

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 learn 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.)

```
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 5 > a.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 3 >> a.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 1 >> a.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 4 > b.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 2 >> b.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 6 > c.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ echo 0 >> c.txt
iteradmin@D001-38:~/Desktop/A2_DPOS$ touch prog.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ ls
a.txt b.txt c.txt prog.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ nano prog.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ cat prog.sh
cat a.txt b.txt c.txt | sort -n > result
cat result
iteradmin@D001-38:~/Desktop/A2_DPOS$ chmod +x prog.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ ./prog.sh
0
1
2
3
4
5
6
iteradmin@D001-38:~/Desktop/A2_DPOS$ █
```

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.)

```

iteradmin@D001-38:~/Desktop/A2_DPOS$ cat > systeminfo.sh
echo "Login Name: $(whoami)"
echo "System Name: $(uname)"
echo "Shell Type: $SHELL"
echo "Present Working Directory : $(pwd)"
echo "List of Files:"
ls -l
^C
iteradmin@D001-38:~/Desktop/A2_DPOS$ chmod +x systeminfo.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ ./systeminfo.sh
Login Name: iteradmin
System Name: Linux
Shell Type: /bin/bash
Present Working Directory : /home/iteradmin/Desktop/A2_DPOS
List of Files:
total 24
-rw-rw-r-- 1 iteradmin iteradmin  6 Oct 17 16:47 a.txt
-rw-rw-r-- 1 iteradmin iteradmin  4 Oct 17 16:48 b.txt
-rw-rw-r-- 1 iteradmin iteradmin  4 Oct 17 16:48 c.txt
-rwxrwxr-x 1 iteradmin iteradmin 52 Oct 17 16:49 prog.sh
-rw-rw-r-- 1 iteradmin iteradmin 14 Oct 17 16:50 result
-rwxrwxr-x 1 iteradmin iteradmin 154 Oct 17 16:59 systeminfo.sh

```

- 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.)

```

swayam@ubuntu-box:~/Desktop$ cat > dtcal.sh
echo "Date: $(date)"
echo "Calender:"
cal 3 2022
^C
swayam@ubuntu-box:~/Desktop$ chmod +x dtcal.sh
swayam@ubuntu-box:~/Desktop$ ./dtcal.sh
Date: Sat Oct 18 10:14:56 PM IST 2025
Calender:
    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

swayam@ubuntu-box:~/Desktop$ █

```

- 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: -

Charcount: -

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

```

iteradmin@D001-38:~/Desktop/A2_DPOS$ cat > nvwc.sh
FILENAME="dtcal.sh"
COUNTS=$(wc $FILENAME)
LINE_COUNT=$(wc -l < $FILENAME)
WORD_COUNT=$(wc -w < $FILENAME)
CHAR_COUNT=$(wc -c < $FILENAME)

echo "filename: $FILENAME"
echo "Line Count: $LINE_COUNT"
echo "Word Count: $WORD_COUNT"
echo "Char Count: $CHAR_COUNT"
^C
iteradmin@D001-38:~/Desktop/A2_DPOS$ chmod +x nvwc.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ ./nvwc.sh
filename: dtcal.sh
Line Count: 2
Word Count: 8
Char Count: 49
iteradmin@D001-38:~/Desktop/A2_DPOS$ cat dtcal.sh
echo "Date: $(date)"
echo "Calendar:" cal 3 2022
iteradmin@D001-38:~/Desktop/A2_DPOS$

```

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      wordcount      charcount

```

```

file1         -              -              -

```

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

```

iteradmin@D001-38:~/Desktop/A2_DPOS$ cat > nvwc2.sh
filename="$1"
line_count=$(wc -l < "$filename")
word_count=$(wc -w < "$filename")
char_count=$(wc -c < "$filename")

echo "filename: $filename"
echo "Line count: $line_count"
echo "Word count: $word_count"
echo "Char count: $char_count"
^C
iteradmin@D001-38:~/Desktop/A2_DPOS$ ./nvwc2.sh dtcal.sh
filename: dtcal.sh
Line count: 2
Word count: 8
Char count: 49
iteradmin@D001-38:~/Desktop/A2_DPOS$

```

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.)

```

iteradmin@D001-38:~/Desktop/A2_DPOS$ cat > darg.sh
echo "Total number of arguments: $#"
```

```

echo "First argument: $1"
echo "Second argument: $2"
echo ""
echo "All arguments: $@"
^C
iteradmin@D001-38:~/Desktop/A2_DPOS$ chmod +x darg.sh
iteradmin@D001-38:~/Desktop/A2_DPOS$ ./darg.sh Hello World 123
Total number of arguments: 3
First argument: Hello
Second argument: World

All arguments: Hello World 123

```

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.)

```
swayam@ubuntu-box:~$ cd desktop
bash: cd: desktop: No such file or directory
swayam@ubuntu-box:~$ cd Desktop
swayam@ubuntu-box:~/Desktop$ cat > ndisp.sh
n="$1"
m="$2"
filename="$3"

head -n "$n" "$filename"
tail -n "$m" "$filename"
^C
swayam@ubuntu-box:~/Desktop$ cat > test.txt
line1
line2
line3
line4
line5

line6
^C
swayam@ubuntu-box:~/Desktop$ chmod +x ndisp.sh
swayam@ubuntu-box:~/Desktop$ ./ndisp.sh 2 1 test.txt
line1
line2
line6
swayam@ubuntu-box:~/Desktop$ █
```