CDAC MUMBAI

Concepts of Operating System Assignment 1

Answers

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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.

```
cdac@Amey: ~/LinuxAssignm   ×    +   ∨                                    —   □   ×
cdac@Amey:~$ ls
abc          duplicate.txt  input.txt   new1.txt     output.txt
data.txt  fruits.txt      new.txt     numbers.txt
cdac@Amey:~$ mkdir LinuxAssignment
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ |
```

b) File Management:
   a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.

```
cdac@Amey: ~/LinuxAssignm   ×    +   ∨                          —   □   ×
cdac@Amey:~$ ls
abc          duplicate.txt  input.txt   new1.txt     output.txt
data.txt  fruits.txt      new.txt     numbers.txt
cdac@Amey:~$ mkdir LinuxAssignment
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ nano file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
India
Pakistan
Bangladesh
Afghanistan
Australia
New Zealand
Brazil
Argentina
Portugal
England
cdac@Amey:~/LinuxAssignment$ |
```

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".

```
cdac@Amey:~$ ls
abc           duplicate.txt   input.txt    new1.txt      output.txt
data.txt  fruits.txt      new.txt      numbers.txt
cdac@Amey:~$ mkdir LinuxAssignment
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ nano file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
India
Pakistan
Bangladesh
Afghanistan
Australia
New Zealand
Brazil
Argentina
Portugal
England
cdac@Amey:~/LinuxAssignment$ mkdir docs
cdac@Amey:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Amey:~/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. Then, change the owner of "file2.txt" to the current user.

```
cdac@Amey:~$ ls
abc           duplicate.txt   input.txt    new1.txt      output.txt
data.txt  fruits.txt      new.txt      numbers.txt
cdac@Amey:~$ mkdir LinuxAssignment
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ nano file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
India
Pakistan
Bangladesh
Afghanistan
Australia
New Zealand
Brazil
Argentina
Portugal
England
cdac@Amey:~/LinuxAssignment$ mkdir docs
cdac@Amey:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Amey:~/LinuxAssignment$ chmod 744 file2.txt
chmod: cannot access 'file2.txt': No such file or directory
cdac@Amey:~/LinuxAssignment$ cd docs
cdac@Amey:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@Amey:~/LinuxAssignment/docs$ chown $(cdac) file2.txt
Command 'cdac' not found, did you mean:
  command 'crac' from deb crac (2.5.2+dfsg-5)
Try: sudo apt install <deb name>
chown: missing operand after 'file2.txt'
Try 'chown --help' for more information.
cdac@Amey:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@Amey:~/LinuxAssignment/docs$ whoami
cdac
cdac@Amey:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@Amey:~/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.

```
cdac@Amey:~$ ls
abc        duplicate.txt  input.txt  new1.txt     output.txt
data.txt  fruits.txt      new.txt    numbers.txt
cdac@Amey:~$ mkdir LinuxAssignment
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ nano file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
India
Pakistan
Bangladesh
Afghanistan
Australia
New Zealand
Brazil
Argentina
Portugal
England
cdac@Amey:~/LinuxAssignment$ mkdir docs
cdac@Amey:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Amey:~/LinuxAssignment$ chmod 744 file2.txt
chmod: cannot access 'file2.txt': No such file or directory
cdac@Amey:~/LinuxAssignment$ cd docs
cdac@Amey:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@Amey:~/LinuxAssignment/docs$ chown $(cdac) file2.txt
Command 'cdac' not found, did you mean:
  command 'crac' from deb crac (2.5.2+dfsg-5)
Try: sudo apt install <deb name>
chown: missing operand after 'file2.txt'
Try 'chown --help' for more information.
cdac@Amey:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@Amey:~/LinuxAssignment/docs$ whoami
cdac
cdac@Amey:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@Amey:~/LinuxAssignment/docs$ cd ..
cdac@Amey:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Amey:~/LinuxAssignment$ cd
cdac@Amey:~$ ls
LinuxAssignment  data.txt        fruits.txt  new.txt   numbers.txt
abc              duplicate.txt   input.txt   new1.txt  output.txt
cdac@Amey:~$
```

g) File Searching:
  a. Search for all files with the extension ".txt" in the current directory and its subdirectories.
  b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

```
cdac@Amey: ~                    ×    +   ∨                              —   □   ×
Argentina
Portugal
England
cdac@Amey:~/LinuxAssignment$ mkdir docs
cdac@Amey:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Amey:~/LinuxAssignment$ chmod 744 file2.txt
chmod: cannot access 'file2.txt': No such file or directory
cdac@Amey:~/LinuxAssignment$ cd docs
cdac@Amey:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@Amey:~/LinuxAssignment/docs$ chown $(cdac) file2.txt
Command 'cdac' not found, did you mean:
  command 'crac' from deb crac (2.5.2+dfsg-5)
Try: sudo apt install <deb name>
chown: missing operand after 'file2.txt'
Try 'chown --help' for more information.
cdac@Amey:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@Amey:~/LinuxAssignment/docs$ whoami
cdac
cdac@Amey:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@Amey:~/LinuxAssignment/docs$ cd ..
cdac@Amey:~/LinuxAssignment$ ls
docs  file1.txt
cdac@Amey:~/LinuxAssignment$ cd
cdac@Amey:~$ ls
LinuxAssignment  data.txt       fruits.txt  new.txt   numbers.txt
abc              duplicate.txt  input.txt   new1.txt  output.txt
cdac@Amey:~$ find . -type f -name "*.txt"
./numbers.txt
./fruits.txt
./input.txt
./output.txt
./new.txt
./new1.txt
./duplicate.txt
./data.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file2.txt
cdac@Amey:~$ grep "fruit" fruits.txt
Jackfruit
Dragonfruit
cdac@Amey:~$ |
```

h) System Information:
   a. Display the current system date and time.

```
England
cdac@Amey:~/LinuxAssignment$ mkdir docs
cdac@Amey:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@Amey:~/LinuxAssignment$ chmod 744 file2.txt
chmod: cannot access 'file2.txt': No such file or directory
cdac@Amey:~/LinuxAssignment$ cd docs
cdac@Amey:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@Amey:~/LinuxAssignment/docs$ chown $(cdac) file2.txt
Command 'cdac' not found, did you mean:
  command 'crac' from deb crac (2.5.2+dfsg-5)
Try: sudo apt install <deb name>
chown: missing operand after 'file2.txt'
Try 'chown --help' for more information.
cdac@Amey:~/LinuxAssignment/docs$ chown $(whoami) file2.txt
cdac@Amey:~/LinuxAssignment/docs$ whoami
cdac
cdac@Amey:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@Amey:~/LinuxAssignment/docs$ cd ..
cdac@Amey:~/LinuxAssignment$ ls
docs   file1.txt
cdac@Amey:~/LinuxAssignment$ cd
cdac@Amey:~$ ls
LinuxAssignment   data.txt        fruits.txt   new.txt     numbers.txt
abc               duplicate.txt   input.txt    new1.txt    output.txt
cdac@Amey:~$ find . -type f -name "*.txt"
./numbers.txt
./fruits.txt
./input.txt
./output.txt
./new.txt
./new1.txt
./duplicate.txt
./data.txt
./LinuxAssignment/file1.txt
./LinuxAssignment/docs/file2.txt
cdac@Amey:~$ grep "fruit" fruits.txt
Jackfruit
Dragonfruit
cdac@Amey:~$ date
Thu Feb 27 13:52:52 UTC 2025
cdac@Amey:~$
```

i) Networking:
    a. Display the IP address of the system.

```
cdac@Amey:~$ grep "fruit" fruits.txt
Jackfruit
Dragonfruit
cdac@Amey:~$ date
Thu Feb 27 13:52:52 UTC 2025
cdac@Amey:~$ ip addr
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:e4:22:8d brd ff:ff:ff:ff:ff:ff
    inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fee4:228d/64 scope link
       valid_lft forever preferred_lft forever
cdac@Amey:~$ ip a
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:e4:22:8d brd ff:ff:ff:ff:ff:ff
    inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fee4:228d/64 scope link
       valid_lft forever preferred_lft forever
cdac@Amey:~$ ^C
cdac@Amey:~$
```

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

```
              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:e4:22:8d brd ff:ff:ff:ff:ff:ff
         inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
              valid_lft forever preferred_lft forever
         inet6 fe80::215:5dff:fee4:228d/64 scope link
              valid_lft forever preferred_lft forever
cdac@Amey:~$ ip a
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:e4:22:8d brd ff:ff:ff:ff:ff:ff
         inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
              valid_lft forever preferred_lft forever
         inet6 fe80::215:5dff:fee4:228d/64 scope link
              valid_lft forever preferred_lft forever
cdac@Amey:~$ ^C
cdac@Amey:~$ ping -c 4 wikipedia.org
PING wikipedia.org (103.102.166.224) 56(84) bytes of data.
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=1 ttl=
50 time=58.3 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=3 ttl=
50 time=57.4 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=4 ttl=
50 time=59.0 ms

--- wikipedia.org ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3105ms
rtt min/avg/max/mdev = 57.416/58.215/58.954/0.629 ms
cdac@Amey:~$
```

j) File Compression:
   a. Compress the "docs" directory into a zip file.


```
    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:e4:22:8d brd ff:ff:ff:ff:ff:ff
    inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fee4:228d/64 scope link
       valid_lft forever preferred_lft forever
cdac@Amey:~$ ^C
cdac@Amey:~$ ping -c 4 wikipedia.org
PING wikipedia.org (103.102.166.224) 56(84) bytes of data.
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=1 ttl=
50 time=58.3 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=3 ttl=
50 time=57.4 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=4 ttl=
50 time=59.0 ms

--- wikipedia.org ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3105ms
rtt min/avg/max/mdev = 57.416/58.215/58.954/0.629 ms
cdac@Amey:~$ ls
LinuxAssignment   data.txt        fruits.txt   new.txt    numbers.txt
abc               duplicate.txt   input.txt    new1.txt   output.txt
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ ls
docs   file1.txt
cdac@Amey:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 12%)
```

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

```
    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:e4:22:8d brd ff:ff:ff:ff:ff:ff
    inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fee4:228d/64 scope link
       valid_lft forever preferred_lft forever
cdac@Amey:~$ ^C
cdac@Amey:~$ ping -c 4 wikipedia.org
PING wikipedia.org (103.102.166.224) 56(84) bytes of data.
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=1 ttl=
50 time=58.3 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=3 ttl=
50 time=57.4 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=4 ttl=
50 time=59.0 ms

--- wikipedia.org ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3105ms
rtt min/avg/max/mdev = 57.416/58.215/58.954/0.629 ms
cdac@Amey:~$ ls
LinuxAssignment   data.txt        fruits.txt   new.txt     numbers.txt
abc               duplicate.txt   input.txt    new1.txt    output.txt
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ ls
docs   file1.txt
cdac@Amey:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 12%)
cdac@Amey:~/LinuxAssignment$ unzip docs.zip -d UnzippedDocsHere
Archive:  docs.zip
   creating: UnzippedDocsHere/docs/
  inflating: UnzippedDocsHere/docs/file2.txt
cdac@Amey:~/LinuxAssignment$ |
```
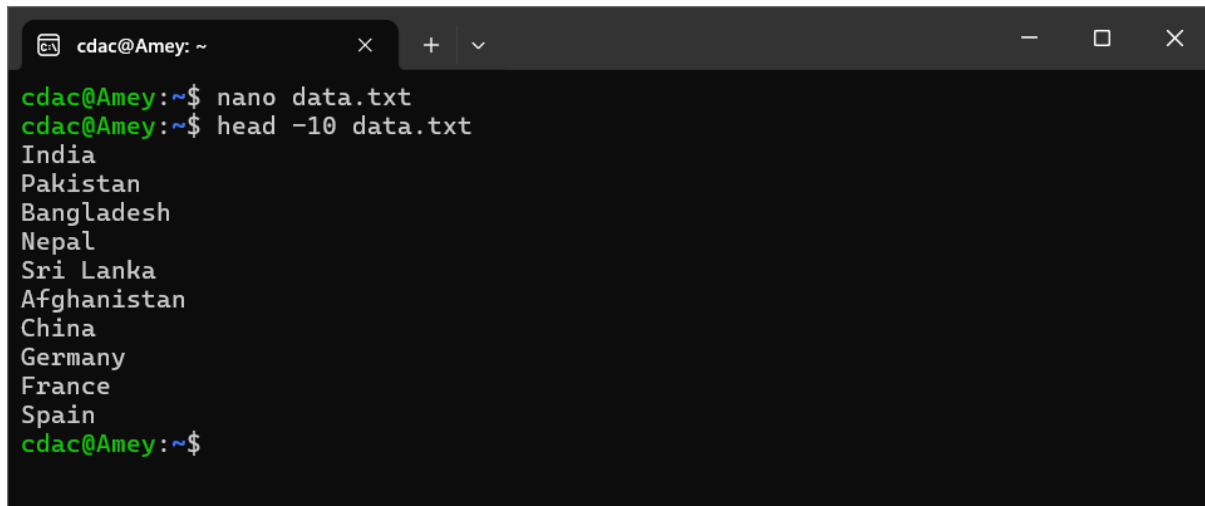
k) File Editing:
   a. Open the "file1.txt" file in a text editor and add some text to it.
   b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

```
cdac@Amey: ~/LinuxAssignm  ×    +  ∨                               —   ☐   ✕

default qlen 1000
    link/ether 00:15:5d:e4:22:8d brd ff:ff:ff:ff:ff:ff
    inet 172.24.9.0/20 brd 172.24.15.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fee4:228d/64 scope link
       valid_lft forever preferred_lft forever
cdac@Amey:~$ ^C
cdac@Amey:~$ ping -c 4 wikipedia.org
PING wikipedia.org (103.102.166.224) 56(84) bytes of data.
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=1 ttl=
50 time=58.3 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=3 ttl=
50 time=57.4 ms
64 bytes from text-lb.eqsin.wikimedia.org (103.102.166.224): icmp_seq=4 ttl=
50 time=59.0 ms

--- wikipedia.org ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3105ms
rtt min/avg/max/mdev = 57.416/58.215/58.954/0.629 ms
cdac@Amey:~$ ls
LinuxAssignment   data.txt        fruits.txt   new.txt    numbers.txt
abc               duplicate.txt   input.txt    new1.txt   output.txt
cdac@Amey:~$ cd LinuxAssignment
cdac@Amey:~/LinuxAssignment$ ls
docs   file1.txt
cdac@Amey:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 12%)
cdac@Amey:~/LinuxAssignment$ unzip docs.zip -d UnzippedDocsHere
Archive:  docs.zip
   creating: UnzippedDocsHere/docs/
  inflating: UnzippedDocsHere/docs/file2.txt
cdac@Amey:~/LinuxAssignment$ ls
UnzippedDocsHere   docs   docs.zip   file1.txt
cdac@Amey:~/LinuxAssignment$ nano file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
Hello My name is Amey. I am from CDAC Kharghar.
cdac@Amey:~/LinuxAssignment$ sed -i 's/Kharghar/Mumbai/g' file1.txt
cdac@Amey:~/LinuxAssignment$ cat file1.txt
Hello My name is Amey. I am from CDAC Mumbai.
cdac@Amey:~/LinuxAssignment$ |
```
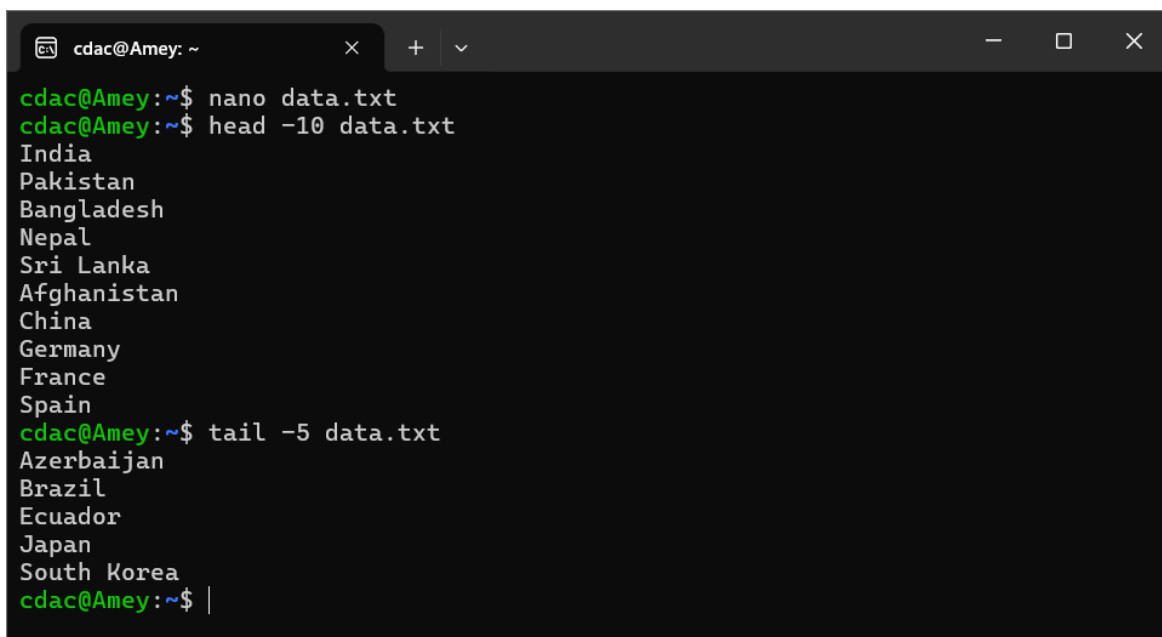
Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

    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.

```
cdac@Amey: ~                    ×    +   ∨                              —   □   ✕

cdac@Amey:~$ nano data.txt
cdac@Amey:~$ head -10 data.txt
India
Pakistan
Bangladesh
Nepal
Sri Lanka
Afghanistan
China
Germany
France
Spain
cdac@Amey:~$
```

    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@Amey: ~                    ×    +   ∨                              —   □   ✕

cdac@Amey:~$ nano data.txt
cdac@Amey:~$ head -10 data.txt
India
Pakistan
Bangladesh
Nepal
Sri Lanka
Afghanistan
China
Germany
France
Spain
cdac@Amey:~$ tail -5 data.txt
Azerbaijan
Brazil
Ecuador
Japan
South Korea
cdac@Amey:~$ |
```

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.

```
cdac@Amey:~$ nano data.txt
cdac@Amey:~$ head -10 data.txt
India
Pakistan
Bangladesh
Nepal
Sri Lanka
Afghanistan
China
Germany
France
Spain
cdac@Amey:~$ tail -5 data.txt
Azerbaijan
Brazil
Ecuador
Japan
South Korea
cdac@Amey:~$ nano numbers.txt
cdac@Amey:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@Amey:~$
```

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

```
cdac@Amey:~$ nano data.txt
cdac@Amey:~$ head -10 data.txt
India
Pakistan
Bangladesh
Nepal
Sri Lanka
Afghanistan
China
Germany
France
Spain
cdac@Amey:~$ tail -5 data.txt
Azerbaijan
Brazil
Ecuador
Japan
South Korea
cdac@Amey:~$ nano numbers.txt
cdac@Amey:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@Amey:~$ tail -3 numbers.txt
18
19
20
cdac@Amey:~$ 
```

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."

```
Afghanistan
China
Germany
France
Spain
cdac@Amey:~$ tail -5 data.txt
Azerbaijan
Brazil
Ecuador
Japan
South Korea
cdac@Amey:~$ nano numbers.txt
cdac@Amey:~$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@Amey:~$ tail -3 numbers.txt
18
19
20
cdac@Amey:~$ nano input.txt
cdac@Amey:~$ nano input.txt
cdac@Amey:~$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
cdac@Amey:~$ cat output.txt
HELLO
HOW ARE YOU
THANK YOU
GOODBYE
cdac@Amey:~$ |
```

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."

```
12
13
14
15
cdac@Amey:~$ tail -3 numbers.txt
18
19
20
cdac@Amey:~$ nano input.txt
cdac@Amey:~$ nano input.txt
cdac@Amey:~$ tr '[:lower:]' '[:upper:]' < input.txt > output.txt
cdac@Amey:~$ cat output.txt
HELLO
HOW ARE YOU
THANK YOU
GOODBYE
cdac@Amey:~$ nano duplicate.txt
cdac@Amey:~$ cat duplicate.txt
India
Pakistan
Bangladesh
Afghanistan
Sri Lanka
New Zealand
Australia
England
India
Afghanistan
Bangladesh
Maldives
cdac@Amey:~$ cat duplicate.txt | sort | uniq
Afghanistan
Australia
Bangladesh
England
India
Maldives
New Zealand
Pakistan
Sri Lanka
cdac@Amey:~$
```

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@Amey: ~                    ×    +   ∨                              —   □   ×

cdac@Amey:~$ nano fruits.txt
cdac@Amey:~$ cat fruits.txt
Grapes
Banana
Apple
Mango
Pear
Guava
Apple
Strawberry
Grapes
Mango
Jackfruit
Dragonfruit
Guava
cdac@Amey:~$ sort fruits.txt | uniq -c
      2 Apple
      1 Banana
      1 Dragonfruit
      2 Grapes
      2 Guava
      1 Jackfruit
      2 Mango
      1 Pear
      1 Strawberry
cdac@Amey:~$ |
```

Submission Guidelines:
   ☐ Document each step of your solution and any challenges faced.
   ☐ Upload it on your GitHub repository

Additional Tips:
   ☐ Experiment with different options and parameters of each command to explore their functionalities.