NAME: MUJAHID BAGWAN

Assignment No 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:**

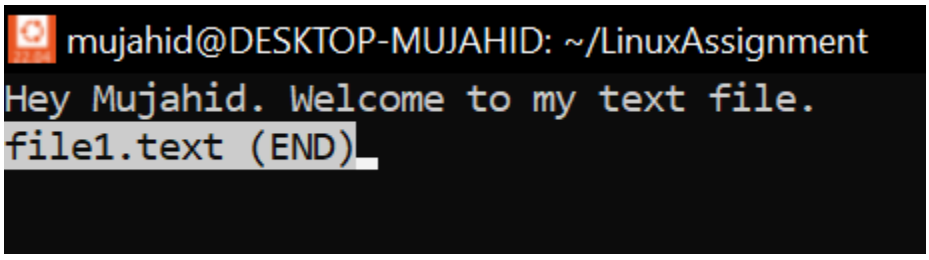
a. Start by navigating to your home directory and list its contents. Then, move into a directory named "Linux Assignment" if it exists; otherwise, create it.

```
mujahid@DESKTOP-MUJAHID:~$ whoami
mujahid
mujahid@DESKTOP-MUJAHID:~$ touch OS.text
mujahid@DESKTOP-MUJAHID:~$ ls
LinuxAssignment  OS.text
mujahid@DESKTOP-MUJAHID:~$ cd ~
mujahid@DESKTOP-MUJAHID:~$ ls
LinuxAssignment  OS.text
mujahid@DESKTOP-MUJAHID:~$ mkdir -p LinuxAssignment
mujahid@DESKTOP-MUJAHID:~$
```

b) **File Management:**

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

```
mujahid@DESKTOP-MUJAHID:~$ mkdir -p LinuxAssignment
mujahid@DESKTOP-MUJAHID:~$ cd LinuxAssignment
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ cat>> file1.text
Hey Mujahid. Welcome to my text file.
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ less file1.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```



c) Directory Management:

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ less file1.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ mkdir docs
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

d) Copy and Move Files:

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

```
docs  file1.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ cat docs/files2.text
cat: docs/files2.text: No such file or directory
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ cat docs/file2.text
Hey Mujahid. Welcome to my text file.
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

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.

b. Then, change the owner of "file2.txt" to the current user.

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ chmod 744 docs/file2.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ ls -l docs/file2.text
-rwxr--r-- 1 mujahid mujahid 38 Aug 19 00:57 docs/file2.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

(Note: to check ownership without attempting to change it, use ls -l command. If its not owned by you and you want to change owner to current user then, use “ sudo chown $(whoami) docs/file2.text ” command.)

f) Final Checklist:

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 mujahid mujahid 4096 Aug 19 00:57 docs
-rw-r--r-- 1 mujahid mujahid   38 Aug 19 00:49 file1.text
```

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ ls -l /
total 2728
lrwxrwxrwx   1 root root       7 Jan  7  2025 bin -> usr/bin
drwxr-xr-x   2 root root    4096 Apr 18  2022 boot
drwxr-xr-x  15 root root    3840 Aug 19 00:32 dev
drwxr-xr-x  81 root root    4096 Aug 19 00:32 etc
drwxr-xr-x   3 root root    4096 Aug 18 19:22 home
-rwxrwxrwx   1 root root 2724480 Jul 31 20:26 init
lrwxrwxrwx   1 root root       7 Jan  7  2025 lib -> usr/lib
lrwxrwxrwx   1 root root       9 Jan  7  2025 lib32 -> usr/lib32
lrwxrwxrwx   1 root root       9 Jan  7  2025 lib64 -> usr/lib64
lrwxrwxrwx   1 root root      10 Jan  7  2025 libx32 -> usr/libx32
drwx------   2 root root   16384 Aug 18 19:16 lost+found
drwxr-xr-x   2 root root    4096 Jan  7  2025 media
drwxr-xr-x   6 root root    4096 Aug 18 19:17 mnt
drwxr-xr-x   2 root root    4096 Jan  7  2025 opt
dr-xr-xr-x 185 root root       0 Aug 19 00:32 proc
drwx------   3 root root    4096 Aug 18 19:17 root
drwxr-xr-x  19 root root     560 Aug 19 00:32 run
lrwxrwxrwx   1 root root       8 Jan  7  2025 sbin -> usr/sbin
drwxr-xr-x   2 root root    4096 Aug 18 19:17 snap
drwxr-xr-x   2 root root    4096 Jan  7  2025 srv
dr-xr-xr-x  13 root root       0 Aug 19 00:31 sys
drwxrwxrwt   7 root root    4096 Aug 19 00:58 tmp
drwxr-xr-x  14 root root    4096 Jan  7  2025 usr
drwxr-xr-x  13 root root    4096 Jan  7  2025 var
```

g) File Searching:

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ find . -name "*.text"
./file1.text
./docs/file2.text
```

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ grep "Hey" file1.text
Hey Mujahid. Welcome to my text file.
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

h) System Information:

a. Display the current system date and time.

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ date
Tue Aug 19 01:11:13 IST 2025
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

i) Networking:

a. Display the IP address of the system.

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ hostname -I
172.20.205.10
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host
    inet 172.20.205.10/20 brd 172.20.207.255 scope global eth0
    inet6 fe80::215:5dff:fe49:6f23/64 scope link
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ ping -c 4 google.com
PING google.com (142.250.192.110) 56(84) bytes of data.
64 bytes from bom12s17-in-f14.1e100.net (142.250.192.110): icmp_seq=1 ttl=110 time=169 ms
64 bytes from bom12s17-in-f14.1e100.net (142.250.192.110): icmp_seq=2 ttl=110 time=43.7 ms
64 bytes from bom12s17-in-f14.1e100.net (142.250.192.110): icmp_seq=3 ttl=110 time=41.6 ms
64 bytes from bom12s17-in-f14.1e100.net (142.250.192.110): icmp_seq=4 ttl=110 time=41.6 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2998ms
rtt min/avg/max/mdev = 41.621/74.052/169.265/54.977 ms
```

j) File Compression:

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.text (stored 0%)
```

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ unzip docs.zip -d extracted_docs
Archive:  docs.zip
   creating: extracted_docs/docs/
 extracting: extracted_docs/docs/file2.text
```

k) File Editing:

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ echo "I am currently pursuing PG-DAC" >> file1.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

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

```
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ sed -i 's/text/txt/g' file1.text
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$ cat file1.text
Hey Mujahid. Welcome to my txt file.
I am currently pursuing PG-DAC
mujahid@DESKTOP-MUJAHID:~/LinuxAssignment$
```

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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.**

```
mujahid@DESKTOP-MUJAHID:~$ cat > data.txt
India
America
Pakistan
Russia
Bangladesh
Saudi Arebia
Canada
Austalia
China
Japan
Turkey
England
poland
Myanmar
Iran
Iraq
mujahid@DESKTOP-MUJAHID:~$ head -10 data.txt
India
America
Pakistan
Russia
Bangladesh
Saudi Arebia
Canada
Austalia
China
Japan
```

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

```
mujahid@DESKTOP-MUJAHID:~$ tail -5 data.txt
England
poland
Myanmar
Iran
Iraq
mujahid@DESKTOP-MUJAHID:~$
```

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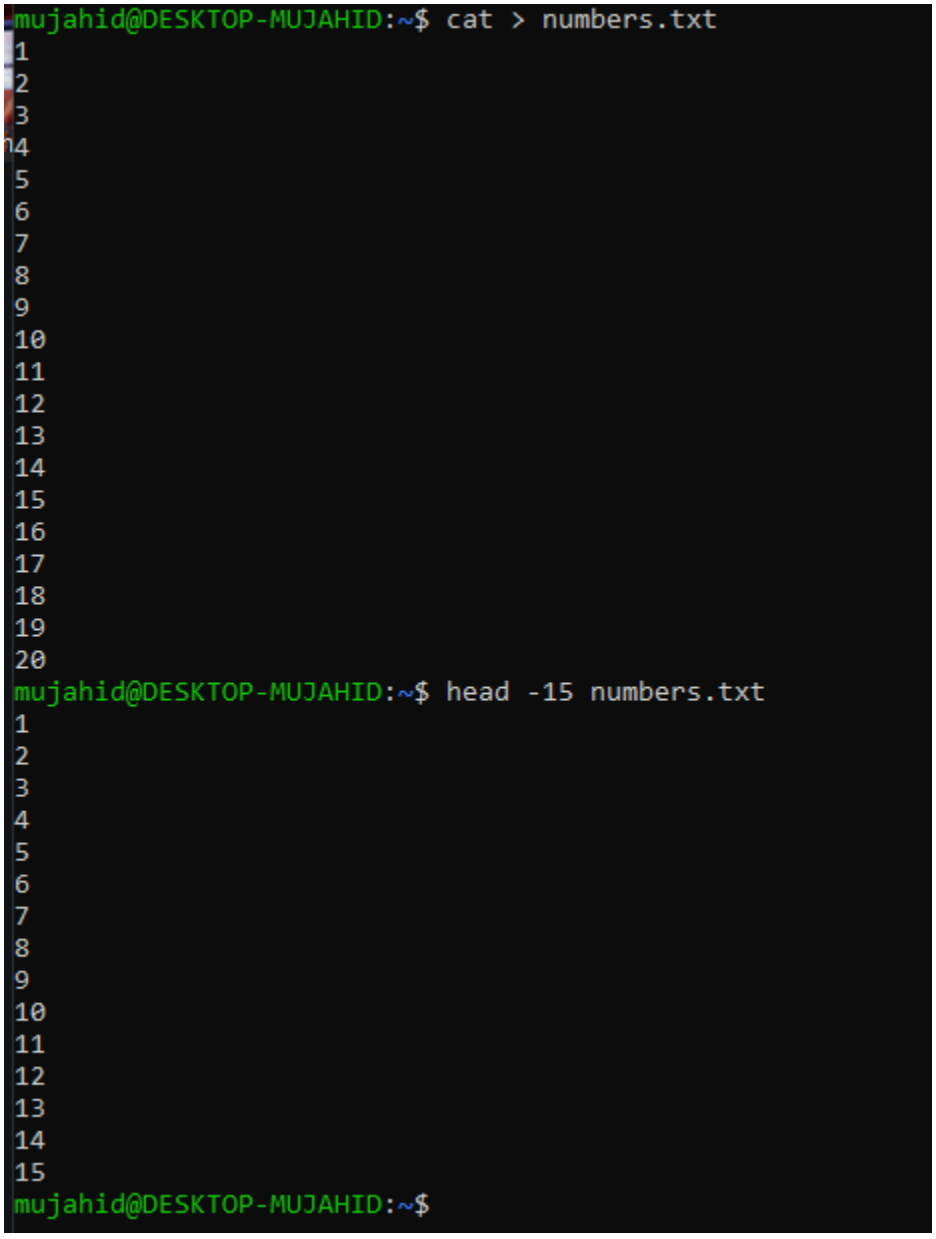
c. **In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.**



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

```
mujahid@DESKTOP-MUJAHID:~$ tail -3 numbers.txt
18
19
20
mujahid@DESKTOP-MUJAHID:~$
```

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."

```
mujahid@DESKTOP-MUJAHID:~$ cat > input.txt
india
pakistan
sri lanka
bangladesh
myanmar
afghanistan
saudi arebia
kuwait
qatar
america
russia
mujahid@DESKTOP-MUJAHID:~$ tr 'a-z' 'A-Z' < input.txt > output.txt
mujahid@DESKTOP-MUJAHID:~$ cat output.txt
INDIA
PAKISTAN
SRI LANKA
BANGLADESH
MYANMAR
AFGHANISTAN
SAUDI AREBIA
KUWAIT
QATAR
AMERICA
RUSSIA
mujahid@DESKTOP-MUJAHID:~$
```

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."**

```
mujahid@DESKTOP-MUJAHID:~$ cat > duplicate.txt
india
pakistan
srilanka
india
nepal
qatar
saudi
pakistan
iran
iraq
nepal
mujahid@DESKTOP-MUJAHID:~$ sort duplicate.txt | uniq
india
iran
iraq
nepal
pakistan
qatar
saudi
srilanka
mujahid@DESKTOP-MUJAHID:~$
```

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."**

```
mujahid@DESKTOP-MUJAHID:~$ cat > fruit.txt
apple
banana
mango
apple
kiwi
banana
mango
watermelon
mujahid@DESKTOP-MUJAHID:~$ sort fruit.txt | uniq -c
      2 apple
      2 banana
      1 kiwi
      2 mango
      1 watermelon
mujahid@DESKTOP-MUJAHID:~$
```