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.

Output

```
cdac@HP:~$ pwd
/home/cdac
cdac@HP:~$ ls
abc.txt  lmn.txt  xyz.txt
cdac@HP:~$ mkdir LinuxAssignment
cdac@HP:~$ ls
LinuxAssignment  abc.txt  lmn.txt  xyz.txt
cdac@HP:~$
```

pwd : – Present working Directory

ls :- It list out all the files and directory of current working directory.

mkdir :- It is used to create new directory.

b. File Management:

a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.

Output

```
cdac@HP:~$ pwd
/home/cdac
cdac@HP:~$ cd LinuxAssignment
cdac@HP:~/LinuxAssignment$ nano file1.txt
cdac@HP:~/LinuxAssignment$ cat file1.txt
Hi
Hello Everyone
Good Morning
cdac@HP:~/LinuxAssignment$
```

Cd :- This command used to change directory

Nano :- It is actually run the editor and open the specified file.

Cat :-To display content of the file on console.

C. Directory Management:

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

Output

```
cdac@HP:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@HP:~/LinuxAssignment$ mkdir -p LinuxAssignment/docs
cdac@HP:~/LinuxAssignment$ ls LinuxAssignment
docs
cdac@HP:~/LinuxAssignment$
```

P :- this commond is used to create parent directory

ls :- listout the directory

d. Copy and Move Files:

a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

Output

```
cdac@HP:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@HP:~/LinuxAssignment$ cp file1.txt docs
cdac@HP:~/LinuxAssignment$ ls
LinuxAssignment  docs  file1.txt
cdac@HP:~/LinuxAssignment$ cd docs
cdac@HP:~/LinuxAssignment/docs$ ls
file1.txt
cdac@HP:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@HP:~/LinuxAssignment/docs$ ls
file2.txt
cdac@HP:~/LinuxAssignment/docs$
```

cp :- It is used to copy files and directories from one location to another.

Mv :- This command is used to move files and directories from one directory to another or to rename a file or directory

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.

Output

```
cdac@HP:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 31 Aug 29 09:15 file2.txt
cdac@HP:~/LinuxAssignment/docs$ chmod u+x file2.txt
```

```
cdac@HP:~/LinuxAssignment/docs$ sudo chown user1 file2.txt
cdac@HP:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 user1 cdac 31 Aug 29 09:15 file2.txt
cdac@HP:~/LinuxAssignment/docs$ sudo chown cdac file2.txt
cdac@HP:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 31 Aug 29 09:15 file2.txt
```

Sudo :- To give some Specific privilages to the user's other than root
Chown :-This command is used to change the file owner or Group.

F. Final Checklist:

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

Output

```
cdac@HP:~/LinuxAssignment$ cd
cdac@HP:~$ ls -l LinuxAssignment
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 29 13:12 docs
-rw-r--r-- 1 cdac cdac    9 Aug 29 13:08 file1.txt
cdac@HP:~$
```

ls –l :- This command is use to list information about files and directories

g. File Searching:

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

Output

```
cdac@HP: ~
cdac@HP:~$ pwd
/home/cdac
cdac@HP:~$ find -name "*.txt"
./file1.txt
./abc.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file1.txt
cdac@HP:~$
```

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

Output

```
cdac@HP:~$ cd LinuxAssignment
cdac@HP:~/LinuxAssignment$ grep "Hi" file1.txt
Hi
cdac@HP:~/LinuxAssignment$
```

find :- This command is used to find files and directories and perform operations on them.
Grep :- By using this command we display specific word in a file.

h. System Information:

a. Display the current system date and time.

Output

```
cdac@HP:~/LinuxAssignment$ date
Thu Aug 29 16:07:25 IST 2024
cdac@HP:~/LinuxAssignment$
```

date : Using this command we display current date and time.

I. Networking:

a. Display the IP address of the system

output

```
cdac@HP:~/LinuxAssignment$ hostname -I
172.25.141.252
```

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

Output

```
cdac@HP:~/LinuxAssignment$ ping www.google.com
PING www.google.com (142.250.183.4) 56(84) bytes of data.
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=1 ttl=111 time=55.1 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=2 ttl=111 time=45.9 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=3 ttl=111 time=108 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=4 ttl=111 time=52.5 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=5 ttl=111 time=42.4 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=6 ttl=111 time=104 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=7 ttl=111 time=53.8 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=8 ttl=111 time=141 ms
64 bytes from bom07s30-in-f4.1e100.net (142.250.183.4): icmp_seq=9 ttl=111 time=71.4 ms
^C
--- www.google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8012ms
rtt min/avg/max/mdev = 42.400/74.882/140.806/32.535 ms
```

hostname -I :- Usiging this command display the IP address of the system

ping :- Using this command check server availability, monitoring network performance.

J. File Compression:

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

Output

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

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

Output

```
cdac@HP:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@HP:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
cdac@HP:~/LinuxAssignment$ unzip docs.zip -d docs1
Archive:  docs.zip
   creating: docs1/docs/
 extracting: docs1/docs/file1.txt
cdac@HP:~/LinuxAssignment$ ls
docs  docs.zip  docs1  file1.txt
cdac@HP:~/LinuxAssignment$
```

zip –r docs.zip docs/ :- This command is used to zip docs directory

unzip docs.zip –d docs1 :- This command is used extract the content of the zip file into new directory

k. File Editing:

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

Output

```
cdac@HP:~/LinuxAssignment$ nano file1.txt
cdac@HP:~/LinuxAssignment$ cat file1.txt
Hi
Hello
Good morning
```

nano :-nano is a editor and open the specified file.

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

Output

```
cdac@HP:~/LinuxAssignment$ nano file1.txt
cdac@HP:~/LinuxAssignment$ cat file1.txt
Hi
Hello
Good morning
cdac@HP:~/LinuxAssignment$ sed -i 's/morning/evening/g' file1.txt
cdac@HP:~/LinuxAssignment$ cat file1.txt
Hi
Hello
Good evening
cdac@HP:~/LinuxAssignment$
```

Sed –i :- This command is used to perform text transformation and manipulation on a file

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.

Output

```
cdac@HP:~/information$ nano data.txt
cdac@HP:~/information$ cat data.txt
hi
hello
everyone
nice to meet u
have a good day
good morning
welcome
have a nice day
gooday
welcome all
good
bye

cdac@HP:~/information$ head -10 data.txt
hi
hello
everyone
nice to meet u
have a good day
good morning
welcome
have a nice day
gooday
welcome all
cdac@HP:~/information$
```

Create data.txt file using nano command

head :- This command display top lines of the file on console

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

Output

```
cdac@HP:~/information$ nano data.txt
cdac@HP:~/information$ cat data.txt
hi
hello
everyone
nice to meet u
have a good day
good morning
welcome
have a nice day
gooday
welcome all
good
bye
cdac@HP:~/information$ tail -5 data.txt
have a nice day
gooday
welcome all
good
bye
```

In this question create data.txt file first
tail – this command display bottom line of the file on console.

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.

Output

```
cdac@HP:~/information$ nano number.txt
cdac@HP:~/information$ cat number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
cdac@HP:~/information$ head -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".

Output

```
cdac@HP:~/information$ nano number.txt
cdac@HP:~/information$ cat number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
cdac@HP:~/information$ tail -3 number.txt
15
16
17
```

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."

Output

```
cdac@HP:~/information$ nano input.txt
cdac@HP:~/information$ cat input.txt
hii
have a nice day
welcome
bye
everyone
cdac@HP:~/information$ tr a-z A-Z < ./input.txt > output.txt
cdac@HP:~/information$ cat output.txt
HII
HAVE A NICE DAY
WELCOME
BYE
EVERYONE
```

Create file input.txt with text content using nano command.
Display output using cat command
tr :- Use of this command to translate or delete character in lower and uppercase letter
redirection (>):- using this symbol save modified text in a new 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."

output

```
cdac@HP:~/information$ nano duplicate.txt
cdac@HP:~/information$ cat duplicate.txt
good
hello
bye
good
eveyone
bye
cdac@HP:~/information$ sort duplicate.txt | uniq
bye
eveyone
good
hello
```

Create file duplicate.txt with text content using nano command.
Display output using cat command
sort :- using this command to print the output of a file in given order
pipe(|) :- to redirect the standard output of one command to the standard input of another command.
uniq :- uniq command is used to remove all the repeated lines from a file.

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."

Output

```
cdac@HP:~/information$ nano fruit.txt
cdac@HP:~/information$ cat fruit.txt
apple
banana
mango
cherry
banana
cherry
grapes
apple
banana
cdac@HP:~/information$ sort fruit.txt | uniq -c
      2 apple
      3 banana
      2 cherry
      1 grapes
      1 mango
cdac@HP:~/information$
```

Create file fruit.txt with text content using nano command.

Display output using cat command

sort :- using this command to print the output of a file in given order

pipe(|) :- to redirect the standard output of one command to the standard input of another command.

uniq -c :- Using this command we count occurrences