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.

```
cdac@DESKTOP-RJF4UPC:~$ ls
cdac@DESKTOP-RJF4UPC:~$ mkdir LinuxAssignment
cdac@DESKTOP-RJF4UPC:~$ cd LinuxAssignment
```

b) **File Management:**

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

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ touch file1.txt
```

c) **Directory Management:**

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

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ mkdir docs
cdac@DESKTOP-RJF4UPC:~/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".

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cat file1.txt
hii
How are you
My name is suraj
Who are you
I am live in Mumbai
your Address
I am join Cdac
I Am complete my degree in AC patil
I am not Employee I am student
I am serious now
I am busy now i will call you back

cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cd docs
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ cat file2.txt
hii
How are you
My name is suraj
Who are you
I am live in Mumbai
your Address
I am join Cdac
I Am complete my degree in AC patil
I am not Employee I am student
I am serious now
I am busy now i will call you back
```

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-RJF4UPC:~/LinuxAssignment/docs$ ls
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ touch file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ chmod a+r file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 cdac cdac 0 Aug 28 23:44 file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ chown suraj file2.txt
chown: changing ownership of 'file2.txt': Operation not permitted
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ sudo chown suraj file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 suraj cdac 0 Aug 28 23:44 file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$
```

Challenges- change the ownership then I got some error and help to my classmates then they told me create a new user and change the ownwership. And then successfully implement this command

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-RJF4UPC:~/LinuxAssignment/docs$ dir
file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ ls -l
total 0
-rwxr--r-- 1 suraj cdac 0 Aug 28 23:44 file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment/docs$ cd /home/cdac/LinuxAssignment
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 23:44 docs
-rw-r--r-- 1 cdac cdac  214 Aug 28 21:43 file1.txt
cdac@DESKTOP-RJF4UPC:~/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@DESKTOP-RJF4UPC:~/LinuxAssignment$ grep -li Hii file1.txt file.txt file3.txt
file1.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ grep -li hii file1.txt file.txt file3.txt
file1.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

h) **System Information:**

a. Display the current system date and time.

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ date
Thu Aug 29 00:57:40 IST 2024
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

i) **Networking:**

a. Display the IP address of the system.

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ hostname -I
172.27.178.207
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

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

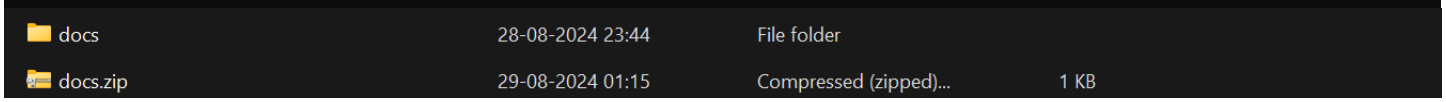
```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ hostname -I
172.27.178.207
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope 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:38:d8:0a brd ff:ff:ff:ff:ff:ff
    inet 172.27.178.207/20 brd 172.27.191.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe38:d80a/64 scope link
       valid_lft forever preferred_lft forever
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ ping
ping: usage error: Destination address required
cdac@DESKTOP-RJF4UPC:~/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=60 time=7.18 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=2 ttl=60 time=3.91 ms
64 bytes from bom12s19-in-f14.1e100.net (142.251.42.14): icmp_seq=3 ttl=60 time=3.82 ms
```

Challenges – In this stage I am enter the (ping google.com) continuously run the program and I have not the exit of this block then I close the ubuntu window and reopen it

j) **File Compression:**

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

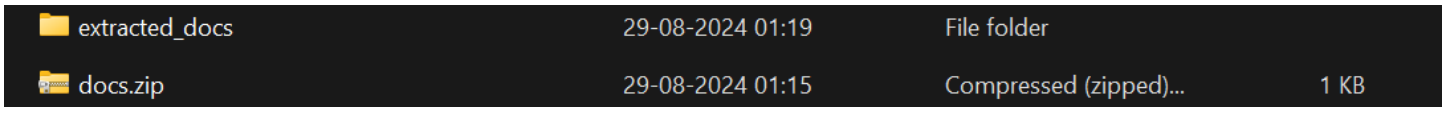
```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ zip -r docs.zip docs
Command 'zip' not found, but can be installed with:
sudo apt install zip
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ sudo apt install zip
[sudo] password for cdac:
Reading package lists... Done
Building dependency tree... Done
Reading state 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 0 not upgraded.
Need to get 350 kB of archives.
After this operation, 929 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 unzip amd64 6.0-26ubuntu3.1 [174 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/main amd64 zip amd64 3.0-12build2 [176 kB]
Fetched 350 kB in 1s (278 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 24208 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-26ubuntu3.1_amd64.deb ...
Unpacking unzip (6.0-26ubuntu3.1) ...
Selecting previously unselected package zip.
Preparing to unpack .../zip_3.0-12build2_amd64.deb ...
Unpacking zip (3.0-12build2) ...
Setting up unzip (6.0-26ubuntu3.1) ...
Setting up zip (3.0-12build2) ...
Processing triggers for man-db (2.10.2-1) ...
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```



Challenges : in this problem I have not directly create the zip file , first download the package as a (sudo apt install zip). Then zip the file

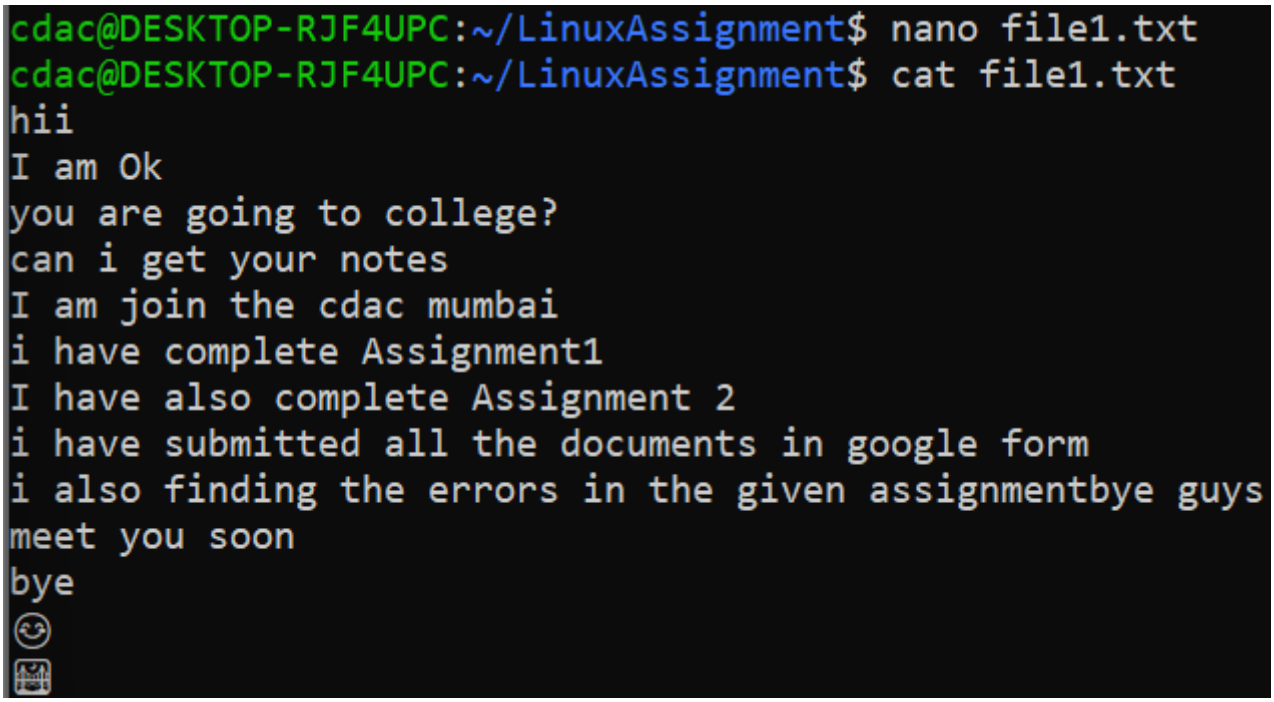
b. Extract the contents of the zip file into a new directory.

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ unzip docs.zip -d extracted_docs
Archive:  docs.zip
   creating: extracted_docs/docs/
  extracting: extracted_docs/docs/file2.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

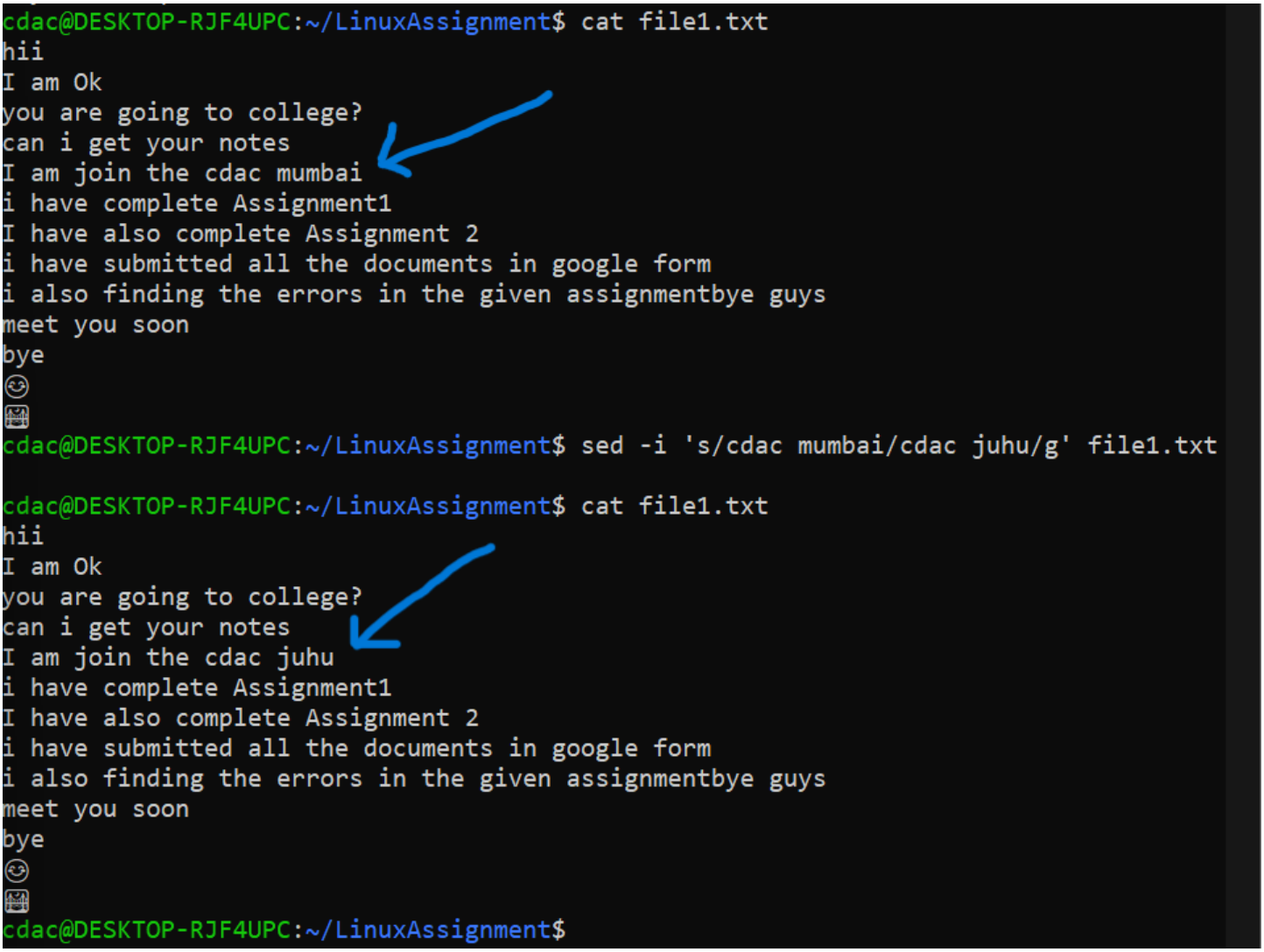


k) File Editing:

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-RJF4UPC:~/LinuxAssignment$ cat data.txt
hii
I am Ok
you are going to college?
can i get your notes
I am join the cdac juhu
i have complete Assignment1
I have also complete Assignment 2
i have submitted all the documents in google form
i also finding the errors in the given assignmentbye guys
meet you soon
bye
😊
🌉

cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ tail -5 data.txt
meet you soon
bye
😊
🌉

cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

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

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-RJF4UPC:~/LinuxAssignment$ cat data.txt
hii
I am Ok
you are going to college?
can i get your notes
I am join the cdac juhu
i have complete Assignment1
I have also complete Assignment 2
i have submitted all the documents in google form
i also finding the errors in the given assignmentbye guys
meet you soon
bye
😊
🌉

cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ heat -10 data.txt
Command 'heat' not found, but can be installed with:
sudo snap install openstackclients    # version xena, or
sudo apt  install python3-heatclient  # version 2.5.1-0ubuntu1
See 'snap info openstackclients' for additional versions.
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ head -10 data.txt
hii
I am Ok
you are going to college?
can i get your notes
I am join the cdac juhu
i have complete Assignment1
I have also complete Assignment 2
i have submitted all the documents in google form
i also finding the errors in the given assignmentbye guys
meet you soon
```

```
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ touch number.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ nano number.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cat number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ head -15 number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ head -n 15 number.txt
```

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

```
cdac@DESKTOP-RJF4UPC:~$ cd LinuxAssignment
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ nano number.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cat number.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ tail -n 3 number.txt
17
18
19
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

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-RJF4UPC:~/LinuxAssignment$ nano input.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cat input.txt
suraj
narayan
metkari
shraddha
roshan
shubham
sahil
tejas
tanmay
saloni
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ tr 'a-z' 'A-Z'<input.txt >output.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ output.txt
output.txt: command not found
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ ls
data.txt  docs.zip        file.txt   file2.txt  file4.txt  number.txt  text1.txt
docs      extracted_docs  file1.txt  file3.txt  input.txt  output.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ tr 'a-z' 'A-Z' < input.txt > output.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ cat output.txt
SURAJ
NARAYAN
METKARI
SHRADDHA
ROSHAN
SHUBHAM
SAHIL
TEJAS
TANMAY
SALONI
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

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-RJF4UPC:~/LinuxAssignment$ cat duplicate.txt
suraj
shubham
sahil
sarthak
shambho
ritika
vishal
suraj
sahil
shraddha
shubham
ritika
vishal
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ sort duplicate.txt | uniq
ritika
sahil
sarthak
shambho
shraddha
shubham
shubham
suraj
suraj
vishal
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```

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-RJF4UPC:~/LinuxAssignment$ touch fruit.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ nano fruit.txt
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ sort fruit.txt
apple
apple
apple
banana
banana
banana
grapes
grapes
kiwi
kiwi
kiwi
orange
orange
pineapple
pineapple
strawbery
strawbery
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ uniq -c
^C
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$ sort fruit.txt | uniq -c
      3 apple
      3 banana
      2 grapes
      3 kiwi
      2 orange
      2 pineapple
      2 strawbery
cdac@DESKTOP-RJF4UPC:~/LinuxAssignment$
```