

CDAC MUMBAI

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Course : DAC Online

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.

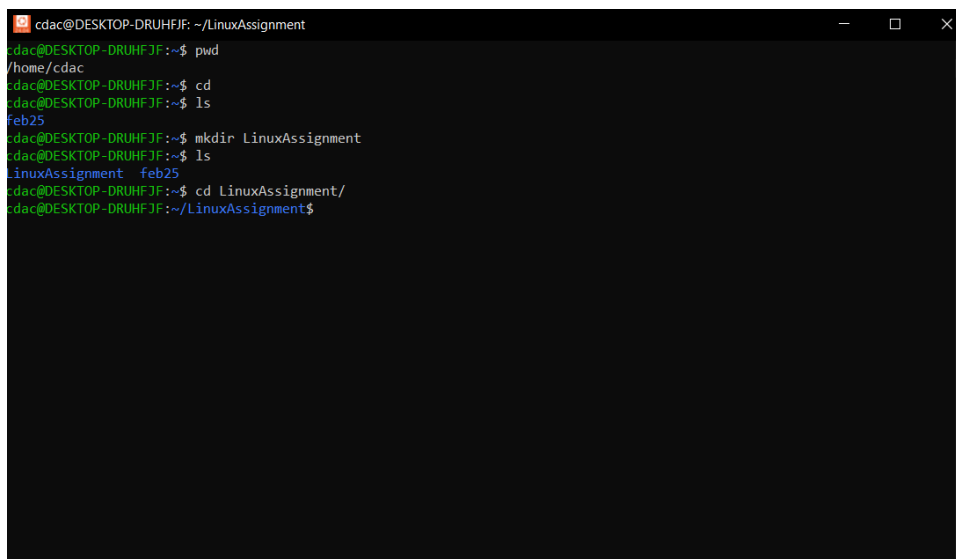
Ans :

1: Use pwd to navigating to home directory

2: Use cd ls to list contents

3: Use mkdir LinuxAssignment to cre Directory

4: Use ls to list its content



```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~$ pwd
/home/cdac
cdac@DESKTOP-DRUHFJF:~$ cd
cdac@DESKTOP-DRUHFJF:~$ ls
Feb25
cdac@DESKTOP-DRUHFJF:~$ mkdir LinuxAssignment
cdac@DESKTOP-DRUHFJF:~$ ls
LinuxAssignment Feb25
cdac@DESKTOP-DRUHFJF:~$ cd LinuxAssignment/
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

b) File Management:

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

Ans : 1: used ls to display content

2: cat file1.txt used to display content of file

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ ls
file1.txt 'file1.txtty file1.txt'
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat -n file1.txtty
cat: file1.txtty: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ nano file1.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file1.txt
Anita
Kavita
Ankita
Nikita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

c) Directory Management:

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

Ans : 1: to create new directory : mkdir docs

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ mkdir docs
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ ls
docs file1.txt 'file1.txtty file1.txt'
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

d) Copy and Move Files:

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

Ans : 1: cp file1.txt docs/file2.txt

2:display file1.txt :cat file1.txt

3.display file2.txt: cat file2.txt

4.cat docs/file2.txt

Challenges Faced: I was tto access the file2.txt file from the wrong directory, not realizing it was located in the docs directory.

Solution: I used cat docs/file2.txt to access the file.

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file1.txt
Anita
Kavita
Ankita
Nikita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file2.txt
cat: file2.txt: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ ls docs
file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cp file1.txt docs/file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file2.txt
cat: file2.txt: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cp -v file1.txt docs/file2.txt
'file1.txt' -> 'docs/file2.txt'
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file2.txt
cat: file2.txt: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat docs/file2.txt
Anita
Kavita
Ankita
Nikita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

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.

Ans : 1: 7 means read,write,execute of owner,4 means only read for other :
chmod 744 docs/file2.txt

2: chown \$USER docs/file2.txt

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ chmod 744 docs/file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ chown $USER docs/file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

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: ls

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ ls
docs  file1.txt  'file1.txtty file1.txt'
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ ls/
-bash: ls/: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

g) File Searching:

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

Ans :

1: Goto Current directory : cd LinuxAssignment/

2: Used this command : find . -type f -name "*.txt"

challenges faced :

1: explored 2,3 commands but I was in different directory so not able to get the output

2: I was writing wrong indedttation.

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/feb25/OSDAY$ ls -R
.:
sh1
cdac@DESKTOP-DRUHFJF:~/feb25/OSDAY$ cd/LinuxAssignment
-bash: cd/LinuxAssignment: No such file or directory
cdac@DESKTOP-DRUHFJF:~/feb25/OSDAY$ cd
cdac@DESKTOP-DRUHFJF:~$ ls
LinuxAssignment  feb25      myfile1  myfile2.txt  myfile4
Test             myfile.txt  myfile2  myfile3
cdac@DESKTOP-DRUHFJF:~$ cd LinuxAssignment/
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file1.txt
./file1.txtty file1.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

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

Ans : 1: check files contants : cat file2.txt

2: run above command to print exact line of word :

grep -n "Kavita" file2.txt

```

cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment/docs
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ ls
file2.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ cat file2.txt
Anita
Kavita
Ankita
Nikita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ grep Ankita docs/file2.txt
grep: docs/file2.txt: No such file or directory
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ grep Ankita file2.txt
Ankita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ grep "Kavita" file2.txt
Kavita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$ grep -n "Kavita" file2.txt
2:Kavita
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment/docs$

```

Challenges Faced : I was writing the commands without -n to find number of line of that word.

h) System Information:

- a. Display the current system date and time.

Ans : 1: Use date command

```

cdac@DESKTOP-DRUHFJF: ~
cdac@DESKTOP-DRUHFJF:~$ date
Thu Feb 27 14:47:17 UTC 2025
cdac@DESKTOP-DRUHFJF:~$

```

i) Networking:

- a. Display the IP address of the system.

Ans : 1: Used command : ip a.

```

cdac@DESKTOP-DRUHFJF: ~
cdac@DESKTOP-DRUHFJF:~$ ip a
4: eth0: <> mtu 1500 group default qlen 1
    link/ether d8:d0:90:50:3b:e1
    inet 169.254.139.58/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::de68:27c7:c918:b790/64 scope link dynamic
        valid_lft forever preferred_lft forever
1: lo: <LOOPBACK,UP> mtu 1500 group default qlen 1
    link/loopback 00:00:00:00:00:00
    inet 127.0.0.1/8 brd 127.255.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host dynamic
        valid_lft forever preferred_lft forever
3: wifi0: <BROADCAST,MULTICAST,UP> mtu 1500 group default qlen 1
    link/ieee802.11 b0:68:e6:11:af:3b
    inet 192.168.1.9/24 brd 192.168.1.255 scope global dynamic
        valid_lft 86279sec preferred_lft 86279sec
    inet6 2401:4900:52f6:d490:b333:34c4:334c:3888/64 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 2401:4900:52f6:d490:f535:929c:16ce:dffc/128 scope global dynamic
        valid_lft 584227sec preferred_lft 65354sec
    inet6 fe80::ef64:e7bf:6653:4c41/64 scope link dynamic
        valid_lft forever preferred_lft forever
16: wifi1: <> mtu 1500 group default qlen 1
    link/ieee802.11 b2:68:e6:11:af:3b
    inet 169.254.102.131/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::3b57:1598:289d:fb0a/64 scope link dynamic
        valid_lft forever preferred_lft forever
14: wifi2: <> mtu 1500 group default qlen 1
    link/ieee802.11 c2:68:e6:11:af:3b
    inet 169.254.42.149/16 brd 169.254.255.255 scope global dynamic
        valid_lft forever preferred_lft forever
    inet6 fe80::87bd:310b:6d87:869/64 scope link dynamic
        valid_lft forever preferred_lft forever
cdac@DESKTOP-DRUHFJF:~$

```

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

Ans : 1: use Command : ping -c 4 8.8.8.8

```

cdac@DESKTOP-DRUHFJF: ~
cdac@DESKTOP-DRUHFJF:~$ ping -c 4 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=114 time=56.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=114 time=76.2 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=114 time=59.2 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=114 time=74.5 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 56.660/66.639/76.166/8.761 ms
cdac@DESKTOP-DRUHFJF:~$

```

j) File Compression:

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

Ans : 1: Use command : zip -r docs.zip .

```
cdac@DESKTOP-DRUHFJF: ~  
cdac@DESKTOP-DRUHFJF:~$ mkdir docs  
cdac@DESKTOP-DRUHFJF:~$ zip -r docs.zip docs  
adding: docs/ (stored 0%)  
cdac@DESKTOP-DRUHFJF:~$
```

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

Ans : 1: use this command : **unzip docs.zip -d extracted_docs** this will extract the docs file content into extracted_docs file.unzip will unzip docs -d use to specify where to extract content.

```
cdac@DESKTOP-DRUHFJF: ~  
cdac@DESKTOP-DRUHFJF:~$ unzip docs.zip -d extracted_docs  
Archive:  docs.zip  
creating: extracted_docs/docs/  
cdac@DESKTOP-DRUHFJF:~$
```

k) File Editing:

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

Ans : 1: display the old data of file1.txt : **cat file1.txt**

2: open text editor nano and edit the data : **nano file1.txt**

3: display edited content : **cat file1.txt**

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment  
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file1.txt  
Anita  
Kavita  
Ankita  
Nikita  
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ nano file1.txt  
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file1.txt  
Anita  
Kavita  
Ankita  
Nikita  
Shamika  
Reva  
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ _
```

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

Ans : 1: use : **sed -i 's/Nikita/Neha/g' file1.txt**. sed is stream editor,
-i Edits the file, s/old/new Substitutes words in file1.txt

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
Anita
Kavita
Ankita
Nikita
Shamika
Reva
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ sed -i 's/Nikita/Neha/g' file1.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat file1.txt
Anita
Kavita
Ankita
Neha
Shamika
Reva
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ _
```

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.

Ans : 1: first view data of data.txt : cat data.txt

2: use head which is use to print first values : head -10 data.txt


```

cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat data.txt
aasd sjkejdkjdf jkfejj
ajsdhjkf rfejrhg
rrggrth trhh hjuyj htterf
ert hthff ashdfhifherg giutowdm
wwjddjri vbhfyrth askeig yiyjknjh
dfffhhtigjjfjjjj
aaajjjff
hhijutuuuuuuuuu hfhhgg
whhehhhr tyiuuiiiiiii gnvefrgtbvngjkh
shdhf vbghtymzjsiw juugjff fgrythvnmxs hjhku
dufutuut ffygttg rhtgnvmw fgghtpwks dhedbewdebbdbssddd jhdhjd
dhdh
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ head -10 data.txt
aasd sjkejdkjdf jkfejj
ajsdhjkf rfejrhg
rrggrth trhh hjuyj htterf
ert hthff ashdfhifherg giutowdm
wwjddjri vbhfyrth askeig yiyjknjh
dfffhhtigjjfjjjj
aaajjjff
hhijutuuuuuuuuu hfhhgg
whhehhhr tyiuuiiiiiii gnvefrgtbvngjkh
shdhf vbghtymzjsiw juugjff fgrythvnmxs hjhku
cdac@DESKTOP-DRUHFJF:~/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.

Ans : 1: used tail for print last 5 line `tail -5 data.txt`

```

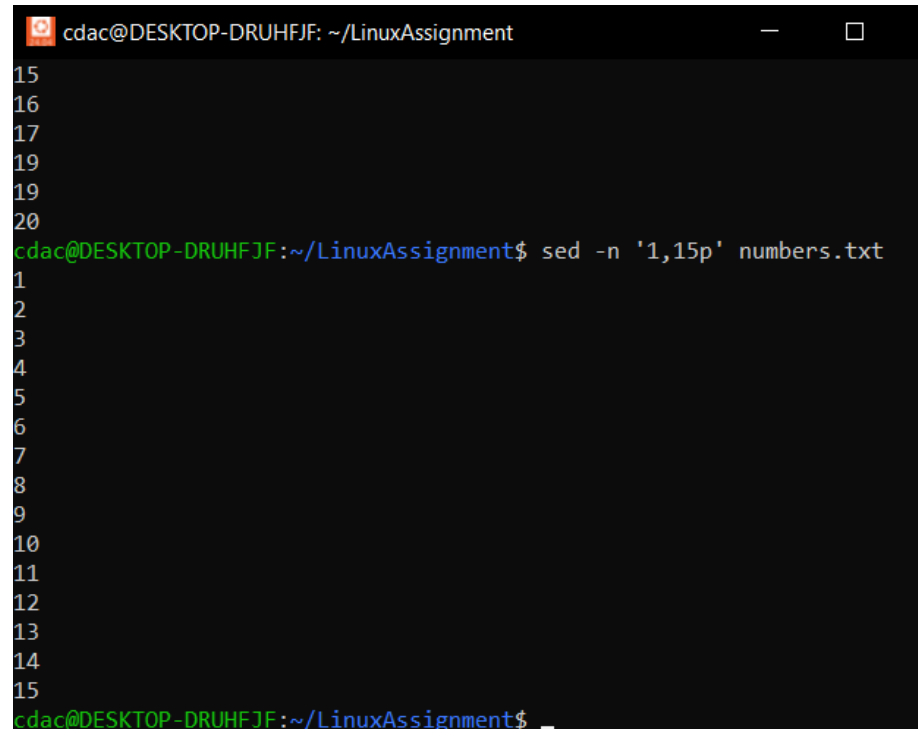
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
aasd sjkejdkjdf jkfejj
ajsdhjkf rfejrhg
rrggrth trhh hjuyj htterf
ert hthff ashdfhifherg giutowdm
wwjddjri vbhfyrth askeig yiyjknjh
dfffhhtigjjfjjjj
aaajjjff
hhijutuuuuuuuuu hfhhgg
whhehhhr tyiuuiiiiiii gnvefrgtbvngjkh
shdhf vbghtymzjsiw juugjff fgrythvnmxs hjhku
dufutuut ffygttg rhtgnvmw fgghtpwks dhedbewdebbdbssddd
jhdhjd
dhdh
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ tail -5 data.txt
hhijutuuuuuuuuu hfhhgg
whhehhhr tyiuuiiiiiii gnvefrgtbvngjkh
shdhf vbghtymzjsiw juugjff fgrythvnmxs hjhku
dufutuut ffygttg rhtgnvmw fgghtpwks dhedbewdebbdbssddd
jhdhjd
dhdh
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$

```

- 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.

Ans : 1: use this command : `sed -n '1,15p' numbers.txt`.

Sed is stream editor, -n Suppress automatic printing, p is used to print.



```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
15
16
17
19
19
20
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ sed -n '1,15p' numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

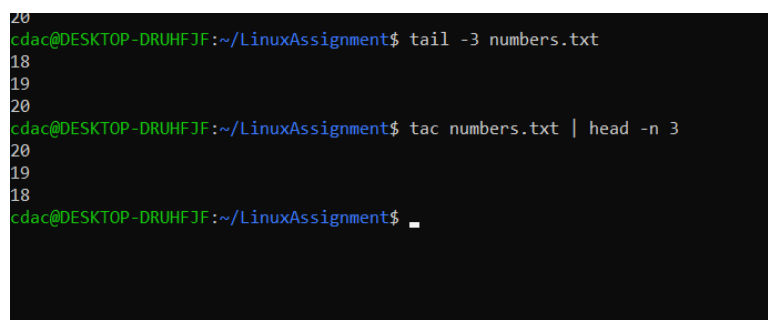
- d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

Ans : 1 : used tail to print last numbers : `tail -3 numbers.txt`,

also used another option : `tac numbers.txt | head -n 3`,

`tac numbers.txt` reverses used order of the lines and display

and reversed output is piped to `head -n 3`.



```
20
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ tail -3 numbers.txt
18
19
20
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ tac numbers.txt | head -n 3
20
19
18
cdac@DESKTOP-DRUHFJF:~/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."

Ans : 1: used `tr 'a-z' 'A-Z' < input.txt > output.txt` command to print one files lowercase content transfer into output.txt.

`tr 'a-z' 'A-Z'` used to Converts lowercase to uppercase, `< input.txt` used read from input.txt, `output, txt` used to save the result in output.txt.

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ touch input.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ nano input.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ tr '[:lower:]' '[:upper:]' <input.txt> out
put.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat input.txt
india
japan
us
dubai
russia
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ tr 'a-z' 'A-Z' <input.txt> output.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat output.txt
INDIA
JAPAN
US
DUBAI
RUSSIA
cdac@DESKTOP-DRUHFJF:~/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."

Ans : 1: used : `cat duplicate.txt |sort|uniq`

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ touch duplicate.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ nano duplicate.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat duplicate.txt
india
india
japan
dubai
pakistan
us
india
china
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat duplicate.txt |sort|unique
Command 'unique' not found, but can be installed with:
sudo apt install john
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat duplicate.txt |sort|uniq
china
dubai
india
japan
pakistan
us
cdac@DESKTOP-DRUHFJF:~/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."

Ans : 1 : used : `sort fruits.txt | uniq -c`

`sort fruit.txt`: This sorts the lines in the file alphabetically, `uniq -c`: This counts the occurrences of each line and displays the count with line.

```
cdac@DESKTOP-DRUHFJF: ~/LinuxAssignment
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ touch fruits.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ nano fruits.txt
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ cat fruits.txt
apple
banana
apple
mango
cheery
watermelon
banana
guava
coconut
coconut
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$ sort fruits.txt | uniq -c
  2 apple
  2 banana
  1 cheery
  2 coconut
  1 guava
  1 mango
  1 watermelon
cdac@DESKTOP-DRUHFJF:~/LinuxAssignment$
```

