Problem 1

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@PRATIK-DAREKAR:~$ pwd

/home/cdac

cdac@PRATIK-DAREKAR:~$ ls

cdac@PRATIK-DAREKAR:~$ feb25

feb25: command not found

cdac@PRATIK-DAREKAR:~$ pwd

/home/cdac

cdac@PRATIK-DAREKAR:~$ cd

cdac@PRATIK-DAREKAR:~$ ls

cdac@PRATIK-DAREKAR:~$ mkdir LinuxAssignment

cdac@PRATIK-DAREKAR:~$ ls

LinuxAssignment

cdac@PRATIK-DAREKAR:~$ cd LinuxAssignment/

cdac@PRATIK-DAREKAR:~/LinuxAssignment$

b) File Management:

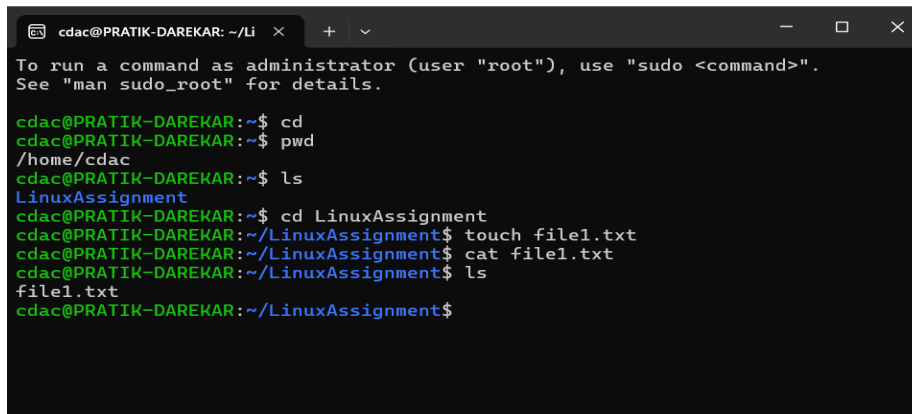**a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents**

cdac@PRATIK-DAREKAR:~$ cd LinuxAssignment

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ touch file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cat file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls

file1.txt

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

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ mkdir -p LinuxAssignment/docs

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls

LinuxAssignment file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$

```
cdac@PRATIK-DAREKAR:~$ cd
cdac@PRATIK-DAREKAR:~$ pwd
/home/cdac
cdac@PRATIK-DAREKAR:~$ ls
LinuxAssignment
cdac@PRATIK-DAREKAR:~$ cd LinuxAssignment
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ touch file1.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cat file1.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls
file1.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ mkdir -p LinuxAssignment/docs
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls
LinuxAssignment  file1.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$
```

d) Copy and Move Files:

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

cdac@PRATIK-DAREKAR:~$ pwd

/home/cdac

cdac@PRATIK-DAREKAR:~$ ls -1

LinuxAssignment

cdac@PRATIK-DAREKAR:~$ cd LinuxAssignment

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cp file1.txt docs/file2.txt

cp: cannot create regular file 'docs/file2.txt': No such file or directory

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ mkdir -p docs

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cp file1.txt docs/file2.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 docs/

file2.txt

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@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 LinuxAssignment/docs/

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cp LinuxAssignment/file1.txt LinuxAssignment/docs/file2.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ chmod 744 LinuxAssignment/docs/file2.txt

chown $(whoami) LinuxAssignment/docs/file2.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ chown $(whoami) LinuxAssignment/docs/file2.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 LinuxAssignment/docs/file2.txt

LinuxAssignment/docs/file2.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$

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@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 LinuxAssignment

docs

file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 /

bin

bin.usr-is-merged

boot

dev

etc

home

init

lib

lib.usr-is-merged

lib64

lost+found

media

mnt

opt

proc

root

run

sbin

sbin.usr-is-merged

snap

srv

sys

tmp

usr

var

cdac@PRATIK-DAREKAR:~/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 file name and the specific word to search).

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 *.txt

file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ grep -i "word" file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ grep -n "word" file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls

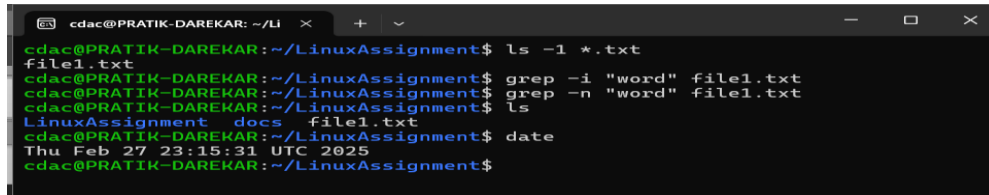LinuxAssignment docs file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$

h) System Information:

a. Display the current system date and time

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ date

Thu Feb 27 23:15:31 UTC 2025

i) Networking:

a. Display the IP address of the system.

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ip a

1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000

   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00

   inet 127.0.0.1/8 scope host lo

     valid_lft forever preferred_lft forever

   inet 10.255.255.254/32 brd 10.255.255.254 scope global lo

     valid_lft forever preferred_lft forever

   inet6 ::1/128 scope host

     valid_lft forever preferred_lft forever

2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000

   link/ether 00:15:5d:05:20:27 brd ff:ff:ff:ff:ff:ff

   inet 172.22.212.237/20 brd 172.22.223.255 scope global eth0

     valid_lft forever preferred_lft forever

   inet6 fe80::215:5dff:fe05:2027/64 scope link

     valid_lft forever preferred_lft forever

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ hostname -I

172.22.212.237

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

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ping -c 4 google.com

PING google.com (142.250.183.78) 56(84) bytes of data.

64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=1 ttl=118 time=11.4 ms

64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=2 ttl=118 time=12.4 ms

64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=3 ttl=118 time=11.4 ms

64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=4 ttl=118 time=10.8 ms

--- google.com ping statistics ---

4 packets transmitted, 4 received, 0% packet loss, time 3004ms

rtt min/avg/max/mdev = 10.788/11.495/12.430/0.592 ms

j) File Compression:

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

cdac@PRATIK-DAREKAR:~$ ls -1

LinuxAssignment

cdac@PRATIK-DAREKAR:~$ find ~ -type d -name "docs"

/home/cdac/LinuxAssignment/docs

/home/cdac/LinuxAssignment/LinuxAssignment/docs

cdac@PRATIK-DAREKAR:~$ cd /path/to/LinuxAssignment

-bash: cd: /path/to/LinuxAssignment: No such file or directory

cdac@PRATIK-DAREKAR:~$ cd ~/LinuxAssignment

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1

LinuxAssignment

docs

file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ zip -r docs.zip docs

  adding: docs/ (stored 0%)

  adding: docs/file2.txt (stored 0%)

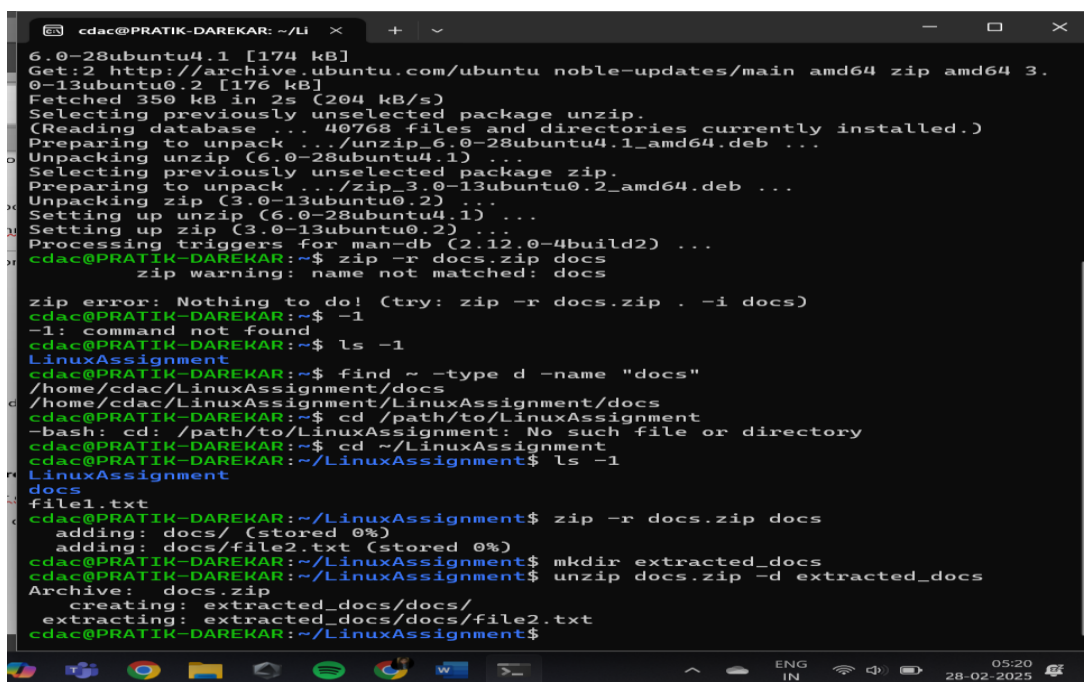**b. Extract the contents of the zip file into a new directory.**

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ mkdir extracted_docs

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ unzip docs.zip -d extracted_docs

Archive: docs.zip

  creating: extracted_docs/docs/

 extracting: extracted_docs/docs/file2.txt

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).

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ nano file1.txt

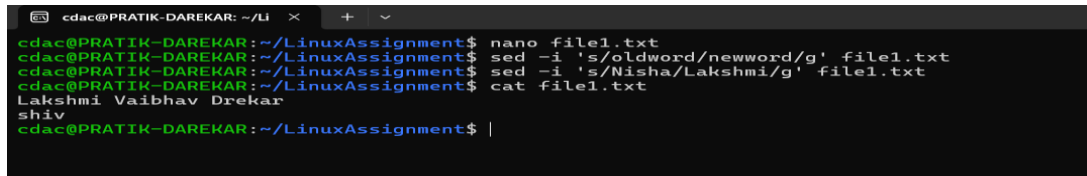cdac@PRATIK-DAREKAR:~/LinuxAssignment$ sed -i 's/oldword/newword/g' file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ sed -i 's/Nisha/Lakshmi/g' file1.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cat file1.txt

Lakshmi Vaibhav Drekar

shiv

cdac@PRATIK-DAREKAR:~/LinuxAssignment$

Problem 2

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@PRATIK-DAREKAR:~/LinuxAssignment$ touch data.txt
    cdac@PRATIK-DAREKAR:~/LinuxAssignment$ nano data.txt
    cdac@PRATIK-DAREKAR:~/LinuxAssignment$ head -n 10 data.txt
    Nisha
    Vaibhav
    Pratik
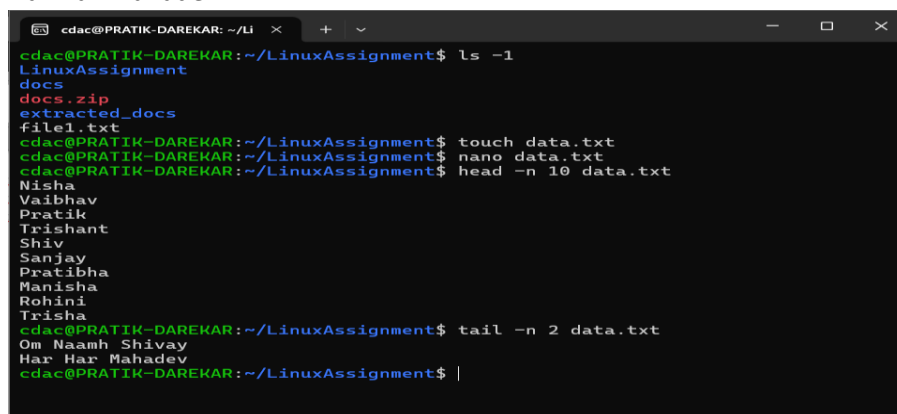   Trishant
    Shiv
    Sanjay
    Pratibha
    Manisha
    Rohini
    Trisha
    cdac@PRATIK-DAREKAR:~/LinuxAssignment$ tail -n 2 data.txt
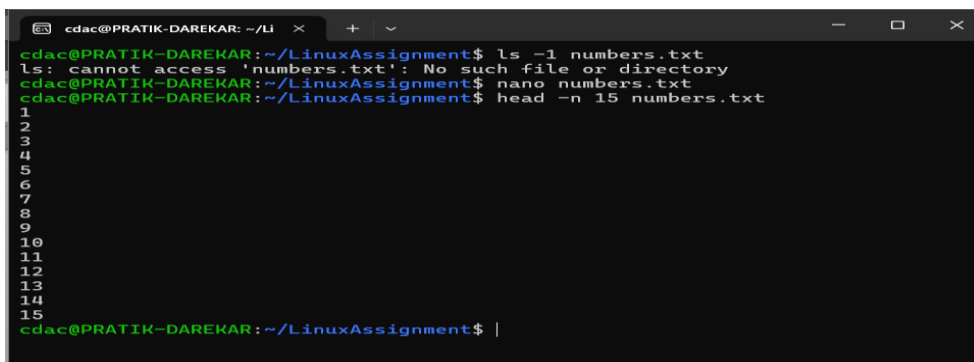   Om Naamh Shivay
    Har Har Mahadev

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@PRATIK-DAREKAR:~/LinuxAssignment$ tail -n 5 data.txt
Sahil
Sohom
Tanu
Om Naamh Shivay
Har Har Mahadev

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@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 numbers.txt
ls: cannot access 'numbers.txt': No such file or directory
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ nano numbers.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ head -n 15 numbers.txt
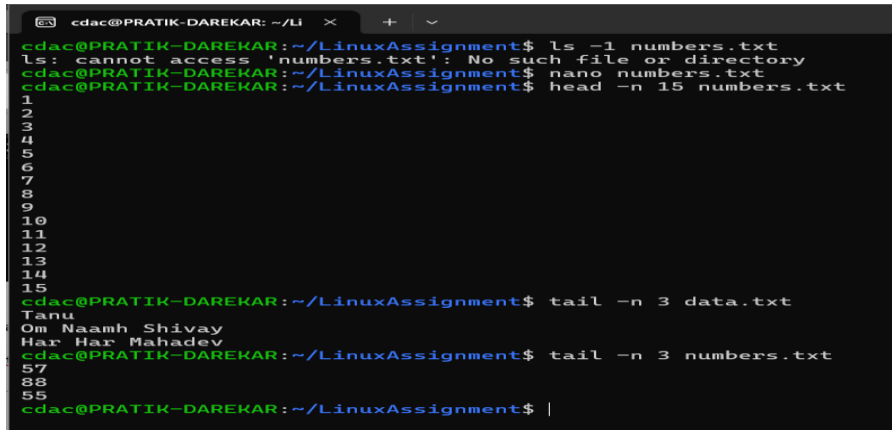1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

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

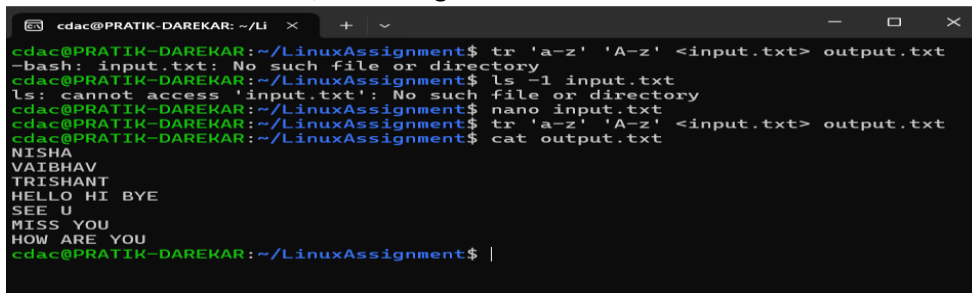cdac@PRATIK-DAREKAR:~/LinuxAssignment$ tail -n 3 numbers.txt
57

88
55
cdac@PRATIK-DAREKAR:~/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@PRATIK-DAREKAR:~/LinuxAssignment$ ls -1 input.txt
ls: cannot access 'input.txt': No such file or directory
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ nano input.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ tr 'a-z' 'A-z' <input.txt> output.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ cat output.txt
NISHA
VAIBHAV
TRISHANT
HELLO HI BYE
SEE U
MISS YOU
HOW ARE YOU
cdac@PRATIK-DAREKAR:~/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@PRATIK-DAREKAR:~/LinuxAssignment$ nano duplicate.txt
cdac@PRATIK-DAREKAR:~/LinuxAssignment$ sort duplicate.txt | uniq
good morning
hello

hello

how are you

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ sort duplicate.txt | uniq -u

good morning

hello

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@PRATIK-DAREKAR:~/LinuxAssignment$ nano fruit.txt

cdac@PRATIK-DAREKAR:~/LinuxAssignment$ sort fruit.txt | uniq -c

    3 apple

    5 banana

    1 grape

    1 orange

cdac@PRATIK-DAREKAR:~/LinuxAssignment$