# CDAC MUMBAI

Concepts of Operating System Assignment 1

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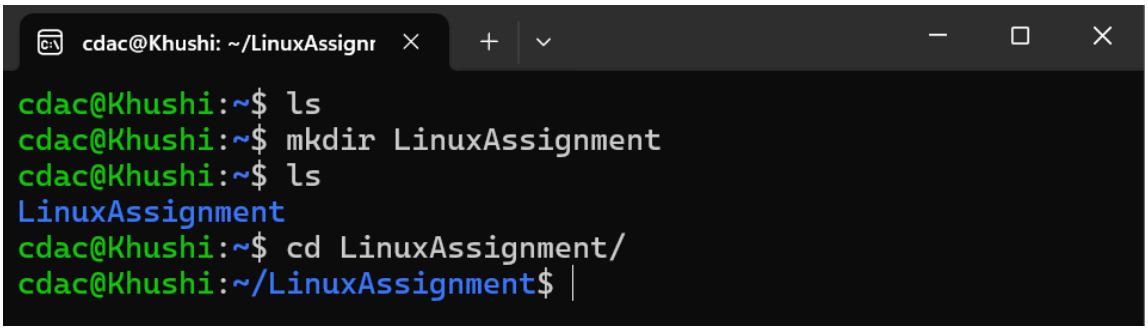
**Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.**

a) Navigate and List:

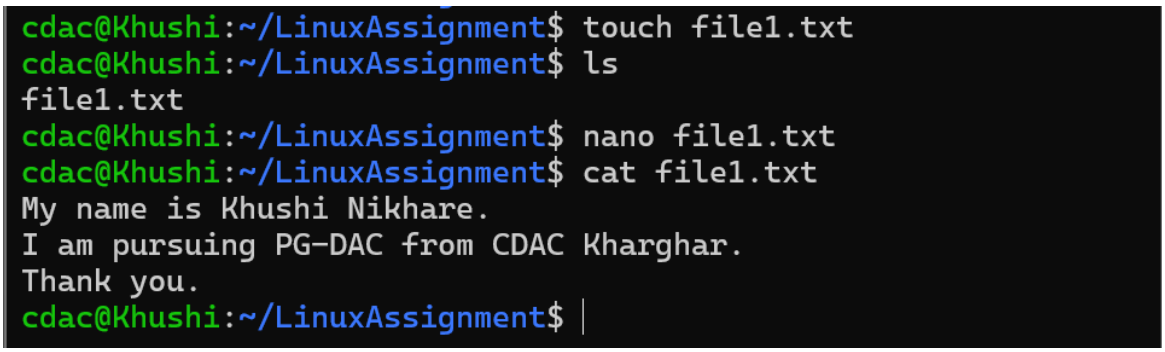
a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

Commands used:
cd (to navigate to your home directory)
ls (list its content)
cd LinuxAssignment/ (to move into directory names “LinuxAssignment”)




b) File Management:

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



Commands used:
touch file1.txt (create a new file named “file1.txt”)
nano file1.txt (to edit file1.txt)
cat file.txt (to display the content in file1.txt)

c) Directory Management:

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

Commands used:
mkdir docs (to create a new directory named “docs”)
ls (list out files and directories in “LinuxAssignment” directory)

```
cdac@Khushi:~/LinuxAssignment$ mkdir docs
cdac@Khushi:~/LinuxAssignment$ ls
docs  file1.txt
```

d) Copy and Move Files:

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

Command used:
cat file1.txt > docs/file2.txt (content of file1.txt is redirected to file2.txt in docs directory)

```
cdac@Khushi:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Khushi:~/LinuxAssignment$ cat file1.txt > docs/file2.tx
t
cdac@Khushi:~/LinuxAssignment$ cd docs
cdac@Khushi:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Khushi:~/LinuxAssignment/docs$ cat file2.txt
My name is Khushi Nikhare.
I am pursuing PG-DAC from CDAC Kharghar.
Thank you.
cdac@Khushi:~/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.

Commands used:
chmod u+wx file2.txt

```
cdac@Khushi:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Khushi:~/LinuxAssignment/docs$ ls -l
total 4
-r--r--r-- 1 cdac cdac 79 Feb 27 12:35 file2.txt
cdac@Khushi:~/LinuxAssignment/docs$ chmod u+wx file2.txt
cdac@Khushi:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 79 Feb 27 12:35 file2.txt
cdac@Khushi:~/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.

Command used:
ls
cd ..

```
cdac@Khushi:~/LinuxAssignment/docs$ ls
file2.txt
cdac@Khushi:~/LinuxAssignment/docs$ cd ..
cdac@Khushi:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Khushi:~/LinuxAssignment$ cd ..
cdac@Khushi:~$ ls
LinuxAssignment  duplicate.txt  input.txt    output.txt
data.txt         fruit.txt      numbers.txt
cdac@Khushi:~$
```

g) File Searching:

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

Command used:
find . -name “*.txt”

```
cdac@Khushi:~$ ls
LinuxAssignment  duplicate.txt  input.txt    output.txt
data.txt         fruit.txt      numbers.txt
cdac@Khushi:~$ find . -name "*.txt"
./fruit.txt
./input.txt
./numbers.txt
./output.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file2.txt
./duplicate.txt
./data.txt
cdac@Khushi:~$
```

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

Command used:
grep “CDAC” file2.txt

```
cdac@Khushi:~/LinuxAssignment/docs$ grep "CDAC" file2.txt
I am pursuing PG-DAC from CDAC Kharghar.
cdac@Khushi:~/LinuxAssignment/docs$
```

h) System Information:

a. Display the current system date and time.

Command used:
date

```
cdac@Khushi:~/LinuxAssignment/docs$ date
Thu Feb 27 14:22:48 UTC 2025
```

i) Networking:

a. Display the IP address of the system.

Command used:
ifconfig

```
cdac@Khushi:~/LinuxAssignment/docs$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1280
        inet 172.30.36.166  netmask 255.255.240.0  broadcast
 172.30.47.255
        inet6 fe80::215:5dff:febb:53d1  prefixlen 64  scopei
d 0x20<link>
        ether 00:15:5d:bb:53:d1  txqueuelen 1000  (Ethernet)
        RX packets 5101  bytes 399025 (399.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1709  bytes 112022 (112.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collis
ions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 112  bytes 13056 (13.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 112  bytes 13056 (13.0 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collis
ions 0
```

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

Command used:
ping medium.com

```
cdac@Khushi:~/LinuxAssignment/docs$ ping medium.com
PING medium.com (162.159.152.4) 56(84) bytes of data.
64 bytes from 162.159.152.4: icmp_seq=1 ttl=51 time=182 ms
64 bytes from 162.159.152.4: icmp_seq=3 ttl=51 time=118 ms
64 bytes from 162.159.152.4: icmp_seq=4 ttl=51 time=119 ms
64 bytes from 162.159.152.4: icmp_seq=5 ttl=51 time=123 ms
64 bytes from 162.159.152.4: icmp_seq=6 ttl=51 time=127 ms
^C
--- medium.com ping statistics ---
6 packets transmitted, 5 received, 16.6667% packet loss, time 5140ms
rtt min/avg/max/mdev = 118.259/134.000/182.405/24.399 ms
```

j) File Compression:

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

Commands used:
Zip -r docs.zip docs

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

Commands used:
unzip docs.zip -d newdocs

```
cdac@Khushi:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 4%)
cdac@Khushi:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
cdac@Khushi:~/LinuxAssignment$ unzip docs.zip -d newdocs
Archive:  docs.zip
   creating: newdocs/docs/
  inflating: newdocs/docs/file2.txt
cdac@Khushi:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  newdocs
```

k) File Editing:

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

Command used:
nano file1.txt

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

Commands used:
sed -i ‘s/Khushi Nikhare/Ayushi Nikhare/g’ file1.txt

```
cdac@Khushi:~/LinuxAssignment$ nano file1.txt
cdac@Khushi:~/LinuxAssignment$ cat file1.txt
My name is Khushi Nikhare.
I am pursuing PG-DAC from CDAC Kharghar.
Thank you.
cdac@Khushi:~/LinuxAssignment$ sed -i 's/Khushi Nikhare/Ayushi Nikhare/g' file1.txt
cdac@Khushi:~/LinuxAssignment$ cat file1.txt
My name is Ayushi Nikhare.
I am pursuing PG-DAC from CDAC Kharghar.
Thank you.
cdac@Khushi:~/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.

Commands used:
touch data.txt
nano data.txt
head -10 data.txt


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

```
cdac@Khushi:~$ tail -5 data.txt
Vietnam
Croatia
Greece
Portugal
Thailand
cdac@Khushi:~$
```

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.

Command used:
nano numbers.txt
head -15 numbers.txt

```
cdac@Khushi:~$ nano numbers.txt
cdac@Khushi:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@Khushi:~$
```

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

Commands used:
tail -3 numbers.txt

```
cdac@Khushi:~$ tail -3 numbers.txt
18
19
20
```

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."

Commands used:

cat input.txt | tr [:lower:] [:upper”] > output.txt

```
cdac@Khushi:~$ nano input.txt
cdac@Khushi:~$ cat input.txt
my name is khushi nikhare
and i am pursuing pg-dac from cdac khargahar.
thank you
cdac@Khushi:~$ cat input.txt | tr [:lower:] [:upper:] > outp
ut.txt
cdac@Khushi:~$ cat output.txt
MY NAME IS KHUSHI NIKHARE
AND I AM PURSUING PG-DAC FROM CDAC KHARGAHAR.
THANK YOU
cdac@Khushi:~$
```

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."

Commands used:
Cat duplicate.txt | sort | uniq

```
cdac@Khushi:~$ nano duplicate.txt
cdac@Khushi:~$ cat duplicate.txt
India
Italy
Czech Republic
Greece
Spain
Germany
Czech Republic
Greece
India
cdac@Khushi:~$ cat duplicate.txt | sort | uniq
Czech Republic
Germany
Greece
India
Italy
Spain
cdac@Khushi:~$
```

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."

Commands used:
cat fruit.txt | sort | uniq -c

```
cdac@Khushi:~$ nano fruit.txt
cdac@Khushi:~$ cat fruit.txt
Custurd Apple
Star Fruit
Kiwi
Persimmon
Dragon Fruit
Kiwi
Custurd Apple
cdac@Khushi:~$ cat fruit.txt | sort | uniq
Custurd Apple
Dragon Fruit
Kiwi
Persimmon
Star Fruit
cdac@Khushi:~$ cat fruit.txt | sort | uniq -c
      2 Custurd Apple
      1 Dragon Fruit
      2 Kiwi
      1 Persimmon
      1 Star Fruit
cdac@Khushi:~$
```