Linux Commands for Shell Scripting

When writing shell scripts, you'll frequently use various Linux commands for **file manipulation, process control, system monitoring, and networking**. Below is a categorized list of essential **basic Linux commands** for shell scripting.

1️ File and Directory Management 📂

Command	Description
`pwd`	Print current working directory
`ls`	List files and directories
`cd <dir>`	Change directory
`mkdir <dir>`	Create a new directory
`rmdir <dir>`	Remove an empty directory
`rm <file>`	Remove a file
`rm -r <dir>`	Remove a directory and its contents
`cp <source> <destination>`	Copy files or directories
`mv <source> <destination>`	Move/rename files or directories
`touch <file>`	Create an empty file
`cat <file>`	Display contents of a file
`more <file>`	View file contents (one page at a time)
`less <file>`	Similar to `more`, but allows backward scrolling
`head -n <N> <file>`	Display the first N lines of a file
`tail -n <N> <file>`	Display the last N lines of a file
`find <dir> -name <file>`	Search for a file in a directory
`locate <file>`	Find file locations (uses database indexing)

Example: Create and delete a directory
mkdir my_project
cd my_project
touch myfile.txt
rm myfile.txt
rmdir my_project

2 File Permissions & Ownership 🔒

Command	Description
`chmod <permissions> <file>`	Change file permissions
`chown <user>:<group> <file>`	Change file owner
`ls -l`	View file permissions
`umask <permissions>`	Set default file permissions

Example: Change file permissions
chmod 755 script.sh # rwxr-xr-x
chown user:group script.sh

3 File Compression & Archiving 📦

Command	Description
`tar -cvf archive.tar <files>`	Create a tar archive
`tar -xvf archive.tar`	Extract a tar archive
`gzip <file>`	Compress file with gzip
`gunzip <file.gz>`	Decompress a gzip file
`zip archive.zip <files>`	Create a zip archive
`unzip archive.zip`	Extract a zip file

Example: Compress and extract a directory
tar -czvf backup.tar.gz my_directory
tar -xzvf backup.tar.gz

4 Process Management ⚙️

Command	Description
`ps aux`	Show running processes
`top`	Display real-time system processes
`htop`	Interactive process viewer (if installed)
`kill <PID>`	Kill a process using its PID
`killall <process_name>`	Kill all instances of a process
`pkill <name>`	Kill a process by name
`nohup <command> &`	Run a process in the background
`jobs`	List background jobs
`fg %<job_id>`	Bring a background job to the foreground
`bg %<job_id>`	Resume a background job

Example: Run a command in the background and check processes
ping google.com > ping.log &
jobs
ps aux | grep ping
killall ping

5 User & Group Management

Command	Description
`whoami`	Show current user
`who`	List logged-in users
`id`	Display user ID and group ID
`sudo su`	Switch to root user
`adduser <username>`	Create a new user
`deluser <username>`	Delete a user
`usermod -aG <group> <user>`	Add user to a group
`passwd <user>`	Change user password

Example: Create a new user and add them to a group
sudo adduser devuser
sudo usermod -aG sudo devuser

6 Disk & Storage Management

Command	Description
`df -h`	Show disk usage in human-readable format
`du -sh <dir>`	Show disk usage of a directory
`mount <device> <dir>`	Mount a filesystem
`umount <device>`	Unmount a filesystem
`lsblk`	List block devices
`fdisk -l`	List disk partitions

Example: Check disk space
df -h
du -sh /home

7 Networking Commands 🌐

Command	Description
`ping <host>`	Check network connectivity
`ifconfig` / `ip addr show`	Show network interface details
`netstat -tulnp`	Show active connections and listening ports
`ss -tulnp`	Show active network sockets (alternative to netstat)
`curl <URL>`	Fetch data from a URL
`wget <URL>`	Download a file from a URL
`nslookup <domain>`	Get domain name server (DNS) details
`traceroute <host>`	Trace the path to a host

Example: Test network connection
ping -c 4 google.com
curl -I https://www.google.com

8 Text Processing Commands 📝

Command	Description
`grep "text" file`	Search for a pattern in a file
`sed 's/old/new/g' file`	Replace text in a file
`awk '{print $1}' file`	Extract specific columns
`cut -d':' -f1 /etc/passwd`	Extract fields from text
`sort file`	Sort lines in a file
`uniq file`	Remove duplicate lines
`wc -l file`	Count lines in a file

Example: Find and replace text in a file

grep "error" logfile.log
sed 's/error/warning/g' logfile.log

9 Date & Time Commands ⏳

Command	Description
`date`	Show current date and time
`cal`	Display a calendar
`uptime`	Show system uptime

Example: Display the current date

date "+%Y-%m-%d %H:%M:%S"

🔟 System Monitoring Commands 📊

Command	Description
`uptime`	Show system uptime
`free -m`	Show memory usage
`vmstat`	Display system performance stats
`iostat`	Show CPU and I/O stats
`sar`	Collect and report system performance
`top`	Show real-time processes and resource usage

Example: Check system performance
free -m
top