

# Lab 4 Shell Scripting Tasks

**Submitted to: Mr. Noman Shafi**

**Submitted by: Hamza Waseem (2022-CS-54)**

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

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

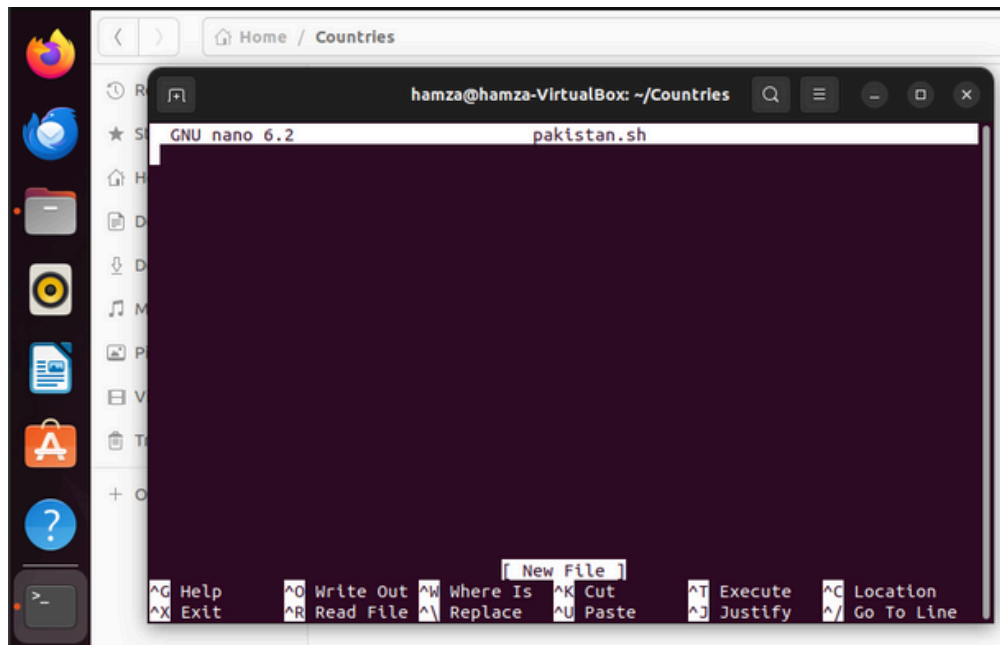
#### Question-01

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 pakistan.sh
```

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

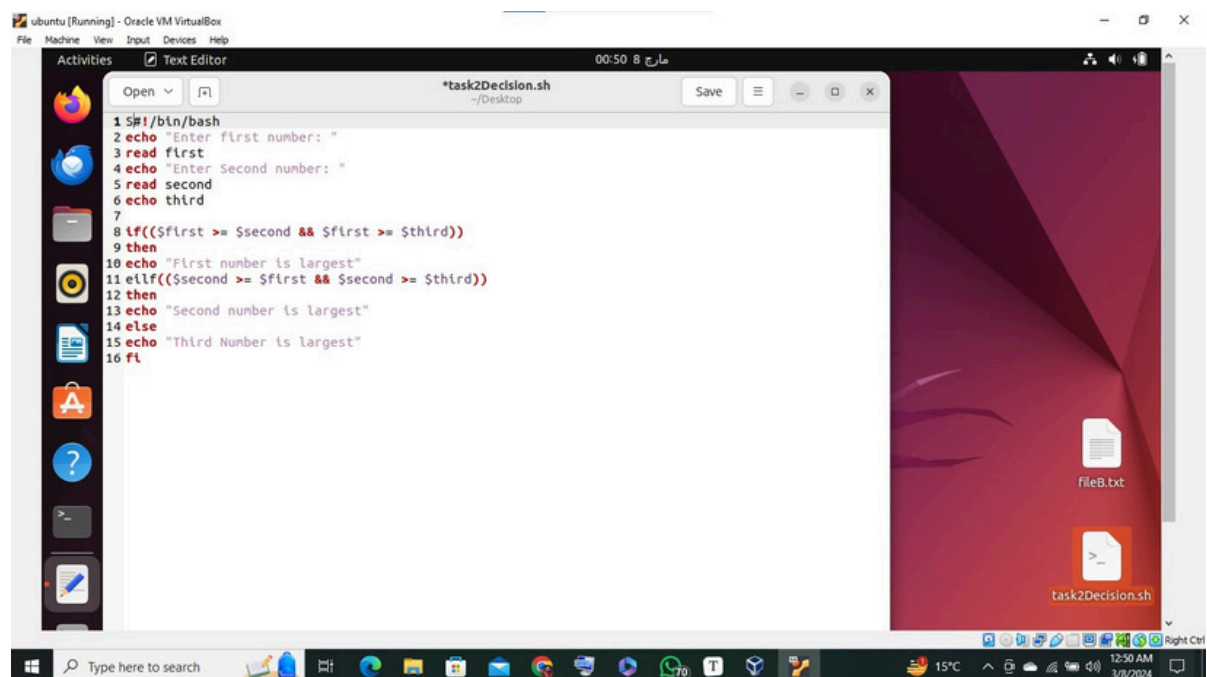


After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

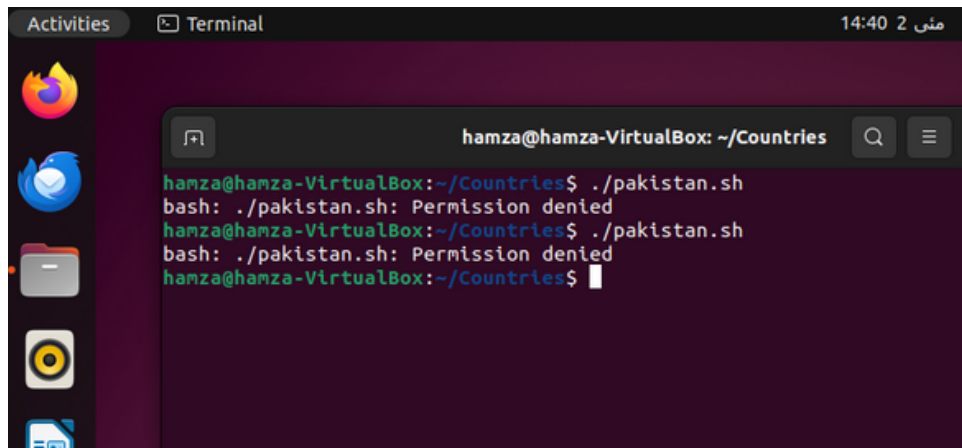
Press Enter to close the Nano text editor e.g



Run the file on the terminal using the following command

```
./pakistan.sh
```

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

A terminal window titled 'Terminal' with a dark purple background. The prompt is 'hamza@hamza-VirtualBox: ~/Countries'. The user enters './pakistan.sh' and the terminal outputs 'bash: ./pakistan.sh: Permission denied'. The user enters the command again, and the terminal outputs 'bash: ./pakistan.sh: Permission denied' again. The prompt is now 'hamza@hamza-VirtualBox:~/Countries\$'.

```
hamza@hamza-VirtualBox:~/Countries$ ./pakistan.sh
bash: ./pakistan.sh: Permission denied
hamza@hamza-VirtualBox:~/Countries$ ./pakistan.sh
bash: ./pakistan.sh: Permission denied
hamza@hamza-VirtualBox:~/Countries$
```

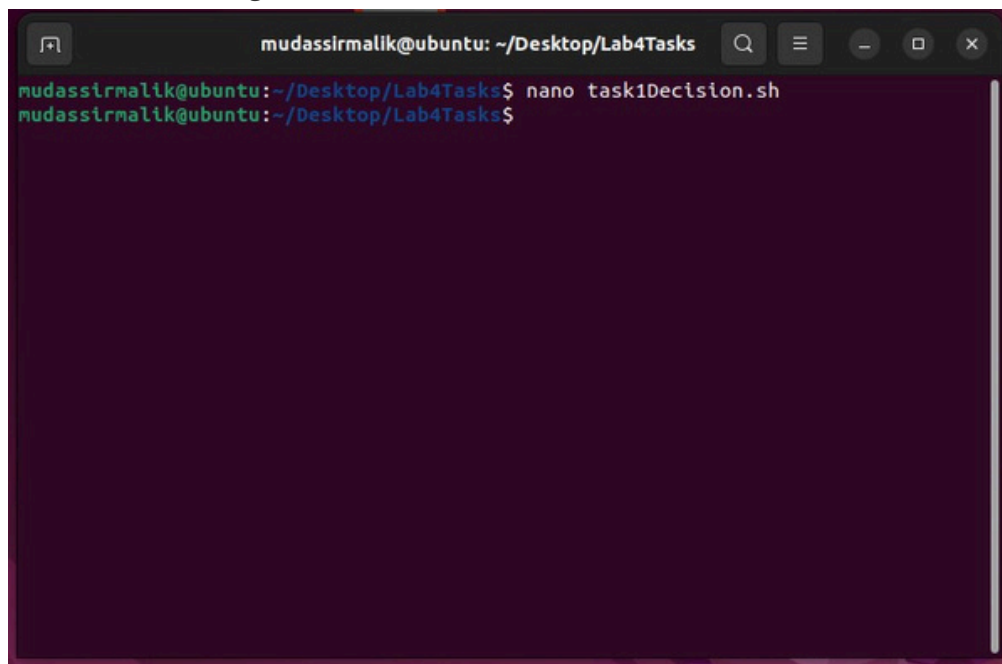
## Question-02

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'. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'. The user enters 'nano task1Decision.sh' and the terminal outputs '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

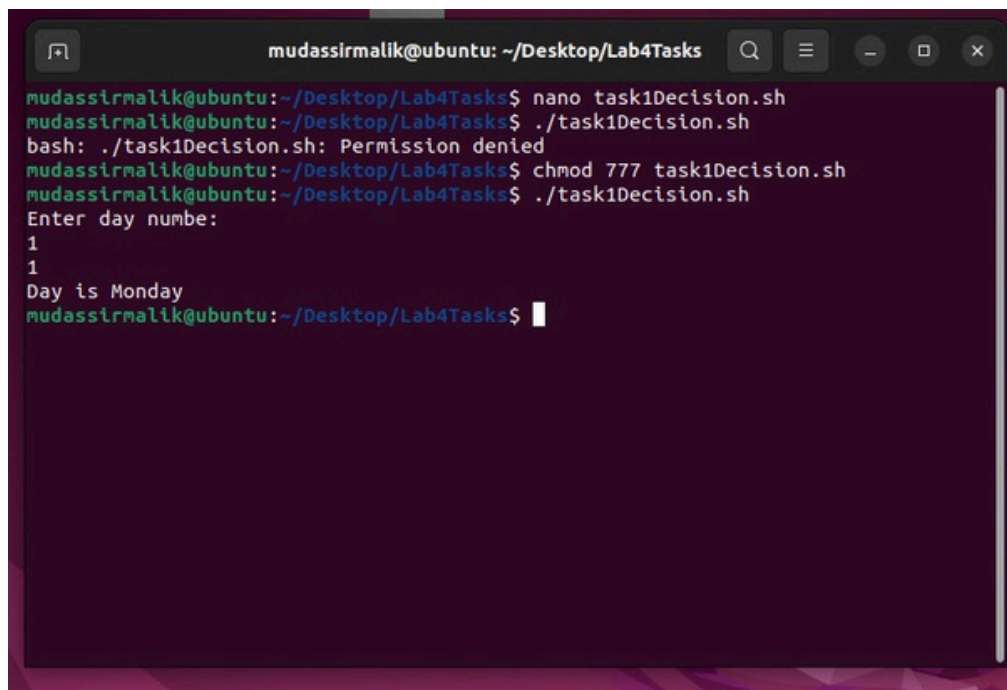


```
1#!/bin/bash
2echo "Enter day numbe: "
3read n
4echo $n
5if(($n == 1))
6then
7echo "Day is Monday"
8elif(($n == 2))
9then
10echo "Day is Tuesday"
11else
12echo "Day is sunday"
13fi
```

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 task1Deciston.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.

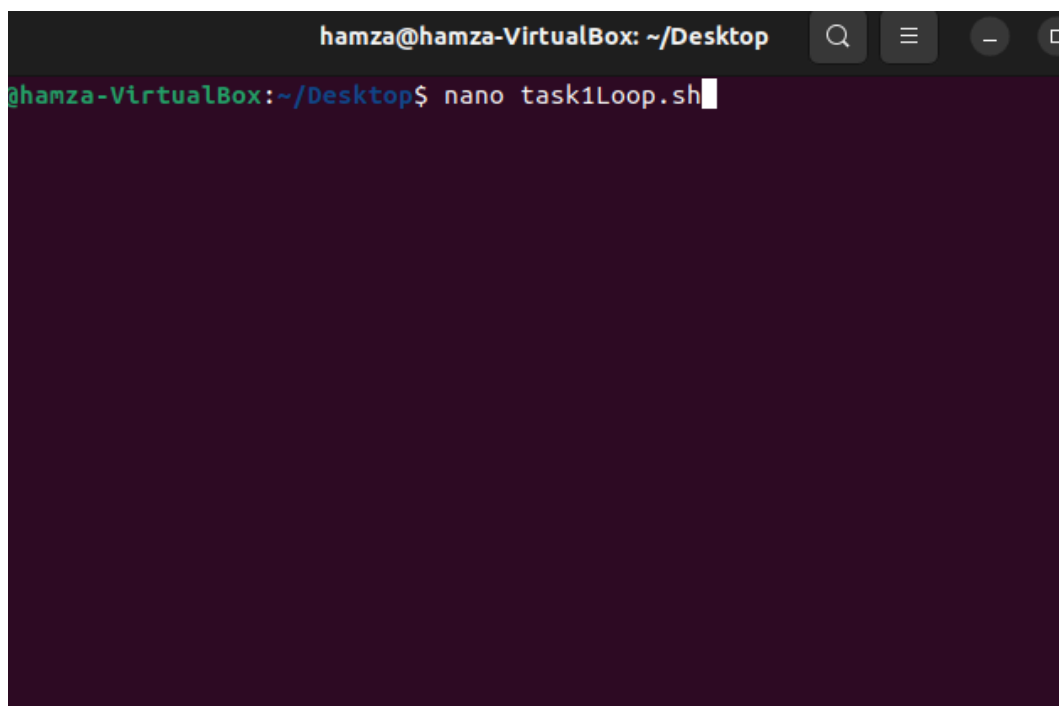
### Question-01

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

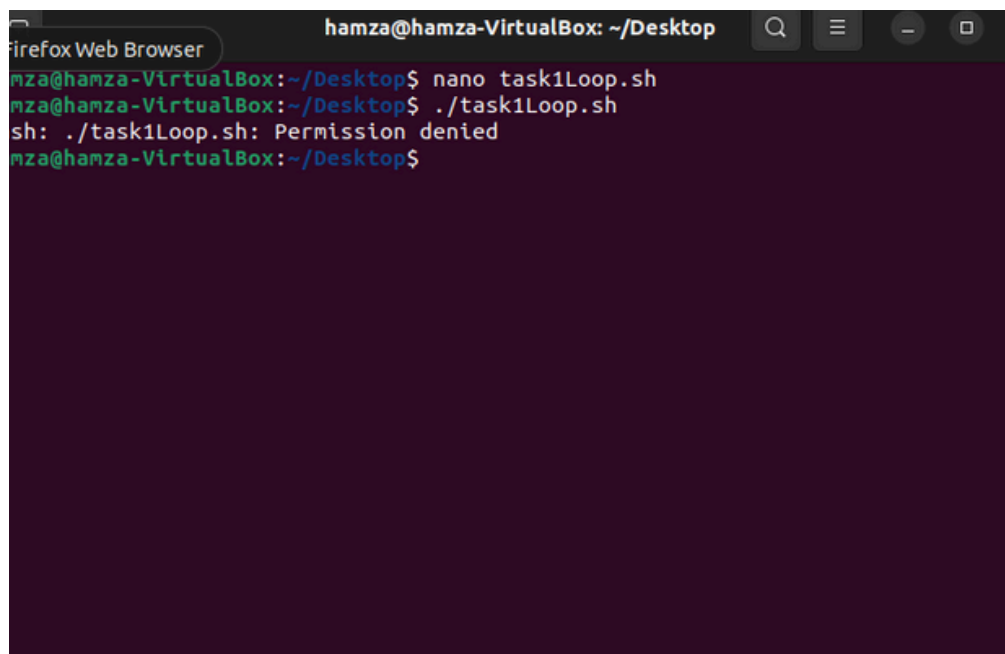


```
1 #!/bin/bash
2
3 counter = 1
4 while((counter!=11))
5 do
6 echo $counter
7 ((counter++))
8 done
```

Run the file on the terminal using the following command

```
./ task1Loop.sh
```

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



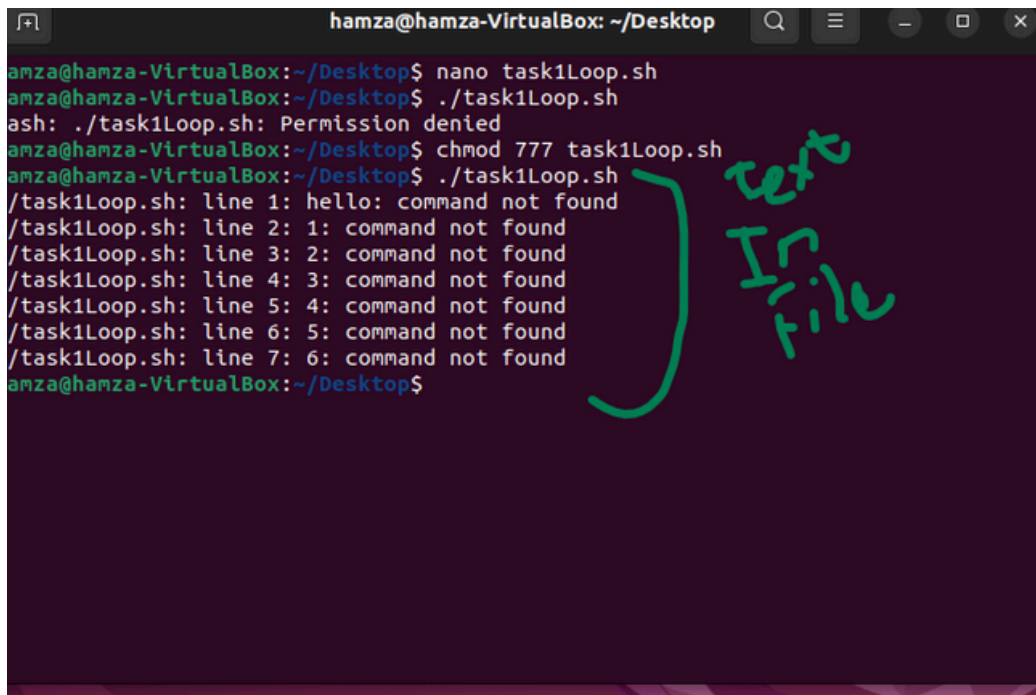
```
hamza@hamza-VirtualBox: ~/Desktop
hamza@hamza-VirtualBox:~/Desktop$ nano task1Loop.sh
hamza@hamza-VirtualBox:~/Desktop$ ./task1Loop.sh
1
2
3
4
5
6
7
8
9
10
hamza@hamza-VirtualBox:~/Desktop$
```

## 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



```
hamza@hamza-VirtualBox: ~/Desktop
amza@hamza-VirtualBox:~/Desktop$ nano task1Loop.sh
amza@hamza-VirtualBox:~/Desktop$ ./task1Loop.sh
ash: ./task1Loop.sh: Permission denied
amza@hamza-VirtualBox:~/Desktop$ chmod 777 task1Loop.sh
amza@hamza-VirtualBox:~/Desktop$ ./task1Loop.sh
/task1Loop.sh: line 1: hello: command not found
/task1Loop.sh: line 2: 1: command not found
/task1Loop.sh: line 3: 2: command not found
/task1Loop.sh: line 4: 3: command not found
/task1Loop.sh: line 5: 4: command not found
/task1Loop.sh: line 6: 5: command not found
/task1Loop.sh: line 7: 6: command not found
amza@hamza-VirtualBox:~/Desktop$
```

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

```
hamza@hamza-VirtualBox: ~/Desktop
mudassirmalik@ubuntu:~/Desktop/Lab4Tasks$ ./task2Loop
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



```
1Loop.sh: line 5: 4: command not found
1Loop.sh: line 6: 5: command not found
1Loop.sh: line 7: 6: command not found
hamza-VirtualBox:~/Desktop$ nano task2.sh
```


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



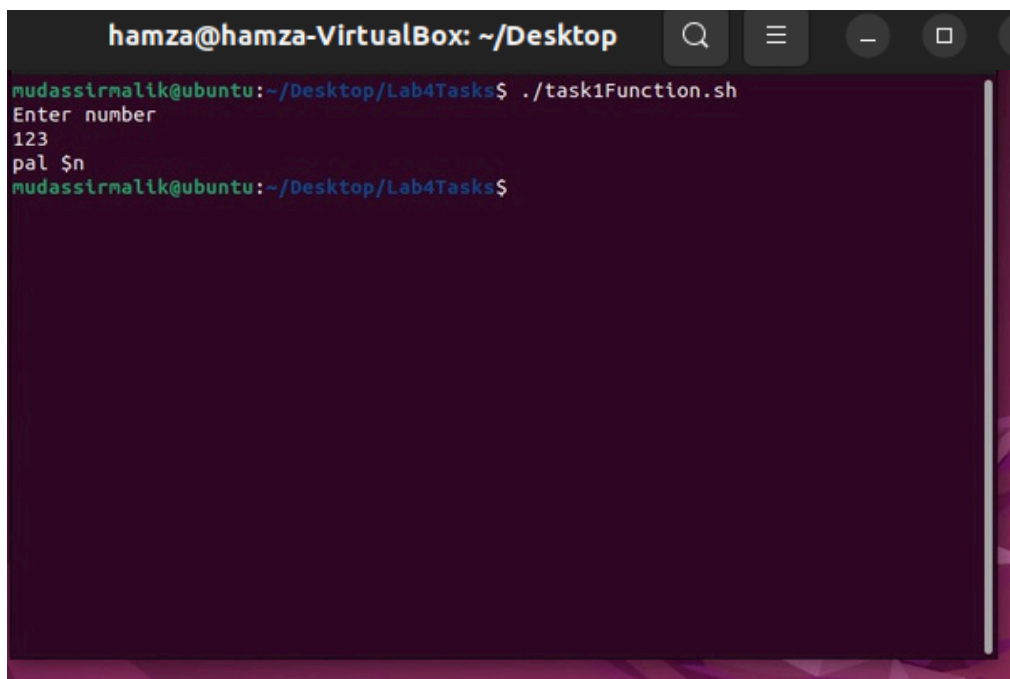
```
*task1Function.sh
~/Desktop/Lab4Tasks

1 #!/bin/bash
2 echo "Enter number"
3 read n
4 function pal
5 {
6 number = $n
7 reverse = 0
8 while [ $n -gt 0 ]
9 do
10 a='expr $n % 10 '
11 n='expr $n / 10 '
12 reverse ='expr $reverse \* 10 + $a'
13 done
14 echo $reverse
15 if [ $number -eq $reverse ]
16 then
17     echo "Number is palindrome"
18 else
19     echo "number is not palindrome"
20 fi
21 }
22 r='pal $n'
23 echo "$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 'hamza@hamza-VirtualBox: ~/Desktop'. The prompt is 'mudassirmalik@ubuntu:~/Desktop/Lab4Tasks\$'. The user has run './task1Function.sh'. The script prompts 'Enter number' and the user has entered '123'. The script then prompts 'pal \$n' and the user has entered 'pal \$n'. The prompt is now '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

```
hamza@hamza-VirtualBox:~/Desktop$ nano task2Functionio
```

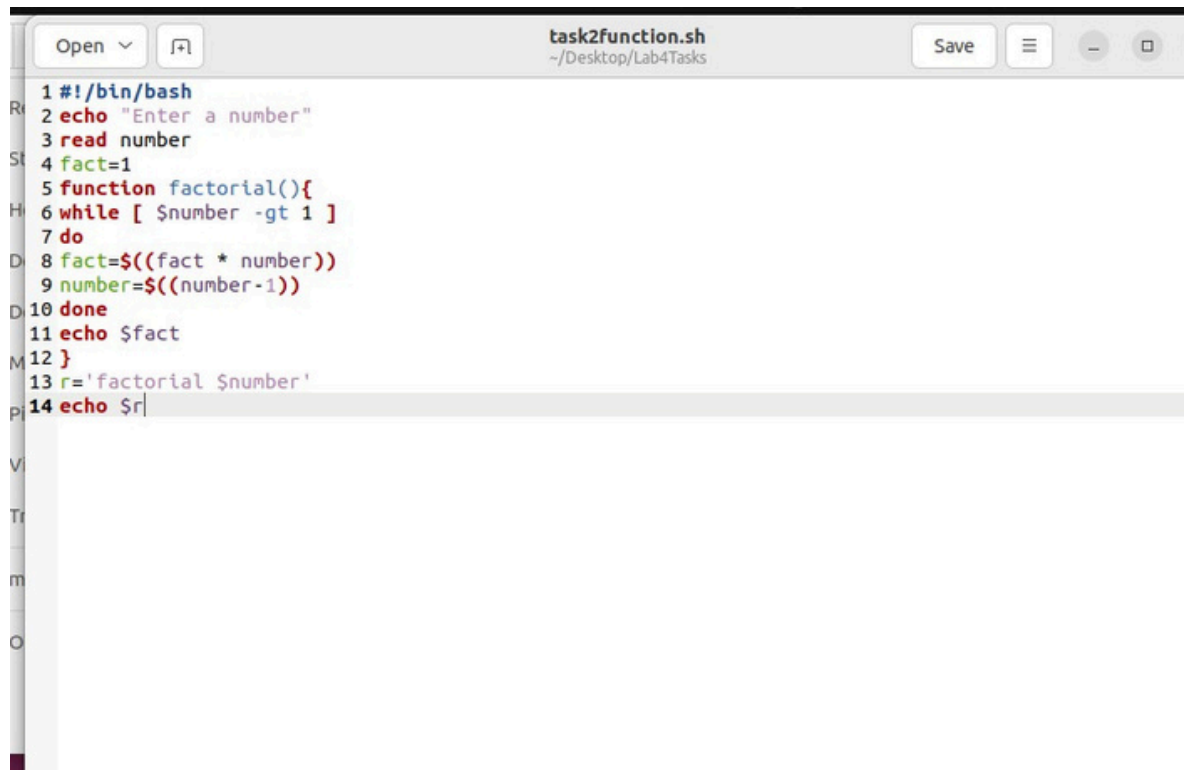
After writing the code into the terminal

Press CTRL+X command to save the file

Save modify buffer by pressing Y

Press Enter to close the Nano text editor

e.g

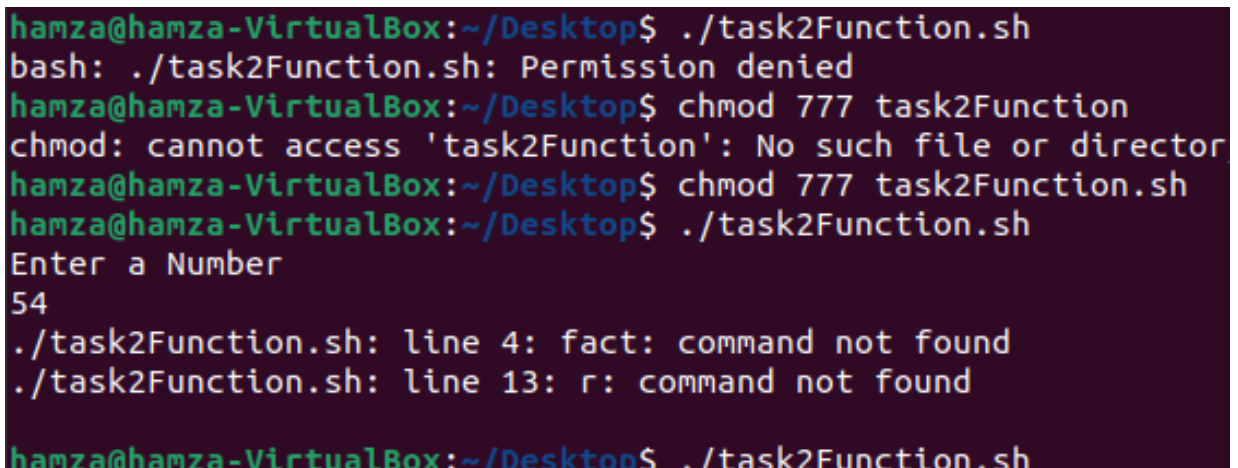


```
1 #!/bin/bash
2 echo "Enter a number"
3 read number
4 fact=1
5 function factorial(){
6 while [ $number -gt 1 ]
7 do
8 fact=$((fact * number))
9 number=$((number-1))
10 done
11 echo $fact
12 }
13 r='factorial $number'
14 echo $r
```

Run the file on the terminal using the following command

```
./ task2function.sh
```

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



```
hamza@hamza-VirtualBox:~/Desktop$ ./task2Function.sh
bash: ./task2Function.sh: Permission denied
hamza@hamza-VirtualBox:~/Desktop$ chmod 777 task2Function
chmod: cannot access 'task2Function': No such file or director
hamza@hamza-VirtualBox:~/Desktop$ chmod 777 task2Function.sh
hamza@hamza-VirtualBox:~/Desktop$ ./task2Function.sh
Enter a Number
54
./task2Function.sh: line 4: fact: command not found
./task2Function.sh: line 13: r: command not found
hamza@hamza-VirtualBox:~/Desktop$ ./task2Function.sh
```