

# CDAC MUMBAI

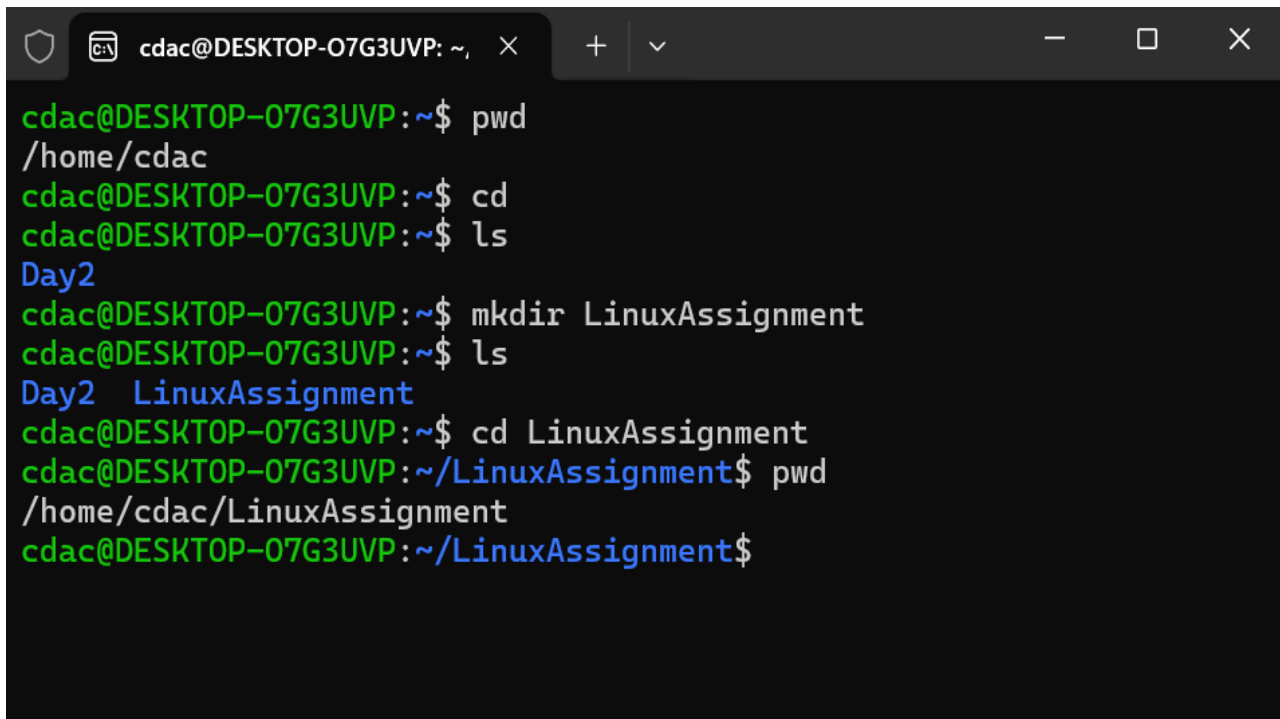
## Concepts of Operating System Assignment 1

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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-07G3UVP: ~$ pwd
/home/cdac
cdac@DESKTOP-07G3UVP:~$ cd
cdac@DESKTOP-07G3UVP:~$ ls
Day2
cdac@DESKTOP-07G3UVP:~$ mkdir LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ ls
Day2 LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$
```

b. File Management:

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

```
cdac@DESKTOP-O7G3UVP: ~$ pwd
/home/cdac
cdac@DESKTOP-O7G3UVP:~$ ls
Day2 LinuxAssignment
cdac@DESKTOP-O7G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ touch file1.txt
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ cat file1.txt
This is a sample text inside file1.txt
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ ls -l
total 8
-rw-r--r-- 1 cdac cdac 39 Feb 26 17:55 file1.txt
-rw----- 1 cdac cdac 43 Feb 26 17:45 nano.371.save
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ cat file1.txt
This is a sample text inside file1.txt
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ cat file1.txt
```

b) Directory Management:

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

```
cdac@DESKTOP-O7G3UVP: ~$ cd LinuxAssignment
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ touch docs.txt
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ |
```

c) Copy and Move Files:

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

```
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ ls
docs  file1.txt  nano.371.save
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ cp file1.txt docs
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ cd docs
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ mv file1.txt file2.
txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 39 Feb 26 18:15 file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ |
```

d) 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-07G3UVP: ~/LinuxAssignment/docs$ ls -l file2.txt
-rw----- 1 cdac cdac 39 Feb 26 18:15 file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ chmod og-rwx file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ ls -l file2.txt
-rw----- 1 cdac cdac 39 Feb 26 18:15 file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ |
```

e) 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-07G3UVP: ~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ cd docs
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ ls
abc  data.txt  docs  docs.txt  file1.txt  nano.371.save
cdac@DESKTOP-07G3UVP: ~/LinuxAssignment$ cd ..
cdac@DESKTOP-07G3UVP: ~$ ls
LinuxAssignment
cdac@DESKTOP-07G3UVP: ~$ |
```

f) 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@DESKTOP-07G3UVP: ~$ pwd
/home/cdac
cdac@DESKTOP-07G3UVP:~$ ls
LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file1.txt
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ grep "text" file1.txt
This is a sample text inside file1.txt , check
This is a sample text inside file1.txt, please check
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$
```

g) System Information:

- a. Display the current system date and time.

```
cdac@DESKTOP-07G3UVP: ~$ date +"%A,%d/%M/%Y - %H:%M:%S %p"
Thursday, 27/07/2025 - 15:07:51 PM
cdac@DESKTOP-07G3UVP:~$
```

h) Networking:

- a. Display the IP address of the system.

```
cdac@DESKTOP-07G3UVP:~$ hostname
DESKTOP-07G3UVP
cdac@DESKTOP-07G3UVP:~$ hostname -I
172.25.226.57
cdac@DESKTOP-07G3UVP:~$
```

- b. Ping a remote server to check connectivity (provide a remote server address to ping). j) File Compression:

```
cdac@DESKTOP-07G3UVP: ~, X + v - □ X
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ ping -c google.com
ping: invalid argument: 'google.com'
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ ping -c 5 google.com
PING google.com (142.250.77.206) 56(84) bytes of data:
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=1 ttl=112 time=93.2 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=2 ttl=112 time=89.6 ms
64 bytes from dell1s08-in-f14.1e100.net (142.250.77.206): icmp_seq=4 ttl=112 time=102 ms

--- google.com ping statistics ---
5 packets transmitted, 3 received, 40% packet loss, time 4072ms
rtt min/avg/max/mdev = 89.638/94.788/101.538/4.988 ms
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ |
```

- 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).

```
cdac@DESKTOP-07G3UVP: ~, X + v - □ X
cdac@DESKTOP-07G3UVP:~$ pwd
/home/cdac
cdac@DESKTOP-07G3UVP:~$ ls
LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ cat file1.txt
This is a sample documents inside file1.txt , check
This is a some text inside file1.txt, please check
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ cat file1.txt
This is a sample text inside file1.txt , check
This is a sample text inside file1.txt, please check
cdac@DESKTOP-07G3UVP:~/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@DESKTOP-07G3UVP: ~$ pwd
/home/cdac
cdac@DESKTOP-07G3UVP:~$ ls
LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ ls -a
. .bash_history .bashrc .lessht .motd_shown .sudo_as_admin_successful
.. .bash_logout .landscape .local .profile LinuxAssignment
cdac@DESKTOP-07G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ nano data.txt
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ head -10 data.txt
Good Morning !!
Good Night !!
good Afternoon
Good Evening!!
Hii
Hello
How are you!
What are you doing!
I wake up early in the morning
I leave for work at 8 a.m
cdac@DESKTOP-07G3UVP:~/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@DESKTOP-07G3UVP:~$ cd LinuxAssignment
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ tail -5 data.txt
I wake up early in the morning
I leave for work at 8 a.m
I take a short break in the afternoon
I attend meetings and complete my tasks
I take a short break in the afternoon
cdac@DESKTOP-07G3UVP:~/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@DESKTOP-O7G3UVP: ~, × + ▾  
cdac@DESKTOP-O7G3UVP:~$ cd LinuxAssignment  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ touch numbers.txt  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ nano numbers.txt  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ head -15 numbers.txt  
23  
35  
5  
89  
70  
45  
6  
76  
13  
25  
57  
12  
1  
54  
98  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-O7G3UVP: ~, × + ▾  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ tail -3 numbers.txt  
1  
54  
98  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ |
```

E. 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@DESKTOP-O7G3UVP: ~, × + ▾  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ sort duplicate.txt | uniq  
Apple  
Banana  
Berry  
Blueberry  
Kiwi  
Lemon  
Mango  
cdac@DESKTOP-O7G3UVP:~/LinuxAssignment$ |
```

F. 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@DESKTOP-07G3UVP: ~, X + v - □ X
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ cat input.txt
hello world
this is a test file
linux commands are useful
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ tr [a-z] [A-Z] < input.txt > output.txt
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ cat output.txt
HELLO WORLD
THIS IS A TEST FILE
LINUX COMMANDS ARE USEFUL
cdac@DESKTOP-07G3UVP:~/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@DESKTOP-07G3UVP: ~, X + v - □ X
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ sort fruit.txt | uniq -c
 2 Apple
 2 Banana
 1 Berry
 1 Blueberry
 2 Kiwi
 1 Lemon
 1 Mango
cdac@DESKTOP-07G3UVP:~/LinuxAssignment$ |
```