

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@DESKTOP-19FHARK:~$ pwd
/home/cdac
cdac@DESKTOP-19FHARK:~$ ls
cdac@DESKTOP-19FHARK:~$ mkdir LinuxAssignment
cdac@DESKTOP-19FHARK:~$ ls
LinuxAssignment
cdac@DESKTOP-19FHARK:~$ |
```

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

```
cdac@DESKTOP-19FHARK:~$ cd LinuxAssignment/
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ touch file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat file1.txt
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cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ mkdir docs
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cp file1.txt docs
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cd docs/
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ ls
file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ man rn
No manual entry for rn
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@DESKTOP-19FHARK:~/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@DESKTOP-19FHARK:~/LinuxAssignment/docs$ man chmod
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ chmod u+rw file2.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ chmod o+r file2.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ whoami
cdac
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ man chown
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 40 Feb 26 19:53 file2.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ man stat
cdac@DESKTOP-19FHARK:~/LinuxAssignment/docs$ stat file2.txt
  File: file2.txt
  Size: 40          Blocks: 8          IO Block: 4096   regular file
Device: 8,32    Inode: 15591         Links: 1
Access: (0744/-rwxr--r--)  Uid: ( 1000/   cdac)   Gid: ( 1000/   cdac)
Access: 2025-02-26 19:53:50.640534080 +0000
Modify: 2025-02-26 19:53:50.640534080 +0000
Change: 2025-02-26 19:56:55.910535444 +0000
```

- 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-19FHARK:~/LinuxAssignment/docs$ cd ..
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cd
cdac@DESKTOP-19FHARK:~$ ls
LinuxAssignment
cdac@DESKTOP-19FHARK:~$ |
```

- 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-19FHARK:~$ find -type f -iname *.txt
./LinuxAssignment/docs/file2.txt
./LinuxAssignment/file1.txt
cdac@DESKTOP-19FHARK:~$ man grep
cdac@DESKTOP-19FHARK:~$ ls
LinuxAssignment
cdac@DESKTOP-19FHARK:~$ cd LinuxAssignment/
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat file1.txt
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cdac@DESKTOP-19FHARK:~/LinuxAssignment$ grep Sec file1.txt
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cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ date
Thu Feb 27 14:41:52 UTC 2025
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ date --date= "28-02-2024"
date: the argument '28-02-2024' 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@DESKTOP-19FHARK:~/LinuxAssignment$ date --date="2024-02-28" +"%A, %d %B %Y"
Wednesday, 28 February2024
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ date --date="2024-02-28" +"%A, %d %Y"
"
Wednesday, 28 2024
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ date --date="2024-02-28" +"%A, %d %B"
"
Wednesday, 28 February
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ date --date="2024-02-28" +"%d %B %Y"
28 February 2024
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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@DESKTOP-19FHARK:~/LinuxAssignment$ hostname -I
172.17.161.134
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ man hostname
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ man ping
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ 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=117 time=74.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=117 time=154 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=117 time=89.3 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=117 time=81.8 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=117 time=89.1 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=117 time=88.0 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=117 time=87.7 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=117 time=75.8 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=117 time=84.5 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=117 time=82.2 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=117 time=82.2 ms
64 bytes from 8.8.8.8: icmp_seq=12 ttl=117 time=74.9 ms
^C
--- 8.8.8.8 ping statistics ---
12 packets transmitted, 12 received, 0% packet loss, time 11646ms
rtt min/avg/max/mdev = 74.710/88.641/153.501/20.216 ms
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ sudo apt install zip
[sudo] password for cdac:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  unzip
The following NEW packages will be installed:
  unzip zip
0 upgraded, 2 newly installed, 0 to remove and 97 not upgraded.
Need to get 350 kB of archives.
After this operation, 933 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 unzip amd64
6.0-28ubuntu4.1 [174 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 zip amd64 3.
0-13ubuntu0.2 [176 kB]
Fetched 350 kB in 3s (110 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 40802 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-28ubuntu4.1_amd64.deb ...
Unpacking unzip (6.0-28ubuntu4.1) ...
Selecting previously unselected package zip.
Preparing to unpack .../zip_3.0-13ubuntu0.2_amd64.deb ...
Unpacking zip (3.0-13ubuntu0.2) ...
Setting up unzip (6.0-28ubuntu4.1) ...
Setting up zip (3.0-13ubuntu0.2) ...
Processing triggers for man-db (2.12.0-4build2) ...
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ zip -r docs1.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 3%)
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs  docs1.zip  file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs docs1.zip file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ unzip docs1.zip -d newdocs
Archive: docs1.zip
  creating: newdocs/docs/
  inflating: newdocs/docs/file2.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ ls
docs docs1.zip file1.txt newdocs
cdac@DESKTOP-19FHARK:~/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@DESKTOP-19FHARK:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat file1.txt
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I am Gaurav Ahirrao
CDAC
Mumbai
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ original=CDAC
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ replacement=Ajay
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ red -i "s/$original/$replacement/g"
file1.txt && echo "Replaced '$original' with '$replacement'"
ed: invalid option -- 'i'
Try '/usr/bin/ed --help' for more information.
cdac@DESKTOP-19FHARK:~/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-19FHARK:~/LinuxAssignment$ nano data.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ head -10 data.txt
Hitesh
pranjwal
Gaurav
Akshay
Ashish
Kunal
Swpanial
ketan
krushna
pavan
cdac@DESKTOP-19FHARK:~/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-19FHARK:~/LinuxAssignment$ nano data.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ head -10 data.txt
Hitesh
pranjwal
Gaurav
Akshay
Ashish
Kunal
ketan
krushna
pavan
Mrunal
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ tail -5 data.txt
krushna
pavan
Mrunal
```

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-19FHARK:~/LinuxAssignment$ nano numbers.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ head -15 numbers.txt
12
52
46
85
76
98
60
75
90
20
11
96
74
65
63
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```

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

```
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ tail -3 Numbers.txt
tail: cannot open 'Numbers.txt' for reading: No such file or directory
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ tail -3 numbers.txt
65
63
cdac@DESKTOP-19FHARK:~/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-19FHARK:~/LinuxAssignment$ nano input.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat input.txt
Hi,
gaurav this side.
complete assign 1 of operating system
Dhanyawad!

cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat input.txt | tr [:lower:] [:upper:]
HI,
GAURAV THIS SIDE.
COMPLETE ASSIGN 1 OF OPERATING SYSTEM
DHANYAWAD!

cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat input.txt | tr [:lower:] [:upper:] > output.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat output.txt
HI,
GAURAV THIS SIDE.
COMPLETE ASSIGN 1 OF OPERATING SYSTEM
DHANYAWAD!

cdac@DESKTOP-19FHARK:~/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-19FHARK:~/LinuxAssignment$ nano duplicate.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat duplicate.txt
Nashik
Pune
Mumbai
Dhule
Jaldaon
sakri
Kolhapur
Gao
Tamilnadu
Kerala
Gujrat
Kashi
Bnadara
Up

cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat duplicate.txt | sort | uniq

Bnadara
Dhule
Gao
Gujrat
Jaldaon
Kashi
Kerala
Kolhapur
Mumbai
Nashik
Pune
Tamilnadu
Up
sakri
cdac@DESKTOP-19FHARK:~/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-19FHARK:~/LinuxAssignment$ nano fruit.txt
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ cat fruit.txt
Pineapple
bananana
apple
greps
mango
apple
mango
watermelon
banana
banana
kiwi
kiwi
peru

cdac@DESKTOP-19FHARK:~/LinuxAssignment$ sort fruit.txt | uniq -c
1
1 Pineapple
2 apple
2 banana
1 bananana
1 greps
2 kiwi
2 mango
1 peru
1 watermelon
cdac@DESKTOP-19FHARK:~/LinuxAssignment$ |
```