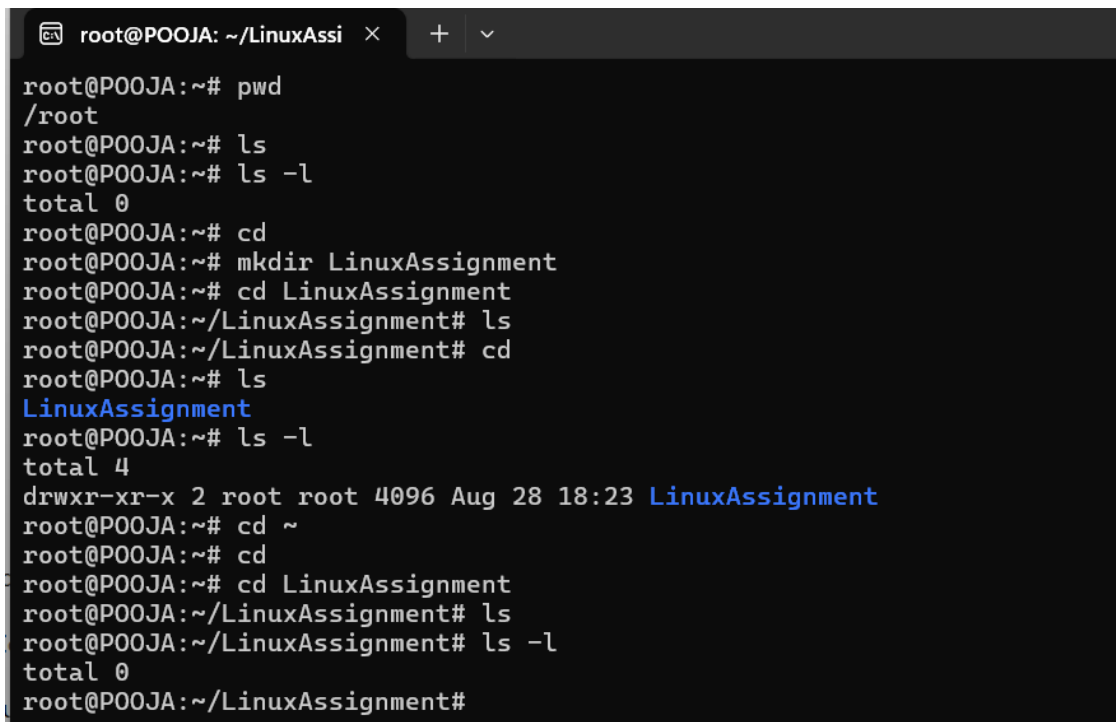


CONCEPTS OF OPERATING SYSTEM

Assignment 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.



```
root@POOJA: ~/LinuxAssi x + v
root@POOJA:~# pwd
/root
root@POOJA:~# ls
root@POOJA:~# ls -l
total 0
root@POOJA:~# cd
root@POOJA:~# mkdir LinuxAssignment
root@POOJA:~# cd LinuxAssignment
root@POOJA:~/LinuxAssignment# ls
root@POOJA:~/LinuxAssignment# cd
root@POOJA:~# ls
LinuxAssignment
root@POOJA:~# ls -l
total 4
drwxr-xr-x 2 root root 4096 Aug 28 18:23 LinuxAssignment
root@POOJA:~# cd ~
root@POOJA:~# cd
root@POOJA:~# cd LinuxAssignment
root@POOJA:~/LinuxAssignment# ls
root@POOJA:~/LinuxAssignment# ls -l
total 0
root@POOJA:~/LinuxAssignment#
```

I used "pwd" means present working directory which shows present directory .

Then I use ls command to list files and directories.

Then I create one directory.

mkdir command is use for to create directory.

Then I use cd command to change a current directory or to move to the directory which I creted recently.

cat command also show the content of .txt file

cat command only use for files not for directories.

b) File Management:

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

```
root@POOJA: ~/LinuxAssi x + v
root@POOJA:~# pwd
/root
root@POOJA:~# ls
LinuxAssignment
root@POOJA:~# cd LinuxAssignment
root@POOJA:~/LinuxAssignment# touch file1.txt
root@POOJA:~/LinuxAssignment# ls -l
total 0
-rw-r--r-- 1 root root 0 Aug 28 18:38 file1.txt
root@POOJA:~/LinuxAssignment# nano file11.txt
root@POOJA:~/LinuxAssignment# ls -l
total 4
-rw-r--r-- 1 root root 0 Aug 28 18:38 file1.txt
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txt
root@POOJA:~/LinuxAssignment# ls file11.txt
file11.txt
root@POOJA:~/LinuxAssignment# cat file11
cat: file11: No such file or directory
root@POOJA:~/LinuxAssignment# cat file11.txt
Hi
I am Pooja.
From MH.
root@POOJA:~/LinuxAssignment# |
```

In this question, I create one file name file1.txt using nano and touch command.

Both command are use for to create file but there is difference between them we can write info into the files using nano command.

But using touch command we can just create a file.

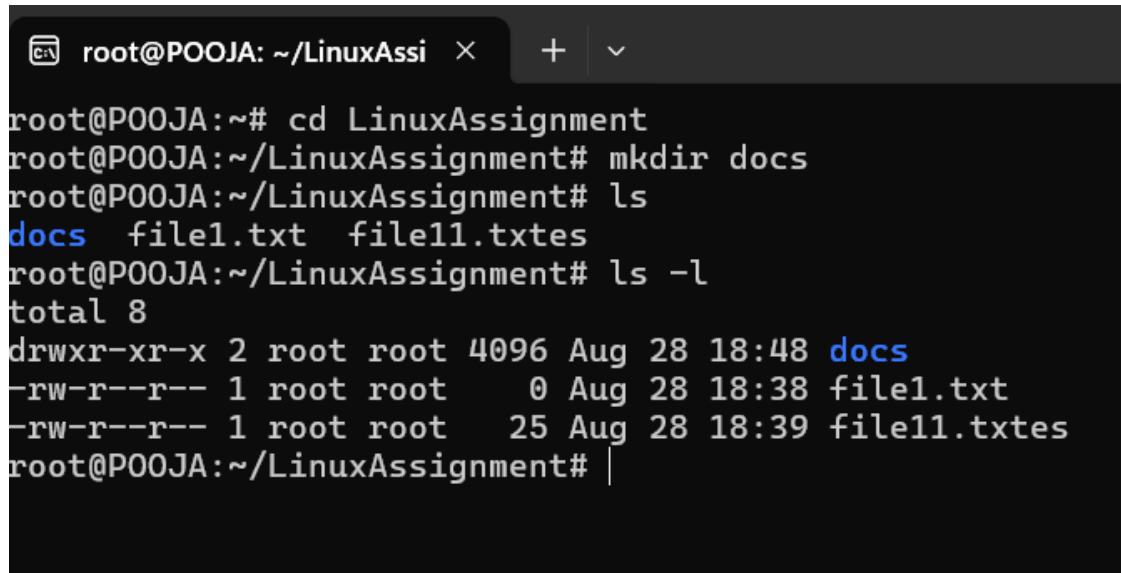
ls command show the content of directory.

And ls -l command show the detail info about each file and directory with permission.

Using cat command we can view file.

c) Directory Management:

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

A terminal window with a dark background. The title bar shows 'root@POOJA: ~/LinuxAssi' with a close button and window controls. The terminal text shows the user navigating to the 'LinuxAssignment' directory and creating a 'docs' subdirectory. Subsequent 'ls' commands show the directory contents, including the newly created 'docs' folder and two text files. A detailed 'ls -l' command shows permissions, ownership, size, and timestamps for all items.

```
root@POOJA:~# cd LinuxAssignment
root@POOJA:~/LinuxAssignment# mkdir docs
root@POOJA:~/LinuxAssignment# ls
docs  file1.txt  file11.txtes
root@POOJA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root    0 Aug 28 18:38 file1.txt
-rw-r--r-- 1 root root  25 Aug 28 18:39 file11.txtes
root@POOJA:~/LinuxAssignment# |
```

Using mkdir command I created new directory inside LinuxAssignment directory.

d) Copy and Move Files:

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

```

docs file1.txt file11.txtes
root@P00JA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 0 Aug 28 18:38 file1.txt
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
root@P00JA:~/LinuxAssignment# cp file1.txt /docs
root@P00JA:~/LinuxAssignment# cd
root@P00JA:~# ls
LinuxAssignment
root@P00JA:~# cd
root@P00JA:~# cd LinuxAssignment
root@P00JA:~/LinuxAssignment# ls
docs file1.txt file11.txtes
root@P00JA:~/LinuxAssignment# mv file1txt filerename.txt
mv: cannot stat 'file1txt': No such file or directory
root@P00JA:~/LinuxAssignment# mv file1.txt filerename.txt
root@P00JA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rw-r--r-- 1 root root 0 Aug 28 18:38 filerename.txt
root@P00JA:~/LinuxAssignment# cp file1.txt /docs

```

I used cp command to copy in file in docs directory and using mv command I rename the file.

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.

```

root@P00JA:~/LinuxAssignment# ls
docs file11.txtes file2.txt
root@P00JA:~/LinuxAssignment# chmod U+wx, g+rw, O+r file2.txt
chmod: invalid mode: 'U+wx,'
Try 'chmod --help' for more information.
root@P00JA:~/LinuxAssignment# chmod u+wx, g+rw, O+r file2.txt
chmod: invalid mode: 'u+wx,'
Try 'chmod --help' for more information.
root@P00JA:~/LinuxAssignment# chmod u+wx,g+rw,o+r file2.txt
root@P00JA:~/LinuxAssignment# ls
docs file11.txtes file2.txt
root@P00JA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
root@P00JA:~/LinuxAssignment# whoami
root
root@P00JA:~/LinuxAssignment# chown root file2.txt
root@P00JA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
root@P00JA:~/LinuxAssignment# |

```

I use chmod command to change permission of user, group and other.

O+wx, we can give read, write and execute permission to other.

g+rw we can give read and write permission to group.

u+r we can give read permission to group.

We can change ownership using chown 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.

```
root@POOJA: ~
root@POOJA:~/LinuxAssignment# ls
docs  file11.txtes  file2.txt
root@POOJA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
root@POOJA:~/LinuxAssignment# cd
root@POOJA:~# ls -l
total 4
drwxr-xr-x 3 root root 4096 Aug 28 19:20 LinuxAssignment
root@POOJA:~# ls
LinuxAssignment
root@POOJA:~# |
```

g) File Searching:

- Search for all files with the extension ".txt" in the current directory and its subdirectories.
- Display lines containing a specific word in a file (provide a file name and the specific word to search).

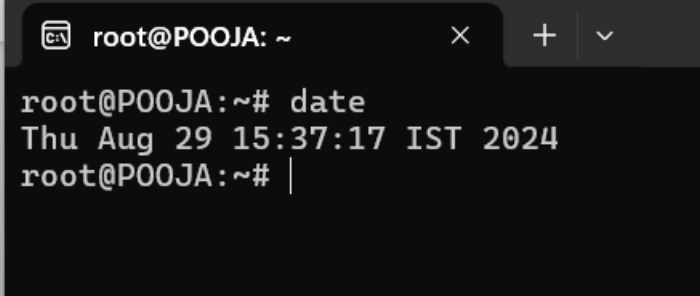
```
root@POOJA:~/LinuxAssignment# ls -l
total 8
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
root@POOJA:~/LinuxAssignment# find . -type f -name "*.txt"
./file2.txt
root@POOJA:~/LinuxAssignment# grep "word" filename.txt
grep: filename.txt: No such file or directory
root@POOJA:~/LinuxAssignment# grep "word" file2.txt
root@POOJA:~/LinuxAssignment# cat file2.txt
root@POOJA:~/LinuxAssignment# cat file11.txt
cat: file11.txt: No such file or directory
root@POOJA:~/LinuxAssignment# cat file11.txtes
Hii
I am Pooja.
From MH.
root@POOJA:~/LinuxAssignment# grep "am" file11.txtes
I am Pooja.
root@POOJA:~/LinuxAssignment# |
```

I used find command for search.

The grep command is used to search

h) System Information:

a. Display the current system date and time.



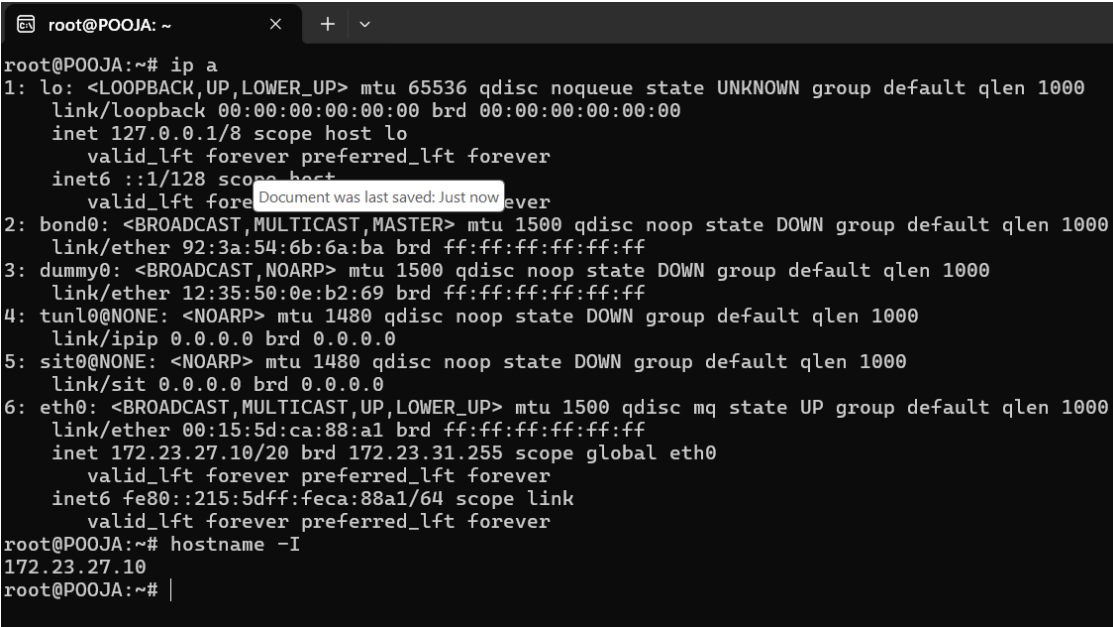
```
root@POOJA: ~  
root@POOJA:~# date  
Thu Aug 29 15:37:17 IST 2024  
root@POOJA:~# |
```

Using date command we can display current system date.

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).



```
root@POOJA: ~  
root@POOJA:~# 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  
    inet6 ::1/128 scope host  
        valid_lft forever preferred_lft forever  
2: bond0: <BROADCAST,MULTICAST,MASTER> mtu 1500 qdisc noop state DOWN group default qlen 1000  
    link/ether 92:3a:54:6b:6a:ba brd ff:ff:ff:ff:ff:ff  
3: dummy0: <BROADCAST,NOARP> mtu 1500 qdisc noop state DOWN group default qlen 1000  
    link/ether 12:35:50:0e:b2:69 brd ff:ff:ff:ff:ff:ff  
4: tunl0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000  
    link/ipip 0.0.0.0 brd 0.0.0.0  
5: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000  
    link/sit 0.0.0.0 brd 0.0.0.0  
6: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000  
    link/ether 00:15:5d:ca:88:a1 brd ff:ff:ff:ff:ff:ff  
    inet 172.23.27.10/20 brd 172.23.31.255 scope global eth0  
        valid_lft forever preferred_lft forever  
    inet6 fe80::215:5dff:feca:88a1/64 scope link  
        valid_lft forever preferred_lft forever  
root@POOJA:~# hostname -I  
172.23.27.10  
root@POOJA:~# |
```

```
root@P00JA:~# ping www.google.com
PING www.google.com (216.239.34.10) 56(84) bytes of data.
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=1 ttl=107 time=77.4 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=2 ttl=107 time=76.4 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=3 ttl=107 time=78.9 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=4 ttl=107 time=77.2 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=5 ttl=107 time=75.4 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=6 ttl=107 time=82.0 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=7 ttl=107 time=72.3 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=8 ttl=107 time=72.3 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=9 ttl=107 time=75.8 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=10 ttl=107 time=72.6 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=11 ttl=107 time=74.9 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=12 ttl=107 time=73.4 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=13 ttl=107 time=73.2 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=14 ttl=107 time=76.0 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=15 ttl=107 time=74.3 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=16 ttl=107 time=75.9 ms
64 bytes from ns2.google.com (216.239.34.10): icmp_seq=17 ttl=107 time=73.1 ms
```

To show ip address we can use `ip -a` and `hostname -I`.

j) File Compression:

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


```

root@P00JA:~/LinuxAssignment# ls -l
total 16
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 113 Aug 29 16:19 docs.tar.gz
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
drwxr-xr-x 2 root root 4096 Aug 29 16:15 newdir
root@P00JA:~/LinuxAssignment# cat newdir
cat: newdir: Is a directory
root@P00JA:~/LinuxAssignment# ls -l newdir
total 0
root@P00JA:~/LinuxAssignment# ls -l
total 16
drwxr-xr-x 2 root root 4096 Aug 28 18:48 docs
-rw-r--r-- 1 root root 113 Aug 29 16:19 docs.tar.gz
-rw-r--r-- 1 root root 25 Aug 28 18:39 file11.txtes
-rwxrw-r-- 1 root root 0 Aug 28 18:38 file2.txt
drwxr-xr-x 2 root root 4096 Aug 29 16:15 newdir
root@P00JA:~/LinuxAssignment# ls -l docs
total 0
root@P00JA:~/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).

```

root@P00JA:~/LinuxAssignment# vim file1.txt
root@P00JA:~/LinuxAssignment# cat file1.txt
RHCSA
redhat
Certified
System
Administrator.
root@P00JA:~/LinuxAssignment# sed -i 's/redhat/linux/g' file1.txt
root@P00JA:~/LinuxAssignment# cat file1.txt
RHCSA
linux
Certified
System
Administrator.
root@P00JA:~/LinuxAssignment# |

```

Sed command is use for replace word, string.

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.

```
root@POOJA:~/LinuxAssignment# cd
root@POOJA:~# touch data.txt
root@POOJA:~# vim data.txt
root@POOJA:~# vim data.txt
root@POOJA:~# head data.txt
Hii
Hello
Hey
Hello World
Hello CDAC
hello MIT.
Good Morning
very good morning
Good afternoon
Good Evening
root@POOJA:~# cat data.txt
Hii
Hello
Hey
Hello World
Hello CDAC
hello MIT.
Good Morning
very good morning
Good afternoon
Good Evening
Good night
root@POOJA:~# |
```

head command by default send 10 starting lines.

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

```
root@P00JA:~# cat data.txt
Hii
Hello
Hey
Hello World
Hello CDAC
hello MIT.
Good Morning
very good morning
Good afternoon
Good Evening
Good night

root@P00JA:~# tail -5 data.txt
very good morning
Good afternoon
Good Evening
Good night

root@P00JA:~# |
```

tail command send last 10 lines by default.

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.

```
root@P00JA:~# touch numbers.txt
root@P00JA:~# vim numbers.txt
root@P00JA:~# head -15 numbers.txt
1      2      3      4      5
11     12     13     14     15
21     22     23     24     25
31     32     33     34     35
41     42     43     44     45
51     52     53     54     55
61     62     63     64     65
71     72     73     74     75
81     82     83     84     85
91     92     93     94     95
2      4      6      8      10
12     14     16     18     20
16     17     18     19
26     27     282    9
36     37     38     39     40
root@P00JA:~# cat numbers.txt
1      2      3      4      5
11     12     13     14     15
21     22     23     24     25
31     32     33     34     35
41     42     43     44     45
51     52     53     54     55
61     62     63     64     65
71     72     73     74     75
```

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

```
36      37      38      39      40
root@P00JA:~# cat numbers.txt
1        2        3        4        5
11       12       13       14       15
21       22       23       24       25
31       32       33       34       35
41       42       43       44       45
51       52       53       54       55
61       62       63       64       65
71       72       73       74       75
81       82       83       84       85
91       92       93       94       95
2        4        6        8        10
12       14       16       18       20
16       17       18       19
26       27       282      9
36       37       38       39       40
46       47       48
root@P00JA:~# tail -5 numbers.txt
12       14       16       18       20
16       17       18       19
26       27       282      9
36       37       38       39       40
46       47       48
root@P00JA:~# |
```

- 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."

```
root@P00JA:~# touch output.txt
root@P00JA:~# vim input.txt
root@P00JA:~# tr a-z A-z > input.txt > output.txt
^C
root@P00JA:~# tr a-z A-z < input.txt > output.txt
root@P00JA:~# cat output.txt
root@P00JA:~# ls -l output.txt
-rw-r--r-- 1 root root 0 Aug 29 17:27 output.txt
root@P00JA:~# cat input.txt
root@P00JA:~# vim input.txt
root@P00JA:~# cat input.txt
hii
hello
java
php
sql
core java
adv java

root@P00JA:~# tr a-z A-z < input.txt > output.txt
root@P00JA:~# cat output.txt
HII
HELLO
JAVA
PHP
SQL
CORE JAVA
ADV JAVA
```

- 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."

```

adv
root@P00JA:~# sort duplicate.txt > duplicate_sort.txt
root@P00JA:~# cat duplicat_sort.txt
cat: duplicat_sort.txt: No such file or directory
root@P00JA:~# cat duplicate_sort.txt
adv
hello
hii
hii
hiii
java
linux
linux
redhat
vim
vim
root@P00JA:~# uniq duplicate_sort.txt
adv
hello
hii
hiii
java
linux
redhat
vim
root@P00JA:~# uniq duplicate_sort.txt > duplicate_sort.txt
root@P00JA:~#

```

I used 2 commands here .

1st is sort command we can sort data in ascending and descending order.

2nd is uniq command at the time of uniq command data should be in sorted order.

Uniq command send the unique data from duplicate data.

- 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."**

```
orange
kiwi
root@P00JA:~# sort fruit.txt > fruit1.txt
root@P00JA:~# uniq fruit1.txt
apple
banana
gauve
grapes
kiwi
mango
orange
root@P00JA:~# uniq fruit1.txt > fruit.txt
root@P00JA:~# cat fruit.txt
apple
banana
gauve
grapes
kiwi
mango
orange
root@P00JA:~# |
```