CDAC Mumbai Operating System

ASSIGNMENT - 1

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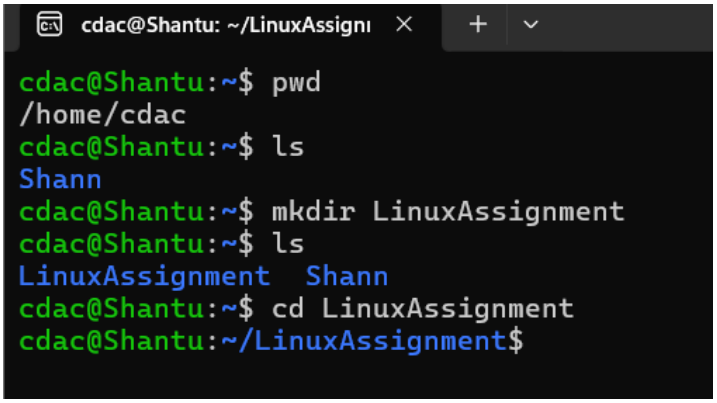
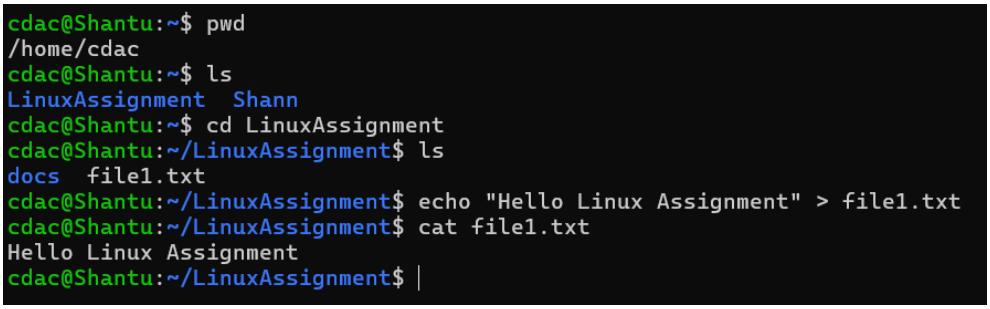
Solution :-

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 "Linux Assignment" if it exists; otherwise, create it.



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



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

```
cdac@Shantu:~/LinuxAssignment$ mkdir docs
cdac@Shantu:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Shantu:~/LinuxAssignment$
```

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

```
cdac@Shantu: ~/LinuxAssignı
cdac@Shantu:~$ cd LinuxAssignment
cdac@Shantu:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Shantu:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Shantu:~/LinuxAssignment$ ls docs
file2.txt
cdac@Shantu:~/LinuxAssignment$
```

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@Shantu:~/Assignment1$ chmod 744 file1.txt
cdac@Shantu:~/Assignment1$ ls -a
.  ..  Q1.txt  Q3.txt  Q5.txt  Q6.txt  Q7.txt  file1.txt  output.txt
cdac@Shantu:~/Assignment1$ ls -l
total 24
-rw-r--r-- 1 cdac cdac 465 Aug 25 13:48 Q1.txt
-rw-r--r-- 1 cdac cdac  36 Aug 25 13:52 Q3.txt
-rw-r--r-- 1 cdac cdac 103 Aug 25 13:55 Q5.txt
-rw-r--r-- 1 cdac cdac  66 Aug 25 13:58 Q6.txt
-rw-r--r-- 1 cdac cdac  64 Aug 25 14:00 Q7.txt
-rwxr--r-- 1 cdac cdac   0 Aug 25 14:05 file1.txt
-rw-r--r-- 1 cdac cdac 103 Aug 25 13:57 output.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@Shantu:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Shantu:~/LinuxAssignment$ ls docs
file2.txt
```

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@Shantu:~/LinuxAssignment$ find . -name "*.txt"
./docs/file2.txt
./file1.txt
cdac@Shantu:~/LinuxAssignment$ grep "Linux" file1.txt
Hello Linux Assignment
cdac@Shantu:~/LinuxAssignment$
```

h) System Information: a. Display the current system date and time.

```
cdac@Shantu:~/LinuxAssignment$ date
Mon Aug 18 14:28:07 UTC 2025
cdac@Shantu:~/LinuxAssignment$
```

i) Networking:

a. Display the IP address of the system.

```
cdac@Shantu:~/LinuxAssignment$ hostname -I
172.21.131.57
cdac@Shantu:~/LinuxAssignment$
```

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

```
cdac@Shantu:~/LinuxAssignment$ ping -c 4 Github.com
PING Github.com (20.207.73.82) 56(84) bytes of data.
64 bytes from 20.207.73.82: icmp_seq=1 ttl=112 time=38.2 ms
64 bytes from 20.207.73.82: icmp_seq=2 ttl=112 time=227 ms
64 bytes from 20.207.73.82: icmp_seq=3 ttl=112 time=155 ms
64 bytes from 20.207.73.82: icmp_seq=4 ttl=112 time=75.1 ms

--- Github.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3131ms
rtt min/avg/max/mdev = 38.208/123.832/226.547/72.906 ms
cdac@Shantu:~/LinuxAssignment$
```

j) 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). Command is =----- nano file1.txt

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@Shantu:~/Assignment1$ head -n 10 Q1.txt
Line 1: Project Report
Line 2: This is a sample document.
Line 3: It contains some important details.
Line 4: Data for testing.
Line 5: Linux command practice.
Line 6: File operations in shell.
Line 7: Head and tail commands.
Line 8: Sorting and unique lines.
Line 9: Text transformation examples.
Line 10: End of preview section.
```

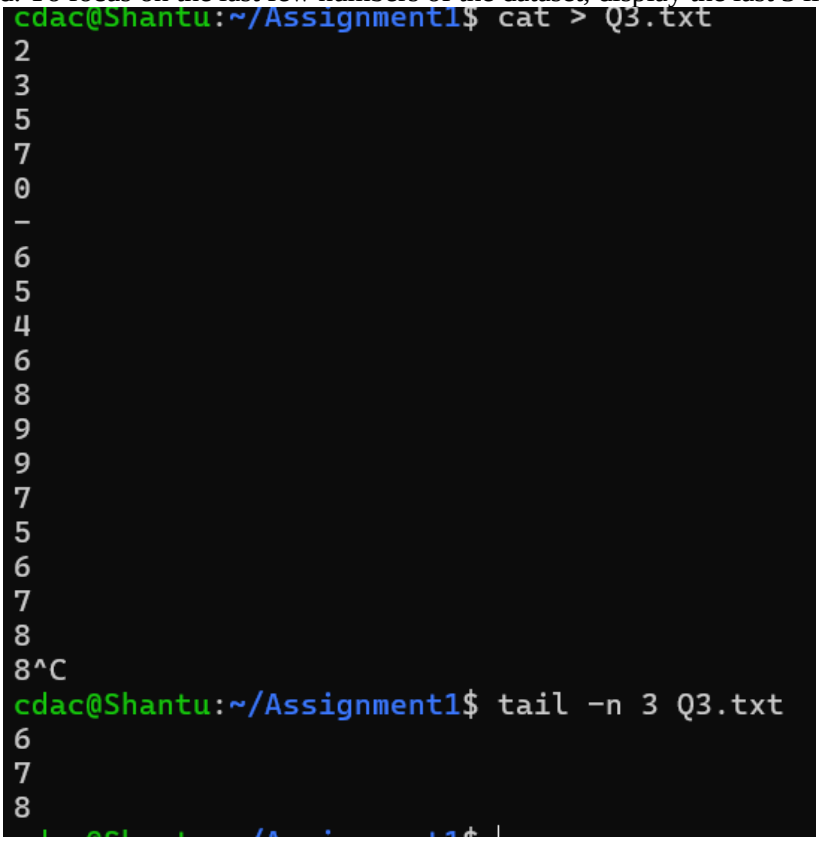
b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

```
cdac@Shantu:~/Assignment1$ tail -n 5 Q1.txt
Line 11: New data entry.
Line 12: Final lines for file.
Line 13: Backup information.
Line 14: Last but not least.
Line 15: Thank you.
```

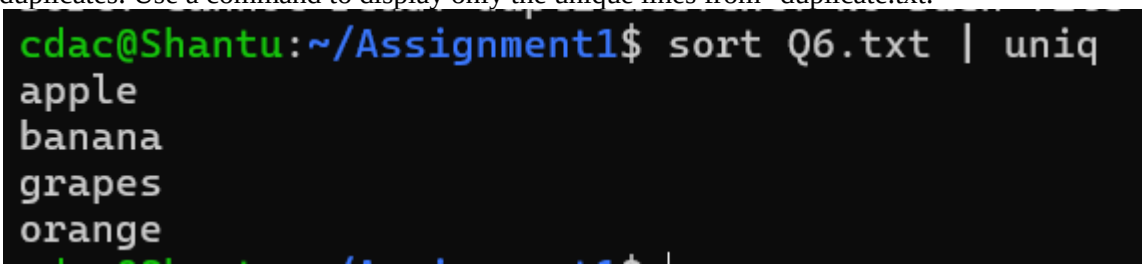
c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.

```
cdac@Shantu:~/Assignment1$ head -n 15 Q3.txt
2
3
5
7
0
-
6
5
4
6
8
9
9
7
5
```

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



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."



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