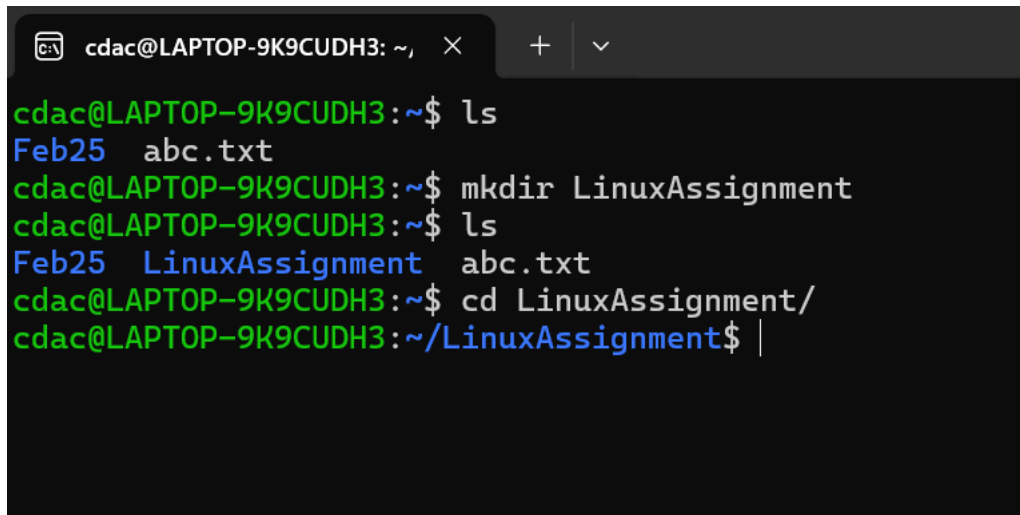


Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a) Navigate and List:

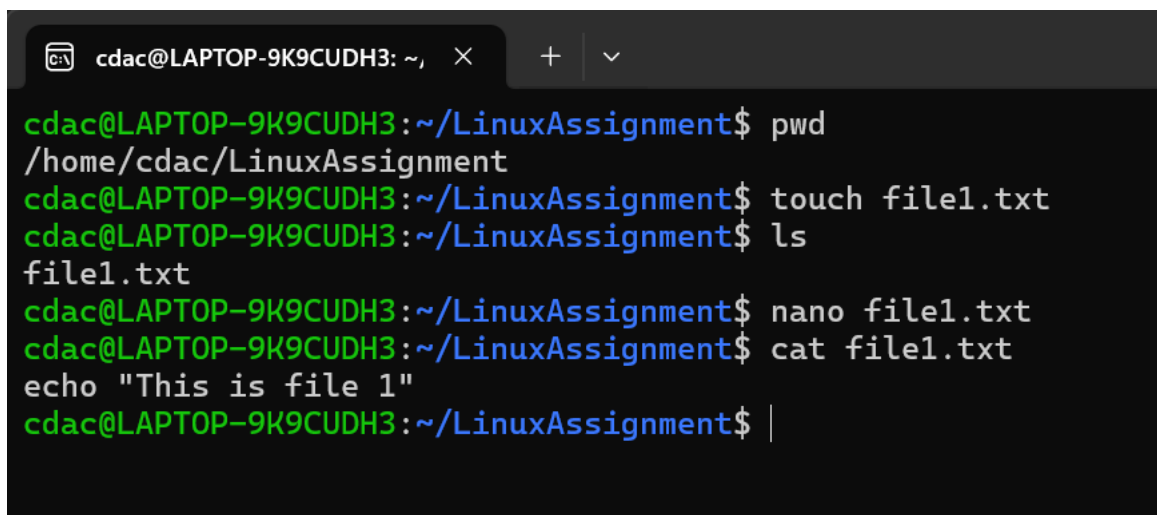
a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

A terminal window with a dark background and light green text. The prompt is 'cdac@LAPTOP-9K9CUDH3: ~'. The user enters 'ls', and the output is 'Feb25 abc.txt'. Then, the user enters 'mkdir LinuxAssignment'. Next, the user enters 'ls' again, and the output is 'Feb25 LinuxAssignment abc.txt'. Finally, the user enters 'cd LinuxAssignment/' and the prompt changes to 'cdac@LAPTOP-9K9CUDH3: ~/LinuxAssignment\$'.

```
cdac@LAPTOP-9K9CUDH3:~$ ls
Feb25  abc.txt
cdac@LAPTOP-9K9CUDH3:~$ mkdir LinuxAssignment
cdac@LAPTOP-9K9CUDH3:~$ ls
Feb25  LinuxAssignment abc.txt
cdac@LAPTOP-9K9CUDH3:~$ cd LinuxAssignment/
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ |
```

b) File Management:

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

A terminal window with a dark background and light green text. The prompt is 'cdac@LAPTOP-9K9CUDH3: ~/LinuxAssignment'. The user enters 'pwd', and the output is '/home/cdac/LinuxAssignment'. Then, the user enters 'touch file1.txt'. Next, the user enters 'ls', and the output is 'file1.txt'. Then, the user enters 'nano file1.txt'. Finally, the user enters 'cat file1.txt' and 'echo "This is file 1"', and the output is 'This is file 1'.

```
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ touch file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls
file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cat file1.txt
echo "This is file 1"
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ |
```

c) Directory Management:

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

```
cdac@LAPTOP-9K9CUDH3: ~, × + ▾
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ |
```

d) Copy and Move Files:

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

```
cdac@LAPTOP-9K9CUDH3: ~, × + ▾
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cd docs
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ ls
file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ cat file2.txt
echo "This is file 1"
cdac@LAPTOP-9K9CUDH3:~/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.

```
cdac@LAPTOP-9K9CUDH3: ~, × + ▾
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ chmod o+r,o+r,o+x file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ chmod o+r,o+w,o+x file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ stat file2.txt
  File: file2.txt
  Size: 22          Blocks: 8          IO Block: 4096   regular file
Device: 8,32      Inode: 18136         Links: 1
Access: (0647/-rw-r--rwx)  Uid: ( 1000/   cdac)   Gid: ( 1000/   cdac)
Access: 2025-02-26 16:08:20.889508385 +0000
Modify: 2025-02-26 16:07:53.875356899 +0000
Change: 2025-02-26 16:14:08.485514101 +0000
 Birth: 2025-02-26 16:07:53.866190238 +0000
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ ld -l file2.txt
ld: cannot find -lfile2.txt: No such file or directory
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ ls -l file2.txt
-rw-r--rwx 1 cdac cdac 22 Feb 26 16:07 file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ |
```

```
cdac@LAPTOP-9K9CUDH3: ~$ chown $USER file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ stat file2.txt
  File: file2.txt
  Size: 22          Blocks: 8          IO Block: 4096   regular file
Device: 8,32      Inode: 18136         Links: 1
Access: (0647/-rw-r--rwx)  Uid: ( 1000/   cdac)   Gid: ( 1000/   cdac)
Access: 2025-02-26 16:08:20.889508385 +0000
Modify: 2025-02-26 16:07:53.875356899 +0000
Change: 2025-02-26 16:22:50.510134435 +0000
 Birth: 2025-02-26 16:07:53.866190238 +0000
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment/docs$ ls -l file2.txt
-rw-r--rwx 1 cdac cdac 22 Feb 26 16:07 file2.txt
cdac@LAPTOP-9K9CUDH3:~/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.

```
cdac@LAPTOP-9K9CUDH3: ~$ ls -l LinuxAssignment
total 8
drwxr-xr-x 2 cdac cdac 4096 Feb 26 16:16 docs
-rw-r--r-- 1 cdac cdac  22 Feb 26 15:54 file1.txt
cdac@LAPTOP-9K9CUDH3: ~$ |
```

```
cdac@LAPTOP-9K9CUDH3: ~ × + v
drwxr-xr-x 2 cdac cdac 4096 Feb 26 16:16 docs
-rw-r--r-- 1 cdac cdac 22 Feb 26 15:54 file1.txt
cdac@LAPTOP-9K9CUDH3:~$ 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 3580 Feb 26 15:49 dev
drwxr-xr-x 87 root root 4096 Feb 26 15:49 etc
drwxr-xr-x 3 root root 4096 Feb 24 11:56 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 24 11:51 lost+found
drwxr-xr-x 2 root root 4096 Jan 6 20:13 media
drwxr-xr-x 6 root root 4096 Feb 24 11:51 mnt
drwxr-xr-x 2 root root 4096 Jan 6 20:13 opt
dr-xr-xr-x 172 root root 0 Feb 26 15:49 proc
drwx----- 4 root root 4096 Feb 24 11:52 root
drwxr-xr-x 18 root root 540 Feb 26 15:49 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 2 root root 4096 Feb 24 11:52 snap
drwxr-xr-x 2 root root 4096 Jan 6 20:13 srv
dr-xr-xr-x 11 root root 0 Feb 26 15:49 sys
drwxrwxrwt 11 root root 4096 Feb 26 15:50 tmp
drwxr-xr-x 12 root root 4096 Jan 6 20:13 usr
drwxr-xr-x 13 root root 4096 Feb 24 11:51 var
cdac@LAPTOP-9K9CUDH3:~$ |
```

g) File Searching:

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

```
cdac@LAPTOP-9K9CUDH3: ~ × + v
cdac@LAPTOP-9K9CUDH3:~$ find . -type f -name "*.txt"
./abc.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file2.txt
cdac@LAPTOP-9K9CUDH3:~$
```

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

```
cdac@LAPTOP-9K9CUDH3: ~  
cdac@LAPTOP-9K9CUDH3:~$ grep "Happy" abc.txt  
I am Happy to see you  
cdac@LAPTOP-9K9CUDH3:~$ |
```

h) System Information:

a. Display the current system date and time.

```
cdac@LAPTOP-9K9CUDH3: ~  
cdac@LAPTOP-9K9CUDH3:~$ date  
Wed Feb 26 16:33:38 UTC 2025  
cdac@LAPTOP-9K9CUDH3:~$ |
```

i) Networking:

a. Display the IP address of the system.

```
cdac@LAPTOP-9K9CUDH3: ~  
cdac@LAPTOP-9K9CUDH3:~$ date  
Wed Feb 26 16:33:38 UTC 2025  
cdac@LAPTOP-9K9CUDH3:~$ ip addr  
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:0a:d5:a4 brd ff:ff:ff:ff:ff:ff  
    inet 172.25.181.185/20 brd 172.25.191.255 scope global eth0  
        valid_lft forever preferred_lft forever  
    inet6 fe80::215:5dff:fe0a:d5a4/64 scope link  
        valid_lft forever preferred_lft forever  
cdac@LAPTOP-9K9CUDH3:~$ |
```

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

```
cdac@LAPTOP-9K9CUDH3: ~  
cdac@LAPTOP-9K9CUDH3:~$ ping www.cdac.in  
PING cdac.in (196.1.1.30) 56(84) bytes of data.  
^C  
--- cdac.in ping statistics ---  
11 packets transmitted, 0 received, 100% packet loss, time 11353ms  
  
cdac@LAPTOP-9K9CUDH3:~$ ping www.googlw.com  
ping: www.googlw.com: Name or service not known  
cdac@LAPTOP-9K9CUDH3:~$ ping www.google.com  
PING www.google.com (142.250.70.100) 56(84) bytes of data.  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=1 ttl=58 time=316 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=2 ttl=58 time=1080 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=4 ttl=58 time=12.7 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=5 ttl=58 time=8.63 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=6 ttl=58 time=732 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=7 ttl=58 time=17.4 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=8 ttl=58 time=111 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=9 ttl=58 time=12.4 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=10 ttl=58 time=13.1 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=11 ttl=58 time=14.0 ms  
64 bytes from pnbomb-ac-in-f4.1e100.net (142.250.70.100): icmp_seq=12 ttl=58 time=13.5 ms  
^C  
--- www.google.com ping statistics ---  
12 packets transmitted, 11 received, 8.33333% packet loss, time 11960ms  
rtt min/avg/max/mdev = 8.628/211.800/1079.624/346.466 ms, pipe 2  
cdac@LAPTOP-9K9CUDH3:~$ |
```

j) File Compression:

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

```
cdac@LAPTOP-9K9CUDH3: ~  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ zip docs LinuxAssignment  
zip warning: name not matched: LinuxAssignment  
  
zip error: Nothing to do! (docs.zip)  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ zip docs LinuxAssignment  
zip warning: name not matched: LinuxAssignment  
  
zip error: Nothing to do! (docs.zip)  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ zip -r docs.zip docs  
adding: docs/ (stored 0%)  
adding: docs/file2.txt (stored 0%)  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls  
docs docs.zip file1.txt  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ mkdir extra  
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ |
```

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

```
cdac@LAPTOP-9K9CUDH3: ~, X + v
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ unzip docs.zip -d extra
Archive:  docs.zip
  creating: extra/docs/
  extracting: extra/docs/file2.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ |
```

k) File Editing:

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

```
cdac@LAPTOP-9K9CUDH3: ~, X + v
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls
docs docs.zip extra file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cat file1.txt
Hello , How are you?
Hello World
Nice to see you
hii
cdac@LAPTOP-9K9CUDH3:~/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).

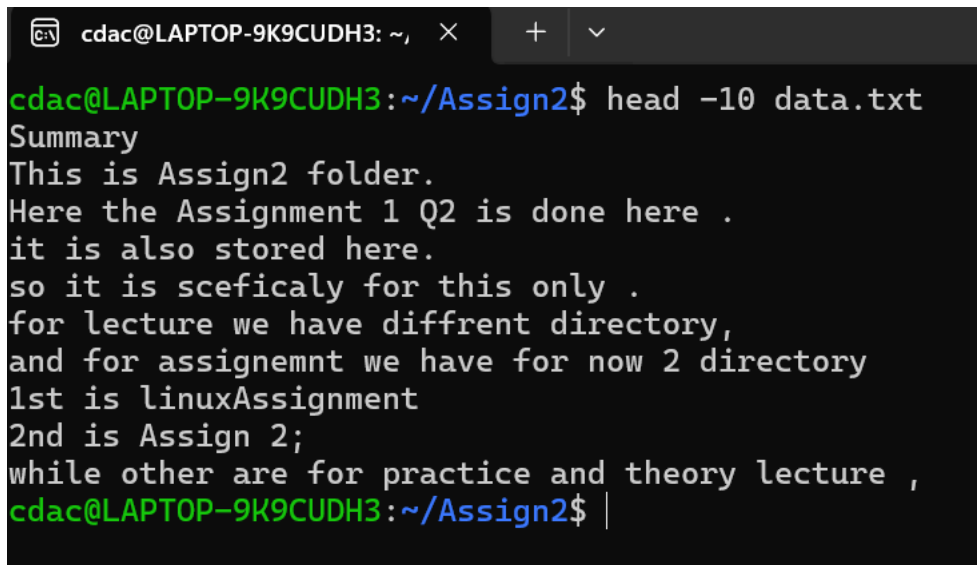
```
cdac@LAPTOP-9K9CUDH3: ~, X + v
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ ls
docs docs.zip extra file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cat file1.txt
Hello , How are you?
Hello World
Nice to see you
hii

cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ sed -i 's/hii/Hii/g' file1.txt
cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$ cat file1.txt
Hello , How are you?
Hello World
Nice to see you
Hii

cdac@LAPTOP-9K9CUDH3:~/LinuxAssignment$
```

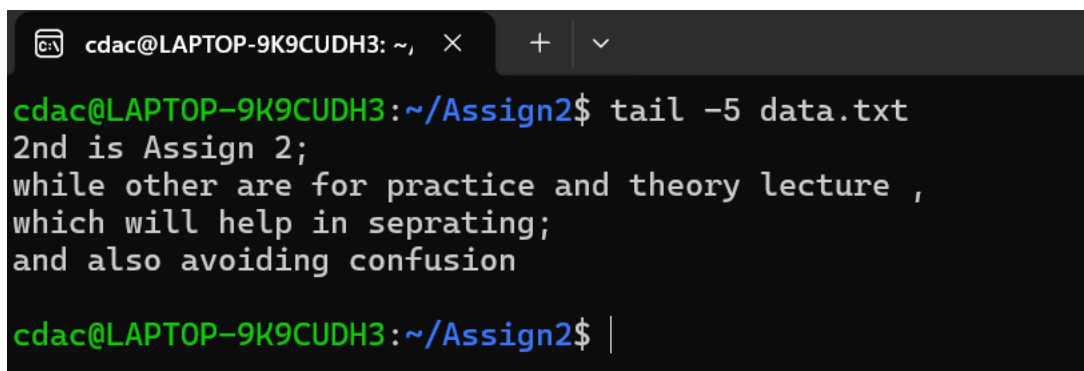
Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

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.

A terminal window with a dark background. The prompt is 'cdac@LAPTOP-9K9CUDH3: ~/Assign2\$'. The command 'head -10 data.txt' has been entered. The output shows the first 10 lines of the file 'data.txt'.

```
cdac@LAPTOP-9K9CUDH3:~/Assign2$ head -10 data.txt
Summary
This is Assign2 folder.
Here the Assignment 1 Q2 is done here .
it is also stored here.
so it is scpecificaly for this only .
for lecture we have diffrent directory,
and for assignemnt we have for now 2 directory
1st is linuxAssignment
2nd is Assign 2;
while other are for practice and theory lecture ,
cdac@LAPTOP-9K9CUDH3:~/Assign2$ |
```

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

A terminal window with a dark background. The prompt is 'cdac@LAPTOP-9K9CUDH3: ~/Assign2\$'. The command 'tail -5 data.txt' has been entered. The output shows the last 5 lines of the file 'data.txt'.

```
cdac@LAPTOP-9K9CUDH3:~/Assign2$ tail -5 data.txt
2nd is Assign 2;
while other are for practice and theory lecture ,
which will help in seprating;
and also avoiding confusion
cdac@LAPTOP-9K9CUDH3:~/Assign2$ |
```

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@LAPTOP-9K9CUDH3: ~, × + v
cdac@LAPTOP-9K9CUDH3:~/Assign2$ head -15 numbers.txt
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
cdac@LAPTOP-9K9CUDH3:~/Assign2$ |
```

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

```
cdac@LAPTOP-9K9CUDH3: ~, × + v
cdac@LAPTOP-9K9CUDH3:~/Assign2$ tail -3 numbers.txt
18
19
20
cdac@LAPTOP-9K9CUDH3:~/Assign2$ |
```

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@LAPTOP-9K9CUDH3: ~, × + v
cdac@LAPTOP-9K9CUDH3:~/Assign2$ tr a-z A-Z < input.txt > output.txt
cdac@LAPTOP-9K9CUDH3:~/Assign2$ ls
data.txt duplicate.txt fruit.txt input.txt numbers.txt output.txt
cdac@LAPTOP-9K9CUDH3:~/Assign2$ cat output.txt
HELLO , HOW ARE YOU?
cdac@LAPTOP-9K9CUDH3:~/Assign2$ cat input.txt
Hello , How are you?
cdac@LAPTOP-9K9CUDH3:~/Assign2$
```

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@LAPTOP-9K9CUDH3: ~, × + ∨  
cdac@LAPTOP-9K9CUDH3:~/Assign2$ uniq duplicate.txt  
papers ,  
assignment papers,  
Question papers,  
Blank papers,  
graph papers.  
Papers,  
Papers.  
cdac@LAPTOP-9K9CUDH3:~/Assign2$
```

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@LAPTOP-9K9CUDH3: ~, × + ∨  
cdac@LAPTOP-9K9CUDH3:~/Assign2$ uniq -c fruit.txt  
3 banana,  
1 apple,  
1 mango,  
1 apple,  
1 mango,  
1 pineapple,  
1 Banana,  
1 alphonso mango.  
1  
cdac@LAPTOP-9K9CUDH3:~/Assign2$ |
```