**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)

**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

**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

**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

**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

**Permissions & Ownership**

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

**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

**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

**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

**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 ===="