**Linux Command Reference Guide**

**Preface**

This guide provides a reference to essential Linux commands used for navigation, file management, process handling, and system administration.

**1. Introduction to Linux and Shells**

Linux provides a command-line interface (CLI) known as the shell, allowing users to interact with the system through text-based commands.

**2. File and Directory Management**

* **man**: Display manual pages for commands. man ls
* **ls**: List directory contents. ls -l 🡪inside a folder you can list all the files that the folder contains using the ls command.
* **cd**: Change directory. cd /home/user 🡪once you have a folder, you can move into It using the cd command. Cd means using directory.
* **pwd**: Print working directory. Pwd 🡪 whenever feel lost the file use the pwd command to know where are you.
* **mkdir**: Create a new directory. mkdir new folder 🡪 you create using the mkdir command
* **rmdir**: Remove empty directories. rmdir old folder 🡪just as you can create a folder using mkdir, you can delete a folder rmdir.
* **mv**: Move or rename files. mv file1.txt newfile.txt 🡪once you have a file you can move it around using the mv command, you specify the file current path and it its new path.
* **cp**: Copy files or directories. cp file1.txt backup/ 🡪 you can copy a file using the cp command.
* **open**: Open files (Mac/Linux GUI environments). open file.txt
* **touch**: Create a new empty file. touch newfile.txt 🡪 you can create an empty file using the touch.
* **find**: Search for files. find /home -name '\*.txt' 🡪the find command can be used to find files or folders matching a particular search pattern.
* **ln**: Create symbolic or hard links. ln -s target link name 🡪 the ln command is part os the linux file system commands.

**3. File Compression and Archiving**

* **gzip**: Compress files. gzip file.txt 🡪
* **gunzip**: Decompress files. gunzip file.txt.gz
* **tar**: Archive files. tar -cvf archive.tar folder/

**4. File Viewing and Manipulation**

* **alias**: Create command shortcuts. alias ll='ls -lah'
* **cat**: View file contents. cat file.txt
* **less**: View large files page by page. less file.txt
* **tail**: Show last lines of a file. tail -n 10 file.txt
* **wc**: Count lines, words, and characters. wc -l file.txt
* **grep**: Search for text in files. grep 'error' logfile.txt
* **sort**: Sort file content. sort names.txt
* **uniq**: Remove duplicate lines. sort names.txt | uniq
* **diff**: Compare two files. diff file1.txt file2.txt
* **echo**: Print text to terminal. echo "Hello, World!"

**5. Permissions and Ownership**

* **chown**: Change file owner. chown user:group file.txt
* **chmod**: Change file permissions. chmod 755 script.sh
* **umask**: Set default permissions for new files. umask 022

**6. Disk and File System Management**

* **du**: Show disk usage. du -sh folder/
* **df**: Show disk space. df -h
* **basename**: Extract filename from path. basename /home/user/file.txt
* **dirname**: Extract directory path. dirname /home/user/file.txt

**7. Process Management**

* **ps**: Display active processes. ps aux
* **top**: Monitor system processes. top
* **kill**: Terminate a process. kill PID
* **killall**: Kill processes by name. killall firefox
* **jobs**: Show background jobs. jobs
* **bg**: Resume a job in the background. bg %1
* **fg**: Bring a job to the foreground. fg %1

**8. Command and User Management**

* **type**: Identify command type. type ls
* **which**: Locate a command's executable. which python3
* **nohup**: Run a command immune to hangups. nohup script.sh &
* **xargs**: Pass output as command arguments. cat files.txt | xargs rm
* **vim**: Open the Vim text editor. vim file.txt
* **emacs**: Open the Emacs text editor. emacs file.txt
* **nano**: Open the Nano text editor. nano file.txt

**9. User and System Information**

* **whoami**: Display current user. whoami
* **who**: Show logged-in users. who
* **su**: Switch user. su username
* **sudo**: Run command as root. sudo apt update
* **passwd**: Change user password. passwd

**10. Network Utilities**

* **ping**: Check network connectivity. ping google.com
* **traceroute**: Trace network route. traceroute google.com

**11. System and Environment Variables**

* **clear**: Clear the terminal screen. clear
* **history**: Show command history. history | tail -10
* **export**: Set environment variables. export PATH=/usr/local/bin:$PATH
* **crontab**: Schedule tasks. crontab -e
* **uname**: Display system info. uname -a
* **env**: Show environment variables. env
* **printenv**: Print specific environment variable. printenv PATH
* **cal**: show the calendar in this month year date