

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@DESKTOP-R3VB19M:~$ ls
LinuxAssignment myfile.txt
cdac@DESKTOP-R3VB19M:~$ cd LinuxAssignment
```

b) File Management:

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ touch file1.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat file.txt
cat: file.txt: No such file or directory
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat file1.txt
sanket
sahil
suresh
anil
```

c) Directory Management:

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ mkdir docs
mkdir: cannot create directory 'docs': File exists
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cd docs
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ cp file1.txt docs/file2.txt
```

d) Copy and Move Files:

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cd docs
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ cat file2.txt
sanket
sahil
suresh
anil
```

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@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ ls -l
total 0
-rw-r--r-- 1 cdac cdac 26 Feb 28 03:07 file2.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 26 Feb 28 03:07 file2.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$
```

f) Final Checklist:

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

```
user1@DESKTOP-R3VB19M:/home/cdac/LinuxAssignment$ ls
docs file1.txt file1.txt
user1@DESKTOP-R3VB19M:/home/cdac/LinuxAssignment$ ls -l
total 0
drwxr-xr-x 1 cdac cdac 4096 Feb 27 16:20 docs
-rw-r--r-- 1 cdac cdac 31 Feb 27 16:08 file1.txt
-rw-r--r-- 1 cdac cdac 26 Feb 28 03:03 file1.txt
user1@DESKTOP-R3VB19M:/home/cdac/LinuxAssignment$ sudo ls -l
[sudo] password for user1:
user1 is not in the sudoers file.
user1@DESKTOP-R3VB19M:/home/cdac/LinuxAssignment$ su cdac
Password:
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ sudo ls -l
total 0
drwxr-xr-x 1 cdac cdac 4096 Feb 27 16:20 docs
-rw-r--r-- 1 cdac cdac 31 Feb 27 16:08 file1.txt
-rw-r--r-- 1 cdac cdac 26 Feb 28 03:03 file1.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$
```

g) File Searching:

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ find -name "*.txt"
./docs/file2.txt
./file1.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ touch file3.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano file3.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat file3.txt
JAVA
public
car
bus
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ grep 'JAVA' file3.txt
JAVA
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano file3.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat file3.txt
JAVA is used to develop mobile app
public
car
bus
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ grep 'JAVA' file3.txt
JAVA is used to develop mobile app
```

h) System Information:

- a. Display the current system date and time.

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ date
Fri Feb 28 13:55:10 UTC 2025
```

i) Networking:

- a. Display the IP address of the system.

```

cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ ip a
19: eth0: <> mtu 1500 group default qlen 1
    link/ether e4:a8:df:fc:3c:c2
    inet 169.254.79.59/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::a5fa:cdf3:6d65:7e94/64 scope link dynamic
        valid_lft forever preferred_lft forever
16: eth1: <> mtu 1500 group default qlen 1
    link/ether b0:60:88:2f:b3:4e
    inet 169.254.48.105/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::8f7a:8be4:5d7f:8038/64 scope link dynamic
        valid_lft forever preferred_lft forever
1: lo: <LOOPBACK,UP> mtu 1500 group default qlen 1
    link/loopback 00:00:00:00:00:00
    inet 127.0.0.1/8 brd 127.255.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host dynamic
        valid_lft forever preferred_lft forever
15: wifi0: <BROADCAST,MULTICAST,UP> mtu 1500 group default qlen 1
    link/ieee802.11 b0:60:88:2f:b3:4a
    inet 192.168.9.196/24 brd 192.168.9.255 scope global dynamic
        valid_lft 3565sec preferred_lft 3565sec
    inet6 2402:3a80:c9e:39ea:62d1:1165:b840:106c/64 scope global dynamic
        valid_lft 7166sec preferred_lft 7166sec
    inet6 2402:3a80:c9e:39ea:4de2:4f7e:6e72:d428/128 scope global dynamic
        valid_lft 7166sec preferred_lft 7166sec
    inet6 fe80::ad81:5dcb:86f2:fc4b/64 scope link dynamic
        valid_lft forever preferred_lft forever
17: wifi1: <> mtu 1500 group default qlen 1
    link/ieee802.11 b0:60:88:2f:b3:4b
    inet 169.254.44.223/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::587c:69a5:9772:23d5/64 scope link dynamic
        valid_lft forever preferred_lft forever
12: wifi2: <> mtu 1500 group default qlen 1
    link/ieee802.11 b2:60:88:2f:b3:4a
    inet 169.254.117.79/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::4b7:aa36:d5e9:2cec/64 scope link dynamic
        valid_lft forever preferred_lft forever

```

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

```

cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ ping 169.254.79.59
PING 169.254.79.59 (169.254.79.59) 56(84) bytes of data.

```

j) File Compression:

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ zip docs.zip docs
  adding: docs/ (stored 0%)
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  file1.txt  file3.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ mkdir out
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  file1.txt  file3.txt  out
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ unzip docs.zip out
Archive:  docs.zip
caution: filename not matched: out
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ unzip docs.zip -d out
Archive:  docs.zip
  creating: out/docs/
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cd out
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/out$ ls
docs
cdac@DESKTOP-R3VB19M:~/LinuxAssignment/out$
```

k) File Editing:

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

```
cdac@DESKTOP-R3VB19M:~$ cat file1.txt
cat: file1.txt: No such file or directory
cdac@DESKTOP-R3VB19M:~$ touch file1.txt
cdac@DESKTOP-R3VB19M:~$ nano file1.txt
cdac@DESKTOP-R3VB19M:~$ cat file1.txt
dog
cat
mouse
```

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@DESKTOP-R3VB19M:~$ sed -i 's/cat/bat/g' file1.txt
cdac@DESKTOP-R3VB19M:~$ cat file1.txt
dog
bat
mouse
```

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@DESKTOP-R3VB19M:~/LinuxAssignment$ touch data.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano data.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat data.txt
Honda
Hyundai
Tata Motors
Mahindra
Skoda
Renault
Nissan
MG Motor
Kia
Foad
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ head -10 data.txt
Honda
Hyundai
Tata Motors
Mahindra
Skoda
Renault
Nissan
MG Motor
Kia
Foad
```

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@DESKTOP-R3VB19M:~/LinuxAssignment$ tail -5 data.txt
Renault
Nissan
MG Motor
Kia
Foad
```

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@DESKTOP-R3VB19M:~/LinuxAssignment$ cat numbers
cat: numbers: No such file or directory
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat numbers.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano numbers.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat numbers.txt
66
98
87
57
47
64
14
15
65
24
25
19
37
18
44
99
37
39
32

cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ head -15 numbers.txt
66
98
87
57
47
64
14
15
65
24
25
19
37
18
44
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ _
```

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

```
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ tail -4 numbers.txt
37
39
32

cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ _
```

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@DESKTOP-R3VB19M:~/LinuxAssignment$ touch input.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano input.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat output.txt
```

```
IN A MULTIPROCESSING OS, CONCURRENT EXECUTION OF PROCESSES BY MULTIPLE PROCESSORS IS DONE.
THE PROCESSES ARE DIVIDED AND ALLOTTED TO DIFFERENT PROCESSORS FOR PARALLEL COMPUTING.
THUS, SYSTEM PERFORMANCE IS ENHANCED DUE TO HIGH THROUGHPUT, GOOD RESOURCE ALLOCATION,
SMOOTH DISTRIBUTION OF WORKLOAD ON THE PROCESSORS, AND FAULT TOLERANCE.
IF ONE OF ITS PROCESSORS FAILS, THEN THE SYSTEM CAN CONTINUE AND REALLOCATE
ITS TASKS TO OTHER PROCESSORS, AND THUS, THE OPERATION CAN BE DONE SMOOTHLY.
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat input.txt
```

```
In a Multiprocessing OS, concurrent execution of processes by multiple processors is done.
The processes are divided and allotted to different processors for parallel computing.
Thus, system performance is enhanced due to high throughput, good resource allocation,
smooth distribution of workload on the processors, and fault tolerance.
If one of its processors fails, then the system can continue and reallocate
its tasks to other processors, and thus, the operation can be done smoothly.
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$
```

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@DESKTOP-R3VB19M:~/LinuxAssignment$ touch duplicate.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano duplicate.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ sort duplicate.txt | uniq
OM
TATA
dhoni
dube
kohali
om
raina
rane
rohit
sanket
suresh
virat
```


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@DESKTOP-R3VB19M:~/LinuxAssignment$ touch fruit.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ nano fruit.txt
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ cat fruit.txt
apple
banana
watermelon
muskmelon
mango
apple
blackberries
blueberries
banana
mango
apple
watermelon
apple
muskmelon
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ sort fruit.txt
apple
apple
apple
apple
banana
banana
blackberries
blueberries
mango
mango
muskmelon
muskmelon
watermelon
watermelon
cdac@DESKTOP-R3VB19M:~/LinuxAssignment$ sort fruit.txt | uniq -c
  4 apple
  2 banana
  1 blackberries
  1 blueberries
  2 mango
  2 muskmelon
  2 watermelon
```