COS Assignment – 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.

```
cdac@kalyanidivyani:~$ pwd
/home/cdac
cdac@kalyanidivyani:~$ ls
abc
cdac@kalyanidivyani:~$ mkdir LinuxAssignment
cdac@kalyanidivyani:~$ ls
LinuxAssignment  abc
cdac@kalyanidivyani:~$
```

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

```
cdac@kalyanidivyani:~$ cd LinuxAssignment/
cdac@kalyanidivyani:~/LinuxAssignment$ ls
cdac@kalyanidivyani:~/LinuxAssignment$ touch file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ ls
file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ nano file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat file1.txt
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```

c. Directory Management: a. Create a new directory named "docs" inside the "LinuxAssignment" directory.

```
cdac@kalyanidivyani:~/LinuxAssignment$ ls
file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ mkdir docs
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  file1.txt
```

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

```
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cp file1.txt docs
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cd docs/
cdac@kalyanidivyani:~/LinuxAssignment/docs$ ls
file1.txt
cdac@kalyanidivyani:~/LinuxAssignment/docs$ man rn
No manual entry for rn
cdac@kalyanidivyani:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@kalyanidivyani:~/LinuxAssignment/docs$ ls
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.

```
cdac@kalyanidivyani:~/LinuxAssignment$ ls -l file2.txt
-rw-r--r-- 1 cdac cdac 99 Feb 27 13:27 file2.txt
cdac@kalyanidivyani:~/LinuxAssignment$ chmod 761 file2.txt
cdac@kalyanidivyani:~/LinuxAssignment$ ls -l file2.txt
-rwxrw---x 1 cdac cdac 99 Feb 27 13:27 file2.txt
cdac@kalyanidivyani:~/LinuxAssignment$ chmod 744 file2.txt
cdac@kalyanidivyani:~/LinuxAssignment$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 99 Feb 27 13:27 file2.txt
```

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@kalyanidivyani:~/LinuxAssignment/docs$ cd ..
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cd
cdac@kalyanidivyani:~$ ls
LinuxAssignment  abc
```

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@kalyanidivyani:~$ find -type f -iname *.txt
./LinuxAssignment/docs/file2.txt
./LinuxAssignment/file1.txt
cdac@kalyanidivyani:~$ man grep
cdac@kalyanidivyani:~$ ls
LinuxAssignment  abc
cdac@kalyanidivyani:~$ cd LinuxAssignment/
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat file1.txt
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cdac@kalyanidivyani:~/LinuxAssignment$ grep Sec file1.txt
Sectio-1 question b)
```

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

```
cdac@kalyanidivyani:~/LinuxAssignment$ date
Wed Feb 26 18:53:29 UTC 2025
cdac@kalyanidivyani:~/LinuxAssignment$ date --date= "27-02-2024"
date: the argument ‘27-02-2024’ lacks a leading '+';
when using an option to specify date(s), any non-option
argument must be a format string beginning with '+'
Try 'date --help' for more information.
cdac@kalyanidivyani:~/LinuxAssignment$ date --date= "27-02-2024"
date: the argument ‘27-02-2024’ lacks a leading '+';
when using an option to specify date(s), any non-option
argument must be a format string beginning with '+'
Try 'date --help' for more information.
cdac@kalyanidivyani:~/LinuxAssignment$ date --date= "2024-02-27"
date: the argument ‘2024-02-27’ lacks a leading '+';
when using an option to specify date(s), any non-option
argument must be a format string beginning with '+'
Try 'date --help' for more information.
cdac@kalyanidivyani:~/LinuxAssignment$ date --date="2024-02-27" +"%A, %d %B %Y"
Tuesday, 27 February 2024
cdac@kalyanidivyani:~/LinuxAssignment$ date --date="2024-02-27" +"%A, %d %Y"
Tuesday, 27 2024
cdac@kalyanidivyani:~/LinuxAssignment$ date --date="2024-02-27" +"%A, %d %B"
Tuesday, 27 February
cdac@kalyanidivyani:~/LinuxAssignment$ date --date="2024-02-27" +"%d %B %Y"
27 February 2024
```

i. Networking: a. Display the IP address of the system. b. Ping a remote server to check connectivity (provide a remote server address to ping).

```
cdac@kalyanidivyani:~$ hostname -I
172.26.252.243
cdac@kalyanidivyani:~$ man hostname
cdac@kalyanidivyani:~$ man ping
cdac@kalyanidivyani:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=52 time=40.4 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=52 time=45.6 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=52 time=27.7 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=52 time=30.6 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=52 time=41.0 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=52 time=55.1 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=52 time=63.3 ms
^C
--- 8.8.8.8 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6648ms
rtt min/avg/max/mdev = 27.673/43.369/63.261/11.729 ms
```

j. File Compression: a. Compress the "docs" directory into a zip file. b. Extract the contents of the zip file into a new directory.

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

```
cdac@kalyanidivyani:~/LinuxAssignment$ mkdir unzipped-docs
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  docs-zip.zip  file1.txt  unzipped-docs
cdac@kalyanidivyani:~/LinuxAssignment$ unzip docs-zip /unzipped-docs
Archive:  docs-zip.zip
caution: filename not matched:  /unzipped-docs
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  docs-zip.zip  file1.txt  unzipped-docs
cdac@kalyanidivyani:~/LinuxAssignment$ unzip docs-zip.zip -d unzipped-docs
Archive:  docs-zip.zip
   creating: unzipped-docs/docs/
 extracting: unzipped-docs/docs/file2.txt
cdac@kalyanidivyani:~/LinuxAssignment$ ls
docs  docs-zip.zip  file1.txt  unzipped-docs
cdac@kalyanidivyani:~/LinuxAssignment$ cd unzipped-docs/
cdac@kalyanidivyani:~/LinuxAssignment/unzipped-docs$ ls
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@kalyanidivyani:~/LinuxAssignment$ nano file1.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat file1.txt
COS
Assignment-1
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section-2
section-4
cdac@kalyanidivyani:~/LinuxAssignment$ original=section-4
cdac@kalyanidivyani:~/LinuxAssignment$ replacement=section-3
cdac@kalyanidivyani:~/LinuxAssignment$ sed -i "s/$original/$replacement/g" file1.txt && echo "Replaced '$original' with '$replacement'"
Replaced 'section-4' with 'section-3'
```

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@kalyanidivyani:~/LinuxAssignment$ cat data2.txt
cat: data2.txt: No such file or directory
cdac@kalyanidivyani:~/LinuxAssignment$ cat data.txt
Hi
Here we are heading
in next week
Maldives
India
China
Japan
Shri-lanka
Pakistan
Bhutan
America
cdac@kalyanidivyani:~/LinuxAssignment$ head -10 data.txt
Hi
Here we are heading
in next week
Maldives
India
China
Japan
Shri-lanka
Pakistan
Bhutan
```

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@kalyanidivyani:~/LinuxAssignment$ tail -5 data.txt
Japan
Shri-lanka
Pakistan
Bhutan
America
```

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@kalyanidivyani:~/LinuxAssignment$ nano Numbers.txt
cdac@kalyanidivyani:~/LinuxAssignment$ head -15 Numbers.txt
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".

```
cdac@kalyanidivyani:~/LinuxAssignment$ tail -3 Numbers.txt
135
136
137
```

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@kalyanidivyani:~/LinuxAssignment$ nano input.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat input.txt
Hello,
kalyani here.
doing assignment - 1 of os
thank you!
cdac@kalyanidivyani:~/LinuxAssignment$ cat input.txt | tr [:lower:] [:upper:]
HELLO,
KALYANI HERE.
DOING ASSIGNMENT - 1 OF OS
THANK YOU!
cdac@kalyanidivyani:~/LinuxAssignment$ cat input.txt | tr [:lower:] [:upper:] > output.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat output.txt
HELLO,
KALYANI HERE.
DOING ASSIGNMENT - 1 OF OS
THANK YOU!
```

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@kalyanidivyani:~/LinuxAssignment$ cat duplicate.txt
Chennai
Goa
Goa
Maharashtra
Pune
Mumbai
Nagpur
Nagpur
Navi-mumbai
cdac@kalyanidivyani:~/LinuxAssignment$ cat duplicate.txt | sort | uniq -u
Chennai
Maharashtra
Mumbai
Navi-mumbai
Pune
```

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@kalyanidivyani:~/LinuxAssignment$ nano fruit.txt
cdac@kalyanidivyani:~/LinuxAssignment$ cat fruit.txt
apple
apple
banana
strawberry
mango
apple
watermelon
graphs
kiwi
graphs
kiwi
cdac@kalyanidivyani:~/LinuxAssignment$ sort fruit.txt | uniq -c
      3 apple
      1 banana
      2 graphs
      2 kiwi
      1 mango
      1 strawberry
      1 watermelon
```