

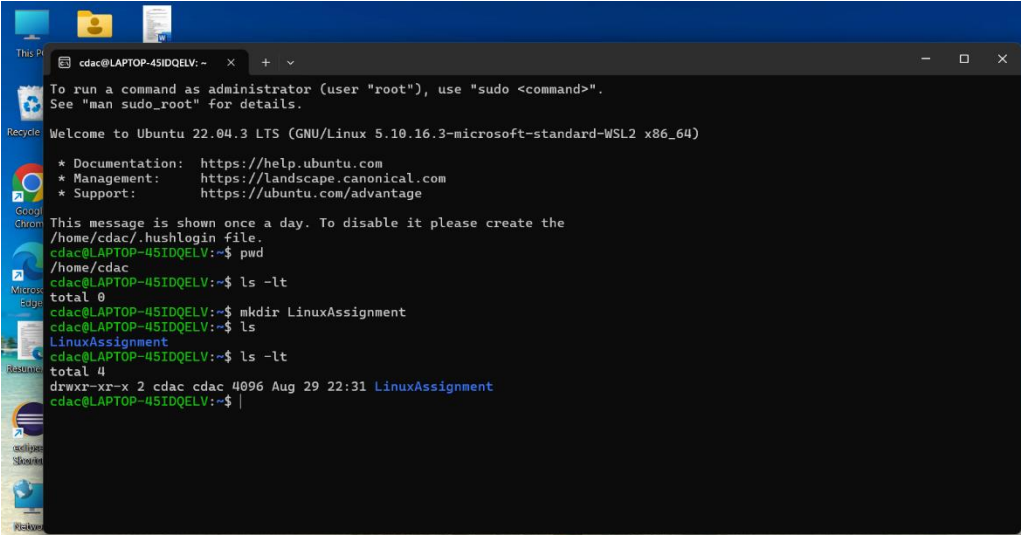
# CDAC MUMBAI

## Concepts of Operating System 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@LAPTOP-45IDQELV: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.10.16.3-microsoft-standard-WSL2 x86_64)  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
This message is shown once a day. To disable it please create the  
/home/cdac/.hushlogin file.  
cdac@LAPTOP-45IDQELV:~$ pwd  
/home/cdac  
cdac@LAPTOP-45IDQELV:~$ ls -lt  
total 0  
cdac@LAPTOP-45IDQELV:~$ mkdir LinuxAssignment  
cdac@LAPTOP-45IDQELV:~$ ls  
LinuxAssignment  
cdac@LAPTOP-45IDQELV:~$ ls -lt  
total 4  
drwxr-xr-x 2 cdac cdac 4096 Aug 29 22:31 LinuxAssignment  
cdac@LAPTOP-45IDQELV:~$
```

b) File Management:

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

```
cdac@LAPTOP-45IDQELV: ~  
cdac@LAPTOP-45IDQELV:~$ touch file1.txt  
cdac@LAPTOP-45IDQELV:~$ ls  
LinuxAssignment  file1.txt  
cdac@LAPTOP-45IDQELV:~$ nano file1.txt  
cdac@LAPTOP-45IDQELV:~$ ls  
LinuxAssignment  file1.txt  
cdac@LAPTOP-45IDQELV:~$ cat file1.txt  
hi  
hello  
good morning  
java developer  
cdac pune  
cdac mumbai  
cdac@LAPTOP-45IDQELV:~$ |
```

c) Directory Management:

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

```
cdac@LAPTOP-45IDQELV: ~/l |  
cdac@LAPTOP-45IDQELV:~$ pwd  
/home/cdac  
cdac@LAPTOP-45IDQELV:~$ ls -lt  
total 8  
drwxr-xr-x 3 cdac cdac 4096 Aug 29 22:38 LinuxAssignment  
-rw-r--r-- 1 cdac cdac 59 Aug 29 22:35 file1.txt  
cdac@LAPTOP-45IDQELV:~$ cd LinuxAssignment/docs  
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt  
total 0  
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ |
```

d) Copy and Move Files:

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

```
cdac@LAPTOP-45IDQELV: ~/LinuxAssignment/docs$ pwd
/home/cdac/LinuxAssignment/docs
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ touch file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ cp file1.txt docs
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ mv file1.txt newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ |
```

e) Permissions and Ownership:

- 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-45IDQELV:~/LinuxAssignment/docs$ pwd
/home/cdac/LinuxAssignment/docs
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ touch file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ cp file1.txt docs
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 file1.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ mv file1.txt newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ touch file2.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:59 file2.txt
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rwxr--r-- 1 cdac cdac 0 Aug 29 22:59 file2.txt
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ ls -lt
total 0
-rwxr--r-- 1 cdac cdac 0 Aug 29 22:59 file2.txt
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:56 docs
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:55 newFile
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ chown rushi file2.txt
chown: invalid user: 'rush'
cdac@LAPTOP-45IDQELV:~/LinuxAssignment/docs$ |
```

f) Final Checklist:

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

g) File Searching:

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

h) System Information:

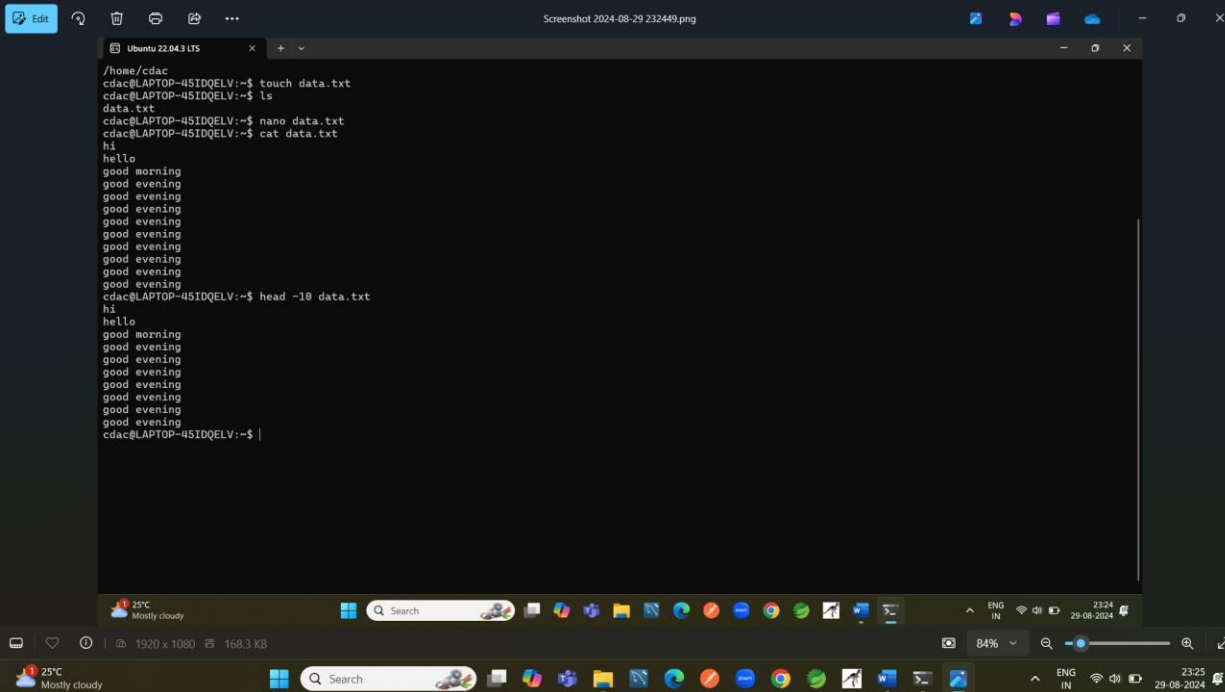
- Display the current system date and time.

```
cdac@LAPTOP-45IDQELV:~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
cdac@LAPTOP-45IDQELV:~$ pwd  
/home/cdac  
cdac@LAPTOP-45IDQELV:~$ mkdir LinuxAssignment  
mkdir: cannot create directory 'LinuxAssignment': File exists  
cdac@LAPTOP-45IDQELV:~$ ls -lt  
total 8  
drwxr-xr-x 3 cdac cdac 4096 Aug 29 22:38 LinuxAssignment  
-rw-r--r-- 1 cdac cdac 59 Aug 29 22:35 file1.txt  
cdac@LAPTOP-45IDQELV:~$ date  
Thu Aug 29 23:13:33 IST 2024  
cdac@LAPTOP-45IDQELV:~$
```

- 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.

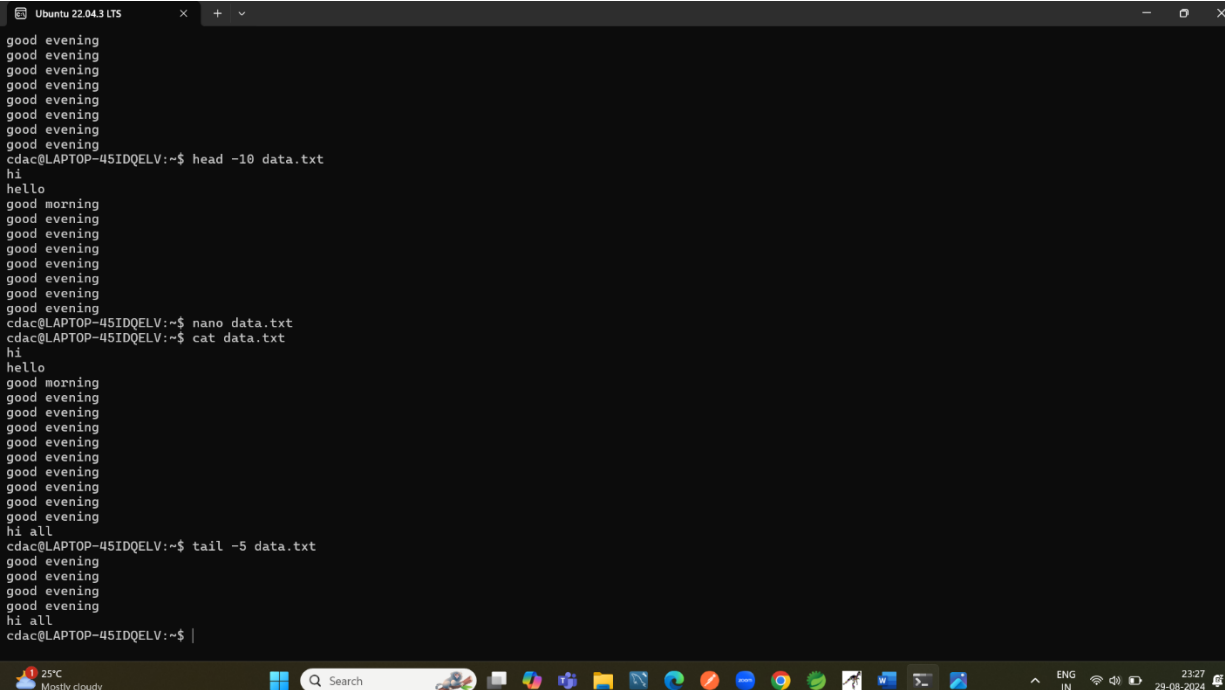


A screenshot of a terminal window titled "Ubuntu 22.04.3 LTS". The terminal shows the following commands and output:

```
/home/cdac
cdac@LAPTOP-4SIDQELV:~$ touch data.txt
cdac@LAPTOP-4SIDQELV:~$ ls
data.txt
cdac@LAPTOP-4SIDQELV:~$ nano data.txt
cdac@LAPTOP-4SIDQELV:~$ cat data.txt
hi
hello
good morning
good evening
good evening
good evening
good evening
good evening
good evening
good evening
good evening
good evening
cdac@LAPTOP-4SIDQELV:~$ head -10 data.txt
hi
hello
good morning
good evening
good evening
good evening
good evening
good evening
good evening
good evening
cdac@LAPTOP-4SIDQELV:~$
```

The terminal window is part of a desktop environment with a taskbar at the bottom showing various application icons and system status information like temperature (25°C) and time (23:24).

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 screenshot of a terminal window titled "Ubuntu 22.04.3 LTS". The terminal shows the following commands and output:

```
good evening
good evening
good evening
good evening
good evening
good evening
good evening
good evening
cdac@LAPTOP-4SIDQELV:~$ head -10 data.txt
hi
hello
good morning
good evening
good evening
good evening
good evening
good evening
good evening
good evening
cdac@LAPTOP-4SIDQELV:~$ nano data.txt
cdac@LAPTOP-4SIDQELV:~$ cat data.txt
hi
hello
good morning
good evening
good evening
good evening
good evening
good evening
good evening
good evening
good evening
hi all
cdac@LAPTOP-4SIDQELV:~$ tail -5 data.txt
good evening
good evening
good evening
good evening
hi all
cdac@LAPTOP-4SIDQELV:~$
```

The terminal window is part of a desktop environment with a taskbar at the bottom showing various application icons and system status information like temperature (25°C) and time (23:27).

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.

A screenshot of a terminal window titled 'Ubuntu 22.04.3 LTS'. The terminal shows the following commands and output:

```
-rw-r--r-- 1 cdac cdac  0 Aug 29 23:28 numbers.txt
-rw-r--r-- 1 cdac cdac 146 Aug 29 23:26 data.txt
cdac@LAPTOP-4SIDQELV:~$ nano numbers.txt
cdac@LAPTOP-4SIDQELV:~$ ls -lt
total 8
-rw-r--r-- 1 cdac cdac 39 Aug 29 23:30 numbers.txt
-rw-r--r-- 1 cdac cdac 146 Aug 29 23:26 data.txt
cdac@LAPTOP-4SIDQELV:~$ cat numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
cdac@LAPTOP-4SIDQELV:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@LAPTOP-4SIDQELV:~$
```

The terminal window is part of a desktop environment with a taskbar at the bottom showing various application icons and system status information like temperature (25°C) and time (23:31).

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

A screenshot of a terminal window titled 'Ubuntu 22.04.3 LTS'. The terminal shows the following commands and output:

```
total 8
-rw-r--r-- 1 cdac cdac 39 Aug 29 23:30 numbers.txt
-rw-r--r-- 1 cdac cdac 146 Aug 29 23:26 data.txt
cdac@LAPTOP-4SIDQELV:~$ cat numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
cdac@LAPTOP-4SIDQELV:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@LAPTOP-4SIDQELV:~$ tail -3 numbers.txt
14
15
16
cdac@LAPTOP-4SIDQELV:~$
```

The terminal window is part of a desktop environment with a taskbar at the bottom showing various application icons and system status information like temperature (24°C) and time (23:32).

- 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."

```
Ubuntu 22.04.3 LTS
cdac@LAPTOP-45IDQELV:~$ pwd
/home/cdac
cdac@LAPTOP-45IDQELV:~$ cat input.txt
abcd

efgh

ijkl
cdac@LAPTOP-45IDQELV:~$ tr [:upper:] [:lower:] input.txt
tr: extra operand 'input.txt'
Try 'tr --help' for more information.
cdac@LAPTOP-45IDQELV:~$ tr [:upper:] [:lower:] input.txt
[:upper:]: command not found
cdac@LAPTOP-45IDQELV:~$ tr [:lower:] [:upper:] <input.txt
ABCD

EFGH

IJKL
cdac@LAPTOP-45IDQELV:~$ |
```

- 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."

```
Ubuntu 22.04.3 LTS
cdac@LAPTOP-45IDQELV:~$ touch duplicate.txt
cdac@LAPTOP-45IDQELV:~$ ls -lt
total 12
-rw-r--r-- 1 cdac cdac  0 Aug 29 23:47 duplicate.txt
-rw-r--r-- 1 cdac cdac 17 Aug 29 23:35 input.txt
-rw-r--r-- 1 cdac cdac 39 Aug 29 23:30 numbers.txt
-rw-r--r-- 1 cdac cdac 146 Aug 29 23:26 data.txt
cdac@LAPTOP-45IDQELV:~$ nano duplicate.txt
cdac@LAPTOP-45IDQELV:~$ cat duplicate.txt
A
B
A
B
C
D
C
cdac@LAPTOP-45IDQELV:~$ sort duplicate.txt|uniq
A
B
C
D
cdac@LAPTOP-45IDQELV:~$ |
```

- 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."

```
Ubuntu 22.04.3 LTS
cdac@LAPTOP-45IDQELV:~$ pwd
/home/cdac
cdac@LAPTOP-45IDQELV:~$ touch fruit.txt
cdac@LAPTOP-45IDQELV:~$ nano fruit.txt
cdac@LAPTOP-45IDQELV:~$ cat fruit.txt
apple
orange
mango
apple
banana
orange
cdac@LAPTOP-45IDQELV:~$ wc -l fruit.txt
6 fruit.txt
cdac@LAPTOP-45IDQELV:~$ sort fruit.txt|uniq
apple
banana
mango
orange
cdac@LAPTOP-45IDQELV:~$ wc -l fruit.txt
6 fruit.txt
cdac@LAPTOP-45IDQELV:~$ |
```

#### Submission Guidelines:

- ☐ Document each step of your solution and any challenges faced.
- ☐ Upload it on your GitHub repository

#### Additional Tips:

- ☐ Experiment with different options and parameters of each command to explore their functionalities.