Laboratory Assignment 2
Subject: Design of Operating Systems
Subject code: CSE 4049

Assignment 2: Familiarization with basic Commands in Unix Operating System and Shell Programming

Objective of this Assignment:

- To learn basic concepts of shell programming
- To lean concept of command line argument in shell script.

1. Write a shell script named as **prog** for merge the content of files a.txt, b.txt, and c.txt sort them and save the result in a file called **result** and display the sorted output on the screen. (Note: a.txt, b.txt and c.txt file contain some numerical value. Make the script an executable file and run it as a command using its name only.)

```
student@D001-37:~/2141020022/DOS/Assignment 2$ touch prog.sh
student@D001-37:~/2141020022/DOS/Assignment 2$ cat >a.txt
1
3
5
7
9
student@D001-37:~/2141020022/DOS/Assignment 2$ cat >b.txt
2
4
student@D001-37:~/2141020022/DOS/Assignment 2$ cat >c.txt
0
8
6
student@D001-37:~/2141020022/DOS/Assignment 2$ cat a.txt b.txt c.txt >prog.sh
student@D001-37:~/2141020022/DOS/Assignment 2$ cat prog.sh
1
3
5
7
9
2
4
0
8
6
student@D001-37:~/2141020022/DOS/Assignment 2$ touch result
student@D001-37:~/2141020022/DOS/Assignment 2$ sort prog.sh >result
student@D001-37:~/2141020022/DOS/Assignment 2$ cat result
0
1
2
3
4
5
6
7
8
9
```

2. Write a shell script named as **systeminfo** that will display the information about the login name of the user, name of the Unix system used by the user, type of the SHELL, Path of current working directory of the user and list of file contain in current working directory. (Make the script an executable file and run it as a command using its name only.

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano systeminfo
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x systeminfo
student@D001-37:~/2141020022/DOS/Assignment 2$ ./systeminfo
Login Name: student
System Name: D001-37
Shell Name: /bin/bash
Current Directory: /home/student/2141020022/DOS/Assignment 2
Files in Current Directory:
a.txt  b.txt  c.txt  prog.sh  result  systeminfo
```

3. Write a shell script named as **dtcal** for displaying both the system date and calendar for specific month, say march 2022, in the given format:-

   Date : specific date
   Calender : current calendar

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano dtcal
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x dtcal
student@D001-37:~/2141020022/DOS/Assignment 2$ ./dtcal
Date: 11 October 2023
Calendar: March 2022
     March 2022
Su Mo Tu We Th Fr Sa
       1  2  3  4  5
 6  7  8  9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31
```

```
echo "Date: $(date +%d %B %Y')"
echo "Calendar: March 2022"
cal 3 2022
```

4. Write a shell script named as **nvwc** which will display the filename and linecount, wordcount and char count of the file dtcal in the following format:

   Filename: dtcal
   Line count: -
   Word count: -
   Charcout: -

(Make the script an executable file and run it as a command using its name only.)

5. Write a shell script named as **nvwc2** which will display the filename and linecount, word

```
file="dtcal"
if [ -e "$file" ]; then
       line_count=$(wc -l < "$file")
       word_count=$(wc -w < "$file")
       char_count=$(wc -m < "$file")
       echo "Filename: $file"
       echo "Line Count: $line_count"
       echo "Word Count: $word_count"
       echo "Character count: $char_count"
else
       echo "Error: The file $file does not exist in the current directory"
fi
```

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano nvwc
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x nvwc
student@D001-37:~/2141020022/DOS/Assignment 2$ ./nvwc
Filename: dtcal
Line Count: 4
Word Count: 13
Character count: 73
```

count and char count of **any file** given as argument to nvwc2 in the following format:

filename	linecount	wordcount	charcount
file1	-	-	-

(Make the script an executable file and run it as a command using its name only.

```
if[ "$#" -ne 1 ]; then
       echo "Usage: $0 <filename>"}
       exit 1
fi

file="$1"

if [ -e "$file" ]; then
       line_count=$(wc -l < "$file")
       word count=$(wc -w < "$file")
       char_count=$(wc -m < "$file")

       echo "Filename: $file"
       echo "Line count: $line_count"
       echo "Word count: Sword_count"
else
       echo "Char count: $char_count"
       echo "Error: the file $file does not exist"
fi
```

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano nvwc2
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x nvwc2
student@D001-37:~/2141020022/DOS/Assignment 2$ ./nvwc2
Filename: dtcal
Line Count: 4
Word Count: 13
Char count: 73
```

6. Write a shell script named as **darg** to display the total number of command line arguments along with the first two arguments. -Modify the script to display all the arguments.

```
echo "Total number of arguments: $#"

if [ $# -ge 1 ]; then
       echo "First argument: $1"
fi
if [ $# -ge 2 ]; then
       echo "Second argument: $2"
fi
for arg in "$#"; do
       echo "argument: $arg"
done
```

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano darg
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x darg
student@D001-37:~/2141020022/DOS/Assignment 2$./darg arg1 arg2
Total number of arguments: 2
First argument: arg1
Second argument: arg2
student@D001-37:~/2141020022/DOS/Assignment 2$ nano darg
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x darg
student@D001-37:~/2141020022/DOS/Assignment 2$./darg arg1 arg2
Total number of arguments: 2
First argument: arg1
Second argument: arg2
argument: 2
```

7. Write a shell script named as **ndisp** that will take three command line arguments specifying the value of n, m and a filename and display the first n number of lines and last m number of lines of the file given as argument.

```
 if [ "$#" -ne 3 ]; then
        echo "Usage: $0 <n> <m> <filename>" exit 1
 fi
1"
 m="$2"
 file="$3"

 if [ -e "$file" ]; then
        head -n "$n" "$file"
        tail -n "$m" "$file"

        echo "Error: The file $file does not exist"
 fi
```

```
 Hi
 My name is Shubham Tiwary
 I am a student
 I am currently studying in ITER
 I am pursuing Computer Science and Engineering
 I am in 5th semester
 I am in DOS lab right now
```

```
student@D001-37:~/2141020022/DOS/Assignment 2$ nano ndisp
student@D001-37:~/2141020022/DOS/Assignment 2$ chmod +x ndisp
student@D001-37:~/2141020022/DOS/Assignment 2$ ./ndisp 2 3 x
Hi
My name is Shubham Tiwary
I am pursuing Computer Science and Engineering
I am in 5th Semester
I am in DOS lab right now
```