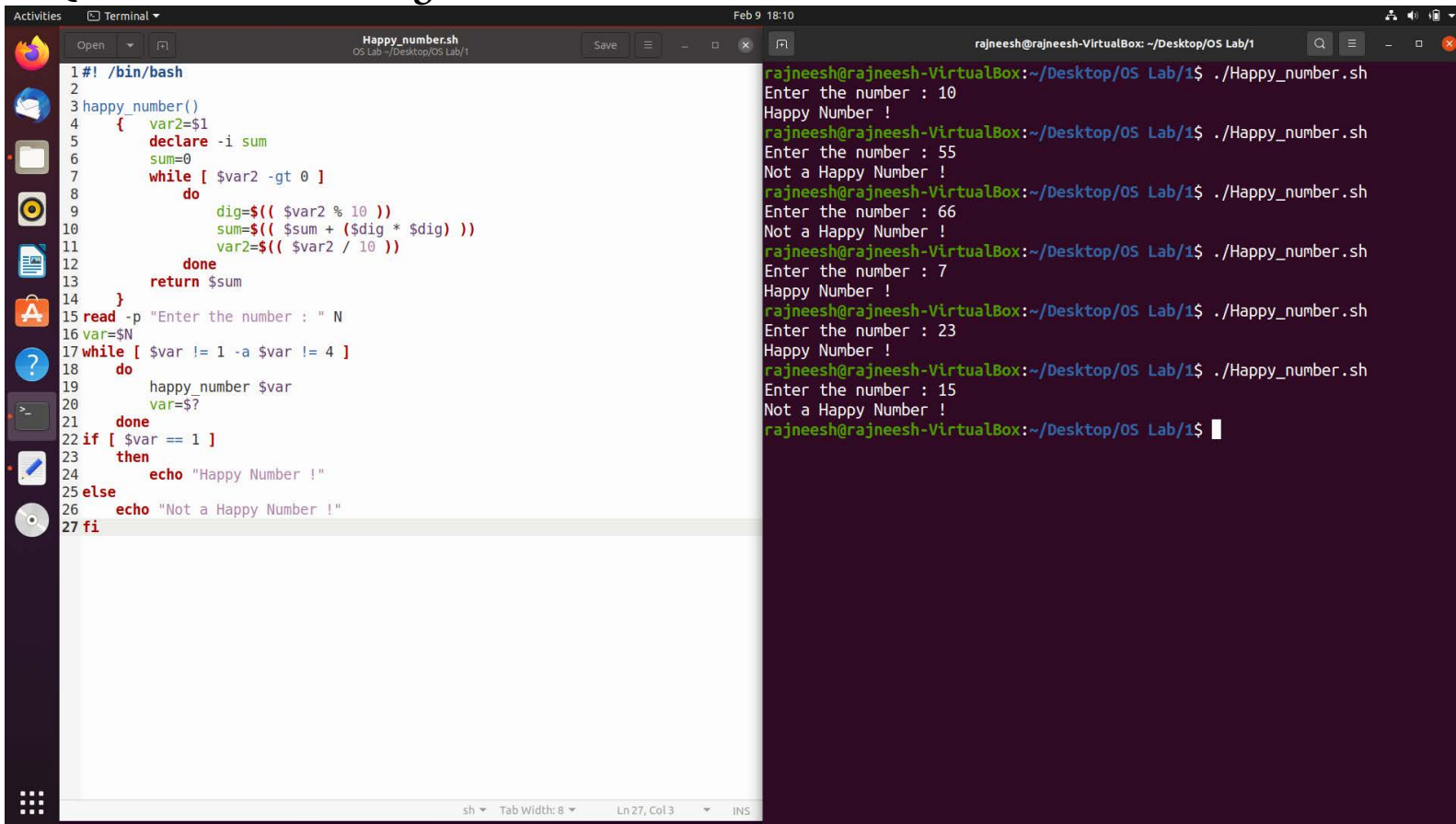


## Question 1: Sum of Digits

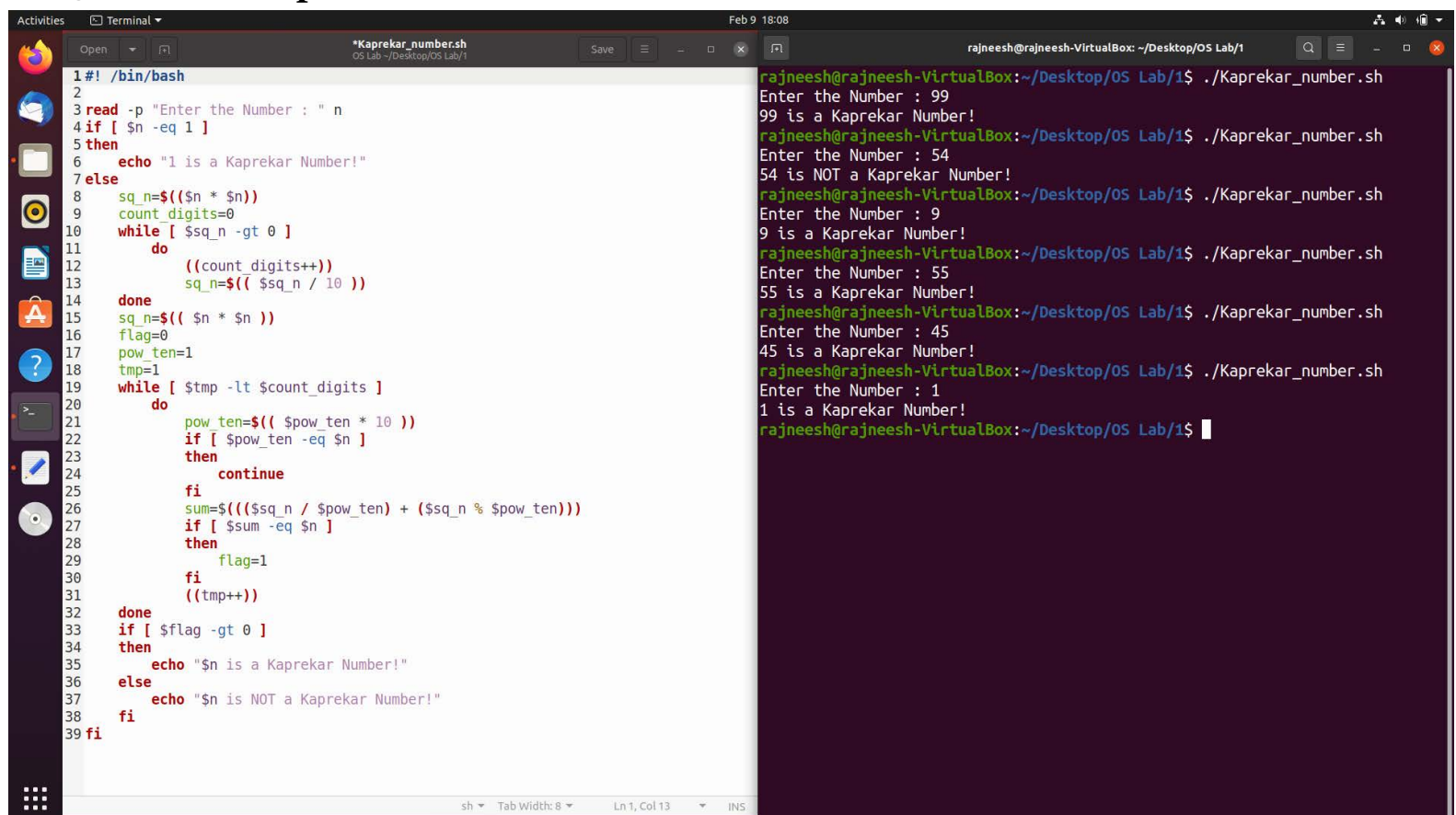


The screenshot shows a terminal window with two panes. The left pane displays the source code of a shell script named 'Happy\_number.sh'. The script defines a function 'happy\_number()' that calculates the sum of digits of a number and checks if it is a 'Happy Number'. The right pane shows the output of running this script with various inputs.

```
1 #!/bin/bash
2
3 happy_number()
4 {
5     declare -i sum
6     sum=0
7     while [ $var2 -gt 0 ]
8     do
9         dig=$(( $var2 % 10 ))
10        sum=$(( $sum + ($dig * $dig) ))
11        var2=$(( $var2 / 10 ))
12    done
13    return $sum
14 }
15 read -p "Enter the number : " N
16 var=$N
17 while [ $var != 1 -a $var != 4 ]
18 do
19     happy_number $var
20     var=$?
21 done
22 if [ $var == 1 ]
23 then
24     echo "Happy Number !"
25 else
26     echo "Not a Happy Number !"
27 fi
```

rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1  
Enter the number : 10  
Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Happy\_number.sh  
Enter the number : 55  
Not a Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Happy\_number.sh  
Enter the number : 66  
Not a Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Happy\_number.sh  
Enter the number : 7  
Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Happy\_number.sh  
Enter the number : 23  
Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Happy\_number.sh  
Enter the number : 15  
Not a Happy Number !  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$

## Question 2: Kaprekar Number

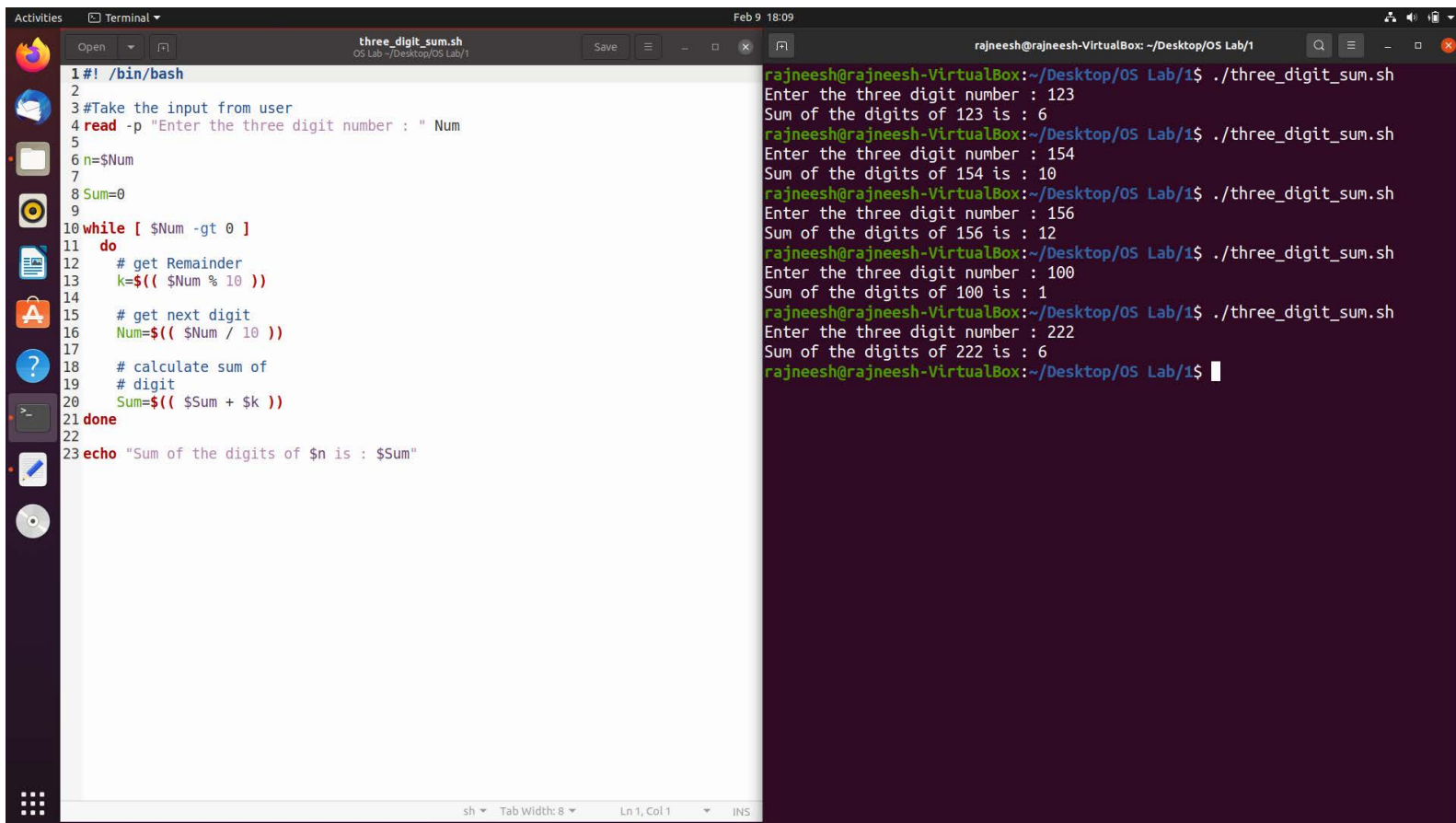


The screenshot shows a terminal window with two panes. The left pane displays the source code of a shell script named 'Kaprekar\_numbers.sh'. The script takes a number 'n' as input and checks if it is a Kaprekar number by comparing the sum of the squares of its digits to the number itself. The right pane shows the output of running this script with various inputs.

```
1 #!/bin/bash
2
3 read -p "Enter the Number : " n
4 if [ $n -eq 1 ]
5 then
6     echo "1 is a Kaprekar Number!"
7 else
8     sq_n=$(( $n * $n ))
9     count_digits=0
10    while [ $sq_n -gt 0 ]
11    do
12        ((count_digits++))
13        sq_n=$(( $sq_n / 10 ))
14    done
15    sq_n=$(( $n * $n ))
16    flag=0
17    pow_ten=1
18    tmp=1
19    while [ $tmp -lt $count_digits ]
20    do
21        pow_ten=$(( $pow_ten * 10 ))
22        if [ $pow_ten -eq $n ]
23        then
24            continue
25        fi
26        sum=$(( ($sq_n / $pow_ten) + ($sq_n % $pow_ten) ))
27        if [ $sum -eq $n ]
28        then
29            flag=1
30        fi
31        ((tmp++))
32    done
33    if [ $flag -gt 0 ]
34    then
35        echo "$n is a Kaprekar Number!"
36    else
37        echo "$n is NOT a Kaprekar Number!"
38    fi
39 fi
```

rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 99  
99 is a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 54  
54 is NOT a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 9  
9 is a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 55  
55 is a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 45  
45 is a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./Kaprekar\_number.sh  
Enter the Number : 1  
1 is a Kaprekar Number!  
rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$

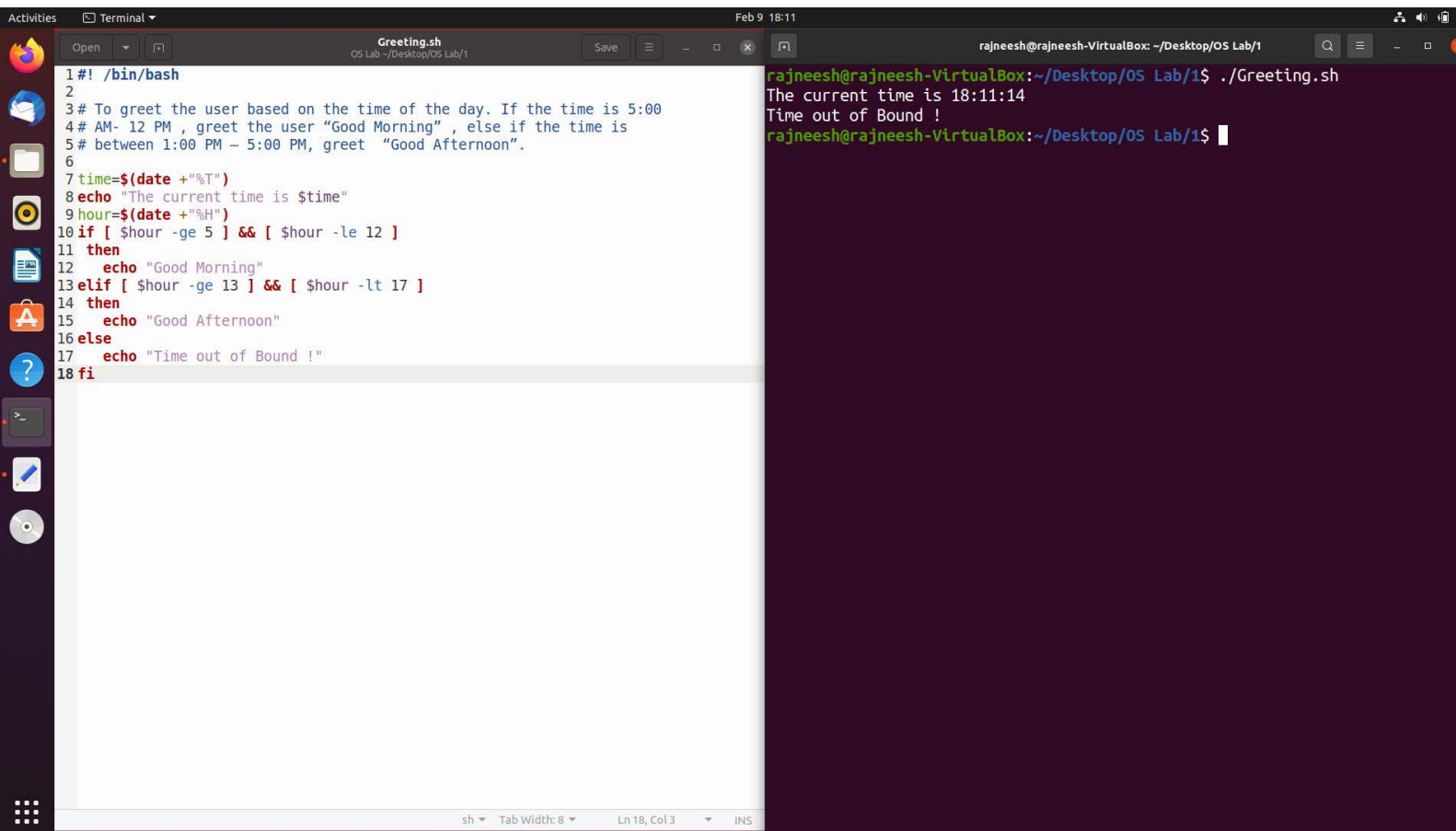
## Question 3: Happy Number



```
1#!/bin/bash
2
3#Take the input from user
4read -p "Enter the three digit number : " Num
5
6n=$Num
7
8Sum=0
9
10while [ $Num -gt 0 ]
11do
12    # get Remainder
13    k=$(( $Num % 10 ))
14
15    # get next digit
16    Num=$(( $Num / 10 ))
17
18    # calculate sum of
19    # digit
20    Sum=$(( $Sum + $k ))
21done
22
23echo "Sum of the digits of $n is : $Sum"
```

rajneesh@rajneesh-VirtualBox: ~/Desktop/OS Lab/1\$ ./three\_digit\_sum.sh  
Enter the three digit number : 123  
Sum of the digits of 123 is : 6  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$ ./three\_digit\_sum.sh  
Enter the three digit number : 154  
Sum of the digits of 154 is : 10  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$ ./three\_digit\_sum.sh  
Enter the three digit number : 156  
Sum of the digits of 156 is : 12  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$ ./three\_digit\_sum.sh  
Enter the three digit number : 100  
Sum of the digits of 100 is : 1  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$ ./three\_digit\_sum.sh  
Enter the three digit number : 222  
Sum of the digits of 222 is : 6  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$

## Question 4: Time Greeting



```
1#!/bin/bash
2
3# To greet the user based on the time of the day. If the time is 5:00
4# AM- 12 PM , greet the user "Good Morning" , else if the time is
5# between 1:00 PM - 5:00 PM, greet "Good Afternoon".
6
7time=$(date +%T)
8echo "The current time is $time"
9hour=$(date +%H)
10if [ $hour -ge 5 ] && [ $hour -le 12 ]
11then
12    echo "Good Morning"
13elif [ $hour -ge 13 ] && [ $hour -lt 17 ]
14then
15    echo "Good Afternoon"
16else
17    echo "Time out of Bound !"
18fi
```

rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$ ./Greeting.sh  
The current time is 18:11:14  
Time out of Bound !  
rajneesh@rajneesh-VirtualBox:~/Desktop/OS Lab/1\$