

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
```

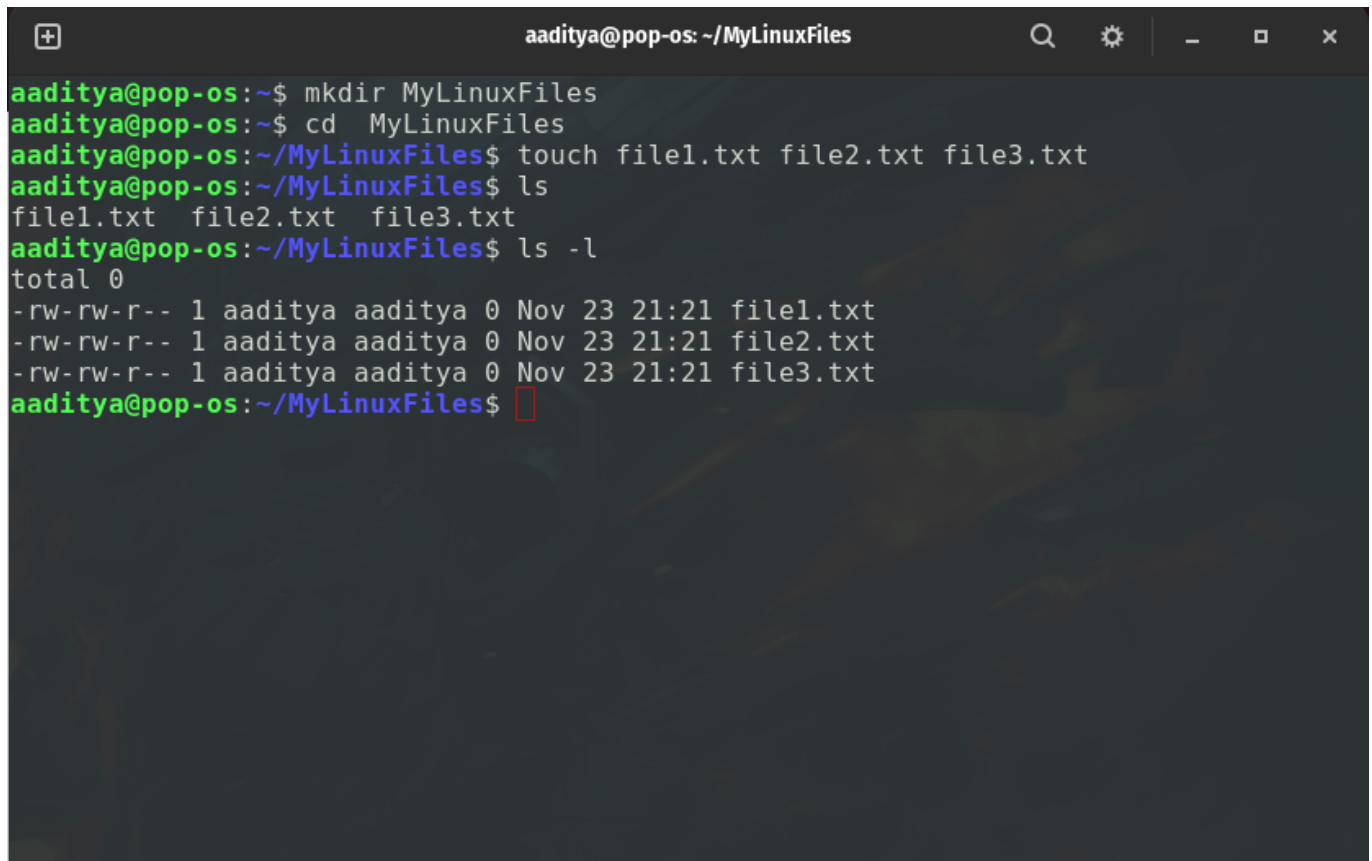
- **4.Verify that the files were created.**

```
ls
```

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

```
ls -l
```

Output:

A terminal window titled 'aaditya@pop-os: ~/MyLinuxFiles' with search, settings, and window control icons. The terminal shows the following commands and output:

```
aaditya@pop-os:~$ mkdir MyLinuxFiles
aaditya@pop-os:~$ cd MyLinuxFiles
aaditya@pop-os:~/MyLinuxFiles$ touch file1.txt file2.txt file3.txt
aaditya@pop-os:~/MyLinuxFiles$ ls
file1.txt file2.txt file3.txt
aaditya@pop-os:~/MyLinuxFiles$ ls -l
total 0
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 21:21 file1.txt
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 21:21 file2.txt
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 21:21 file3.txt
aaditya@pop-os:~/MyLinuxFiles$
```

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

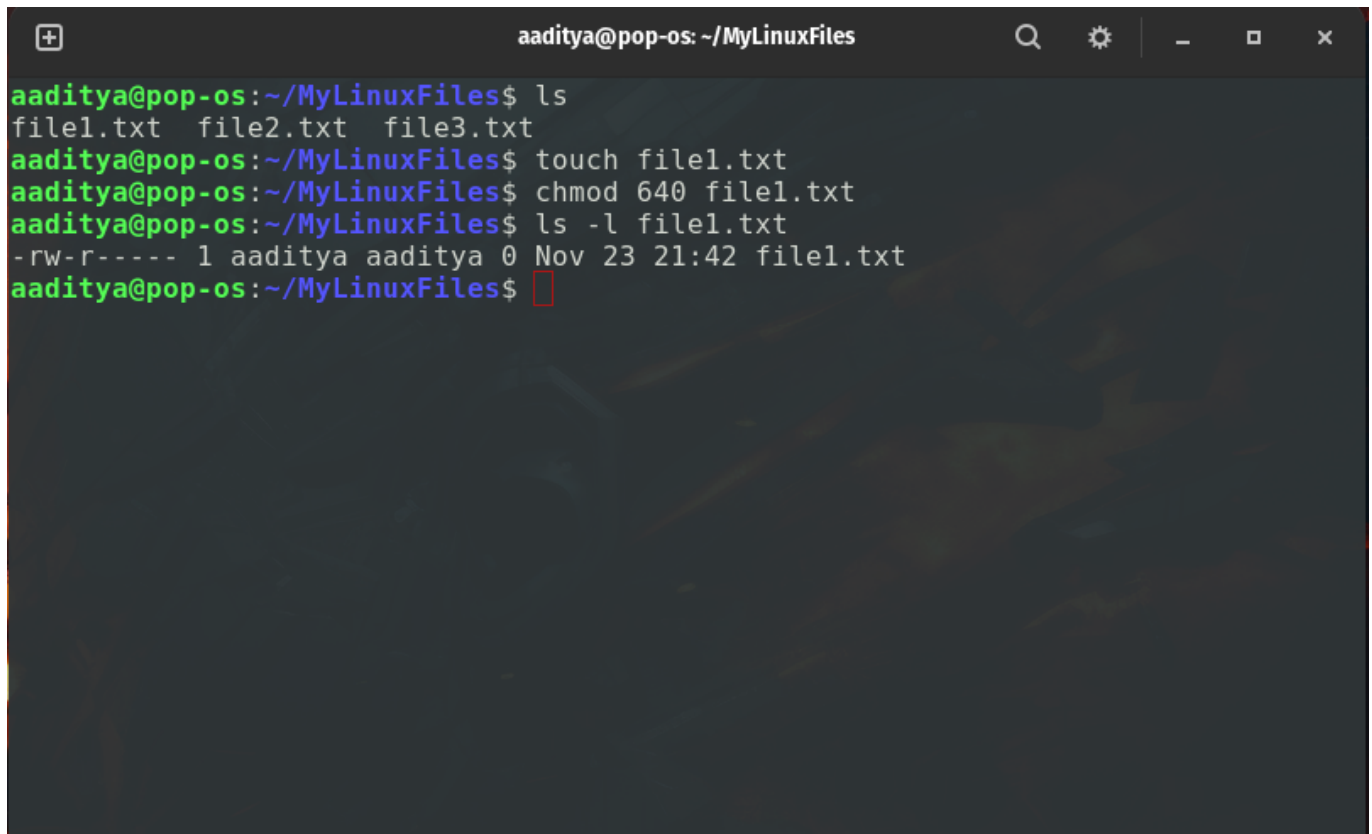
Use `chmod` to set:

- 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:

A terminal window titled 'aaditya@pop-os: ~/MyLinuxFiles' with standard window controls. The terminal shows a sequence of commands: 'ls' lists 'file1.txt', 'file2.txt', and 'file3.txt'; 'touch file1.txt' creates a new file; 'chmod 640 file1.txt' sets permissions; and 'ls -l file1.txt' displays the file's details: '-rw-r----- 1 aaditya aaditya 0 Nov 23 21:42 file1.txt'. The prompt is currently at the end of the last command line.

```
aaditya@pop-os: ~/MyLinuxFiles
aaditya@pop-os:~/MyLinuxFiles$ ls
file1.txt  file2.txt  file3.txt
aaditya@pop-os:~/MyLinuxFiles$ touch file1.txt
aaditya@pop-os:~/MyLinuxFiles$ chmod 640 file1.txt
aaditya@pop-os:~/MyLinuxFiles$ ls -l file1.txt
-rw-r----- 1 aaditya aaditya 0 Nov 23 21:42 file1.txt
aaditya@pop-os:~/MyLinuxFiles$
```

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`

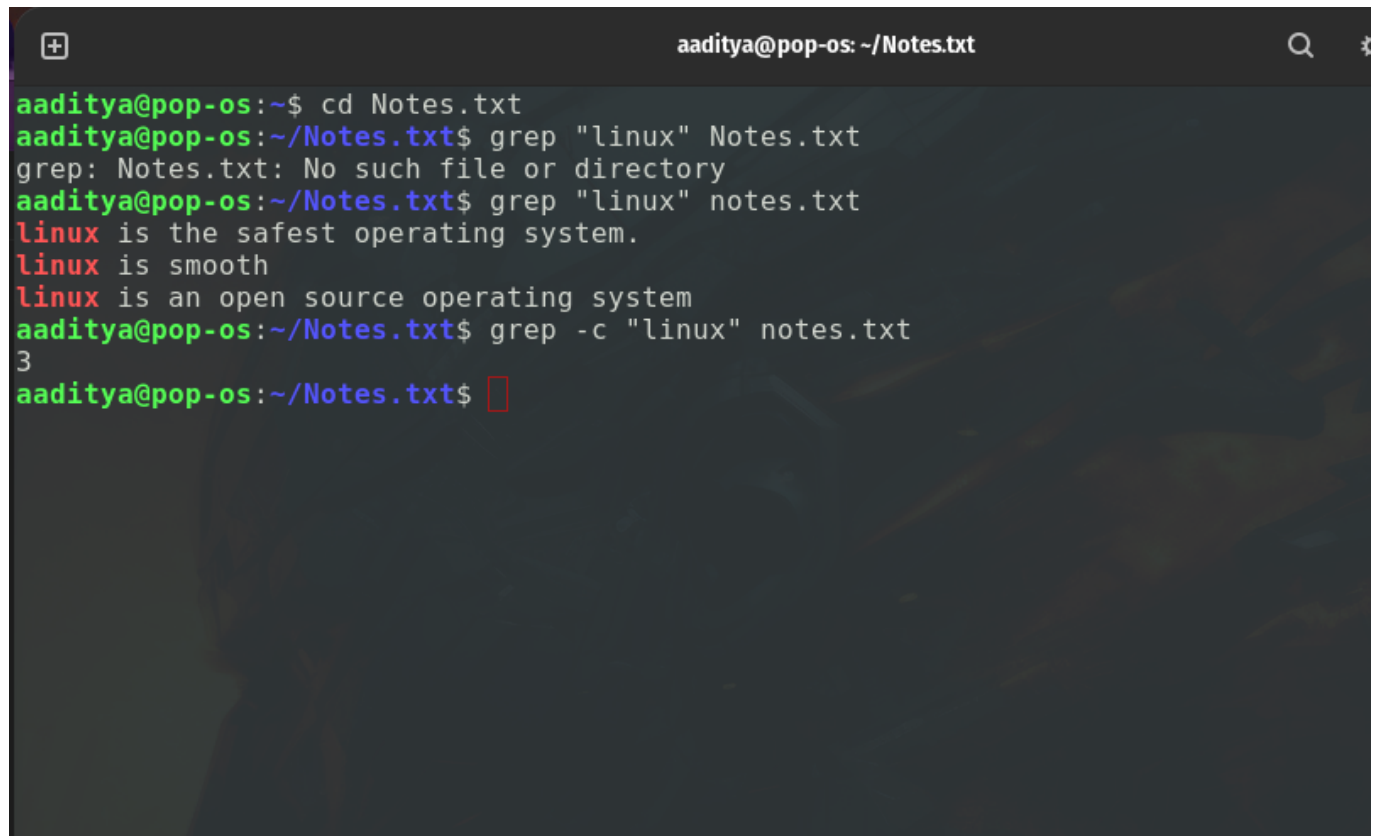
3 — Find All Lines Containing the Word "Linux"

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:



```
aaditya@pop-os: ~/Notes.txt
aaditya@pop-os:~$ cd Notes.txt
aaditya@pop-os:~/Notes.txt$ grep "linux" Notes.txt
grep: Notes.txt: No such file or directory
aaditya@pop-os:~/Notes.txt$ grep "linux" notes.txt
linux is the safest operating system.
linux is smooth
linux is an open source operating system
aaditya@pop-os:~/Notes.txt$ grep -c "linux" notes.txt
3
aaditya@pop-os:~/Notes.txt$
```

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

```
aaditya@pop-os: ~/MyLinuxFiles

aaditya@pop-os:~/Notes.txt$ cd
aaditya@pop-os:~$ ls
cpu_usage.log  exp10.sh  MyLinuxFiles  Public
Desktop        exp9.sh   Notes.txt     rtw89
Documents      linux-lab-assingments  'Pankaj Sir Assingments'  Templates
Downloads      Music     Pictures      Videos

aaditya@pop-os:~$ cd MyLinuxFiles
aaditya@pop-os:~/MyLinuxFiles$ ls
file1.txt  file2.txt  file3.txt
aaditya@pop-os:~/MyLinuxFiles$ touch file1.txt
aaditya@pop-os:~/MyLinuxFiles$ cat file1.txt | sort > sorted.txt
aaditya@pop-os:~/MyLinuxFiles$ ls -l
total 0
-rw-r----- 1 aaditya aaditya 0 Nov 23 22:09 file1.txt
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 21:21 file2.txt
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 21:21 file3.txt
-rw-rw-r-- 1 aaditya aaditya 0 Nov 23 22:09 sorted.txt
aaditya@pop-os:~/MyLinuxFiles$ cat sorted.txt
aaditya@pop-os:~/MyLinuxFiles$
```

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

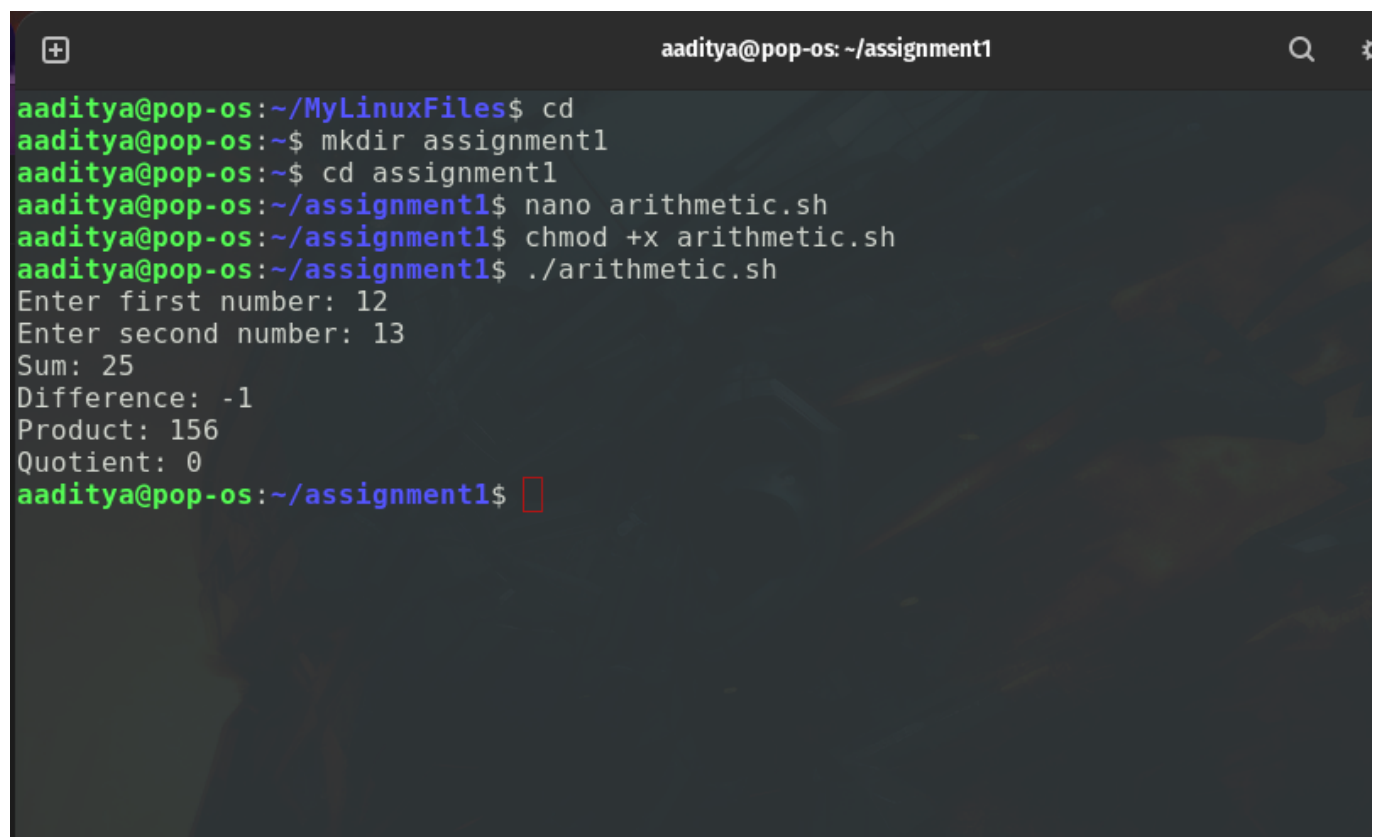
4 — Make the script executable

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

5 — Run the script

```
./arithmetic.sh
```

Output:

A terminal window titled 'aaditya@pop-os: ~/assignment1' showing the following commands and output:

```
aaditya@pop-os:~/MyLinuxFiles$ cd
aaditya@pop-os:~$ mkdir assignment1
aaditya@pop-os:~$ cd assignment1
aaditya@pop-os:~/assignment1$ nano arithmetic.sh
aaditya@pop-os:~/assignment1$ chmod +x arithmetic.sh
aaditya@pop-os:~/assignment1$ ./arithmetic.sh
Enter first number: 12
Enter second number: 13
Sum: 25
Difference: -1
Product: 156
Quotient: 0
aaditya@pop-os:~/assignment1$
```

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:

```
aaditya@pop-os: ~/assignment1
aaditya@pop-os:~$ find ~ -name "*.txt" -mtime -7
/home/aaditya/.mozilla/firefox/UcRl1b5V.Profile 1/weave/logs/error-sync-1763657349280.txt
/home/aaditya/.mozilla/firefox/UcRl1b5V.Profile 1/weave/logs/error-sync-1763659861835.txt
/home/aaditya/.mozilla/firefox/UcRl1b5V.Profile 1/weave/logs/error-sync-1763812336233.txt
/home/aaditya/.mozilla/firefox/UcRl1b5V.Profile 1/serviceworker.txt
/home/aaditya/.mozilla/firefox/UcRl1b5V.Profile 1/pkcs11.txt
/home/aaditya/.mozilla/firefox/7e8yyskd.default-release/weave/logs/error-sync-1763649570911.txt
/home/aaditya/.mozilla/firefox/7e8yyskd.default-release/serviceworker.txt
/home/aaditya/.mozilla/firefox/7e8yyskd.default-release/pkcs11.txt
/home/aaditya/.mozilla/firefox/ohs3vj2f.aaditya profile/pkcs11.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LicenseRef-Qt-Commercial.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LicenseRef-KFQF-Accepted-GPL.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LicenseRef-KDE-Accepted-LGPL.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/CC0-1.0.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LGPL-2.0-or-later.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LGPL-2.1-or-later.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LGPL-2.0-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/BSO-3-Clause.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/plasma-integrati
n/LGPL-3.0-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kded/CC0-1.0.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kded/LGPL-2.0-or-later.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kded/LGPL-2.0-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/LicenseRef-KDE-Accepted-LGPL.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/LGPL-2.1-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/CC0-1.0.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/LGPL-2.0-or-later.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/LGPL-2.0-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/kxamlgui/LGPL-3.0-only.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/qt6-qtquick3d/LicenseRef-Qt-Commercial.txt
/home/aaditya/.local/share/flatpak/runtime/org.kde.Platform/x86_64/6.10/5429f7ac7d9c6d10aca8e39c2c1926287dea370bcd2abfd851db5b777ef7ce61/files/share/licenses/org.kde.Platform/qt6-qtquick3d/CC0-1.0.txt
/home/aaditya/.config/google-chrome/Profile 1/Extensions/mlmiejdfoikolichefjclbpmpeanijj/10.5.19.0/rule_resources/redirects/noop.txt
/home/aaditya/.config/google-chrome/optimization_guide_model_store/15/E6DC4029A1E4B4C1/116FC6588DD105DD/VERSION.txt
/home/aaditya/.config/google-chrome/optimization_guide_model_store/24/E6DC4029A1E4B4C1/08A491CED24C6894/vocab_en-us.txt
/home/aaditya/.config/google-chrome/optimization_guide_model_store/24/E6DC4029A1E4B4C1/08A491CED24C6894/enus_denylist_encoded_241007.txt
/home/aaditya/MyLinuxFiles/file2.txt
/home/aaditya/MyLinuxFiles/file1.txt
/home/aaditya/MyLinuxFiles/file3.txt
/home/aaditya/MyLinuxFiles/sorted.txt
```

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:


```

aaditya@pop-os: ~
MyLinuxFiles/sorted.txt
aaditya@pop-os:~$ ls -l
total 80
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:20 assignment1
-rw-rw-r-- 1 aaditya aaditya 114 Nov 21 00:54 cpu_usage.log
drwxr-xr-x 2 aaditya aaditya 4096 Nov 23 01:37 Desktop
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Documents
drwxr-xr-x 10 aaditya aaditya 4096 Nov 23 21:34 Downloads
-rw-rw-r-- 1 aaditya aaditya 150 Nov 21 12:02 exp10.sh
-rwxrwxrwx 1 aaditya aaditya 386 Nov 21 00:54 exp9.sh
drwxrwxr-x 3 aaditya aaditya 4096 Nov 21 18:36 linux-lab-assingments
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Music
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:53 MyLinuxFiles
-rw-rw-r-- 1 aaditya aaditya 298 Nov 23 22:54 MyLinuxFiles.tar.gz
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 21:58 Notes.txt
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:31 'Pankaj Sir Assingments'
drwxr-xr-x 4 aaditya aaditya 4096 Nov 22 12:04 Pictures
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Public
drwxrwxr-x 4 aaditya aaditya 12288 Nov 20 15:21 rtw89
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Templates
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Videos
aaditya@pop-os:~$ tar -xzf MyLinuxFiles.tar.gz
MyLinuxFiles/
MyLinuxFiles/MyLinuxFiles.tar.gz
MyLinuxFiles/file2.txt
MyLinuxFiles/file1.txt
MyLinuxFiles/file3.txt
MyLinuxFiles/sorted.txt
aaditya@pop-os:~$ ls -l
total 80
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:20 assignment1
-rw-rw-r-- 1 aaditya aaditya 114 Nov 21 00:54 cpu_usage.log
drwxr-xr-x 2 aaditya aaditya 4096 Nov 23 01:37 Desktop
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Documents
drwxr-xr-x 10 aaditya aaditya 4096 Nov 23 21:34 Downloads
-rw-rw-r-- 1 aaditya aaditya 150 Nov 21 12:02 exp10.sh
-rwxrwxrwx 1 aaditya aaditya 386 Nov 21 00:54 exp9.sh
drwxrwxr-x 3 aaditya aaditya 4096 Nov 21 18:36 linux-lab-assingments
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Music
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:53 MyLinuxFiles
-rw-rw-r-- 1 aaditya aaditya 298 Nov 23 22:54 MyLinuxFiles.tar.gz
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 21:58 Notes.txt
drwxrwxr-x 2 aaditya aaditya 4096 Nov 23 22:31 'Pankaj Sir Assingments'
drwxr-xr-x 4 aaditya aaditya 4096 Nov 22 12:04 Pictures
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Public
drwxrwxr-x 4 aaditya aaditya 12288 Nov 20 15:21 rtw89
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Templates
drwxr-xr-x 2 aaditya aaditya 4096 Nov 20 15:11 Videos
aaditya@pop-os:~$ ls MyLinuxFiles
file1.txt file2.txt file3.txt MyLinuxFiles.tar.gz sorted.txt
aaditya@pop-os:~$

```

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:

```
aaditya@pop-os: ~
aaditya@pop-os:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: wlp2s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 78:46:5c:aa:30:8f brd ff:ff:ff:ff:ff:ff
    inet 172.191.14.198/30 brd 172.191.14.199 scope global noprefixroute wlp2s0
        valid_lft forever preferred_lft forever
aaditya@pop-os:~$ ifconfig
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 4260 bytes 792833 (792.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4260 bytes 792833 (792.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.191.14.198 netmask 255.255.255.252 broadcast 172.191.14.199
    ether 78:46:5c:aa:30:8f txqueuelen 1000 (Ethernet)
    RX packets 1739241 bytes 797927932 (797.9 MB)
    RX errors 0 dropped 62 overruns 0 frame 0
    TX packets 157090 bytes 33871943 (33.8 MB)
    TX errors 0 dropped 1 overruns 0 carrier 0 collisions 0

aaditya@pop-os:~$ ping google.com
PING google.com (142.250.182.206) 56(84) bytes of data.
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=1 ttl=119 time=19.8 ms
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=2 ttl=119 time=18.4 ms
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=3 ttl=119 time=20.6 ms
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=4 ttl=119 time=15.6 ms
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=5 ttl=119 time=26.1 ms
64 bytes from bom07s28-in-f14.1e100.net (142.250.182.206): icmp_seq=6 ttl=119 time=31.0 ms
64 bytes from bom07s28-in-f14.1e100.net (142.250.182.206): icmp_seq=7 ttl=119 time=29.4 ms
64 bytes from tzelb-au-in-f14.1e100.net (142.250.182.206): icmp_seq=8 ttl=119 time=97.3 ms
64 bytes from bom07s28-in-f14.1e100.net (142.250.182.206): icmp_seq=9 ttl=119 time=19.4 ms
^C
--- google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8034ms
rtt min/avg/max/mdev = 15.645/30.856/97.321/24.008 ms
aaditya@pop-os:~$
```

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:

A terminal window titled 'aaditya@pop-os: ~' showing the execution of a script named 'largest.sh'. The user runs 'nano largest.sh', 'chmod +x largest.sh', and './largest.sh'. The script prompts for three numbers: 45, 68, and 69. It then outputs 'The largest number is: 69'.

```
aaditya@pop-os:~$ nano largest.sh
aaditya@pop-os:~$ chmod +x largest.sh
aaditya@pop-os:~$ ./largest.sh
Enter first number: 45
Enter second number: 68
Enter third number: 69
The largest number is: 69
aaditya@pop-os:~$
```

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

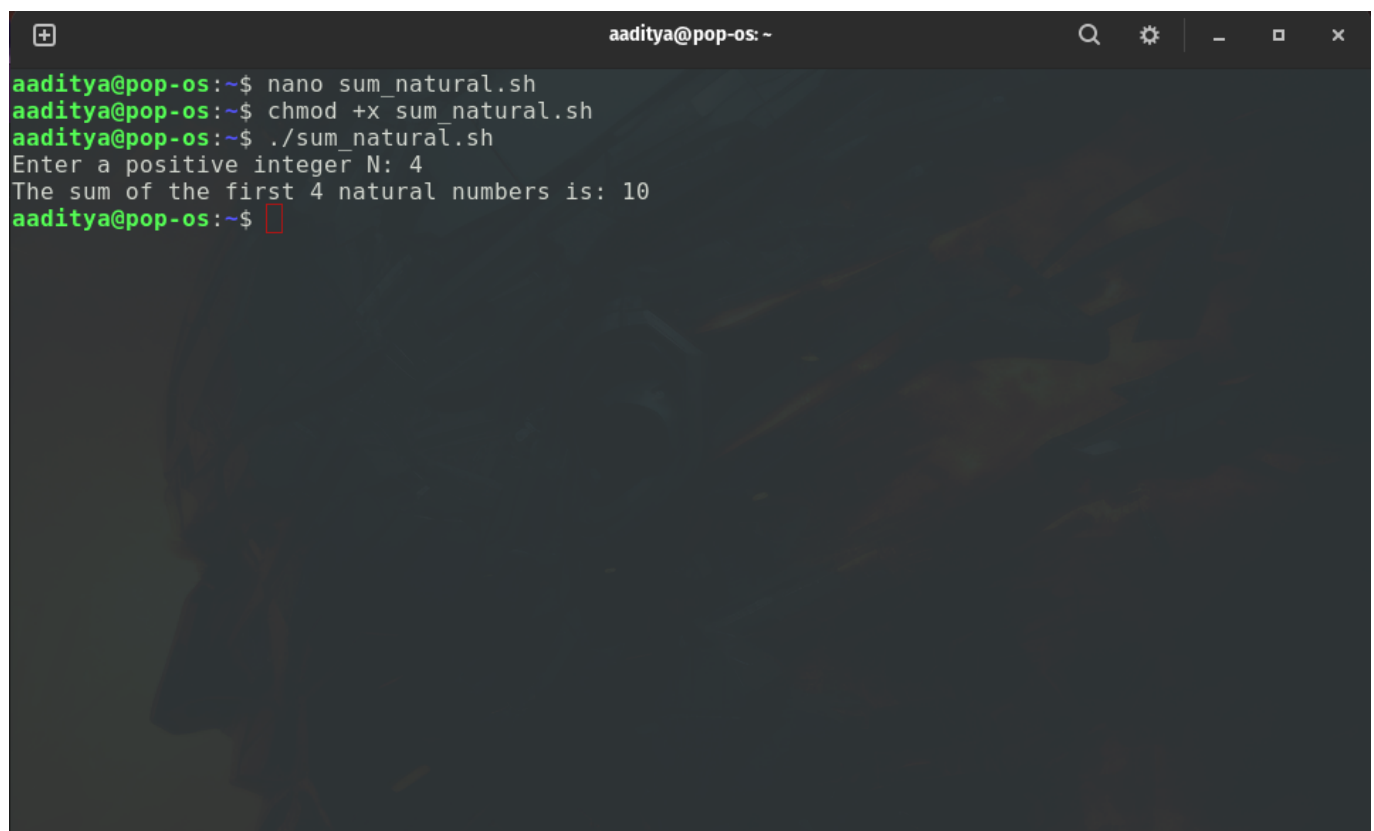
4 — Make the script executable

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

5 — Run the script

```
./sum_natural.sh
```

Output

A terminal window titled 'aaditya@pop-os: ~' with search, settings, and window control icons. The terminal shows the following commands and output:

```
aaditya@pop-os:~$ nano sum_natural.sh
aaditya@pop-os:~$ chmod +x sum_natural.sh
aaditya@pop-os:~$ ./sum_natural.sh
Enter a positive integer N: 4
The sum of the first 4 natural numbers is: 10
aaditya@pop-os:~$
```

The prompt 'aaditya@pop-os:~\$' is followed by a red cursor box.