

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
- **pvccreate** - 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
- **ps tree** - 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