COS Assignment 1

Problem 1

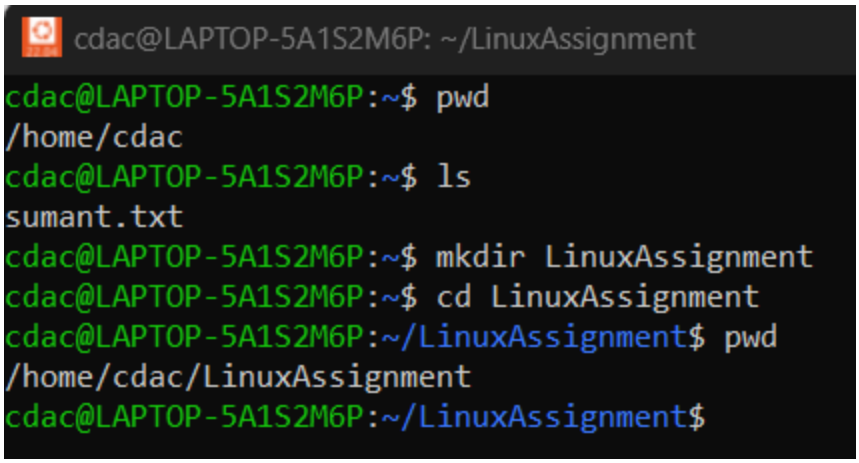
a. Navigate, list and make directory

pwd: is used to see the current directory

ls: list out the content of the directory

mkdir: make directory

cd: to change current directory

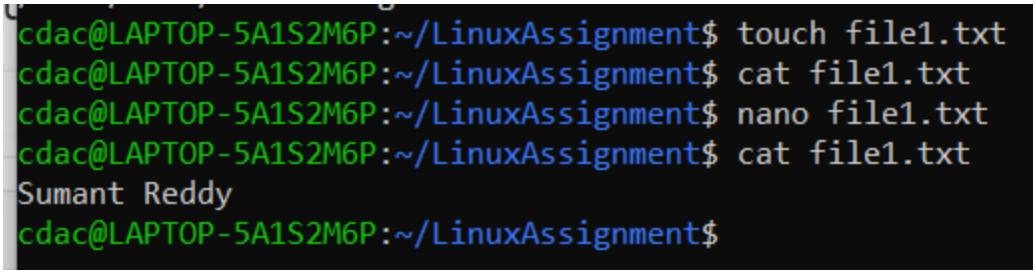


b. File Management

touch: to create new file

cat: view the content of the file

nano: file editor



c. Directory Management

mkdir: create directory

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ mkdir docs
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

d. Copy and Move Files

cp: copy file from one location to other

mv: to move or rename the file

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cp file1.txt docs/
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cd docs
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ ls
file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ mv file1.txt file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ ls
file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$
```

e. Permissions and Ownership

ls -l : To list out the files and see their permissions

chmod: change permissions

chown: change owner of the file

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ pwd
/home/cdac/LinuxAssignment/docs
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ ls -l
total 4
-rw-r--r-- 1 cdac cdac 13 Aug 28 18:17 file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ chmod u+rwx file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 13 Aug 28 18:17 file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ chown cdac file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$ ls -l
total 4
-rwxr--r-- 1 cdac cdac 13 Aug 28 18:17 file2.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment/docs$
```

f. Final Checklist

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ ls
docs  file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ ls -l
total 8
drwxr-xr-x 2 cdac cdac 4096 Aug 28 18:19 docs
-rw-r--r-- 1 cdac cdac   13 Aug 28 18:08 file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cd /
cdac@LAPTOP-5A1S2M6P:/$ ls
bin   dev  home  lib    lib64   lost+found  mnt  proc  run   snap  sys  usr
boot  etc  init  lib32  libx32  media       opt  root  sbin  srv   tmp  var
cdac@LAPTOP-5A1S2M6P:/$
```

g. File Searching

a. Challenge: i haven't heard or read about this command before so had to read and learn about it

   find <directory> -type f -name <filename>: To find file in directory and sub directories

   - type f specifies that we only want to search for regular files (not directories).

- name "*.txt" searches for files with the .txt extension.

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ find . -type f -name "*.txt"
./docs/file2.txt
./file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

b. grep command can be used to search lines of file containing specific word

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ grep -ri "Sumant" .
./docs/file2.txt:Sumant Reddy
./file1.txt:Sumant Reddy
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ grep -ri "Sumant" file1.txt
Sumant Reddy
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

h. System Information

date command will provide us the date and time

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ date
Wed Aug 28 19:19:23 IST 2024
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

i. Networking

a. ifconfig command is used to show ip address of the system

b. Ping command is used to ping the perticular network

The “ping” command is a powerful tool that allows users to check the status of their internet connection and diagnose network-related issues.

The PING (Packet Internet Groper) command is used to check the network connectivity between the host and server/host.

more about PING: https://www.geeksforgeeks.org/ping-command-in-linux-with-examples/

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ ping www.google.com
PING www.google.com (142.250.192.132) 56(84) bytes of data.
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=1 ttl=117 time=59.9 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=2 ttl=117 time=55.5 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=3 ttl=117 time=55.7 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=4 ttl=117 time=40.8 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=5 ttl=117 time=58.1 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=6 ttl=117 time=57.7 ms
64 bytes from bom12s18-in-f4.1e100.net (142.250.192.132): icmp_seq=7 ttl=117 time=47.9 ms
^C
--- www.google.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6010ms
rtt min/avg/max/mdev = 40.802/53.648/59.900/6.331 ms
```

j. File Compression

a. zip command is used to zip a directory into a single file

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.txt (stored 0%)
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ ls
docs  docs.zip  file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

b. unzip command is used to unzip a zip file into a directory

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ unzip docs.zip ../
Archive:  docs.zip
caution: filename not matched:  ../
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ unzip docs.zip -d  ../
Archive:  docs.zip
   creating: ../docs/
 extracting: ../docs/file2.txt
```

k. File Editing

a. Nano command is used to add data in file. Basically, it is a editor

   nano file1.txt

b. Challenge: i had to read about it from external file

   sed command is used to replace a word from file

more about sed command: link

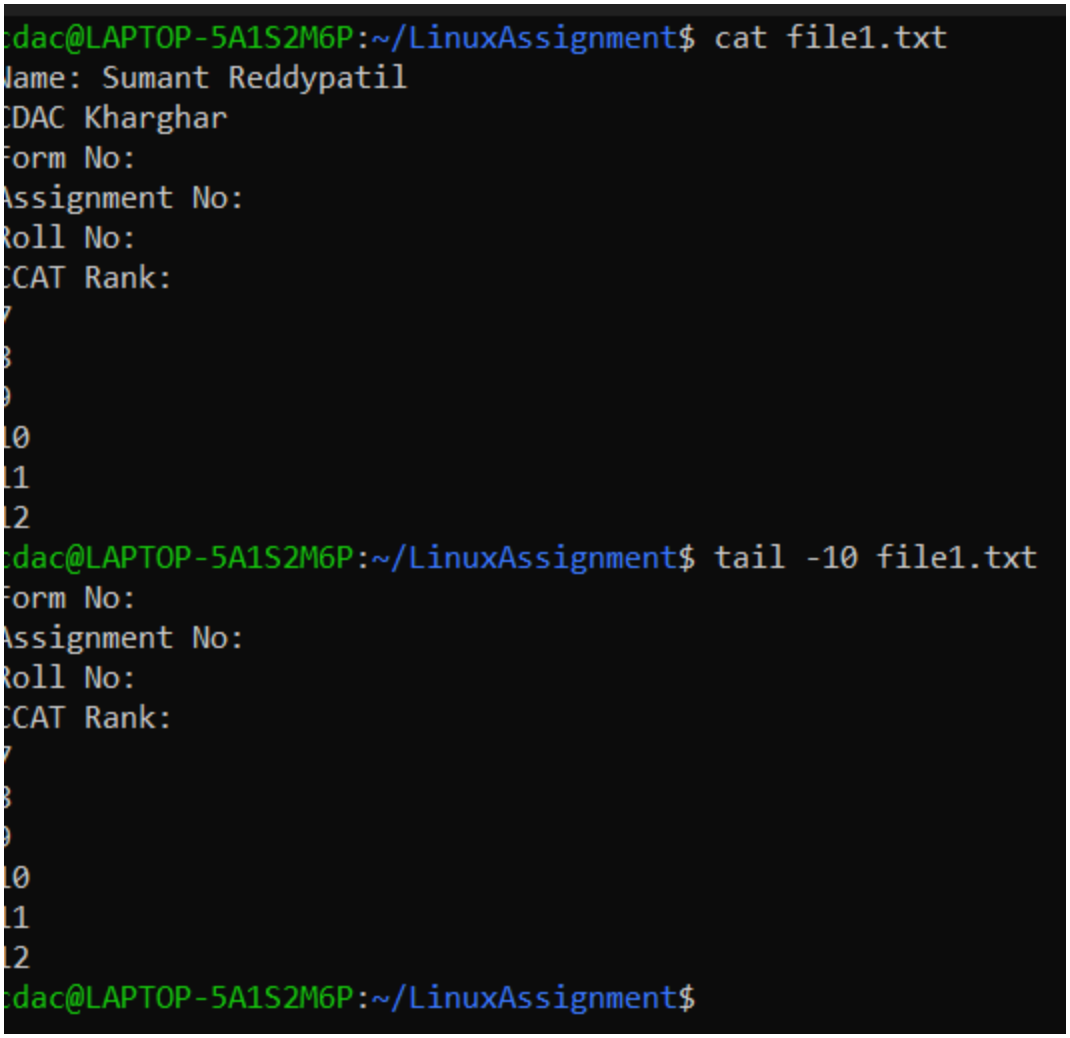
```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ sed -i 's/Reddy/Reddypatil/gi' file1.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat file1.txt
Name: Sumant Reddypatil
CDAC Kharghar
Form No:
Assignment No:
Roll No:
CCAT Rank:
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

Problem 2

a. head command is used to print first n lines

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat file1.txt
Name: Sumant Reddypatil
CDAC Kharghar
Form No:
Assignment No:
Roll No:
CCAT Rank:
7
8
9
10
11
12
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ head -10 file1.txt
Name: Sumant Reddypatil
CDAC Kharghar
Form No:
Assignment No:
Roll No:
CCAT Rank:
7
8
9
10
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

b . tail command is used to print last n lines



c .

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ head -15 numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

d.

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ tail -3 numbers.txt
18
19
20
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

e. tr command is used for text transformations like

- character case conversion
- squeezing repeating characters
- deleting specific characters
- basic text replacement

'>' redirection command is used to give output of a command as input to the file

read more about tr command: https://www.baeldung.com/linux/tr-command

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat file1.txt
Name: Sumant Reddypatil
CDAC Kharghar
Form No:
Assignment No:
Roll No:
CCAT Rank:
7
8
9
10
11
12
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ tr 'a-z' 'A-Z' < file1.txt > output.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat output.txt
NAME: SUMANT REDDYPATIL
CDAC KHARGHAR
FORM NO:
ASSIGNMENT NO:
ROLL NO:
CCAT RANK:
7
8
9
10
11
12
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

f. uniq command is used to return unique lines of the file

   read more : https://www.geeksforgeeks.org/uniq-command-in-linux-with-examples/

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ nano duplicate.txt
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat duplicate.txt
Sumant Reddy Reddy
Sumant Reddy Reddy
Sumant Reddy Reddy

CDAC Kharghar
CDAC Kharghar

Cdac Kharghar
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ uniq duplicate.txt
Sumant Reddy Reddy

CDAC Kharghar

Cdac Kharghar
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```

g. sort command is used to sort the content of the file

uniq -c command is used to get unique lines and their count

'|' piping operator is used to used multiple commands in one instruction

read more: https://www.futurelearn.com/info/courses/linux-for-bioinformatics/0/steps/201955

```
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ cat fruits.txt
Apple
Apple
Orange
Grapes
Apple
Banana
Dragonfruit
Grapes
Banana
Banana
Apple
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$ sort fruits.txt | uniq -c
      4 Apple
      3 Banana
      1 Dragonfruit
      2 Grapes
      1 Orange
cdac@LAPTOP-5A1S2M6P:~/LinuxAssignment$
```