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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-1FR68IK0:~$ cd
.cache/ .landscape/ .local/ .vim/ cdac/
cdac@LAPTOP-1FR68IK0:~$ cd cdac/
cdac@LAPTOP-1FR68IK0:~/cdac$ ls
cdac@LAPTOP-1FR68IK0:~/cdac$ cd ..
cdac@LAPTOP-1FR68IK0:~$ cd cdac/
cdac@LAPTOP-1FR68IK0:~/cdac$ mkdir LinuxAssignment
cdac@LAPTOP-1FR68IK0:~/cdac$ ls
LinuxAssignment
```

b) File Management:

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

```
cdac@LAPTOP-1FR68IK0:~/cdac$ ls
LinuxAssignment
cdac@LAPTOP-1FR68IK0:~/cdac$ cd LinuxAssignment
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
LS: command not found
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ nano file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat file1.txt
Hii,
I'm Rahul Nikale
PG-DAC student
CDAC-KHARGHAR
```

c) Directory Management:

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

```
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ mkdir docs
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs file1.txt
```

d) Copy and Move Files: a. Copy the "file1.txt" file into the "

```
docs" directory
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ mv file1.txt docs
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cd docs/
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ mv file1.txt fi
file2.txt
Command 'rmname' not found, did you mean:
command 'uname' from deb coreutils (9.4-2ubuntu2)
command 'rename' from deb rename (2.02-1)
Try: sudo apt install <deb name>
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ mv file1.txt fi
le2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ ls
file2.txt
```

docs" directory and rename it to "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@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 53 Feb 26 17:05 file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ chmod 744 file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 53 Feb 26 17:05 file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ chown $(whoami)
file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 cdac cdac 53 Feb 26 17:05 file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ cd
```

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@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/docs$ cd ..
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$
```

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@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ find . -name "*.txt"
-print
./docs/file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat docs/file2.txt
Hii,
I'm Rahul Nikale
PG-DAC student
CDAC-KHARGHAR

cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ grep Rahul docs/file2.txt
I'm Rahul Nikale
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$
```

h) System Information:

a. Display the current system date and time.

```
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ date
Wed Feb 26 17:33:30 UTC 2025
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ipconf
```

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-1FR68IK0:~/cdac/LinuxAssignment$ ipconfig
Command 'ipconfig' not found, did you mean:
  command 'iconfig' from deb ipmiutil (3.1.9-3)
  command 'hipconfig' from deb hipcc (5.2.3-12)
  command 'ifconfig' from deb net-tools (2.10-0.1ubuntu3)
  command 'iwconfig' from deb wireless-tools (30~pre9-13.1ubuntu4)
Try: sudo apt install <deb name>
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ifconfig
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sudo apt install net
-tools
[sudo] password for cdac:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 81 not upgraded.
Need to get 204 kB of archives.
After this operation, 811 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 net-tools amd64 2.10-0.1ubuntu4 [204 kB]
Fetched 204 kB in 4s (54.5 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 43342 files and directories currently installed.)
Preparing to unpack .../net-tools_2.10-0.1ubuntu4_amd64.deb ...
Unpacking net-tools (2.10-0.1ubuntu4) ...
```

```
Processing triggers for man-db (2.12.0-4build2) ...
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1400
    inet 192.168.46.115 netmask 255.255.240.0 broadcast 192.168.47.255
    inet6 fe80::215:5dff:fe2c:49ec prefixlen 64 scopeid 0x20<link>
    ether 00:15:5d:2c:49:ec txqueuelen 1000 (Ethernet)
    RX packets 802 bytes 272188 (272.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 801 bytes 61536 (61.5 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 60 bytes 7114 (7.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 60 bytes 7114 (7.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ping google.com
PING google.com (142.251.42.14) 56(84) bytes of data:
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=1 ttl=52 time=368 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=2 ttl=52 time=180 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=3 ttl=52 time=94.5 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=4 ttl=52 time=145 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=5 ttl=52 time=153 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=6 ttl=52 time=174 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=7 ttl=52 time=311 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=8 ttl=52 time=243 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=9 ttl=52 time=144 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=10 ttl=52 time=170 ms
ping: Warning: time of day goes back (-5372960us), taking countermeasures
ping: Warning: time of day goes back (-5372492us), taking countermeasures
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=11 ttl=52 time=0.000 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=12 ttl=52 time=219 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=13 ttl=52 time=147 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=14 ttl=52 time=162 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=15 ttl=52 time=186 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=16 ttl=52 time=214 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=17 ttl=52 time=240 ms
```

```

cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ping gov.in
ping: gov.in: No address associated with hostname
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ping twitter.com
PING twitter.com (104.244.42.193) 56(84) bytes of data.
64 bytes from 104.244.42.193: icmp_seq=1 ttl=48 time=263 ms
64 bytes from 104.244.42.193: icmp_seq=2 ttl=48 time=330 ms
64 bytes from 104.244.42.193: icmp_seq=3 ttl=48 time=294 ms
64 bytes from 104.244.42.193: icmp_seq=4 ttl=48 time=247 ms
64 bytes from 104.244.42.193: icmp_seq=5 ttl=48 time=207 ms
64 bytes from 104.244.42.193: icmp_seq=6 ttl=48 time=254 ms
64 bytes from 104.244.42.193: icmp_seq=7 ttl=48 time=204 ms
64 bytes from 104.244.42.193: icmp_seq=8 ttl=48 time=181 ms
64 bytes from 104.244.42.193: icmp_seq=9 ttl=48 time=290 ms
64 bytes from 104.244.42.193: icmp_seq=10 ttl=48 time=248 ms
64 bytes from 104.244.42.193: icmp_seq=11 ttl=48 time=203 ms
64 bytes from 104.244.42.193: icmp_seq=12 ttl=48 time=335 ms
64 bytes from 104.244.42.193: icmp_seq=13 ttl=48 time=292 ms
^C
--- twitter.com ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 14543ms
rtt min/avg/max/mdev = 181.408/257.453/334.798/47.312 ms
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ zip -r docs.zip docsCommand 'zip'

```

j) File Compression:

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

```

--- twitter.com ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 14543ms
rtt min/avg/max/mdev = 181.408/257.453/334.798/47.312 ms
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ zip -r docs.zip docsCommand 'zip' not found, but can be installed with:
sudo apt install zip
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sudo apt install zip
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 81 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 5s (73.2 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 43390 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-28ubuntu4.1_amd64.deb ...

```

```

Setting up zip (3.0-13ubuntu0.2) ...
Processing triggers for man-db (2.12.0-4build2) ...
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (deflated 2%)
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs  docs.zip
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ mkdir newDirForzipFile
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs  docs.zip  newDirForzipFile
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ unzip docs.zip newDirForzipFile/
Archive:  docs.zip
caution: filename not matched: newDirForzipFile/
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ unzip docs.zip newDirForzipFile
Archive:  docs.zip
caution: filename not matched: newDirForzipFile
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ unzip docs.zip; mv docs
docs/  docs.zip
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ unzip docs.zip; mv docs.zip newDirForzipFile/
Archive:  docs.zip
replace docs/file2.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: new file
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs  newDirForzipFile
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cd newDirForzipFile/
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/newDirForzipFile$ ls
docs  docs.zip
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/newDirForzipFile$ unzip docs.zip
Archive:  docs.zip
  creating: docs/
  inflating: docs/file2.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/newDirForzipFile$ ls
docs  docs.zip
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment/newDirForzipFile$ cd ..

```

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-1FR68IK0:~/cdac/LinuxAssignment/newDirForzipFile$ cd ..
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ vi file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ vi file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sed -i 's/Hii/Hii/g' file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ vi file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat file1.txt
Hii,
So today i learn about the difference between
multitasking, multiprogramming and multiprocessing
multiprogramming means we have multiple process in RAM
but process executing in non-preemptive manner ie. first the process get completd then cpu get context switch to next prce
and in multitasking single cpu get context switch with multiple process that is knwon as multitasking
and multiprocessing is mulitple process handle the processes is called multiprocessing
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sed -i 's/Hii/Hi, i'm Rahul/g' file1.txt
>
>
> ^C
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sed -i 's/Hii/Hi, i'm Rahul/g' file1.txt
^C
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sed -i 's/Hii/Hi i'm Rahul/g' file1.txt
> ^C
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sed -i 's/Hii/Hello/g' file1.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat file1.txt
Hello,
So today i learn about the difference between
multitasking, multiprogramming and multiprocessing
multiple process in RAM
but process executing in non-preemptive manner ie. first the process get completd then cpu get context switch to next prce
and in multitasking single cpu get context switch with multiple process that is knwon as multitasking
and multiprocessing is mulitple process handle the processes is called multiprocessing
```

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-1FR68IK0:~/cdac/LinuxAssignment$ ls
docs  file1.txt  newDirForzipFile
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ vi data.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ head -10 data.txt
Hii
monday
tuesday
wednesday
thursday
friday
saturday
sunday
weekdays
weekend
```

- b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

```
Weekend
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ tail -5 data.txt
office
machine
Ai
CDAC
Java
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ nano numbers.txt
```

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-1FR68IK0:~/cdac/LinuxAssignment$ nano numbers.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ head -15 n
newDirForzipFile/ numbers.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
```

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

```
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ tail -3 numbers.txt
18
19
20
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ nano numbers.txt
```

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-1FR68IK0:~/cdac/LinuxAssignment$ nano input.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat input.txt
hii i'm rahul nikale
i write in this file with with all letters in lowercase
so i have to perform operation on it to make file
in uppercase format
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat input.txt | tr '[:lower:]' '[:upper:]' > output.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ ls
data.txt  file1.txt  newDirForzipFile  output.txt
docs      input.txt  numbers.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat output.txt
HII I'M RAHUL NIKALE
I WRITE IN THIS FILE WITH WITH ALL LETTERS IN LOWERCASE
SO I HAVE TO PERFORM OPERATION ON IT TO MAKE FILE
IN UPPERCASE FORMAT
```

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."

```
IN UPPERCASE FORMAT
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ vi duplicate.txt
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ cat duplicate.txt
rahul
rahul
rahul
sai
sai
sai
Nikale
Rahul

CDAC
PG_DAC
Mumbai
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sort duplicate.txt | uniq
CDAC
Mumbai
Nikale
PG_DAC
Rahul
```

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-1FR68IK0:~/cdac/LinuxAssignment$ cat fruit.txt
Mango
Mango
Mango
Apple
Apple
Apple
Berries
Berries
Pineapple
Pineapple
Orange

cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$ sort fruit.txt | uniq -c
 1
 3 Apple
 2 Berries
 3 Mango
 1 Orange
 2 Pineapple
cdac@LAPTOP-1FR68IK0:~/cdac/LinuxAssignment$
```