Concepts of Operating System (BY SAITEJA GAMPA)

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.

```
cdac@DESKTOP-MUSUDSF:~$ cd
cdac@DESKTOP-MUSUDSF:~$ ls
cdac@DESKTOP-MUSUDSF:~$ mkdir LinuxAssignment
cdac@DESKTOP-MUSUDSF:~$ ls
LinuxAssignment
cdac@DESKTOP-MUSUDSF:~$ cd LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$
```

b) File Management:

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

```
cdac@DESKTOP-MUSUDSF:~$ cd LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ touch file1.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ cat file1.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ cat file1.txt
Hello World
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$
```

c) Directory Management:

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

```
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ mkdir docs
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$
```

d) Copy and Move Files:

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

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

cp **(Copy Command):**

- Used to copy files and directories from one location to another.
- Example: cp file1.txt docs/ copies file1.txt to the docs directory.

mv **(Move Command):**

- Used to move or rename files and directories.
- Example: mv docs/file1.txt docs/file2.txt renames file1.txt to file2.txt in the docs directory.

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-MUSUDSF:~/LinuxAssignment/docs$ pwd
/home/cdac/LinuxAssignment/docs
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ chmod u=rwx,g=r,o=r file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ chown $USER file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 12 Feb 26 18:31 file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ chmod 742 file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr---w- 1 cdac cdac 12 Feb 26 18:31 file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$
```

chmod 744: Sets permissions as follows:

- Owner: Read, Write, Execute (7)
- Group: Read (4)
- Others: Read (4)

chown $USER: Changes the owner to the current user.

Challenge: Required sudo privileges for chown.

f) Final Checklist:

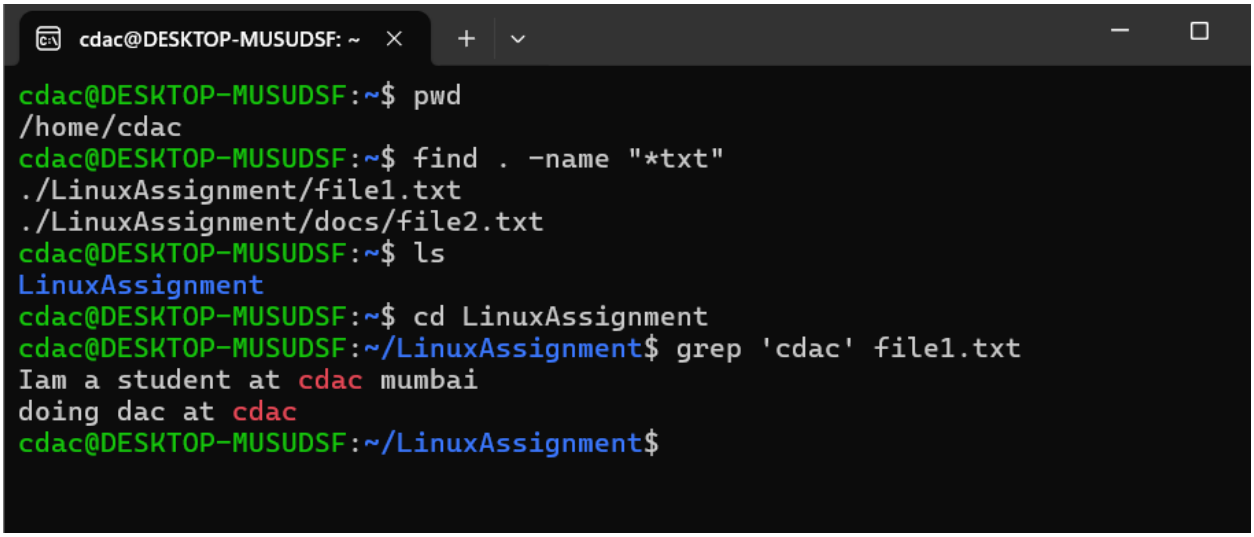
a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.

```
cdac@DESKTOP-MUSUDSF:~$ cd LinuxAssignment
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ cd docs
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$ ls /
bin                home               lost+found  root               srv
bin.usr-is-merged  init               media       run                sys
boot               lib                mnt         sbin               tmp
dev                lib.usr-is-merged  opt         sbin.usr-is-merged  usr
etc                lib64              proc        snap               var
cdac@DESKTOP-MUSUDSF:~/LinuxAssignment$
```

g) **File Searching:**

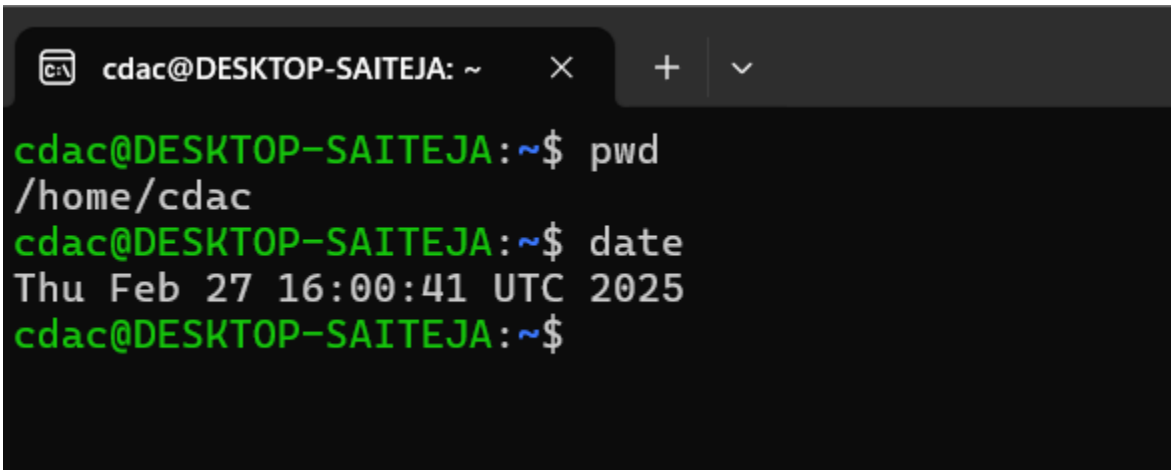
a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

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



h) **System Information:**

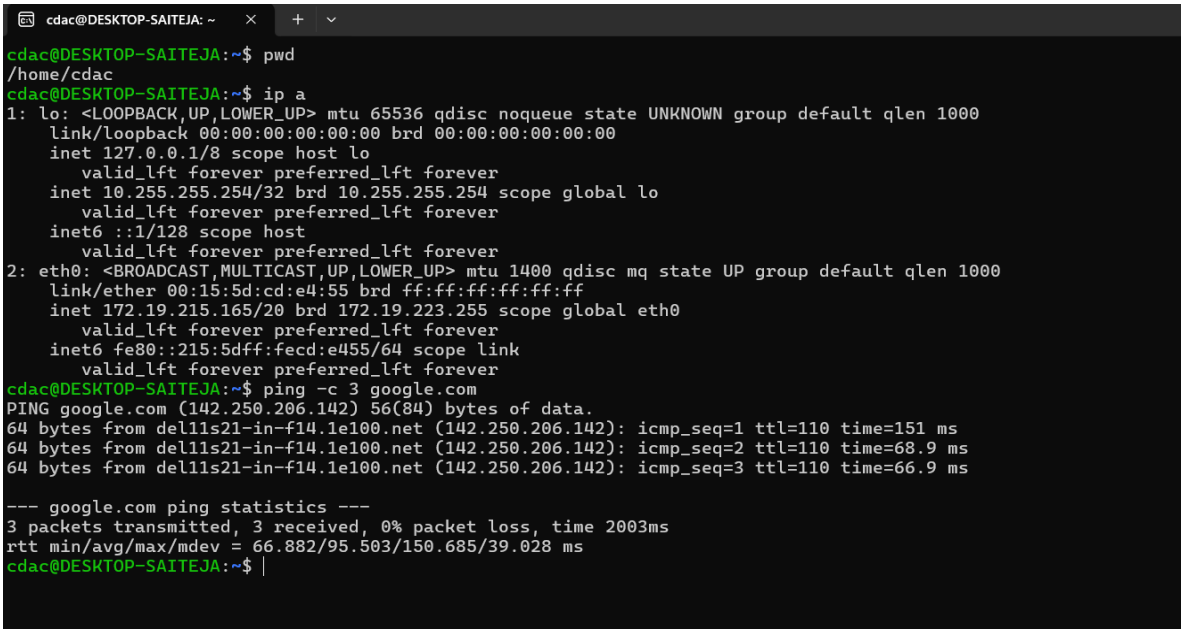
a. Display the current system date and time.



i) **Networking**:

a. Display the IP address of the system.

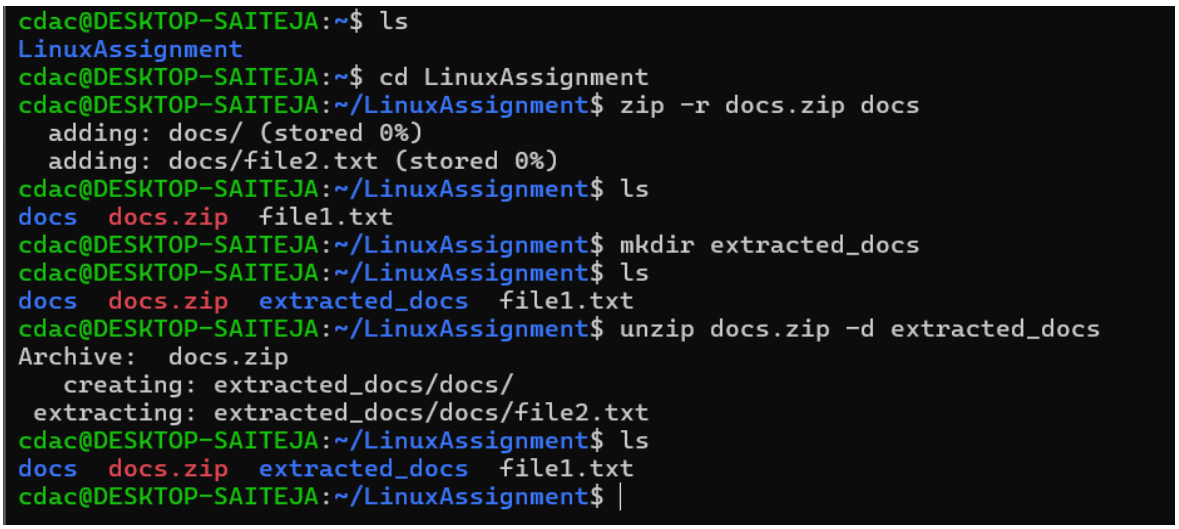
b. Ping a remote server to check connectivity (provide a remote server address to ping).



j) **File Compression:**

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

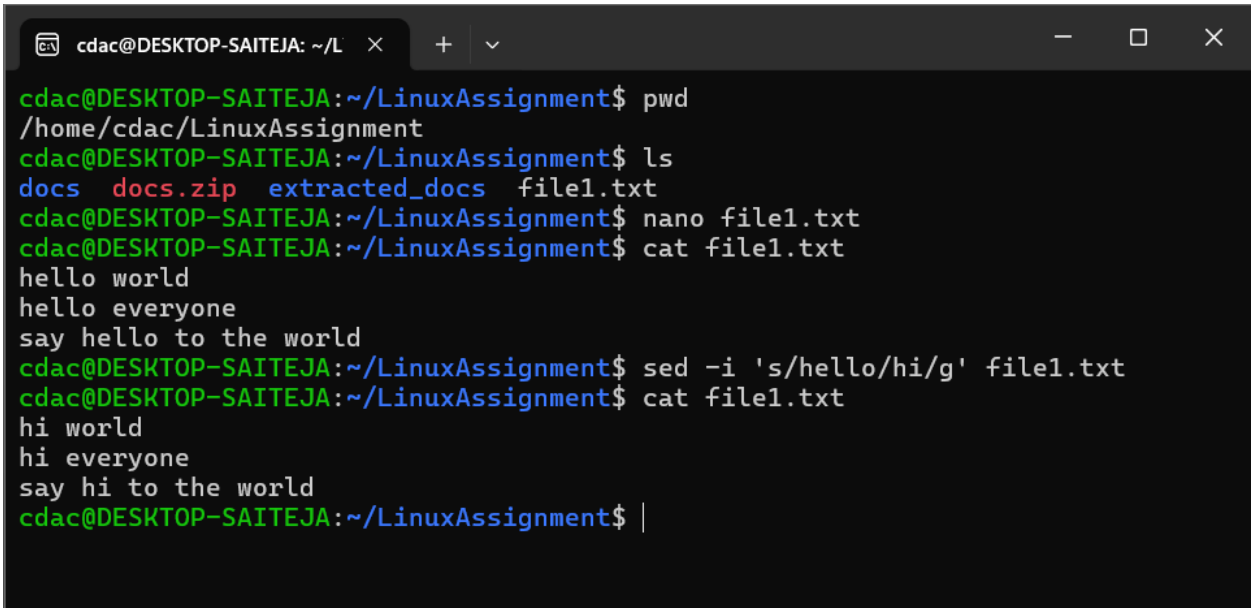
b. Extract the contents of the zip file into a new directory.



k**) File Editing:**

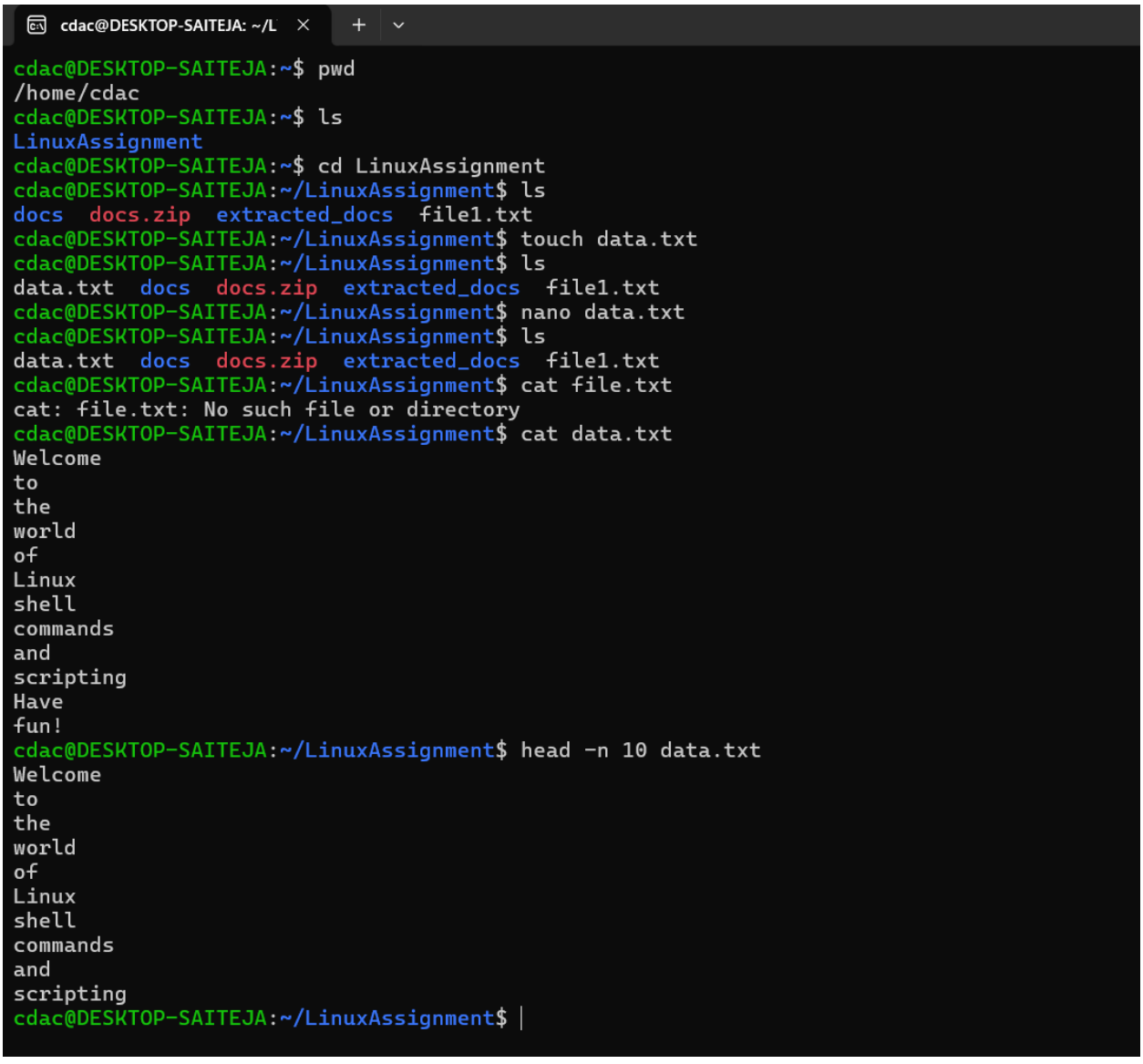
a. Open the "file1.txt" file in a text editor and add some text to it.

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



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

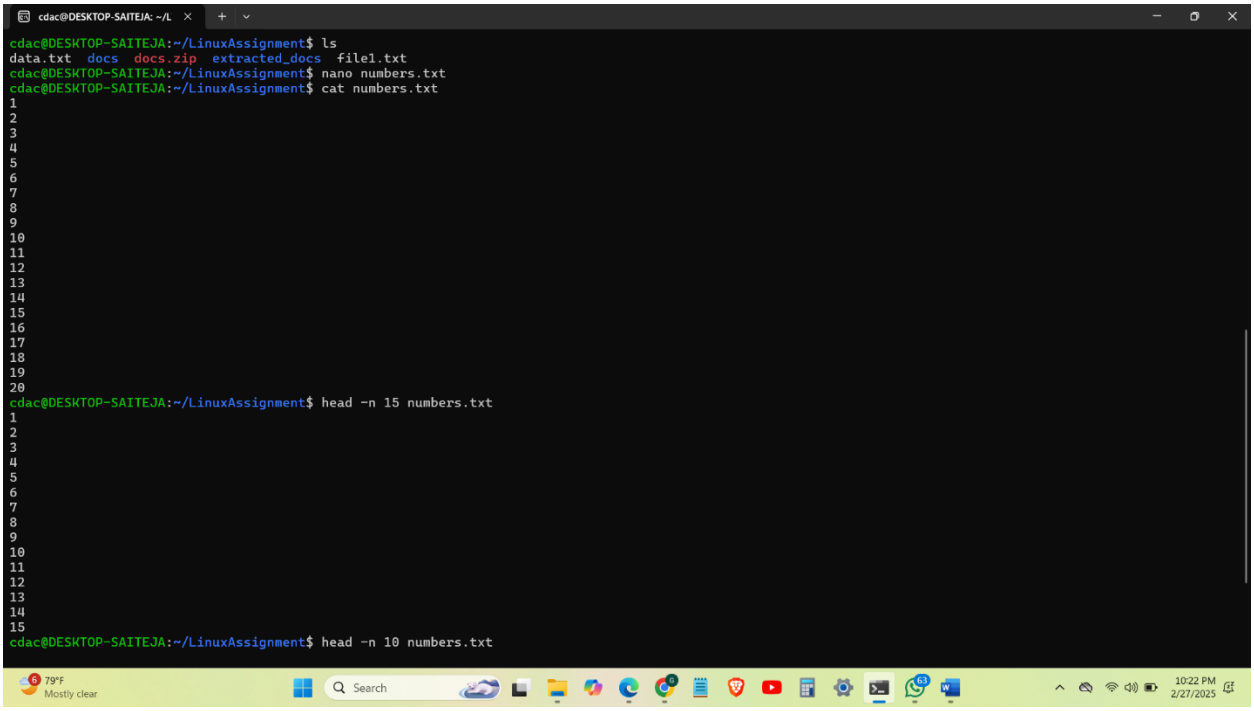
a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command**.**



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-SAITEJA:~/LinuxAssignment$ tail -n 5 data.txt
commands
and
scripting
Have
fun!
cdac@DESKTOP-SAITEJA:~/LinuxAssignment$
```

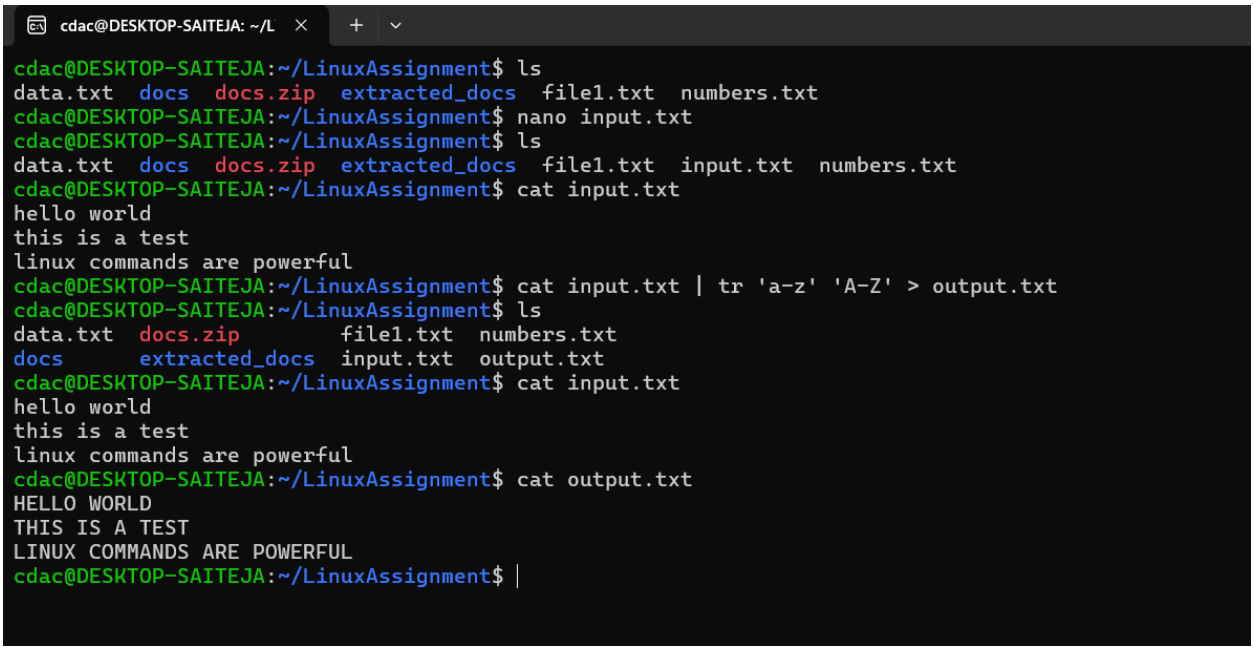
c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.



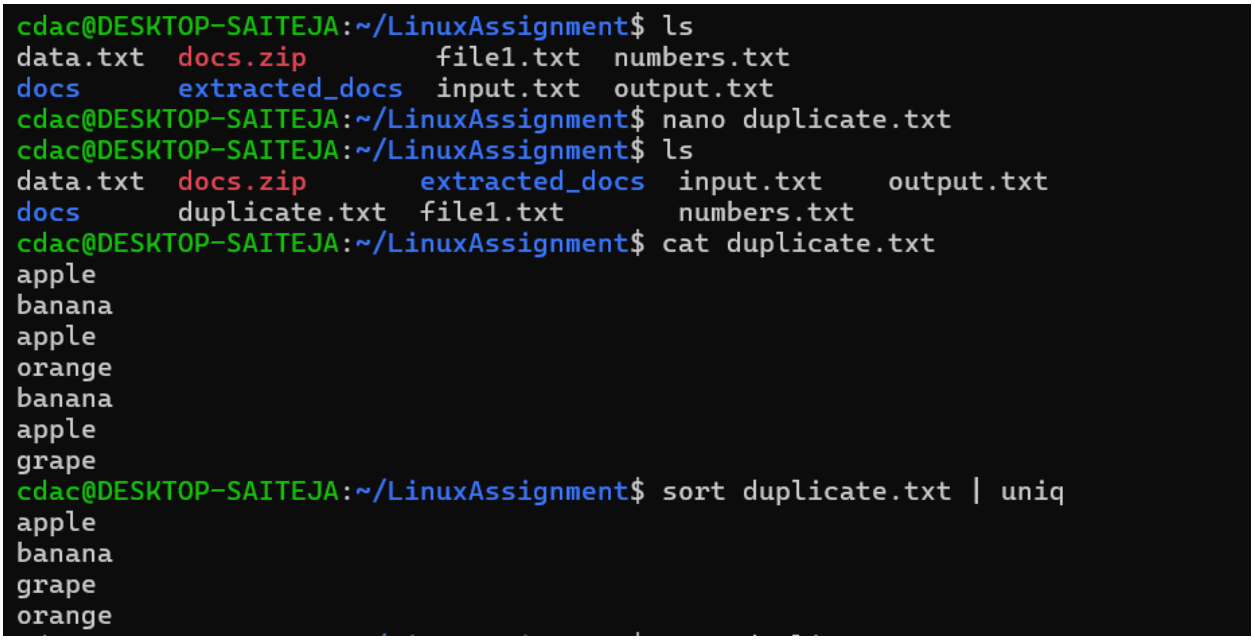
d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

```
cdac@DESKTOP-SAITEJA:~/LinuxAssignment$ tail -n 3 numbers.txt
18
19
20
cdac@DESKTOP-SAITEJA:~/LinuxAssignment$
```

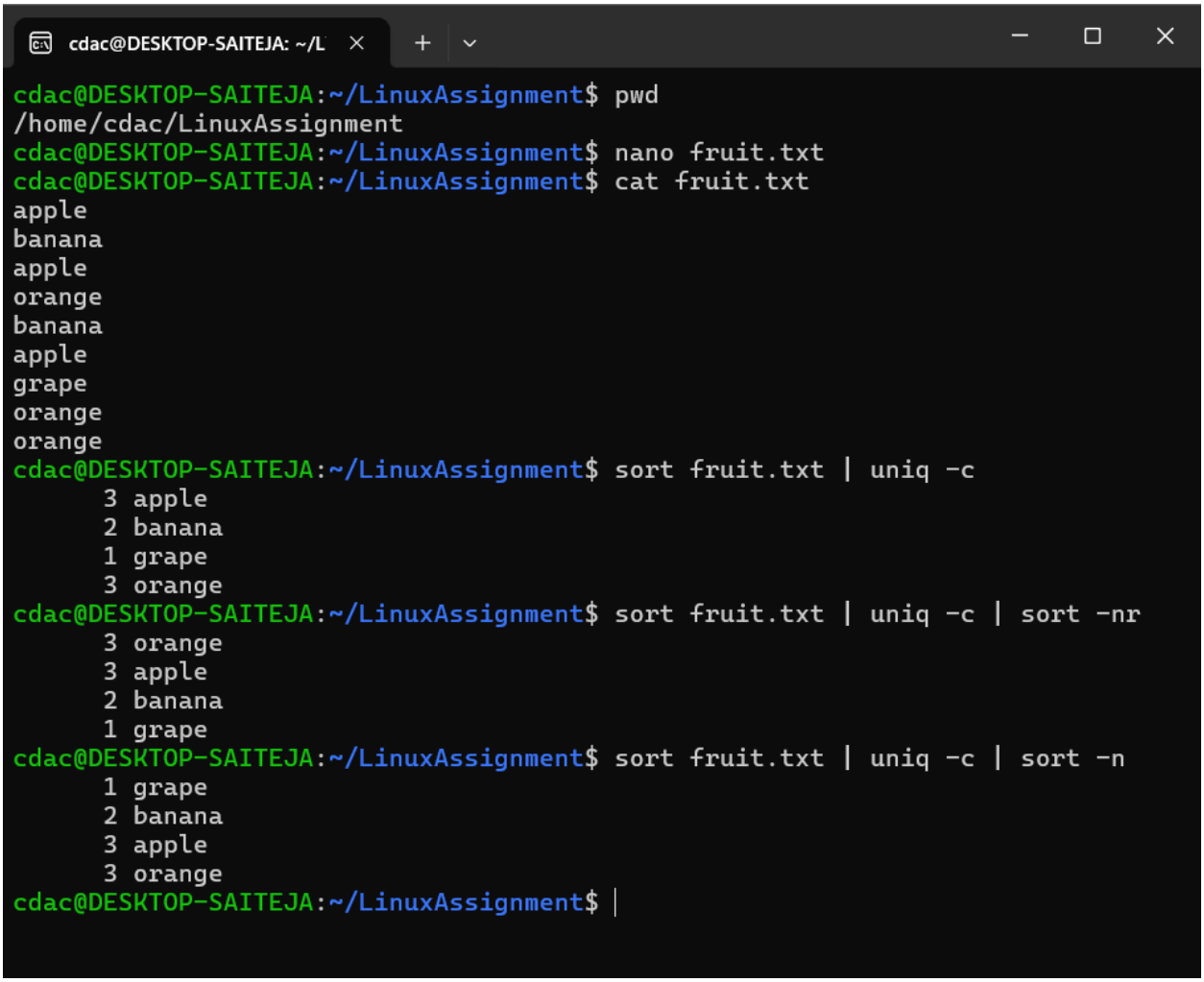
e. Imagine you have a file named "input.txt" with text content. Use a command to translate all lowercase letters to uppercase in "input.txt" and save the modified text in a new file named "output.txt."



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."



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."



Challenges Encountered:

1. Permission Problems: Experienced permission problems using chown. Solution: Used sudo.

2. Case Sensitivity in Searching: grep is case-sensitive. Solution: Used grep -i for case-insensitive searching.

3. Network Commands: The ifconfig could not be traced in my machine. Solution: ip a used instead or accessed using sudo.