboot using systemd**

13. Task Scheduling

- `crontab -e` - **Edit cron jobs for the current user**

- `crontab -l` - **List scheduled cron jobs**

- `crontab -r` - **Remove all cron jobs for the current user**

- `crontab -u <user> -l` - **List cron jobs for a specific user**

- `at <time>` - **Schedule a command to run at specified time**

14. System Diagnostics and Troubleshooting

- `journalctl -xe` - **View detailed system logs**

- `journalctl -f` - **Follow live logs in real-time**

- `journalctl --since "1 hour ago"` - **View logs from the last hour**

- `dmesg | less` - **View system boot logs**

- `dmesg | grep error` - **Check for errors in system logs**

- `cat /var/log/syslog` - **View general system logs (Debian-based)**

- `cat /var/log/messages` - **View general system logs (RHEL-based)**

- `uptime` - **Show system uptime and load**

- `free -m` - **Display available and used memory in MB**

- `top` - **Monitor real-time CPU, memory, and process usage**

- `htop` - **Interactive system monitoring (if installed)**

- `vmstat 1 5` - **Display system performance stats**

- `iostat` - **Show CPU and disk usage statistics**