#\_ Essential Linux Commands [+100 ]

1. **File Operations:**
   * ls: Lists all files and directories in the present working directory
   * ls -R: Lists files in sub-directories as well
   * ls -a: Shows hidden files
   * ls -al: Lists files and directories with detailed information like permissions, size, owner, etc. ● cd directoryname: Changes the directory
   * cd ..: Moves one level up
   * pwd: Displays the present working directory
   * cat > filename: Creates a new file
   * cat filename: Displays the file content
   * cat file1 file2 > file3: Joins two files (file1 and file2) and stores the output in a new file (file3)
   * touch filename: Creates or modifies a file
   * rm filename: Deletes a file
   * cp source destination: Copies files from the source path to the destination path
   * mv source destination: Moves files from the source path to the destination path
   * find / -name filename: Finds a file or a directory by its name starting from root
   * file filename: Determines the file type
   * less filename: Views the file content page by page
   * head filename: Views the first ten lines of a file ● tail filename: Views the last ten lines of a file ● lsof: Shows which files are opened by which process.
   * du -h --max-depth=1: Shows the size of each directory. Use --max-depth=1 to limit the output to the current directory and its immediate children.
   * fdisk: Disk partition manipulation command.
2. **Directory Operations:**
   * mkdir directoryname: Creates a new directory in the present working directory
   * rmdir directoryname: Deletes a directory
   * cp -r source destination: Copies directories recursively
   * mv olddir newdir: Renames directories
   * find / -type d -name directoryname: Finds a directory starting from root
3. **Process Operations:**
   * ps: Displays your currently active processes
   * top: Displays all running processes
   * kill pid: Kills the process with given pid
   * pkill name: Kills the process with the given name
   * bg: Resumes suspended jobs without bringing them to foreground
   * fg: Brings the most recent job to foreground
   * fg n: Brings job n to the foreground
   * renice +n [pid]: Change the priority of a running process.
   * &>filename: Redirects both the stdout and the stderr to the file filename.
   * 1>filename: Redirect the stdout to file filename. ● 2>filename: Redirect stderr to file filename.
4. **File Permissions:**
   * chmod octal filename: Change the permissions of file to octal, which can be between 0 (no permissions) to 7 (full permissions)
   * chown ownername filename: Change file owner
   * chgrp groupname filename: Change group owner
5. **Networking:**

ping host: Ping a host and outputs results whois domain: Get whois information for domain dig domain: Get DNS information for domain netstat -pnltu: Display various network related information such as network connections, routing tables, interface statistics etc.

* + ifconfig: Displays IP addresses of all network interfaces
  + ssh user@host: Remote login into the host as user
  + scp: Transfers files between hosts over ssh
  + wget url: Download files from the web
  + curl url: Sends a request to a URL and returns the response
  + traceroute domain: Prints the route that a packet takes to reach the domain.
  + mtr domain: mtr combines the functionality of the traceroute and ping programs in a single network diagnostic tool.
  + ss: Another utility to investigate sockets. It's a more modern alternative to netstat.
  + nmap: Network exploration tool and security scanner.

1. **Archives and Compression:**
   * tar cf file.tar files: Create a tar named file.tar containing files
   * tar xf file.tar: Extract the files from file.tar
   * gzip file: Compresses file and renames it to file.gz
   * gzip -d file.gz: Decompresses file.gz back to file
   * zip -r file.zip files: Create a zip archive named file.zip ● unzip file.zip: Extract the contents of a zip file
2. **Text Processing:**
   * grep pattern files: Search for pattern in files
   * grep -r pattern dir: Search recursively for pattern in dir
   * command | grep pattern: Pipe the output of command to grep for searching
   * echo 'text': Prints text
   * sed 's/string1/string2/g' filename: Replaces string1 with string2 in filename
   * diff file1 file2: Compares two files and shows the differences ● wc filename: Count lines, words, and characters in a file ● awk: A versatile programming language for working on files. ● sed -i 's/string1/string2/g' filename: Replace string1 with string2 in filename. The -i option edits the file in-place.
   * cut -d':' -f1 /etc/passwd: Cut out the first field of each line in /etc/passwd, using colon as a field delimiter.
3. **Disk Usage:**
   * df: Shows disk usage
   * du: Shows directory space usage
   * free: Show memory and swap usage
   * whereis app: Show possible locations of app
4. **System Info:**
   * date: Show the current date and time
   * cal: Show this month's calendar
   * uptime: Show current uptime
   * w: Display who is online
   * whoami: Who you are logged in as
   * uname -a: Show kernel information
   * df -h: Disk usage in human readable format
   * du -sh: Disk usage of current directory in human readable format
   * free -m: Show free and used memory in MB
5. **Package Installations:**

sudo apt-get update: Updates package lists for upgrades sudo apt-get upgrade: Upgrades all upgradable packages sudo apt-get install pkgname: Install pkgname sudo apt-get remove pkgname: Removes pkgname

1. **Others (mostly used in scripts):**
   * command1 ; command2: Run command1 and then command2
   * command1 && command2: Run command2 if command1 is successful
   * command1 || command2: Run command2 if command1 is not successful ● command &: Run command in background
2. **Version Control (Git commands):**
   * git init: Initialize a local git repository
   * git clone url: Create a local copy of a remote repository
   * git add filename: Add a file to the staging area
   * git commit -m "Commit message": Commit changes with a message
   * git status: Check the status of the working directory
   * git pull: Pull latest changes from the remote repository
   * git push: Push changes to the remote repository
   * git branch: List all local branches
   * git branch branchname: Create a new branch
   * git checkout branchname: Switch to a branch
   * git merge branchname: Merge a branch into the active branch
   * git stash: Stash changes in a dirty working directory
   * git stash apply: Apply changes from a stash
   * git log: View commit history
   * git reset: Reset your HEAD pointer to a previous commit ● git rm filename: Remove a file from version control
   * git rebase: Reapply commits on top of another base tip.
   * git revert: Create a new commit that undoes all of the changes made in a particular commit, then apply it to the current branch.
   * git cherry-pick commitID: Apply the changes introduced by some existing commits.
3. **Environment Variables:**
   * env: Display all environment variables
   * echo $VARIABLE: Display the value of an environment variable
   * export VARIABLE=value: Set the value of an environment variable
   * alias new\_command='old\_command options': Create a new command that executes the old command with the specified options.
   * echo $PATH: Print the PATH environment variable.
   * export PATH=$PATH:/new/path: Add /new/path to the PATH.
4. **Job Scheduling (Cron Jobs):**
   * crontab -l: List all your cron jobs
   * crontab -e: Edit your cron jobs
   * crontab -r: Remove all your cron jobs
   * crontab -v: Display the last time you edited your cron jobs
   * crontab file: Install a cron job from a file
   * @reboot command: Schedule a job to run at startup
5. **Package Installations (using pip, a Python package installer):**
   * pip install packagename: Install a Python package.
   * pip uninstall packagename: Uninstall a Python package.
   * pip freeze > requirements.txt: Freeze the installed packages into a requirements file.
   * pip install -r requirements.txt: Install packages from a requirements file.
6. **Shell Scripting:**

#!/bin/bash: Shebang line to specify the script interpreter.

$0, $1, ..., $9, ${10}, ${11}: Script arguments.

if [condition]; then ... fi: if statement in bash scripts.

for i in {1..10}; do ... done: for loop in bash scripts.

* + while [condition]; do ... done: while loop in bash scripts. ● function name() {...}: Define a function.

1. **System Monitoring and Performance:**
   * iostat: Reports Central Processing Unit (CPU) statistics and input/output statistics for devices, partitions, and network filesystems.
   * vmstat: Reports information about processes, memory, paging, block IO, traps, disks, and CPU activity.
   * htop: An interactive process viewer for Unix systems. It's a more user-friendly alternative to top.
2. **Search and Find:**
   * locate filename: Find a file by its name. The database updated by updatedb command.
   * whereis programname: Locate the binary, source, and manual page files for a command.
   * which commandname: Shows the full path of (shell) commands.
3. **Compression / Archives:**
   * tar -cvf archive.tar dirname/: Create a tar archive.
   * tar -xvf archive.tar: Extract a tar archive.
   * tar -jcvf archive.tar.bz2 dirname/: Create a compressed bz2 archive.
   * tar -jxvf archive.tar.bz2: Extract a bz2 archive.
4. **Disk Usage:**
   * dd if=/dev/zero of=/tmp/output.img bs=8k count=256k: Create a file of a certain size for testing disk speed.
   * hdparm -Tt /dev/sda: Measure the read speed of your hard drive.
5. **Others:**
   * yes > /dev/null &: Use this command to push a system to its limit.
   * :(){ :|:& };:: A fork bomb – handle with care. Do not run this command on a production system.

Remember, you can always use the man command (e.g. man ls) to get more information about each command.