CDAC MUMBAI

Concepts of Operating System
Assignment 1
Outputs

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.

```
cdac@PRATIK:~$ cd ~
cdac@PRATIK:~$ pwd
/home/cdac
cdac@PRATIK:~$ ls
aa.txt  abc.txt  cadc1  file.txt  file1.txt  file2.txt  fruit.txt  s3.sh  s4.sh  s5.sh  s6.sh  xyz.txt
cdac@PRATIK:~$ mkdir LinuxAssignment
cdac@PRATIK:~$ cd LinuxAssignment
cdac@PRATIK:~/LinuxAssignment$
```

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

```
cdac@PRATIK:~$ cd LinuxAssignment
cdac@PRATIK:~/LinuxAssignment$ touch file1.txt
cdac@PRATIK:~/LinuxAssignment$ cat file1.txt
```

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

```
cdac@PRATIK:~/LinuxAssignment$ mkdir docs
cdac@PRATIK:~/LinuxAssignment$ cp file1.txt docs/file2.txt
```

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

```
cdac@PRATIK:~/LinuxAssignment$ cp file1.txt docs/file2.txt
```

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.

```
cdac@PRATIK:~$ touch file2.txt
cdac@PRATIK:~$ cat file2.txt
cdac@PRATIK:~$ ls
LinuxAssignment  aa.txt  abc.txt  cadc1  file2.txt  fruit.txt  s3.sh  s4.sh  s5.sh  s6.sh  xyz.txt
cdac@PRATIK:~$ chmod 744 file2.txt
cdac@PRATIK:~$ chown $USER file2.txt
cdac@PRATIK:~$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 0 Aug 20 14:27 file2.txt
```

f) **Final Checklist:**

a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.

```
cdac@PRATIK:~$ ls LinuxAssignment
color.txt  data.txt  docs  duplicate.txt  file1.txt  number.txt
cdac@PRATIK:~$ ls /
bin                boot  etc   init  lib.usr-is-merged  lost+found  mnt  proc  run   sbin.usr-is-merged  srv  tmp  var
bin.usr-is-merged  dev   home  lib   lib64              media       opt  root  sbin  snap                sys  usr
```

g) **File Searching:**

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

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

```
cdac@PRATIK:~/LinuxAssignment$ find ~ -type f -name "*.txt"
/home/cdac/xyz.txt
/home/cdac/aa.txt
/home/cdac/cadc1/numbers.txt
/home/cdac/cadc1/file3.txt
/home/cdac/cadc1/file1.txt
/home/cdac/cadc1/file2.txt
/home/cdac/cadc1/color.txt
/home/cdac/abc.txt
/home/cdac/LinuxAssignment/file1.txt
/home/cdac/LinuxAssignment/docs/file2.txt
```

h) **System Information:**

a. Display the current system date and time.

```
cdac@PRATIK:~/LinuxAssignment$ date
Tue Aug 19 13:34:09 UTC 2025
```

i) **Networking:**

a. Display the IP address of the system.

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

```
cdac@PRATIK:~/LinuxAssignment$ hostname -I
172.19.152.25
cdac@PRATIK:~/LinuxAssignment$ ping google.com
PING google.com (142.250.192.46) 56(84) bytes of data.
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=1 ttl=113 time=67.3 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=2 ttl=113 time=58.5 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=3 ttl=113 time=43.1 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=4 ttl=113 time=113 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=5 ttl=113 time=75.7 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=6 ttl=113 time=71.6 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=7 ttl=113 time=67.5 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=8 ttl=113 time=62.2 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=9 ttl=113 time=116 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=10 ttl=113 time=56.2 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=11 ttl=113 time=87.1 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=12 ttl=113 time=123 ms
64 bytes from bom12s15-in-f14.1e100.net (142.250.192.46): icmp_seq=13 ttl=113 time=88.6 ms
```

j) **File Compression:**

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

```
cdac@PRATIK:~$ zip -r docs.zip docs
updating: docs/ (stored 0%)
cdac@PRATIK:~$ ls
LinuxAssignment  ab.sh   abc.txt  docs      file.txt   file2.txt  input.txt  output.txt  s4.sh  s6.sh
aa.txt           ab1.sh  cadc1    docs.zip  file1.txt  fruit.txt  newdocs    s3.sh       s5.sh  xyz.txt
```

```
cdac@PRATIK:~$ unzip docs.zip -d newdocs
Archive:  docs.zip
cdac@PRATIK:~$ ls newdocs
docs
cdac@PRATIK:~$
```

k) **File Editing:**

a. Open the "file1.txt" file in a text editor and add some text to it.
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@PRATIK:~$ vi file1.txt
cdac@PRATIK:~$ cat file1.txt
Linux is powerful
Linux is secure
Linux is open-source

cdac@PRATIK:~$ vi file1.txt
cdac@PRATIK:~$ cat file1.txt
Ubuntu is powerful
Ubuntu is secure
Ubuntu is open-source
```

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@PRATIK:~/LinuxAssignment$ cat > data.txt
Yellow
pink
blue
red
green
violet
black
orange
light blue
brown
cdac@PRATIK:~/LinuxAssignment$ head -n 10 data.txt
Yellow
pink
blue
red
green
violet
black
orange
light blue
brown
```

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@PRATIK:~/LinuxAssignment$ tail -n 5 data.txt
violet
black
orange
light blue
brown
```

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@PRATIK:~/LinuxAssignment$ head -n 15 number.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".

```
cdac@PRATIK:~/LinuxAssignment$ tail -n 3 number.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."

```
cdac@PRATIK:~$ touch input.txt
cdac@PRATIK:~$ echo "linux is powerful" > input.txt
cdac@PRATIK:~$ touch output.txt
cdac@PRATIK:~$ tr 'a-z' 'A-Z' <input.txt> output.txt
cdac@PRATIK:~$ cat output.txt
LINUX IS POWERFUL
```

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@PRATIK:~/LinuxAssignment$ cat > duplicate.txt
Unix
Linux
Window
Mac
Unix
UNIX
WINDOW
MAC
```

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@PRATIK:~$ cat > fruit.txt
apple
banana
Grapes
Cherry
APPLE
BANANA
GRAPES
CHERRY
cdac@PRATIK:~$ sort fruit.txt | uniq -c
      1 APPLE
      1 BANANA
      1 CHERRY
      1 Cherry
      1 GRAPES
      1 Grapes
      1 apple
      1 banana
```

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