

CDAC MUMBAI
Concepts of Operating System
Assignment 1

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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.

Ans:

Create directory named "LinuxAssignment"

```
cdac@LAPTOP-RLVRS19J:~$  
cdac@LAPTOP-RLVRS19J:~$  
cdac@LAPTOP-RLVRS19J:~$ whoami  
cdac  
cdac@LAPTOP-RLVRS19J:~$ pwd  
/home/cdac  
cdac@LAPTOP-RLVRS19J:~$ ls -l  
total 8  
drwxr-xr-x 2 cdac cdac 4096 Aug 28 18:26 LinuxAssignment  
-rw-r--r-- 1 cdac cdac  37 Aug 28 14:27 file1  
cdac@LAPTOP-RLVRS19J:~$
```

b) File Management:

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

```
-rw-r--r-- 1 cdac cdac  37 Aug 28 14:27 file1  
cdac@LAPTOP-RLVRS19J:~$ cd LinuxAssignment/  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ touch file1.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls  
file1.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ nano file1.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls  
file1.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cat file1.txt  
This is file1.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```

c) Directory Management:

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

Ans:

```
-rw-r--r-- 1 cdac cdac 37 Aug 28 14:27 file1
cdac@LAPTOP-RLVRS19J:~$ cd LinuxAssignment/
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 19:33 docs
-rw-r--r-- 1 cdac cdac 18 Aug 28 18:36 file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```

d) Copy and Move Files:

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

Ans:

```
cdac@LAPTOP-RLVRS19J:~$ cd LinuxAssignment/
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 19:33 docs
-rw-r--r-- 1 cdac cdac 18 Aug 28 18:36 file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 20:24 docs
-rw-r--r-- 1 cdac cdac 18 Aug 28 18:36 file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cd docs/
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ cat file2.txt
This is file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ cd ..
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cat file1.txt
This is file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```

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.

Ans:

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 18 Aug 28 20:24 file2.txt
```

change the owner of "file2.txt" to the current user:

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ sudo chown newuser file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 newuser cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/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.

Ans:

```
cdac@LAPTOP-RLVRS19J:~$ ls
LinuxAssignment
cdac@LAPTOP-RLVRS19J:~$ cd LinuxAssignment/
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 21:54 docs
-rw-r--r-- 1 cdac cdac 18 Aug 28 18:36 file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cd docs/
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 newuser cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

g) File Searching:

- Search for all files with the extension ".txt" in the current directory and its subdirectories.
- Display lines containing a specific word in a file (provide a file name and the specific word to search).

Ans

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l *.txt  
-rwxr--r-- 1 newuser cdac 18 Aug 28 20:24 file2.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l  
total 12  
drwxr-xr-x 2 cdac cdac 4096 Aug 28 23:41 docs  
-rw-r--r-- 1 cdac cdac 18 Aug 28 18:36 file1.txt  
-rw-r--r-- 1 cdac cdac 15 Aug 29 13:30 file2.txt  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ grep "is" file1.txt file2.txt  
file1.txt:This is file1.txt  
file2.txt:this is file2  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```

h) System Information:

- Display the current system date and time.

Ans:

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ date  
Wed Aug 28 22:50:21 IST 2024  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ date +"%d-%m-%y"  
28-08-24  
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

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).

Ans:

a.

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:43:6c:14 brd ff:ff:ff:ff:ff:ff
    inet 172.17.143.90/20 brd 172.17.143.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe43:6c14/64 scope link
        valid_lft forever preferred_lft forever
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ hostname -I
172.17.143.90
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

b.

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ping facebook.com
PING facebook.com (157.240.23.35) 56(84) bytes of data:
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=1 ttl=56 time=10.0 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=2 ttl=56 time=29.9 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=3 ttl=56 time=10.3 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=4 ttl=56 time=9.93 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=5 ttl=56 time=8.90 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=6 ttl=56 time=10.3 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=7 ttl=56 time=23.7 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=8 ttl=56 time=20.8 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=9 ttl=56 time=31.5 ms
64 bytes from edge-star-mini-shv-01-maa2.facebook.com (157.240.23.35): icmp_seq=10 ttl=56 time=10.6 ms
^X^C64 bytes from 157.240.23.35: icmp_seq=11 ttl=56 time=34.0 ms

--- facebook.com ping statistics ---
11 packets transmitted, 11 received, 0% packet loss, time 10014ms
rtt min/avg/max/mdev = 8.901/18.171/33.958/9.550 ms
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

j) File Compression:

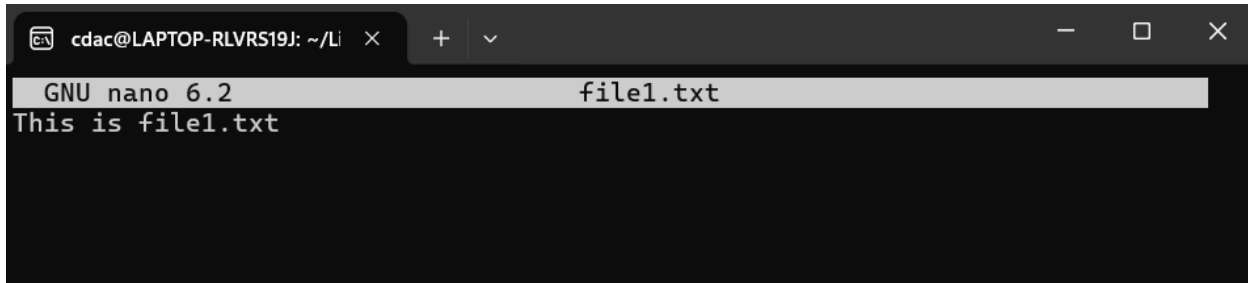
- a. Compress the "docs" directory into a zip file.
- b. Extract the contents of the zip file into a new directory.

Ans:

```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$ ls -l
total 8
-rw-r--r-- 1 cdac      cdac 22 Aug 28 23:41 compress.zip
-rwxr--r-- 1 newuser  cdac 18 Aug 28 20:24 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment/docs$
```

k) File Editing:

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



```
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 cdac cdac 4096 Aug 28 23:41 docs
-rw-r--r-- 1 cdac cdac  18 Aug 28 18:36 file1.txt
-rw-r--r-- 1 cdac cdac  15 Aug 29 13:30 file2.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```

- 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-RLVRS19J:~/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ cat file1.txt
this is file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$ sed 's/this/that/g' file1.txt
that is file1.txt
cdac@LAPTOP-RLVRS19J:~/LinuxAssignment$
```