

Assignment 2

OPERATING SYSTEMS (CS-301)

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(1) Shell script Program to accept a character and check whether it is an

Lower case alphabet

Upper case alphabet

A digit

Special symbol

Vowel

Using case control structure.

```
read -p "Enter a character: " CHAR
case "$CHAR" in
    [aeiouAEIOU])
        echo "Vowel"
        ;;
    [A-Z])
        echo "Upper Case"
        ;;
    [a-z])
        echo "Lower Case"
        ;;
    [0-9])
        echo "Digit"
        ;;
    ['!@#\$%^&*()_+'])
        echo "Special Character"
        ;;
    *)
        echo "None"
        ;;
esac
```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q1.sh
Enter a character: c
Lower Case
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q1.sh
Enter a character: A
Vowel
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q1.sh
Enter a character: 1
Digit
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q1.sh
Enter a character: @
Special Character
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(2) Using case .. esac structure

Find the number of users logged into the system

Print the calendar for current year

Print the date

```

echo "-----"
echo "[1] Find the number of users logged into the system"
echo "[2] Print the calendar for current year"
echo "[3] Print the date"
echo "-----"
read -p "Enter choice: " choice
case "$choice" in
1)
who --count
;;
2)
cal -y
;;
3)
date
;;
*)
echo "none"
;;
esac

```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q2.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q2.sh

```

```

.....
[1] Find the number of users logged into the system
[2] Print the calendar for cuurent year
[3] Print the date
Enter choice: 1

```

```

# users=0
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q2.sh
.....
[1] Find the number of users logged into the system
[2] Print the calendar for cuurent year
[3] Print the date
Enter choice: 2

```

```

                2021
    January          February          March
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
                1 2          1 2 3 4 5 6          1 2 3 4 5 6
 3  4  5  6  7  8  9    7  8  9 10 11 12 13    7  8  9 10 11 12 13
10 11 12 13 14 15 16   14 15 16 17 18 19 20   14 15 16 17 18 19 20
17 18 19 20 21 22 23   21 22 23 24 25 26 27   21 22 23 24 25 26 27
24 25 26 27 28 29 30   28                28 29 30 31
31

    April          May          June
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
                1 2 3          1          1 2 3 4 5
 4  5  6  7  8  9 10    2  3  4  5  6  7  8    6  7  8  9 10 11 12
11 12 13 14 15 16 17    9 10 11 12 13 14 15   13 14 15 16 17 18 19
18 19 20 21 22 23 24   16 17 18 19 20 21 22   20 21 22 23 24 25 26
25 26 27 28 29 30     23 24 25 26 27 28 29   27 28 29 30
                30 31

```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2

```

```

    July          August          September
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
                1 2 3          1 2 3 4 5 6 7          1 2 3 4
 4  5  6  7  8  9 10    8  9 10 11 12 13 14    5  6  7  8  9 10 11
11 12 13 14 15 16 17   15 16 17 18 19 20 21   12 13 14 15 16 17 18
18 19 20 21 22 23 24   22 23 24 25 26 27 28   19 20 21 22 23 24 25
25 26 27 28 29 30 31   29 30 31                26 27 28 29 30

```

```

    October          November          December
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
                1 2          1 2 3 4 5 6          1 2 3 4
 3  4  5  6  7  8  9    7  8  9 10 11 12 13    5  6  7  8  9 10 11
10 11 12 13 14 15 16   14 15 16 17 18 19 20   12 13 14 15 16 17 18
17 18 19 20 21 22 23   21 22 23 24 25 26 27   19 20 21 22 23 24 25
24 25 26 27 28 29 30   28 29 30                26 27 28 29 30 31
31

```

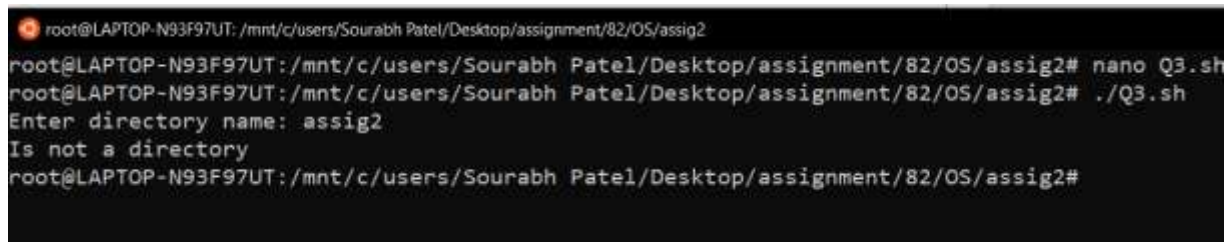
```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q2.sh
.....
[1] Find the number of users logged into the system
[2] Print the calendar for cuurent year
[3] Print the date
Enter choice: 3
Sun Aug 15 17:18:32 IST 2021
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(3) Shell Script Program to check whether given file is a directory or not.

```
read -p "Enter directory name: " dir
if [ -d "$dir" ]
then
echo "Is a directory"
else
echo "Is not a directory"
fi
```



```
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q3.sh
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q3.sh
Enter directory name: assig2
Is not a directory
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#
```

(4) Shell Script Program to Count number of files in a Directory.

```
echo "Count of file in directory:$#"
```



```
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q4.sh
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q4.sh
Total Numbers of file is: 0
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#
```

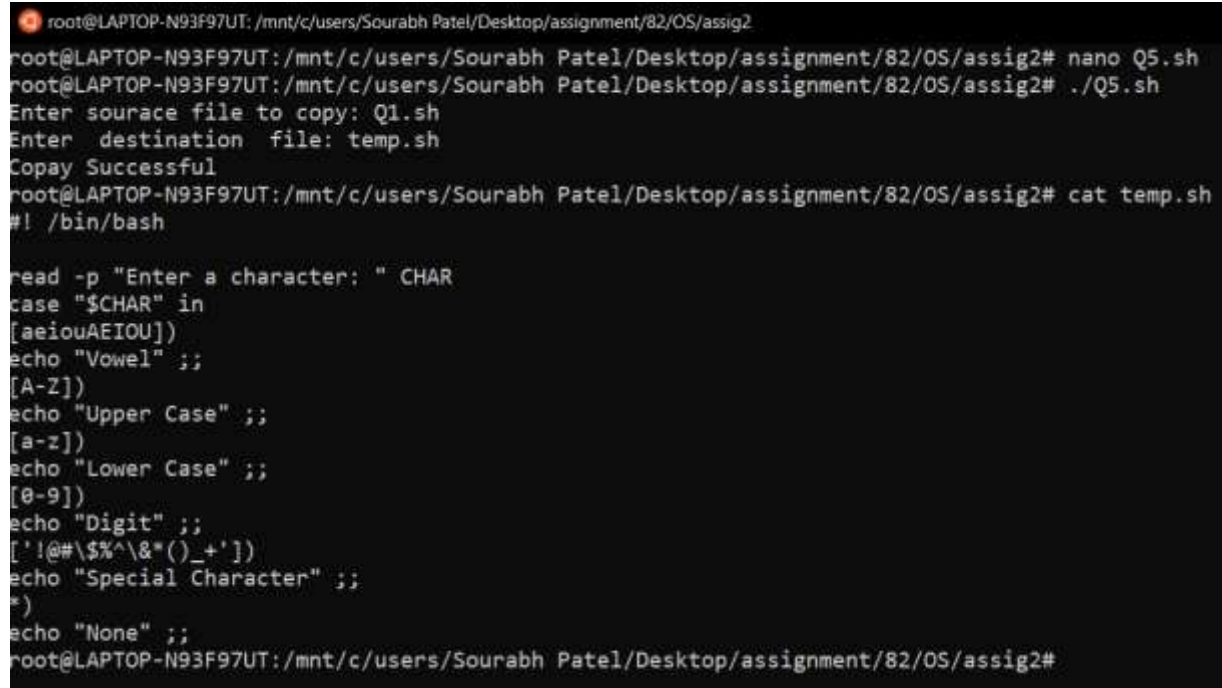
(5) Shell Script Program to copy contents of one file to another.

```
read -p "Enter source file to copy: " file1
read -p "Enter destination file: " file2
if [[ -f "$file1" && -f "$file2" ]]
then
cp $file1 $file2
echo "Copy Successful"
else
```

```

if [[ ! -f "$file1" ]]
then
echo "Source file doesn't exist"
else
echo "Destination file doesn't exist"
fi
fi

```



```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q5.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q5.sh
Enter source file to copy: Q1.sh
Enter destination file: temp.sh
Copy Successful
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# cat temp.sh
#!/bin/bash

read -p "Enter a character: " CHAR
case "$CHAR" in
[aeiouAEIOU])
echo "Vowel" ;;
[A-Z])
echo "Upper Case" ;;
[a-z])
echo "Lower Case" ;;
[0-9])
echo "Digit" ;;
['!@#\$%^&*()_+'])
echo "Special Character" ;;
*)
echo "None" ;;
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

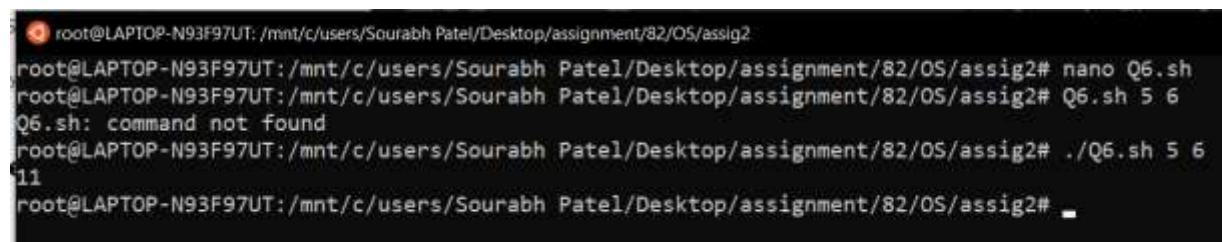
```

(6) Write a shell script to add two numbers supplied by user and supplied as command line argument.

```

if [[ $# == 2 ]]
then
echo "$1 + $2 = `expr $1 + $2`"
else
echo "Enter 2 arguments only"
fi

```



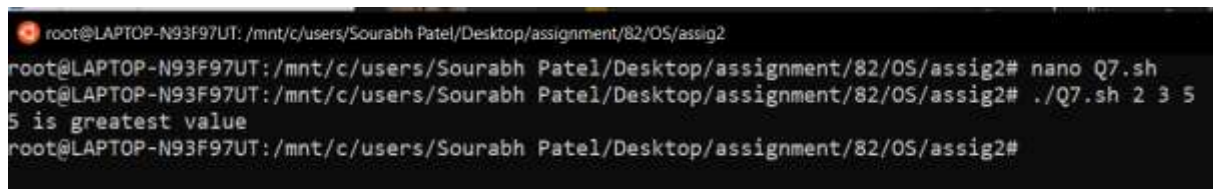
```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q6.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# Q6.sh 5 6
Q6.sh: command not found
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q6.sh 5 6
11
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# _

```

(7) Write a shell script to find out biggest number form given three numbers. Numbers are supplied by command line argument.

```
if [[ $# == 3 ]]
then
if [[ $1 -ge $2 && $1 -ge $3 ]]
then echo "$1 is the greatest value"
elif [[ $2 -ge $1 && $2 -ge $3 ]]
then echo "$2 is the greatest value"
else
echo "$3 is the greatest value"
fi
else
echo "Enter 3 arguments only"
fi
```



A terminal window showing the execution of a shell script. The prompt is root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2. The user enters 'nano Q7.sh' to create the script. Then, they run './Q7.sh 2 3 5'. The output is '5 is greatest value'.

(8) Implement simple calculator. Numbers are supplied by command line argument.

```
if [ $# == 3 ]
then
case "$2" in
"+" ) echo "$1 + $3 = `expr $1 + $3`"
;;
"-" ) echo "$1 - $3 = `expr $1 - $3`"
;;
"x" ) echo "$1 * $3 = `expr $1 \* $3`"
;;
"/" ) echo "$1 / $3 = `expr $1 / $3`"
;;
%" ) echo "$1 % $3 = `expr $1 % $3`"
;;
*) echo "Incorrect input"
;;
esac
else
echo "Enter 2 arguments only"
fi
```

```

Select root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q8.sh
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 + 3
5
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 - 3
-1
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 X 3
6
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 / 3
0
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 % 3
2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q8.sh 2 ~ 3
Incorrect input
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(9) Write a shell script to print numbers in descending order using while loop.

```

read -p "Enter a number: " num
while [ $num -gt 0 ]
do
echo "$num"
num=$((num - 1))
done

```

```

Select root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q9.sh
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q9.sh
Enter a number: 8
8
7
6
5
4
3
2
1

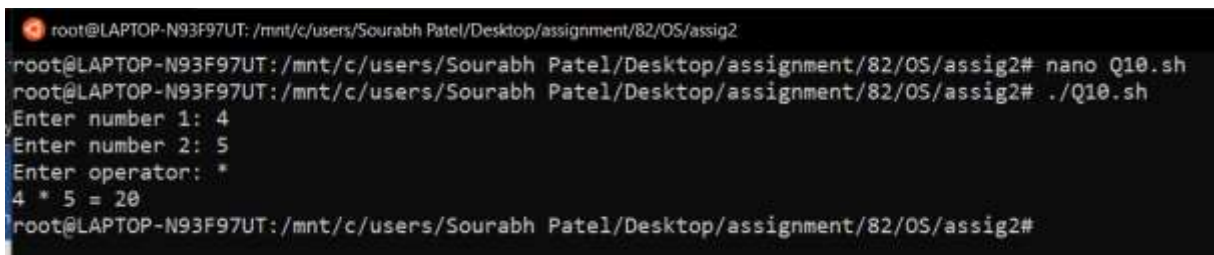
```

(10) Write a shell script to create a simple calculator using switchcase statement.


```

read -p "Enter number 1: " num1
read -p "Enter number 2: " num2
read -p "Enter operator: " op
case "$op" in
"+")
echo "$num1 + $num2 = `expr $num1 + $num2`"
;;
"-")
echo "$num1 - $num2 = `expr $num1 - $num2`"
;;
"*)
echo "$num1 * $num2 = `expr $num1 \* $num2`"
;;
"/")
echo "$num1 / $num2 = `expr $num1 / $num2`"
;;
"%")
echo "$num1 % $num2 = `expr $num1 % $num2`"
;;
*)
echo "Incorrect input"
;;
esac

```



```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q10.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q10.sh
Enter number 1: 4
Enter number 2: 5
Enter operator: *
4 * 5 = 20
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(11) Write a shell script to print given number in reverse order.

```

read -p "Enter number: " num
temp=0
while [ $num -gt 0 ]
do
temp=$((temp * 10 + num % 10))
num=$((num / 10))
done
echo "Reverse = $temp"

```



```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q11.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q11.sh
Enter number: 1234555
Reverse = 5554321
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(12) Write a shell script to print sum of all digits of a given number.

```

read -p "Enter number: " num
sum=0
while [ $num -gt 0 ]
do
sum=$((sum + num % 10))
num=$((num / 10))
done
echo "Sum of digits = $sum"

```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q12.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q12.sh
Enter number: 1234555
Sum of digits = 25
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(13) Find the factorial value of given input number.

```

read -p "Enter number: " num
ans=1
while [ $num -gt 0 ]
do
ans=$((ans * num))
num=$((num - 1))
done
echo "Factorial = $ans"

```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q13.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q13.sh
Enter number: 6
Factorial = 720
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2#

```

(14) Generate and display Fibonacci series.

```

read -p "Enter the number of element in Fibonacci series: "
num
echo "Fibonacci series: "
num1=1
num2=1
temp=0
count=0
while [ $count -lt $num ]
do
count=$((count + 1))
echo "$num1"
temp=$((num1 + num2))
num1=$num2
num2=$temp
done

```

```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q14.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q14.sh
Enter the number of element in Fibonacci series: 5
Fibonacci series:
1
1
2
3
5
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# _

```

(15) Display all even numbers within given range.

```

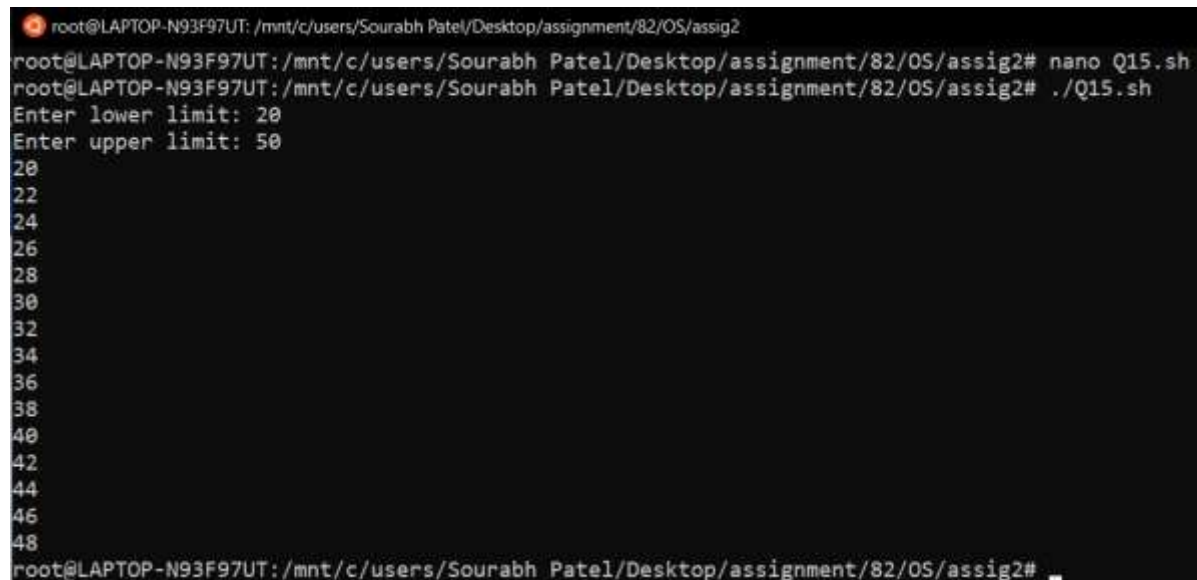
read -p "Enter lower limit: " start
read -p "Enter upper limit: " end
if [ $start -lt $end ]
then
while [ $start -lt $end ]
do

```

```

if [ $((start % 2)) == 0 ]
then
echo $start
fi
start=$((start + 1))
done
else
echo "Incorrent range"
fi

```



```

root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q15.sh
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q15.sh
Enter lower limit: 20
Enter upper limit: 50
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# _

```

(16) Find out number of characters, words and lines from a given file.

```

read -p "Enter a file name: " file
if [ -f $file ]
then
lines=`wc -l $file`
word=`wc -w $file`
char=`wc -m $file`
echo -e "Charecters = $char \nwords = $word \nLines = $lines"
else
echo -E "File doesn't exist!"
fi

```

```
root@LAPTOP-N93F97UT: /mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano Q16.sh
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# nano temp.txt
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# cat temp.txt
A Kernel is at the nucleus of a computer. It makes the communication between the hardware and soft
While the Kernel is the innermost part of an operating system, a shell is the outermost one.
A shell in a Linux operating system takes input from you in the form of commands, processes it,
and then gives an output. It is the interface through which a user works on the programs, commands
cessed by a terminal which runs it.
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ./Q16.sh
Enter a file name: temp.txt
Characters = 464 temp.txt
Words = 84 temp.txt
Lines = 4 temp.txt
root@LAPTOP-N93F97UT:/mnt/c/users/Sourabh Patel/Desktop/assignment/82/OS/assig2# A_
```