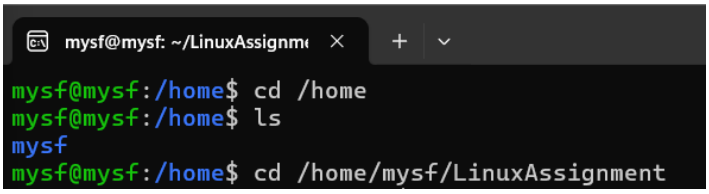
Problem 1: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

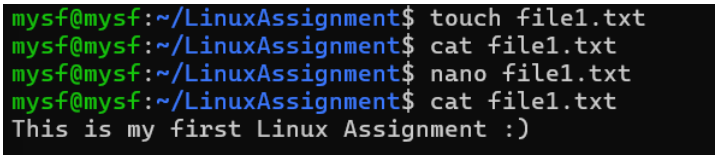
a) Navigate and List:

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.



b) File Management:

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

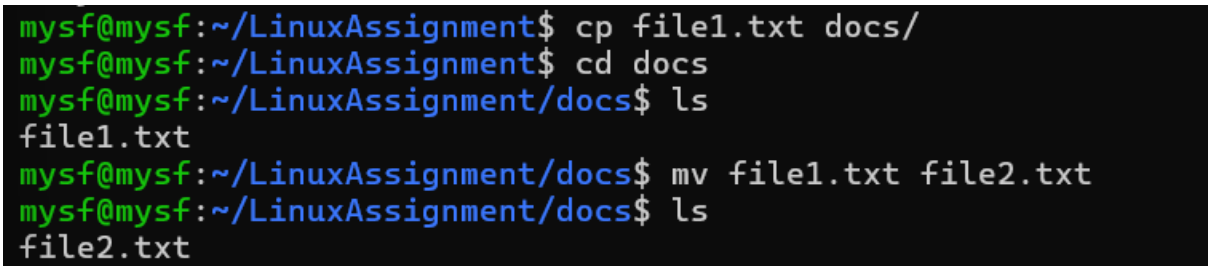


c) Directory Management:

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

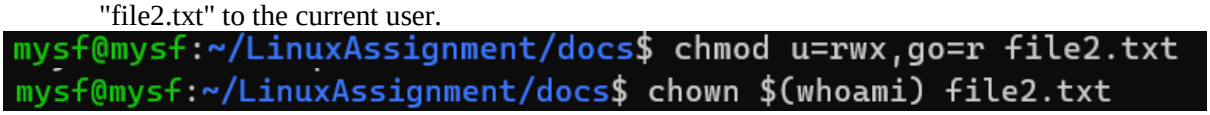
d) Copy and Move Files:

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



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.



f) Final Checklist:

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

```
mysf@mysf:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 mysf mysf 4096 Feb 26 18:53 docs
-rw-r--r-- 1 mysf mysf   38 Feb 26 18:38 file1.txt
```

```
mysf@mysf:~/LinuxAssignment$ 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 18:23 dev
drwxr-xr-x  87 root root    4096 Feb 26 18:23 etc
drwxr-xr-x   3 root root    4096 Feb 24 09:58 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 09:58 lost+found
drwxr-xr-x   2 root root    4096 Jan  6 20:13 media
drwxr-xr-x   5 root root    4096 Feb 24 09:58 mnt
drwxr-xr-x   2 root root    4096 Jan  6 20:13 opt
dr-xr-xr-x 228 root root       0 Feb 26 18:23 proc
drwx------   4 root root    4096 Feb 24 09:58 root
drwxr-xr-x  18 root root     540 Feb 26 18:23 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 09:58 snap
drwxr-xr-x   2 root root    4096 Jan  6 20:13 srv
dr-xr-xr-x  11 root root       0 Feb 26 18:23 sys
drwxrwxrwt  11 root root    4096 Feb 26 18:43 tmp
drwxr-xr-x  12 root root    4096 Jan  6 20:13 usr
drwxr-xr-x  13 root root    4096 Feb 24 09:58 var
```

g) File Searching:

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

```
mysf@mysf:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file1.txt
```

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

```
mysf@mysf:~/LinuxAssignment$ grep "Linux" file1.txt
This is my first Linux Assignment :)
```

h) System Information:

a. Display the current system date and time.

```
mysf@mysf:~/LinuxAssignment/docs$ date
Wed Feb 26 19:08:29 UTC 2025
```

i) Networking:

a. Display the IP address of the system

```
mysf@mysf:~/LinuxAssignment/docs$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group de
fault 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:5e:63:1a brd ff:ff:ff:ff:ff:ff
    inet 172.23.79.246/20 brd 172.23.79.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe5e:631a/64 scope link
       valid_lft forever preferred_lft forever
```

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

```
mysf@mysf:~/LinuxAssignment/docs$ ping google.com
PING google.com (142.250.183.46) 56(84) bytes of data.
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=1 ttl=117 time=172 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=2 ttl=117 time=91.8 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=3 ttl=117 time=117 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=4 ttl=117 time=37.3 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=5 ttl=117 time=63.0 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=6 ttl=117 time=38.2 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=7 ttl=117 time=69.5 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=8 ttl=117 time=32.3 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=9 ttl=117 time=43.2 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=10 ttl=117 time=81.9 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=11 ttl=117 time=60.6 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=12 ttl=117 time=39.7 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=13 ttl=117 time=52.1 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=14 ttl=117 time=77.0 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=15 ttl=117 time=102 ms
64 bytes from bom12s11-in-f14.1e100.net (142.250.183.46): icmp_seq=16 ttl=117 time=91.7 ms
^C
--- google.com ping statistics ---
16 packets transmitted, 16 received, 0% packet loss, time 14993ms
rtt min/avg/max/mdev = 32.299/73.030/171.546/35.458 ms
```

j) File Compression:

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

```
mysf@mysf:~/LinuxAssignment$ zip docs.zip docs
  adding: docs/ (stored 0%)
mysf@mysf:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
```

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

```
mysf@mysf:~/LinuxAssignment$ unzip docs.zip -d newdir
Archive:  docs.zip
   creating: newdir/docs/
```

k) File Editing:

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

```
mysf@mysf:~/LinuxAssignment$ nano file1.txt
```

```
mysf@mysf:~/LinuxAssignment$ cat file1.txt
This is my first Linux Assignment :)
Cdac Mumbai is Best :)
I am happy to work hard to acheive my goals :)
```

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

```
mysf@mysf:~/LinuxAssignment$ sed -i 's/Mumbai/Juhu/g' file1.txt
mysf@mysf:~/LinuxAssignment$ cat file1.txt
This is my first Linux Assignment :)
Cdac Juhu is Best :)
I am happy to work hard to acheive my goals :)
```

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.

```
mysf@mysf:~/LinuxAssignment$ nano data.txt
mysf@mysf:~/LinuxAssignment$ cat data.txt
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
mysf@mysf:~/LinuxAssignment$ head -n 10 data.txt
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
```

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

```
mysf@mysf:~/LinuxAssignment$ tail -n 5 data.txt
couldn't put Humpty together again.
Humpty Dumpty sat on a wall.
Humpty Dumpty had a great fall.
All the king's horses and all the king's men
couldn't put Humpty together again.
```

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.

```
mysf@mysf:~/LinuxAssignment$ head -n 15 numbers.txt
1
4
9
16
25
36
49
64
81
100
121
144
169
196
225
```

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

```
mysf@mysf:~/LinuxAssignment$ tail -n 3 numbers.txt
169
196
225
```

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."

```
mysf@mysf:~/LinuxAssignment$ touch input.txt
mysf@mysf:~/LinuxAssignment$ nano input.txt
mysf@mysf:~/LinuxAssignment$ cat input.txt
this is a linux assignment.
mysf@mysf:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
mysf@mysf:~/LinuxAssignment$ cat output.txt
THIS IS A LINUX ASSIGNMENT.
```

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."

```
mysf@mysf:~/LinuxAssignment$ touch duplicate.txt
mysf@mysf:~/LinuxAssignment$ nano duplicate.txt
mysf@mysf:~/LinuxAssignment$ cat duplicate.txt
This is a Linux Assignment.
Cdac Mumbai is the best.
This is a Linux Assignment.
mysf@mysf:~/LinuxAssignment$ sort -u duplicate.txt
Cdac Mumbai is the best.
This is a Linux Assignment.
```

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."

```
mysf@mysf:~/LinuxAssignment$ touch duplicate.txt
mysf@mysf:~/LinuxAssignment$ nano fruit.txt
mysf@mysf:~/LinuxAssignment$ nano fruit.txt
mysf@mysf:~/LinuxAssignment$ cat fruit.txt
Apple
Mango
Apple
Banana
Papaya
Watermelon
Orange
Banana
Apple
Guava
Apple
Banana
mysf@mysf:~/LinuxAssignment$ sort fruit.txt | uniq -c
      4 Apple
      3 Banana
      1 Guava
      1 Mango
      1 Orange
      1 Papaya
      1 Watermelon
mysf@mysf:~/LinuxAssignment$
```


```
mysf@mysf:~/LinuxAssignment$ touch duplicate.txt
mysf@mysf:~/LinuxAssignment$ nano fruit.txt
mysf@mysf:~/LinuxAssignment$ nano fruit.txt
mysf@mysf:~/LinuxAssignment$ cat fruit.txt
Apple
Mango
Apple
Banana
Papaya
Watermelon
Orange
Banana
Apple
Guava
Apple
Banana
mysf@mysf:~/LinuxAssignment$ sort fruit.txt | uniq -c
      4 Apple
      3 Banana
      1 Guava
      1 Mango
      1 Orange
      1 Papaya
      1 Watermelon
mysf@mysf:~/LinuxAssignment$
```