Assignment No.1

Problem 1:

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 a.

1. Use cd home/ command , this will redirect you to home directory(root directory)
2. Use ls command to list all the directories present in the home directory
3. As LinuxAssignment2 directory is not present we need to create it using command :

   mkdir LinuxAssignment2
4. Use pwd(current location) command to check newly create directory inside home.

```
ohini@LAPTOP-U0E18KK2:~$ cd home/
-bash: cd: home/: No such file or directory
ohini@LAPTOP-U0E18KK2:~$ cd ~
ohini@LAPTOP-U0E18KK2:~$ ls
10              data.txt        myfile.txt   output.txt
ABC             data.txty       myfile1      s3
Feb25           duplicate.txt   myfile2      sh1
LinuxAssignment extracted_docs  myfile2.txt  sh2
abc             fruit.txt       myfile3      sh2.txt
cpp             input.txt       number.txt   sh3
ohini@LAPTOP-U0E18KK2:~$ mkdir LinuxAssignment2
ohini@LAPTOP-U0E18KK2:~$ ls
10               data.txt        myfile1      sh1
ABC              data.txty       myfile2      sh2
Feb25            duplicate.txt   myfile2.txt  sh2.txt
LinuxAssignment  extracted_docs  myfile3      sh3
LinuxAssignment2 fruit.txt       number.txt
abc              input.txt       output.txt
cpp              myfile.txt      s3
ohini@LAPTOP-U0E18KK2:~$ cd LinuxAssignment2
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment2$ pwd
/home/ohini/LinuxAssignment2
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment2$
```

b) File Management:

a. Inside the "LinuxAssignment" directory, create a new file named "file8.txt". Display its contents.

Ans. 1.Use cd LinuxAssignment to move into LinuxAssignment directory.

2. Use touch command we can create file8.txt new file.

3. using cat command we can display the content of file8.txt but it is empty file.

4. echo adds text to the file.

5.cat displays the contents of the file.

```
ohini@LAPTOP-U0E18KK2:~$ cd LinuxAssignment
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ touch file8.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ ls
docs  file1.txt  file8.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ cat file8.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ echo "Hello,This is
Assignment no.1" > file8.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ cat file8.txt
Hello,This is Assignment no.1
```

c) Directory Management:

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

Ans.

Creates a folder named **docs** inside **LinuxAssignment** using mkdir command

```
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ mkdir docs
ohini@LAPTOP-U0E18KK2:~/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".

Ans :

1. Use cp command to copy file.txt to another directory.

2. Once the file is copied into another directory, use mv command to rename fil1.txt to file2.txt

```
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ ls
docs  file1.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ ls
docs  file1.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ cp file1.txt docs
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment$ cd docs
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ ls
file1.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ mv file1.txt file2
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ ls
file2.txt
ohini@LAPTOP-U0E18KK2:~/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.

1. Use chmod u+wrx command to allocate read, write, permissions to the current user.
2. Use chmod u+r command to allocate read permissions to other users.

- `chmod` → Changes file permissions.
- `u+rwx` → Grants the owner read (r), write (w), and execute (x) permissions.
- `o+r` → Grants others only read (r) permission.
- `file2.txt` → The target file

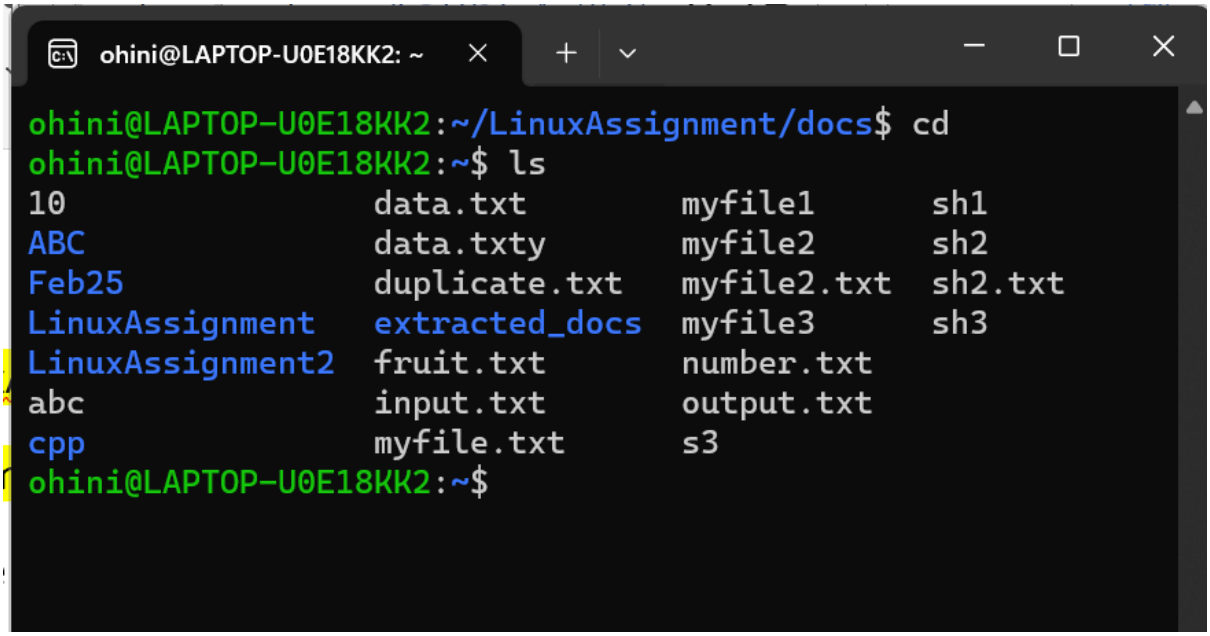
```
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ chmod o+r file2.txt
ohini@LAPTOP-U0E18KK2:~/LinuxAssignment/docs$ chown ohini file2.txt
```

f) Final Checklist:

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

Ans.

1. Use cd command to go to home directory.
2. Then use Is command to list the content of home directory
3. Further change the directory to LinuxAssignment with the help of cd command
4. Finally, list the content of LinuxAssignment directory by again using the command



g) File Searching:

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

ls -R → Lists all files and directories **recursively**.

grep "\.txt$" → Filters and displays only files ending with .txt.

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

```
ohini@LAPTOP-U0E18KK2:~$ cat data.txt
username - rohini
password - 123456
location - pune
place -hinjewadi
mob - 9898989898
dob-2/2/1999
manager - ojas
nation -india
state -MH
fax no - 123789
gender - female
age - 25
sal - 123246
ohini@LAPTOP-U0E18KK2:~$ grep "pune" data.txt
location - pune
ohini@LAPTOP-U0E18KK2:~$ grep "age" data.txt
manager - ojas
age - 25
ohini@LAPTOP-U0E18KK2:~$ grep "MH" data.txt
state -MH
ohini@LAPTOP-U0E18KK2:~$
```

Use it command grep "word_to_search" filename.txt

grep → Searches for a pattern (word) in a file.

"word_to_search" → Replace with the actual word you want to find (age)

filename.txt → Replace with the actual file name(data.txt)

h) System Information:

a. Display the current system date and time.

Ans: date → Displays the **current system date and time**.

```
ohini@LAPTOP-U0E18KK2:~$ cd/
-bash: cd/: No such file or directory
ohini@LAPTOP-U0E18KK2:~$ cd /home
ohini@LAPTOP-U0E18KK2:/home$ date
Thu Feb 27 13:57:48 UTC 2025
ohini@LAPTOP-U0E18KK2:/home$
```

i) Networking:

a. Display the IP address of the system.

```
ohini@LAPTOP-U0E18KK2:/home$ ip a
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 m
q state UP group default qlen 1000
    link/ether 00:15:5d:13:2f:f3 brd ff:ff:ff:ff:ff:ff
    inet 172.17.85.157/20 brd 172.17.95.255 scope global et
h0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe13:2ff3/64 scope link
       valid_lft forever preferred_lft forever
ohini@LAPTOP-U0E18KK2:/home$ hostname -I
172.17.85.157
ohini@LAPTOP-U0E18KK2:/home$
```

Ans: ip a → Shows all network interfaces and their IP addresses.

hostname -I → Displays only the system's IP address.

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

```
ohini@LAPTOP-U0E18KK2:/home$ ping -c 4 google.com
PING google.com (142.250.70.110) 56(84) bytes of data.
64 bytes from pnbomb-ac-in-f14.1e100.net (142.250.70.110):
icmp_seq=1 ttl=59 time=13.7 ms
64 bytes from pnbomb-ac-in-f14.1e100.net (142.250.70.110):
icmp_seq=2 ttl=59 time=5.30 ms
64 bytes from pnbomb-ac-in-f14.1e100.net (142.250.70.110):
icmp_seq=3 ttl=59 time=5.03 ms
64 bytes from pnbomb-ac-in-f14.1e100.net (142.250.70.110):
icmp_seq=4 ttl=59 time=4.98 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 300
5ms
rtt min/avg/max/mdev = 4.981/7.254/13.702/3.724 ms
ohini@LAPTOP-U0E18KK2:/home$
```

Ans:

ping → Sends ICMP packets to check connectivity.

-c 4 → Sends **4 packets** (change as needed).

google.com → Replace with any **remote server address**.

j) File Compression:

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

```
ohini@LAPTOP-U0E18KK2:~$ mkdir docs
ohini@LAPTOP-U0E18KK2:~$ pwd
/home/ohini
ohini@LAPTOP-U0E18KK2:~$ ls
10                data.txt        myfile.txt   s3
ABC               data.txty       myfile1      sh1
Feb25             docs            myfile2      sh2
LinuxAssignment   duplicate.txt   myfile2.txt  sh2.txt
LinuxAssignment2  extracted_docs  myfile3      sh3
abc               fruit.txt       number.txt
cpp               input.txt       output.txt
ohini@LAPTOP-U0E18KK2:~$ pwd
/home/ohini
ohini@LAPTOP-U0E18KK2:~$ cd docs
ohini@LAPTOP-U0E18KK2:~/docs$ touch file10.txt file11.txt file12.txt file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ ls
file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file10.txt
ohini@LAPTOP-U0E18KK2:~/docs$ zip -r docs.zip docs
        zip warning: name not matched: docs

zip error: Nothing to do! (try: zip -r docs.zip . -i docs)
ohini@LAPTOP-U0E18KK2:~/docs$  zip -r docs.zip . -i docs
        zip warning: zip file empty
ohini@LAPTOP-U0E18KK2:~/docs$ ls
docs.zip  file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$
```

Ans: mkdir → Creates a new directory named **docs**.

touch → Creates empty files named **file1.txt, file2.txt, and file3.txt** inside **docs**.

zip -r → Recursively compresses the **docs** directory into **docs.zip**.

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

```
ohini@LAPTOP-U0E18KK2:~/docs$ touch file10.txt file11.txt file12.txt file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ ls
file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file10.txt
ohini@LAPTOP-U0E18KK2:~/docs$ zip -r docs.zip docs
        zip warning: name not matched: docs

zip error: Nothing to do! (try: zip -r docs.zip . -i docs)
ohini@LAPTOP-U0E18KK2:~/docs$  zip -r docs.zip . -i docs
        zip warning: zip file empty
ohini@LAPTOP-U0E18KK2:~/docs$ ls
docs.zip  file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ unzip docs.zip -d new_docs
Archive:  docs.zip
warning [docs.zip]:  zipfile is empty
ohini@LAPTOP-U0E18KK2:~/docs$ ls  new_docs
ls: cannot access 'new_docs': No such file or directory
ohini@LAPTOP-U0E18KK2:~/docs$ ls new_docs
ls: cannot access 'new_docs': No such file or directory
ohini@LAPTOP-U0E18KK2:~/docs$ ls
docs.zip  file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ ls
docs.zip  file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file10.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file11.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file12.txt
ohini@LAPTOP-U0E18KK2:~/docs$ nano file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ ls -lh docs.zip
-rw-r--r-- 1 ohini ohini 22 Feb 27 14:30 docs.zip
ohini@LAPTOP-U0E18KK2:~/docs$ unzip docs.zip -d new_docs
Archive:  docs.zip
warning [docs.zip]:  zipfile is empty
ohini@LAPTOP-U0E18KK2:~/docs$ zip -r docs.zip *
  adding: file10.txt (deflated 27%)
  adding: file11.txt (deflated 30%)
  adding: file12.txt (deflated 33%)
  adding: file13.txt (deflated 34%)
ohini@LAPTOP-U0E18KK2:~/docs$ ls -lh docs.zip
-rw-r--r-- 1 ohini ohini 1.1K Feb 27 14:51 docs.zip
ohini@LAPTOP-U0E18KK2:~/docs$ unzip docs.zip -d new_docs
Archive:  docs.zip
  inflating: new_docs/file10.txt
  inflating: new_docs/file11.txt
  inflating: new_docs/file12.txt
  inflating: new_docs/file13.txt
ohini@LAPTOP-U0E18KK2:~/docs$ ls
docs.zip  file10.txt  file11.txt  file12.txt  file13.txt  new_docs
ohini@LAPTOP-U0E18KK2:~/docs$ cd new_docs/
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$ ls
file10.txt  file11.txt  file12.txt  file13.txt
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$
```

Ans:

-rw-r--r-- → File permissions

1 user user → Owner and group

5.2K → Size of the ZIP file (if it's **0 bytes**, the file is empty)

Feb 27 12:34 → Date and time of creation

docs.zip → The ZIP file name

Extract the Contents of the ZIP File into a New Directory: unzip docs.zip -d new_docs

unzip → Extracts the ZIP file.

docs.zip → The ZIP file to be extracted.

-d new_docs → Extracts files into a **new directory** named **new_docs** (it will be created automatically if it doesn't exist).

To Verify the Extraction:ls

k) File Editing:

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

```
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$ nano file1.txt
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$ cat file1.txt
Employee Name: Rahul Sharma
Employee ID: EMP001
Department: Information Technology
Designation: Software Engineer
Joining Date: 15th March 2020
Salary: 8,00,000 INR per annum
Contact Number: 9876543210
Email: rahul.sharma@example.com
Office Location: Mumbai, India
Reporting Manager: Amit Verma
```

Ans: a) Open the "file1.txt" File in a Text Editor and Add Some Text.

Use it nano command to open this file.

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

```
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$ sed -i 's/Amit/Rohini/g' file1.txt
ohini@LAPTOP-U0E18KK2:~/docs/new_docs$ cat file1.txt
Employee Name: Rahul Sharma
Employee ID: EMP001
Department: Information Technology
Designation: Software Engineer
Joining Date: 15th March 2020
Salary: 8,00,000 INR per annum
Contact Number: 9876543210
Email: rahul.sharma@example.com
Office Location: Mumbai, India
Reporting Manager: Rohini Verma
```

Use the sed command: sed -i 's/oldword/newword/g' file1.txt

Example:

If you want to replace **"hello"** with **"hi"**: sed -i 's/hello/hi/g' file1.txt

Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

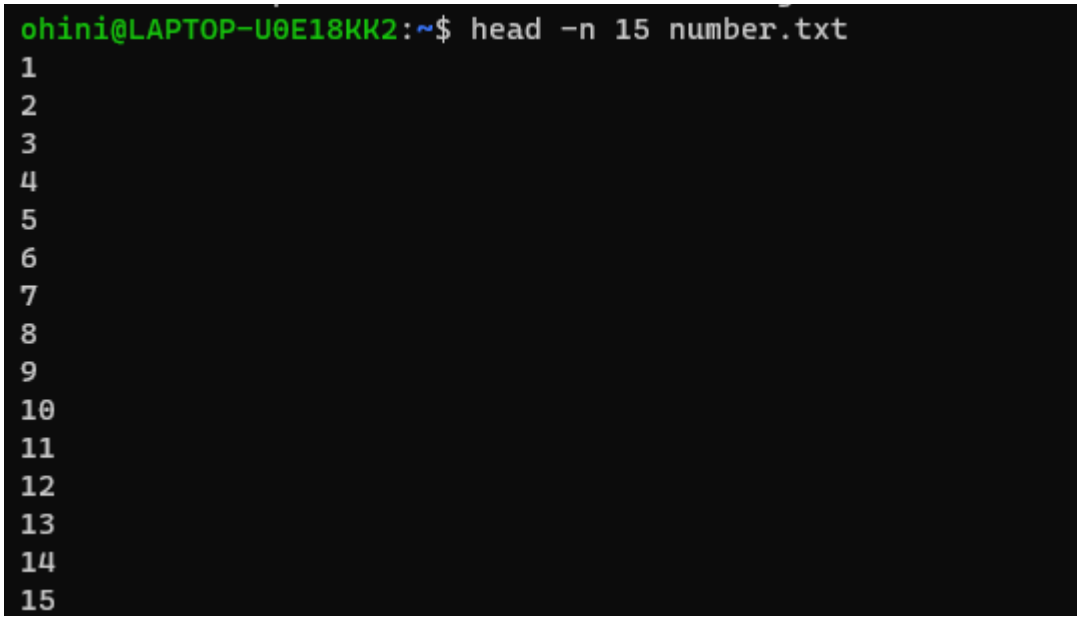
a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command.

```
ohini@LAPTOP-U0E18KK2:~$ head  data.txt
username - rohini
password - 123456
location - pune
place -hinjewadi
mob - 9898989898
dob-2/2/1999
manager - ojas
nation -india
state -MH
fax no - 123789
```

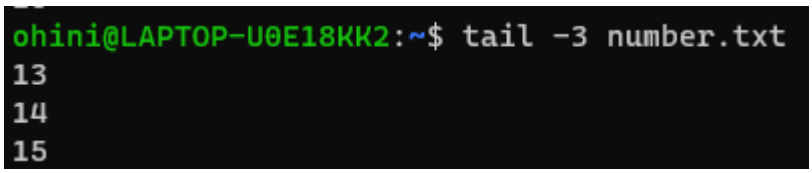
b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

```
ohini@LAPTOP-U0E18KK2:~$ tail -5 data.txt
state -MH
fax no - 123789
gender - female
age - 25
sal - 123246
```

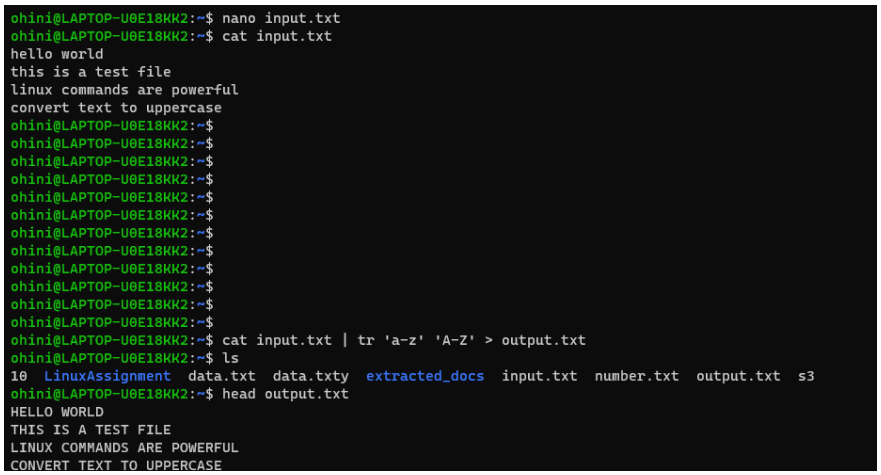
c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.



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



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."

```
ohini@LAPTOP-U0E18KK2:~$ echo -e "apple\nbanana\napple\norange\nbanana\ngrape\napple\ngrape\nmango
ange" > duplicate.txt
ohini@LAPTOP-U0E18KK2:~$ ls
10              data.txt   duplicate.txt   input.txt   output.txt
LinuxAssignment  data.txty  extracted_docs  number.txt  s3
ohini@LAPTOP-U0E18KK2:~$ head duplicate.txt
apple
banana
apple
orange
banana
grape
apple
grape
mango
orange
ohini@LAPTOP-U0E18KK2:~$ sort duplicate.txt
apple
apple
apple
banana
banana
grape
grape
mango
orange
orange
ohini@LAPTOP-U0E18KK2:~$ uniq duplicate.txt
apple
banana
apple
orange
banana
grape
apple
grape
mango
orange
ohini@LAPTOP-U0E18KK2:~$ sort duplicate.txt | uniq
apple
banana
grape
mango
orange
```

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.

```
ohini@LAPTOP-U0E18KK2:~$ echo -e "apple\nbanana\napple\norange\nbanana\ngrape\napple\ngrape\nmango\nor
ange\nbanana\nmango\napple\nkiwi\npeach\nbanana\napple\npeach" > fruit.txt
ohini@LAPTOP-U0E18KK2:~$ ls
10              data.txt   duplicate.txt   fruit.txt  number.txt  s3
LinuxAssignment  data.txty  extracted_docs  input.txt  output.txt
ohini@LAPTOP-U0E18KK2:~$ sort fruit.txt | uniq -c
      5 apple
      4 banana
      2 grape
      1 kiwi
      2 mango
      2 orange
      2 peach
```