**Common Linux Commands Used by Programmers**

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**Let’s get a pro player in using the Linux system by knowing the common commands**.



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Let's first understand the basic introduction about the Linux machine, and then start about the Linux command.

Linux is an open-source, Unix-like operating system kernel that serves as the core of various operating systems. Developed collaboratively by a global community, Linux is renowned for its stability, security, and versatility. With its robust command-line interface and support for numerous programming languages, Linux is a preferred choice for developers and administrators.

Let explore with different sections in Linux which is helps programmer to access necessary information from the machine.

**File and Directory Operations**

✅**ls (List):**

Usage: ls [options] [directory]

Description: Lists the contents of a directory.

Options:

* -l: Long format, displaying detailed information.
* -a: Show hidden files.
* -h: Human-readable file sizes.

✅**cd (Change Directory):**

Usage: cd [directory]

Description: Changes the current working directory to the specified one.

✅**pwd (Print Working Directory):**

Usage: pwd

Description: Prints the current working directory, showing the full path.

✅**mkdir (Make Directory):**

Usage: mkdir [directory]

Description: Creates a new directory with the specified name.

✅**cp (Copy):**

Usage: cp [options] source destination

Description: Copies files or directories from the source to the destination.

Options:

* -r: Copy directories recursively.
* -i: Prompt before overwriting.

✅**mv (Move):**

Usage: mv [options] source destination

Description: Moves files or directories from the source to the destination, or renames a file.

✅**rm (Remove):**

Usage: rm [options] file

Description: Removes (deletes) files or directories.

Options:

* -r: Remove directories and their contents recursively.
* -f: Force, ignore nonexistent files and do not prompt.

**✅touch:**

Usage: touch [options] file

Description: Creates an empty file or updates the access and modification times of a file.

**User Management**

The sudo command in Unix-like operating systems is used to execute a command as a superuser or another user, as specified by the security policy configured in the sudoers file. Here's the basic usage of

sudo [OPTION] COMMAND [ARGUMENTS...]

* OPTION: Optional flags or options for sudo.
* COMMAND: The command you want to execute with elevated privileges.
* ARGUMENTS: Any arguments or options required by the specified command.

Usage Examples:

**1.Run a Command as Superuser:**

sudo ls /root

This command runs the ls command with elevated privileges, allowing it to list the contents of the /root directory, which is typically restricted to the root user.

**2. Edit a System Configuration File:**

sudo nano /etc/nginx/nginx.conf

This example opens the NGINX configuration file for editing with the Nano text editor. Editing system configuration files usually requires superuser privileges.

**3. Install Software:**

sudo apt-get install nginx

The sudo command is often used with package management tools, such as apt-get on Debian-based systems, to install or remove software.

**4. Restart a System Service:**

sudo systemctl restart apache2

Restarting a system service, like Apache, usually requires superuser privileges. sudo allows you to perform such actions.

**5. Run a Command as Another User:**

sudo -u username command

Use the -u option to run a command as a specified user. Replace username with the desired username.

**Text Manipulation**

**✅cat (Concatenate):**

Usage: cat [file]

Description: Displays the content of a file.

**✅nano and vim:**

Usage: nano [file] or vim [file]

Description: Text editors for creating or editing files. They have different user interfaces and capabilities.

**✅grep (Global Regular Expression Print):**

Usage: grep [options] pattern [file]

Description: Searches for a pattern in files.

Options:

* -i: Ignore case.
* -r: Search recursively in directories.

**✅sed (Stream Editor):**

Usage: sed [options] 's/pattern/replacement/' file

Description: Filters and transforms text using patterns.

Example: sed 's/old/new/' filename

**✅awk:**

Usage: awk 'pattern { action }' file

Description: A pattern scanning and text processing tool.

**System Information**

**✅top or htop(Display real-time system statistics):**

Usage: top

Usage: htop

Description: Both top and htop display real-time system statistics, including information about processes, CPU usage, memory usage, and system resource distribution.

**✅free(Display amount of free and used memory in the system):**

Usage: free [options]

Description: The free command provides information about the system's memory usage, displaying the total, used, and free memory in kilobytes. Options like -h can be used for human-readable output.

Example: free -h

**✅df: Display disk space usage:**

Usage :df [options] [file|directory]

Description: The df command shows the disk space usage of file systems. Adding the -h option provides human-readable output.

Example :df -h

**Process Management**

**✅ps: Display information about active processes:**

Usage:ps [options]

Description: The ps command provides a snapshot of currently running processes. It displays information such as process ID (PID), terminal associated with the process, CPU and memory usage, and the command that started the process.

Options:

* Common options include:
* -e: Display information for all processes.
* -f: Full-format listing.
* -u user: Display processes for a specific user.

**✅kill: Send a signal to a process (e.g., terminate a process):**

Usage:kill [signal] PID

Description: The kill command sends a signal to a process, allowing for various actions such as terminating, stopping, or reloading. The default signal is SIGTERM, which terminates the process gracefully. Use SIGKILL for forceful termination.

Example:kill 1234 (Terminates the process with PID 1234)

**✅pkill: Kill processes based on name**:

Usage:pkill [options] pattern

Description: The pkill command sends signals to processes based on their name. It terminates processes that match the specified pattern.

Options: Common options include:

* -signal: Specify the signal to send.
* -u username: Limit the operation to processes owned by a specific user.

Example: pkill -TERM firefox (Terminates all processes with the name 'firefox')

**✅killall: Kill processes by name:**

Usage:killall [options] process\_name

Description: The killall command sends signals to processes based on their name, similar to pkill. It terminates processes that match the specified name.

Options:

Common options include:

* -signal: Specify the signal to send.
* -u username: Limit the operation to processes owned by a specific user.

Example: killall -TERM chrome (Terminates all processes with the name 'chrome')

**SSH (Secure shell)**

**✅ssh: Connect to a remote server securely:**

Usage:ssh [user@]hostname [options]

Description: The ssh command establishes a secure shell connection to a remote server. It prompts for the user's password or uses key-based authentication. Once connected, users can execute commands on the remote server's shell.

Options:

* -p port: Specify the port to connect to (default is 22).
* -i identity\_file: Specify the private key file for authentication.

Example: ssh user@example.com (Connect to the remote server "example.com" as the user "user")

**✅scp: Copy files between a local and remote machine over SSH:**

Usage:scp [options] source destination

Description: The scp command securely copies files between a local and a remote machine over an SSH connection. It supports copying to and from remote servers, as well as between two remote servers.

Options:

* Common options include:
* -P port: Specify the port on the remote server.
* -r: Recursively copy entire directories.

Examples:

* Copy local file to remote server:

scp localfile.txt user@example.com:/path/to/destination/

* Copy from remote server to local machine:

scp user@example.com:/path/to/remotefile.txt /local/destination/

**File Compression and Archiving**

**✅tar: Create and extract tar archives:**

**Creation of Tar Archive:**

Usage:tar -cvf archive.tar [files/directories]

Description: The tar command is used to create tar archives. The options used here are:

* -c: Create a new archive.
* -v: Verbosely list the files processed.
* -f: Use archive file specified (in this case, "archive.tar").

Example:tar -cvf archive.tar file1.txt dir1/

**Extraction of Tar Archive:**

* Usage:tar -xvf archive.tar [files/directories]

Description: The tar command with different options (-x for extract) is used to extract files from a tar archive.

Example: tar -xvf archive.tar

**✅gzip (GNU Zip)**:

**Compression:**

* Usage: gzip [options] file

Description: gzip compresses files and replaces them with a compressed version with a .gz extension.

Example: gzip myfile.txt (Creates myfile.txt.gz)

**Decompression:**

Usage: gzip -d file.gz or gunzip file.gz

Description: Decompresses a file compressed with gzip.

Example: gunzip myfile.txt.gz (Restores myfile.txt)

These are common commands cover a broad range of Linux functionality and mastering them will help you effectively working on Linux os.

**Note: If i have missed any Linux command feel free to add a comment in comment window.**

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