**Task 1**

**30 Linux basic commands with clear explanations and Examples:**

**Navigation and File Management:**

1. **pwd:** Prints the Working Directory (your current location).
   * Example: pwd
     + Output: /home/user (assuming your username is "user")
2. **cd:** Changes Directory to a new location.
   * Example: cd Documents
     + This changes the current directory to "Documents" within your home directory.
3. **ls:** Lists the contents of a directory.
   * Example: ls
     + Output: (Shows a list of files and subdirectories in the current directory)
   * Options:
     + ls -l: Lists with detailed information (permissions, owner, size, etc.)
     + ls -a: Lists all files, including hidden ones (starting with ".")
4. **mkdir:** Creates a new directory.
   * Example: mkdir new\_folder
     + This creates a new directory named "new\_folder" in the current directory.
5. **rmdir:** Removes an empty directory.
   * Example: rmdir new\_folder
     + This removes the directory "new\_folder" only if it's empty.
6. **touch:** Creates an empty file.
   * Example: touch my\_file.txt
     + This creates a new empty file named "my\_file.txt" in the current directory.
7. **rm:** Removes files (use with caution!).
   * Example: rm my\_file.txt (**Be careful!** This permanently deletes "my\_file.txt")
   * Options:
     + rm -r directory\_name: Removes a directory and its contents recursively (use with extreme caution!)
8. **cp:** Copies files or directories.
   * Example: cp my\_file.txt backup
     + This creates a copy of "my\_file.txt" named "backup" in the current directory.
   * Options:
     + cp -r directory1 directory2: Copies an entire directory structure.
9. **mv:** Moves or renames files or directories.
   * Example: mv my\_file.txt documents/
     + This moves "my\_file.txt" to the "documents" directory.
   * Example: mv old\_name.txt new\_name.txt
     + This renames "old\_name.txt" to "new\_name.txt".

**File Viewing and Permissions:**

1. **cat:** Displays the contents of a file on the terminal.
   * Example: cat my\_file.txt
     + This shows the text content of "my\_file.txt" in the terminal.
2. **more/less:** Displays file content one page at a time (useful for long files).
   * Example: more my\_file.txt (Use space bar to page down, 'q' to quit)
   * Example: less my\_file.txt (Similar to more but allows scrolling up/down)
3. **head:** Displays the first few lines of a file.
   * Example: head my\_file.txt
     + This shows the first 10 lines of "my\_file.txt" by default.
   * Option:
     + head -n <number> my\_file.txt: Shows the specified number of lines.
4. **tail:** Displays the last few lines of a file.
   * Example: tail my\_file.txt
     + This shows the last 10 lines of "my\_file.txt" by default.
   * Option:
     + tail -n <number> my\_file.txt: Shows the specified number of lines from the end.
5. **file:** Identifies the type of a file.
   * Example: file my\_file.txt
     + This outputs something like: "my\_file.txt: ASCII text".
6. **chmod:** Changes file permissions (who can read, write, or execute).
   * Syntax: chmod [ugo][+-=]<permissions> file (complex, consult the man chmod command for details)
7. **chown:** Changes the owner of a file.
   * Syntax: chown <username>:<groupname> file (complex, consult the man chown command for details)

**Text Processing and Searching:**

1. **grep:** Searches for a pattern within a file.
   * Example: `grep "search\_term" my\_file.txt

**Text Processing and Searching (continued):**

1. **sed:** Edits text files in-place (be cautious!).
   * Example: sed 's/old\_text/new\_text/g' my\_file.txt
     + This replaces all occurrences of "old\_text" with "new\_text" in "my\_file.txt".
2. **awk:** Powerful text processing tool for complex manipulations.
   * (Syntax is more involved, consult the man awk command for details)

**System Information and Processes:**

1. **uname:** Prints information about the system kernel.
   * Example: uname -a
     + This outputs details like the operating system name, version, and architecture.
2. **hostname:** Shows the hostname of the system.
   * Example: hostname
     + This outputs the name assigned to your computer on the network.
3. **whoami:** Prints your current username.
   * Example: whoami
     + This outputs the username you're logged in with.
4. **ps:** Lists currently running processes.
   * Example: ps aux
     + This provides detailed information about processes (user, PID, CPU usage, etc.).
5. **top:** Displays process information in real-time.
   * Example: top
     + This shows a dynamic view of CPU, memory, and process usage. Use q to quit.
6. **kill:** Sends a signal to a process (can be used to stop or terminate it).
   * Example: kill <PID> (replace <PID> with the process ID from ps)
   * Option:
     + kill -9 <PID>: Forces termination (use with caution!).

**Network and Connectivity:**

1. **ping:** Tests network connectivity to a host.
   * Example: ping google.com
     + This sends packets to "google.com" to check if it's reachable.
2. **ifconfig:** Displays network interface information (IP address, etc.).
   * Example: ifconfig
     + This outputs details about your network adapters.
3. **wget/curl:** Downloads files from the internet.
   * Example: wget https://example.com/file.txt
     + This downloads "file.txt" from the given URL.

**Basic User Management:**

1. **id:** Displays user and group information for the current user.
   * Example: id
     + This outputs your user ID (UID), group ID (GID), and some group memberships.
2. **sudo:** Executes a command with superuser (root) privileges (use with caution!).
   * Example: sudo apt update (assuming you use apt for package management)
     + This updates the package list with root privileges (often required for system administration tasks).