NAME: ASFIYA SHAIKH

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 "LinuxAssignment" if it exists; otherwise, create it.

```
asfiya@Irum:~$ ls
OS.text
asfiya@Irum:~$ cd ~
asfiya@Irum:~$ ls
OS.text
asfiya@Irum:~$ mkdir -p LinuxAssignment
```

b) **File Management:**

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

```
asfiya@Irum:~/LinuxAssignment$ cat>> file1.text
Hello its Asfiya Shaikh. Welcome to my text file !!
asfiya@Irum:~/LinuxAssignment$ less file1.text
```

```
Hello its Asfiya Shaikh. Welcome to my text file !!
file1.text (END)
```

c) **Directory Management:**

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

```
asfiya@Irum:~$ mkdir -p LinuxAssignment
asfiya@Irum:~$ cd LinuxAssignment
asfiya@Irum:~/LinuxAssignment$ cat>> file1.text
Hello its Asfiya Shaikh. Welcome to my text file !!
asfiya@Irum:~/LinuxAssignment$ less file1.text
asfiya@Irum:~/LinuxAssignment$ mkdir docs
```

d) Copy and Move Files:

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

```
asfiya@Irum:~/LinuxAssignment$ mkdir docs
asfiya@Irum:~/LinuxAssignment$ cp file1.text docs/file2.text
asfiya@Irum:~/LinuxAssignment$ less file2.text
file2.text: No such file or directory
asfiya@Irum:~/LinuxAssignment$ ls
docs  file1.text
asfiya@Irum:~/LinuxAssignment$ cat docs/file2.text
Hello its Asfiya Shaikh. Welcome to my text file !!
```

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.

```
asfiya@Irum:~/LinuxAssignment$ chmod 744 docs/file2.text
asfiya@Irum:~/LinuxAssignment$ ls -l docs/file2.text
-rwxr--r-- 1 asfiya asfiya 52 Aug 18 20:05 docs/file2.text
```

(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.

```
asfiya@Irum:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 asfiya asfiya 4096 Aug 18 20:05 docs
-rw-r--r-- 1 asfiya asfiya   52 Aug 18 20:00 file1.text
```

```
asfiya@Irum:~/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    3860 Aug 18 23:33 dev
drwxr-xr-x  81 root root    4096 Aug 18 23:33 etc
drwxr-xr-x   3 root root    4096 Aug 18 10:12 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 10:07 lost+found
drwxr-xr-x   2 root root    4096 Jan  7  2025 media
drwxr-xr-x   5 root root    4096 Aug 18 10:07 mnt
drwxr-xr-x   2 root root    4096 Jan  7  2025 opt
dr-xr-xr-x 241 root root       0 Aug 18 23:33 proc
drwx------   3 root root    4096 Aug 18 10:07 root
drwxr-xr-x  19 root root     560 Aug 18 23:33 run
lrwxrwxrwx   1 root root       8 Jan  7  2025 sbin -> usr/sbin
drwxr-xr-x   2 root root    4096 Aug 18 10:07 snap
drwxr-xr-x   2 root root    4096 Jan  7  2025 srv
dr-xr-xr-x  13 root root       0 Aug 18 23:33 sys
drwxrwxrwt   7 root root    4096 Aug 18 23:34 tmp
drwxr-xr-x  14 root root    4096 Jan  7  2025 usr
drwxr-xr-x  13 root root    4096 Jan  7  2025 var
asfiya@Irum:~/LinuxAssignment$
```

g) File Searching:

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

```
asfiya@Irum:~/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).

```
asfiya@Irum:~/LinuxAssignment$ grep "Hello" file1.text
Hello its Asfiya Shaikh. Welcome to my text file !!
```

h) System Information:

a. Display the current system date and time.

```
asfiya@Irum:~/LinuxAssignment$ date
Mon Aug 18 23:48:37 IST 2025
```

i) Networking:

a. Display the IP address of the system.

```
asfiya@Irum:~/LinuxAssignment$ hostname -I
172.29.199.28
asfiya@Irum:~/LinuxAssignment$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
    inet6 ::1/128 scope host
    inet 172.29.199.28/20 brd 172.29.207.255 scope global eth0
    inet6 fe80::215:5dff:fed7:919e/64 scope link
asfiya@Irum:~/LinuxAssignment$
```

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

```
asfiya@Irum:~/LinuxAssignment$ ping -c 4 google.com
PING google.com (142.250.76.174) 56(84) bytes of data.
64 bytes from bom12s09-in-f14.1e100.net (142.250.76.174): icmp_seq=1 ttl=117 time=14.1 ms
64 bytes from bom12s09-in-f14.1e100.net (142.250.76.174): icmp_seq=2 ttl=117 time=18.7 ms
64 bytes from bom12s09-in-f14.1e100.net (142.250.76.174): icmp_seq=3 ttl=117 time=16.9 ms
64 bytes from bom12s09-in-f14.1e100.net (142.250.76.174): icmp_seq=4 ttl=117 time=24.0 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3037ms
rtt min/avg/max/mdev = 14.098/18.403/23.980/3.607 ms
asfiya@Irum:~/LinuxAssignment$
```

j) File Compression:

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

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

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

```
asfiya@Irum:~/LinuxAssignment$ mkdir extracted_docs
unzip docs.zip -d extracted_docs
Archive:  docs.zip
   creating: extracted_docs/docs/
 extracting: extracted_docs/docs/file2.text
asfiya@Irum:~/LinuxAssignment$
```

k) File Editing:

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

```
asfiya@Irum:~/LinuxAssignment$ echo "I am currently pursuing PG-DAC." >> file1.text
asfiya@Irum:~/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).

```
asfiya@Irum:~/LinuxAssignment$ sed -i 's/text/txt/g' file1.text
asfiya@Irum:~/LinuxAssignment$ cat file1.text
Hello its Asfiya Shaikh. Welcome to my txt file !!
I am currently pursuing PG-DAC.
asfiya@Irum:~/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.

```
asfiya@Irum:~$ cat>> data.text
computer science
mechanical
information technology
civil
airtifical intelligence
e&tc
mechatronics
chemical
aeronotic
electrical
data science
machine learning
blockchain
data visulization
robotics
asfiya@Irum:~$ head -10 data.text
computer science
mechanical
information technology
civil
airtifical intelligence
e&tc
mechatronics
chemical
aeronotic
electrical
```

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

```
asfiya@Irum:~$ tail -n 5 data.text
data science
machine learning
blockchain
data visulization
robotics
```

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.

```
asfiya@Irum:~$ head -n 15 number.text
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
```

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

```
asfiya@Irum:~$ tail -n 3 number.text
138
139
140
```

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."

```
asfiya@Irum:~$ cat>> input.text
Hello Everyone!!
Sofiya
Mujahid
Saalik
Asif
Afsha
Asfiya
asfiya@Irum:~$ tr 'a-z' 'A-Z' <input.text> output.text
asfiya@Irum:~$ cat output.text
HELLO EVERYONE!!
SOFIYA
MUJAHID
SAALIK
ASIF
AFSHA
ASFIYA
asfiya@Irum:~$
```

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."

```
asfiya@Irum:~$ cat>> duplicate.text
india
pakistan
dubai
canada
ameriva
newzland
pakistan
india
dubai
china
bangladesh
asfiya@Irum:~$ sort duplicate.txt | uniq
sort: cannot read: duplicate.txt: No such fil
asfiya@Irum:~$ sort duplicate.text | uniq
ameriva
bangladesh
canada
china
dubai
india
newzland
pakistan
```

f. 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."

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```
asfiya@Irum:~$ cat>> fruit.text
apple
mango
banana
pineapple
stawberry
chickoo
orange
cherry
dragon fruit
kiwi
fig
asfiya@Irum:~$ sort fruit.text | uniq -c
      1 apple
      1 banana
      1 cherry
      1 chickoo
      1 dragon fruit
      1 fig
      1 kiwi
      1 mango
      1 orange
      1 pineapple
      1 stawberry
asfiya@Irum:~$ cat>> fruit.text
apple
cherry
fig
asfiya@Irum:~$ sort fruit.text | uniq -c
      2 apple
      1 banana
      2 cherry
      1 chickoo
      1 dragon fruit
      2 fig
      1 kiwi
      1 mango
      1 orange
      1 pineapple
      1 stawberry
```

Search