Laboratory Assignment 2

Subject: Design Principles of Operating Systems

Subject code: CSE 3249

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.)

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117$ cd DOSass2
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ pwd
/home/koushik_das/DOS_2341004117/DOSass2
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > a
12
57
45
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > b
42
89
1089
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > c
156
76
366537
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ #! /bin/bash
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat a b c > result
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ sort -n result
12
42
45
57
76
89
156
1089
366537
```

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.)

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > systeminfo
#!  /bin/bash
echo "User Name : $(whoami)"
echo "System Name : $(uname)"
echo "SHELL Type : $SHELL"
echo "Path of Current Working Directory : $(pwd)"
echo "File list in current working directory : "
ls
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 systeminfo
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./systeminfo
User Name : koushik_das
System Name : Linux
SHELL Type : /bin/bash
Path of Current Working Directory : /home/koushik_das/DOS_2341004117/DOSass2
File list in current working directory :
a  b  c  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 (Make the script an executable file and run it as a command using its name only.)

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > dtcal
#! /bin/bash
echo "Date : $(date)"
echo "Calender :"
cal
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 dtcal
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./dtcal
Date : Wed Oct 22 20:24:46 IST 2025
Calender :
    October 2025
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
```

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.)

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > nvwc
#! /bin/bash
echo "File Name : dtcal"
echo "Line Count : $(wc -l < dtcal)"
echo "Word Count : $(wc -w < dtcal)"
echo "Char Count : $(wc -m < dtcal)"
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 nvwc
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./nvwc
File Name : dtcal
Line Count : 4
Word Count : 10
Char Count : 57
```

5) Write a shell script named as nvwc2 which will display the filename and linecount, word count and char count of any file given as argument to nvwc2 in the following format: filename linecount file1 - wordcount - charcount - (Make the script an executable file and run it as a command using its name only.)

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > prog
This is a sample file.
It has multiple lines.
Just for testing.
```

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > nvwc2
#! /bin/bash
FILE="prog"
L=$(wc -l < "prog")
W=$(wc -w < "prog")
C=$(wc -m < "prog")
echo -e "filename \t linecount \t wordcount \t charcount"
echo -e "$FILE \t\t $L \t\t $W \t\t $C"
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 nvwc2
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./nvwc2
filename        linecount       wordcount       charcount
prog            3               12              64
```

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

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > darg
#! /bin/bash
echo "Total Number of Command Line Arguments : $#"
echo "1st Command Line Argument : $1"
echo "2nd Command Line Argument : $2"
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 darg
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./darg Arg1 Arg2 Arg3 Arg4 Arg5
Total Number of Command Line Arguments : 5
1st Command Line Argument : Arg1
2nd Command Line Argument : Arg2
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ gedit darg
```

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat darg
#! /bin/bash
echo "Total Number of Command Line Arguments : $#"
echo "1st Command Line Argument : $1"
echo "2nd Command Line Argument : $2"
echo "All the Command Line Arguments : $@"

koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 darg
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./darg Arg1 Arg2 Arg3 Arg4 Arg5
Total Number of Command Line Arguments : 5
1st Command Line Argument : Arg1
2nd Command Line Argument : Arg2
All the Command Line Arguments : Arg1 Arg2 Arg3 Arg4 Arg5
```

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

```
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > ndisp
#! /bin/bash
n="$1"
m="$2"
a="$3"
echo "First $n lines of file $a :"
head -n  "$n" "$a"
echo "Last  $m lines of file $a :"
tail -n "$m" "$a"
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 ndisp
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ cat > fileee
Koushik
Das
MAGNATE
MONEY
TECH
LIFE
kyun nahi ho rahi padhai
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ chmod 777 ndisp
koushik_das@LAPTOP-BIHGEI3G:~/DOS_2341004117/DOSass2$ ./ndisp 3 4 fileee
First 3 lines of file fileee :
Koushik
Das
MAGNATE
Last  4 lines of file fileee :
MONEY
TECH
LIFE
kyun nahi ho rahi padhai
```