

SIKSHA 'O' ANUSANDHAN

DEEMED TO BE UNIVERSITY

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Laboratory Assignment #2

DESIGN OF OPERATING SYSTEMS (CSE 4049)

Submitted By -

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Objective of this Assignment:

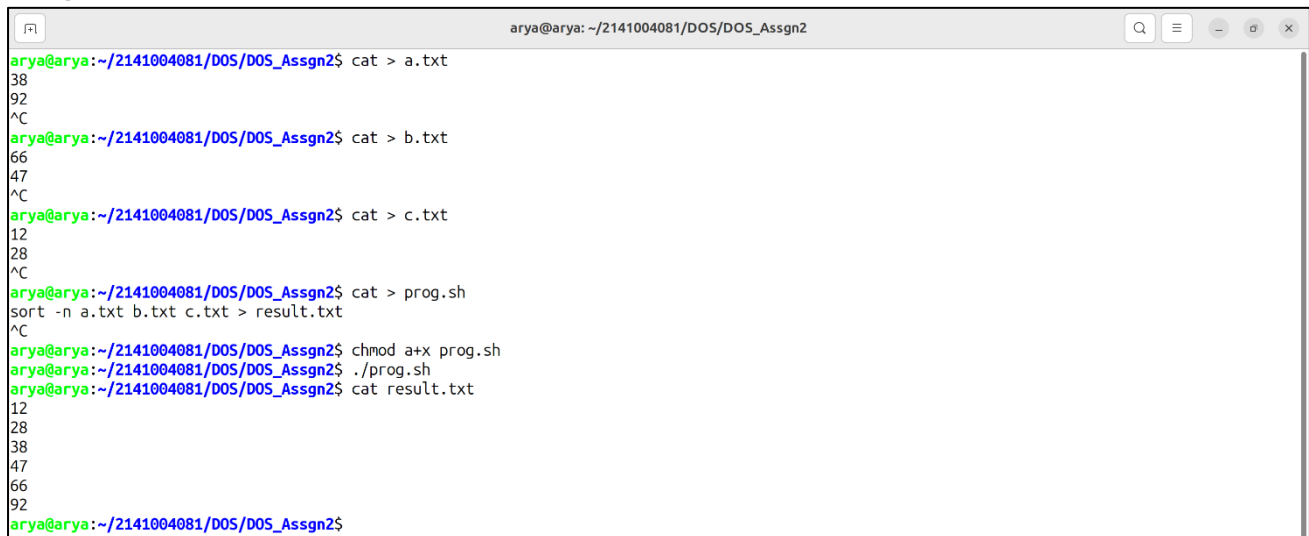
- To learn basic concepts of shell programming
- To learn concept of command line argument in shell script.

Q1. 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.

Command:

```
cat > a.txt
cat > b.txt
cat > c.txt
cat > prog.sh
    sort -n a.txt b.txt c.txt > prog.sh
chmod a+x prog.sh
./prog.sh
cat result.txt
```

Output:



```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > a.txt
38
92
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > b.txt
66
47
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > c.txt
12
28
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > prog.sh
sort -n a.txt b.txt c.txt > result.txt
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x prog.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./prog.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat result.txt
12
28
38
47
66
92
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

Q2. 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 files contain in current working directory.

Command:

```
cat > systeminfo.sh
echo $USERNAME
uname
echo $SHELL
pwd
ls -l
chmod a+x system.info
./systeminfo.sh
```

Output:

A screenshot of a terminal window titled 'arya@arya: ~/2141004081/DOS/DOS_Assgn2'. The terminal shows the execution of a shell script named 'systeminfo.sh'. The script's output is displayed line by line: 'echo \$USERNAME' outputs 'arya', 'uname' outputs 'Linux', 'echo \$SHELL' outputs '/bin/bash', 'pwd' outputs '/home/arya/2141004081/DOS/DOS_Assgn2', and 'ls -l' outputs a directory listing for the current directory. The listing shows files 'a.txt', 'b.txt', 'c.txt', 'prog.sh', 'result.txt', and 'systeminfo.sh' with their respective permissions, owners, and timestamps. The prompt returns to the user after the script execution.

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > systeminfo.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ echo $USERNAME
arya
arya@arya:~/2141004081/DOS/DOS_Assgn2$ uname
Linux
arya@arya:~/2141004081/DOS/DOS_Assgn2$ echo $SHELL
/bin/bash
arya@arya:~/2141004081/DOS/DOS_Assgn2$ pwd
/home/arya/2141004081/DOS/DOS_Assgn2
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ls -l
total 24
-rw-rw-r-- 1 arya arya  6 Oct 18 20:58 a.txt
-rw-rw-r-- 1 arya arya  6 Oct 18 20:58 b.txt
-rw-rw-r-- 1 arya arya  6 Oct 18 20:58 c.txt
-rwxrwxr-x 1 arya arya 39 Oct 18 20:59 prog.sh
-rw-rw-r-- 1 arya arya 18 Oct 18 20:59 result.txt
-rwxrwxr-x 1 arya arya 43 Oct 18 21:01 systeminfo.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```


Q3. 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
Calendar: current calendar

Command:

```
cat > dtcal.sh
date=`date`
calendar=`cal 06 2025`
echo "Date: $date"
echo "Calendar: $calendar"
chmod a+x dtcal.sh
./dtcal.sh
```

Output:



```
arya@arya: ~/2141004081/DOS/DOS_Assgn2$ cat > dtcal.sh
date=`date`
calender=`cal 06 2025`
echo "Date: $date"
echo "Calender: $calender"
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x dtcal.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./dtcal.sh
Date: Wednesday 18 October 2023 09:06:03 PM IST
Calender:           June 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
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

Q4. Write a shell script named as nvwc which will display the filename and line count, wordcount and char count of the file dtcal in the following format:

Filename: dtcal

Line count:

Word count:

Char count:

Command:

```
cat > nvwc.sh
filename="dtcal.sh"
linecount=`wc -l $filename`
wordcount=`wc -w $filename`
charcount=`wc -m $filename`
echo "Filename: $filename"
echo "Line Count: $linecount"
echo "Word Count: $wordcount"
echo "Char Count: $charcount"
chmod a+x nvwc.sh
./nvwc.sh
```

Output:

```
arya@arya: ~/2141004081/DOS/DOS_Assgn2
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > nvwc.sh
filename="dtcal.sh"
linecount=`wc -l dtcal.sh`
wordcount=`wc -w dtcal.sh`
charcount=`wc -m dtcal.sh`
echo "Filename: $filename"
echo "Line Count: $linecount"
echo "Word Count: $wordcount"
echo "Char Count: $charcount"
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x nvwc.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./nvwc.sh
Filename: dtcal.sh
Line Count: 4 dtcal.sh
Word Count: 10 dtcal.sh
Char Count: 81 dtcal.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

Q5. Write a shell script named as nvwc2 which will display the filename and line count, word count and char count of any file given as argument to nvwc2 in the following format:

filename	linecount	wordcount	charcount
file1	-	-	-

Command:

```
cat > nvwc2.sh
filename="$1"
linecount=`wc -l $filename`
wordcount=`wc -w $filename`
charcount=`wc -m $filename`
echo "Filename Linecount Wordcount Charcount"
echo "$filename $linecount $wordcount $charcount"
chmod a+x nvwc2.sh
./nvwc2.sh a.txt
```

Output:

```
arya@arya: ~/2141004081/DOS/DOS_Assgn2
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > nvwc2.sh
filename="$1"
linecount=`wc -l $filename`
wordcount=`wc -w $filename`
charcount=`wc -m $filename`
echo "Filename Linecount Wordcount Charcount"
echo "$filename $linecount $wordcount $charcount"
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x nvwc2.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./nvwc2.sh a.txt
Filename Linecount Wordcount Charcount
a.txt 2 a.txt 2 a.txt 6 a.txt
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

**Q6. 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.**

Command Part 1:

```
cat > darg.sh
    echo "Total number of arguments are: $#"
```

```
    echo "First argument: $1"
```

```
    echo "Second argument: $2"
```

```
chmod a+x darg.sh
```

```
./darg.sh argu1 argu2
```

Output Part 1:



```
arya@arya: ~/2141004081/DOS/DOS_Assgn2
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > darg.sh
echo "Total number of arguments: $#"
```

```
echo "First argument: $1"
```

```
echo "Second argument: $2"
```

```
^C
```

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x darg.sh
```

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./darg.sh argu1 argu2
```

```
Total number of arguments: 2
```

```
First argument: argu1
```

```
Second argument: argu2
```

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

Command Part 1:

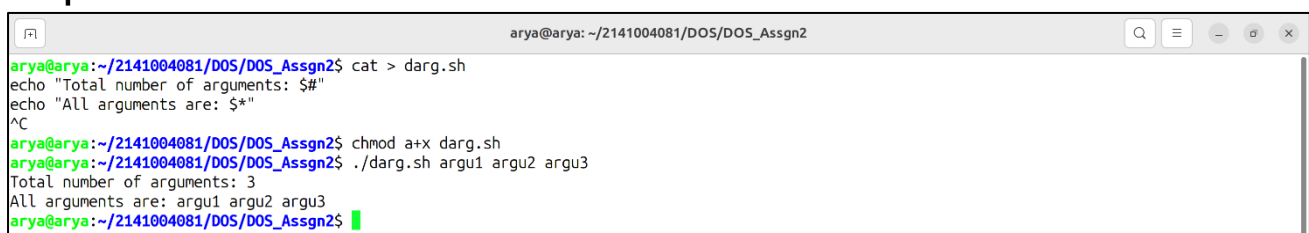
```
cat > darg.sh
    echo "Total number of arguments are: $#"
```

```
    echo "All arguments are: $*"
```

```
chmod a+x darg.sh
```

```
./darg.sh argu1 argu2 argu3
```

Output Part 2:



```
arya@arya: ~/2141004081/DOS/DOS_Assgn2
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > darg.sh
echo "Total number of arguments: $#"
```

```
echo "All arguments are: $*"
```

```
^C
```

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x darg.sh
```

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./darg.sh argu1 argu2 argu3
```

```
Total number of arguments: 3
```

```
All arguments are: argu1 argu2 argu3
```

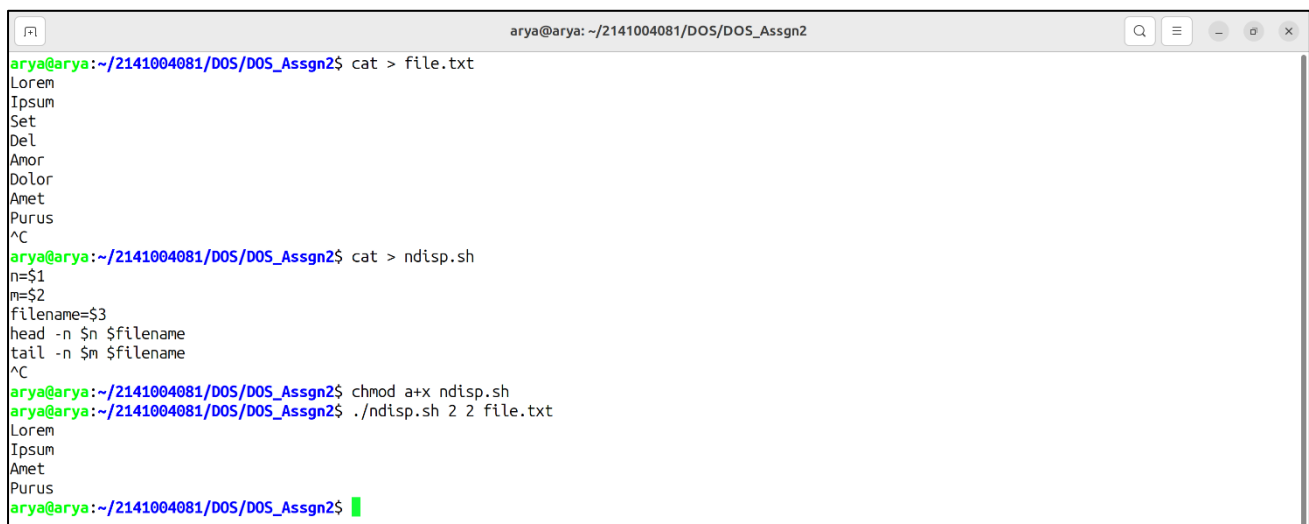
```
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```

Q7. 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.

Command:

```
cat > file.txt
cat > ndisp.sh
n=$1
m=$2
filename=$3
head -n $n $filename
tail -n $m $filename
chmod a+x ndisp.sh
./ndisp.sh 2 2 file.txt
```

Output:

A terminal window titled 'arya@arya: ~/2141004081/DOS/DOS_Assgn2' showing the execution of the 'ndisp.sh' script. The user first creates 'file.txt' with 'cat > file.txt', which contains the text: Lorem, Ipsum, Set, Del, Amor, Dolor, Amet, Purus. Then, the user creates 'ndisp.sh' with 'cat > ndisp.sh', which contains: n=\$1, m=\$2, filename=\$3, head -n \$n \$filename, tail -n \$m \$filename. The user sets permissions with 'chmod a+x ndisp.sh' and runs the script with './ndisp.sh 2 2 file.txt'. The output of the script is: Lorem, Ipsum, Amet, Purus.

```
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > file.txt
Lorem
Ipsum
Set
Del
Amor
Dolor
Amet
Purus
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ cat > ndisp.sh
n=$1
m=$2
filename=$3
head -n $n $filename
tail -n $m $filename
^C
arya@arya:~/2141004081/DOS/DOS_Assgn2$ chmod a+x ndisp.sh
arya@arya:~/2141004081/DOS/DOS_Assgn2$ ./ndisp.sh 2 2 file.txt
Lorem
Ipsum
Amet
Purus
arya@arya:~/2141004081/DOS/DOS_Assgn2$
```