

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:

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-PLD6211J:~$ pwd
/home/cdac
cdac@LAPTOP-PLD6211J:~$ cd ~
cdac@LAPTOP-PLD6211J:~$ ls
cdac@LAPTOP-PLD6211J:~$ mkdir LinuxAssignment
cdac@LAPTOP-PLD6211J:~$ ls
LinuxAssignment
cdac@LAPTOP-PLD6211J:~$ |
```

b) File Management:

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

```
cdac@LAPTOP-PLD6211J:~$ cd LinuxAssignment
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cat file1.txt
CDAC Mumbai
CDAC Pune
CDAC Noida
CDAC Bangaluru
CDAC Hydrabad
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$
```

c) Directory Management:

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$
```

d) Copy and Move Files:

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cp file1.txt /home/cdac/LinuxAssignment/docs
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cd docs
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ ls
file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ ls
file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ |
```

e) Permissions and Ownership:

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-PLD6211J:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 62 Aug 29 07:06 file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ chmod u+rw file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 62 Aug 29 07:06 file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$
```

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ sudo chown user1 file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 user1 cdac 62 Aug 29 07:06 file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ sudo chown cdac file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 62 Aug 29 07:06 file2.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ |
```

f) Final Checklist:

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ cd ..
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cd /
cdac@LAPTOP-PLD6211J:/$ ls
bin  boot  dev  etc  home  init  lib  lib32  lib64  libx32  lost+found  media  mnt
opt  proc  root  run  sbin  snap  srv  sys  tmp  usr  var
cdac@LAPTOP-PLD6211J:/$
```

g) File Searching:

Search for all files with the extension ".txt" in the current directory and its subdirectories. Display lines containing a specific word in a file (provide a file name and the specific word to search).

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ touch file2.txt file3.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
docs  file1.txt  file2.txt  file3.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file2.txt
./file3.txt
./file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$
```

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ grep CDAC file2.txt
CDAC Mumbai
CDAC Pune
CDAC Noida
CDAC Bangaluru
CDAC Hyderabad
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$
```

h) System Information:

Display the current system date and time.

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ date
Thu Aug 29 10:04:05 IST 2024
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/docs$ |
```

i) Networking:

Display the IP address of the system.

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ hostname -I  
172.22.235.70
```

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ping www.google.com  
PING www.google.com (142.250.207.228) 56(84) bytes of data.  
64 bytes from del12s11-in-f4.1e100.net (142.250.207.228): icmp_seq=1 ttl=116 time=22.1 ms  
64 bytes from del12s11-in-f4.1e100.net (142.250.207.228): icmp_seq=2 ttl=116 time=20.0 ms  
64 bytes from del12s11-in-f4.1e100.net (142.250.207.228): icmp_seq=3 ttl=116 time=19.2 ms  
64 bytes from del12s11-in-f4.1e100.net (142.250.207.228): icmp_seq=4 ttl=116 time=20.0 ms  
64 bytes from del12s11-in-f4.1e100.net (142.250.207.228): icmp_seq=5 ttl=116 time=19.7 ms
```

j) File Compression:

Compress the "docs" directory into a zip file.

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ pwd  
/home/cdac/LinuxAssignment  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls  
data.txt  duplicate.txt  fruit.txt  numbers.txt  
docs      file1.txt      input.txt  output.txt  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ zip -r docs.zip docs  
adding: docs/ (stored 0%)  
adding: docs/file2.txt (deflated 21%)  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls  
data.txt  docs.zip      file1.txt  input.txt  output.txt  
docs      duplicate.txt  fruit.txt  numbers.txt
```

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ which unzip  
/usr/bin/unzip  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ unzip docs.zip -d extract  
Archive:  docs.zip  
creating: extract/docs/  
inflating: extract/docs/file2.txt  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cd extract  
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/extract$ ls  
docs
```

k) File Editing:

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

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-PLD6211J:~/LinuxAssignment/extract$ nano file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/extract$ cat file1.txt
India got independence on 15th August 1947.
New Delhi is the capital of India.
```

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/extract$ sed -i 's/India/Bharat/g' file1.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment/extract$ cat file1.txt
Bharat got independence on 15th August 1947.
New Delhi is the capital of Bharat.
```

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-PLD6211J:~/LinuxAssignment$ nano data.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ head -10 data.txt
1001
1002
1003
1004
1005
1006
1007
1008
1009
1010
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$
```

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-PLD6211J:~/LinuxAssignment$ tail -5 data.txt
1016
1017
1018
1019
1020
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$
```

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-PLD6211J:~/LinuxAssignment$ nano numbers.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ head -15 numbers.txt
2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
```

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

```
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ tail -3 numbers.txt
83
89
97
```

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-PLD6211J:~/LinuxAssignment$ nano input.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cat input.txt
hello! my name is chitransh mrigank singh.
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ tr a-z A-Z <input.txt>> output.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ ls
data.txt  duplicate.txt  input.txt  output.txt
docs      file1.txt     numbers.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cat output.txt
HELLO! MY NAME IS CHITRANSH MRIGANK SINGH.
```

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-PLD6211J:~/LinuxAssignment$ nano duplicate.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ cat duplicate.txt
Good Morning
Good Afternoon
Good Evening
Good Night
Happy Birthday
Good Morning
All The Best
Good Night
Good Morning
Happy Birthday
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ sort duplicate.txt | uniq
All The Best
Good Afternoon
Good Evening
Good Morning
Good Night
Happy Birthday
```

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-PLD6211J:~/LinuxAssignment$ nano fruit.txt
cdac@LAPTOP-PLD6211J:~/LinuxAssignment$ sort fruit.txt | uniq -c
  2 apple
  2 banana
  2 mango
  1 orange
  1 pineapple
```