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**-Updatethedatabaseusedbylocate

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.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

13. 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