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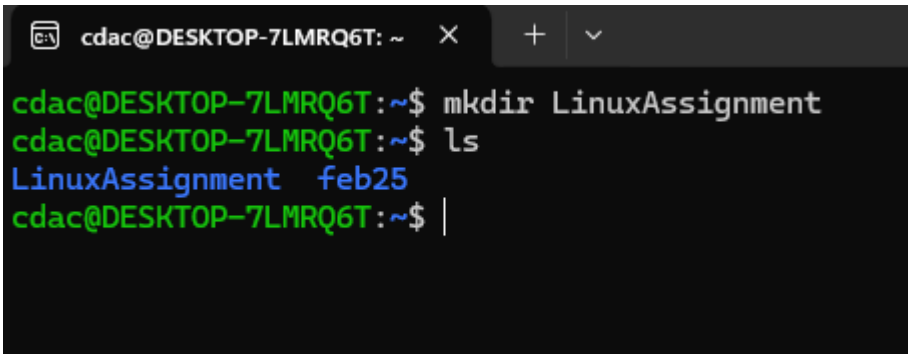
Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

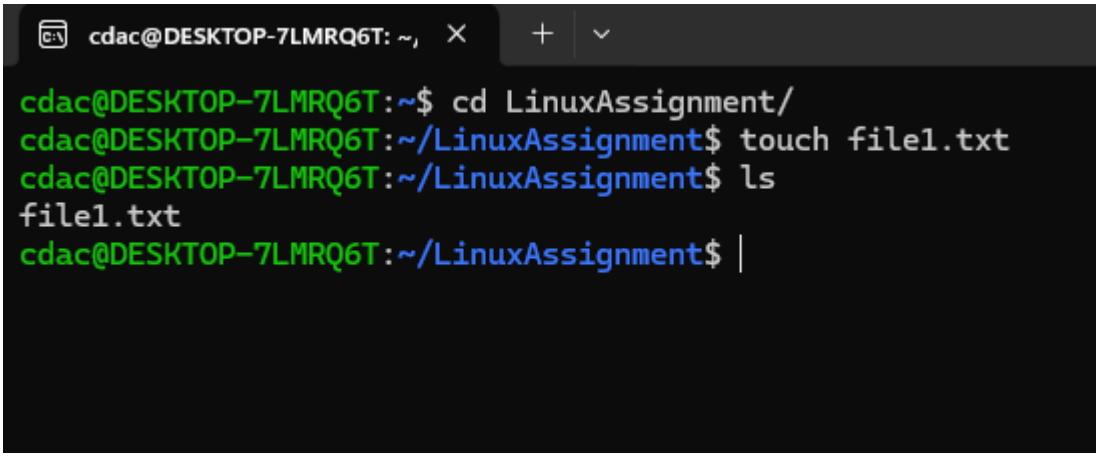
a. Navigate and List

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



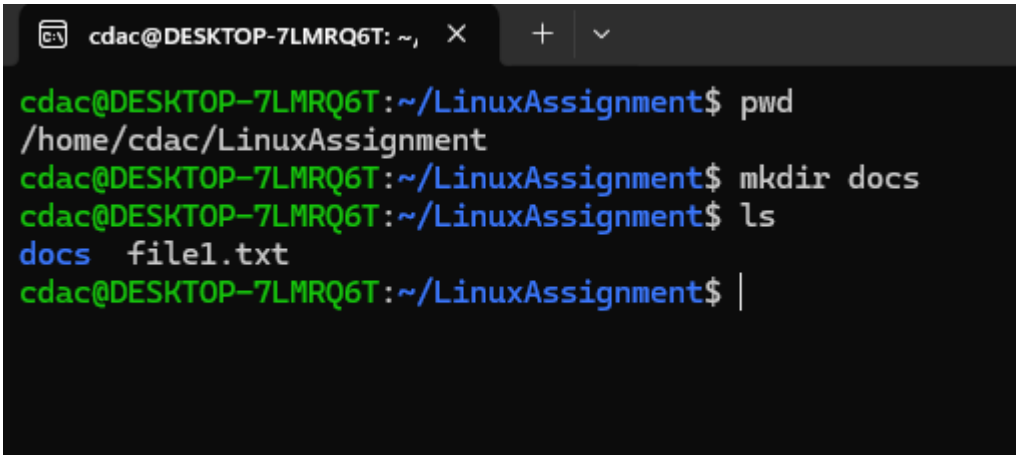
b. File Management

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



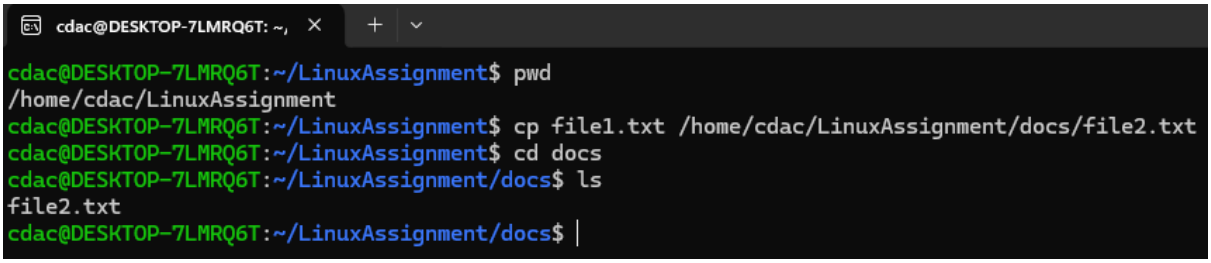
c. Directory Management

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



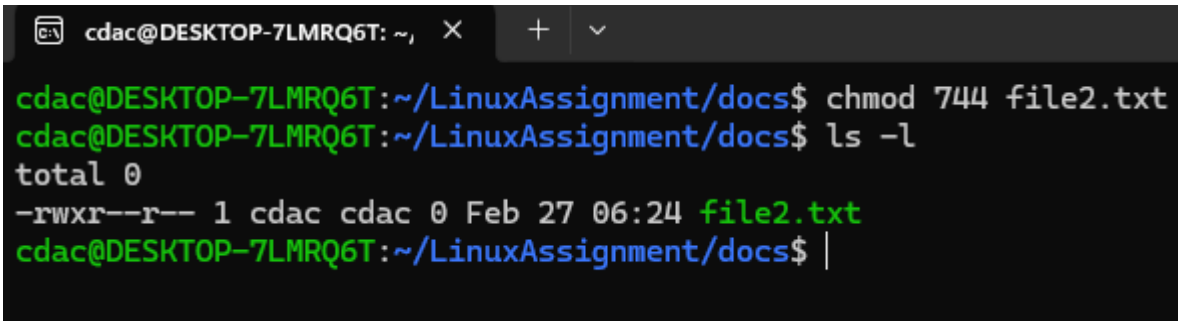
d. Copy and move files

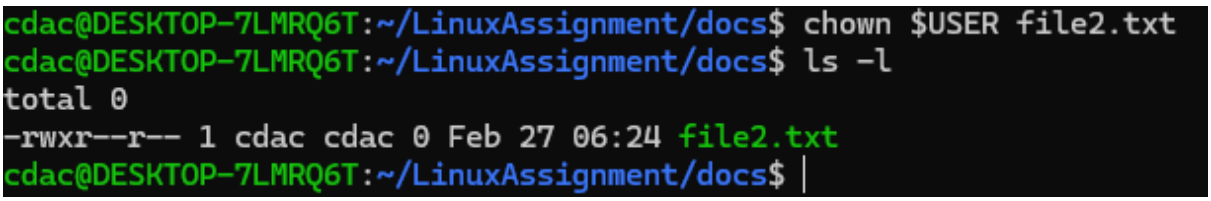
1. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".



e. Permission and Ownership

1. 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.





f. Final checklist

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ cd docs
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 cdac cdac 0 Feb 27 06:24 file2.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

g. File Searching

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ ls -R | grep '.*[.]txt'
file1.txt
file2.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ cat file1.txt
Atharva
Kishor
Pimple
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ grep 'Pimple' file1.txt
Pimple
```

h. System Information

1. Display the current system date and time.

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ date
Thu Feb 27 12:42:59 UTC 2025
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$
```

i. Networking

1. Display the IP address of the system.

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ 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:03:63:dc brd ff:ff:ff:ff:ff:ff
    inet 172.26.123.219/20 brd 172.26.127.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe03:63dc/64 scope link
       valid_lft forever preferred_lft forever
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ ping google.com
PING google.com (142.250.67.142) 56(84) bytes of data.
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=1 ttl=118 time=3.81 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=2 ttl=118 time=3.62 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=3 ttl=118 time=6.03 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=4 ttl=118 time=4.12 ms
64 bytes from bom12s06-in-f14.1e100.net (142.250.67.142): icmp_seq=5 ttl=118 time=3.93 ms
^C
--- google.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4367ms
rtt min/avg/max/mdev = 3.620/4.302/6.032/0.879 ms
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

j. File Compression

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ zip -r my_arch.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ ls
docs  file1.txt  my_arch.zip
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ ls
docs  file1.txt  my_arch.zip
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment$ unzip my_arch.zip -d docs/
Archive:  my_arch.zip
   creating: docs/docs/
 extracting: docs/docs/file2.txt
```

k. File editing:

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

.

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ nano file2.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat file2.txt
Hello World!
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

2. 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-7LMRQ6T:~/LinuxAssignment/docs$ cat file2.txt
Hello World!
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ sed -i 's/World/Atharva/' file2.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat file2.txt
Hello Atharva!
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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-7LMRQ6T:~/LinuxAssignment/docs$ nano data.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ head -10 data.txt
id,first_name,last_name,email,gender,ip_address
1,Celeste,Vance,cvance0@purevolume.com,Agender,103.124.250.141
2,Brig,Roots,broots1@cnn.com,Male,198.181.58.129
3,Massimiliano,Fayre,mfayre2@ow.ly,Male,123.11.73.248
4,Ferrel,Parley,fparley3@chronoengine.com,Male,41.106.55.248
5,Austin,Wick,awick4@opensource.org,Male,26.54.215.187
6,Katya,Jorin,kjorin5@google.com,Female,42.251.60.230
7,Loraine,Dunwoody,ldunwoody6@ocn.ne.jp,Female,193.191.176.57
8,Clim,Molesworth,cmolesworth7@china.com.cn,Male,227.50.142.96
9,Anna-diane,Leeb,aleeb8@51.la,Female,15.144.17.165
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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-7LMRQ6T:~/LinuxAssignment/docs$ tail -5 data.txt
47,Fonz,Bousquet,fbousquet1a@state.gov,Male,186.229.212.132
48,Rosetta,Glasper,rglasper1b@reverbnation.com,Female,43.35.212.144
49,Buck,Patman,bpatman1c@amazonaws.com,Male,139.102.64.238
50,Amerigo,Rackham,arackham1d@vinaora.com,Male,52.169.4.103

cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyse the initial data set.

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ head -15 number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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

```
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ tail -3 number.txt
18
19
20
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat input.txt
Hello, I am Atharva Kishor Pimple.
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat output.txt
HELLO, I AM ATHARVA KISHOR PIMPLE.
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat duplicate.txt
Messi
Ronaldo
Neymar
Maradona
Cruyf
Zidane
Ronaldo
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat duplicate.txt | sort | uniq
Cruyf
Maradona
Messi
Neymar
Ronaldo
Zidane
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```

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-7LMRQ6T:~/LinuxAssignment/docs$ cat fruits.txt
Apple
Apple
Mango
Cherry
Mango
Mango
Orange
Apple
Banana
Banana
Grapes
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$ cat fruits.txt | sort | uniq -c
      3 Apple
      2 Banana
      1 Cherry
      1 Grapes
      3 Mango
      1 Orange
cdac@DESKTOP-7LMRQ6T:~/LinuxAssignment/docs$
```