

## File & Directory Management

1. **ls** – Lists the contents of a directory.
  - **ls -l** : Long format (shows permissions, ownership, size, and modification time).
  - **ls -a** : Shows hidden files.
2. **cd** – Changes the directory.
  - **cd /path/to/directory** : Navigates to the specified directory.
  - **cd ..** : Moves one directory up.
  - **cd ~** : Navigates to the home directory.
3. **pwd** – Prints the working directory (shows current directory path).
4. **mkdir** – Creates a new directory.
  - **mkdir directory\_name**
5. **rmdir** – Removes an empty directory.
  - **rmdir directory\_name**
6. **rm** – Removes files or directories.
  - **rm filename** : Removes a file.
  - **rm -r directory\_name** : Recursively removes a directory and its contents.
7. **cp** – Copies files or directories.
  - **cp source destination** : Copies a file.
  - **cp -r source\_directory destination\_directory** : Recursively copies directories.
8. **mv** – Moves or renames files or directories.
  - **mv source destination** : Moves or renames a file or directory.
9. **touch** – Creates an empty file or updates the timestamp of an existing file.
10. **find** – Finds files or directories based on conditions.

- `find /path -name filename` : Finds files by name.

## **File Viewing & Manipulation**

1. **cat** – Displays the contents of a file.
  - `cat filename`
2. **less** – Views the contents of a file one page at a time.
  - `less filename`
3. **head** – Displays the first 10 lines of a file.
  - `head filename`
4. **tail** – Displays the last 10 lines of a file.
  - `tail filename`
  - `tail -f filename` : Follows the file in real-time (useful for logs).
5. **grep** – Searches for patterns within files.
  - `grep "pattern" filename` : Searches for a pattern in a file.
  - `grep -r "pattern" /path` : Searches recursively.
6. **sort** – Sorts the contents of a file or output.
  - `sort filename`
7. **wc** – Counts words, lines, and characters in a file.
  - `wc filename`
  - `wc -l filename` : Counts lines.

## **Permissions & Ownership**

1. **chmod** – Changes file or directory permissions.
  - `chmod 755 filename` : Sets the permission (read, write, execute).
  - `chmod +x filename` : Adds execute permission.
2. **chown** – Changes file ownership.
  - `chown user:group filename` : Changes ownership to user and group.

3. **chgrp** – Changes the group ownership of a file.

- `chgrp group filename`

## System Information & Monitoring

1. **top** – Displays real-time system processes and resource usage.

2. **ps** – Displays information about active processes.

- `ps aux` : Shows all running processes.
- `ps -ef` : Another format for listing processes.

3. **free** – Displays memory usage.

- `free -h` : Shows memory in human-readable format.

4. **df** – Displays disk space usage.

- `df -h` : Shows in human-readable format.

5. **du** – Displays the disk usage of files or directories.

- `du -sh directory_name` : Shows the size of a directory.

6. **uptime** – Shows how long the system has been running and its load average.

7. **uname** – Displays system information.

- `uname -a` : Shows all system information.

## Network Commands

1. **ping** – Tests network connectivity.

- `ping google.com` : Pings Google's server.

2. **ifconfig** – Displays network interfaces and their configurations.

3. **ip** – A more advanced networking tool.

- `ip a` : Displays all network interfaces.
- `ip link set eth0 up` : Brings up an interface.

4. **netstat** – Displays network connections and statistics.

5. **ss** – Another tool to display socket statistics (alternative to netstat).

6. **scp** – Securely copies files between hosts over SSH.

- scp file user@hostname:/path
- 7. **ssh** – Securely logs into a remote machine.
  - ssh user@hostname
- 8. **curl** – Transfers data from or to a server using various protocols.
  - curl http://example.com

## Package Management (Debian-based)

1. **apt-get** – Package handling utility.
  - sudo apt-get update : Updates package lists.
  - sudo apt-get install package\_name : Installs a package.
  - sudo apt-get upgrade : Upgrades installed packages.
2. **dpkg** – Low-level package management.
  - sudo dpkg -i package.deb : Installs a .deb package.

## User Management

1. **useradd** – Adds a new user.
  - sudo useradd username
2. **usermod** – Modifies an existing user.
  - sudo usermod -aG group username : Adds user to group.
3. **passwd** – Changes a user's password.
  - sudo passwd username
4. **groupadd** – Adds a new group.
  - sudo groupadd groupname
5. **whoami** – Displays the current logged-in user.
6. **id** – Shows user ID and group ID.

## Process Management

1. **kill** – Terminates processes by PID.
  - kill PID

2. **killall** – Kills processes by name.
  - killall process\_name
3. **bg** – Resumes a suspended process in the background.
4. **fg** – Brings a background process to the foreground.
5. **jobs** – Lists jobs running in the background.