CDAC MUMBAI

Concepts of Operating System

Assignment 1

Problem1:Readtheinstructionscarefullyandansweraccordingly.Ifthereis 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 in to a directory named "LinuxAssignment" if it exists; otherwise , create it.

```
cdac@LAPTOP-PM6I6O6O:~$ pwd
/home/cdac
cdac@LAPTOP-PM6I6O6O:~$ cd
cdac@LAPTOP-PM6I6O6O:~$ ls
abc.txt  myfile1.txt.save
cdac@LAPTOP-PM6I6O6O:~$ mkdir LinuxAssignment
```

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

```
cdac@LAPTOP-PM6I6O6O:~$ cd LinuxAssignment
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat file1.txt
Hello
I am Sejal Sonwal
```

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

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-PM6I6O6O:~/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-PM6I6O6O:~/LinuxAssignment$ cat file1.txt > file2.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat file2.txt
Hello
I am Sejal Sonwal
```

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-PM6I6O6O:~/LinuxAssignment$ chmod 744 file2.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 cdac cdac 4096 Feb 27 20:19 docs
-rw-r--r-- 1 cdac cdac   25 Feb 27 20:16 file1.txt
-rwxr--r-- 1 cdac cdac   25 Feb 27 20:20 file2.txt
```

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ chown cdac file2.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 cdac cdac 4096 Feb 27 20:19 docs
-rw-r--r-- 1 cdac cdac   25 Feb 27 20:16 file1.txt
-rwxr--r-- 1 cdac cdac   25 Feb 27 20:20 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-PM6I6O6O:~/LinuxAssignment$ chown cdac file2.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 cdac cdac 4096 Feb 27 20:19 docs
-rw-r--r-- 1 cdac cdac   25 Feb 27 20:16 file1.txt
-rwxr--r-- 1 cdac cdac   25 Feb 27 20:20 file2.txt
```

g) **File Searching:**
   a. Search for all files with the extension". txt" in the current directory and its sub directories.
   b. Display lines containing a specific word in a file(provide a file name and the specific word to search).

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ find . -type f -name "*.txt"
./duplicate.txt
./fruit.txt
./data.txt
./numbers.txt
./file1.txt
./file2.txt
./output.txt
./input.txt
```

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

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ date
Fri Feb 28 08:34:18 IST 2025
```

i) **Networking:**
   a. Display the IP address of the system.
   b. Ping are mote server to check connectivity (provide are mote server addres stoping).

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ hostname -I
172.31.82.32
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ping 172.31.82.32
PING 172.31.82.32 (172.31.82.32) 56(84) bytes of data.
64 bytes from 172.31.82.32: icmp_seq=1 ttl=64 time=1.63 ms
64 bytes from 172.31.82.32: icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from 172.31.82.32: icmp_seq=3 ttl=64 time=0.026 ms
64 bytes from 172.31.82.32: icmp_seq=4 ttl=64 time=0.037 ms
64 bytes from 172.31.82.32: icmp_seq=5 ttl=64 time=0.024 ms
64 bytes from 172.31.82.32: icmp_seq=6 ttl=64 time=0.025 ms
64 bytes from 172.31.82.32: icmp_seq=7 ttl=64 time=0.060 ms
64 bytes from 172.31.82.32: icmp_seq=8 ttl=64 time=0.070 ms
64 bytes from 172.31.82.32: icmp_seq=9 ttl=64 time=0.024 ms
64 bytes from 172.31.82.32: icmp_seq=10 ttl=64 time=0.025 ms
64 bytes from 172.31.82.32: icmp_seq=11 ttl=64 time=0.024 ms
64 bytes from 172.31.82.32: icmp_seq=12 ttl=64 time=0.024 ms
64 bytes from 172.31.82.32: icmp_seq=13 ttl=64 time=0.045 ms
64 bytes from 172.31.82.32: icmp_seq=14 ttl=64 time=0.063 ms
64 bytes from 172.31.82.32: icmp_seq=15 ttl=64 time=0.025 ms
64 bytes from 172.31.82.32: icmp_seq=16 ttl=64 time=0.025 ms
64 bytes from 172.31.82.32: icmp_seq=17 ttl=64 time=0.084 ms
64 bytes from 172.31.82.32: icmp_seq=18 ttl=64 time=0.147 ms
64 bytes from 172.31.82.32: icmp_seq=19 ttl=64 time=0.029 ms
64 bytes from 172.31.82.32: icmp_seq=20 ttl=64 time=0.024 ms
64 bytes from 172.31.82.32: icmp_seq=21 ttl=64 time=0.025 ms
^C
--- 172.31.82.32 ping statistics ---
21 packets transmitted, 21 received, 0% packet loss, time 20780ms
rtt min/avg/max/mdev = 0.024/0.117/1.633/0.340 ms
```

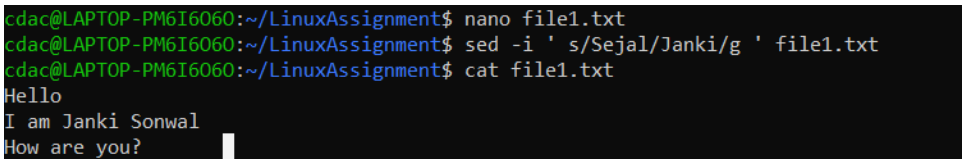
j) **File Compression:**
   a. Compress the " docs" directory into a zip file.
   b. Extract the contents of the zip file in to a new directory.

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ zip -r docs.zip docs/
  adding: docs/ (stored 0%)
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  file2.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls docs
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ man zip
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ mkdir New
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ unzip docs.zip New
Archive:  docs.zip
caution: filename not matched:  New
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ unzip docs.zip -d New
Archive:  docs.zip
   creating: New/docs/
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls New
docs
```

k) **File Editing:**

a. Open the "file1.txt" file in a text edit or and adds omet ex to it.

b. Replaceaspecificwordinthe"file1.txt"file with another word(provide the original word and the word to replace it with).



Problem2:Readtheinstructionscarefullyandansweraccordingly.Ifthereis 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-PM6I6O6O:~/LinuxAssignment$ nano data.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat head -10 data.txt
```

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ head -10 data.txt
 Based on Shivaji Sawant's Marathi novel, Chhaava (lion's cub) aims to acknowledge the bravery
of Shambhu Raje (Sambhaji Maharaj played by Vicky Kaushal),
 that most history books haven't been able to.
 There's more to him than being Shivaji's
 son who was betrayed by his own men, captured and brutally
 executed by Aurangzeb (played by Akshaye Khanna).
The film sheds light on why he was widely revered by his people and feared by rivals
 in the nine years that he held the Maratha throne.
Still reeling from the loss of his father,
 Sambhaji and Sersenapati Hambirrao Mohite (essayed by Ashutosh Rana)
```

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-PM6I6O6O:~/LinuxAssignment$ nano data.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ tail -5 data.txt
Still reeling from the loss of his father,
 Sambhaji and Sersenapati Hambirrao Mohite (essayed by Ashutosh Rana)
 invaded Mughal stronghold Burhanpur right under their nose.
 For the nine years that followed, Sambhaji trampled on Mughals'
 expansion plans making him a thorn in their side.
```

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

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ nano numbers.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ head -15 numbers.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 data set , display the last 3 lines of "numbers.txt".

```
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ tail -3 numbers.txt
28
29
30
```

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-PM6I6O6O:~/LinuxAssignment$ nano input.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ ls
New  data.txt  docs  docs.zip  file1.txt  file2.txt  input.txt  numbers.txt  output.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat input.txt
india
russia
goa
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat output.txt
INDIA
RUSSIA
GOA
```

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-PM6I6O6O:~/LinuxAssignment$ nano duplicate.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat duplicate.txt
India
Canada
Goa
Maldives
Goa
America
Korea
Japan
India
Canada
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ sort duplicate.txt | uniq
America
Canada
Goa
India
Japan
Korea
Maldives
```

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-PM6I6O6O:~/LinuxAssignment$ nano fruit.txt
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat fruit.txt
Apple
Banana
Grapes
Kiwi
Cherry
Apple
Strawberry
Kiwi
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ sort fruit.txt | uniq
Apple
Banana
Cherry
Grapes
Kiwi
Strawberry
cdac@LAPTOP-PM6I6O6O:~/LinuxAssignment$ cat -n fruit.txt
     1  Apple
     2  Banana
     3  Grapes
     4  Kiwi
     5  Cherry
     6  Apple
     7  Strawberry
     8  Kiwi
```