

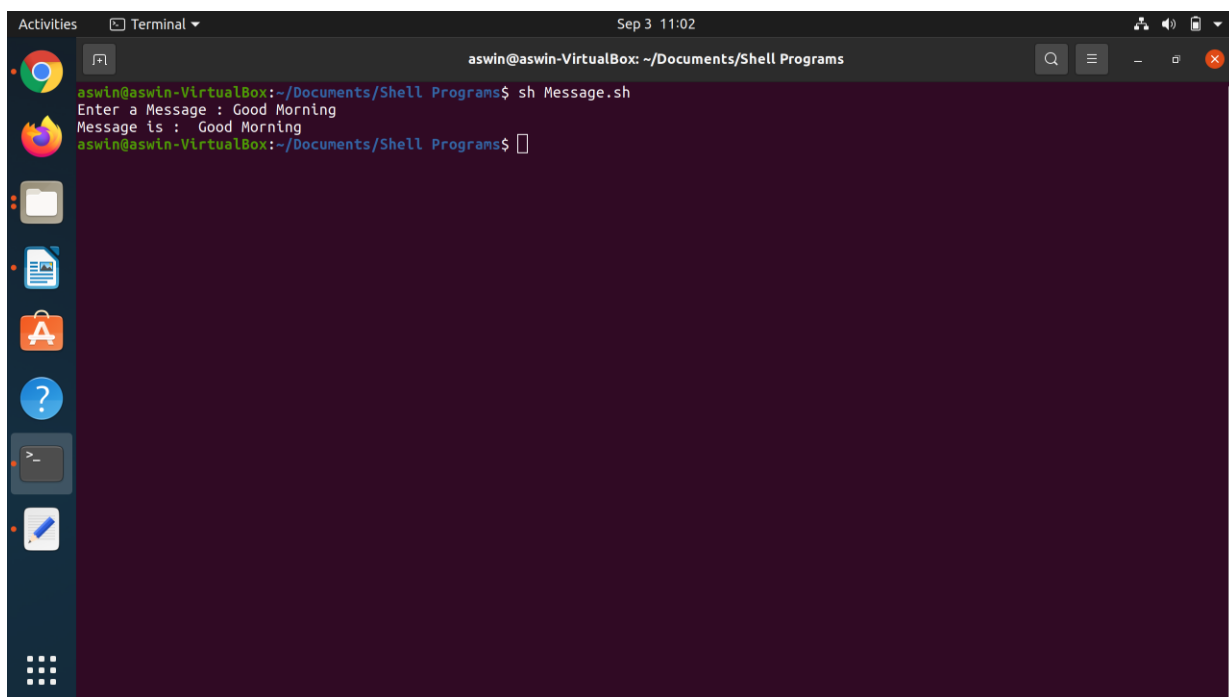
Shell Programming

1. Write a shell script program to display a given message

Source Code

```
#!/bin/bash  
  
read -p "Enter a Message : " m  
  
echo "Message is : " $m
```

Output



The screenshot shows a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user has entered "sh Message.sh". The script prompts "Enter a Message : Good Morning" and then displays "Message is : Good Morning". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$".

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Message.sh  
Enter a Message : Good Morning  
Message is : Good Morning  
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

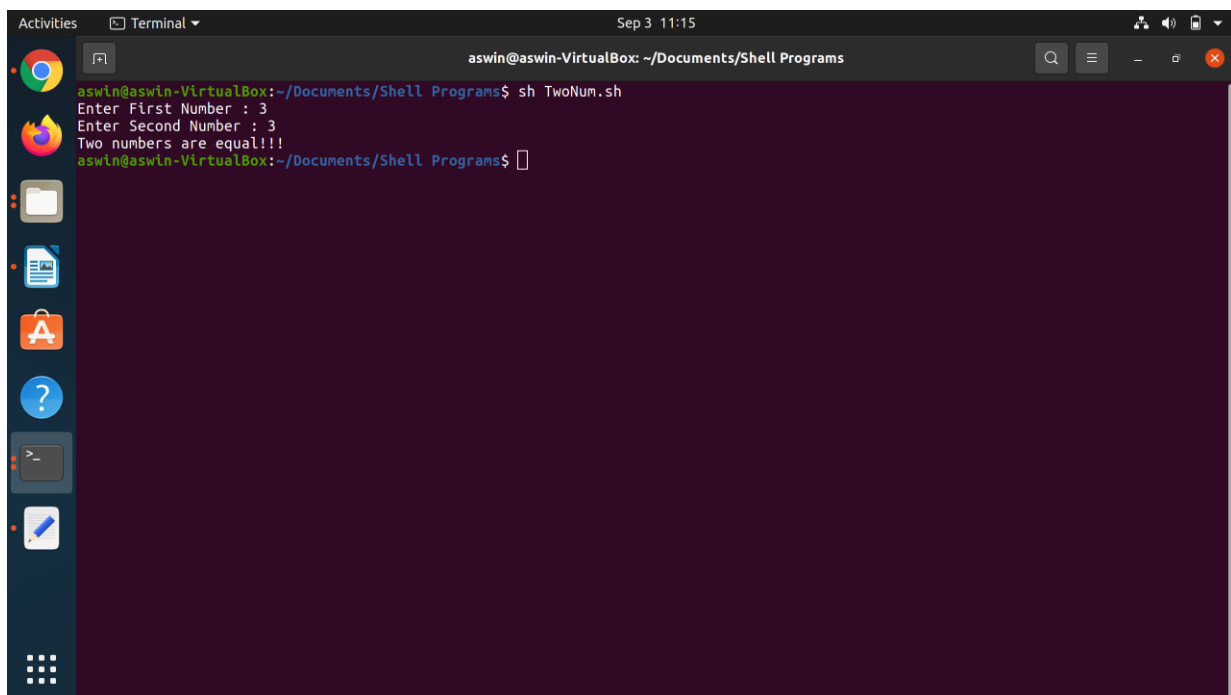
2. Write a shell script to print whether two numbers are equal or not

Source Code

```
#!/bin/bash

read -p "Enter First Number : " n1
read -p "Enter Second Number : " n2
if [ $n1 -eq $n2 ]
then
echo "Two numbers are equal!!!"
else
echo "Two numbers are not equal!!!"
fi
```

Output



```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh TwoNum.sh
Enter First Number : 3
Enter Second Number : 3
Two numbers are equal!!!
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

3. Write a Shell Program to find the roots of the quadratic equation.

Source Code

```
#!/bin/bash

echo Enter the coefficient of x^2:

read a

echo Enter the coefficient of x:

read b

echo Enter the constant term:

read c

f=`echo "-($b)" |bc`

p=`expr 2 \* $a`

if [ $a -ne 0 ]

then

d=`echo "\(\ $b \* $b \) - \(\ 4 \* $a \* $c \)" |bc`

if [ $d -lt 0 ]

then

x=`echo "-($d)" |bc`

s=`echo "scale=2; sqrt ( $x )" |bc`

echo The first root is:

echo "($f + $s i) / $p"

echo The second root is:

echo "($f - $s i) / $p"

elif [ $d -eq 0 ]

then

res=`expr $f / $p`

echo The root is: $res

else

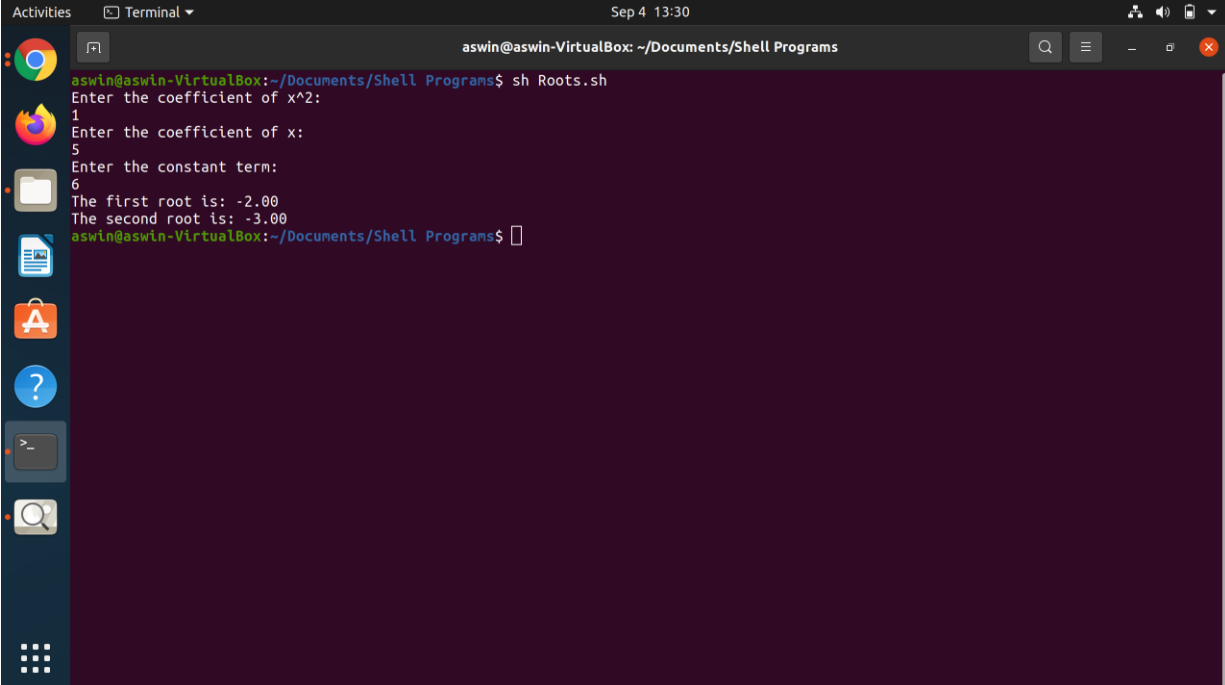
s=`echo "scale=2; sqrt( $d )" |bc`

res1=`echo "scale=2; ( $f + $s) / ( $p )" |bc`

res2=`echo "scale=2; ( $f - $s) / ( $p )" |bc`
```

```
echo The first root is: $res1
echo The second root is: $res2
fi
else
echo Coefficient of x^2 can not be 0.
fi"Two numbers are not equal!!!"
fi
```

Output



```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Roots.sh
Enter the coefficient of x^2:
1
Enter the coefficient of x:
5
Enter the constant term:
6
The first root is: -2.00
The second root is: -3.00
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

4. Write a shell script to perform integer arithmetic operations.

Source Code

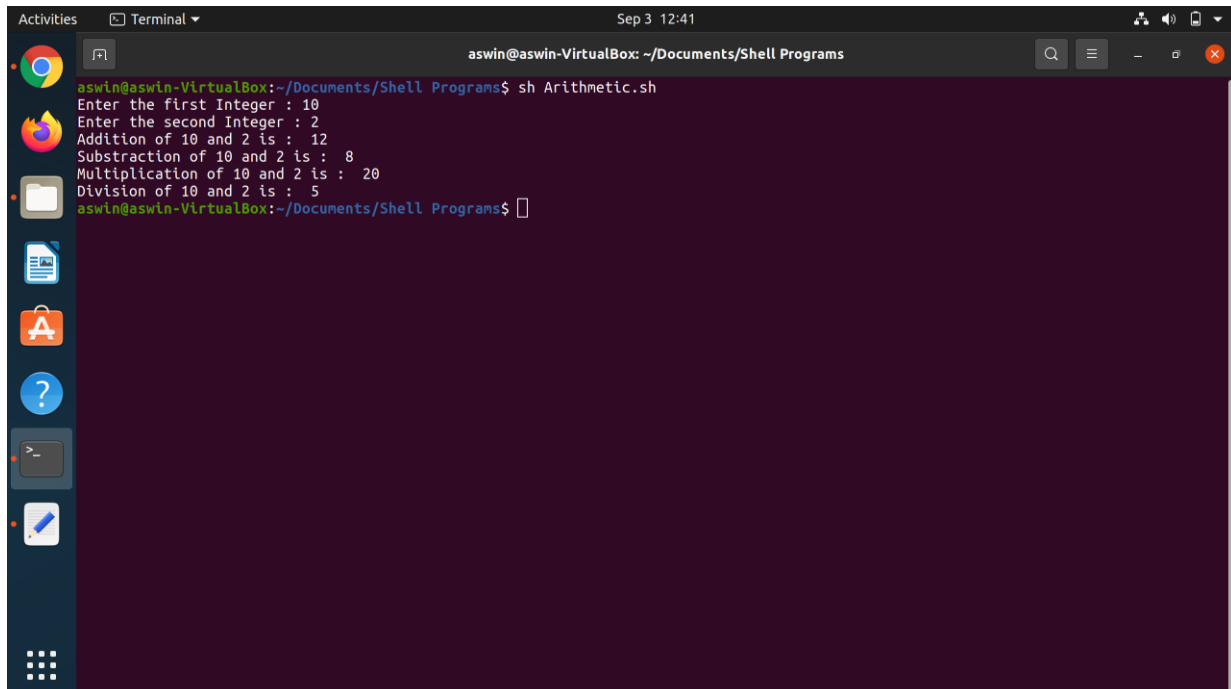
```
#!/bin/bash

read -p "Enter the first Integer : " a
read -p "Enter the second Integer : " b

add=$(( $a+$b ))
sub=$(( $a-$b ))
mul=$(( $a*$b ))
div=$(( $a/$b ))

echo "Addition of $a and $b is : " $add
echo "Substraction of $a and $b is : " $sub
echo "Multiplication of $a and $b is : " $mul
echo "Division of $a and $b is : " $div
```

Output

A screenshot of a Linux terminal window titled "Terminal" with a timestamp of "Sep 3 12:41". The window shows the execution of a shell script named "Arithmetic.sh". The script prompts the user to enter two integers, 10 and 2. It then performs four arithmetic operations: addition (10 + 2 = 12), subtraction (10 - 2 = 8), multiplication (10 * 2 = 20), and division (10 / 2 = 5). The results are displayed on the terminal. The terminal window is running on a system named "aswin@aswin-VirtualBox" in the directory "~/Documents/Shell Programs".

```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Arithmetic.sh
Enter the first Integer : 10
Enter the second Integer : 2
Addition of 10 and 2 is : 12
Substraction of 10 and 2 is : 8
Multiplication of 10 and 2 is : 20
Division of 10 and 2 is : 5
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

5. Write a shell script to getting input details like name, roll number and marks and print them.

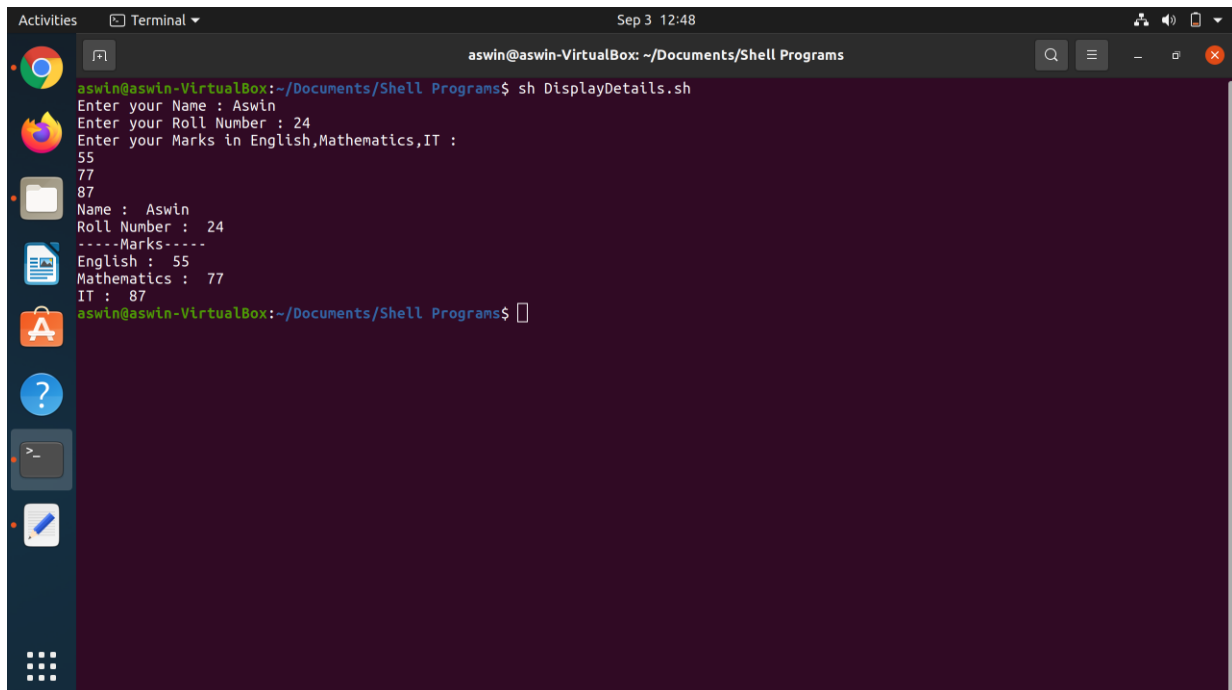
Source Code

```
#!/bin/bash

read -p "Enter your Name : " name
read -p "Enter your Roll Number : " roll
echo "Enter your Marks in English,Mathematics,IT : "
read english
read maths
read it

echo "Name : " $name
echo "Roll Number : " $roll
echo "-----Marks-----"
echo "English : " $english
echo "Mathematics : " $maths
echo "IT : " $it
```

Output



The screenshot shows a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The user has executed the command `sh DisplayDetails.sh`. The script prompts for input, and the user provides the following values: Name: Aswin, Roll Number: 24, English: 55, Mathematics: 77, and IT: 87. The script then displays these values in a formatted output.

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh DisplayDetails.sh
Enter your Name : Aswin
Enter your Roll Number : 24
Enter your Marks in English,Mathematics,IT : 
55
77
87
Name : Aswin
Roll Number : 24
-----Marks-----
English : 55
Mathematics : 77
IT : 87
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

6. Write a Shell program to swap two values

Source Code

```
#!/bin/bash

read -p "Enter the first Number : " a
read -p "Enter the second Number : " b

echo "Before Swap"

echo "a is $a"

echo "b is $b"

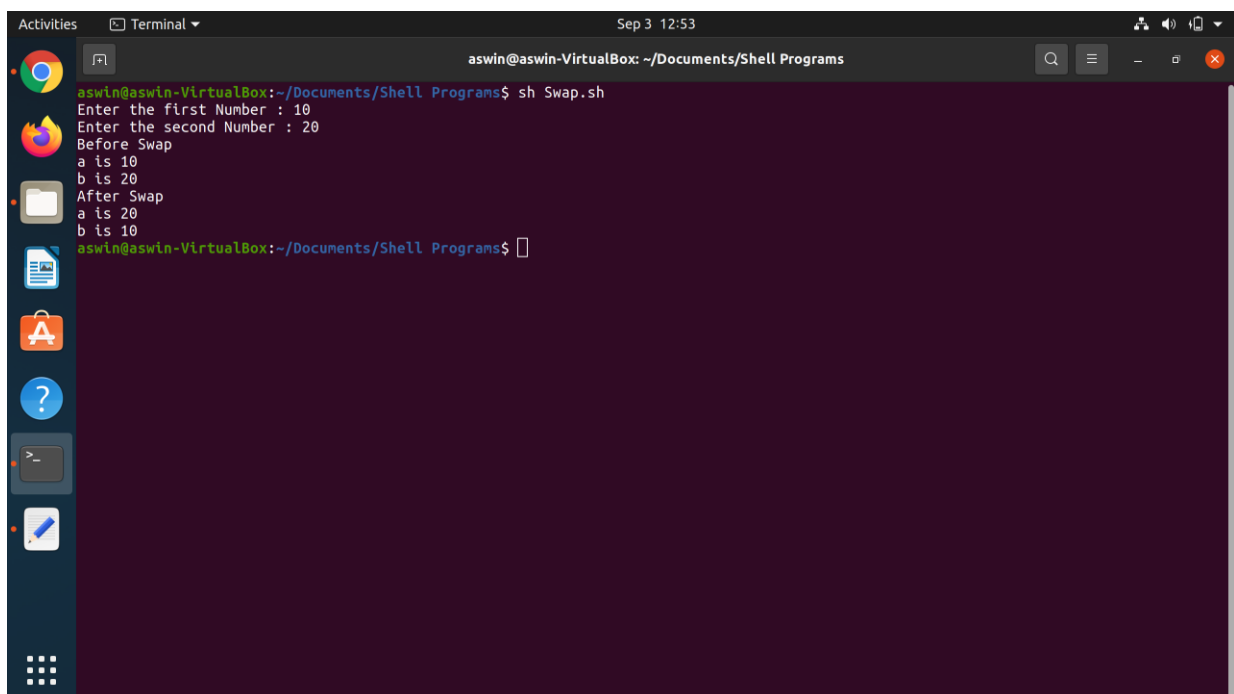
a=$((a+b))
b=$((a-b))
a=$((a-b))

echo "After Swap"

echo "a is $a"

echo "b is $b"
```

Output

A screenshot of a Linux terminal window titled "Terminal" with a timestamp of "Sep 3 12:53". The user is logged in as "aswin" on a system named "aswin-VirtualBox". The current directory is "~/Documents/Shell Programs". The user has executed a shell script named "Swap.sh". The script prompts for two numbers: "Enter the first Number : 10" and "Enter the second Number : 20". It then displays "Before Swap" followed by "a is 10" and "b is 20". After performing the swap, it displays "After Swap" followed by "a is 20" and "b is 10". The terminal window has a dark purple background and a sidebar on the left with various application icons.

```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Swap.sh
Enter the first Number : 10
Enter the second Number : 20
Before Swap
a is 10
b is 20
After Swap
a is 20
b is 10
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

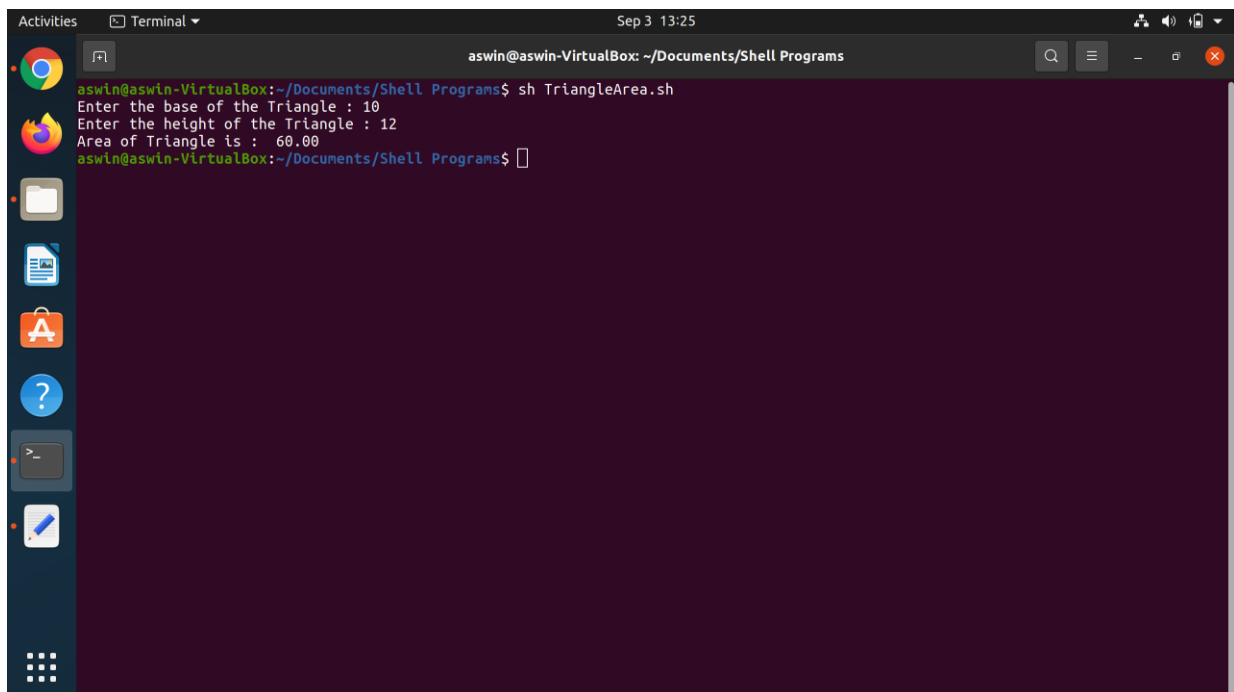
7. Write a shell program to find the area of a triangle.

Source Code

```
#!/bin/bash

read -p "Enter the base of the Triangle : " b
read -p "Enter the height of the Triangle : " h
area=`expr "scale=2; 1/2*$b*$h"|bc`
echo "Area of Triangle is : " $area
```

Output

A screenshot of a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "TriangleArea.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$ sh TriangleArea.sh". The script prompts for the base of the triangle, which is entered as "10". It then prompts for the height, which is entered as "12". The script outputs "Area of Triangle is : 60.00". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal window has a dark background and a sidebar on the left with various application icons. The top of the window shows the date and time "Sep 3 13:25".

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh TriangleArea.sh
Enter the base of the Triangle : 10
Enter the height of the Triangle : 12
Area of Triangle is : 60.00
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```


8. Write a shell program to find the square and cube of a number

Source Code

```
#!/bin/bash

read -p "Enter a number : " a

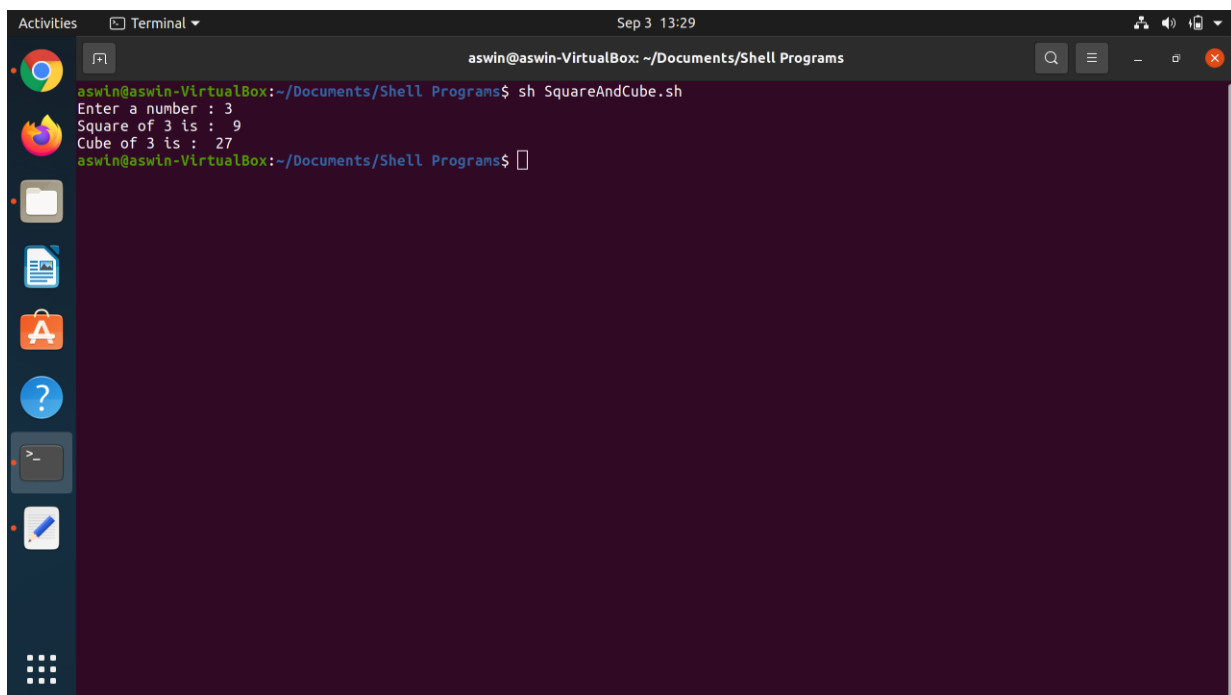
square=$(( $a*$a ))

cube=$(( $a*$a*$a ))

echo "Square of $a is : " $square

echo "Cube of $a is : " $cube
```

Output

A screenshot of a Linux terminal window. The window title is "Terminal" and the date/time is "Sep 3 13:29". The user is "aswin" and the host is "aswin-VirtualBox". The current directory is "~/Documents/Shell Programs". The user has run the command "sh SquareAndCube.sh". The script prompts "Enter a number : 3". It then outputs "Square of 3 is : 9" and "Cube of 3 is : 27". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$".

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh SquareAndCube.sh
Enter a number : 3
Square of 3 is : 9
Cube of 3 is : 27
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

9. Write a shell program to check whether the given number is odd or even.

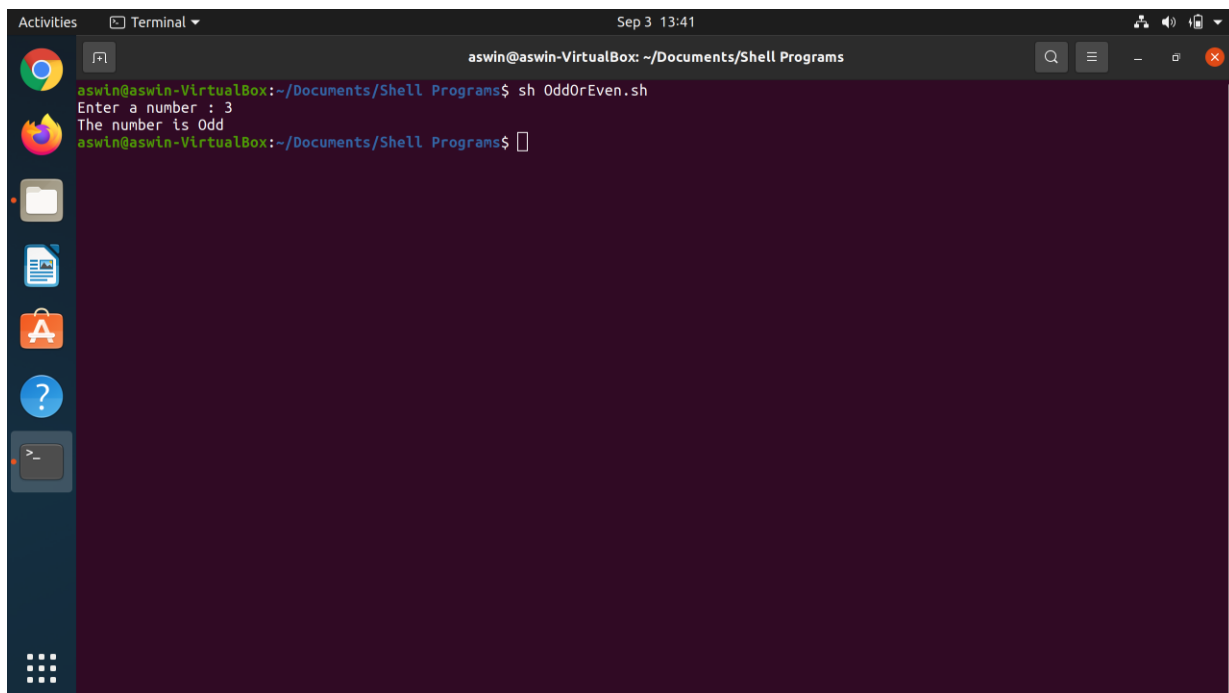
Source Code

```
#!/bin/bash

read -p "Enter a number : " a

if [ $(( a%2 )) -eq 0 ]
then
echo "The number is Even"
else
echo "The number is Odd"
fi
```

Output

A screenshot of a Linux terminal window. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the command "sh OddOrEven.sh" being executed. The prompt "Enter a number : 3" is displayed, followed by the output "The number is Odd". The terminal has a dark purple background and a light blue prompt. The window's top bar shows the date and time as "Sep 3 13:41". The left sidebar of the window displays various application icons including a web browser, file manager, and terminal.

```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh OddOrEven.sh
Enter a number : 3
The number is Odd
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

10. Write a shell program to find the minimum among four values.

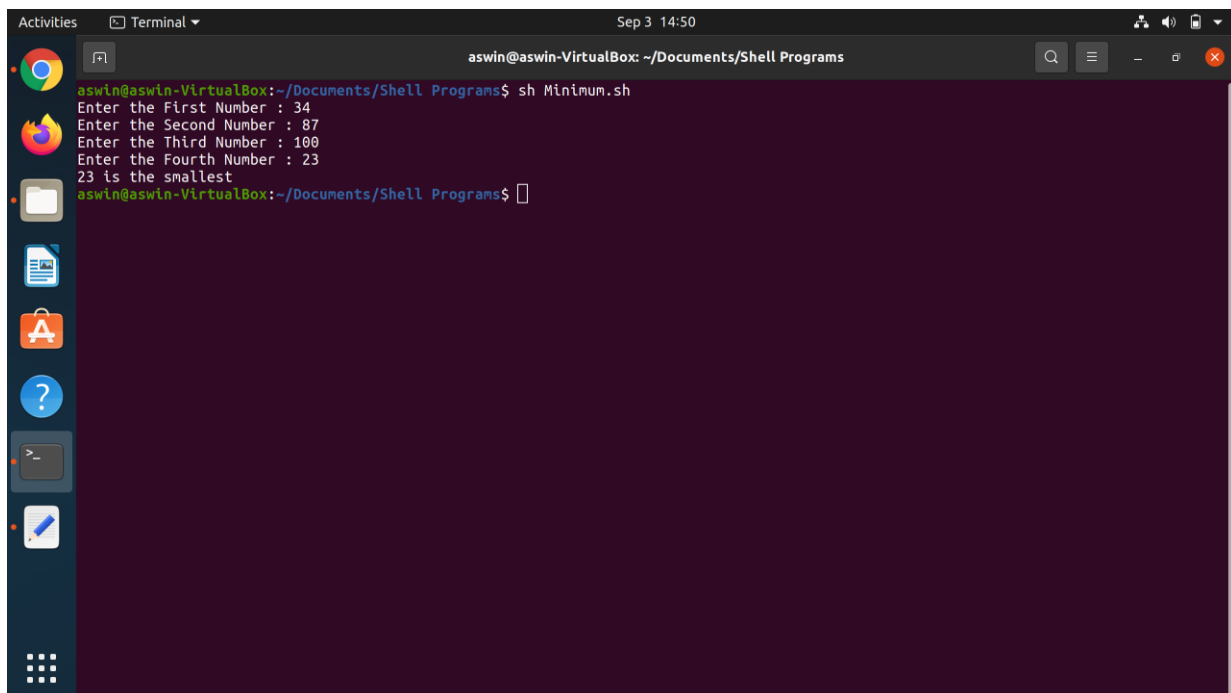
Source Code

```
#!/bin/bash

read -p "Enter a number : " a

if [ $(( a%2 )) -eq 0 ]
then
echo "The number is Even"
else
echo "The number is Odd"
fi
```

Output

A screenshot of a Linux terminal window. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Minimum.sh". The script prompts the user to enter four numbers: 34, 87, 100, and 23. It then outputs "23 is the smallest". The terminal background is dark purple. The left sidebar shows various application icons like Chrome, Firefox, and the Dash icon.

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Minimum.sh
Enter the First Number : 34
Enter the Second Number : 87
Enter the Third Number : 100
Enter the Fourth Number : 23
23 is the smallest
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

11. Write a shell program to check whether the input number is prime or not.

Source Code

```
#!/bin/bash

read -p "Enter a Number : " a

flag=0

half=$(( $a/2 ))

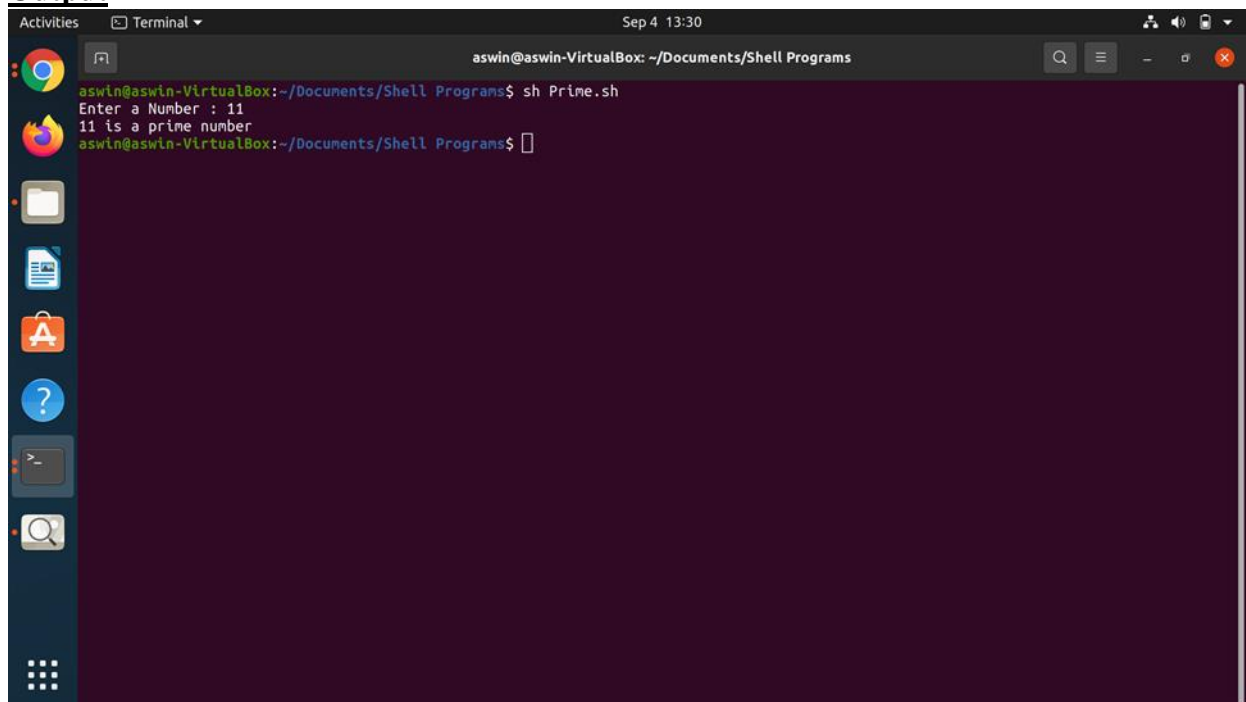
for i in $(seq 2 $half)
do
if [ $(( a % i )) -eq 0 ]
then
echo "$a is not a prime number"

flag=1

break
fi
done

if [ $flag -eq 0 ]
then
echo "$a is a prime number"
fi
```

Output

A screenshot of a Linux terminal window. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Prime.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user enters "sh Prime.sh". The script prompts "Enter a Number : 11". The script then outputs "11 is a prime number". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal window has a dark background and a sidebar on the left with various application icons. The top of the window shows system information like "Sep 4 13:30".

12. Write a shell program to find the area of circle, square, rectangle and triangle using case statements.

Source Code

```
#!/bin/bash

val=1

while [ $val = 1 ]
do
echo "----MENU----"
echo "1. Circle"
echo "2. Square"
echo "3. Rectangle"
echo "4. Triangle"
echo "5. Exit"

read -p "Enter your choice : " ch
case "$ch" in
1) echo "-----Circle-----"
read -p "Enter The Radius : " r
area=$(echo "scale=2; 3.14*$r*$r" | bc)
echo "Area of the Circle is : " $area;;
2) echo "-----Square-----"
read -p "Enter The Side : " s
area=$(( $s * $s ))
echo "Area of the Square is : " $area;;
3) echo "-----Recangle-----"
read -p "Enter The Length : " l
read -p "Enter The Breadth : " b
area=$(( $l * $b ))
echo "Area of the Rectangle is : " $area;;
4) echo "-----Triangle-----"
read -p "Enter the base of the Triangle : " b
read -p "Enter the height of the Triangle : " h
area=`expr "scale=2; 1/2*$b*$h"|bc`
```

```
echo "Area of Triangle is : " $area;;
```

```
5) echo "Bye"
```

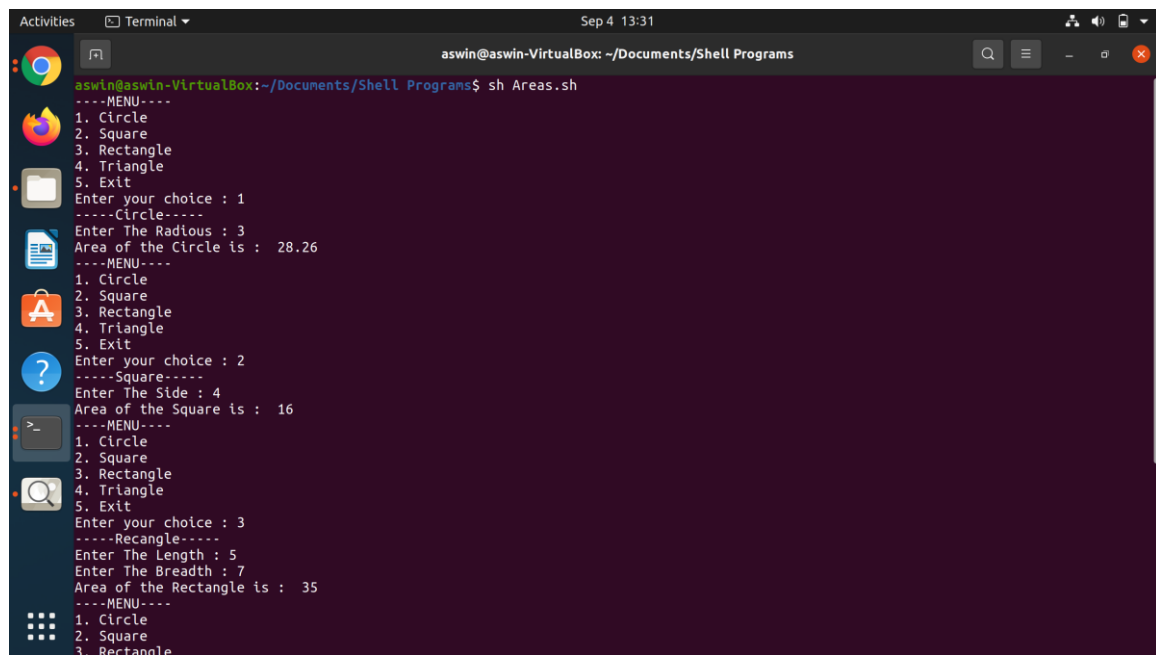
```
val=0;;
```

```
*)echo "Invalid Input"
```

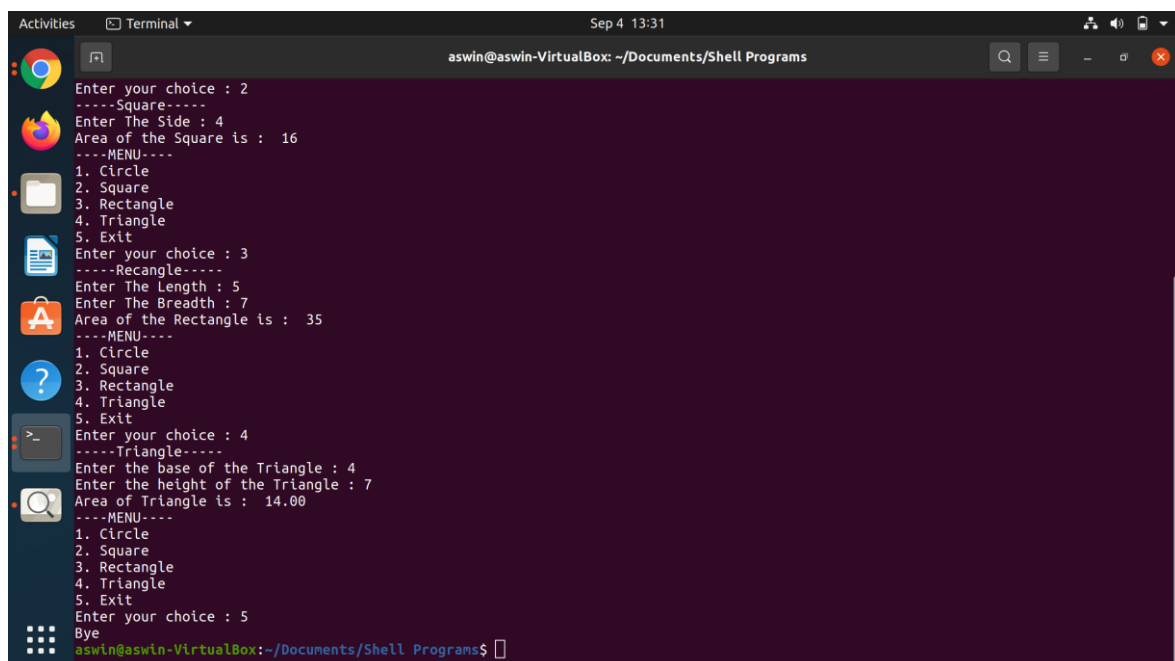
```
esac
```

```
done
```

Output



```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Areas.sh
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 1
-----Circle-----
Enter The Radius : 3
Area of the Circle is : 28.26
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 2
-----Square-----
Enter The Side : 4
Area of the Square is : 16
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 3
-----Rectangle-----
Enter The Length : 5
Enter The Breadth : 7
Area of the Rectangle is : 35
----MENU----
1. Circle
2. Square
3. Rectangle
```



```
Enter your choice : 2
-----Square-----
Enter The Side : 4
Area of the Square is : 16
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 3
-----Rectangle-----
Enter The Length : 5
Enter The Breadth : 7
Area of the Rectangle is : 35
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 4
-----Triangle-----
Enter the base of the Triangle : 4
Enter the height of the Triangle : 7
Area of Triangle is : 14.00
----MENU----
1. Circle
2. Square
3. Rectangle
4. Triangle
5. Exit
Enter your choice : 5
Bye
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

13. Write a shell program to find the factorial of a given number

Source Code

```
#!/bin/bash

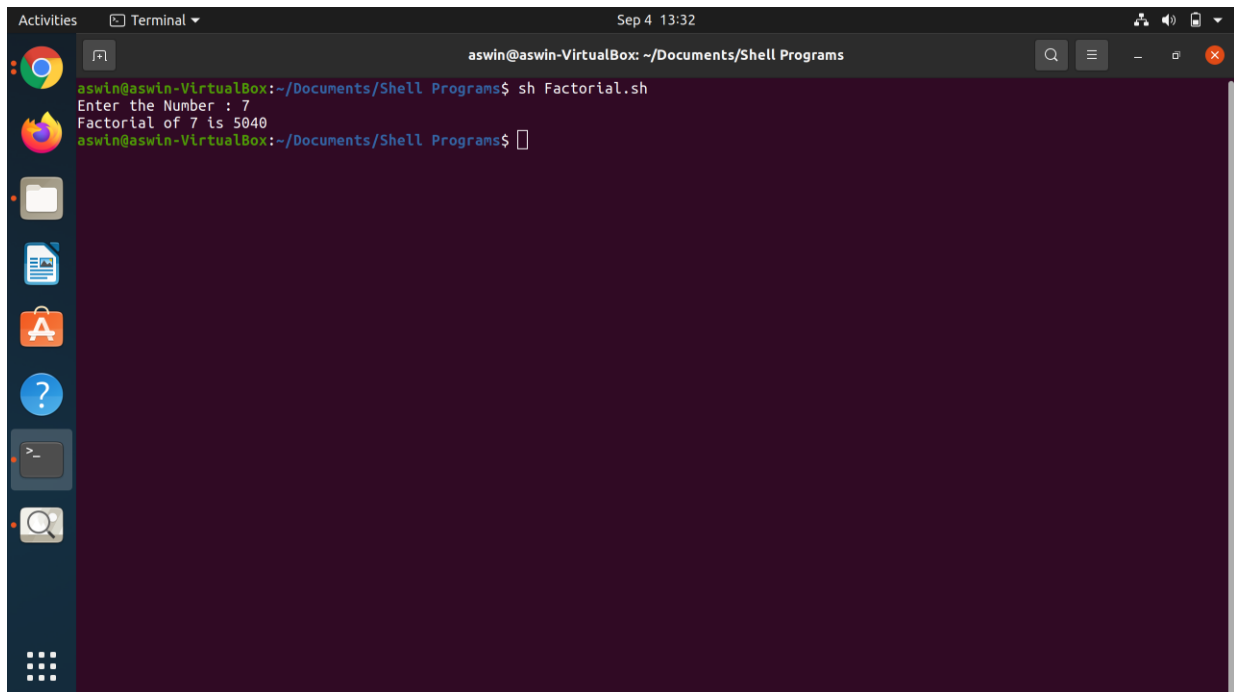
read -p "Enter the Number : " n

fact=1

for i in $(seq 2 $n)
do
fact=$(( fact*i ))
done

echo "Factorial of $n is $fact"
```

Output

A screenshot of a Linux terminal window. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Factorial.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user enters "sh Factorial.sh". The script prompts "Enter the Number : 7". The script then outputs "Factorial of 7 is 5040". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal has a dark purple background and a light blue prompt. The window has a standard Linux desktop environment with a sidebar on the left containing icons for Activities, Terminal, and various applications. The top bar shows the date and time as "Sep 4 13:32".

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Factorial.sh
Enter the Number : 7
Factorial of 7 is 5040
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

14. Write a Simple Shell script to print the sum of n natural numbers

Source Code

```
#!/bin/bash

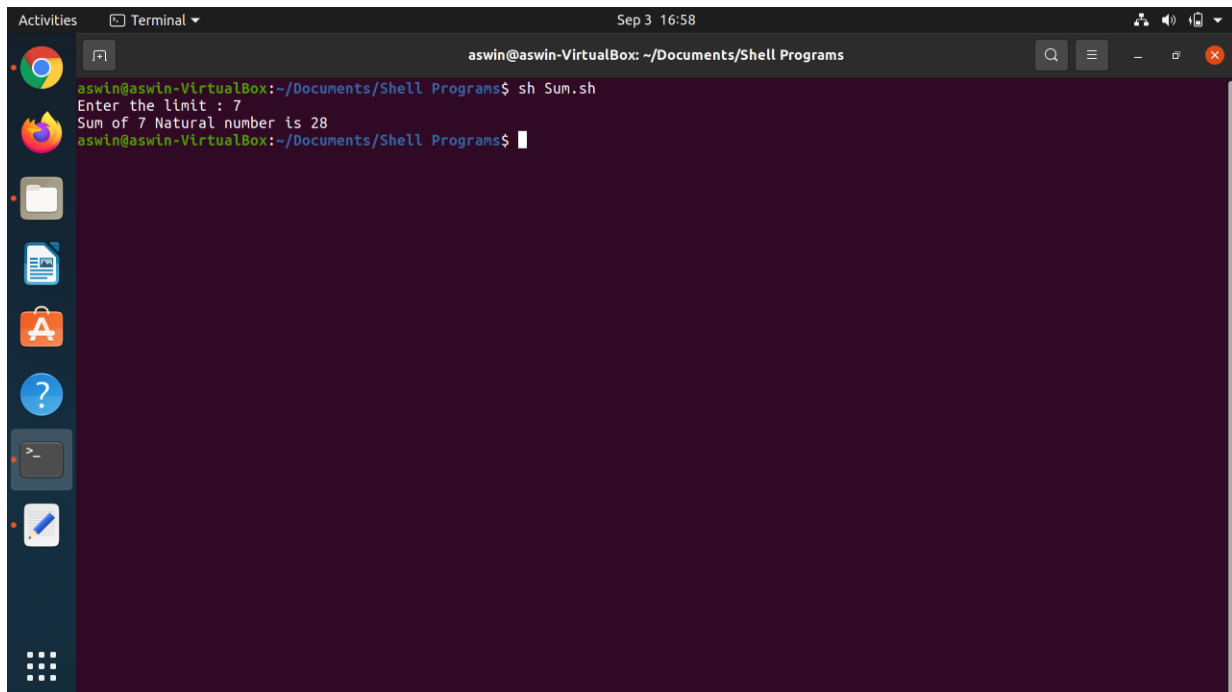
read -p "Enter the limit : " n

sum1=0

for i in $(seq 1 $n)
do
sum1=$(( sum1+i ))
done

echo "Sum of $n Natural number is $sum1"
```

Output

A screenshot of a Linux terminal window. The title bar shows 'Activities', 'Terminal', and the date 'Sep 3 16:58'. The terminal content shows a user running a script named 'Sum.sh'. The prompt is 'aswin@aswin-VirtualBox: ~/Documents/Shell Programs\$'. The user enters 'sh Sum.sh'. The script prompts 'Enter the limit : 7'. The script then outputs 'Sum of 7 Natural number is 28'. The prompt returns to 'aswin@aswin-VirtualBox: ~/Documents/Shell Programs\$'. The terminal has a dark purple background and a light blue prompt. The left sidebar shows various application icons like Chrome, Firefox, and the Dash icon.

```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs$ sh Sum.sh
Enter the limit : 7
Sum of 7 Natural number is 28
aswin@aswin-VirtualBox: ~/Documents/Shell Programs$
```


15. Write a shell program to reverse a number.

Source Code

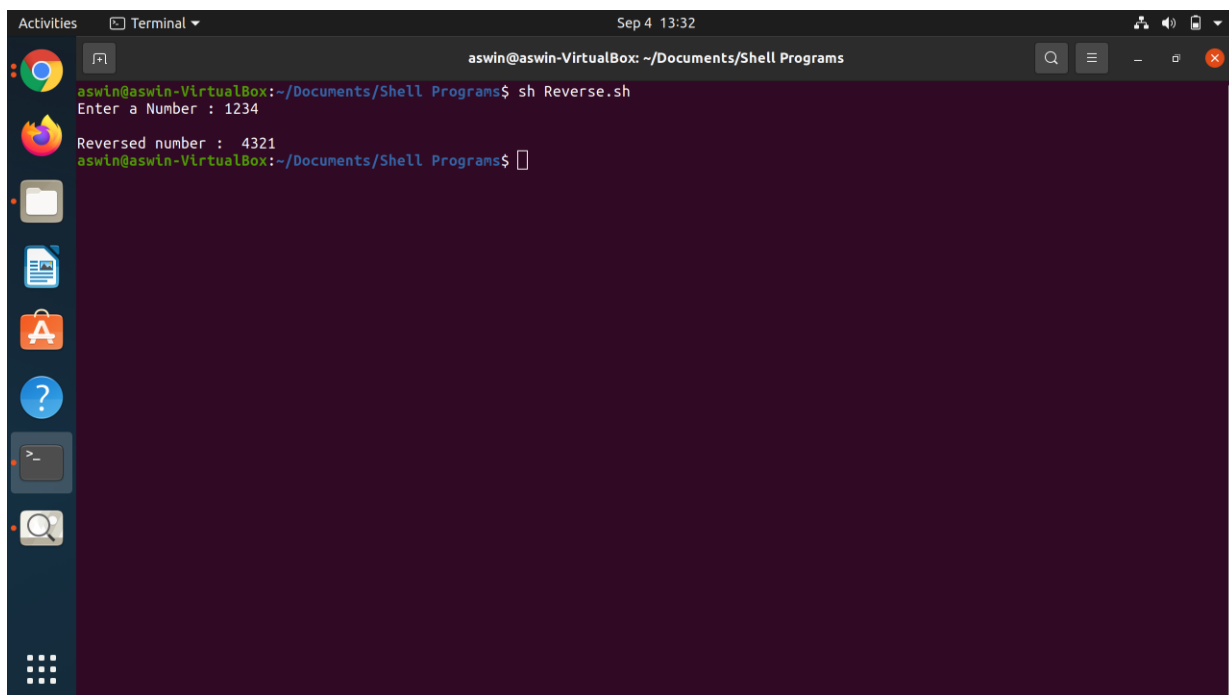
```
#!/bin/bash

read -p "Enter a Number : " n

while [ $n -ne 0 ]
do
    rem=$(( $n%10 ))
    rev=$(( rev*10+rem ))
    n=$(( n/10 ))
done

echo
echo "Reversed number : " $rev
```

Output

A screenshot of a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Reverse.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$ sh Reverse.sh". The user enters "1234" in response to the prompt "Enter a Number : ". The script then outputs "Reversed number : 4321". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal window has a dark background and a sidebar on the left with various application icons. The top of the window shows the date and time as "Sep 4 13:32".

```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Reverse.sh
Enter a Number : 1234
Reversed number : 4321
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```