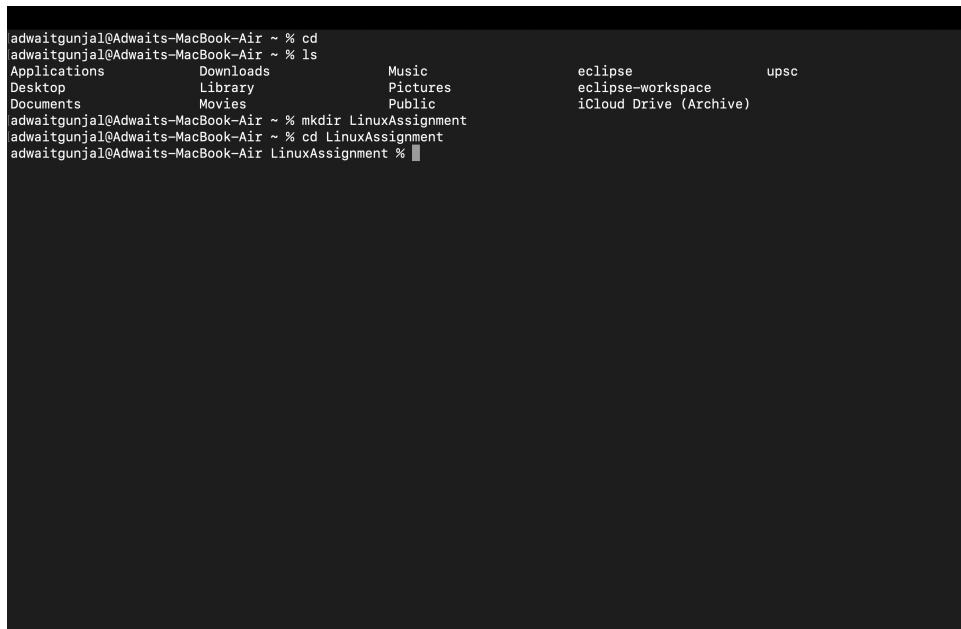


a) Navigate and List:

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.

```
adwaitgunjal@Adwaits-MacBook-Air ~ % cd  
adwaitgunjal@Adwaits-MacBook-Air ~ % ls  
Applications      Movies          eclipse-workspace  
Desktop           Music           iCloud Drive (Archive)  
Documents         Pictures        upsc  
Downloads         Public  
Library          eclipse  
adwaitgunjal@Adwaits-MacBook-Air ~ % mkdir LinuxAssignment  
adwaitgunjal@Adwaits-MacBook-Air ~ % cd LinuxAssignment
```

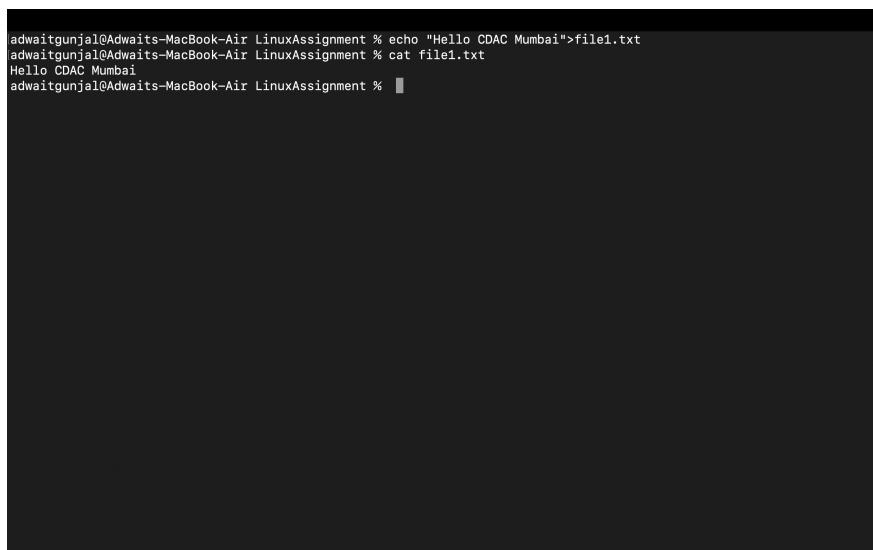


```
adwaitgunjal@Adwaits-MacBook-Air ~ % cd  
adwaitgunjal@Adwaits-MacBook-Air ~ % ls  
Applications      Downloads      Music          eclipse          upsc  
Desktop           Library       Pictures        eclipse-workspace  
Documents         Movies        Public         iCloud Drive (Archive)  
adwaitgunjal@Adwaits-MacBook-Air ~ % mkdir LinuxAssignment  
adwaitgunjal@Adwaits-MacBook-Air ~ % cd LinuxAssignment  
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

b) File Management:

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

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % echo "Hello CDAC  
Mumbai">file1.txt  
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % cat file1.txt  
Hello CDAC Mumbai
```

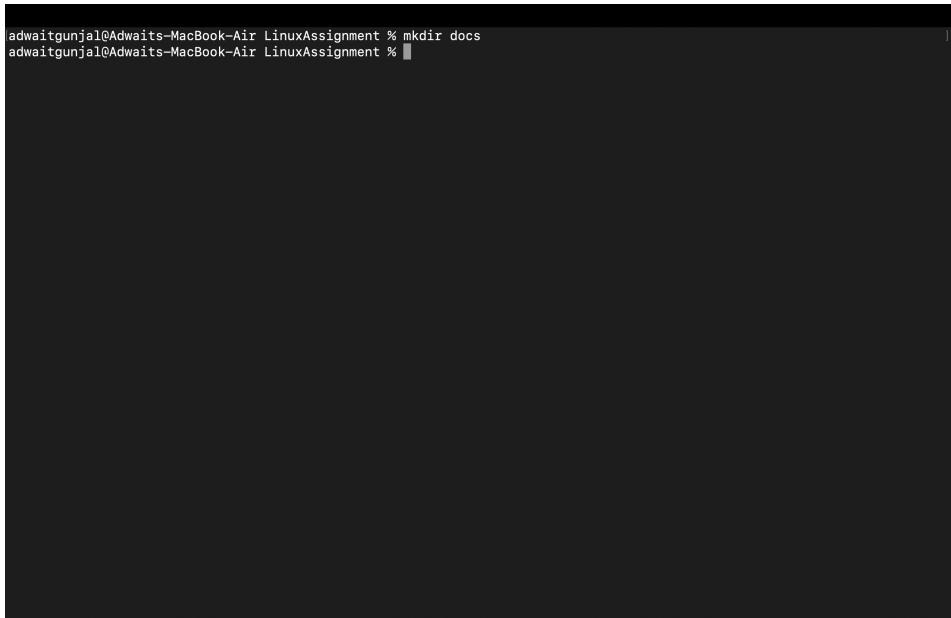


```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % echo "Hello CDAC Mumbai">file1.txt  
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % cat file1.txt  
Hello CDAC Mumbai  
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

c) Directory Management:

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

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % mkdir docs
```

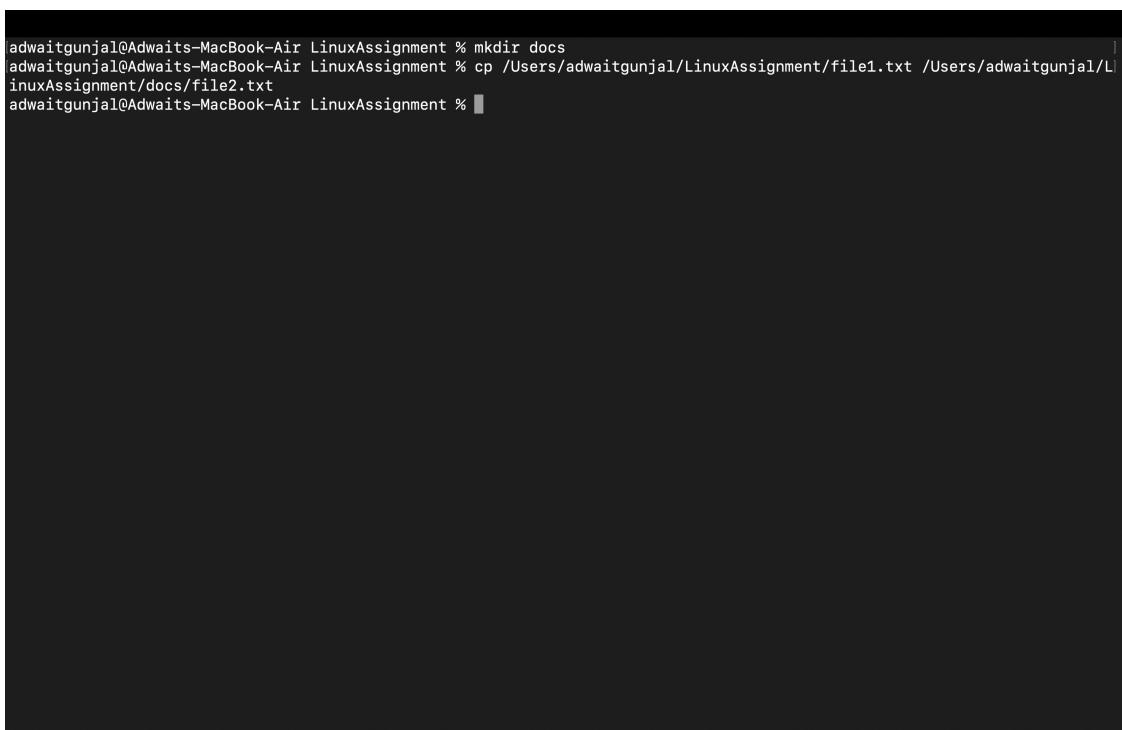


A screenshot of a terminal window on a Mac OS X system. The window title is 'Terminal'. The command 'mkdir docs' has been entered and is visible at the top of the terminal window. The cursor is located at the end of the command line.

d) Copy and Move Files:

- a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % cp /Users/adwaitgunjal/LinuxAssignment/file1.txt /Users/adwaitgunjal/LinuxAssignment/docs/file2.txt
```



A screenshot of a terminal window on a Mac OS X system. The command 'cp /Users/adwaitgunjal/LinuxAssignment/file1.txt /Users/adwaitgunjal/LinuxAssignment/docs/file2.txt' has been entered and is visible at the top of the terminal window. The cursor is located at the end of the command line.

e) Permissions and Ownership:

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.

```
adwaitgunjal@Adwaits-MacBook-Air docs % chmod 744 file2.txt
adwaitgunjal@Adwaits-MacBook-Air docs % chown $(whoami) file2.txt
adwaitgunjal@Adwaits-MacBook-Air docs % ls -l file2.txt
-rwxr--r-- 1 adwaitgunjal staff 18 Feb 27 19:43 file2.txt
```

```
adwaitgunjal@Adwaits-MacBook-Air ~ % cd LinuxAssignment/docs
adwaitgunjal@Adwaits-MacBook-Air docs % ls -l file2.txt
-rwxr--r-- 1 adwaitgunjal staff 18 Feb 27 22:58 file2.txt
adwaitgunjal@Adwaits-MacBook-Air docs %
```

f) Final Checklist:

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

```
adwaitgunjal@Adwaits-MacBook-Air docs % cd
adwaitgunjal@Adwaits-MacBook-Air ~ % ls
Applications      LinuxAssignment      eclipse
Desktop          Movies              eclipse-workspace
Documents         Music              iCloud Drive (Archive)
Downloads        Pictures           upsc
Library          Public
adwaitgunjal@Adwaits-MacBook-Air ~ % ls LinuxAssignment
docs      file1.txt
```

```
Last login: Thu Feb 27 22:50:37 on ttys000
adwaitgunjal@Adwaits-MacBook-Air ~ % cd LinuxAssignment/docs
adwaitgunjal@Adwaits-MacBook-Air docs % ls -l file2.txt
-rwxr--r-- 1 adwaitgunjal staff 18 Feb 27 22:58 file2.txt
adwaitgunjal@Adwaits-MacBook-Air docs % cd ..
adwaitgunjal@Adwaits-MacBook-Air ~ % ls
Applications           Library          Pictures          iCloud Drive (Archive)
Desktop                LinuxAssignment   Public            upsc
Documents              Movies           eclipse
Downloads              Music            eclipse-workspace
adwaitgunjal@Adwaits-MacBook-Air ~ % ls LinuxAssignment
docs                  file1.txt
adwaitgunjal@Adwaits-MacBook-Air ~ %
```

g) File Searching:

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

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % find . -type f -name
"*.txt"
./file1.txt
./docs/file2.txt
```

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

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % grep "Hello"
file1.txt
Hello CDAC Mumbai
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

```
Last login: Thu Feb 27 22:59:41 on ttys000
adwaitgunjal@Adwaits-MacBook-Air ~ % cd LinuxAssignment
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % find . -type f -name "*.txt"
./file1.txt
./docs/file2.txt
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % grep "Hello" file1.txt
Hello CDAC Mumbai
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

h.) System Information:

Display the current system date and time.

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % date  
Thu Feb 27 19:57:26 IST 2025
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % date  
Thu Feb 27 23:04:03 IST 2025  
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

i) Networking:

a. Display the IP address of the system.

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % ipconfig getifaddr  
en0  
192.168.29.183
```

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

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % ping -c 4 google.com  
  
PING google.com (142.250.194.46): 56 data bytes  
64 bytes from 142.250.194.46: icmp_seq=0 ttl=111 time=53.097 ms  
64 bytes from 142.250.194.46: icmp_seq=1 ttl=111 time=50.235 ms  
64 bytes from 142.250.194.46: icmp_seq=2 ttl=111 time=59.064 ms  
64 bytes from 142.250.194.46: icmp_seq=3 ttl=111 time=105.576 ms  
  
--- google.com ping statistics --
```

```
4 packets transmitted, 4 packets received, 0.0% packet loss  
round-trip min/avg/max/stddev = 50.235/66.993/105.576/22.502 ms
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % ipconfig getifaddr en0
192.168.1.7
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % ping -c 4 google.com
PING google.com (142.250.194.238): 56 data bytes
64 bytes from 142.250.194.238: icmp_seq=0 ttl=60 time=15.758 ms
64 bytes from 142.250.194.238: icmp_seq=1 ttl=60 time=24.059 ms
64 bytes from 142.250.194.238: icmp_seq=2 ttl=60 time=69.034 ms
64 bytes from 142.250.194.238: icmp_seq=3 ttl=60 time=99.450 ms
--- google.com ping statistics ---
4 packets transmitted, 4 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 15.758/52.075/99.450/34.043 ms
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

j) File Compression:

- Compress the "docs" directory into a zip file.
 - Extract the contents of the zip file into a new directory.
- ```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % zip -r docs.zip docs
 adding: docs/ (stored 0%)
 adding: docs/file2.txt (stored 0%)
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % unzip docs.zip -d
docsunzip
Archive: docs.zip
 creating: docsunzip/docs/
 extracting: docsunzip/docs/file2.txt
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % zip -r docs.zip docs
 adding: docs/ (stored 0%)
 adding: docs/file2.txt (stored 0%)
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % unzip docs.zip -d docsunzip
Archive: docs.zip
 creating: docsunzip/docs/
 extracting: docsunzip/docs/file2.txt
adwaitgunjal@Adwaits-MacBook-Air 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).

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % open -e file1.txt
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % sed -i '' 's/Hello/Hola/g' file1.txt
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % cat file1.txt
Hola CDAC Mumbai
```

```
This is Feb 25 batch!!
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

```
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % open -e file1.txt
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % sed -i '' 's/Hello/Hola/g' file1.txt
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment % cat file1.txt
Hola CDAC Mumbai
Welcome Feb 2025 Batch#
adwaitgunjal@Adwaits-MacBook-Air LinuxAssignment %
```

## PROBLEM 2

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

```
[adwaitgunjal@Adwaits-MacBook-Air ~ % head -n 10 data1.txt
Article 18 of the Indian Constitution – Abolition of Titles
Article 18 prohibits the conferral and acceptance of titles by the State to ensure equality and prevent the creation of a privileged class in society.
1. Prohibition of Titles by the State:
The State is forbidden from conferring any titles on individuals, whether they are citizens or non-citizens.
Exceptions: Military and academic distinctions are exempted. For instance, awards like Param Vir Chakra(military) or academic titles such as Doctor are permissible.

2. Acceptance of Titles from Foreign States:
Indian citizens are prohibited from accepting any titles from foreign states.
Non-citizens holding any office of profit or trust under the State must obtain the President's consent before accepting any title from a foreign state.

[adwaitgunjal@Adwaits-MacBook-Air ~ % tail -5 data1.txt
Individuals holding any office of profit or trust under the State, regardless of citizenship, must secure the President's consent before accepting any present, emolument, or office from or under any foreign state.

Article 18 prohibits only hereditary titles of nobility titles.
Merit can be recognised
National Awards were instituted in 1954, they were discontinued once by Morarji Desai in 1977 but again revived by Indira Gandhi in 1980.
adwaitgunjal@Adwaits-MacBook-Air ~ %]
```

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".

```
[adwaitgunjal@Adwaits-MacBook-Air ~ % head -n 15 numbers.txt
1012929120120930120319230120391239012398120930129839012039123
1293813824731280912381923912039012931231231231231255431231234
6582938498475684397543908593407859345340958093458903458093450
234234234234
234235676765443
2234435436546
45342
42342345676543242
4356789876534245467565432
4356
677865434354535
6456342
3423
5645767432423
456756746535342423345465
[adwaitgunjal@Adwaits-MacBook-Air ~ % tail -n 3 numbers.txt
664
322353453453453434523424
adwaitgunjal@Adwaits-MacBook-Air ~ %]
```

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."

```
adwaitgunjal@Adwaits-MacBook-Air ~ % cat input.txt
Article 18 of the Indian Constitution – Abolition of Titles
Article 18 prohibits the conferral and acceptance of titles by the State to ensure equality and prevent the creation of a privileged class in society.

1. Prohibition of Titles by the State:
The State is forbidden from conferring any titles on individuals, whether they are citizens or non-citizens.
Exceptions: Military and academic distinctions are exempted. For instance, awards like Param Vir Chakra(military) or academic titles such as Doctor are permissible.

2. Acceptance of Titles from Foreign States:
Indian citizens are prohibited from accepting any titles from foreign states.
Non-citizens holding any office of profit or trust under the State must obtain the President's consent before accepting any title from a foreign state.

3. Acceptance of Presents, Emoluments, or Offices from Foreign States:
Individuals holding any office of profit or trust under the State, regardless of citizenship, must secure the President's consent before accepting any present, emolument, or office from or under any foreign state.

Article 18 prohibits only hereditary titles of nobility.
Merit can be recognised
National Awards were instituted in 1954, they were discontinued once by Morarji Desai in 1977 but again revived by Indira Gandhi in 1980.

adwaitgunjal@Adwaits-MacBook-Air ~ % cat input.txt | tr 'a-z' 'A-Z' > output.txt
adwaitgunjal@Adwaits-MacBook-Air ~ % cat output.txt
ARTICLE 18 OF THE INDIAN CONSTITUTION – ABOLITION OF TITLES
ARTICLE 18 PROHIBITS THE CONFERRAL AND ACCEPTANCE OF TITLES BY THE STATE TO ENSURE EQUALITY AND PREVENT THE CREATION OF A PRIVILEGED CLASS IN SOCIETY.

1. PROHIBITION OF TITLES BY THE STATE:
THE STATE IS FORBIDDEN FROM CONFERRING ANY TITLES ON INDIVIDUALS, WHETHER THEY ARE CITIZENS OR NON-CITIZENS.
EXCEPTIONS: MILITARY AND ACADEMIC DISTINCTIONS ARE EXEMPTED. FOR INSTANCE, AWARDS LIKE PARAM VIR CHAKRA(MILITARY) OR ACADEMIC TITLES SUCH AS DOCTOR ARE PERMISSIBLE.

2. ACCEPTANCE OF TITLES FROM FOREIGN STATES:
INDIAN CITIZENS ARE PROHIBITED FROM ACCEPTING ANY TITLES FROM FOREIGN STATES.
NON-CITIZENS HOLDING ANY OFFICE OF PROFIT OR TRUST UNDER THE STATE MUST OBTAIN THE PRESIDENT'S CONSENT BEFORE ACCEPTING ANY TITLE FROM A FOREIGN STATE.

3. ACCEPTANCE OF PRESENTS, EMOLUMENTS, OR OFFICES FROM FOREIGN STATES:
INDIVIDUALS HOLDING ANY OFFICE OF PROFIT OR TRUST UNDER THE STATE, REGARDLESS OF CITIZENSHIP, MUST SECURE THE PRESIDENT'S CONSENT BEFORE ACCEPTING ANY PRESENT, EMOLUMENT, OR OFFICE FROM OR UNDER ANY FOREIGN STATE.

ARTICLE 18 PROHIBITS ONLY HEREDITARY TITLES OF NOBILITY.
MERIT CAN BE RECOGNISED
NATIONAL AWARDS WERE INSTITUTED IN 1954, THEY WERE DISCONTINUED ONCE BY MORARJI DESAI IN 1977 BUT AGAIN REVIVED BY INDIRA GANDHI IN 1980.
```

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."

```
adwaitgunjal@Adwaits-MacBook-Air ~ % cat duplicate.txt
The sun rises in the east.
```

```
A journey of a thousand miles begins with a single step.
Practice makes perfect.
```

```
The early bird catches the worm.
Actions speak louder than words.
```

```
Practice makes perfect.
```

```
A journey of a thousand miles begins with a single step.
```

```
Honesty is the best policy.
```

```
Actions speak louder than words.
```

```
The sun rises in the east.%
```

```
adwaitgunjal@Adwaits-MacBook-Air ~ % sort duplicate.txt | sed
's/^[\t]*//;s/[\t]*$//' | uniq
```

```
A journey of a thousand miles begins with a single step.
```

```
Actions speak louder than words.
```

```
Honesty is the best policy.
```

```
Practice makes perfect.
```

```
The early bird catches the worm.
```

```
The sun rises in the east.
```

```
adwaitgunjal@Adwaits-MacBook-Air ~ %
```

```
[adwaitgunjal@Adwaits-MacBook-Air ~ % cat duplicate.txt
The sun rises in the east.
A journey of a thousand miles begins with a single step.
Practice makes perfect.
The early bird catches the worm.
Actions speak louder than words.
Practice makes perfect.
A journey of a thousand miles begins with a single step.
Honesty is the best policy.
Actions speak louder than words.
The sun rises in the east.%
adwaitgunjal@Adwaits-MacBook-Air ~ % sort duplicate.txt | sed 's/^[\t]*//;s/[\t]*$//' | uniq
A journey of a thousand miles begins with a single step.
Actions speak louder than words.
Honesty is the best policy.
Practice makes perfect.
The early bird catches the worm.
The sun rises in the east.
adwaitgunjal@Adwaits-MacBook-Air ~ %]
```

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."

```
adwaitgunjal@Adwaits-MacBook-Air ~ % cat
fruit.txt
```

```
apple
banana
apple
orange
grape
banana
mango
apple
grape
orange
```

```
adwaitgunjal@Adwaits-MacBook-Air ~ % sort
fruit.txt | uniq -c
```

```
3 apple
2 banana
2 grape
1 mango
2 orange
```

```
adwaitgunjal@Adwaits-MacBook-Air ~ %
```

```
[adwaitgunjal@Adwaits-MacBook-Air ~ % cat fruit.txt
apple
banana
apple
orange
grape
banana
mango
apple
grape
orange
[adwaitgunjal@Adwaits-MacBook-Air ~ % sort fruit.txt | uniq -c
 3 apple
 2 banana
 2 grape
 1 mango
 2 orange
[adwaitgunjal@Adwaits-MacBook-Air ~ %
```