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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@DESKTOP-NOU1RRE:~/cdac$
cdac@DESKTOP-NOU1RRE:~/cdac$ ls
as.txt  cpp  dada
cdac@DESKTOP-NOU1RRE:~/cdac$ mkdir LinuxAssignment
cdac@DESKTOP-NOU1RRE:~/cdac$ ls
LinuxAssignment  as.txt  cpp  dada
cdac@DESKTOP-NOU1RRE:~/cdac$ _
```

b) File Management:

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ touch file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
Hello file1 here...
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

c) Directory Management:

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ mkdir docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

d) Copy and Move Files:

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
docs   file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cp ./file1.txt ./docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cd docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ ls
file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$
```

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@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ ls -l
total 0
-rw-r--r-- 1 cdac cdac 20 Feb 27 12:24 file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ chmod 744 *
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 cdac cdac 20 Feb 27 12:24 file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ chown $USER file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 cdac cdac 20 Feb 27 12:24 file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/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@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
docs   file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls -l
total 0
drwxr-xr-x 1 cdac cdac 512 Feb 27 12:26 docs
-rw-r--r-- 1 cdac cdac  20 Feb 27 12:15 file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cd ..
cdac@DESKTOP-NOU1RRE:~/cdac$ ls
LinuxAssignment   as.txt   cpp   dada
cdac@DESKTOP-NOU1RRE:~/cdac$
```

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@DESKTOP-NOU1RRE:~/cdac$ cd LinuxAssignment
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ find ~/ -name "*.txt"
/home/cdac/cdac/as.txt
/home/cdac/cdac/LinuxAssignment/docs/file2.txt
/home/cdac/cdac/LinuxAssignment/file1.txt
/home/cdac/OS_CDAC/OSDAY02/abx.txt
/home/cdac/OS_CDAC/OSDAY02/myfile.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
Hello file1 here...
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ grep "Hello" file1.txt
Hello file1 here...
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

h) System Information:

   a. Display the current system date and time.

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ date
Thu Feb 27 13:00:30 UTC 2025
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ date
Thu Feb 27 13:00:42 UTC 2025
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

i) Networking:

   a. Display the IP address of the system.

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ifconfig
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 1500
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0xfe<compat,link,site,host>
        loop  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wifi0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.92.214  netmask 255.255.255.0  broadcast 192.168.92.255
        inet6 2409:4081:ccd:ac09:d58f:e21e:34e5:f25b  prefixlen 64  scopeid 0x0<global>
        inet6 2409:4081:ccd:ac09:ecf1:8521:6448:f821  prefixlen 128  scopeid 0x0<global>
        inet6 fe80::3de6:8179:eb1d:d0e  prefixlen 64  scopeid 0xfd<compat,link,site,host>
        ether 18:47:3d:ba:e1:9f  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ping www.google.com
PING www.google.com (2404:6800:4009:831::2004) 56 data bytes
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=1 ttl=116 time=104 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=2 ttl=116 time=172 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=3 ttl=116 time=88.3 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=4 ttl=116 time=136 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=5 ttl=116 time=104 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=6 ttl=116 time=123 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=7 ttl=116 time=77.3 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=8 ttl=116 time=115 ms
64 bytes from bom12s21-in-x04.1e100.net (2404:6800:4009:831::2004): icmp_seq=9 ttl=116 time=191 ms
^C
--- www.google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8005ms
rtt min/avg/max/mdev = 77.345/123.324/190.879/35.343 ms
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

j) File Compression:

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ zip -r compressed_file.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
compressed_file.zip  docs  file1.txt
```

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ mkdir extracted_docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
compressed_file.zip  docs  extracted_docs  file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ mkdir extracted_docs
mkdir: cannot create directory 'extracted_docs': File exists
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ unzip compressed_file.zip -d extracted_docs
Archive:  compressed_file.zip
   creating: extracted_docs/docs/
 extracting: extracted_docs/docs/file2.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ ls
compressed_file.zip  docs  extracted_docs  file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cd extracted_docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/extracted_docs$ ls
docs
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment/extracted_docs$
```

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@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
Hello file1 here...
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
Hello file1 here...
C++
Java
JavaScript
React
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ sed -i 's/React/React.js/g' file1.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat file1.txt
Hello file1 here...
C++
Java
JavaScript
React.js
cdac@DESKTOP-NOU1RRE:~/cdac/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@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ nano data.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat data.txt
id-1 C
id-2 C++
id-3 C#
id-4 Java
id-5 Python
id-6 Perl
id-7 JavaScript
id-8 TypeScript
id-9 Node
id-10 React
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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-NOU1RRE:~/cdac/LinuxAssignment$ tail -5 data.txt
id-6 Perl
id-7 JavaScript
id-8 TypeScript
id-9 Node
id-10 React
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ nano numbers.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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

```
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ tail -3 numbers.txt
23
24
25
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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-NOU1RRE:~/cdac/LinuxAssignment$ nano input.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat input.txt
Hii, My Name is Suraj Balaram Patil
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ tr 'a-z' 'A-Z' <input.txt> output.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat output.txt
HII, MY NAME IS SURAJ BALARAM PATIL
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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-NOU1RRE:~/cdac/LinuxAssignment$ nano duplicate.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat duplicate.txt
C
CPP
C#
C
C
Java
CSS
HTML
CPP
JAVA
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat duplicate.txt | sort | uniq
C
C#
CPP
CSS
HTML
JAVA
Java
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```

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-NOU1RRE:~/cdac/LinuxAssignment$ nano fruit.txt
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat fruit.txt
Apple
Banana
Orange
Mango
Apple
Orange
Orange
Pineapple
Apple
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$ cat fruit.txt | sort | uniq -c
      3 Apple
      1 Banana
      1 Mango
      3 Orange
      1 Pineapple
cdac@DESKTOP-NOU1RRE:~/cdac/LinuxAssignment$
```