

## 1. File and Directory Management

- **ls** – List directory contents
- **cd** – Change directory
- **pwd** – Print working directory
- **cp** – Copy files and directories
- **mv** – Move or rename files and directories
- **rm** – Remove files or directories
- **mkdir** – Make directories
- **rmdir** – Remove empty directories
- **touch** – Change file timestamps or create empty files
- **find** – Search for files in a directory hierarchy
- **locate** – Find files by name
- **tree** – Display directories in a tree-like format
- **chmod** – Change file permissions
- **chown** – Change file owner and group
- **chgrp** – Change group ownership
- **stat** – Display file or file system status

## 2. File Viewing and Editing

- **cat** – Concatenate and display file content
- **tac** – Concatenate and display file content in reverse
- **more** – View file content interactively (page by page)
- **less** – View file content interactively (scrollable)
- **head** – Output the first part of a file
- **tail** – Output the last part of a file
- **nano** – Text editor (terminal-based)
- **vim / vi** – Advanced text editors
- **emacs** – Text editor
- **grep** – Search text using patterns
- **sed** – Stream editor for filtering and transforming text
- **awk** – Pattern scanning and processing language

- **ifconfig** – Configure network interfaces
- **ip** – Show/manipulate routing, devices, and tunnels
- **ping** – Send ICMP Echo requests to network hosts
- **netstat** – Network statistics
- **ss** – Socket statistics (faster than netstat)
- **traceroute** – Trace the route packets take to a network host
- **nslookup** – Query Internet name servers interactively
- **dig** – DNS lookup utility
- **wget** – Non-interactive network downloader
- **curl** – Transfer data with URLs
- **scp** – Secure copy files between hosts
- **ssh** – Secure shell for remote login
- **ftp** – File Transfer Protocol client

## 6. User and Group Management

- **useradd** – Add a user to the system
- **usermod** – Modify a user account
- **userdel** – Delete a user account
- **groupadd** – Add a group to the system
- **groupdel** – Delete a group
- **passwd** – Change user password
- **chage** – Change user password expiry information
- **whoami** – Print the current logged-in user
- **who** – Show who is logged in
- **w** – Show who is logged in and what they're doing
- **id** – Display user and group information
- **groups** – Show user's groups

## 7. System Information and Monitoring

- **uname** – Print system information
- **hostname** – Show or set the system's hostname
- **uptime** – How long the system has been running

- apt-get remove <package> – Remove a package
- **apt-cache** – Query APT cache
  - apt-cache search <package> – Search for a package
  - apt-cache show <package> – Show package details

### Red Hat-based (e.g., CentOS, Fedora)

- **yum** – Package manager for RPM-based systems
  - yum install <package> – Install a package
  - yum update – Update installed packages
  - yum remove <package> – Remove a package
- **dnf** – Next-generation package manager (Fedora, CentOS 8+)
  - dnf install <package> – Install a package
  - dnf update – Update installed packages
  - dnf remove <package> – Remove a package

### General Commands

- **rpm** – RPM package manager
  - rpm -i <package.rpm> – Install an RPM package
  - rpm -e <package> – Remove an RPM package
- **dpkg** – Debian package manager
  - dpkg -i <package.deb> – Install a Debian package
  - dpkg -r <package> – Remove a Debian package

## 10. System Services and Daemon Management

- **systemctl** – Control the systemd system and service manager
  - systemctl start <service> – Start a service
  - systemctl stop <service> – Stop a service
  - systemctl restart <service> – Restart a service
  - systemctl enable <service> – Enable a service to start on boot
  - systemctl disable <service> – Disable a service from starting on boot

## 13. System Backup and Restore

- **rsync** – Remote file and directory synchronization
  - rsync -avz source/ destination/ – Synchronize files
  - rsync -avz -e ssh source/ user@remote:/destination/ – Sync over SSH
- **cpio** – Copy files to and from archives
- **dd** – Low-level copying and backup of entire filesystems
  - dd if=/dev/sda of=/path/to/backup.img – Backup a disk/partition
  - dd if=/path/to/backup.img of=/dev/sda – Restore a disk/partition

## 14. System Diagnostics and Troubleshooting

- **dmesg** – Print the kernel ring buffer messages (system boot and hardware-related messages)
- **journalctl** – Query and view logs from systemd's journal
- **strace** – Trace system calls and signals
  - strace <command> – Trace a command's system calls
- **lsof** – List open files (useful for debugging)
  - lsof <file> – Show processes using a specific file
- **vmstat** – Report virtual memory statistics
- **iostat** – Report CPU and I/O statistics
- **mpstat** – Report CPU usage statistics
- **pidstat** – Report statistics by process
- **free** – Display memory usage
- **uptime** – How long the system has been running
- **watch** – Execute a program periodically, showing output
  - watch -n 1 free – Watch memory usage every second
- **lshw** – List hardware configuration
- **htop** – Interactive process viewer (better than top)
- **netstat** – Network statistics (deprecated in favor of ss)

- `scp file.txt user@remote:/path/to/destination/` – Copy file to remote server
- **rsync** – Remote file and directory synchronization (often used for backups)
  - `rsync -avz /local/path/ remote:/remote/path/` – Sync directories

## 16. Text Processing Utilities

- **grep** – Search for patterns within files
  - `grep 'pattern' file.txt` – Search for a pattern in a file
- `grep -r 'pattern' /dir/` – Recursively search for a pattern
- **sed** – Stream editor for filtering and transforming text
  - `sed 's/old/new/g' file.txt` – Replace old with new globally
- **awk** – A powerful text processing language
  - `awk '{print $1}' file.txt` – Print the first column of each line in a file
- **cut** – Remove sections from each line of a file
  - `cut -d ':' -f 1 /etc/passwd` – Print the first field of each line, delimited by ":"
- **sort** – Sort lines of text files
  - `sort file.txt` – Sort file content in ascending order
- **uniq** – Report or omit repeated lines in a file
  - `sort file.txt | uniq` – Sort and remove duplicate lines
- **tee** – Read from standard input and write to standard output and files
  - `echo "text" | tee file.txt` – Write to file and show output on screen
- **tr** – Translate or delete characters
  - `echo "hello" | tr 'a-z' 'A-Z'` – Convert lowercase to uppercase
- **paste** – Merge lines of files
  - `paste file1.txt file2.txt` – Combine lines of file1 and file2 side by side

- `chmod 755 file.txt` – Give read, write, and execute permissions to owner, and read-execute permissions to others
- **chown** – Change file owner and group
  - `chown user:group file.txt` – Change owner and group of a file
- **chgrp** – Change group ownership of a file
  - `chgrp group file.txt` – Change the group of a file
- **umask** – Set default permissions for new files
  - `umask 022` – Set default permissions for newly created files to 755
- **setfacl** – Set access control lists (ACL) for file permissions
- **getfacl** – Get access control lists (ACL) for file permissions

