


Concepts of Operating System

Assignment 1

Problem 1

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-J89SK76: ~/Linux_Assignment

```
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

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

```
total 0
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ touch file.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls -ltr
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 00:29 file.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls
file.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

c)Directory Management:

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

```
cdac@DESKTOP-J89SK76: ~/Linux_Assignment
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ mkdir docs
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls -ltr
total 0
-rw-r--r-- 1 cdac cdac 0 Aug 29 00:29 file.txt
drwxr-xr-x 1 cdac cdac 4096 Aug 29 00:50 docs
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

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

```
cdac@DESKTOP-J89SK76: ~/Linux_Assignment/docs
cdac@DESKTOP-J89SK76:~/Linux_Assignment/docs$ ls
file1.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment/docs$ cp file1.txt file2.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment/docs$ ls
file1.txt  file2.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment/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.

```
-rw-r--r-- 1 cdac cdac 52 Aug 29 22:47 data.txt
drwxr-xr-x 1 cdac cdac 4096 Aug 29 01:03 docs
-rw-r--r-- 1 cdac cdac 472 Aug 29 22:00 docs.zip
-rw-r--r-- 1 cdac cdac 24 Aug 29 23:39 duplicate.txt
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:34 file.txt
-rwxr--r-- 1 user1 cdac 12 Aug 29 22:37 file1.txt
-rw-r--r-- 1 cdac cdac 0 Aug 29 20:42 filef1
-rw-r--r-- 1 cdac cdac 58 Aug 29 23:59 fruit.txt
-rw-r--r-- 1 cdac cdac 29 Aug 29 23:14 input.txt
drwxr-xr-x 1 cdac cdac 4096 Aug 29 22:03 new1
-rw-r--r-- 1 cdac cdac 52 Aug 29 23:03 numbers.txt
-rw-r--r-- 1 cdac cdac 29 Aug 29 23:17 output.txt
-rw-r--r-- 1 cdac cdac 25 Aug 29 23:38 uniq
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

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-J89SK76:~/Linux_Assignment$ su user1
Password:
user1@DESKTOP-J89SK76:/home/cdac/Linux_Assignment$ ls
docs file.txt file1.txt filef1
user1@DESKTOP-J89SK76:/home/cdac/Linux_Assignment$ su cdac
Password:
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls
docs file.txt file1.txt filef1
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cd ..
cdac@DESKTOP-J89SK76:~$ ls
Linux_Assignment cdac f1 f2 f3 f4 f5 file file2 folder new new.txt scripts
cdac@DESKTOP-J89SK76:~$
```

g) File Searching:

a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

```
Select cdac@DESKTOP-J89SK76: ~
cdac@DESKTOP-J89SK76:~$ find "*.txt"
find: '*.txt': No such file or directory
cdac@DESKTOP-J89SK76:~$ find -name "*.txt"
./Linux_Assignment/docs/file1.txt
./Linux_Assignment/docs/file2.txt
./Linux_Assignment/file.txt
./Linux_Assignment/file1.txt
./new.txt
cdac@DESKTOP-J89SK76:~$
```

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

Select cdac@DESKTOP-J89SK76: ~

```
cdac@DESKTOP-J89SK76:~$ find "*.txt"
find: '*.txt': No such file or directory
cdac@DESKTOP-J89SK76:~$ find -name "*.txt"
./Linux_Assignment/docs/file1.txt
./Linux_Assignment/docs/file2.txt
./Linux_Assignment/file.txt
./Linux_Assignment/file1.txt
./new.txt
cdac@DESKTOP-J89SK76:~$
```

h) System Information:

a. Display the current system date and time.

```
cdac@DESKTOP-J89SK76: ~/Linux_Assignment
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ date
Fri Aug 30 00:04:29 IST 2024
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

i) Networking:

a. Display the IP address of the system

```
cdac@DESKTOP-J89SK76: ~
cdac@DESKTOP-J89SK76:~$ hostname -i
127.0.1.1
cdac@DESKTOP-J89SK76:~$
```

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

```
cdac@DESKTOP-J89SK76: ~  
cdac@DESKTOP-J89SK76:~$ ping google.com  
PING google.com(bom07s28-in-x0e.1e100.net (2404:6800:4009:81e::200e)) 56 data bytes  
64 bytes from bom07s28-in-x0e.1e100.net (2404:6800:4009:81e::200e): icmp_seq=1 ttl=116 time=622 ms  
64 bytes from bom07s28-in-x0e.1e100.net (2404:6800:4009:81e::200e): icmp_seq=3 ttl=116 time=1509 ms  
64 bytes from bom07s28-in-x0e.1e100.net (2404:6800:4009:81e::200e): icmp_seq=4 ttl=116 time=1071 ms  
64 bytes from bom07s28-in-x0e.1e100.net (2404:6800:4009:81e::200e): icmp_seq=5 ttl=116 time=1570 ms  
^C  
--- google.com ping statistics ---  
7 packets transmitted, 4 received, 42.8571% packet loss, time 6003ms  
rtt min/avg/max/mdev = 621.991/1192.916/1570.288/381.755 ms, pipe 2  
cdac@DESKTOP-J89SK76:~$  
cdac@DESKTOP-J89SK76:~$
```

j) File Compression:

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

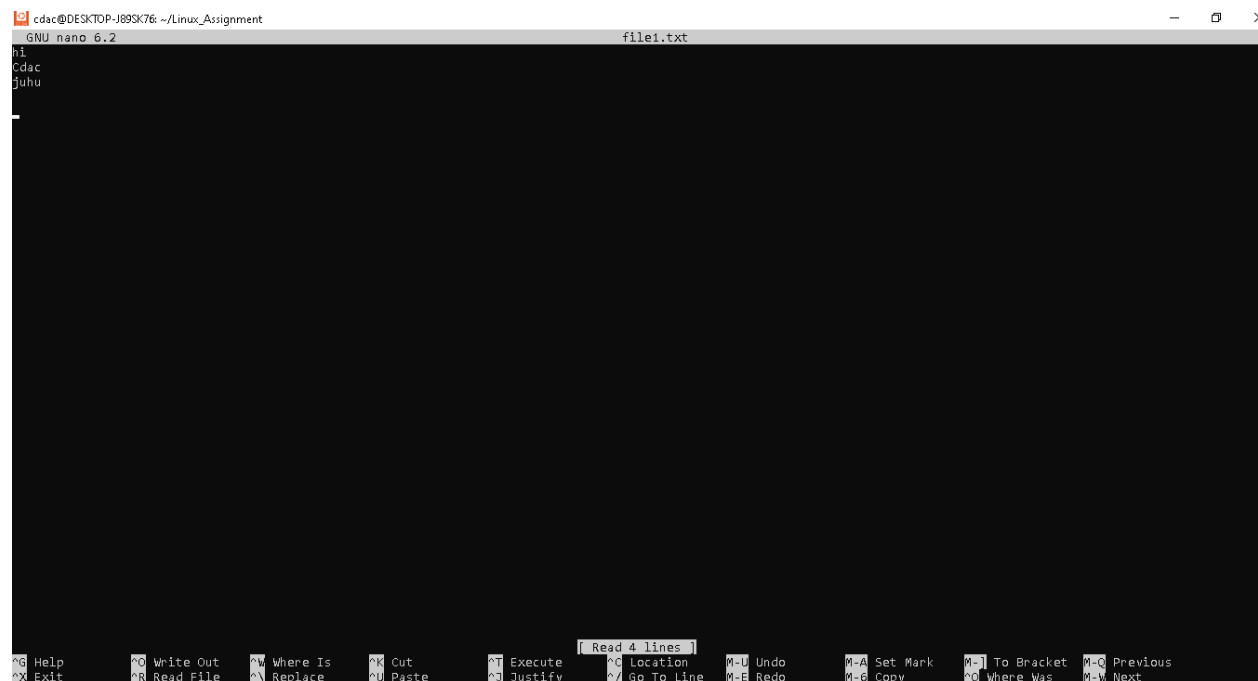
```
zip error: Nothing to do! (try: zip -r docs.zip . -i docs)  
cdac@DESKTOP-J89SK76:~$ ls  
Linux_Assignment cdac f1 f2 f3 f4 f5 file file2 folder new new.txt scripts  
cdac@DESKTOP-J89SK76:~$ cd Linux_Assignment/  
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls  
docs file.txt file1.txt filef1  
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ zip -r docs.zip docs  
  adding: docs/ (stored 0%)  
  adding: docs/file1.txt (stored 0%)  
  adding: docs/file2.txt (stored 0%)  
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls  
docs docs.zip file.txt file1.txt filef1  
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ _
```

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

```
-rw-r--r-- 1 cdac cdac 472 Aug 29 22:00 docs.zip
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ unzip docs.zip -d new1
Archive:  docs.zip
  creating: new1/docs/
  extracting: new1/docs/file1.txt
  extracting: new1/docs/file2.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls
docs  docs.zip  file.txt  file1.txt  filef1  new1
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cd
cdac@DESKTOP-J89SK76:~$
```

k) File Editing:

a. Open the "file1.txt" file in a text editor and add some text to it.



```
cdac@DESKTOP-J89SK76: ~/Linux_Assignment
GNU nano 6.2                                file1.txt
hi
cdac
juhu
_

[ Read 4 lines ]
^G Help      ^O Write Out  ^W Where Is   ^X Cut        ^T Execute    ^_ Location   ^U Undo       ^- Set Mark   ^- To Bracket ^- Previous
^X Exit      ^R Read File  ^N Replace    ^P Paste      ^J Justify    ^V Go To Line ^E Redo       ^C Copy       ^- Where Was  ^- Next
```

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

Select cdac@DESKTOP-J89SK76: ~/Linux_Assignment

```
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cat file1.txt
```

hi

Cdac

juhu

```
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ sed 's/juhu/KH/g' file1.txt
```

hi

Cdac

KH

```
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

Problem 2

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.

```
-rw-r--r-- 1 cdac cdac 0 Aug 29 22:38 data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cat data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cat data.txt
1gm
2gn
3sd
4tc
5mu
6good
7best
8luck
9Thala07
10Go
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ head -n 5 data.txt
1gm
2gn
3sd
4tc
5mu
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ _
```

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-J89SK76:~/Linux_Assignment$ cat data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cat data.txt
1gm
2gn
3sd
4tc
5mu
6good
7best
8luck
9Thala07
10Go
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano data.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ head -n 5 data.txt
1gm
2gn
3sd
4tc
5mu
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ tail -n 5 data.txt
6good
7best
8luck
9Thala07
10Go
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ _
```

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-J89SK76: ~/Linux_Assignment
cdac@DESKTOP-J89SK76:~$ ls
Linux_Assignment cdac f1 f2 f3 f4 f5 file file2 folder new new.txt scripts
cdac@DESKTOP-J89SK76:~$ cd Linux_Assignment/
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls
data.txt docs docs.zip file.txt file1.txt filef1 new1 numbers.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano numbers.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ head -15 numbers.txt
1
2
3
4
5
7
8
9
10
11
12
13
14
15
16
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ _
```

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

```
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ tail -3 numbers.txt
19
20
21
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ _
```

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-J89SK76:~/Linux_Assignment$ cat input.txt
CDAC MUMBAI
OPERATING SYSTEM
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ ls
data.txt  docs  docs.zip  file.txt  file1.txt  filef1  input.txt  new1  numbers.txt  output.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ cat output.txt
cdac mumbai
operating system
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ =

```

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."

```

mumbai
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ sort duplicate.txt |uniq > uniq
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ sort duplicate.txt |uniq

cdac
cdac
juhu
mumbai
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano duplicate.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ sort duplicate.txt |uniq

cdac
juhu
mumbai
cdac@DESKTOP-J89SK76:~/Linux_Assignment$

```

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."

```
2 Mango
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ nano fruit.txt
cdac@DESKTOP-J89SK76:~/Linux_Assignment$ sort fruit.txt |uniq -c
2 Apple
2 Banana
1 Dragon fruit
1 Grapes
2 Mango
cdac@DESKTOP-J89SK76:~/Linux_Assignment$
```

