1. 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.

```
yashwagh@DESKTOP-U3BESBN:~$ cd ~
yashwagh@DESKTOP-U3BESBN:~$ if [ -d "LinuxAssignment" ]
> then
>       cd LinuxAssignment
> else
>       mkdir LinuxAssignment
>       cd  LinuxAssignment
> fi
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```

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

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ nano file.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat file.txt
Hello world
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```

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

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ mkdir docs
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ ls
docs  file.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```

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

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ mv file.txt docs
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cd docs
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/docs$ ls
file.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/docs$ cp file.txt file2.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/docs$ cat file2.txt
Hello world
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/docs$
```

5. 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

```
root@DESKTOP-U3BESBN:~# nano file2.txt
root@DESKTOP-U3BESBN:~# ls -l
total 0
drwxr-xr-x 1 root root     512 Sep  2 09:00 ABC
-rwx---r-- 1 root yashwagh   5 Sep  1 13:15 file.txt
-rw-r--r-- 1 root root       4 Sep  2 09:03 file2.txt
root@DESKTOP-U3BESBN:~# chmod 704 file2.txt
root@DESKTOP-U3BESBN:~# ls -l
total 0
drwxr-xr-x 1 root root     512 Sep  2 09:00 ABC
-rwx---r-- 1 root yashwagh   5 Sep  1 13:15 file.txt
-rwx---r-- 1 root root       4 Sep  2 09:03 file2.txt
root@DESKTOP-U3BESBN:~# chown $(whoami) file2.txt
root@DESKTOP-U3BESBN:~# ls -l
total 0
drwxr-xr-x 1 root root     512 Sep  2 09:00 ABC
-rwx---r-- 1 root yashwagh   5 Sep  1 13:15 file.txt
-rwx---r-- 1 root root       4 Sep  2 09:03 file2.txt
root@DESKTOP-U3BESBN:~# chown yashwagh file2.txt
root@DESKTOP-U3BESBN:~# ls -l
```

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

```
yashwagh@DESKTOP-U3BESBN:~$ ls -l ~/LinuxAssignment
total 0
drwxr-xr-x 1 yashwagh yashwagh 512 Aug 31 16:47 docs
yashwagh@DESKTOP-U3BESBN:~$ ls -l /
total 1408
lrwxrwxrwx   1 root root       7 Nov 23  2023 bin -> usr/bin
drwxr-xr-x   1 root root     512 Apr 18  2022 boot
drwxr-xr-x   1 root root     512 Aug 31 16:32 dev
drwxr-xr-x   1 root root     512 Aug 31 16:32 etc
drwxr-xr-x   1 root root     512 Dec 20  2023 home
-rwxr-xr-x   1 root root 1440152 May  7  2022 init
lrwxrwxrwx   1 root root       7 Nov 23  2023 lib -> usr/lib
lrwxrwxrwx   1 root root       9 Nov 23  2023 lib32 -> usr/lib32
lrwxrwxrwx   1 root root       9 Nov 23  2023 lib64 -> usr/lib64
lrwxrwxrwx   1 root root      10 Nov 23  2023 libx32 -> usr/libx32
drwxr-xr-x   1 root root     512 Nov 23  2023 media
drwxr-xr-x   1 root root     512 Dec 20  2023 mnt
drwxr-xr-x   1 root root     512 Nov 23  2023 opt
dr-xr-xr-x   9 root root       0 Aug 31 16:32 proc
drwx------   1 root root     512 Nov 23  2023 root
drwxr-xr-x   1 root root     512 Aug 31 16:32 run
lrwxrwxrwx   1 root root       8 Nov 23  2023 sbin -> usr/sbin
drwxr-xr-x   1 root root     512 Nov 23  2023 snap
drwxr-xr-x   1 root root     512 Nov 23  2023 srv
dr-xr-xr-x  12 root root       0 Aug 31 16:32 sys
drwxrwxrwt   1 root root     512 Jan  3  2024 tmp
drwxr-xr-x   1 root root     512 Nov 23  2023 usr
drwxr-xr-x   1 root root     512 Nov 23  2023 var
yashwagh@DESKTOP-U3BESBN:~$
```

7. 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).

```
yashwagh@DESKTOP-U3BESBN:~$ ls -R | grep '\.txt$'
commands.txt
filename.txt
java.txt
java_lang_classes.txt
file.txt
file2.txt
c.txt
yashwagh@DESKTOP-U3BESBN:~$ cat filename.txt
abc
yashwagh@DESKTOP-U3BESBN:~$ grep 'a*' filename.txt
abc
yashwagh@DESKTOP-U3BESBN:~$
```

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

```
yashwagh@DESKTOP-U3BESBN:~$ date +'%Y-%m-%d %H:%M:%S'
2024-08-31 18:42:01
yashwagh@DESKTOP-U3BESBN:~$
```

9. Networking: a. Display the IP address of the system. b. Ping a remote server to check connectivity (provide a remote server address to ping).

```
yashwagh@DESKTOP-U3BESBN:~$ hostname -I
192.168.223.175
yashwagh@DESKTOP-U3BESBN:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=59 time=21.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=59 time=19.5 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=59 time=20.5 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=59 time=30.8 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=59 time=21.9 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=59 time=19.6 ms
```

10. File Compression: a. Compress the "docs" directory into a zip file. b. Extract the contents of the zip file into a new directory.

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/docs$ cd ..
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ ls
docs  first.txt  zipfilecon.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ zip -r zipfilecon.zip

zip error: Nothing to do! (zipfilecon.zip)
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file.txt (stored 0%)
  adding: docs/file2.txt (stored 0%)
  adding: docs/LinuxAssignment (deflated 61%)
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ ls
docs  docs.zip  first.txt  zipfilecon.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ mkdir newdir
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ unzip docs.zip -d newdir
Archive:  docs.zip
   creating: newdir/docs/
 extracting: newdir/docs/file.txt
 extracting: newdir/docs/file2.txt
  inflating: newdir/docs/LinuxAssignment
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cd newdir
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/newdir$ ls
docs
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment/newdir$
```

11. 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).

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ nano newfile.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat newfile.txt
hello world
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ sed -i 's/world/india/g' newfile.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat newfile.txt
hello india
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```

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.

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat data.txt
Hello this is India from Asia
India has so many rivers
India has a so many cultures
India is a global superpower
India has so many states
India name comes from Indus river
India is best country in the world
India has so many festivals
I love my india so much
Bharat Mata ki jay
Jande Mataram
Jai hind Jai Bharat
Jai Maharashtra
Jai Shivray
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ head -n 10 data.txt
Hello this is India from Asia
India has so many rivers
India has a so many cultures
India is a global superpower
India has so many states
India name comes from Indus river
India is best country in the world
India has so many festivals
I love my india so much
Bharat Mata ki jay
yashwagh@DESKTOP-U3BESBN:~/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.

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ tail -n 5 data.txt
Bharat Mata ki jay
Jande Mataram
Jai hind Jai Bharat
Jai Maharashtra
Jai Shivray
yashwagh@DESKTOP-U3BESBN:~/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.

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ nano number.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ head -n 15 number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```

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

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ tail -n 3 number.txt
28
29
30
yashwagh@DESKTOP-U3BESBN:~/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."

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ tr 'a-z' 'A-Z' < input.txt > output.txt
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat output.txt
HELLO THIS IS INDIA FROM ASIA
INDIA HAS SO MANY RIVERS
INDIA HAS A SO MANY CULTURES
INDIA IS A GLOBAL SUPERPOWER
INDIA HAS SO MANY STATES
INDIA NAME COMES FROM INDUS RIVER
INDIA IS BEST COUNTRY IN THE WORLD
INDIA HAS SO MANY FESTIVALS
I LOVE MY INDIA SO MUCH
BHARAT MATA KI JAY
JANDE MATARAM
JAI HIND JAI BHARAT
JAI MAHARASHTRA
JAI SHIVRAY
yashwagh@DESKTOP-U3BESBN:~/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."

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ sort duplicate.txt | uniq
Bharat Mata ki jay
Hello this is India from Asia
I love my india so much
India has a so many cultures
India has so many festivals
India has so many festivals
India has so many rivers
India has so many states
India is a global superpower
India is best country in the world
India name comes from Indus river
Jai Maharashtra
Jai Shivray
Jai hind Jai Bharat
Jande Mataram
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat duplicate.txt
Bharat Mata ki jay
Hello this is India from Asia
I love my india so much
India has a so many cultures
India has so many festivals
India has so many rivers
India has so many states
India is a global superpower
India is best country in the world
India name comes from Indus river
Jai Maharashtra
Jai Shivray
Jai hind Jai Bharat
Jande Mataram
Bharat Mata ki jay
Hello this is India from Asia
I love my india so much
India has a so many cultures
India has so many festivals
India has so many rivers
India has so many states
India is a global superpower
India is best country in the world
India name comes from Indus river
```

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."

```
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ cat fruit.txt
mango
mango
apple
mango
banana
banana
grapes
grapes
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$ sort fruit.txt | uniq -c
      1 apple
      2 banana
      2 grapes
      3 mango
yashwagh@DESKTOP-U3BESBN:~/LinuxAssignment$
```