

CDAC MUMBAI Concepts of Operating System 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@LAPTOP-RVFA61EF: ~/L × + v
cdac@LAPTOP-RVFA61EF:~$ cd ..
cdac@LAPTOP-RVFA61EF:/home$ ls
cdac
cdac@LAPTOP-RVFA61EF:/home$ cd /home/cdac/LinuxAssignment
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ ls
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$
```

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

```
cdac@LAPTOP-RVFA61EF: ~/L × + v
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ ls
file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cat file1.txt
This is a new file
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ |
```

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

```
cdac@LAPTOP-RVFA61EF: ~/L × + v
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ ls
docs file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd /home/cdac/LinuxAssignment/docs
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ pwd
/home/cdac/LinuxAssignment/docs
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ |
```

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

```
cdac@LAPTOP-RVFA61EF: ~/L x + v
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd ~/docs
-bash: cd: /home/cdac/docs: No such file or directory
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd /home/cdac/LinuxAssignment/docs
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ |
```

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

```
cdac@LAPTOP-RVFA61EF: ~ x + v
cdac@LAPTOP-RVFA61EF:~$ date
Fri Feb 28 00:44:17 IST 2025
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~ x + v
cdac@LAPTOP-RVFA61EF:~$ hostname -I
172.27.195.146
cdac@LAPTOP-RVFA61EF:~$ ping -c 4 google.com
PING google.com (142.250.183.78) 56(84) bytes of data.
64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=1 ttl=51 time=80.9 ms
64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=2 ttl=51 time=33.0 ms
64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=3 ttl=51 time=34.0 ms
64 bytes from bom12s12-in-f14.1e100.net (142.250.183.78): icmp_seq=4 ttl=51 time=33.8 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 33.039/45.426/80.852/20.456 ms
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~/L × + ▾
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ mkdir extracted_docs && unzip docs.zip -d extracted_docs
Archive:  docs.zip
  creating: extracted_docs/docs/
  extracting: extracted_docs/docs/file2.txt
cdac@LAPTOP-RVFA61EF:~/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@LAPTOP-RVFA61EF: ~/L × + ▾
cdac@LAPTOP-RVFA61EF:~$ pwd
/home/cdac
cdac@LAPTOP-RVFA61EF:~$ cd /home/cdac/LinuxAssignment
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ ls
docs  docs.zip  extracted_docs  file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd /docs
-bash: cd: /docs: No such file or directory
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd ~/docs
-bash: cd: /home/cdac/docs: No such file or directory
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cd ..
cdac@LAPTOP-RVFA61EF:~$ cd /home/cdac/LinuxAssignment/docs
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ cd .
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment/docs$ cd ..
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ ls
docs  docs.zip  extracted_docs  file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ sed -i 's/Right/Ubuntu/g' file1.txt
cdac@LAPTOP-RVFA61EF:~/LinuxAssignment$ cat file1.txt
Ubuntu
cdac@LAPTOP-RVFA61EF:~/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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ touch data.txt  
cdac@LAPTOP-RVFA61EF:~$ ls  
LinuxAssignment data.txt nano.379.save  
cdac@LAPTOP-RVFA61EF:~$ nano data.txt  
cdac@LAPTOP-RVFA61EF:~$ head -n 10 data.txt  
Onepiece  
Naruto  
Bleach  
Dragon ball  
Dragon ball z  
Dragon ball super  
Attack on Titan  
Demon Slayer: Kimetsu no Yaiba  
Jujutsu Kaisen  
Re: Zero - Starting Life in Another World  
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ tail -n 5 data.txt  
Demon Slayer: Kimetsu no Yaiba  
Jujutsu Kaisen  
Re: Zero - Starting Life in Another World  
Vinland Saga  
My Hero Academia  
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ touch numbers.txt  
cdac@LAPTOP-RVFA61EF:~$ pwd  
/home/cdac  
cdac@LAPTOP-RVFA61EF:~$ ls  
LinuxAssignment data.txt nano.379.save numbers.txt  
cdac@LAPTOP-RVFA61EF:~$ nano numbers.txt  
cdac@LAPTOP-RVFA61EF:~$ head -n 15 numbers.txt  
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
cdac@LAPTOP-RVFA61EF:~$ |
```

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

```
cdac@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ tail -n 3 numbers.txt  
18  
19  
20  
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ nano input.txt  
cdac@LAPTOP-RVFA61EF:~$ touch output.txt  
cdac@LAPTOP-RVFA61EF:~$ tr 'shriraj' 'SHRIRAJ' < input.txt > output.txt  
cdac@LAPTOP-RVFA61EF:~$ cat output.txt  
SHRIRAJ  
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ touch duplicate.txt  
cdac@LAPTOP-RVFA61EF:~$ nano duplicate.txt  
cdac@LAPTOP-RVFA61EF:~$ sort duplicate.txt | uniq  
A  
H  
I  
J  
R  
S  
cdac@LAPTOP-RVFA61EF:~$ |
```

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@LAPTOP-RVFA61EF: ~  
cdac@LAPTOP-RVFA61EF:~$ touch fruit.txt.  
cdac@LAPTOP-RVFA61EF:~$ nano fruit.txt.  
cdac@LAPTOP-RVFA61EF:~$ sort fruit.txt. | uniq  
apple  
banana  
grape  
orange  
cdac@LAPTOP-RVFA61EF:~$ |
```


