ASSIGNMENT:1

Q1: FILE AND DIRECTORY COMMANDS

- Create a directory called My Linux Files in your home folder. Inside it,create file1.txt, file2.txt, and file3.txt.Display the list of files with detailed information.

- **1.Create a directory named MyLinuxFiles in your home folder**

```
mkdir ~/MyLinuxFiles
```

- **2.Move into the new directory**

```
cd ~/MyLinuxFiles
```

- **3.Create the three text files.**

```
touch file1.txt file2.txt file3.txt
```

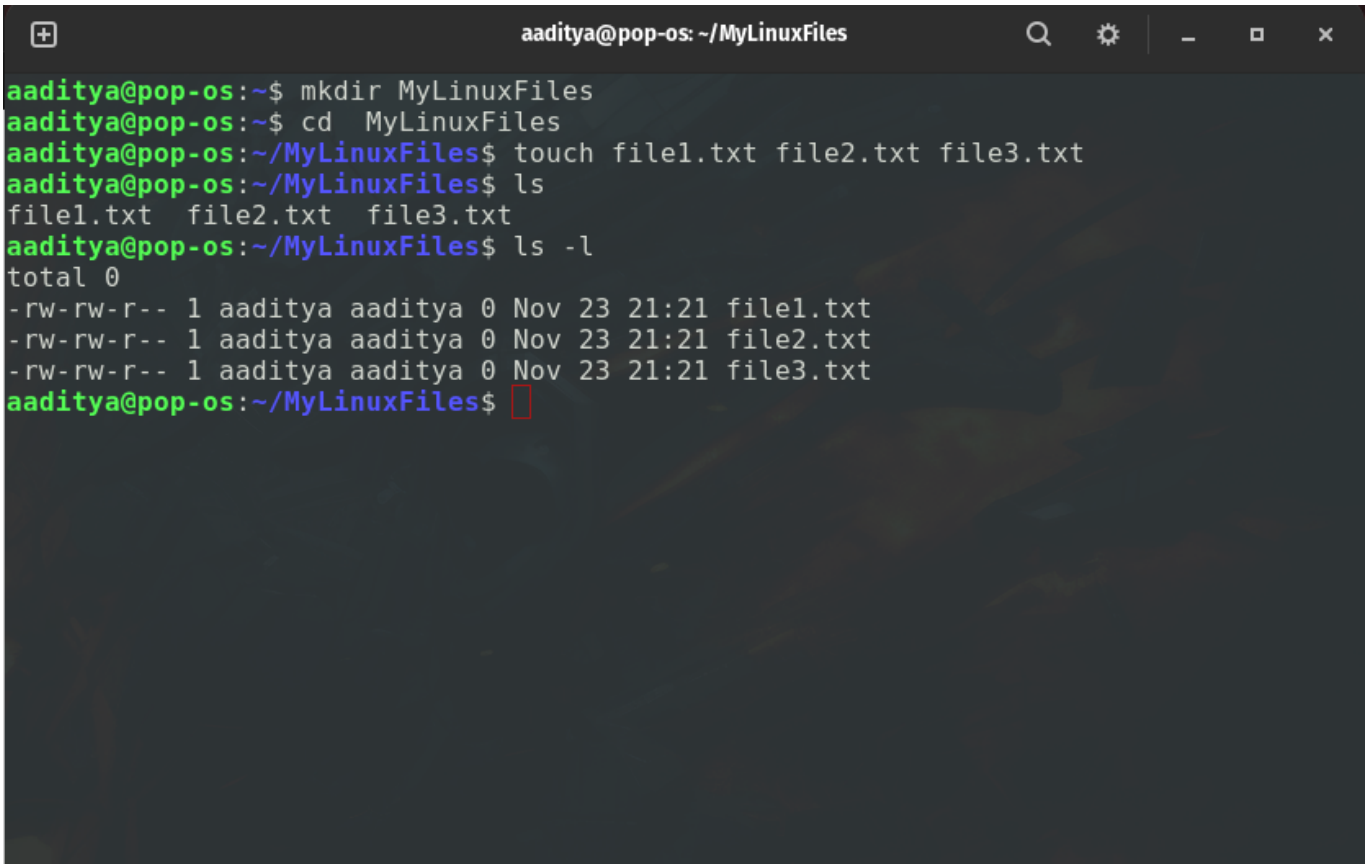
- **4.Verify that the files were created.**

```
ls
```

- **5.Display the files with detailed information.**

```
ls -l
```

Output:



Q2: File Permissions

- Change the permissions of file1.txt so that the owner can read and write, the group can read only, and others have no access. Verify the permissions.

1. Open the Terminal

Open your Linux or macOS terminal (or Git Bash/WSL on Windows).

2. Go to the Directory Containing `file1.txt`

Use the `cd` command to navigate: `cd /path/to/your/directory`

3.Change the Permissions

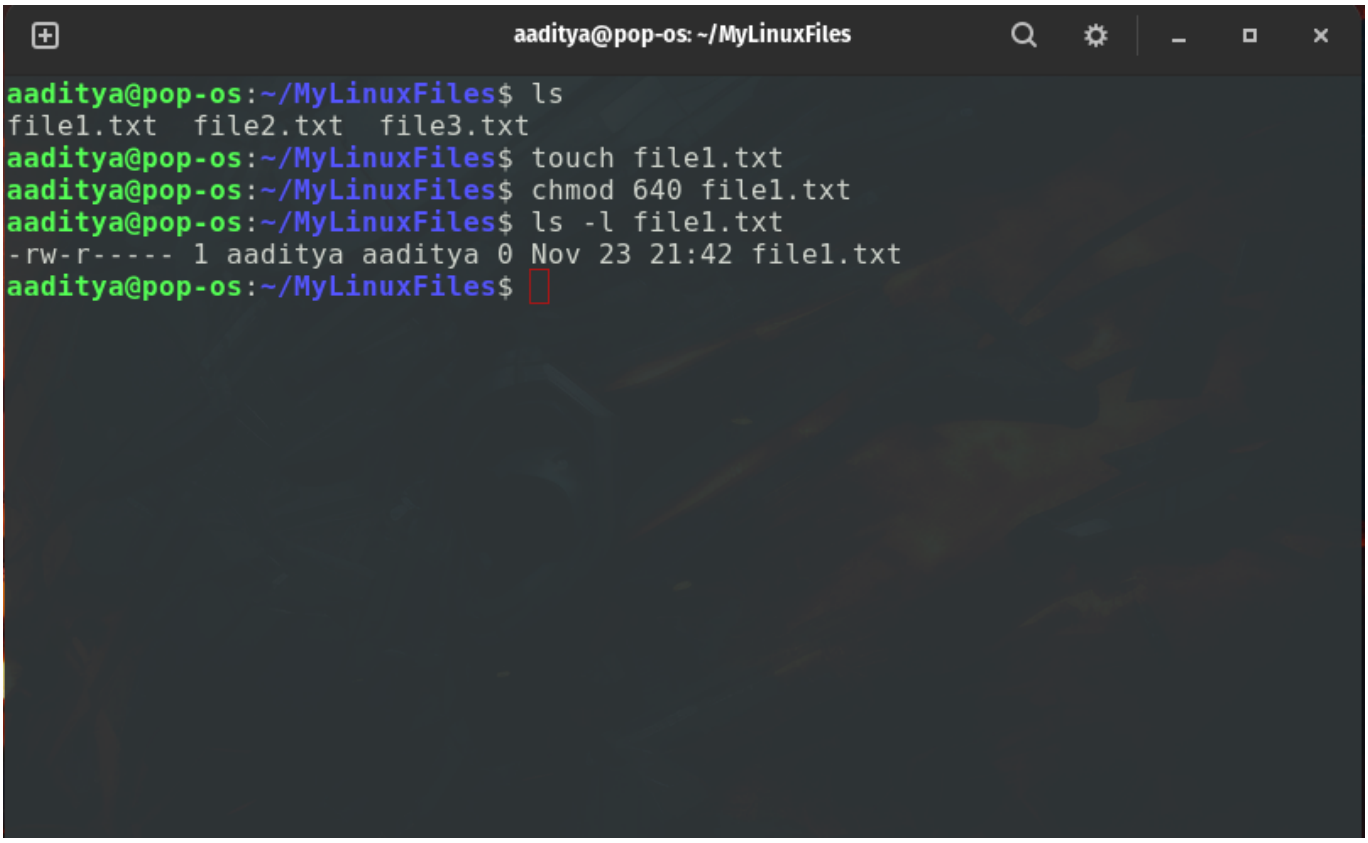
Use chmod to set:

- Owner: read + write
- Group: read
- Others: no access `chmod 640 file1.txt`

4. Verify the Permission Change

Use `ls -l` to list file details: `ls -l file1.txt`

Output:



Meaning:

- rw- → Owner can read and write
- r-- → Group can read
- --- → Others have no access

Q3:Text Processing

Use the grep command to find all lines containing the word "Linux" in a file named notes.txt. Count how many lines contain this word.

1 — Open the Terminal

Open your Linux/macOS terminal or your command-line tool.

2 — Navigate to the Directory

Move to the folder that contains `notes.txt`: `cd /path/to/your/directory`

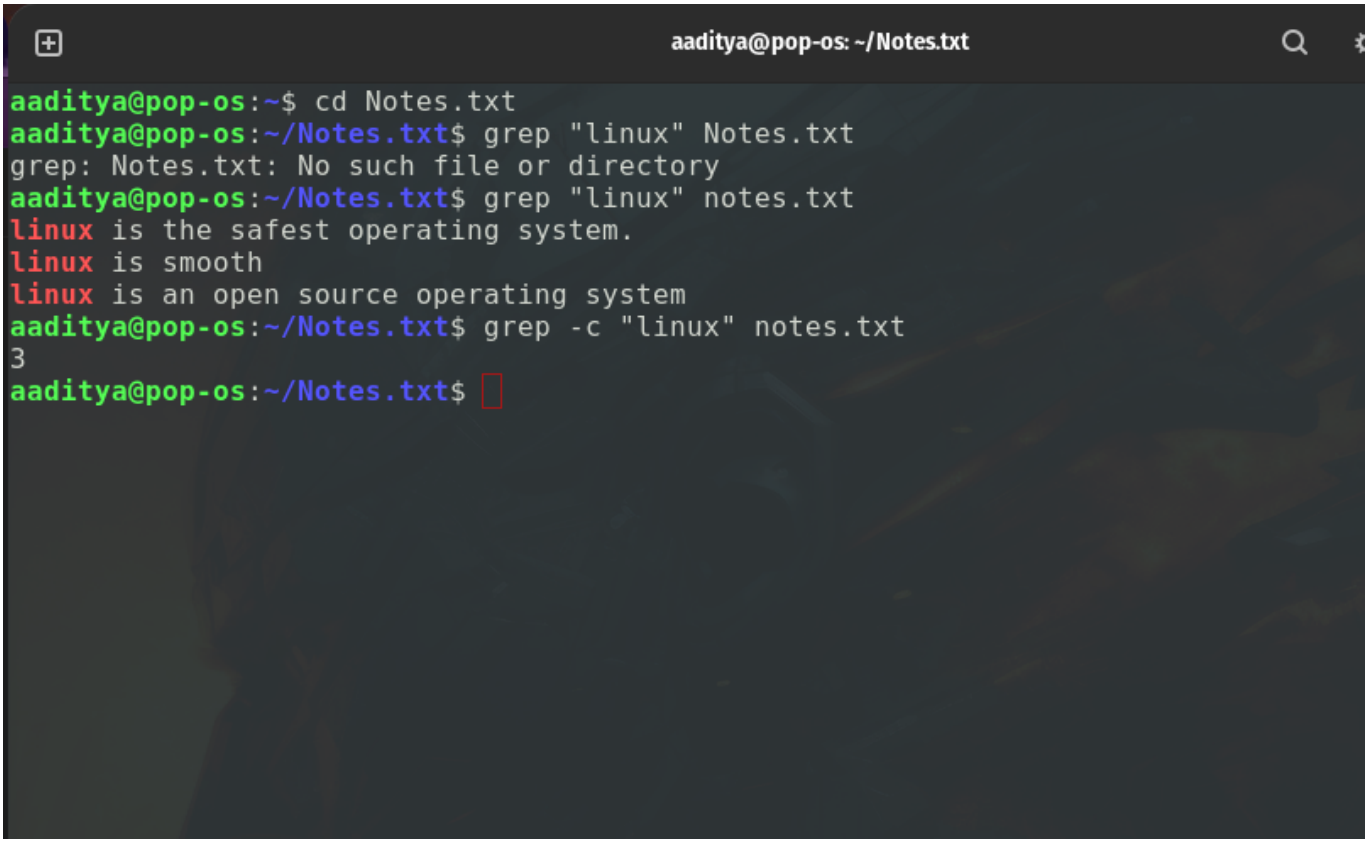
3 — Find All Lines Containing the Word “Linux”

Use the `grep` command: grep "Linux" notes.txt

4 — Count the Number of Matching Lines

Use `grep` with the `-c` (count) option: grep -c "Linux" notes.txt

Output:



Q4:Redirection and Pipes

• Write a command to display the contents of file1.txt, and save the sorted output into a file named sorted.txt.

1 — Open the Terminal

Open your Linux or macOS terminal (or Git Bash/WSL on Windows).

2 — Navigate to the Directory

Move to the folder where `file1.txt` is located:

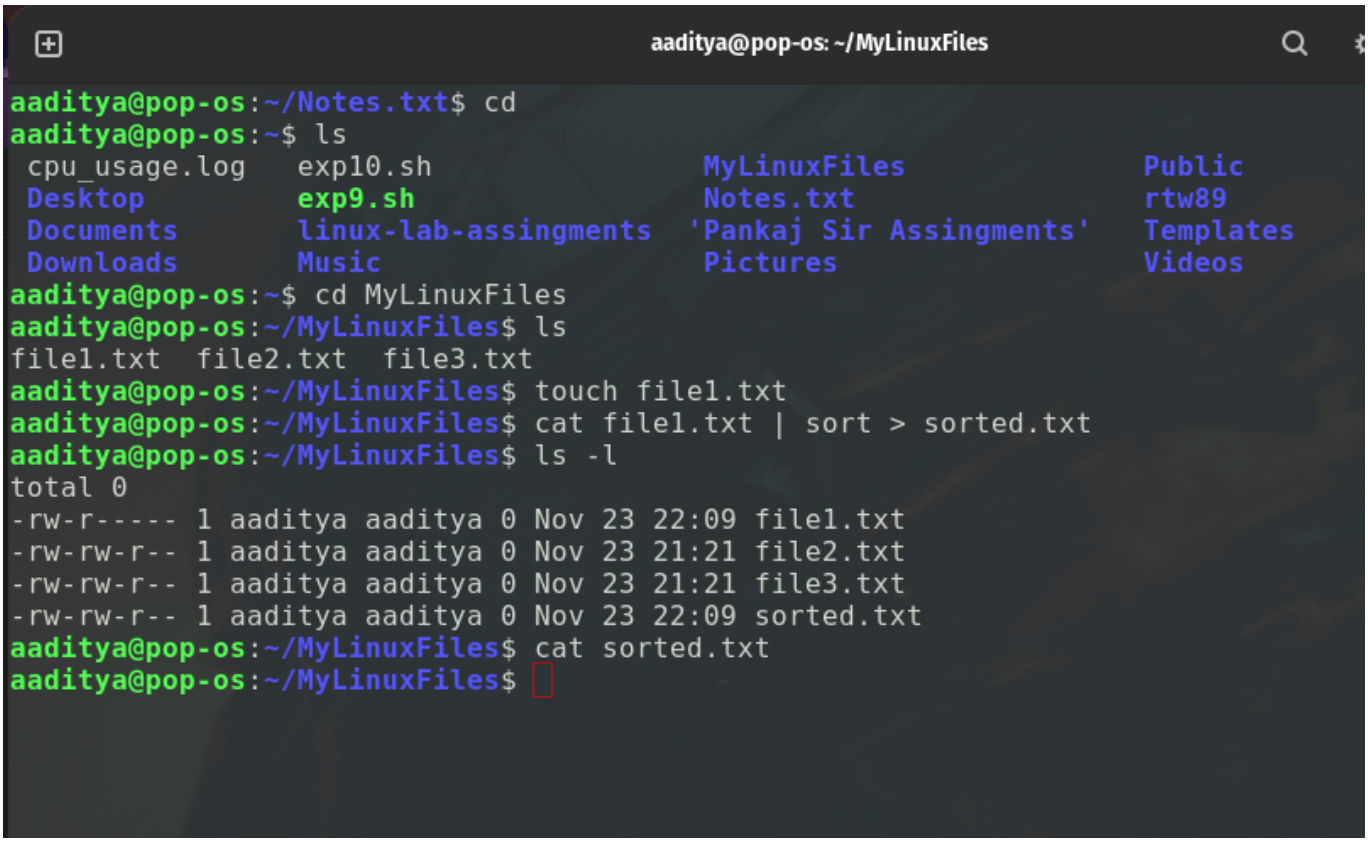
3 — Use a Pipe to Sort the File Contents

Use the cat command to display the contents, then pipe (|) the output into the sort command. `cat file1.txt | sort > sorted.txt`

4 — Verify the Output File

Check that `sorted.txt` was created: `ls -l`

Output



Q5: Shell Scripting (Arithmetic)

• Write a shell script that takes two numbers as input from the user and prints their sum, difference, product, and quotient. Handle division by zero appropriately.

1 — Create a new script file.

```
nano arithmetic.sh
```

2 — Paste the script into the file

```
#!/bin/bash

# Ask user for two numbers
read -p "Enter first number: " num1
read -p "Enter second number: " num2

# Perform arithmetic
sum=$((num1 + num2))
diff=$((num1 - num2))
prod=$((num1 * num2))

# Print results
echo "Sum: $sum"
echo "Difference: $diff"
echo "Product: $prod"

# Division with zero check
if [ "$num2" -eq 0 ]; then
```

```
    echo "Quotient: Error! Division by zero is not allowed."
else
    quotient=$((num1 / num2))
    echo "Quotient: $quotient"
fi
```

3 — Save and exit

- Press CTRL + O, then ENTER
- Press CTRL + X

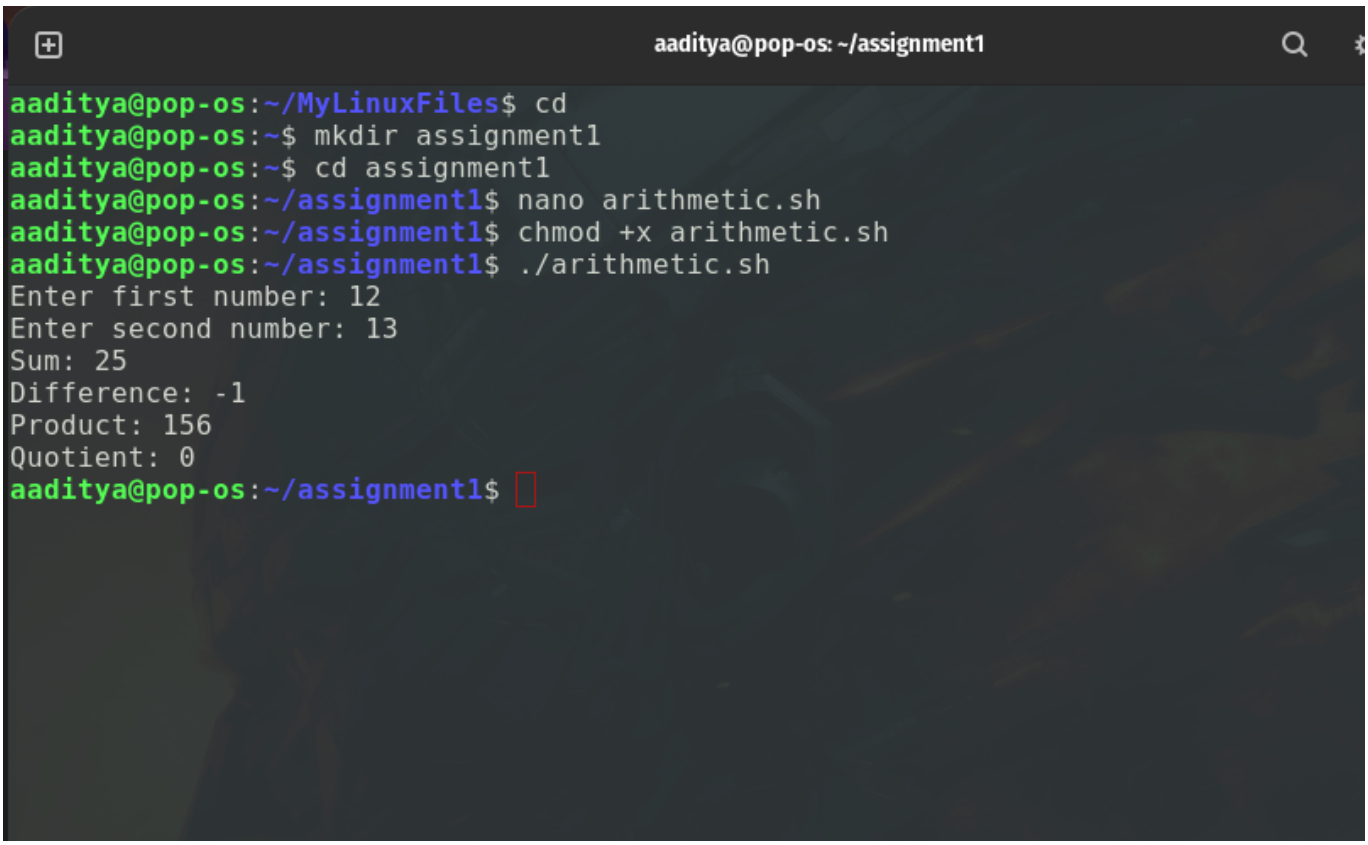
4 — Make the script executable

```
chmod +x arithmetic.sh
```

5 — Run the script

```
./arithmetic.sh
```

Output:



Q6:File Searching

• Use the find command to search for all .txt files in your home directory that were modified in the last 7 days.

1 — Open the Terminal

Open your Linux or macOS terminal (or WSL/Git Bash on Windows).

2 — Navigate to Your Home Directory

Although not required, you can move to the home directory explicitly: `cd ~`

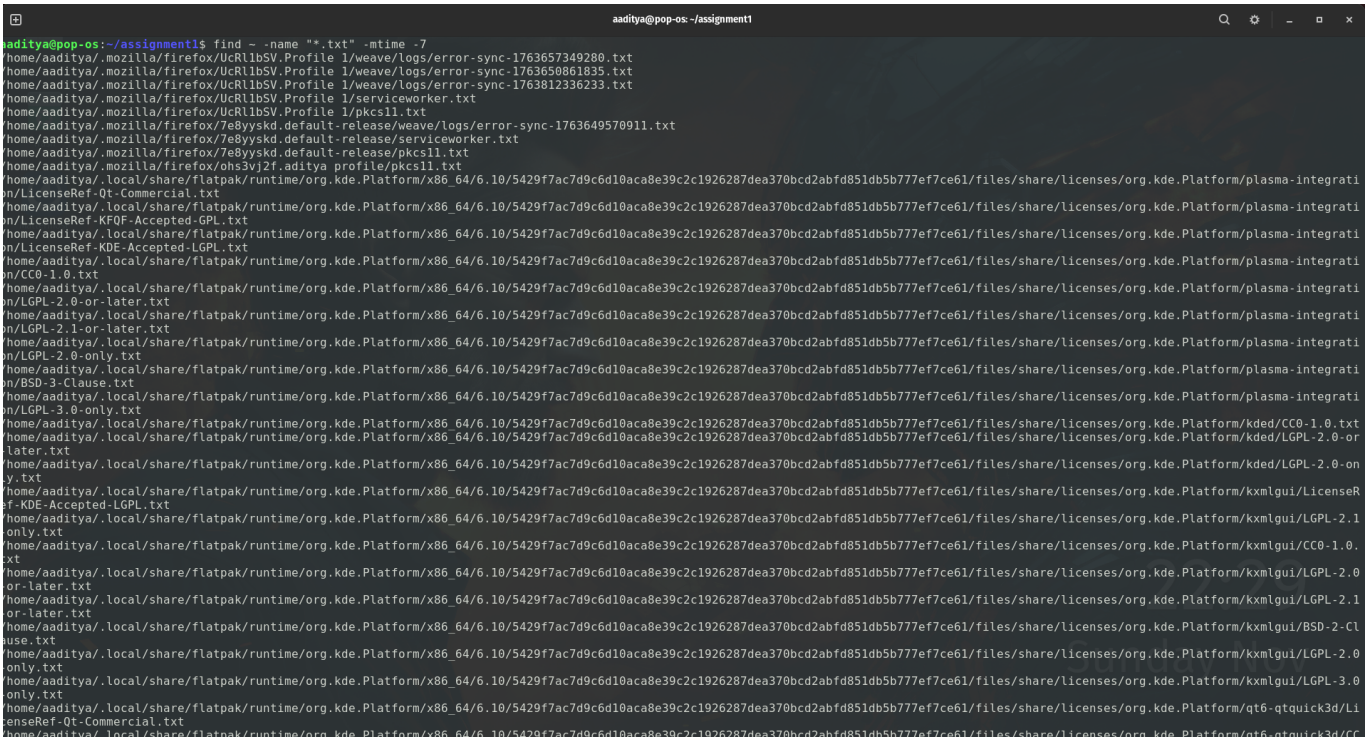
3 — Use the find Command

Run the find command to search for all `.txt` files modified within the last 7 days: `find ~ -name "*.txt" -mtime -7`

4 — Understand the Command

- find ~ → searches in your home directory
- -name "*.txt" → matches all .txt files
- -mtime -7 → modified less than 7 days ago
- (negative -7 means “within the last 7 days”)

Output:



Q7:Archiving and Compression

• Create a compressed archive of the directory MyLinuxFiles using tar and gzip. Then extract it to verify its contents.

1 — Open the Terminal

Open your Linux or macOS terminal.

2 — Navigate to the Directory Containing `MyLinuxFiles`

```
cd /path/to/parent/directory
```

3 — Create a Compressed Archive Using tar + gzip

Use the -czvf options:

- c → create
- z → compress with gzip
- v → verbose (show progress)
- f → specify filename

```
tar -czvf MyLinuxFiles.tar.gz MyLinuxFiles
```

4 — Verify That the Archive Exists

```
ls -l
```

5 — Extract the Archive

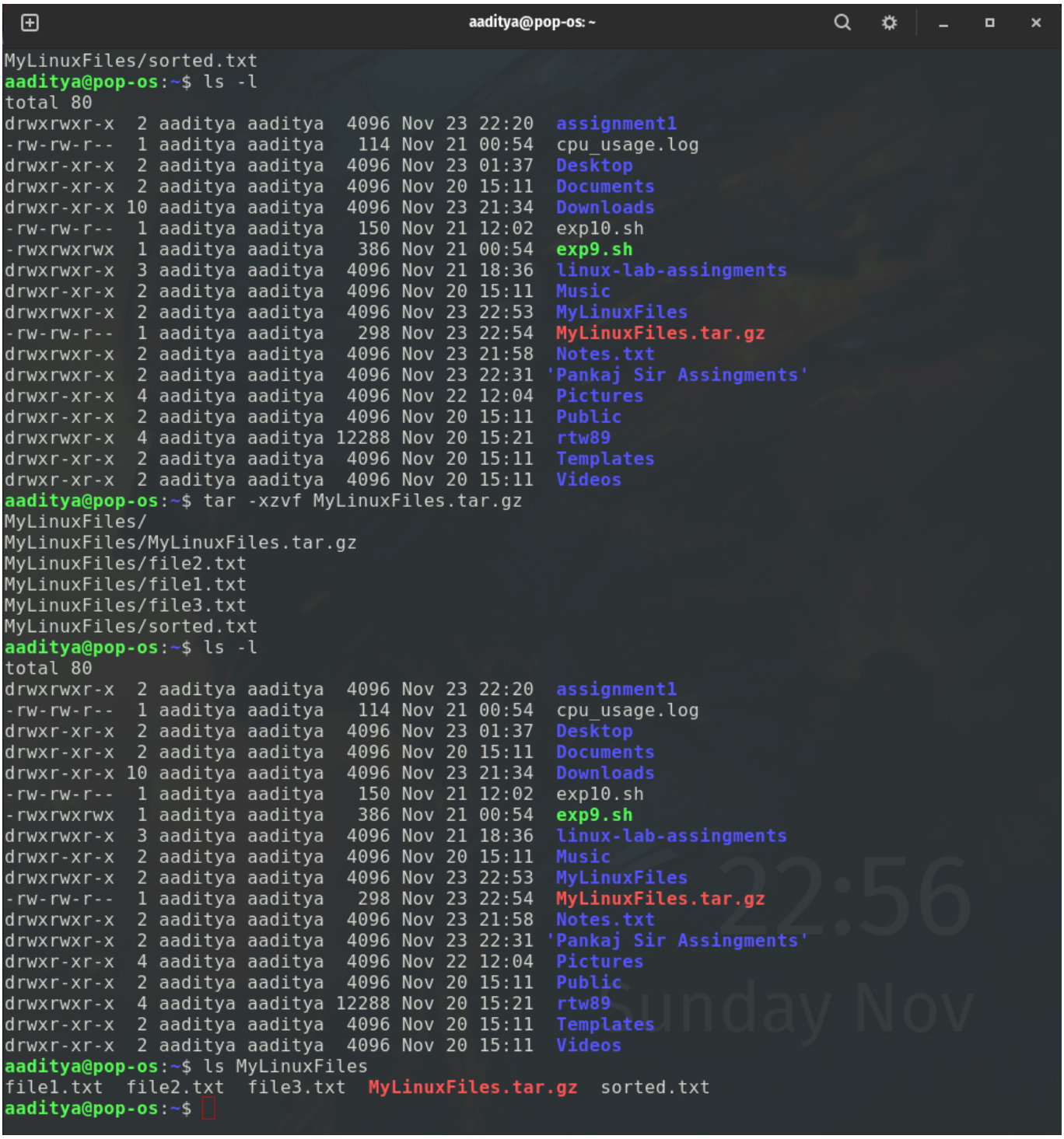
Use the -xzvf options:

- x → extract
- z → unzip gzip
- v → verbose
- f → specify file `tar -xzvf MyLinuxFiles.targz`

6 — Verify the Extracted Contents

```
ls -l
```

Output:



Q8:Networking

• Display the IP address of your system. Use ping to check connectivity to google.com.

1— Open the Terminal

Open your Linux or macOS terminal (or Windows PowerShell/WSL).

2 — Use one of the following commands

Option A: Using `ip` (recommended on modern Linux) `ip addr show` Option B: Using ifconfig (older systems) `ifconfig`

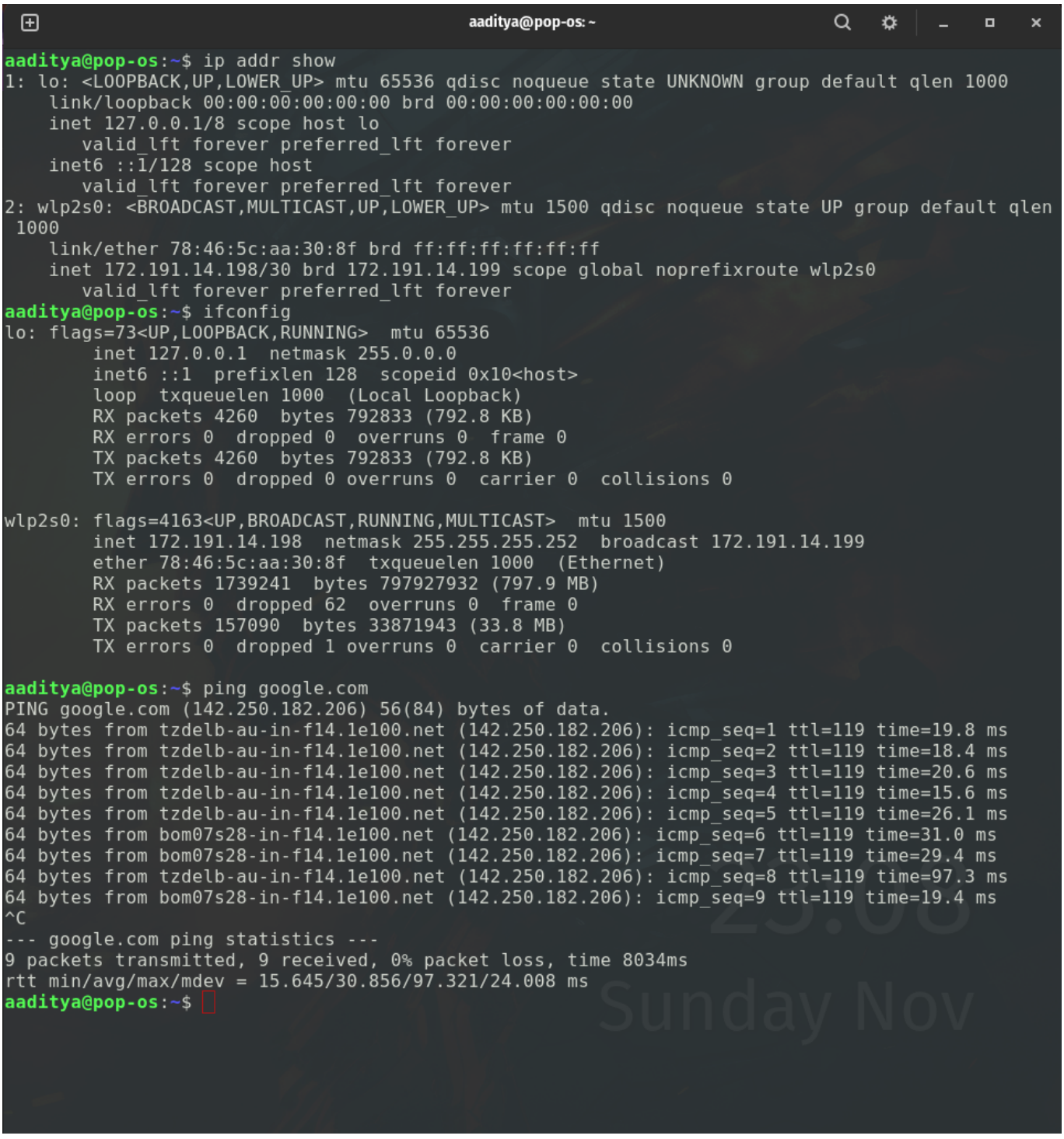
3 — Use the ping command

```
ping google.com
```

4 — Stop the ping

Press:CTRL + C

Output:



Q9:Largest of Three Numbers

• Write a program to find the largest number among three numbers entered by the user.

1 — Create a new script file

```
nano largest.sh
```

2 — Paste the script inside the file

```
#!/bin/bash

# Read three numbers from the user
read -p "Enter first number: " num1
read -p "Enter second number: " num2
read -p "Enter third number: " num3

# Compare the numbers
if [ "$num1" -ge "$num2" ] && [ "$num1" -ge "$num3" ]; then
    echo "The largest number is: $num1"
elif [ "$num2" -ge "$num1" ] && [ "$num2" -ge "$num3" ]; then
    echo "The largest number is: $num2"
else
    echo "The largest number is: $num3"
fi
```

3 — Save and exit

Press CTRL + O, then ENTER

Press CTRL + X

4 — Make the script executable.

```
chmod +x largest.sh
```

5 — Run the script

```
./largest.sh
```

Output:

Q10:Sum of Natural Numbers

• Write a program to find the sum of the first N natural numbers.

1 — Create a new script file

```
nano sum_natural.sh
```

2 — Paste the script inside the file

```
#!/bin/bash

# Read N from the user
read -p "Enter a positive integer N: " N

# Initialize sum variable
sum=0

# Loop from 1 to N
for (( i=1; i<=N; i++ ))
do
    sum=$((sum + i))
done

# Display the result
echo "The sum of the first $N natural numbers is: $sum"
```

3 — Save and exit

Press CTRL + O, then ENTER

Press CTRL + X

4 — Make the script executable

```
chmod +x sum_natural.sh
```

5 — Run the script

```
./sum_natural.sh
```

Output