Assignment 1

Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a) Navigate and List: a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

Ans:

```
cdac@Tanmaypc:~$ cd ~
cdac@Tanmaypc:~$ ls
cdac  cdac1  dir1
cdac@Tanmaypc:~$ mkdir LinuxAssignment
cdac@Tanmaypc:~$ cd LinuxAssignment
cdac@Tanmaypc:~/LinuxAssignment$
```

b) File Management: a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ touch file1.txt
cdac@Tanmaypc:~/LinuxAssignment$ echo "Hello this is file1 text" > file1.txt
cdac@Tanmaypc:~/LinuxAssignment$ cat file1.txt
Hello this is file1 text
```

c) Directory Management: a. Create a new directory named "docs" inside the "LinuxAssignment" directory.

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ mkdir docs
```

d) Copy and Move Files: a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Tanmaypc:~/LinuxAssignment$ cd docs
cdac@Tanmaypc:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Tanmaypc:~/LinuxAssignment/docs$ cat file2.txt
Hello this is file1 text
```

e) Permissions and Ownership: a. Change the permissions of "file2.txt" to allow read, write, and execute permissions for the owner and only read permissions for others. Then, change the owner of "file2.txt" to the current user.

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ ls -l file2.txt
-rw-r--r-- 1 cdac cdac 25 Aug 19 12:21 file2.txt
cdac@Tanmaypc:~/LinuxAssignment$ chmod u+x file2.txt
cdac@Tanmaypc:~/LinuxAssignment$ ls -l file2.txt
```

-rwxr--r-- 1 cdac cdac 25 Aug 19 12:21 file2.txt

chown $(whoami) file1.txt
cdac@Tanmaypc:~$ ls -l file1.txt
-rwxr--r-- 1 cdac cdac 14 Aug 19 12:22 file2.txt
//since there is only one user chown doesn't really change anything in ownership

f) Final Checklist: a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.
Ans:
cdac@Tanmaypc:~/LinuxAssignment/docs$ cd ..
cdac@Tanmaypc:~/LinuxAssignment$ ls
docs file1.txt
cdac@Tanmaypc:~/LinuxAssignment$ cd ~
cdac@Tanmaypc:~$ ls
LinuxAssignment cdac cdac1 dir1

g) File Searching:
a. Search for all files with the extension ".txt" in the current directory and its subdirectories.
Ans:
cdac@Tanmaypc:~$ find . -type f -name "*.txt"
./cdac1/bigtext.txt
./cdac1/lorem.txt
./cdac1/ts.txt
./cdac1/file.txt
./destination/check.txt
./destination/source/new.txt
./destination/source/text2.txt
./destination/text2.txt
./source/new.txt
./source/text2.txt
./file1.txt

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).
Ans:
cdac@Tanmaypc:~$ grep "is" file1.txt
This is file1

h) System Information: a. Display the current system date and time.
Ans:
cdac@Tanmaypc:~$ date
Tue Aug 19 16:09:13 UTC 2025

i) Networking:
a. Display the IP address of the system.
Ans:
cdac@Tanmaypc:~$ 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
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:c0:83:f1 brd ff:ff:ff:ff:ff:ff
    inet 172.18.247.227/20 brd 172.18.255.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fec0:83f1/64 scope link
       valid_lft forever preferred_lft forever
```

b. Ping a remote server to check connectivity (provide a remote server address to ping).

Ans:

```
cdac@Tanmaypc:~$ ping google.com
PING google.com (142.251.221.238) 56(84) bytes of data.
64 bytes from pnbomb-bk-in-f14.1e100.net (142.251.221.238): icmp_seq=1 ttl=117 time=49.5 ms
64 bytes from pnbomb-bk-in-f14.1e100.net (142.251.221.238): icmp_seq=2 ttl=117 time=41.5 ms
64 bytes from pnbomb-bk-in-f14.1e100.net (142.251.221.238): icmp_seq=3 ttl=117 time=49.5 ms
^C
--- google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2167ms
rtt min/avg/max/mdev = 41.466/46.830/49.534/3.793 ms
```

j) File Compression:

a. Compress the "docs" directory into a zip file.

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Tanmaypc:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
  adding: docs/newfile.txt (stored 0%)
cdac@Tanmaypc:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
```

b. Extract the contents of the zip file into a new directory.

Ans:

```
cdac@Tanmaypc:~/LinuxAssignment$ unzip docs.zip -d unzipped
Archive:  docs.zip
   creating: unzipped/docs/
  extracting: unzipped/docs/file2.txt
  extracting: unzipped/docs/newfile.txt
cdac@Tanmaypc:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  unzipped
```

k) File Editing:

a. Open the "file1.txt" file in a text editor and add some text to it.

Ans:

```
cdac@Tanmaypc:~$ vi file1.txt
cdac@Tanmaypc:~$ chmod u+x file1.txt
cdac@Tanmaypc:~$ ./file1.txt
Hello, World!
cdac@Tanmaypc:~$ cat file1.txt
echo "Hello, World!"
```

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

Ans:

```
//In editor press
esc :s/old_word/new_word/
//this will replace all instances of old_word with new_word
```

Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command.

Ans: //when we need to see first 10 line we can use **head** command. By default head command returns first 10 line, we can specify it with **head -n num file_name.txt** where num is the number of lines you want to display

b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

Ans: //like head we can use tail command to display last lines **tail -n 5 file_name.txt** //**tail -F file_name.txt** Output last lines of file as it changes

c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.

Ans: cdac@Tanmaypc:~$ head -n 15 numbers.txt

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
```

d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

Ans: cdac@Tanmaypc:~$ tail -3 numbers.txt
18
19
20

e. Imagine you have a file named "input.txt" with text content. Use a command to translate all lowercase letters to uppercase in "input.txt" and save the modified text in a new file named "output.txt."

Ans: cdac@Tanmaypc:~$ echo "Hello welcome to this input file" > input.txt

cdac@Tanmaypc:~$ tr a-z A-Z < input.txt > uppcase.txt

cdac@Tanmaypc:~$ cat uppcase.txt

HELLO WELCOME TO THIS INPUT FILE

f. In a file named "duplicate.txt," there are several lines of text, some of which are duplicates. Use a command to display only the unique lines from "duplicate.txt."

Ans: sort duplicate.txt | uniq

g. In a file named "fruit.txt," there is a list of fruits, but some fruits are repeated. Use a command to display each unique fruit along with the count of its occurrences in "fruit.txt."

Ans: sort fruit.txt | uniq -c