

# Lab 4 Shell Scripting Tasks

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In this lab we will learn how to perform the following task,

1. Conditional Statements
2. Loops
3. Functions

All of these task will be performed using the Shell Scripting which is power way to write the commands in the ubuntu operating system.

In all files it is required that give the permission to read, write and execute by using following command

```
chmod 777 [filename]
```

The 777 grant the read, write and execute permission.

## 1. Conditional Statements

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The decisions making in the shell scripting give new power to perform the complex task.

### Syntax

```
if ((condition))  
then # *block of code to be executed if the condition is true*  
fi
```

**Note** Make sure that you close the if statement with fi.

### Examples

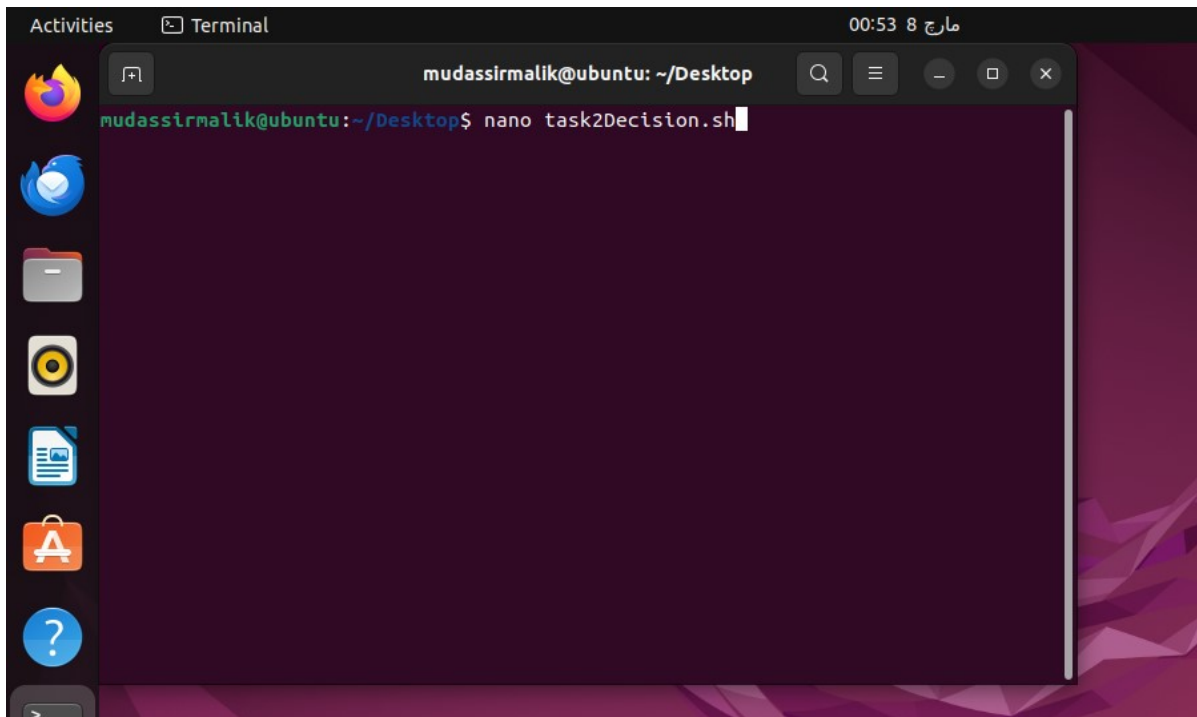
#### Question-01

Create a Bash script which will take 3 numbers as command line arguments. It will print to the screen the larger of the three numbers

#### Solution

```
nano task2Decision.sh
```

Open the terminal based text editor using the nano keyword follow by the file name where the file will be stored. e.g



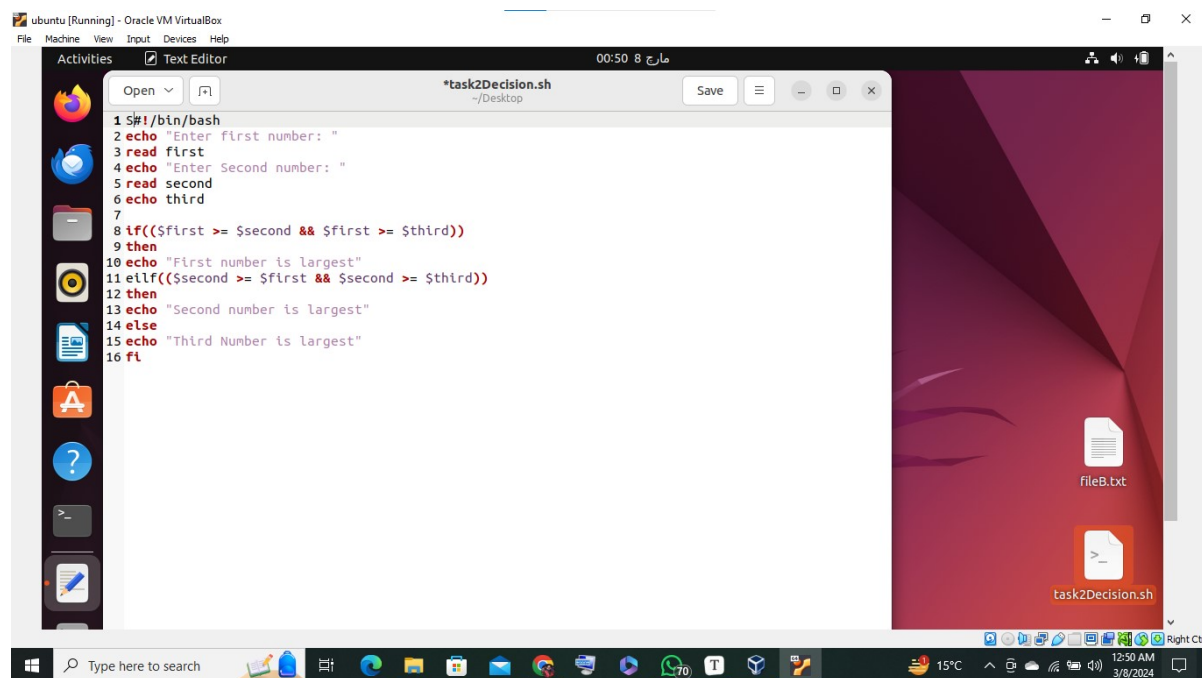
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

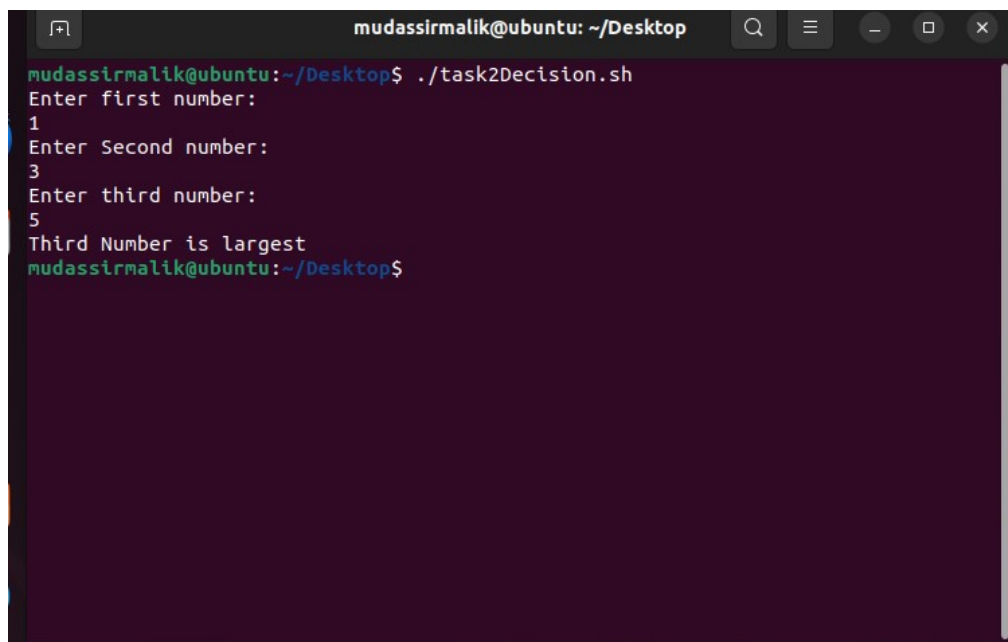
e.g



Run the file on the terminal using the following command

```
./task2Decision.sh
```

It will run the the script on the terminal.e.g

A terminal window titled 'mudassirmalik@ubuntu: ~/Desktop' showing the execution of a script. The prompt is 'mudassirmalik@ubuntu:~/Desktop\$ ./task2Decision.sh'. The script prompts for three numbers: 'Enter first number:', 'Enter Second number:', and 'Enter third number:'. The user enters '1', '3', and '5' respectively. The script then outputs 'Third Number is largest' and returns to the prompt 'mudassirmalik@ubuntu:~/Desktop\$'.

```
mudassirmalik@ubuntu: ~/Desktop
mudassirmalik@ubuntu:~/Desktop$ ./task2Decision.sh
Enter first number:
1
Enter Second number:
3
Enter third number:
5
Third Number is largest
mudassirmalik@ubuntu:~/Desktop$
```

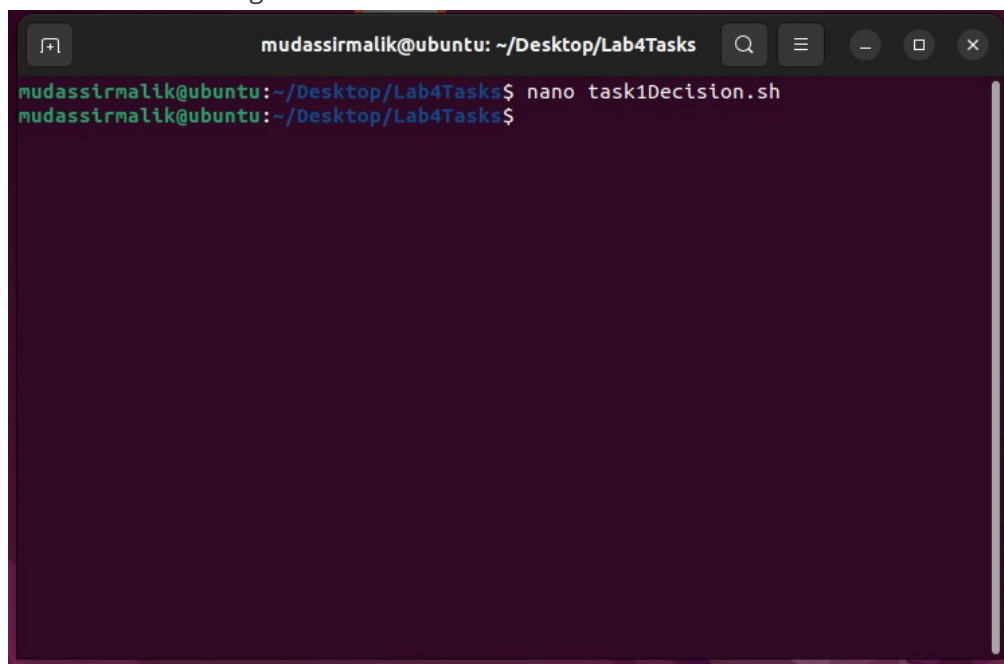
## Question-02

Create a Bash script which will print a message based upon which day of the week it is (eg. 3 for Wednesday, 5 for Friday etc) using switch statement.

## Solution

```
nano task2Decision.sh
```

Open the terminal based text editor using the nano keyword follow by the file name where the file will be stored. e.g

A terminal window titled 'mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks' showing the command 'nano task1Decision.sh' being entered at the prompt. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'.

```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ nano task1Decision.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

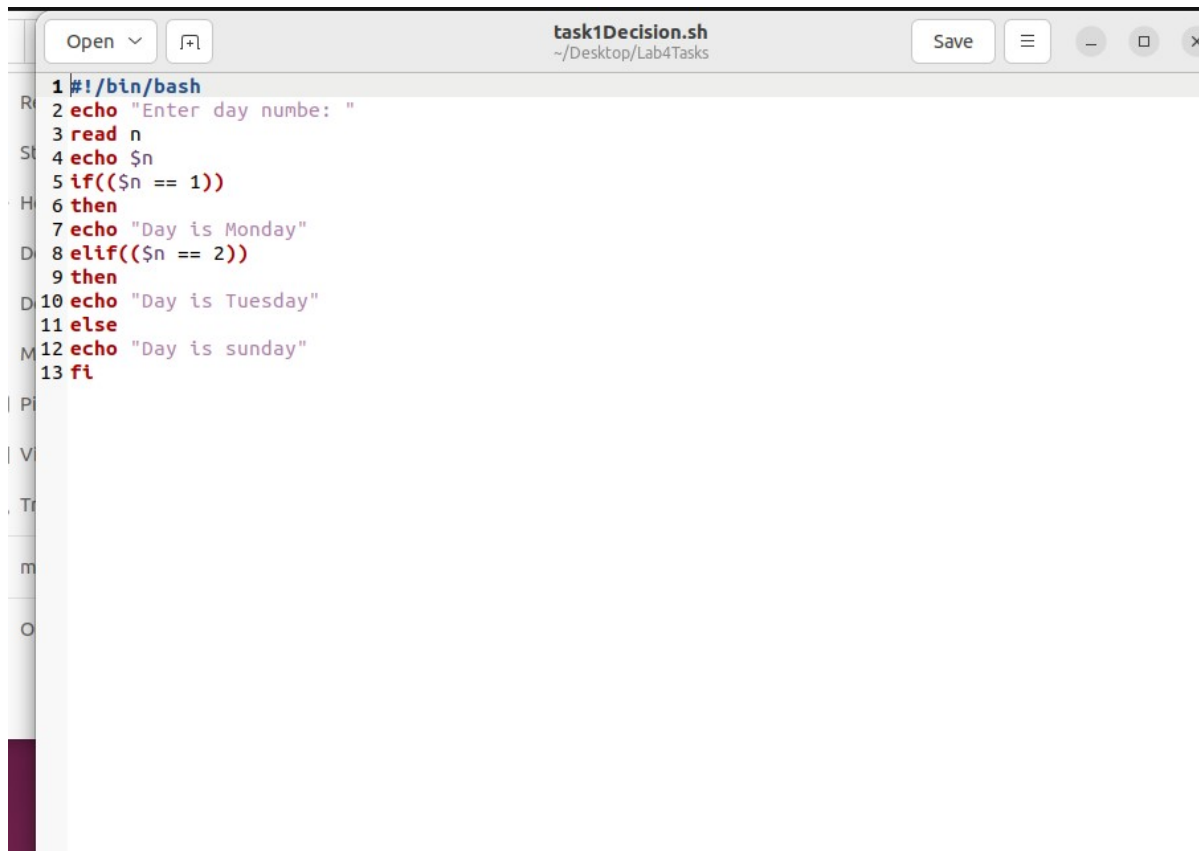
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g

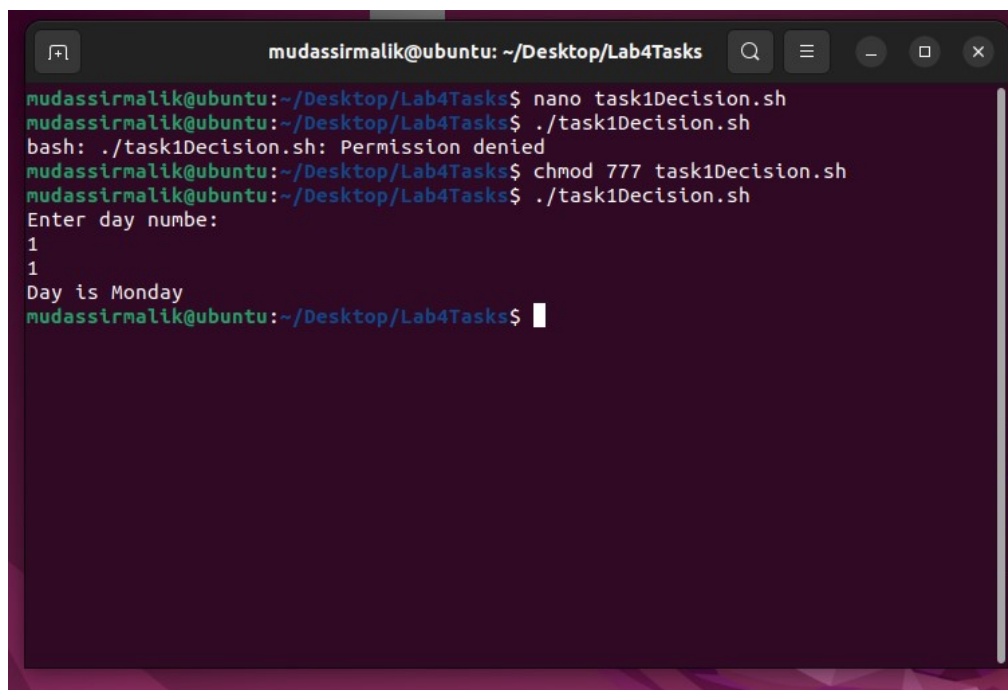


```
1#!/bin/bash
2echo "Enter day numbe: "
3read n
4echo $n
5if(($n == 1))
6then
7echo "Day is Monday"
8elif(($n == 2))
9then
10echo "Day is Tuesday"
11else
12echo "Day is sunday"
13fi
```

Run the file on the terminal using the following command

```
./task2Decision.sh
```

It will run the the script on the terminal.e.g



```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ nano task1Decision.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task1Decision.sh
bash: ./task1Decision.sh: Permission denied
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ chmod 777 task1Decision.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task1Decision.sh
Enter day numbe:
1
1
Day is Monday
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

## 2. Loops

Loops are used to perform the repetitive task in the easier way.

### Syntax

```
while ((condition))  
do  
then # *block of code to be executed if while the condition is true*  
done
```

**Note** Make sure that you close the loop with then keyword.

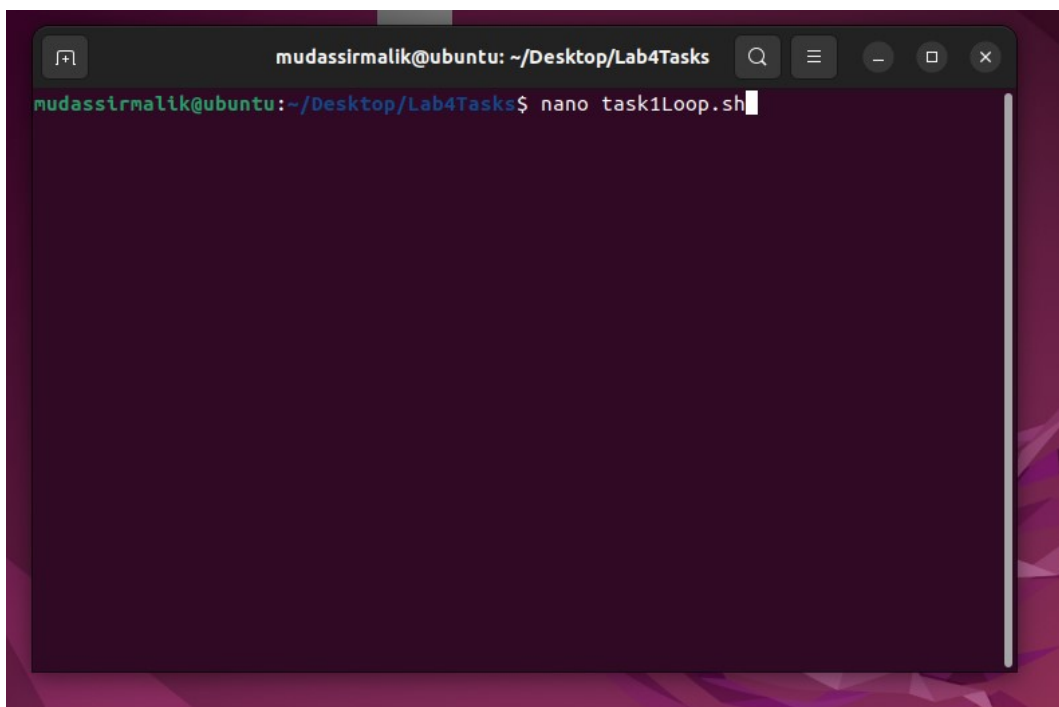
### Question-01

Create a simple script which will print the numbers 1 - 10 (each on a separate line) and whether they are even or odd.

### Solution

```
nano task1Loop.sh
```

Open the terminal based text editor using the Nano keyword follow by the file name where the file will be stored. e.g



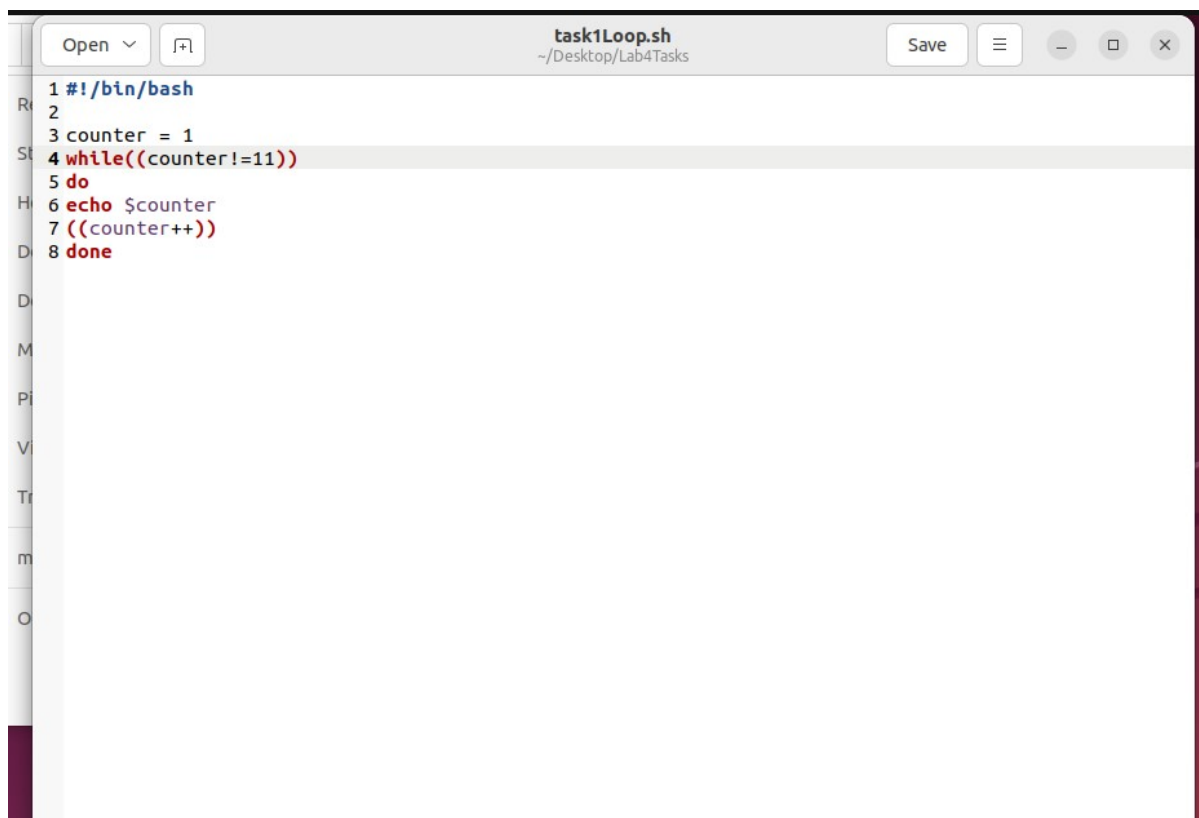
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g

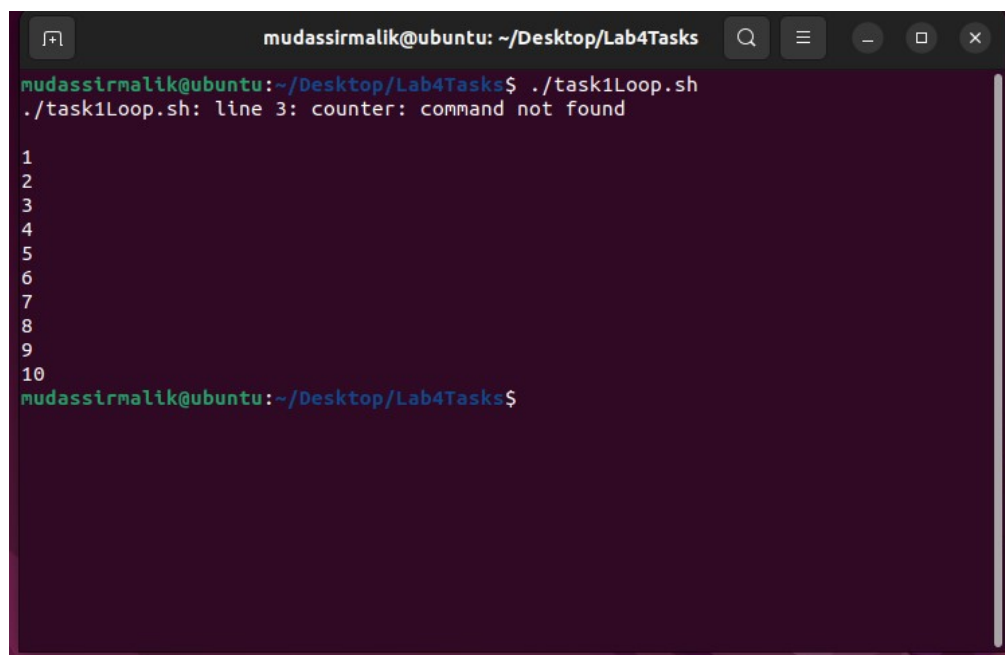


```
1 #!/bin/bash
2
3 counter = 1
4 while((counter!=11))
5 do
6 echo $counter
7 ((counter++))
8 done
```

Run the file on the terminal using the following command

```
./ task1Loop.sh
```

It will run the the script on the terminal.e.g



```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task1Loop.sh
./task1Loop.sh: line 3: counter: command not found

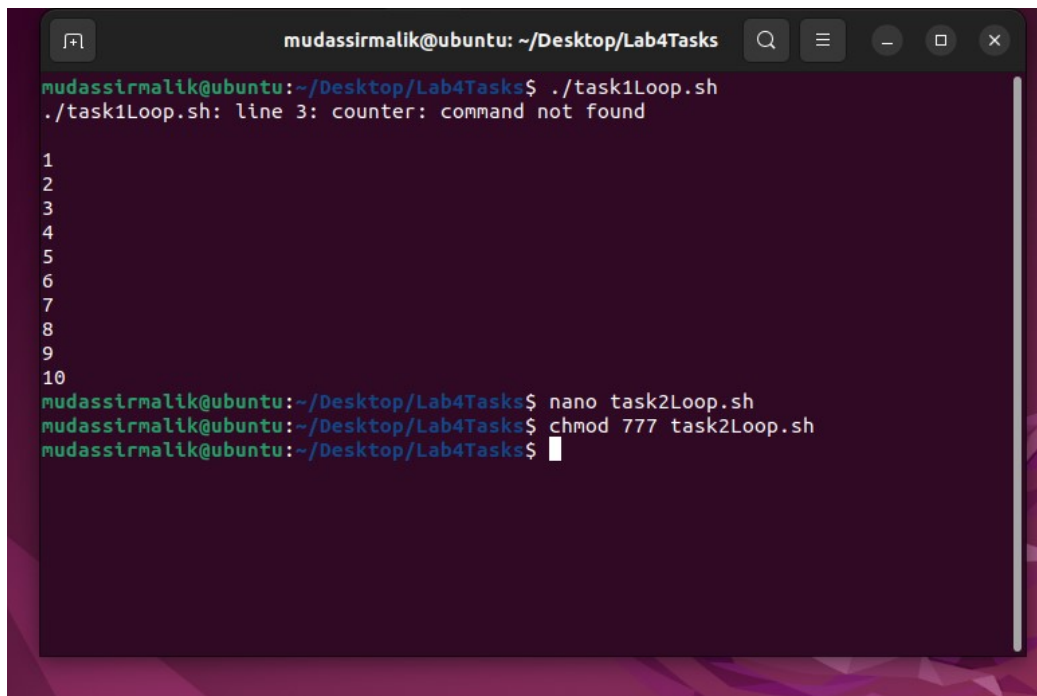
1
2
3
4
5
6
7
8
9
10
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

## Question-02

### Solution

```
nano task2Loop.sh
```

Open the terminal based text editor using the Nano keyword follow by the file name where the file will be stored. e.g



```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task1Loop.sh
./task1Loop.sh: line 3: counter: command not found
1
2
3
4
5
6
7
8
9
10
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ nano task2Loop.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ chmod 777 task2Loop.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g



```
task2Loop.sh
~/Desktop/Lab4Tasks
1 #!/bin/bash
2 echo "Enter number length: "
3 read counter
4 echo "Enter number: "
5 read n
6 sum=0
7 while((counter!=0))
8 do
9 ((sum+=n%10))
10 ((n=n/10))
11 ((counter--))
12 done
13 echo "Sum is: " $sum
```

Run the file on the terminal using the following command

```
./ task2Loop.sh
```

It will run the the script on the terminal.e.g

```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tas
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task2Loop.s
Enter number length:
4
Enter number:
1234
Sum is: 10
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

### 3. Functions

Functions are used to divide the all program or set of instruction into smaller independent parts

#### Syntax

```
function functionName{
    # *block of code to be executed when the control will be enter*
}
```

**Note** Make sure that you start and end with curly brackets.

#### Question-01

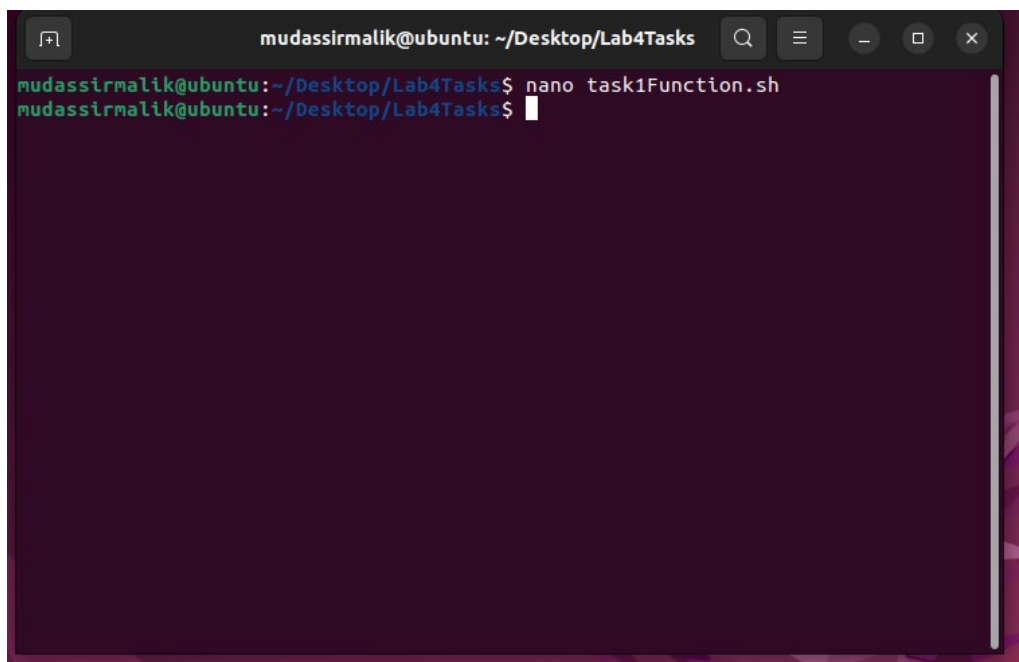
Write a shell script which takes a positive integer as an argument on the terminal and then checks if it is a palindrome or not. In order to find the reverse of this number it must be passed to function named reverse(), which computes the reverse and passes both, the number and its reverse to another function called palindromeCheck(). palindromeCheck() then compares the numbers and echoes if the number is a palindrome or not.

#### Solution

```
nano task1Function.sh
```

Open the terminal based text editor using the Nano keyword follow by the file name where the file will be stored. e.g



A terminal window titled 'mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks'. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'. The command 'nano task1Function.sh' has been entered, and the cursor is at the end of the line.

```
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ nano task1Function.sh
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```

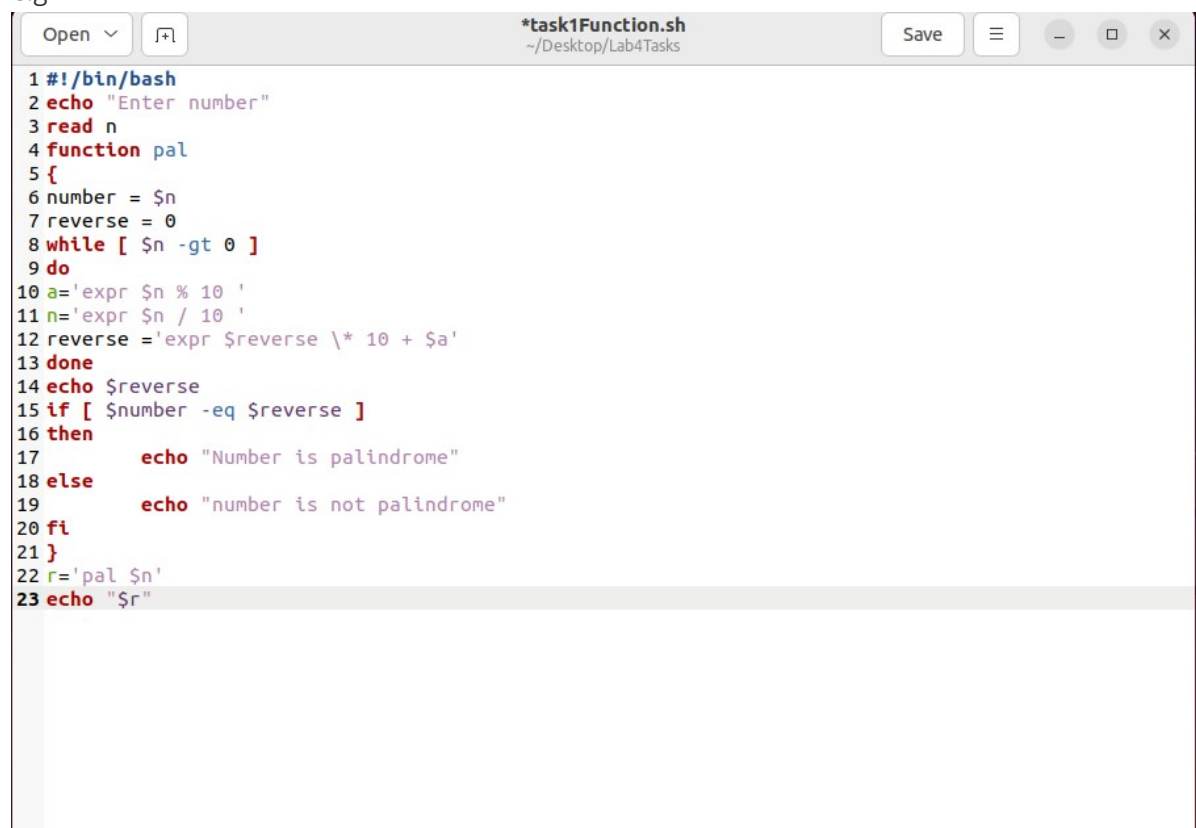
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g

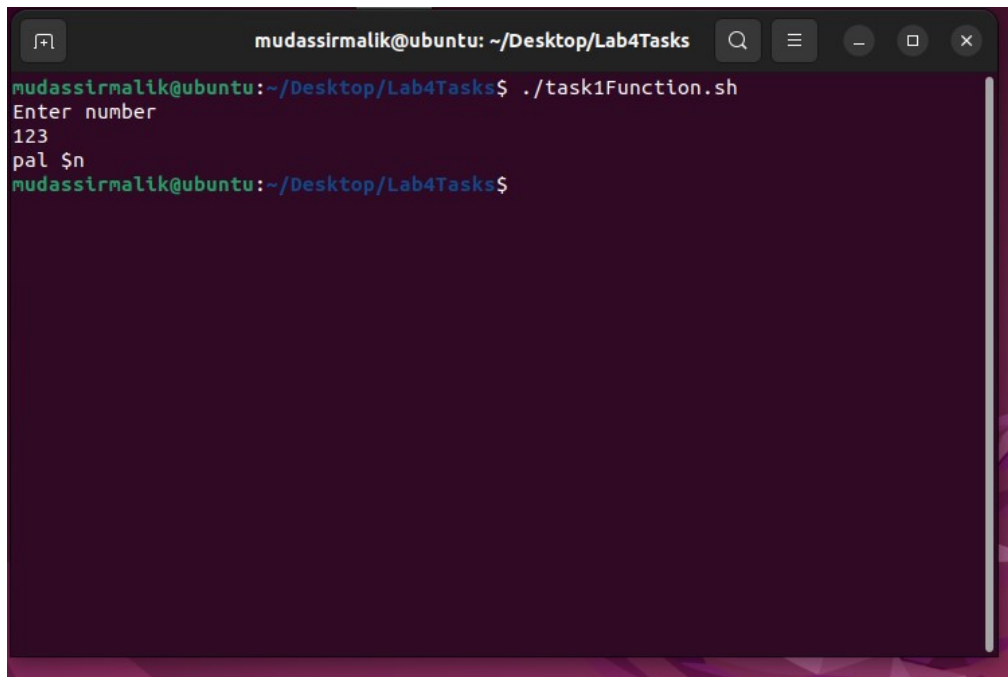
A screenshot of the nano text editor window titled '\*task1Function.sh' with the path '~ / Desktop / Lab4Tasks'. The window contains a shell script for checking if a number is a palindrome. The script uses a while loop to reverse the digits of the input number and then compares the original number with the reversed number. The script is as follows:

```
1#!/bin/bash
2echo "Enter number"
3read n
4function pal
5{
6number = $n
7reverse = 0
8while [ $n -gt 0 ]
9do
10a='expr $n % 10 '
11n='expr $n / 10 '
12reverse ='expr $reverse \* 10 + $a'
13done
14echo $reverse
15if [ $number -eq $reverse ]
16then
17    echo "Number is palindrome"
18else
19    echo "number is not palindrome"
20fi
21}
22r='pal $n'
23echo "$r"
```

Run the file on the terminal using the following command

```
./ task1Function.sh
```

It will run the the script on the terminal.e.g

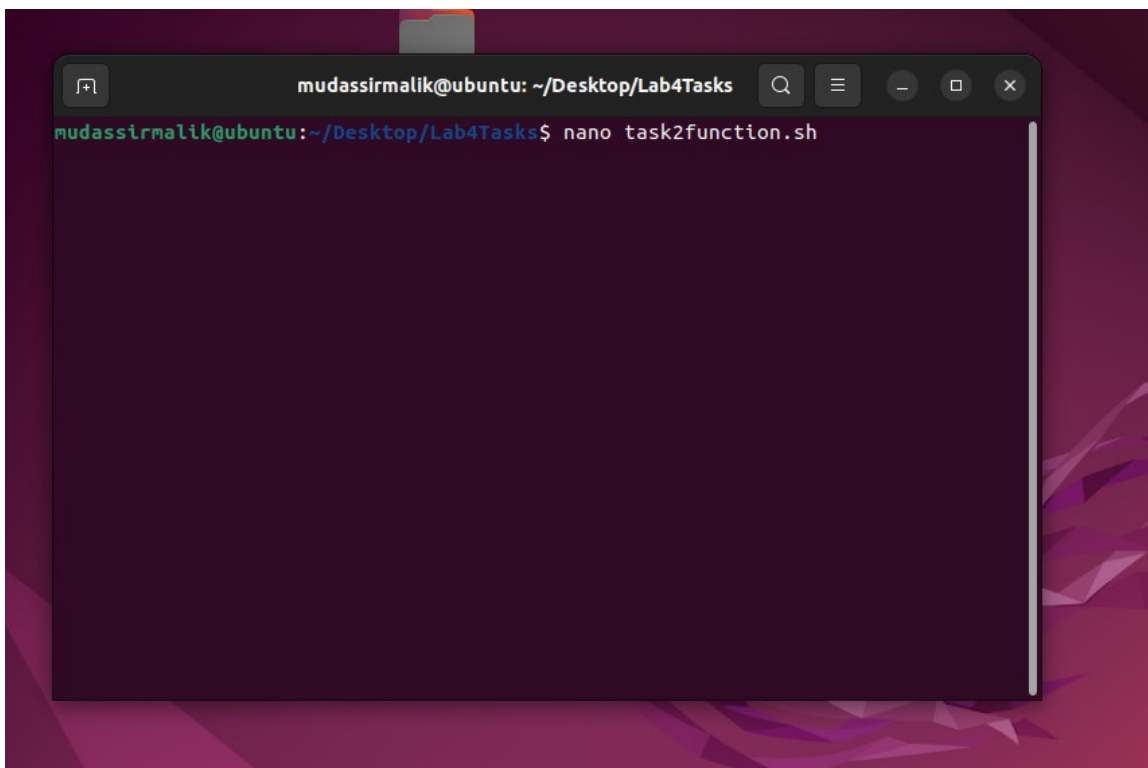
A terminal window titled 'mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks' with search, menu, and window control icons. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'. The user has entered './task1Function.sh'. The script outputs 'Enter number' followed by '123' and 'pal \$n'. The prompt returns to 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'.

## Question-02

### Solution

```
nano task2function.sh
```

Open the terminal based text editor using the Nano keyword follow by the file name where the file will be stored. e.g

A terminal window titled 'mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks' with search, menu, and window control icons. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'. The user has entered 'nano task2function.sh'. The terminal is now in the Nano text editor, which is currently empty.

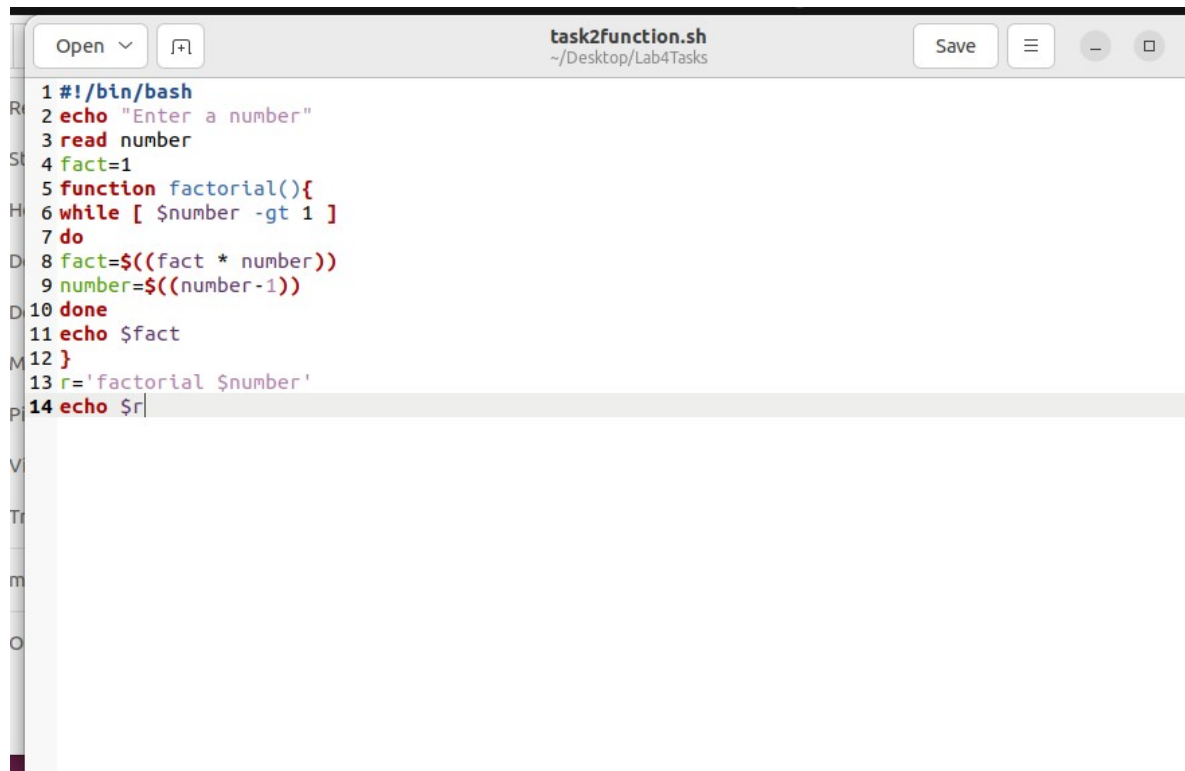
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g

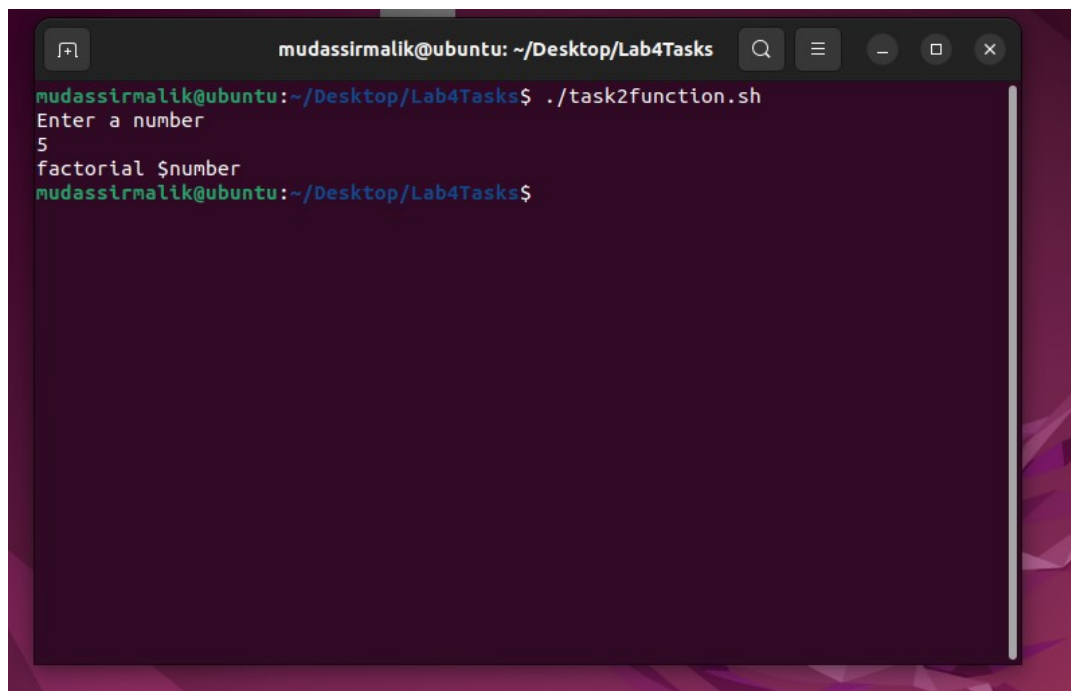


```
1#!/bin/bash
2echo "Enter a number"
3read number
4fact=1
5function factorial(){
6while [ $number -gt 1 ]
7do
8fact=$((fact * number))
9number=$((number-1))
10done
11echo $fact
12}
13r='factorial $number'
14echo $r
```

Run the file on the terminal using the following command

```
./ task2function.sh
```

It will run the the script on the terminal.e.g



```
mudassirmalik@ubuntu: ~/Desktop/Lab4Tasks
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task2function.sh
Enter a number
5
factorial $number
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$
```