Assignment_01_Linux

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.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~$ pwd
/home/hemant_bhoir
hemant_bhoir@LAPTOP-U0NQNEDO:~$ mkdir LinuxAssignment
hemant_bhoir@LAPTOP-U0NQNEDO:~$ ls -l
total 48
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 A
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 AA
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 AAB
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 ABB
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 BBE
drwxr-xr-x 2 hemant_bhoir hemant_bhoir 4096 Mar  7 17:36 LinuxAssignment
drwxr-xr-x 3 hemant_bhoir hemant_bhoir 4096 Mar  6 16:19 OS
drwxr-xr-x 2 hemant_bhoir hemant_bhoir 4096 Mar  7 00:06 div1
drwxr-xr-x 3 hemant_bhoir hemant_bhoir 4096 Mar  7 00:07 div2
-rw-r--r-- 1 hemant_bhoir hemant_bhoir   15 Mar  6 20:01 f1
-rw-r--r-- 1 hemant_bhoir hemant_bhoir   15 Mar  7 00:01 f2
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:23 f3
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 10:46 file
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:34 hemant.java
drwxr-xr-x 6 hemant_bhoir hemant_bhoir 4096 Mar  4 18:15 laxman
lrwxrwxrwx 1 hemant_bhoir hemant_bhoir    2 Mar  7 00:08 link -> f1
-rw-r--r-- 1 hemant_bhoir hemant_bhoir   17 Mar  7 00:10 my
-r-xr-xr-x 1 hemant_bhoir hemant_bhoir   17 Mar  7 00:11 my.sh
-rw-r--r-- 1 hemant_bhoir hemant_bhoir   45 Mar  7 09:05 ram.txt
-rw-r--r-- 1 hemant_bhoir hemant_bhoir    0 Mar  6 19:34 shyam.txt
drwxr-xr-x 4 hemant_bhoir hemant_bhoir 4096 Mar  6 10:35 user1
drwxr-xr-x 4 hemant_bhoir hemant_bhoir 4096 Mar  6 10:35 user2
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~$ cd LinuxAssignment
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ cat > file1.txt
I am in file1
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ cat file1.txt
I am in file1
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ mkdir docs
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ ls
docs  file1.txt
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ cp file1.txt docs
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ ls
file1.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.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ vi file2.txt
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ chmod o+r file2.txt
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 hemant_bhoir hemant_bhoir 25 Mar  7 18:02 file2.txt
```

f) Final Checklist: a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to ensure that all operations were performed correctly.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ ls
docs  file1.txt

hemant_bhoir@LAPTOP-U0NQNEDO:~$ ls
A   AAB  BBE             OS    div2  f2  file         laxman  my     ram.txt    user1
AA  ABB  LinuxAssignment  div1  f1    f3  hemant.java  link    my.sh  shyam.txt  user2
```

g) File Searching:

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ find -name "*.txt"
./docs/file2.txt
./file1.txt
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/docs$ grep "I" file2.txt
I am in file1
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~$ date
Thu Mar  7 18:28:55 IST 2024
```

i) Networking:

a. Display the IP address of the system.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.19.31.145  netmask 255.255.240.0  broadcast 172.19.31.255
        inet6 fe80::215:5dff:fe2a:c392  prefixlen 64  scopeid 0x20<link>
        ether 00:15:5d:2a:c3:92  txqueuelen 1000  (Ethernet)
        RX packets 718  bytes 544738 (544.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
```

```
        TX packets 229  bytes 54931 (54.9 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
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ ping 127.0.0.1
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
```

j) File Compression:

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ mkdir docs1
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ zip -r docs1.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ ls
docs  docs1.zip  file1.txt
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ unzip docs1.zip -d newdir
Archive:  docs1.zip
   creating: newdir/docs/
 extracting: newdir/docs/file2.txt

 hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/newdir$ ls
 docs
```

k) File Editing:

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ vi file1.txt

Hello cdac
ls
echo "bhoir"
```

```
~
~
~
~
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment$ sed -i 's/bhoir/Hemant Bhoir/g'
file1.txt
Hello cdac
ls
echo "Hemant Bhoir"
~
```

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.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat > data.txt
1a
2a
3a
4a
5a
6a
7a
8a
9a
10a
11a
12a
13a
14a
15a
16a
17a
18a
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ head -10 data.txt
1a
2a
3a
4a
```

```
5a
6a
7a
8a
9a
10a
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ head -n 10 data.txt
1a
2a
3a
4a
5a
6a
7a
8a
9a
10a
```

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

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ tail -5
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ tail -5 data.txt
14a
15a
16a
17a
18a
```

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.

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat > numbers.txt
1
2
3
4
5
6
7
8
9
10
11
```

```
12
13
14
15
16
17
18
19
20
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ 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".

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ tail -3 numbers.txt
18
19
20
```

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."

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat > input.txt
hemant bhoir studnet of cdac Kharghar

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ tr 'a-z' 'A-Z' <input.txt>
output.txt

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat output.txt
HEMANT BHOIR STUDNET OF CDAC KHARGHAR
```

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."

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat > duplicate.txt
aa
aa
bb
bb
bb
cc
cc
dd
ee
ff
ff
gg

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat duplicate.txt | uniq
aa
bb
cc
dd
ee
ff
gg

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq duplicate.txt
aa
bb
cc
dd
ee
ff
gg
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq -u duplicate.txt
dd
ee
gg
```

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."

```
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ cat > fruit.txt
mango
Mango
```

```
Grapes
Grapes
Grapes
Banana
Mango
mango
kiwi
watermelon
hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq fruit.txt
mango
Mango
Grapes
Banana
Mango
mango
kiwi
watermelon

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq -u fruit.txt
mango
Mango
Banana
Mango
mango
kiwi
watermelon

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ uniq -c fruit.txt
      1 mango
      1 Mango
      3 Grapes
      1 Banana
      1 Mango
      1 mango
      1 kiwi
      1 watermelon

hemant_bhoir@LAPTOP-U0NQNEDO:~/LinuxAssignment/question2$ sort fruit.txt | uniq -c
      1 Banana
      3 Grapes
      2 Mango
      1 kiwi
      2 mango
      1 watermelon
```