Problem 1:

a)Navigate and List:

Start by navigating to your home directory and list its contents:

```
cdac@LAPTOP-39EV3JI7:~$ pwd
/home/cdac
cdac@LAPTOP-39EV3JI7:~$ ls
ClassPractice  Day-1  abc.txt  file1.txt  file2.txt  file3.txt  xyz.txt
```

Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it:

```
cdac@LAPTOP-39EV3JI7:~$ if [ -d "LinuxAssignment" ]; then echo 'Exists'; else echo 'Not found'; fi
Not found

cdac@LAPTOP-39EV3JI7:~$ mkdir LinuxAssignment
cdac@LAPTOP-39EV3JI7:~$ mv ClassPractice/* LinuxAssignment/
cdac@LAPTOP-39EV3JI7:~$ cd LinuxAssignment
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls
file1.txt  file2.txt  file3.txt
```

b)File Management:

Inside the "LinuxAssignment" directory, create a new file named "file1.txt":

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ nano file1.txt
```

Display its contents:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ cat file1.txt
Hi
```

c)Directory Management:

Create a new directory named "docs" inside the "LinuxAssignment" directory:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls
docs  file1.txt  file2.txt  file3.txt
```

d)Copy and Move Files:

Copy the "file1.txt" file into the "docs" directory:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ cp file1.txt docs
```

Rename it to "file2.txt":

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ mv file1.txt file2.txt
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls
docs  file2.txt  file3.txt
```

e)Permissions and Ownership:

Change the permissions of "file2.txt" to allow read, write, and execute permissions for the owner:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ chmod u+r+w+x file2.txt
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 19:42 docs
-rwxr--rwx 1 cdac cdac    3 Aug 28 19:30 file2.txt
-rw-r--r-x 1 cdac cdac    0 Aug 28 00:29 file3.txt
```

Only read permissions for others:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ chmod o-w-x file2.txt
```

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 19:42 docs
-rwxr--r-- 1 cdac cdac    3 Aug 28 19:30 file2.txt
-rw-r--r-x 1 cdac cdac    0 Aug 28 00:29 file3.txt
```

Change the owner of "file2.txt" to the current user:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ sudo chown $(whoami) file2.txt
[sudo] password for cdac:
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls
docs  file2.txt  file3.txt
```

f) Final Checklist:

Finally, list the contents of the "LinuxAssignment" directory:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 19:42 docs
-rwxr--r-- 1 cdac cdac    3 Aug 28 19:30 file2.txt
-rw-r--r-x 1 cdac cdac    0 Aug 28 00:29 file3.txt
```

And the root directory to

ensure that all operations were performed correctly:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ cd /
cdac@LAPTOP-39EV3JI7:/$ ls
bin   dev  home  lib   lib64   lost+found  mnt  proc  run   snap  sys  usr
boot  etc  init  lib32  libx32  media       opt  root  sbin  srv   tmp  var
```

g)File Searching:

a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

cdac@LAPTOP-39EV3JI7:~$ cd LinuxAssignment

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ find . -name "*.txt"

./file2.txt

./file3.txt

./docs/file1.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ls

docs file2.txt file3.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ cd docs

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ find . -name "*.txt"

./file1.txt

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ grep "Hi" file2.txt

Hi

h) System Information:

Display the current system date and time:

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ date

Wed Aug 28 22:54:17 IST 2024

i) Networking:

a. Display the IP address of the system:

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ 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:09:e1:5a brd ff:ff:ff:ff:ff:ff
    inet 172.17.58.16/20 brd 172.17.63.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe09:e15a/64 scope link
       valid_lft forever preferred_lft forever
```

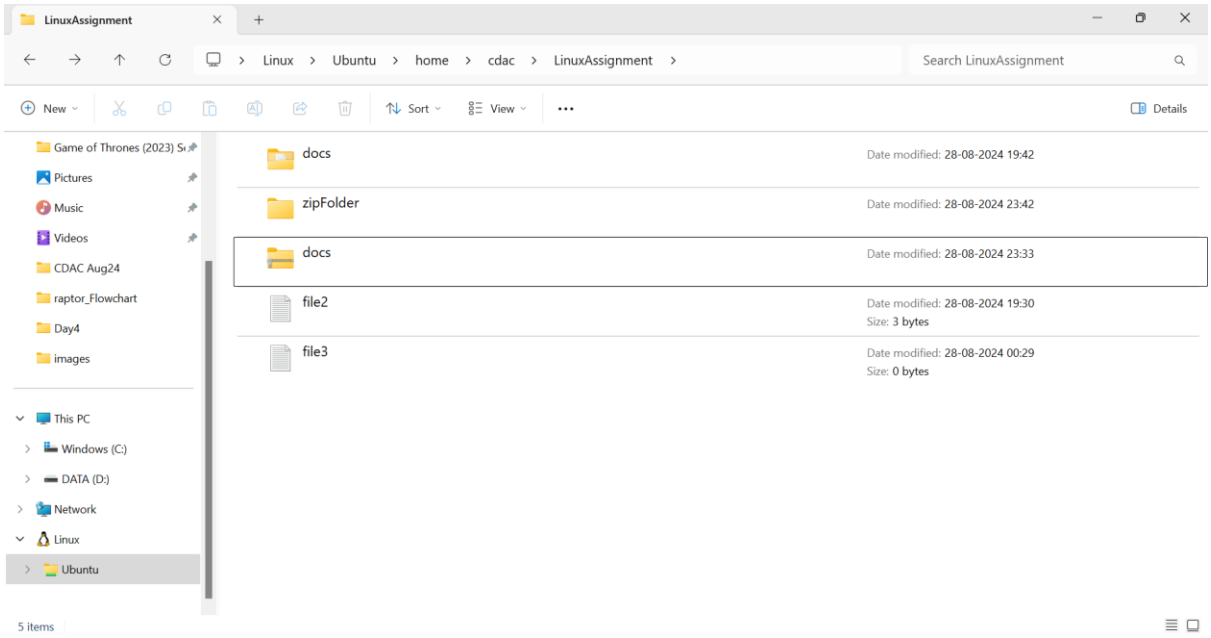
b. Ping a remote server to check connectivity (provide a remote server address to ping):

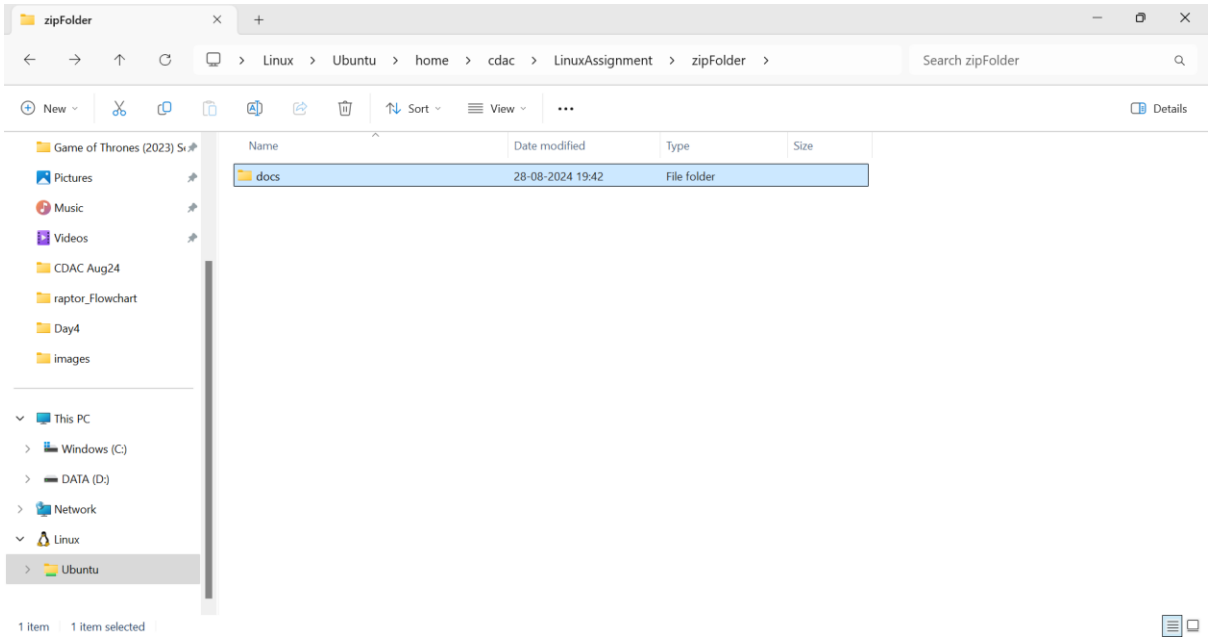
```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=117 time=37.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=117 time=12.8 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=117 time=10.8 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=117 time=10.9 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=117 time=11.4 ms
^C
--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 10.773/16.625/37.325/10.374 ms
```

j) File Compression:

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

```
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file1.txt (stored 0%)
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$
cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$
```





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

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment$ unzip docs.zip -d zipFolder

Archive: docs.zip

  creating: zipFolder/docs/

 extracting: zipFolder/docs/file1.txt

k) File Editing:

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

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat file1.txt

Hi

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ nano file1.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat file1.txt

Hey there, I'm using Ubuntu!

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

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat file1.txt

Hey there, I'm using Ubuntu!

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ sed -i 's/Hey/Hi/g' file1.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat file1.txt

Hi there, I'm using Ubuntu!

Problem 2:

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:

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ nano data.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ head -10 data.txt

Hi

Hello

How

Are

You

?

Doing

Good

Thank

You

b. Now, to check the end of the file for any recent additions,

display the last 5 lines of "data.txt" using another command.

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ tail -5 data.txt

You

Mention

Not

Bye

Goodbye

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:

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ nano numbers.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat numbers.txt

12

54

8

56

09

23

225

76

90

37

61

83

97

49

54

89

3

9

2

5

0

8

65

4

33

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

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ tail -3 numbers.txt

4

33

21

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."

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat output.txt

HI, HOW ARE YOU MY DEAR??

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." :

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ nano duplicate.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat duplicate.txt

hi

hello

bye

how

are

you

hello

hi

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ sort duplicate.txt | uniq

are

bye

hello

hi

how

you

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."

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ nano fruits.txt

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ cat fruits.txt

Apple

Banana

Orange

Mango

Apple

Watermelon

Pineapple

Banana

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ sort fruits.txt | uniq

Apple

Banana

Mango

Orange

Pineapple

Watermelon

cdac@LAPTOP-39EV3JI7:~/LinuxAssignment/docs$ sort fruits.txt | uniq -c

2 Apple

2 Banana

1 Mango

1 Orange

1 Pineapple

1 Watermelon