**Linux Commands and Their Uses**

**1. File and Directory Management**

* **ls**: Lists files and directories.
  + Example: ls -l (detailed list)
* **cd**: Changes the current directory.
  + Example: cd /home (change to /home directory)
* **pwd**: Displays the current working directory.
* **mkdir**: Creates a new directory.
  + Example: mkdir new\_folder
* **rmdir**: Removes an empty directory.
  + Example: rmdir old\_folder
* **rm**: Removes files or directories.
  + Example: rm file.txt or rm -r folder (remove recursively)

**2. File Operations**

* **touch**: Creates a new empty file.
  + Example: touch file.txt
* **cp**: Copies files or directories.
  + Example: cp source.txt destination.txt
* **mv**: Moves or renames files or directories.
  + Example: mv old.txt new.txt
* **cat**: Displays the content of a file.
  + Example: cat file.txt
* **more**: Views file content one screen at a time.
  + Example: more file.txt
* **less**: Similar to more but with backward navigation.
  + Example: less file.txt
* **head**: Displays the first few lines of a file.
  + Example: head -n 10 file.txt
* **tail**: Displays the last few lines of a file.
  + Example: tail -n 10 file.txt
* **nano**: Opens a file in the Nano text editor.
  + Example: nano file.txt
* **vi** or **vim**: Opens a file in the Vi text editor.
  + Example: vim file.txt

**3. Permissions and Ownership**

* **chmod**: Changes file permissions.
  + Example: chmod 755 file.txt
* **chown**: Changes file ownership.
  + Example: chown user:group file.txt
* **chgrp**: Changes group ownership of a file.
  + Example: chgrp group file.txt

**4. Process Management**

* **ps**: Displays running processes.
  + Example: ps aux
* **top**: Displays real-time system performance and processes.
* **htop**: Interactive process viewer (if installed).
* **kill**: Terminates a process by PID.
  + Example: kill 1234
* **killall**: Terminates processes by name.
  + Example: killall firefox
* **jobs**: Lists background jobs.
  + Example: jobs
* **bg**: Resumes a background job.
  + Example: bg %1
* **fg**: Brings a background job to the foreground.
  + Example: fg %1

**5. Networking**

* **ping**: Checks connectivity to a host.
  + Example: ping google.com
* **ifconfig**: Displays or configures network interfaces (deprecated, use ip).
  + Example: ifconfig eth0
* **ip**: Configures network interfaces.
  + Example: ip addr show
* **netstat**: Displays network connections (deprecated, use ss).
  + Example: netstat -tuln
* **ss**: Displays network statistics.
  + Example: ss -tuln
* **curl**: Transfers data from or to a server.
  + Example: curl http://example.com
* **wget**: Downloads files from the internet.
  + Example: wget http://example.com/file.txt

**6. System Monitoring**

* **df**: Displays disk space usage.
  + Example: df -h
* **du**: Displays directory space usage.
  + Example: du -sh folder
* **free**: Displays memory usage.
  + Example: free -h
* **uptime**: Displays system uptime.
* **who**: Displays logged-in users.
  + Example: who
* **w**: Displays detailed information about logged-in users.
  + Example: w

**7. Archiving and Compression**

* **tar**: Archives files.
  + Example: tar -cvf archive.tar folder
* **gzip**: Compresses files using gzip.
  + Example: gzip file.txt
* **gunzip**: Decompresses gzip files.
  + Example: gunzip file.txt.gz
* **zip**: Compresses files into a zip archive.
  + Example: zip archive.zip file.txt
* **unzip**: Extracts files from a zip archive.
  + Example: unzip archive.zip

**8. User Management**

* **whoami**: Displays the current user.
* **id**: Displays user ID and group ID.
* **adduser**: Adds a new user.
  + Example: adduser username
* **passwd**: Changes the password of a user.
  + Example: passwd username
* **deluser**: Deletes a user.
  + Example: deluser username
* **usermod**: Modifies user accounts.
  + Example: usermod -aG group username

**9. Package Management**

* **apt-get**: Installs, upgrades, or removes packages.
  + Example: apt-get install package
* **apt**: Modern package manager for Debian-based systems.
  + Example: apt update
* **dpkg**: Low-level package manager.
  + Example: dpkg -i package.deb

**10. Search and Filters**

* **find**: Searches for files and directories.
  + Example: find / -name file.txt
* **grep**: Searches for patterns in text.
  + Example: grep 'error' log.txt
* **locate**: Finds files quickly using an indexed database.
  + Example: locate file.txt
* **awk**: Processes and analyzes text.
  + Example: awk '{print $1}' file.txt
* **sed**: Edits text in a stream.
  + Example: sed 's/old/new/g' file.txt

**11. Disk Management**

* **mount**: Mounts a filesystem.
  + Example: mount /dev/sdb1 /mnt
* **umount**: Unmounts a filesystem.
  + Example: umount /mnt
* **fdisk**: Manages disk partitions.
  + Example: fdisk /dev/sdb
* **mkfs**: Formats a partition.
  + Example: mkfs.ext4 /dev/sdb1
* **fsck**: Checks and repairs a filesystem.
  + Example: fsck /dev/sdb1