

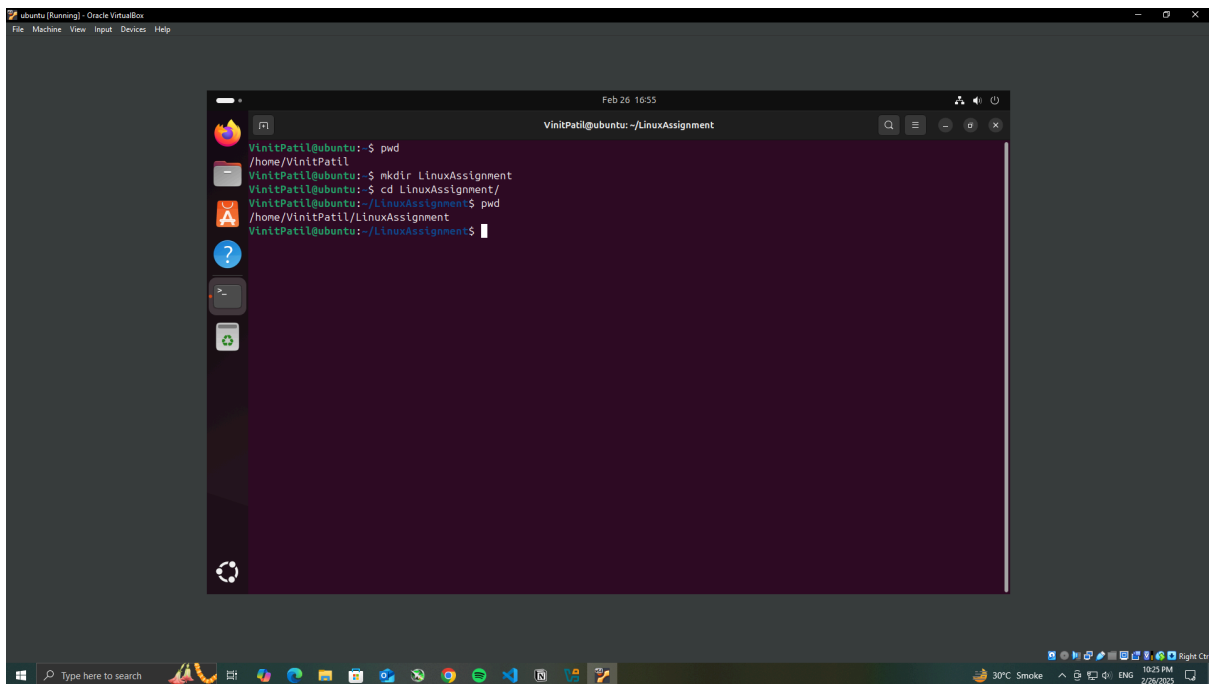
## Operating System(Linux) Assignment 1

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:

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.

Commands:



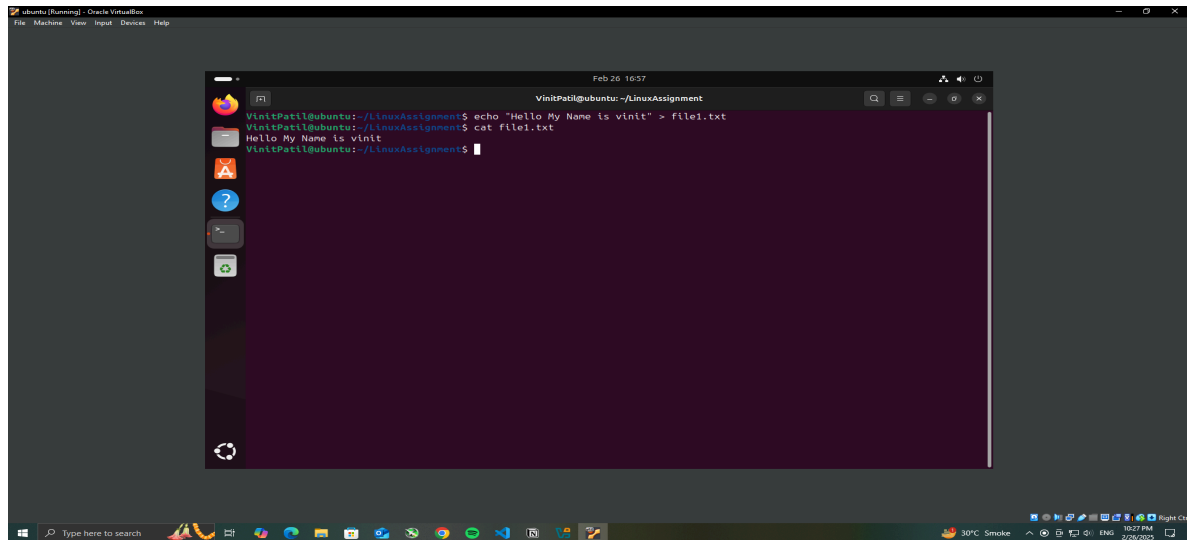
```

VinitPatil@ubuntu:~$ pwd
/home/VinitPatil
VinitPatil@ubuntu:~$ mkdir LinuxAssignment
VinitPatil@ubuntu:~$ cd LinuxAssignment/
VinitPatil@ubuntu:~/LinuxAssignment$ pwd
/home/VinitPatil/LinuxAssignment
VinitPatil@ubuntu:~/LinuxAssignment$
```

b) File Management:

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

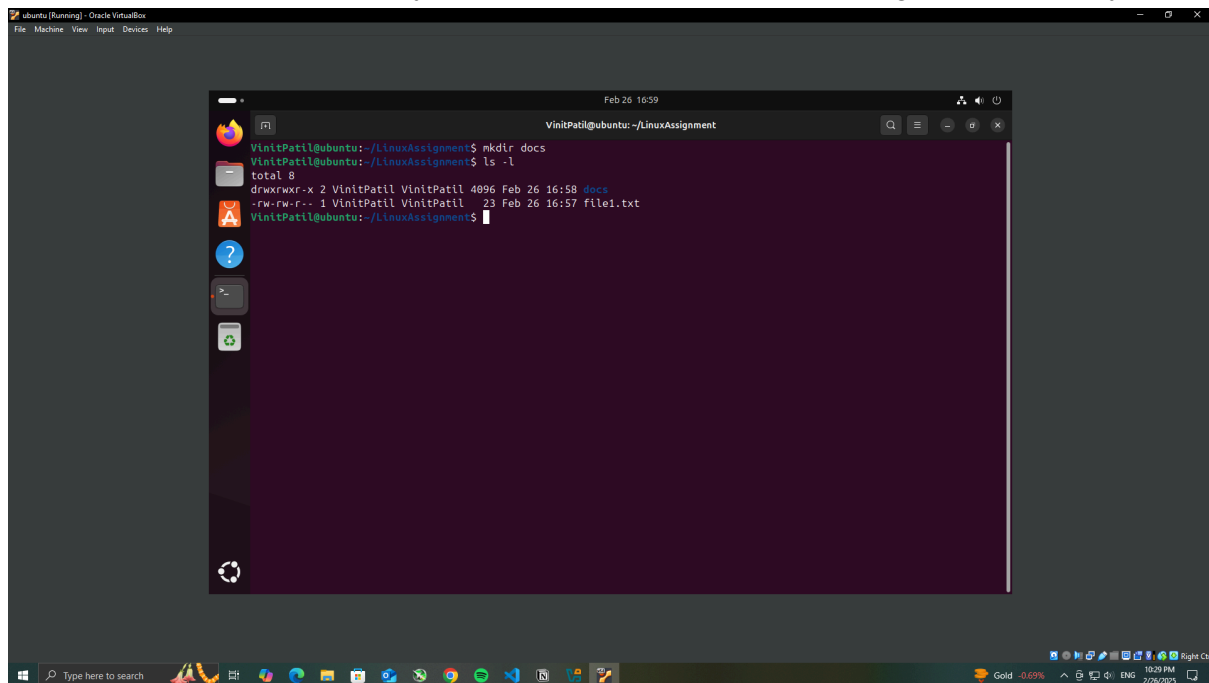
Commands:



```
VinitPatil@ubuntu:~/LinuxAssignment$ echo "Hello My Name is vinit" > file1.txt
VinitPatil@ubuntu:~/LinuxAssignment$ cat file1.txt
Hello My Name is vinit
VinitPatil@ubuntu:~/LinuxAssignment$
```

### c) Directory Management:

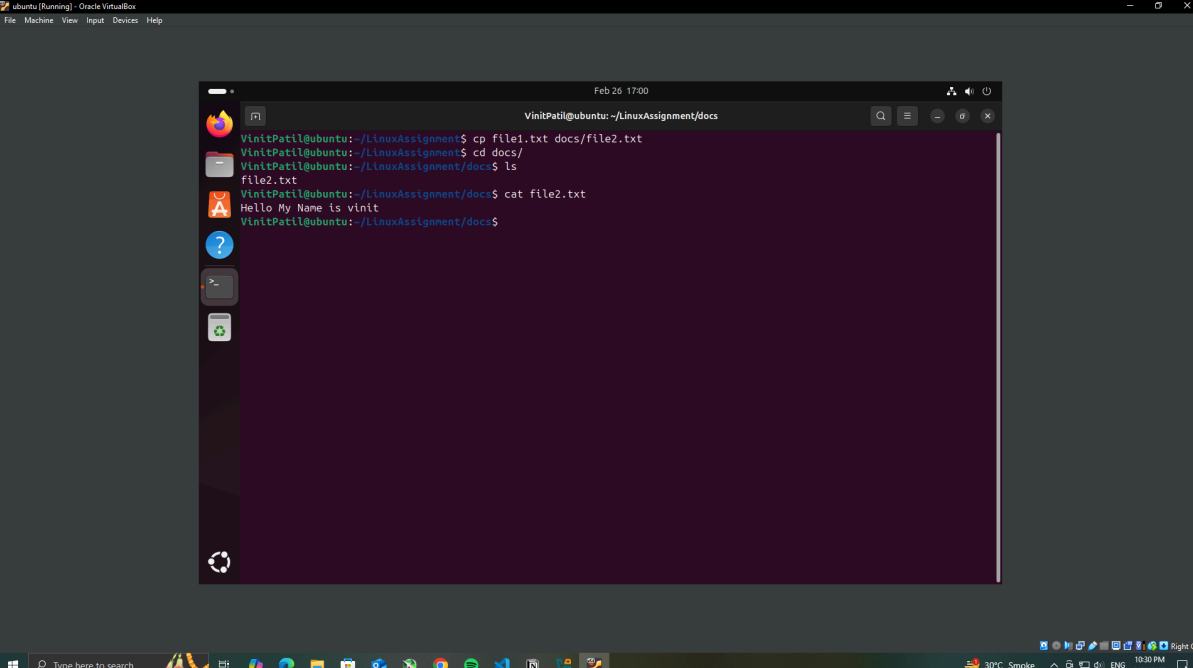
- a. Create a new directory named "docs" inside the "LinuxAssignment" directory.



```
VinitPatil@ubuntu:~/LinuxAssignment$ mkdir docs
VinitPatil@ubuntu:~/LinuxAssignment$ ls -l
total 8
drwxrwxr-x 2 VinitPatil VinitPatil 4096 Feb 26 16:58 docs
-rw-rw-r-- 1 VinitPatil VinitPatil 23 Feb 26 16:57 file1.txt
VinitPatil@ubuntu:~/LinuxAssignment$
```

### d) Copy and Move Files:

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



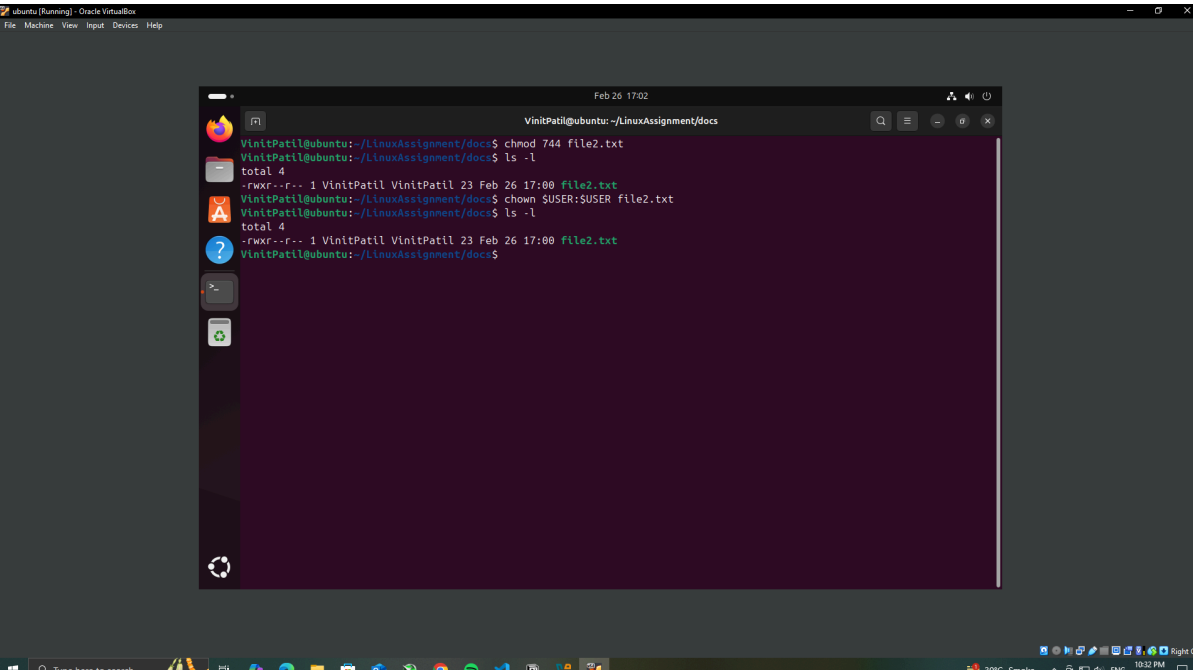
The screenshot shows a terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment/docs" with a timestamp of "Feb 26 17:00". The terminal displays the following commands and output:

```
VinitPatil@ubuntu:~/LinuxAssignment$ cp file1.txt docs/file2.txt
VinitPatil@ubuntu:~/LinuxAssignment$ cd docs/
VinitPatil@ubuntu:~/LinuxAssignment/docs$ ls
file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$ cat file2.txt
Hello My Name is vinit
VinitPatil@ubuntu:~/LinuxAssignment/docs$
```

The terminal window is part of a desktop environment within Oracle VM VirtualBox, showing a taskbar with various application icons and a system tray at the bottom right indicating "30°C Smoke" and "10:30 PM 2/26/2025".

#### 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.



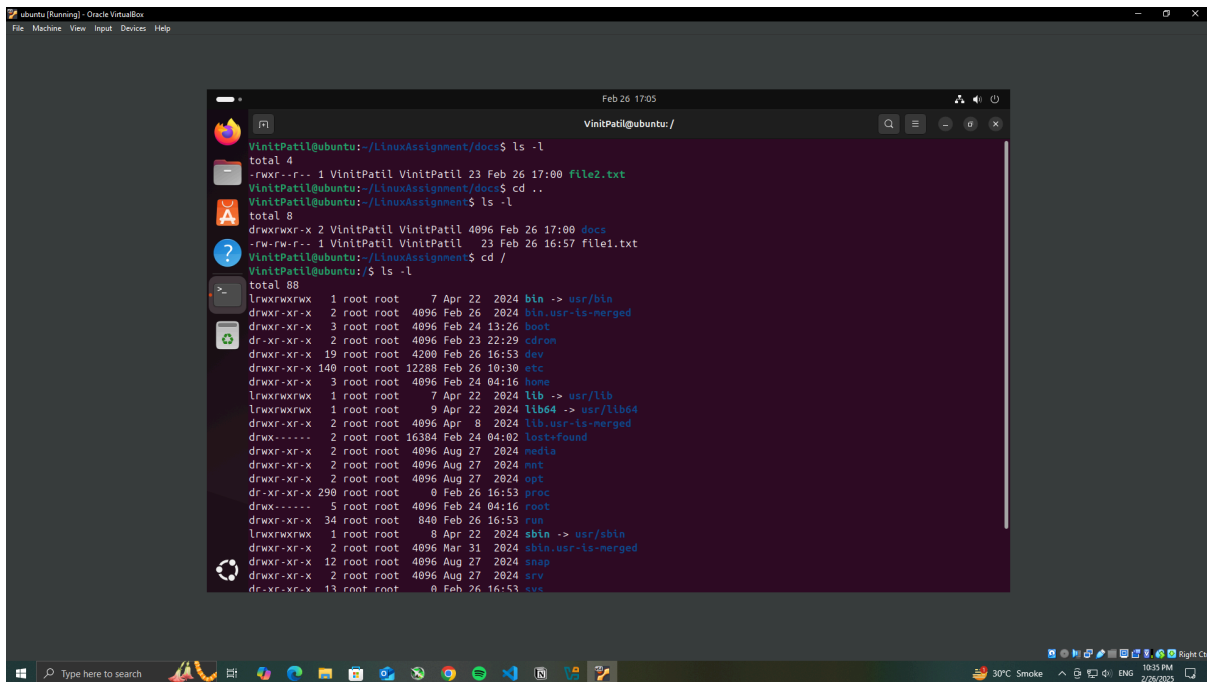
The screenshot shows a terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment/docs" with a timestamp of "Feb 26 17:02". The terminal displays the following commands and output:

```
VinitPatil@ubuntu:~/LinuxAssignment/docs$ chmod 744 file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 VinitPatil VinitPatil 23 Feb 26 17:00 file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$ chown $USER:file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 VinitPatil VinitPatil 23 Feb 26 17:00 file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$
```

The terminal window is part of a desktop environment within Oracle VM VirtualBox, showing a taskbar with various application icons and a system tray at the bottom right indicating "30°C Smoke" and "10:32 PM 2/26/2025".

#### f) Final Checklist:

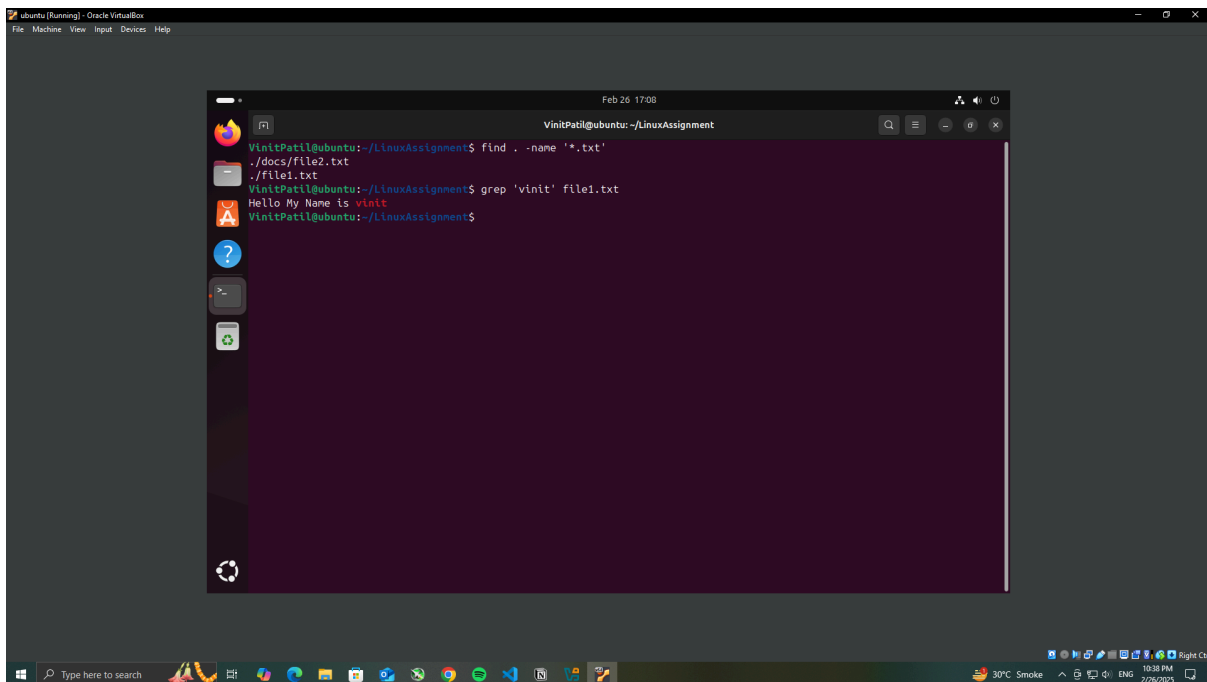
- a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.



```
VinitPatil@ubuntu:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 VinitPatil VinitPatil 23 Feb 26 17:00 file2.txt
VinitPatil@ubuntu:~/LinuxAssignment/docs$ cd ..
VinitPatil@ubuntu:~/LinuxAssignment$ ls -l
total 8
drwxrwxr-x 2 VinitPatil VinitPatil 4096 Feb 26 17:00 docs
-rw-rw-r-- 1 VinitPatil VinitPatil 23 Feb 26 16:57 file1.txt
VinitPatil@ubuntu:~/LinuxAssignment$ cd /
VinitPatil@ubuntu:/ $ ls -l
total 88
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 3 root root 4096 Feb 24 13:26 boot
dr-xr-xr-x 2 root root 4096 Feb 23 22:29 cdrom
drwxr-xr-x 19 root root 4200 Feb 26 16:53 dev
drwxr-xr-x 140 root root 12288 Feb 26 10:30 etc
drwxr-xr-x 3 root root 4096 Feb 24 04:16 home
lrwxrwxrwx 1 root root 7 Apr 22 2024 lib -> usr/lib
lrwxrwxrwx 1 root root 9 Apr 22 2024 lib64 -> usr/lib64
drwxr-xr-x 2 root root 4096 Apr 8 2024 lib.usr-is-merged
drwx----- 2 root root 16384 Feb 24 04:02 lost-found
drwxr-xr-x 2 root root 4096 Aug 27 2024 media
drwxr-xr-x 2 root root 4096 Aug 27 2024 nmt
drwxr-xr-x 2 root root 4096 Aug 27 2024 opt
dr-xr-xr-x 298 root root 0 Feb 26 16:53 proc
drwx----- 5 root root 4096 Feb 24 04:16 root
drwxr-xr-x 34 root root 840 Feb 26 16:53 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 12 root root 4096 Aug 27 2024/snap
drwxr-xr-x 2 root root 4096 Aug 27 2024/srv
dr-xr-xr-x 13 root root 0 Feb 26 16:53 sys
```

g) File Searching:

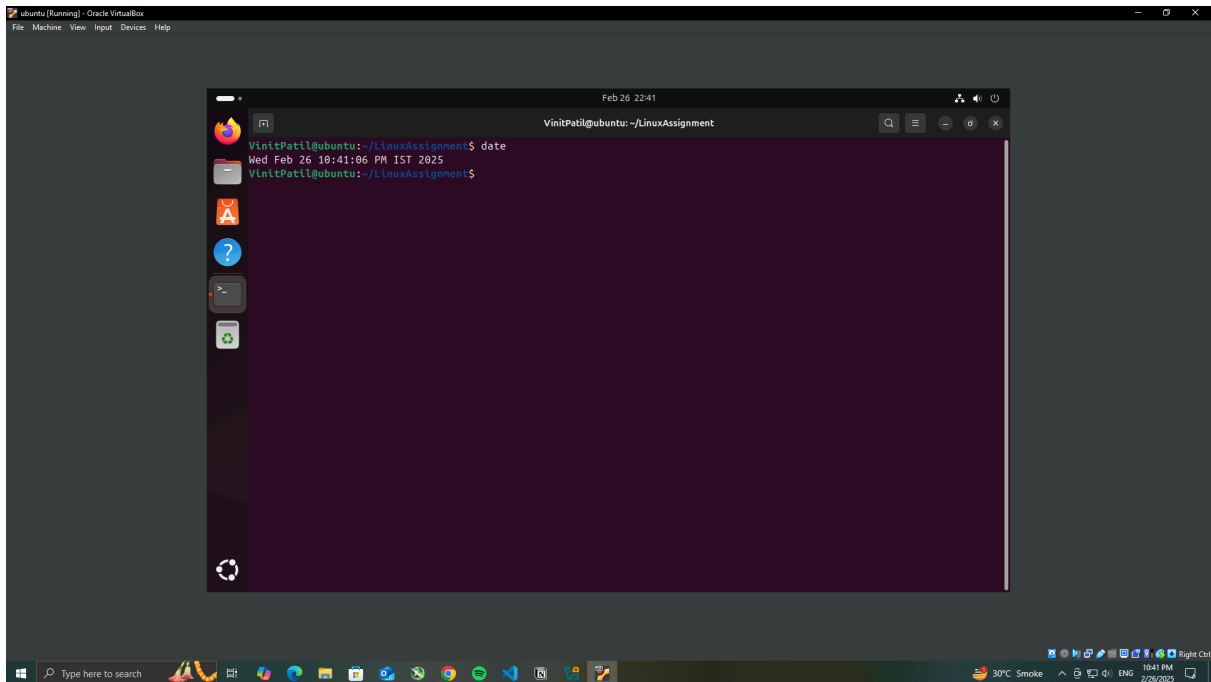
- a. Search for all files with the extension ".txt" in the current directory and its subdirectories.  
b. Display lines containing a specific word in a file (provide a file name and the specific word to search).



```
VinitPatil@ubuntu:~/LinuxAssignment$ find . -name '*.txt'
./docs/file2.txt
./file1.txt
VinitPatil@ubuntu:~/LinuxAssignment$ grep 'vinit' file1.txt
Hello My Name is vinit
VinitPatil@ubuntu:~/LinuxAssignment$
```

h) System Information:

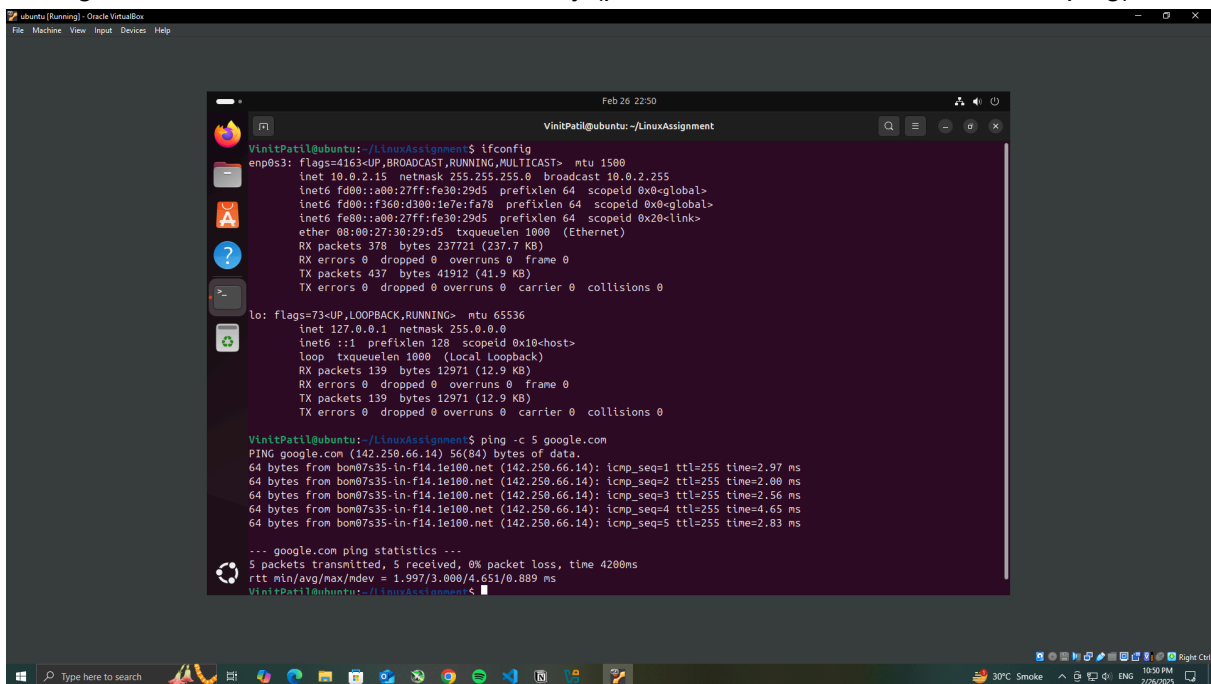
- a. Display the current system date and time.



## i) Networking:

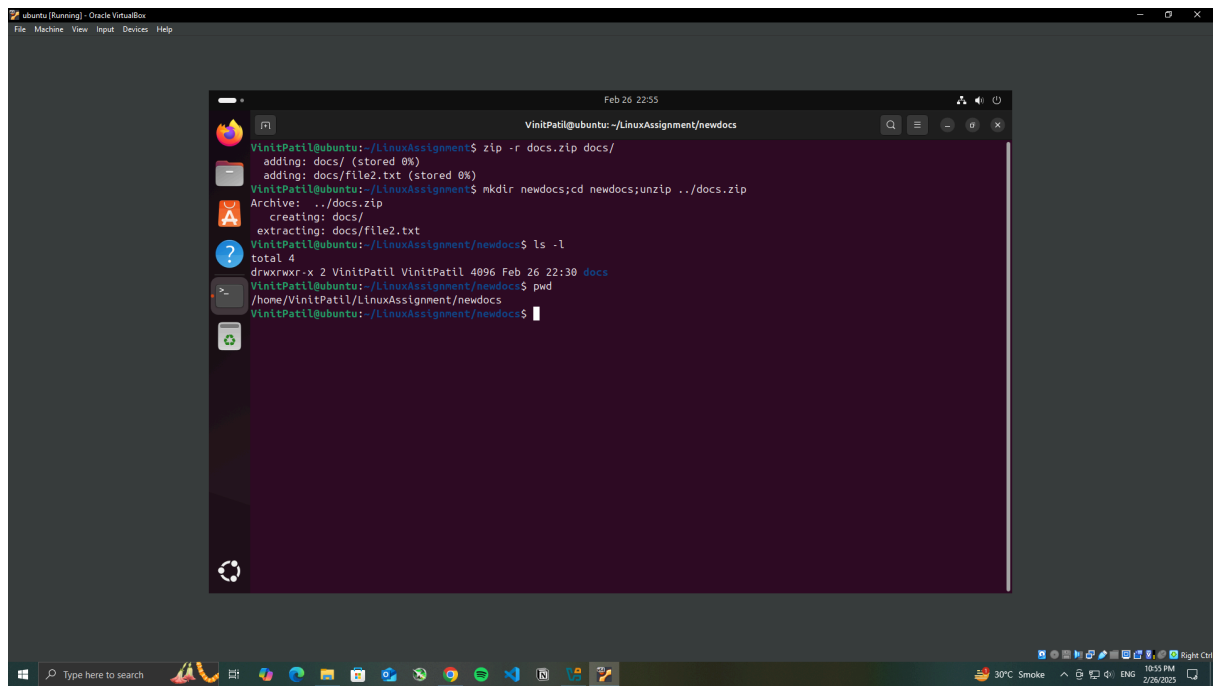
a. Display the IP address of the system.

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



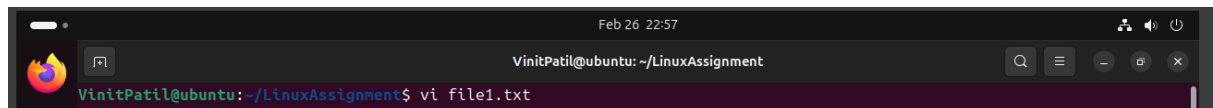
## j) File Compression:

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

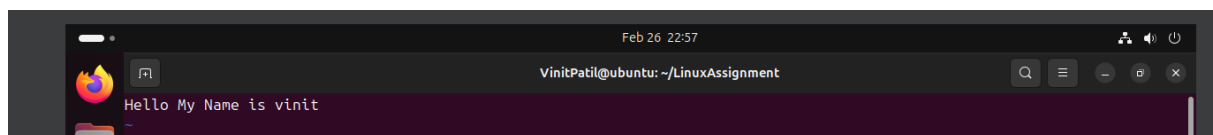


#### k) File Editing:

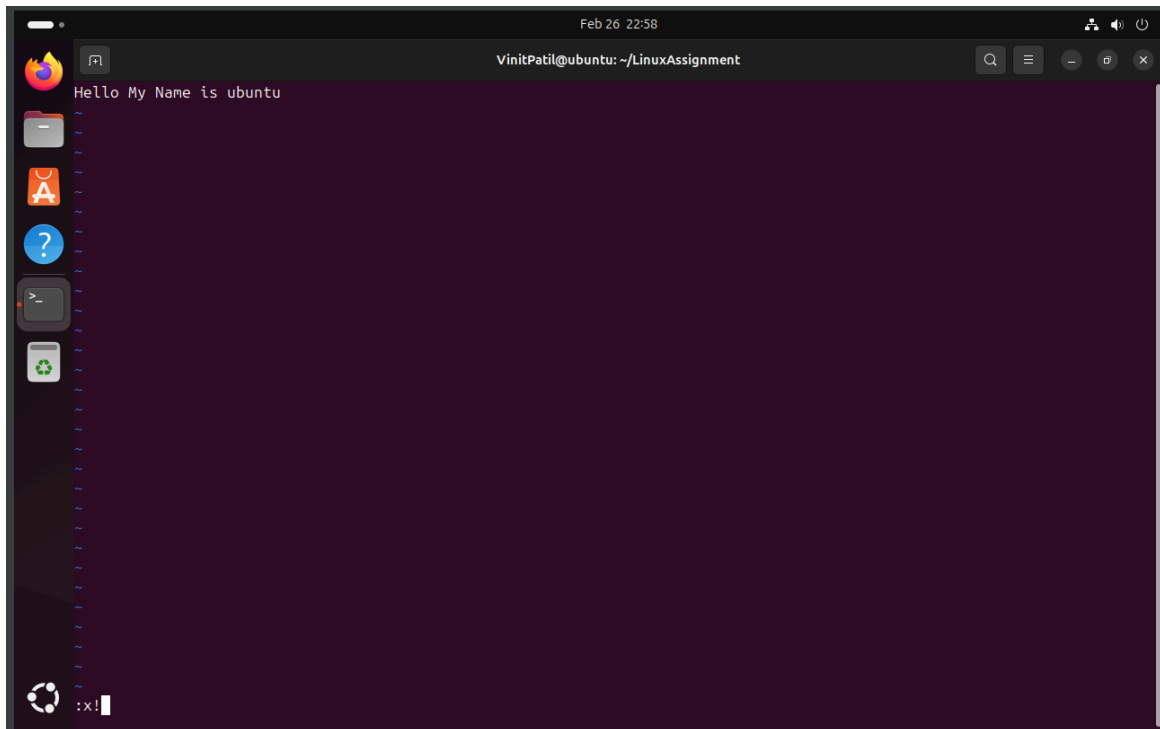
a. Open the "file1.txt" file in a text editor and add some text to it.



Before



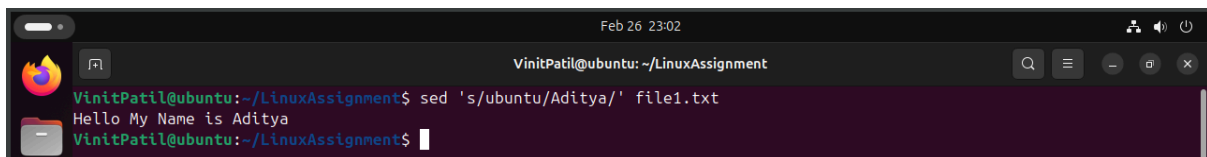
After



A terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment" with a timestamp of "Feb 26 22:58". The window shows the output of a command: "Hello My Name is ubuntu". The terminal has a dark purple background and a light blue cursor. The window's title bar includes standard Ubuntu window controls (minimize, maximize, close) and a search icon.

```
VinitPatil@ubuntu: ~/LinuxAssignment
Hello My Name is ubuntu
```

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

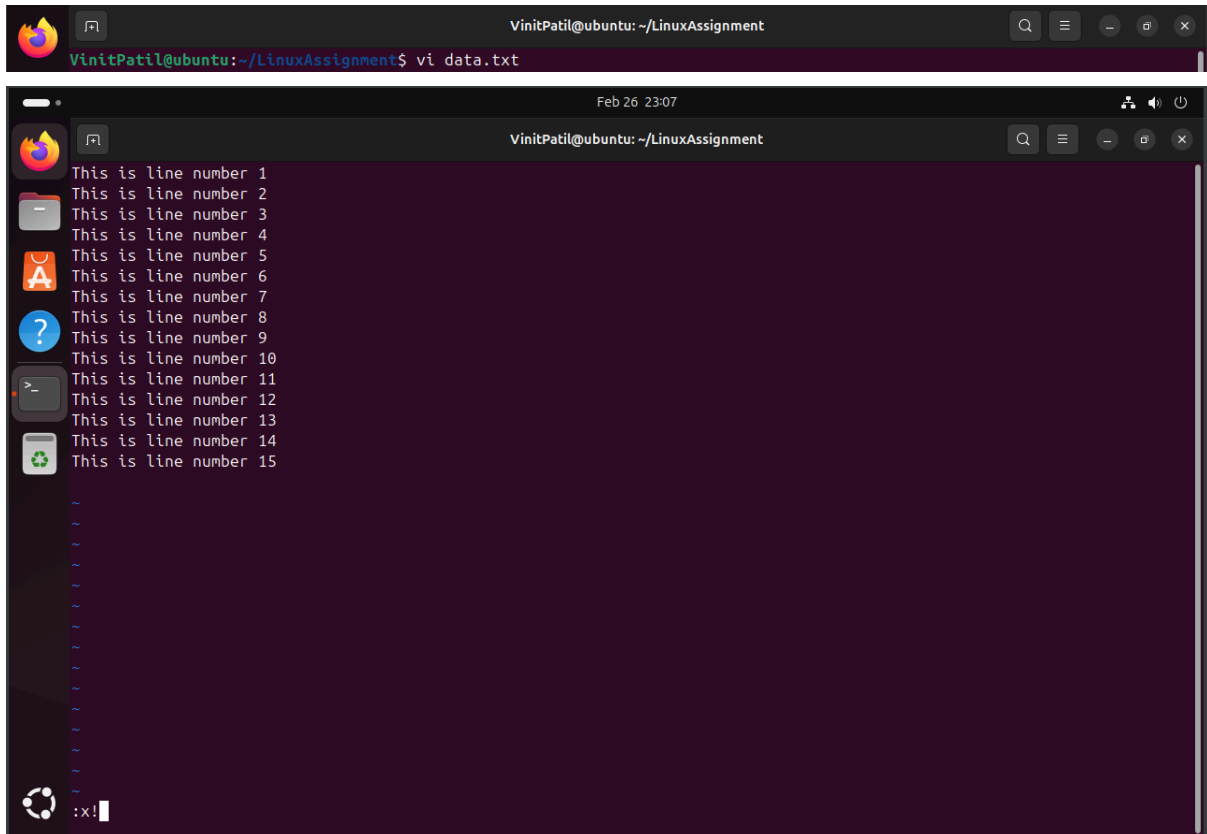


A terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment" with a timestamp of "Feb 26 23:02". The window shows the execution of a sed command to replace the word "ubuntu" with "Aditya" in a file named "file1.txt". The output shows the command being executed and the resulting text in the file.

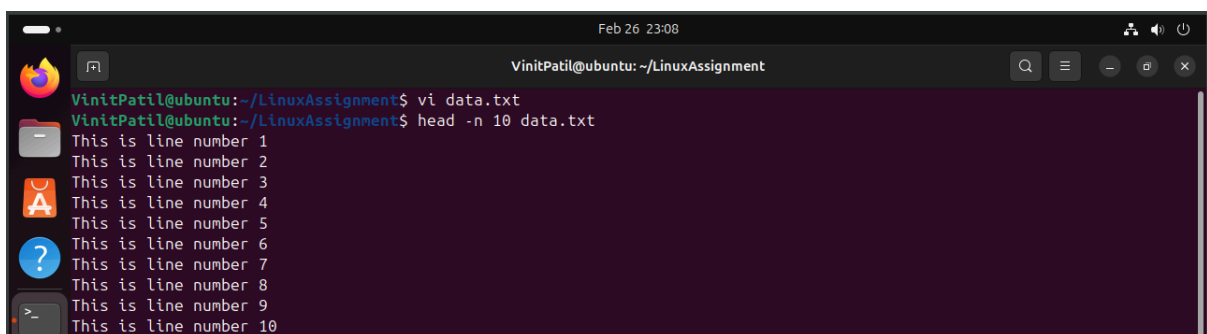
```
VinitPatil@ubuntu:~/LinuxAssignment$ sed 's/ubuntu/Aditya/' file1.txt
Hello My Name is Aditya
VinitPatil@ubuntu:~/LinuxAssignment$
```

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.

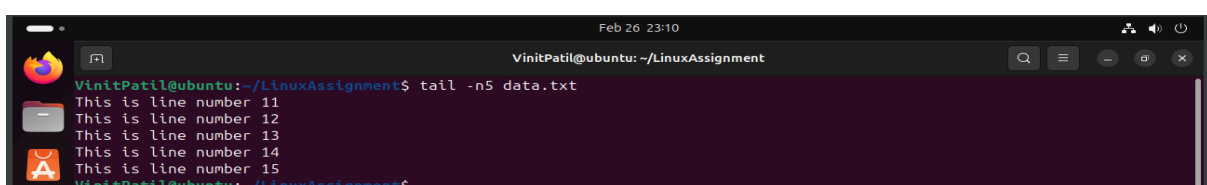


The screenshot shows a terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment". The command prompt is "VinitPatil@ubuntu:~/LinuxAssignment\$ vi data.txt". The terminal displays the contents of "data.txt" using the vi editor. The file contains 15 lines, each starting with "This is line number" followed by a number from 1 to 15. The terminal window has a dark background and a light-colored text. The vi editor's command line at the bottom shows ":x!".



The screenshot shows a terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment". The command prompt is "VinitPatil@ubuntu:~/LinuxAssignment\$ vi data.txt". The user has entered the command "head -n 10 data.txt". The terminal displays the first 10 lines of "data.txt", each starting with "This is line number" followed by a number from 1 to 10. The terminal window has a dark background and a light-colored text.

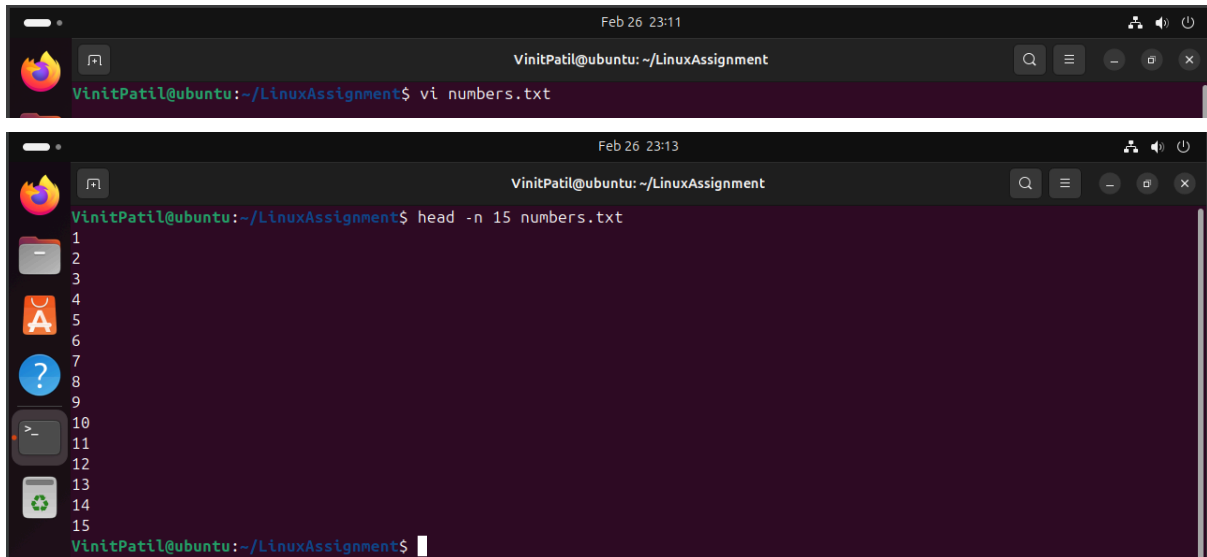
b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.



The screenshot shows a terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment". The command prompt is "VinitPatil@ubuntu:~/LinuxAssignment\$". The user has entered the command "tail -n5 data.txt". The terminal displays the last 5 lines of "data.txt", each starting with "This is line number" followed by a number from 11 to 15. The terminal window has a dark background and a light-colored text.



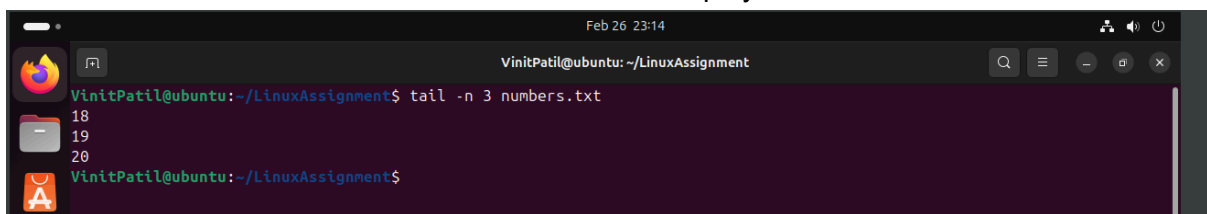
c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.



```
Feb 26 23:11
VinitPatil@ubuntu: ~/LinuxAssignment
VinitPatil@ubuntu:~/LinuxAssignment$ vi numbers.txt

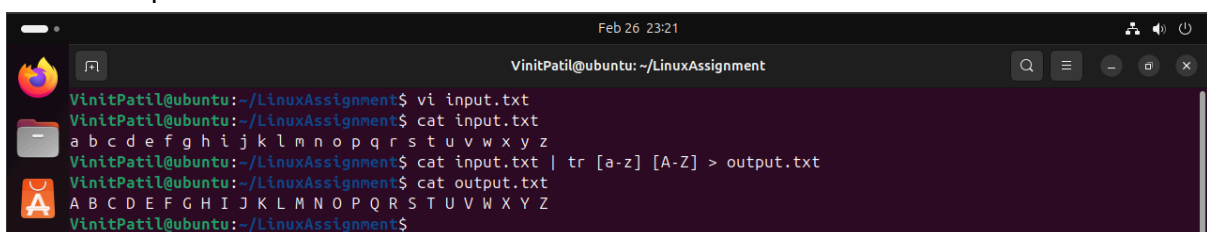
Feb 26 23:13
VinitPatil@ubuntu:~/LinuxAssignment$ head -n 15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
VinitPatil@ubuntu:~/LinuxAssignment$
```

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



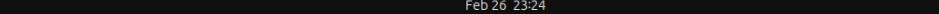
```
Feb 26 23:14
VinitPatil@ubuntu: ~/LinuxAssignment
VinitPatil@ubuntu:~/LinuxAssignment$ tail -n 3 numbers.txt
18
19
20
VinitPatil@ubuntu:~/LinuxAssignment$
```

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."



```
Feb 26 23:21
VinitPatil@ubuntu: ~/LinuxAssignment
VinitPatil@ubuntu:~/LinuxAssignment$ vi input.txt
VinitPatil@ubuntu:~/LinuxAssignment$ cat input.txt
a b c d e f g h i j k l m n o p q r s t u v w x y z
VinitPatil@ubuntu:~/LinuxAssignment$ cat input.txt | tr [a-z] [A-Z] > output.txt
VinitPatil@ubuntu:~/LinuxAssignment$ cat output.txt
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
VinitPatil@ubuntu:~/LinuxAssignment$
```

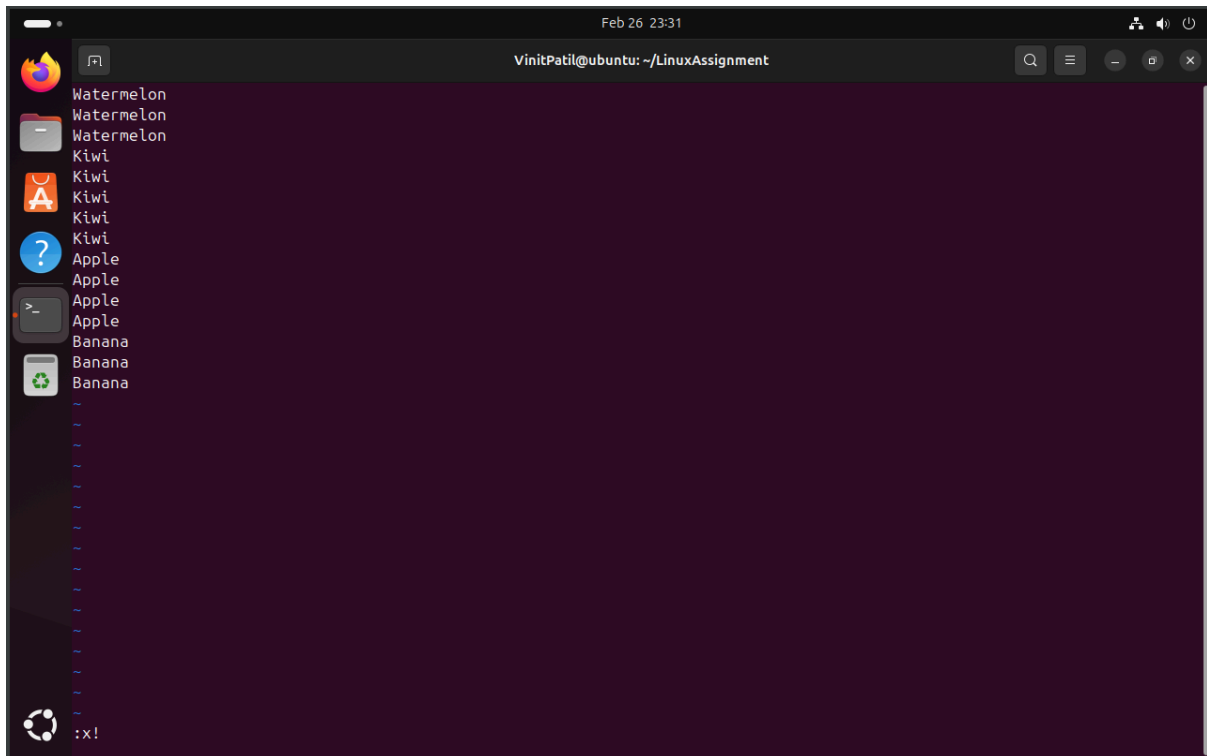
f. In a file named "duplicate.txt," there are several lines of text, some of which are duplicates. Use a command to display only the unique lines from "duplicate.txt."

A screenshot of a Linux desktop environment. The desktop background is dark purple. On the left side, there is a vertical dock with several application icons: a Firefox browser icon, a file manager icon, an application icon with a red 'A', a question mark icon, a terminal icon, and a recycling bin icon. At the bottom left, there is a circular icon with three arrows and a small status bar showing ':x!' and a battery level indicator. In the center of the screen, a terminal window is open. The terminal title bar reads 'VinitPatil@ubuntu: ~/LinuxAssignment'. The terminal content shows the text 'Hello Ubuntu' repeated ten times, one on each line. The top of the screen shows a system status bar with the date and time 'Feb 26 23:24' and icons for network, sound, and power.

The screenshot shows a terminal window with the following content:

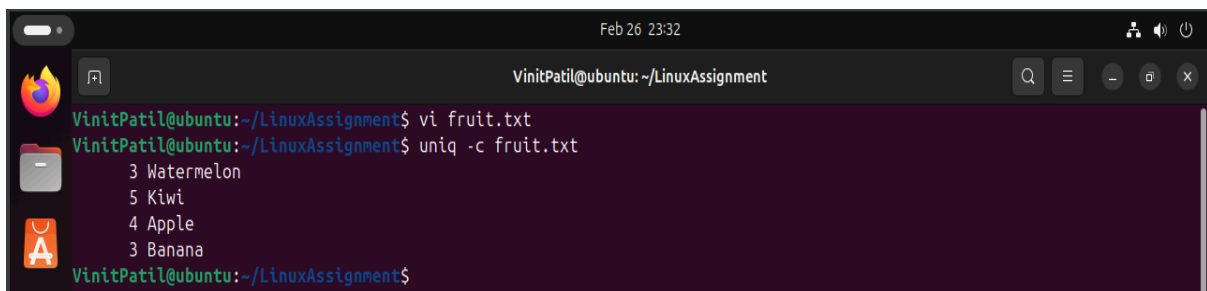
```
VinitPatil@ubuntu: ~/LinuxAssignment
VinitPatil@ubuntu:~/LinuxAssignment$ vi duplicate.txt
VinitPatil@ubuntu:~/LinuxAssignment$ uniq duplicate.txt
Hello Ubuntu
VinitPatil@ubuntu:~/LinuxAssignment$
```

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."



A terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment" showing the contents of a file named "fruit.txt". The file contains a list of fruits: Watermelon, Watermelon, Watermelon, Kiwi, Kiwi, Kiwi, Kiwi, Kiwi, Apple, Apple, Apple, Apple, Banana, Banana, and Banana. The terminal shows the file's content line by line.

```
Watermelon
Watermelon
Watermelon
Kiwi
Kiwi
Kiwi
Kiwi
Kiwi
Apple
Apple
Apple
Apple
Banana
Banana
Banana
```



A terminal window titled "VinitPatil@ubuntu: ~/LinuxAssignment" showing the command to count unique fruits. The user enters the command `vi fruit.txt` and then `uniq -c fruit.txt`. The output shows the count of each unique fruit: 3 Watermelon, 5 Kiwi, 4 Apple, and 3 Banana.

```
VinitPatil@ubuntu:~/LinuxAssignment$ vi fruit.txt
VinitPatil@ubuntu:~/LinuxAssignment$ uniq -c fruit.txt
  3 Watermelon
  5 Kiwi
  4 Apple
  3 Banana
VinitPatil@ubuntu:~/LinuxAssignment$
```