**Essential Linux Commands for Beginners**

**File & Directory Navigation**

- ls → list files in current directory
- ls -l → list with details (permissions, owner, size, date)
- ls -a → show hidden files
- pwd → print current working directory
- cd → change directory (cd /home/user, cd .. = go up one)

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**File Viewing & Editing**

- cat file.txt → show file content
- less file.txt → view file page by page (press q to quit)
- head file.txt → first 10 lines
- tail file.txt → last 10 lines
- nano file.txt → simple editor
- vi file.txt or vim file.txt → advanced editor

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**File Management**

- touch file.txt → create empty file
- cp file1 file2 → copy file
- mv file1 file2 → move/rename file
- rm file.txt → remove file
- mkdir mydir → make directory
- rmdir mydir → remove empty directory
- rm -r mydir → remove directory with contents

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**Searching & Finding**

- find /path -name "file.txt" → find file by name
- grep "word" file.txt → search for a word in file
- grep -i "error" logfile → search ignoring case

- grep -r "TODO" . → search inside all files in current folder

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**System Info & Help**

- man command → manual page (help), e.g., man ls
- whoami → current logged in user
- date → current date and time
- uptime → system running time and load
- df -h → disk usage
- free -h → memory usage
- uname -a → system info

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**Permissions & Ownership**

- ls -l → view file permissions
- chmod +x file.sh → make file executable
- chown user file.txt → change file owner

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**Process Management**

- ps → list running processes
- ps aux → detailed process list
- top → live system processes (press q to quit)
- kill PID → kill a process by ID
- kill -9 PID → force kill

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**Networking**

- ping google.com → check connectivity
- curl http://example.com → fetch webpage content
- wget http://example.com/file.zip → download file
- ifconfig or ip a → show IP addresses

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**Archiving & Compression**

- tar -cvf files.tar file1 file2 → create archive
- tar -xvf files.tar → extract archive
- gzip file.txt → compress
- gunzip file.txt.gz → uncompress

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**Logs & Monitoring**

- tail -f /var/log/syslog → watch logs live
- dmesg → view kernel messages
- journalctl -xe → system logs

Imagine you're a DevOps engineer. Every time your team updates code, you need to:

1. Pull the latest code from Git.
2. Build the project.
3. Restart the web server.

Doing this manually every time would be boring and error-prone.

Instead, we write a **shell script**:

```
#!/bin/bash
# Auto-deploy script for web application

echo "==== Starting Deployment ===="

# Step 1: Go to project folder
cd /home/devops/myapp || exit

# Step 2: Pull latest code from Git
echo "Pulling latest code..."
git pull origin main

# Step 3: Build the project (example: Java Maven project)
echo "Building project..."
mvn clean package -DskipTests

# Step 4: Deploy (copy new build to server directory)
echo "Deploying..."
cp target/myapp.jar /opt/myapp/

# Step 5: Restart the service
echo "Restarting service..."
```

```
systemctl restart myapp.service

echo "==== Deployment Complete ===="
```