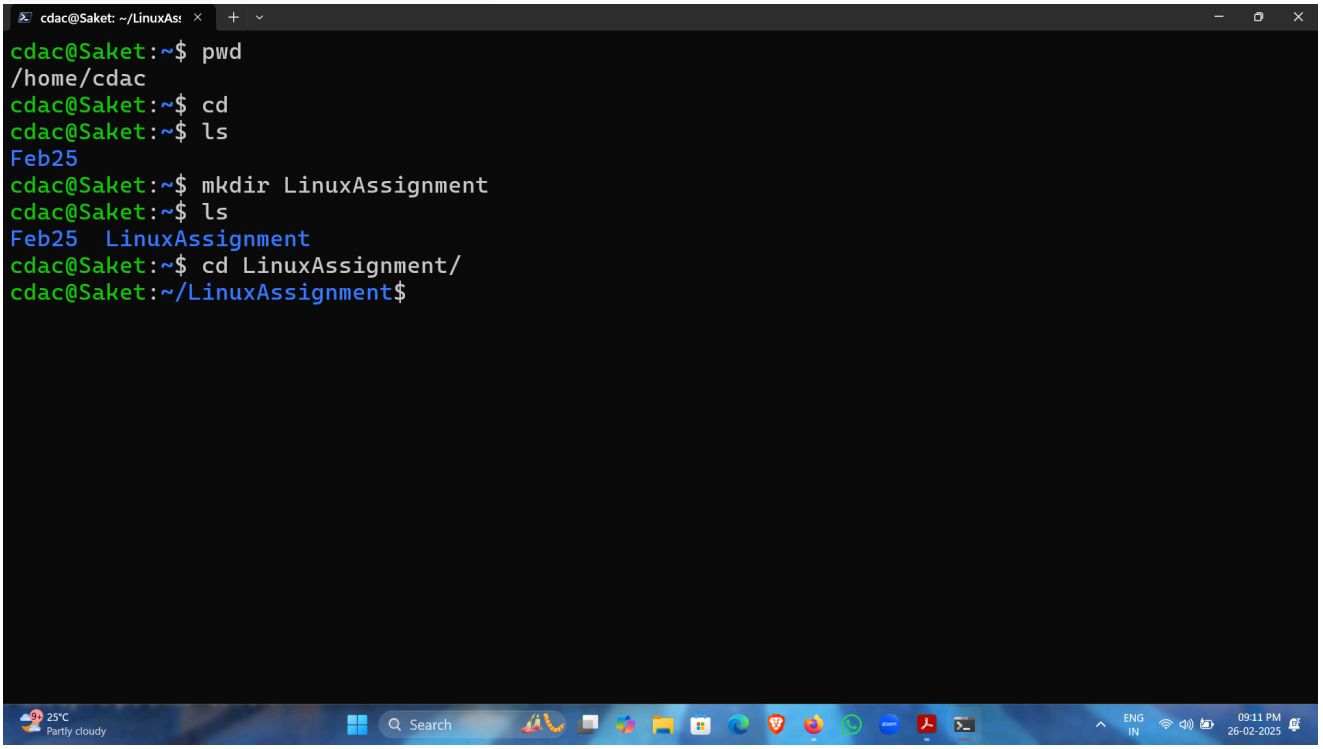
Assignment 01

Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

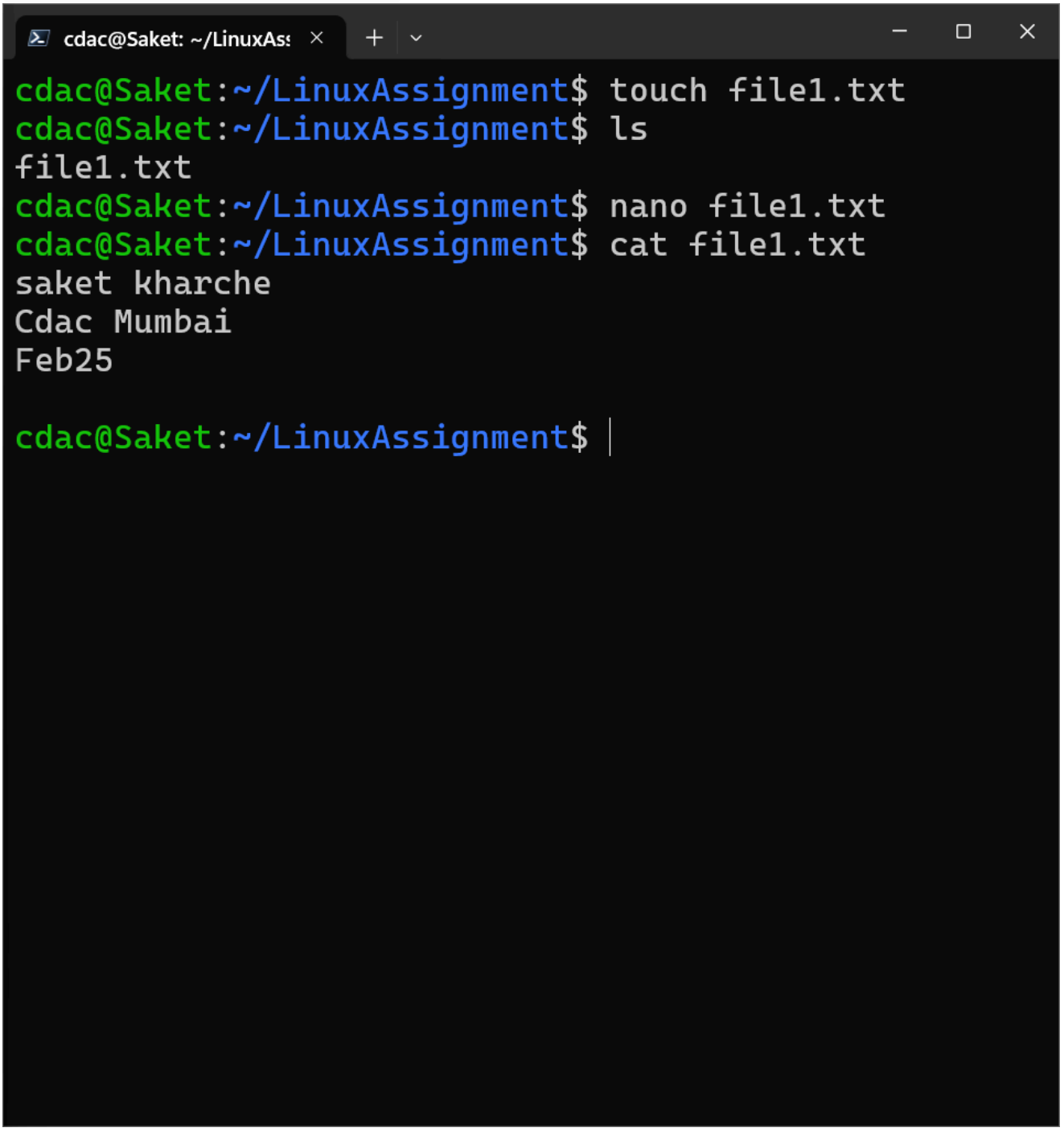
a) Navigate and List:
a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.
Ans:-

```
cdac@Saket:~$ pwd
/home/cdac
cdac@Saket:~$ cd
cdac@Saket:~$ ls
Feb25
cdac@Saket:~$ mkdir LinuxAssignment
cdac@Saket:~$ ls
Feb25 LinuxAssignment
cdac@Saket:~$ cd LinuxAssignment/
cdac@Saket:~/LinuxAssignment$
```



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

```
cdac@Saket:~/LinuxAssignment$ touch file1.txt
cdac@Saket:~/LinuxAssignment$ ls
file1.txt
cdac@Saket:~/LinuxAssignment$ nano file1.txt
cdac@Saket:~/LinuxAssignment$ cat file1.txt
saket kharche
Cdac Mumbai
Feb25
cdac@Saket:~/LinuxAssignment$
```



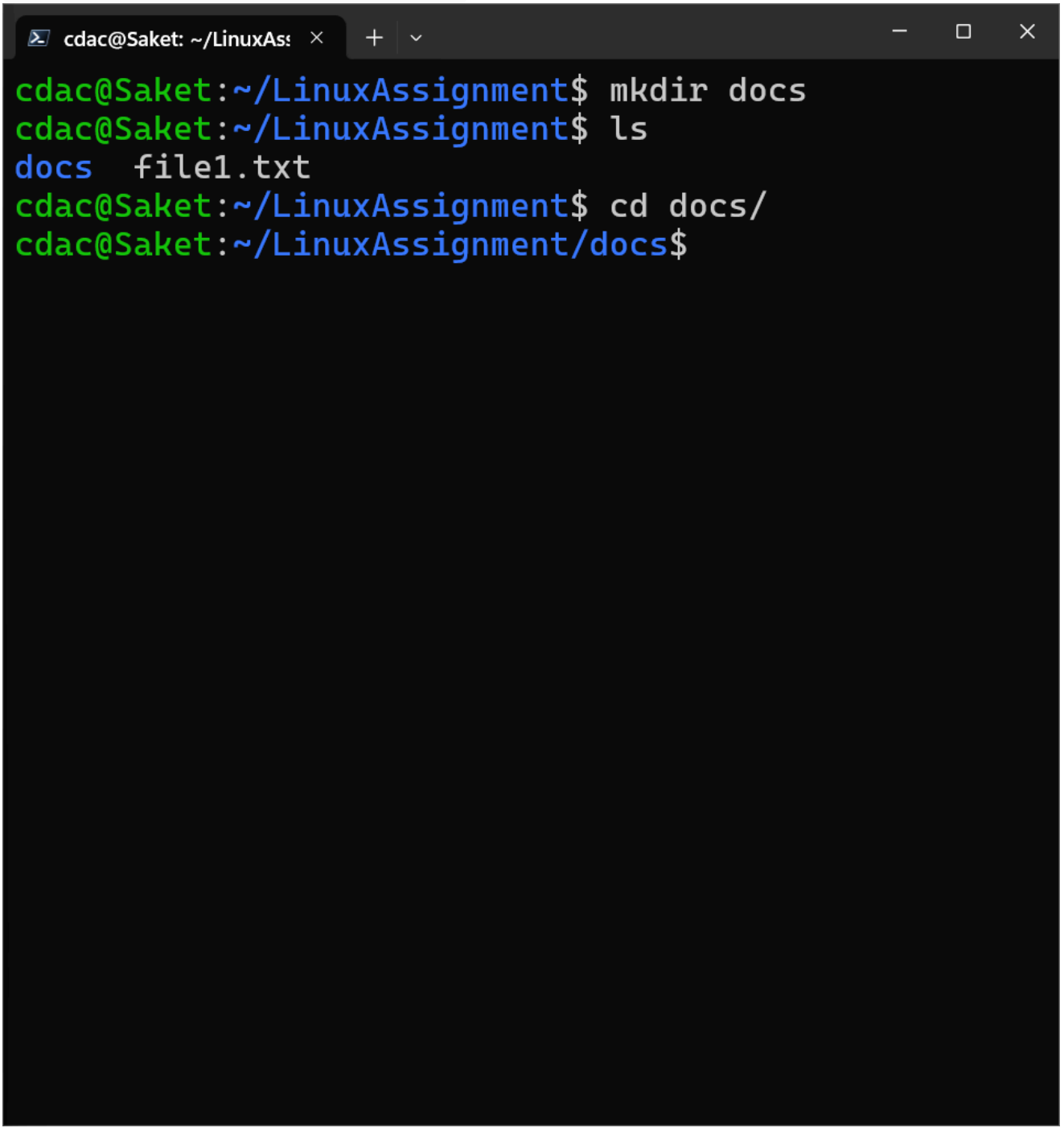
c) Directory Management:

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

Ans

```
cdac@Saket:~/LinuxAssignment$ mkdir docs
```

```
cdac@Saket:~/LinuxAssignment$ ls
docs file1.txt
cdac@Saket:~/LinuxAssignment$ cd docs/
cdac@Saket:~/LinuxAssignment/docs$
```



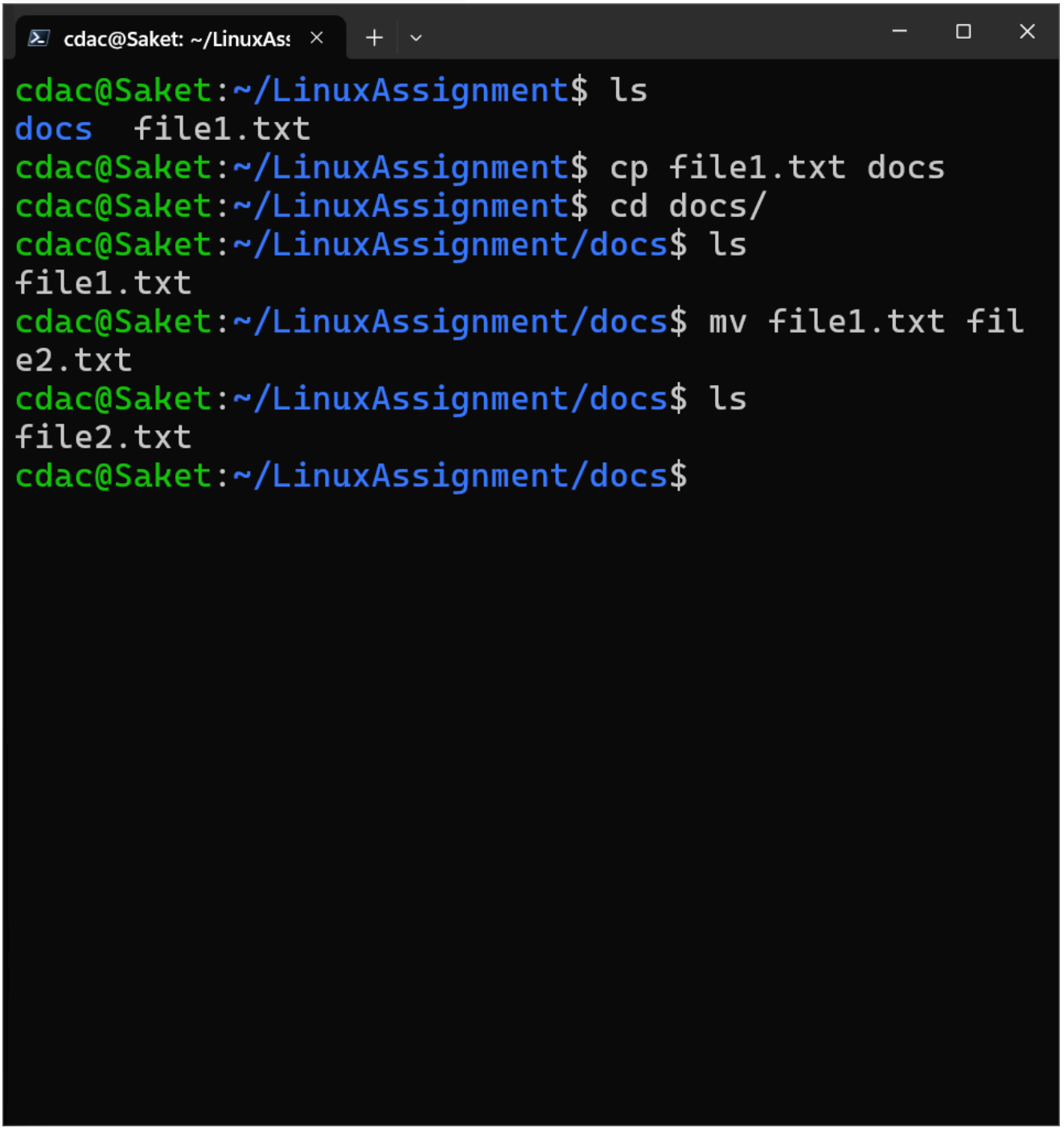
d) Copy and Move Files:

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

Ans:-

```
cdac@Saket:~/LinuxAssignment$ ls
docs file1.txt
cdac@Saket:~/LinuxAssignment$ cp file1.txt docs
cdac@Saket:~/LinuxAssignment$ cd docs/
cdac@Saket:~/LinuxAssignment/docs$ ls
file1.txt
```

```
cdac@Saket:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@Saket:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Saket:~/LinuxAssignment/docs$
```



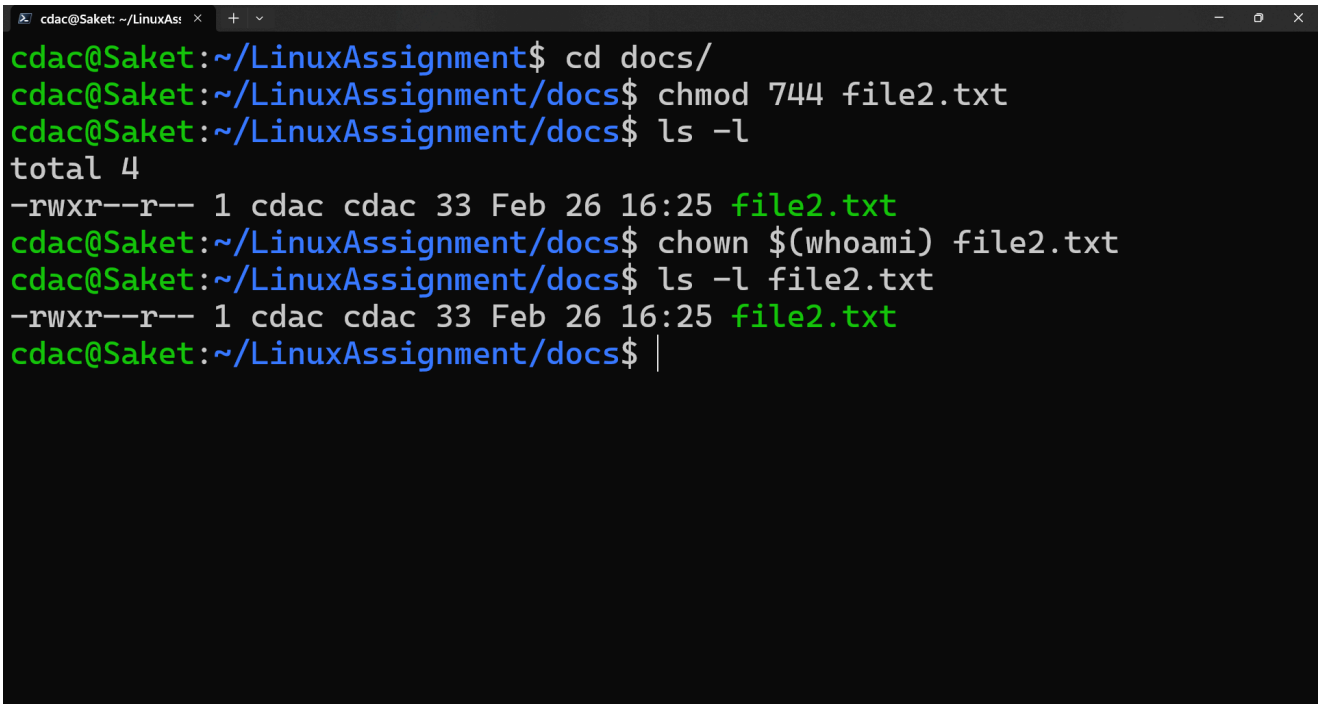
e) Permissions and Ownership:

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.

Ans:-

```
cdac@Saket:~/LinuxAssignment$ cd docs/
cdac@Saket:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@Saket:~/LinuxAssignment/docs$ ls -l
total 4
```

```
-rwxr--r-- 1 cdac cdac 33 Feb 26 16:25 file2.txt
cdac@Saket:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@Saket:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 33 Feb 26 16:25 file2.txt
cdac@Saket:~/LinuxAssignment/docs$
```



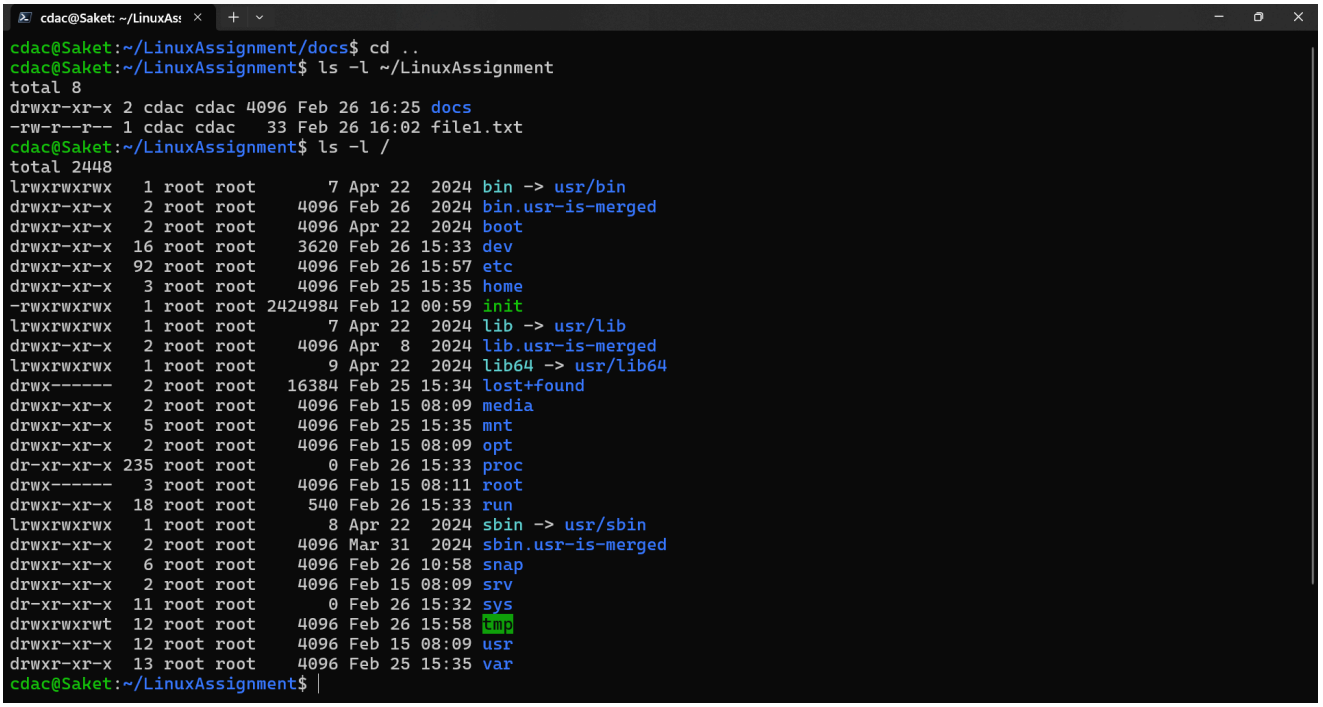
f) Final Checklist:

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

Ans:-

```
cdac@Saket:~/LinuxAssignment/docs$ cd ..
cdac@Saket:~/LinuxAssignment$ ls -l ~/LinuxAssignment
total 8
drwxr-xr-x 2 cdac cdac 4096 Feb 26 16:25 docs
-rw-r--r-- 1 cdac cdac 33 Feb 26 16:02 file1.txt
cdac@Saket:~/LinuxAssignment$ ls -l /
total 2448
lrwxrwxrwx 1 root root 7 Apr 22 2024 bin -> usr/bin
drwxr-xr-x 2 root root 4096 Feb 26 2024 bin.usr-is-merged
drwxr-xr-x 2 root root 4096 Apr 22 2024 boot
drwxr-xr-x 16 root root 3620 Feb 26 15:33 dev
drwxr-xr-x 92 root root 4096 Feb 26 15:57 etc
drwxr-xr-x 3 root root 4096 Feb 25 15:35 home
-rwxrwxrwx 1 root root 2424984 Feb 12 00:59 init
lrwxrwxrwx 1 root root 7 Apr 22 2024 lib -> usr/lib
drwxr-xr-x 2 root root 4096 Apr 8 2024 lib.usr-is-merged
lrwxrwxrwx 1 root root 9 Apr 22 2024 lib64 -> usr/lib64
drwx------ 2 root root 16384 Feb 25 15:34 lost+found
```

```
drwxr-xr-x 2 root root 4096 Feb 15 08:09 media
drwxr-xr-x 5 root root 4096 Feb 25 15:35 mnt
drwxr-xr-x 2 root root 4096 Feb 15 08:09 opt
dr-xr-xr-x 235 root root 0 Feb 26 15:33 proc
drwx------ 3 root root 4096 Feb 15 08:11 root
drwxr-xr-x 18 root root 540 Feb 26 15:33 run
lrwxrwxrwx 1 root root 8 Apr 22 2024 sbin -> usr/sbin
drwxr-xr-x 2 root root 4096 Mar 31 2024 sbin.usr-is-merged
drwxr-xr-x 6 root root 4096 Feb 26 10:58 snap
drwxr-xr-x 2 root root 4096 Feb 15 08:09 srv
dr-xr-xr-x 11 root root 0 Feb 26 15:32 sys
drwxrwxrwt 12 root root 4096 Feb 26 15:58 tmp
drwxr-xr-x 12 root root 4096 Feb 15 08:09 usr
drwxr-xr-x 13 root root 4096 Feb 25 15:35 var
cdac@Saket:~/LinuxAssignment$
```



g) File Searching:

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

Ans:-

```
cdac@Saket:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./data.txt
./file1.txt
./docs1/docs/file2.txt
```

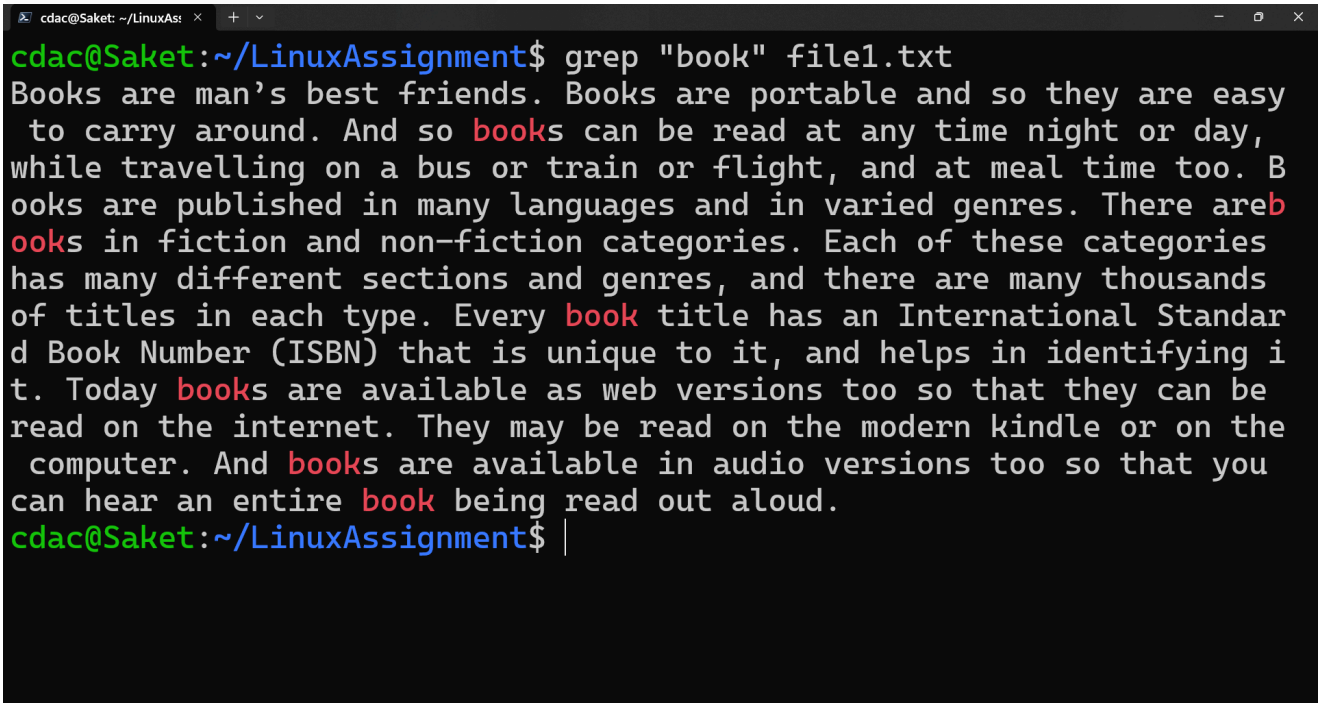
```
cdac@Saket:~/LinuxAssignment$
```

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

Ans:-

```
cdac@Saket:~/LinuxAssignment$ grep "book" file1.txt
Books are man’s best friends. Books are portable and so they are easy to carry around. And so books can be read at any time night or day, while travelling on a bus or train or flight, and at meal time too. Books are published in many languages and in varied genres. There arebooks in fiction and non-fiction categories. Each of these categories has many different sections and genres, and there are many thousands of titles in each type. Every book title has an International Standard Book Number (ISBN) that is unique to it, and helps in identifying it. Today books are available as web versions too so that they can be read on the internet. They may be read on the modern kindle or on the computer. And books are available in audio versions too so that you can hear an entire book being read out aloud.
```

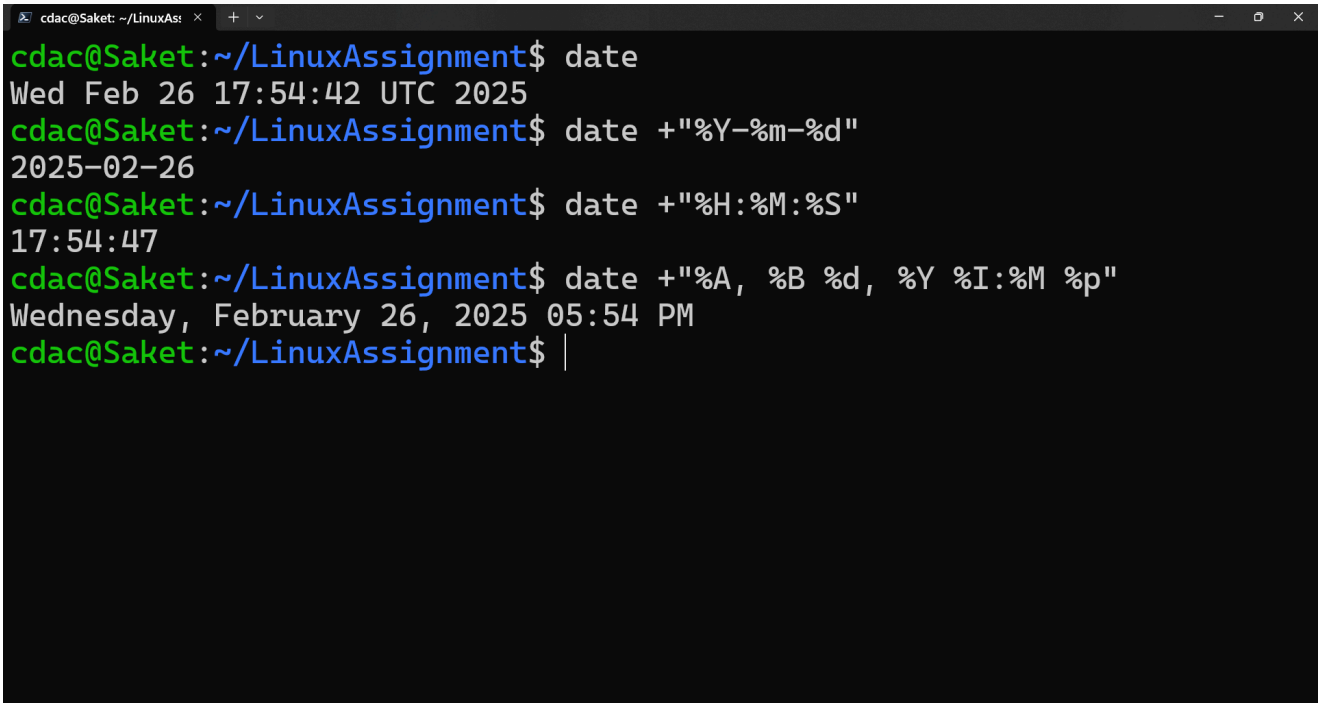
```
cdac@Saket:~/LinuxAssignment$
```



h) System Information:

a. Display the current system date and time.

```
cdac@Saket:~/LinuxAssignment$ date
Wed Feb 26 17:54:42 UTC 2025
cdac@Saket:~/LinuxAssignment$ date +"%Y-%m-%d"
2025-02-26
cdac@Saket:~/LinuxAssignment$ date +"%H:%M:%S"
17:54:47
cdac@Saket:~/LinuxAssignment$ date +"%A, %B %d, %Y %I:%M %p"
Wednesday, February 26, 2025 05:54 PM
cdac@Saket:~/LinuxAssignment$
```

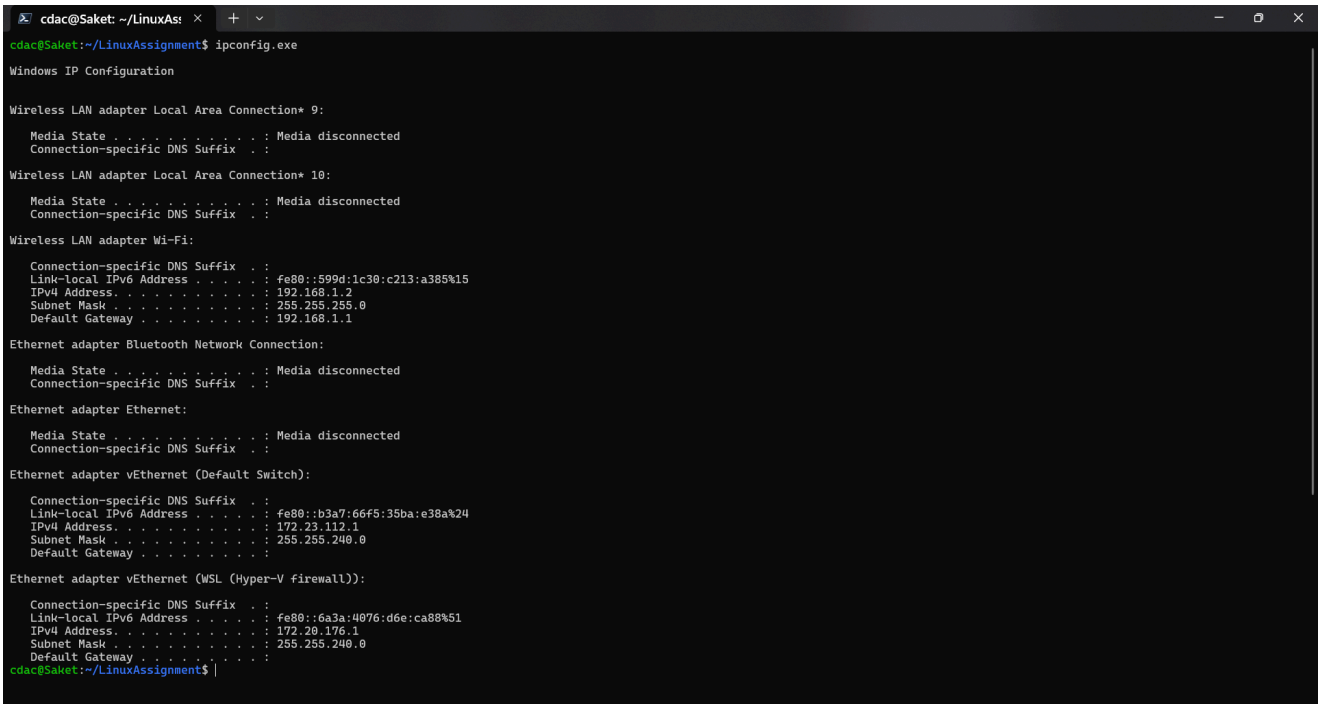


i) Networking:

a. Display the IP address of the system.

```
cdac@Saket:~/LinuxAssignment$ ipconfig.exe

Windows IP Configuration

Wireless LAN adapter Local Area Connection* 9:

Media State . . . . . . . . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 10:

Media State . . . . . . . . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::599d:1c30:c213:a385%15
IPv4 Address. . . . . . . . . . . . : 192.168.1.2
Subnet Mask . . . . . . . . . . . . : 255.255.255.0
Default Gateway . . . . . . . . . : 192.168.1.1

Ethernet adapter Bluetooth Network Connection:

Media State . . . . . . . . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Ethernet adapter Ethernet:

Media State . . . . . . . . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Ethernet adapter vEthernet (Default Switch):

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::b3a7:66f5:35ba:e38a%24
IPv4 Address. . . . . . . . . . . . : 172.23.112.1
Subnet Mask . . . . . . . . . . . . : 255.255.240.0
Default Gateway . . . . . . . . . :

Ethernet adapter vEthernet (WSL (Hyper-V firewall)):

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::6a3a:4076:d6e:ca88%51
IPv4 Address. . . . . . . . . . . . : 172.20.176.1
Subnet Mask . . . . . . . . . . . . : 255.255.240.0
```

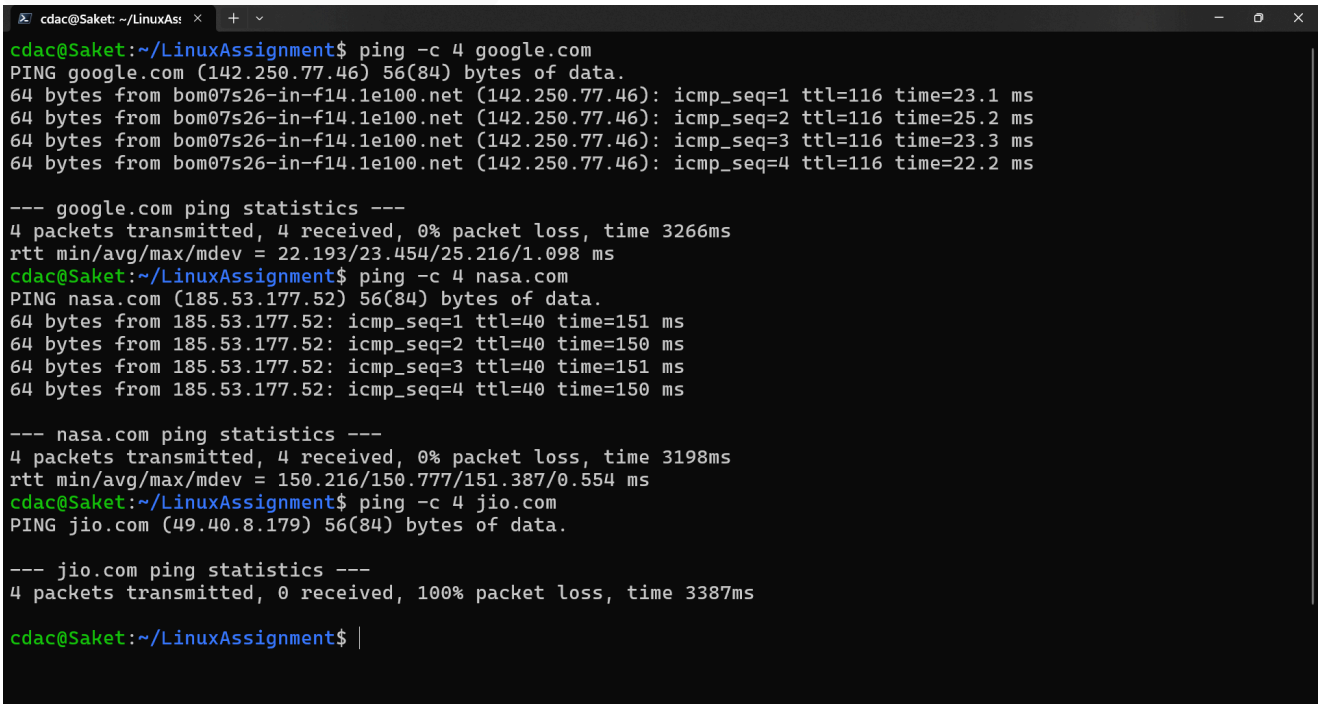
```
Default Gateway . . . . . . . . . :
cdac@Saket:~/LinuxAssignment$
```



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

```
cdac@Saket:~/LinuxAssignment$ ping -c 4 google.com
PING google.com (142.250.77.46) 56(84) bytes of data.
64 bytes from bom07s26-in-f14.1e100.net (142.250.77.46): icmp_seq=1 ttl=116 time=23.1 ms
64 bytes from bom07s26-in-f14.1e100.net (142.250.77.46): icmp_seq=2 ttl=116 time=25.2 ms
64 bytes from bom07s26-in-f14.1e100.net (142.250.77.46): icmp_seq=3 ttl=116 time=23.3 ms
64 bytes from bom07s26-in-f14.1e100.net (142.250.77.46): icmp_seq=4 ttl=116 time=22.2 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3266ms
rtt min/avg/max/mdev = 22.193/23.454/25.216/1.098 ms
cdac@Saket:~/LinuxAssignment$ ping -c 4 nasa.com
PING nasa.com (185.53.177.52) 56(84) bytes of data.
64 bytes from 185.53.177.52: icmp_seq=1 ttl=40 time=151 ms
64 bytes from 185.53.177.52: icmp_seq=2 ttl=40 time=150 ms
64 bytes from 185.53.177.52: icmp_seq=3 ttl=40 time=151 ms
64 bytes from 185.53.177.52: icmp_seq=4 ttl=40 time=150 ms

--- nasa.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3198ms
rtt min/avg/max/mdev = 150.216/150.777/151.387/0.554 ms
```

```
cdac@Saket:~/LinuxAssignment$ ping -c 4 jio.com
PING jio.com (49.40.8.179) 56(84) bytes of data.

--- jio.com ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 3387ms
cdac@Saket:~/LinuxAssignment$
```

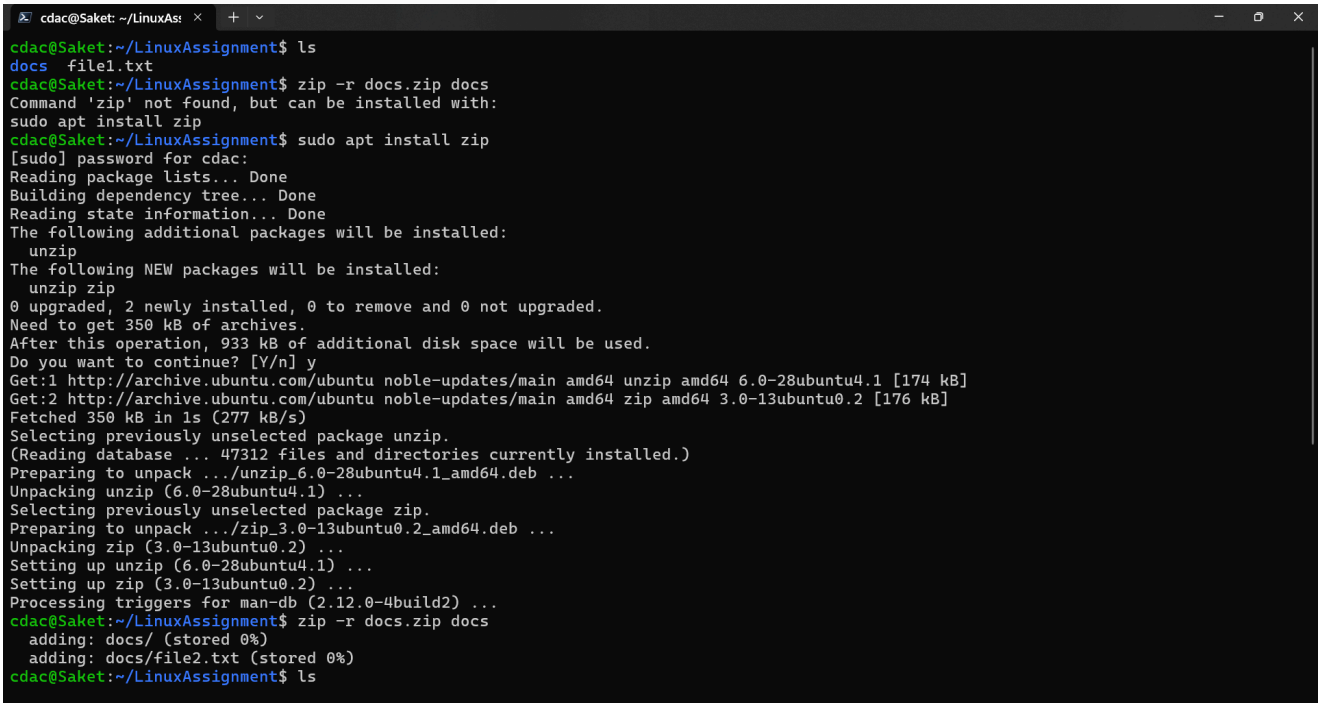


j) File Compression:

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

```
cdac@Saket:~/LinuxAssignment$ ls
docs file1.txt
cdac@Saket:~/LinuxAssignment$ zip -r docs.zip docs
Command 'zip' not found, but can be installed with:
sudo apt install zip
cdac@Saket:~/LinuxAssignment$ sudo apt install zip
[sudo] password for cdac:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
unzip
The following NEW packages will be installed:
unzip zip
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 350 kB of archives.
After this operation, 933 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 unzip amd64
6.0-28ubuntu4.1 [174 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 zip amd64 3.0-
```

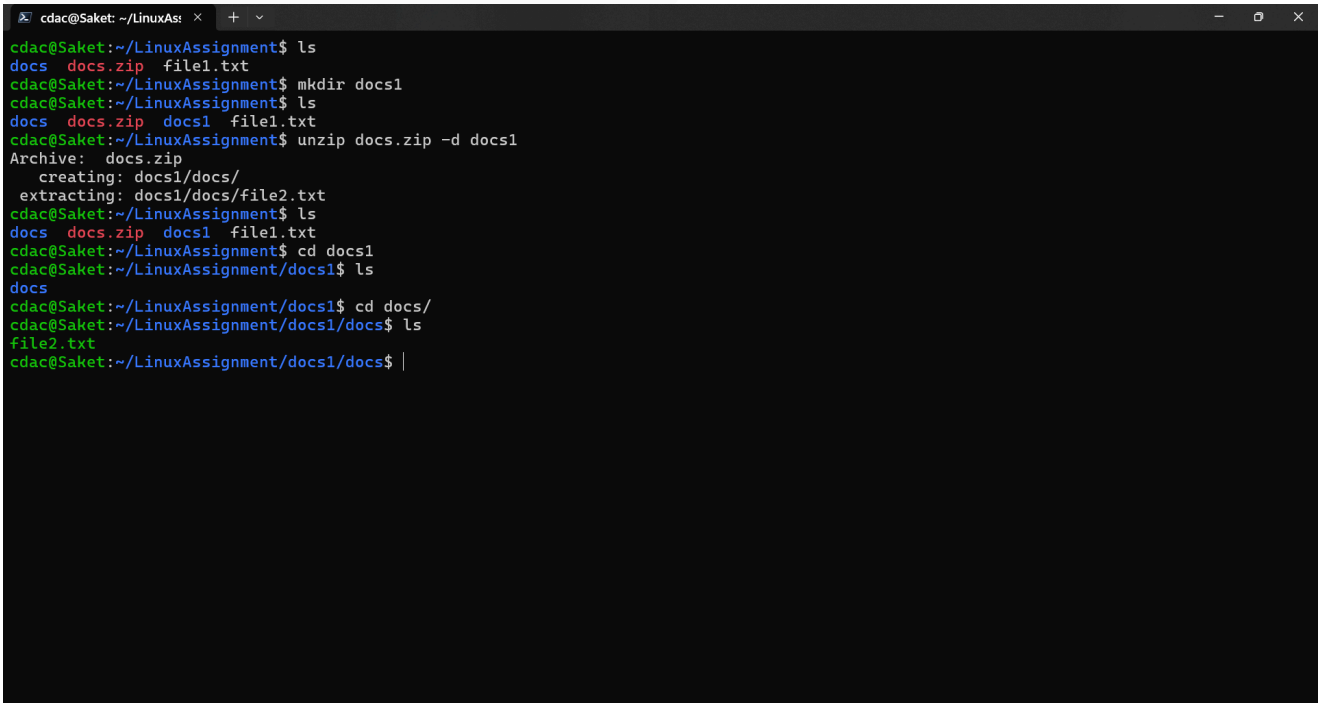
```
13ubuntu0.2 [176 kB]
Fetched 350 kB in 1s (277 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 47312 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-28ubuntu4.1_amd64.deb ...
Unpacking unzip (6.0-28ubuntu4.1) ...
Selecting previously unselected package zip.
Preparing to unpack .../zip_3.0-13ubuntu0.2_amd64.deb ...
Unpacking zip (3.0-13ubuntu0.2) ...
Setting up unzip (6.0-28ubuntu4.1) ...
Setting up zip (3.0-13ubuntu0.2) ...
Processing triggers for man-db (2.12.0-4build2) ...
cdac@Saket:~/LinuxAssignment$ zip -r docs.zip docs
adding: docs/ (stored 0%)
adding: docs/file2.txt (stored 0%)
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip file1.txt
cdac@Saket:~/LinuxAssignment$
```



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

```
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip file1.txt
cdac@Saket:~/LinuxAssignment$ mkdir docs1
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ unzip docs.zip -d docs1
Archive: docs.zip
creating: docs1/docs/
extracting: docs1/docs/file2.txt
```

```
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ cd docs1
cdac@Saket:~/LinuxAssignment/docs1$ ls
docs
cdac@Saket:~/LinuxAssignment/docs1$ cd docs/
cdac@Saket:~/LinuxAssignment/docs1/docs$ ls
file2.txt
cdac@Saket:~/LinuxAssignment/docs1/docs$
```



k) File Editing:

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

```
cdac@Saket:~$ ls
Feb25 LinuxAssignment
cdac@Saket:~$ cd LinuxAssignment/
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ nano file1.txt
cdac@Saket:~/LinuxAssignment$ cat file1.txt
saket kharche
Cdac Mumbai
Feb25
Books are man’s best friends. Books are portable and so they are easy to carry around. And so books can be read at any time night or day, while travelling on a bus or train or flight, and at meal time too. Books are published in many languages and in varied genres. There are books in fiction and non-fiction categories. Each of these categories has many different sections and genres, and there are many thousands of titles in each type. Every book title has an International Standard Book Number (ISBN) that is unique to it, and helps in
```

identifying it. Today books are available as web versions too so that they can be read on the internet. They may be read on the modern kindle or on the computer. And books are available in audio versions too so that you can hear an entire book being read out aloud.
Hey Good Morning every one

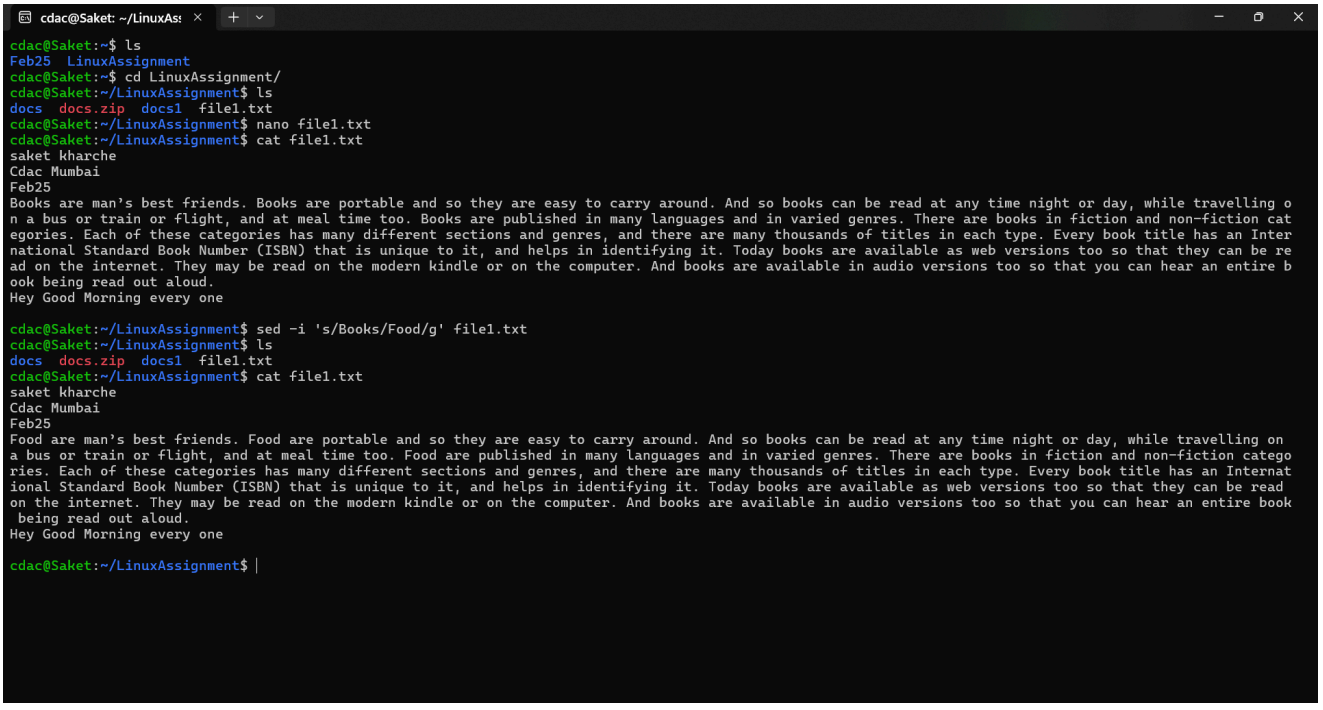
cdac@Saket:~/LinuxAssignment$

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@Saket:~$ ls
Feb25 LinuxAssignment
cdac@Saket:~$ cd LinuxAssignment/
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ nano file1.txt
cdac@Saket:~/LinuxAssignment$ cat file1.txt
saket kharche
Cdac Mumbai
Feb25
Books are man's best friends. Books are portable and so they are easy to carry around. And so books can be read at any time night or day, while travelling on a bus or train or flight, and at meal time too. Books are published in many languages and in varied genres. There are books in fiction and non-fiction categories. Each of these categories has many different sections and genres, and there are many thousands of titles in each type. Every book title has an International Standard Book Number (ISBN) that is unique to it, and helps in identifying it. Today books are available as web versions too so that they can be read on the internet. They may be read on the modern kindle or on the

computer. And books are available in audio versions too so that you can hear an entire book being read out aloud.
Hey Good Morning every one

```
cdac@Saket:~/LinuxAssignment$ sed -i 's/Books/Food/g' file1.txt
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ cat file1.txt
saket kharche
Cdac Mumbai
Feb25
Food are man’s best friends. Food are portable and so they are easy to carry around. And so books can be read at any time night or day, while travelling on a bus or train or flight, and at meal time too. Food are published in many languages and in varied genres. There are books in fiction and non-fiction categories. Each of these categories has many different sections and genres, and there are many thousands of titles in each type. Every book title has an International Standard Book Number (ISBN) that is unique to it, and helps in identifying it. Today books are available as web versions too so that they can be read on the internet. They may be read on the modern kindle or on the computer. And books are available in audio versions too so that you can hear an entire book being read out aloud.
Hey Good Morning every one

cdac@Saket:~/LinuxAssignment$
```

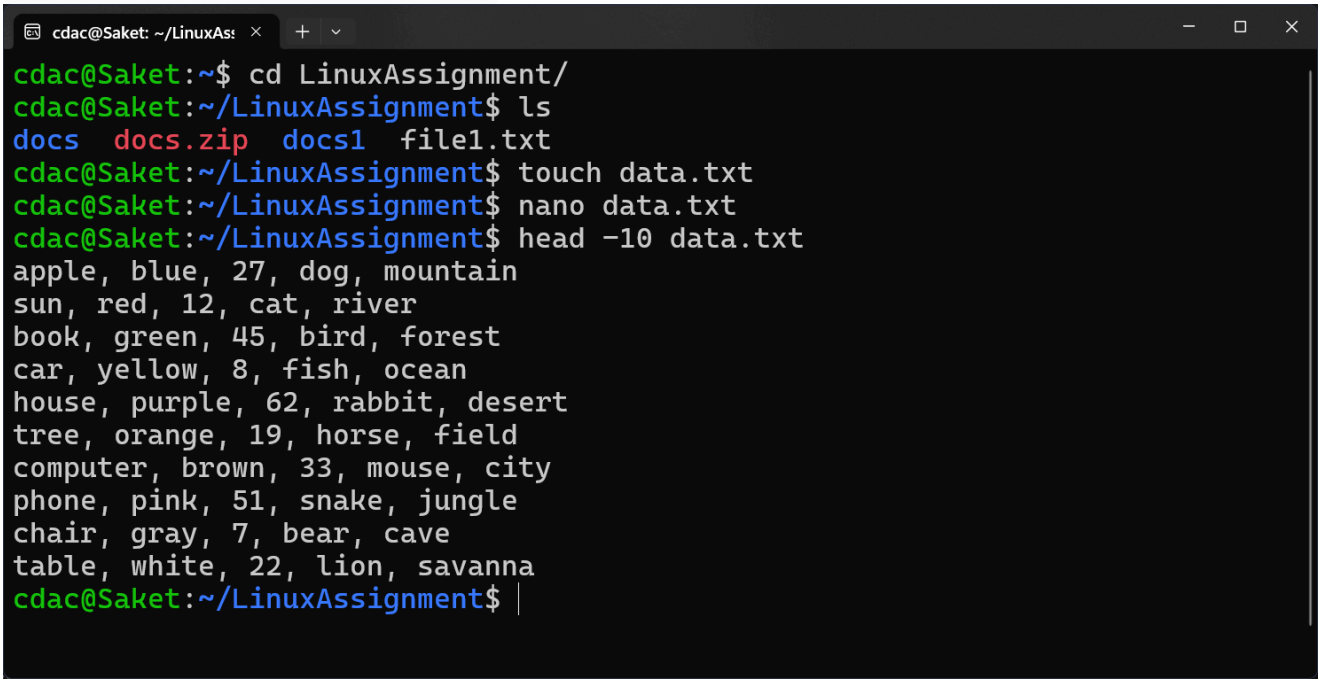


Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data

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.

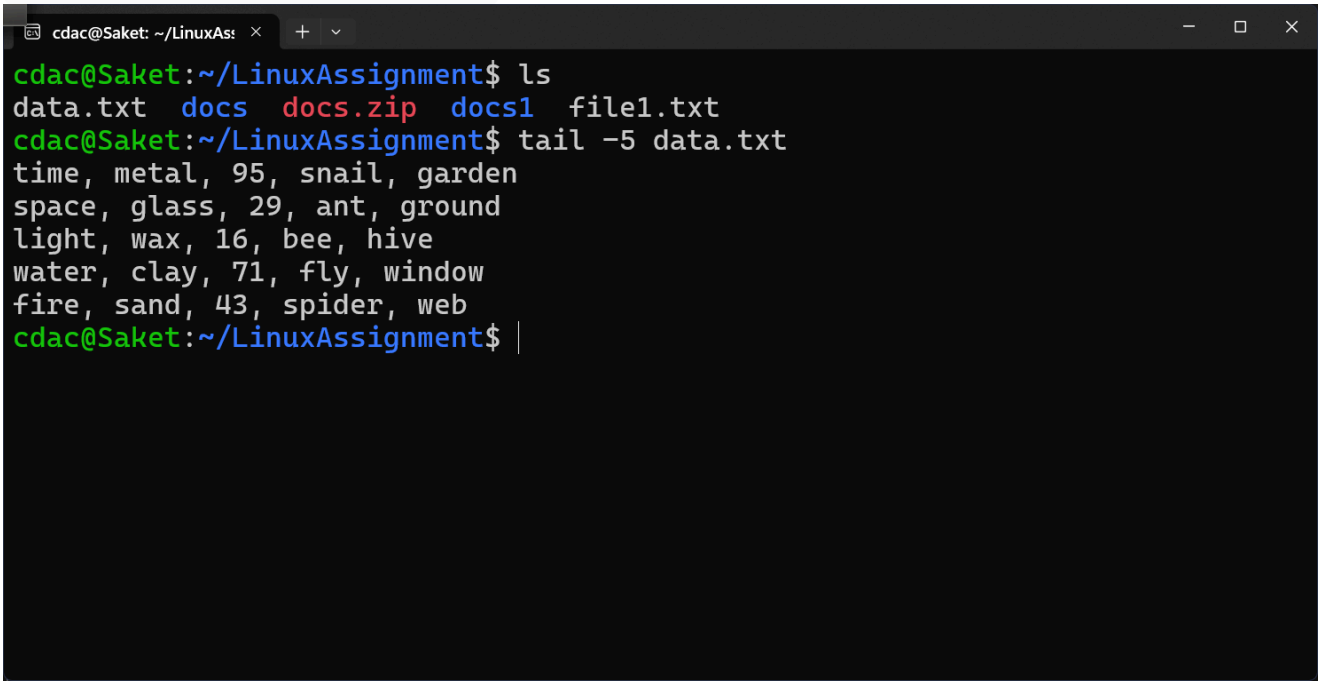
```
cdac@Saket:~$ cd LinuxAssignment/
cdac@Saket:~/LinuxAssignment$ ls
docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ touch data.txt
cdac@Saket:~/LinuxAssignment$ nano data.txt
cdac@Saket:~/LinuxAssignment$ head -10 data.txt
apple, blue, 27, dog, mountain
sun, red, 12, cat, river
book, green, 45, bird, forest
car, yellow, 8, fish, ocean
house, purple, 62, rabbit, desert
tree, orange, 19, horse, field
computer, brown, 33, mouse, city
phone, pink, 51, snake, jungle
chair, gray, 7, bear, cave
table, white, 22, lion, savanna
cdac@Saket:~/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.

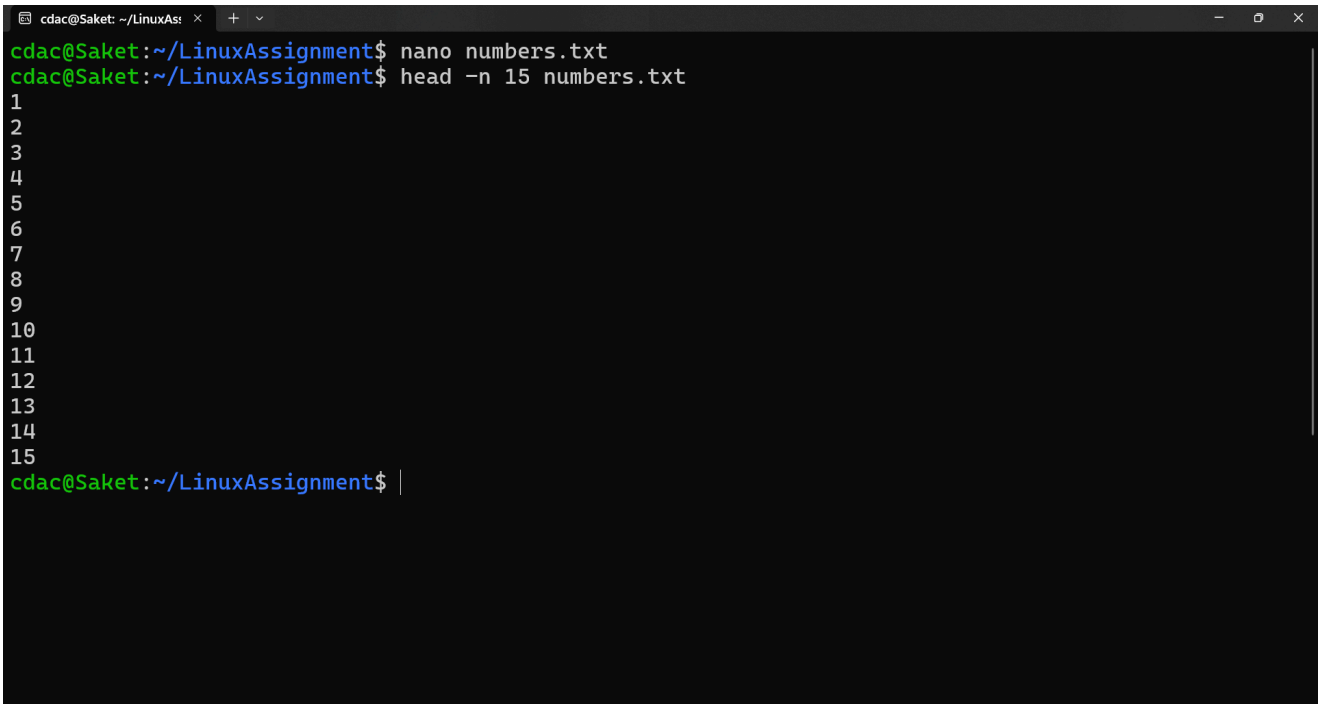
```
cdac@Saket:~/LinuxAssignment$ ls
data.txt docs docs.zip docs1 file1.txt
cdac@Saket:~/LinuxAssignment$ tail -5 data.txt
time, metal, 95, snail, garden
space, glass, 29, ant, ground
```

```
light, wax, 16, bee, hive
water, clay, 71, fly, window
fire, sand, 43, spider, web
cdac@Saket:~/LinuxAssignment$
```



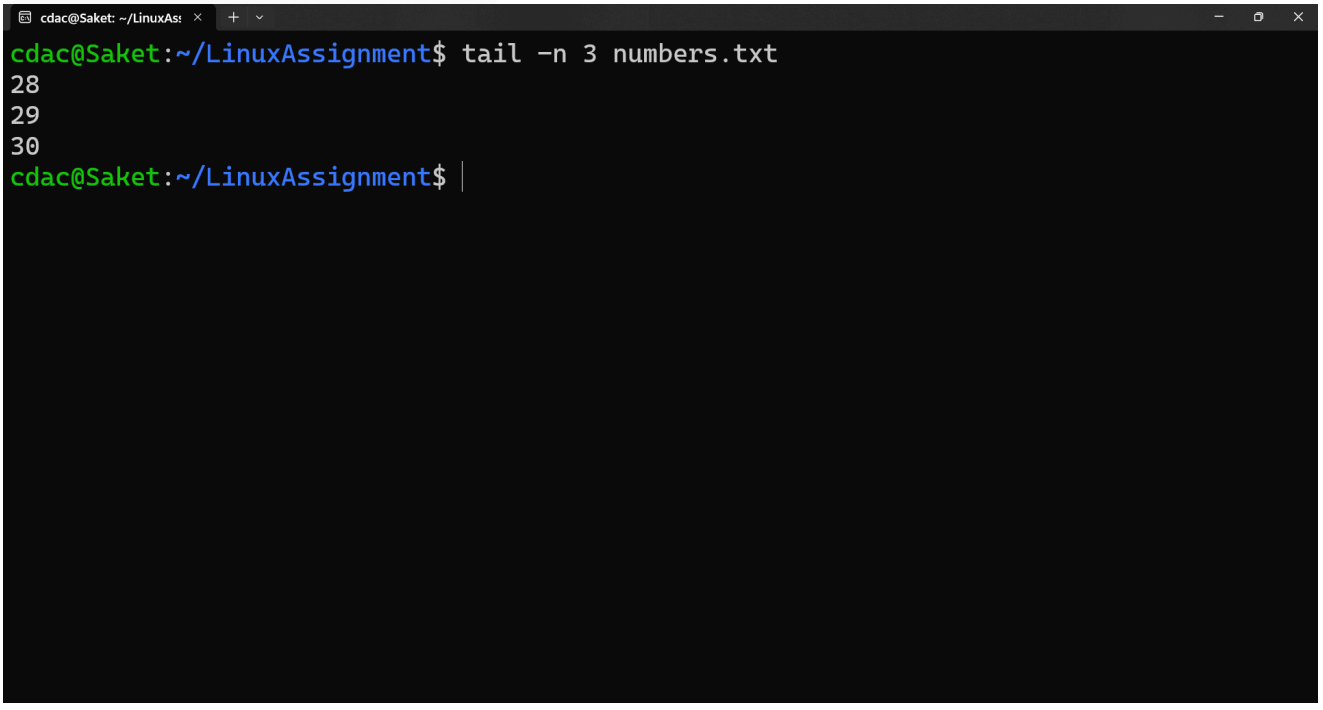
c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.

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



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

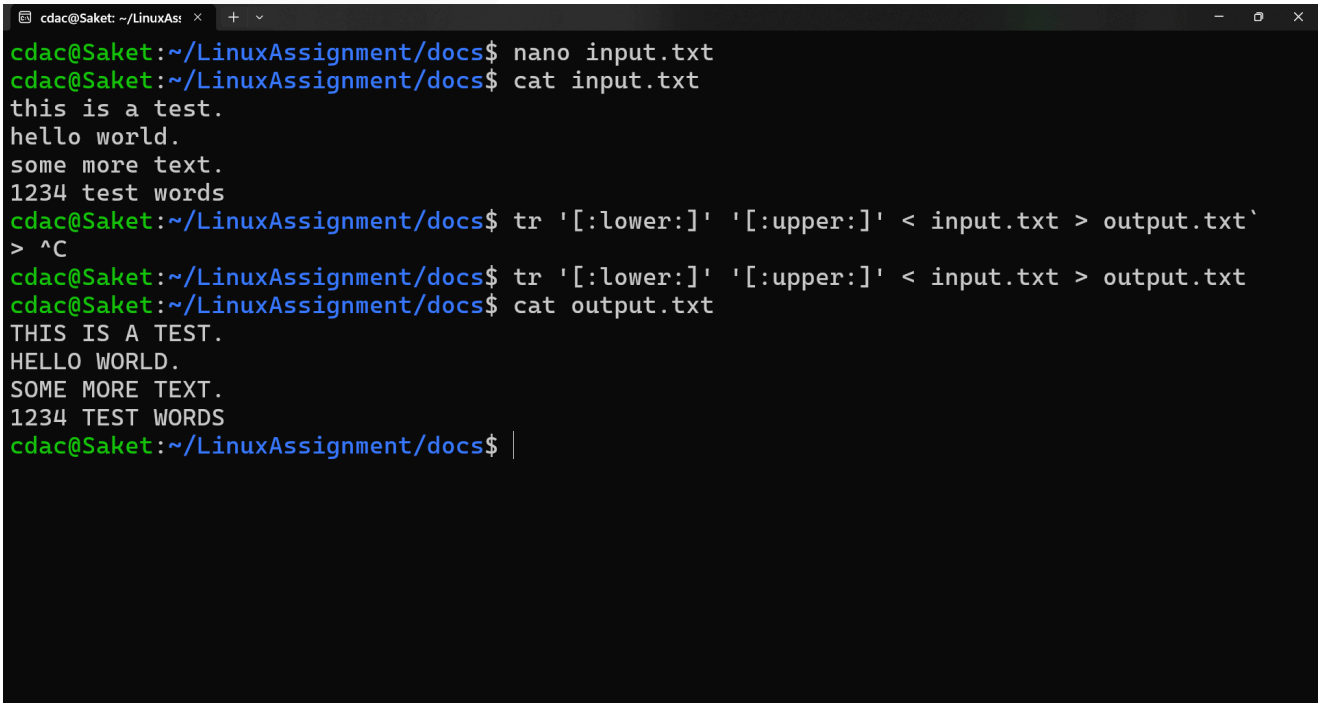
```
cdac@Saket:~/LinuxAssignment$ tail -n 3 numbers.txt
28
29
30
cdac@Saket:~/LinuxAssignment$
```



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."

```
@Saket:~/LinuxAssignment$ nano input.txt
cdac@Saket:~/LinuxAssignment$ ls
data.txt docs1 output.txt
docs input.txt
docs.zip numbers.txt
```

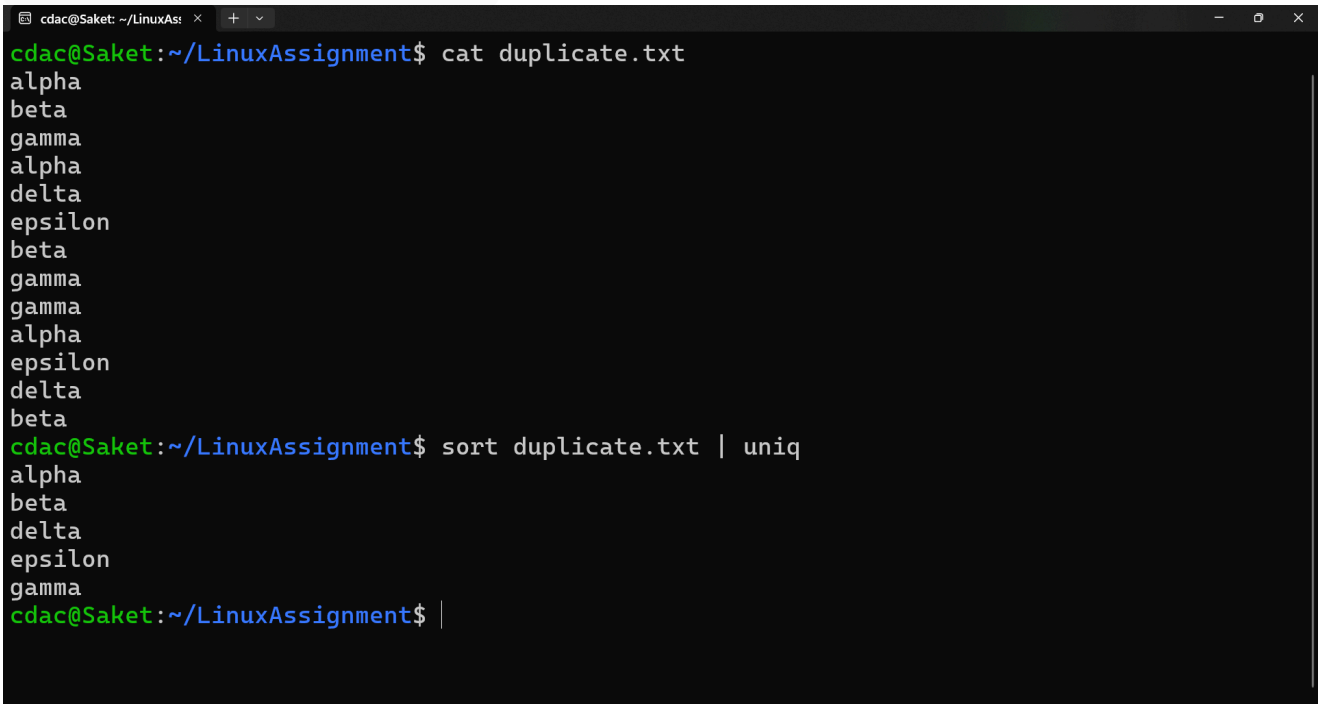
```
cdac@Saket:~/LinuxAssignment$ cat input.t
xt
this is a test.
hello world.
some more text.
1234 test words

cdac@Saket:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]' < input.txt >
output.txt
cdac@Saket:~/LinuxAssignment$ ls
data.txt docs1 output.txt
docs input.txt
docs.zip numbers.txt
cdac@Saket:~/LinuxAssignment$ cat output.txt
THIS IS A TEST.
HELLO WORLD.
SOME MORE TEXT.
1234 TEST WORDS

cdac@Saket:~/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@Saket:~/LinuxAssignment$ ls
data.txt docs docs.zip docs1 duplicate.txt input.txt numbers.txt output.txt
uniqe1.txt
cdac@Saket:~/LinuxAssignment$ cat duplicate.txt
alpha
beta
gamma
```

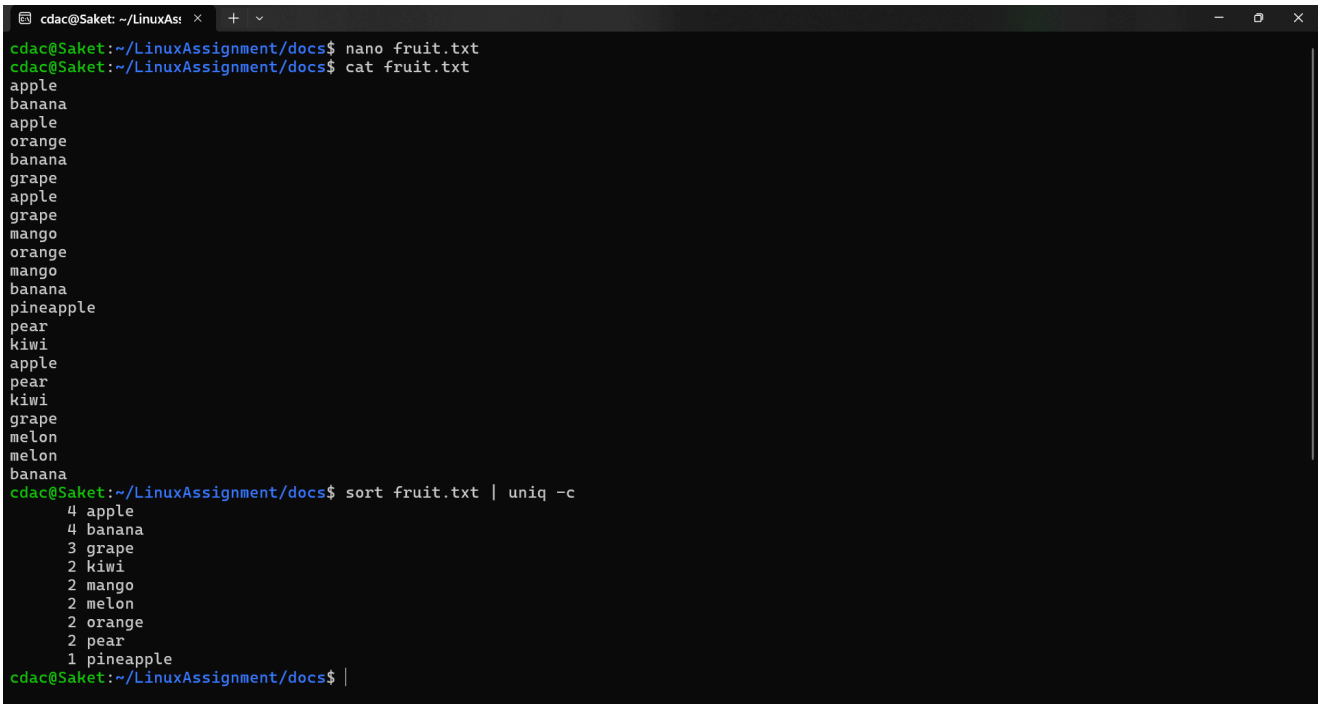
```
alpha
delta
epsilon
beta
gamma
gamma
alpha
epsilon
delta
beta
cdac@Saket:~/LinuxAssignment$ sort duplicate.txt | uniq
alpha
beta
delta
epsilon
gamma
cdac@Saket:~/LinuxAssignment$
```



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@Saket:~/LinuxAssignment/docs$ nano fruit.txt
cdac@Saket:~/LinuxAssignment/docs$ cat fruit.txt
apple
banana
apple
orange
banana
grape
```

```
apple
grape
mango
orange
mango
banana
pineapple
pear
kiwi
apple
pear
kiwi
grape
melon
melon
banana
cdac@Saket:~/LinuxAssignment/docs$ sort fruit.txt | uniq -c
4 apple
4 banana
3 grape
2 kiwi
2 mango
2 melon
2 orange
2 pear
1 pineapple
cdac@Saket:~/LinuxAssignment/docs$
```


cdac@Saket: ~/LinuxAs
cdac@Saket:~/LinuxAssignment/docs$ nano fruit.txt
cdac@Saket:~/LinuxAssignment/docs$ cat fruit.txt
apple
banana
apple
orange
banana
grape
apple
grape
mango
orange
mango
banana
pineapple
pear
kiwi
apple
pear
kiwi
grape
melon
melon
banana
cdac@Saket:~/LinuxAssignment/docs$ sort fruit.txt | uniq -c
4 apple
4 banana
3 grape
2 kiwi
2 mango
2 melon
2 orange
2 pear
1 pineapple
cdac@Saket:~/LinuxAssignment/docs$