

CDAC MUMBAI

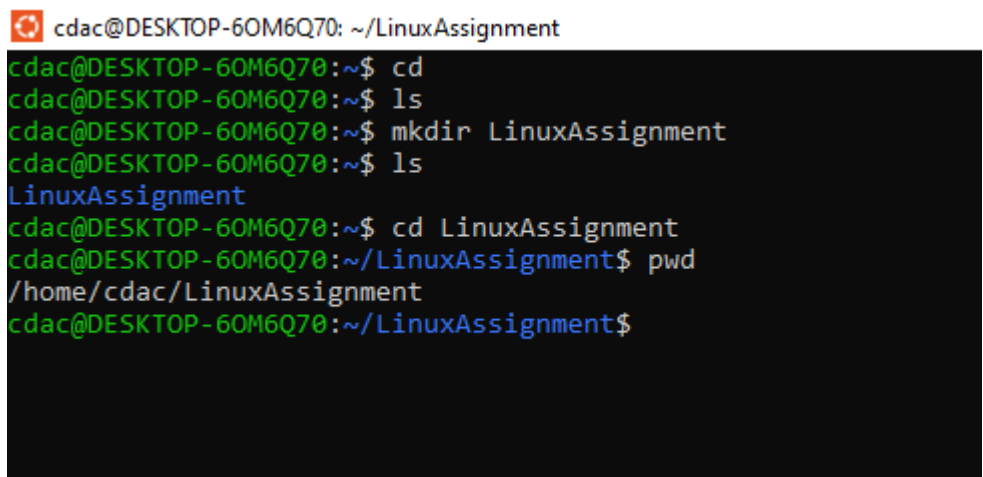
Concepts of Operating System

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.

A terminal window with a dark background and light-colored text. The prompt is 'cdac@DESKTOP-60M6Q70: ~/LinuxAssignment'. The user enters 'cd', then 'ls', then 'mkdir LinuxAssignment', then 'ls', then 'cd LinuxAssignment', and finally 'pwd'. The output of 'pwd' is '/home/cdac/LinuxAssignment'.

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment
cdac@DESKTOP-60M6Q70:~$ cd
cdac@DESKTOP-60M6Q70:~$ ls
cdac@DESKTOP-60M6Q70:~$ mkdir LinuxAssignment
cdac@DESKTOP-60M6Q70:~$ ls
LinuxAssignment
cdac@DESKTOP-60M6Q70:~$ cd LinuxAssignment
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ pwd
/home/cdac/LinuxAssignment
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$
```

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

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ cat file1.txt
hello
world
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ _
```

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

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
file1.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ mkdir docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ _
```

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

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment/docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
docs  file1.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ cd docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/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.

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment/docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 12 Aug 30 14:17 file2.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ chmod u=rwx file2.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 12 Aug 30 14:17 file2.txt
cdac@DESKTOP-60M6Q70:~/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.

```
cdac@DESKTOP-60M6Q70: ~
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/docs$ cd
cdac@DESKTOP-60M6Q70:~$ ls LinuxAssignment/
docs  file1.txt
cdac@DESKTOP-60M6Q70:~$
```

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-60M6Q70: ~
cdac@DESKTOP-60M6Q70:~$ find LinuxAssignment/ -name "*.txt"
LinuxAssignment/docs/file2.txt
LinuxAssignment/file1.txt
cdac@DESKTOP-60M6Q70:~$ grep "hello" LinuxAssignment/file1.txt
hello
cdac@DESKTOP-60M6Q70:~$
```

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

```
cdac@DESKTOP-60M6Q70: ~
```

```
cdac@DESKTOP-60M6Q70:~$ date
Fri Aug 30 14:30:10 IST 2024
cdac@DESKTOP-60M6Q70:~$
```

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-60M6Q70: ~
```

```
cdac@DESKTOP-60M6Q70:~$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.23.81.49 netmask 255.255.240.0 broadcast 172.23.95.255
    inet6 fe80::215:5dff:fead:bbef prefixlen 64 scopeid 0x20<link>
    ether 00:15:5d:ad:bb:ef txqueuelen 1000 (Ethernet)
    RX packets 906 bytes 684617 (684.6 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 228 bytes 56779 (56.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
cdac@DESKTOP-60M6Q70:~$ 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=51 time=56.0 ms
^C
--- 8.8.8.8 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 56.033/56.033/56.033/0.000 ms
cdac@DESKTOP-60M6Q70:~$
```

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@DESKTOP-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
docs  file1.txt  unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ zip docs.zip docs
  adding: docs/ (stored 0%)
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ unzip -d unz docs.zip
Archive:  docs.zip
  creating: unz/docs/
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt  unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment$ cd unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ ls
docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ _

```

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).

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-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ ls
docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ nano data.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ head data.txt
one
two
three
four
five
six
seven
eight
nine
ten
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ _

```

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-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ ls
data.txt  docs
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ tail -n 5 data.txt
fourteen
fifteen
sixteen
seventeen
eighteen
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$
```

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-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ nano numbers.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ head -n 15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$
```

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

```
cdac@DESKTOP-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ ls
data.txt  docs  numbers.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ tail -n 3 numbers.txt
18
19
20
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ _
```

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."

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-60M6Q70: ~/LinuxAssignment/unz
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ nano duplicate.txt
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ sort duplicate.txt | uniq
apple
banana
mango
pine
watermelon
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$
```

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-60M6Q70: ~/LinuxAssignment/unz

```
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ nano fruit.txt
```

```
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ sort fruit.txt | uniq -c
```

```
2 apple
```

```
3 banana
```

```
2 mango
```

```
1 watermelon
```

```
cdac@DESKTOP-60M6Q70:~/LinuxAssignment/unz$ _
```