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.

**6. 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

**7. Text Processing:**

* grep pattern files: Search for patterns in files
* grep -r pattern dir: Search recursively for a pattern in dir
* command | grep pattern: Pipe the output of a 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.

**8. Disk Usage:**

* df: Shows disk usage
* du: Shows directory space usage
* free: Show memory and swap usage
* whereis app: Show possible locations of app

**9. 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

**10. 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

**11. 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

**12. 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.

**13. 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.

**14. 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

**15. 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.

**16. 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.

**17. 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.

**18. 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.

**19. 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.

**20. 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.

**21. 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.**