Concepts of Operating System
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.
→ cdac@LAPTOP-95AVPF97:~$ pwd
/home/cdac
cdac@LAPTOP-95AVPF97:~$ mkdir LinuxAssignment
cdac@LAPTOP-95AVPF97:~$ ls
LinuxAssignment 'file.txt '

b) File Management:
a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.
cdac@LAPTOP-95AVPF97:~$ cd LinuxAssignment/
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cat file1.txt
Hello!! Divya here!

c) Directory Management:
a. Create a new directory named "docs" inside the "LinuxAssignment" directory.
cdac@LAPTOP-95AVPF97:~/ LinuxAssignment$ mkdir docs
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ ls
docs file1.txt

d) Copy and Move Files:
a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cp file1.txt docs
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cd docs/
cdac@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ ls
file1.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ ls
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@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ ls -l
total 4

-rw-r--r-- 1 cdac cdac 21 Aug 29 15:03 file2.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ chmod u+x file2.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 21 Aug 29 15:03 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@LAPTOP-95AVPF97:~/LinuxAssignment/docs$ cd ~/LinuxAssignmen
t
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ ls
docs file1.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cd ~
cdac@LAPTOP-95AVPF97:~$ ls
 LinuxAssignment 'file.txt '

g) File Searching:
a. Search for all files with the extension ".txt" in the current directory and its subdirectories.
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ find . -type f -name "*.txt"
./file1.txt
./docs/file2.txt

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ grep "Divya" *.txt
Hello!! Divya here!

h) System Information:
a. Display the current system date and time.
cdac@LAPTOP-95AVPF97:~$ date
Thu Aug 29 23:17:38 IST 2024

i) Networking:
a. Display the IP address of the system.
cdac@LAPTOP-95AVPF97:~$ ip addr
inet 127.0.0.1/8
inet 10.255.255.254/32 brd 10.255.255.254
inet6 ::1/128

inet 172.28.213.127/20
inet6 fe80::215:5dff:fedf:3d3e/64

b. Ping a remote server to check connectivity (provide a remote server address to ping).
cdac@LAPTOP-95AVPF97:~$ ping 192.168.1.1

j) File Compression:
a. Compress the "docs" directory into a zip file.

```
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ zip -r ZipDoc.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ ls
ZipDoc.zip  docs  file1.txt
```

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

```
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ mkdir docs2
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ unzip ZipDoc.zip -d docs2
Archive:  ZipDoc.zip
   creating: docs2/docs/
 extracting: docs2/docs/file2.txt
```

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

```
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cat file1.txt
Hii there!! Divya here!
```

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-95AVPF97:~/LinuxAssignment$ cat file1.txt
Hii there!! Divya this side!

cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ sed -i 's/there/helooo/'
 file1.txt
cdac@LAPTOP-95AVPF97:~/LinuxAssignment$ cat file1.txt
Hii helooo!! Divya this side!
```

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.

```
cdac@LAPTOP-95AVPF97:~$ head data.txt
Divya
Londhe
Age 21
Nashik
Graduate
CGPA 8.36
```

ISBM Pune
CDAC Mumbai
Gardening
Painting

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-95AVPF97:~$ tail -5 data.txt
Portfolio
Ecommerce website
Gardening
Painting
Trekking

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-95AVPF97:~$ touch numbers.txt
cdac@LAPTOP-95AVPF97:~$ nano numbers.txt
cdac@LAPTOP-95AVPF97:~$ head -15 numbers.txt
11
131
145
167
25
21
06
05
33
91
67
42
04
76
64

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

cdac@LAPTOP-95AVPF97:~$ tail -3 numbers.txt
34
71
201

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-95AVPF97:~$ touch input.txt
cdac@LAPTOP-95AVPF97:~$ nano input.txt
cdac@LAPTOP-95AVPF97:~$ cat input.txt
I am doing my assignment.
cdac@LAPTOP-95AVPF97:~$ touch output.txt
cdac@LAPTOP-95AVPF97:~$  tr 'a-z' 'A-Z' <input.txt> output.txt
cdac@LAPTOP-95AVPF97:~$ cat output.txt
I AM DOING MY ASSIGNMENT.
```

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-95AVPF97:~$ nano duplicate.txt
cdac@LAPTOP-95AVPF97:~$ sort duplicate.txt | uniq -u
Do you have any plans for today
Do you have any plans for today??
How are 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-95AVPF97:~$ sort fruit.txt | uniq -c
      1 Apple
      2 Banana
      1 Blueberry
      2 Grapes
      2 Guava
      3 Mango
      2 Muskmelon
      2 Pineapple
      1 Strawberry
      1 Watermelon
```

Submission Guidelines:
 Document each step of your solution and any challenges faced.
 Upload it on your GitHub repository

Additional Tips:
 Experiment with different options and parameters of each command to explore their functionalities.