

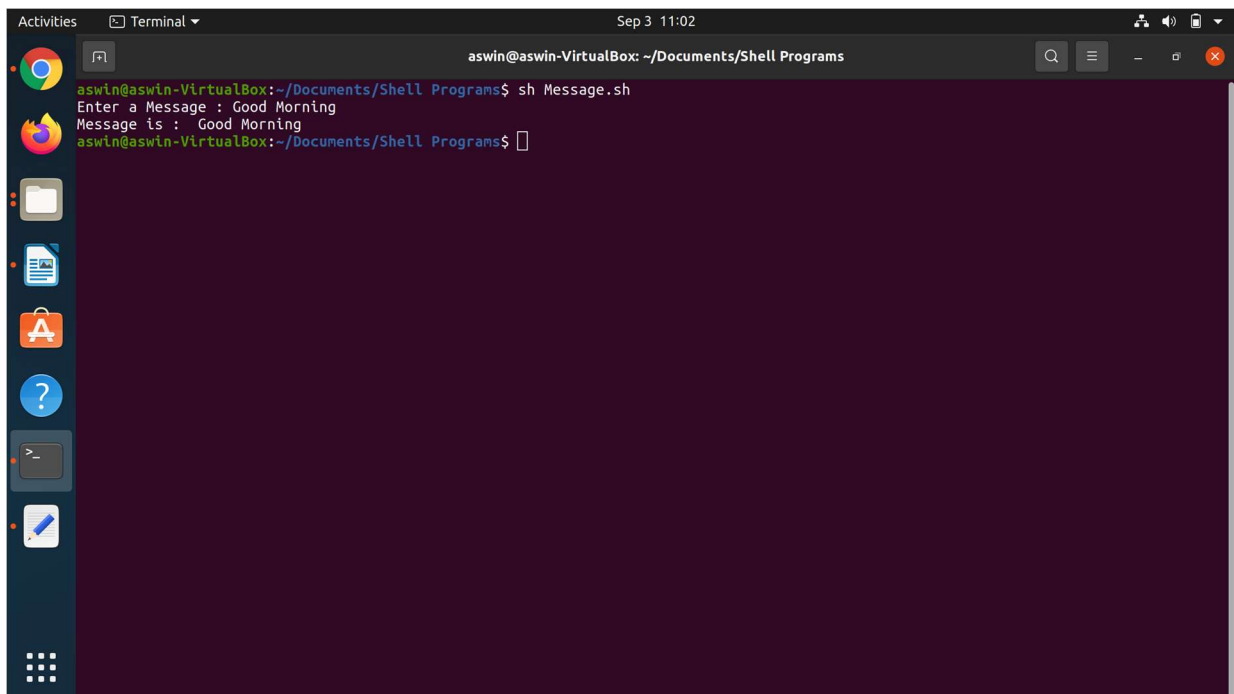
Shell Programming

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 "Terminal" with the date and time "Sep 3 11:02". The user is logged in as "aswin" on a system named "aswin-VirtualBox". The current directory is "~/Documents/Shell Programs". The user has executed the command "sh Message.sh". The script prompts the user to "Enter a Message : " and the user has entered "Good Morning". The script then outputs "Message is : Good Morning". The terminal window has a dark purple background and a sidebar on the left with various application icons.

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

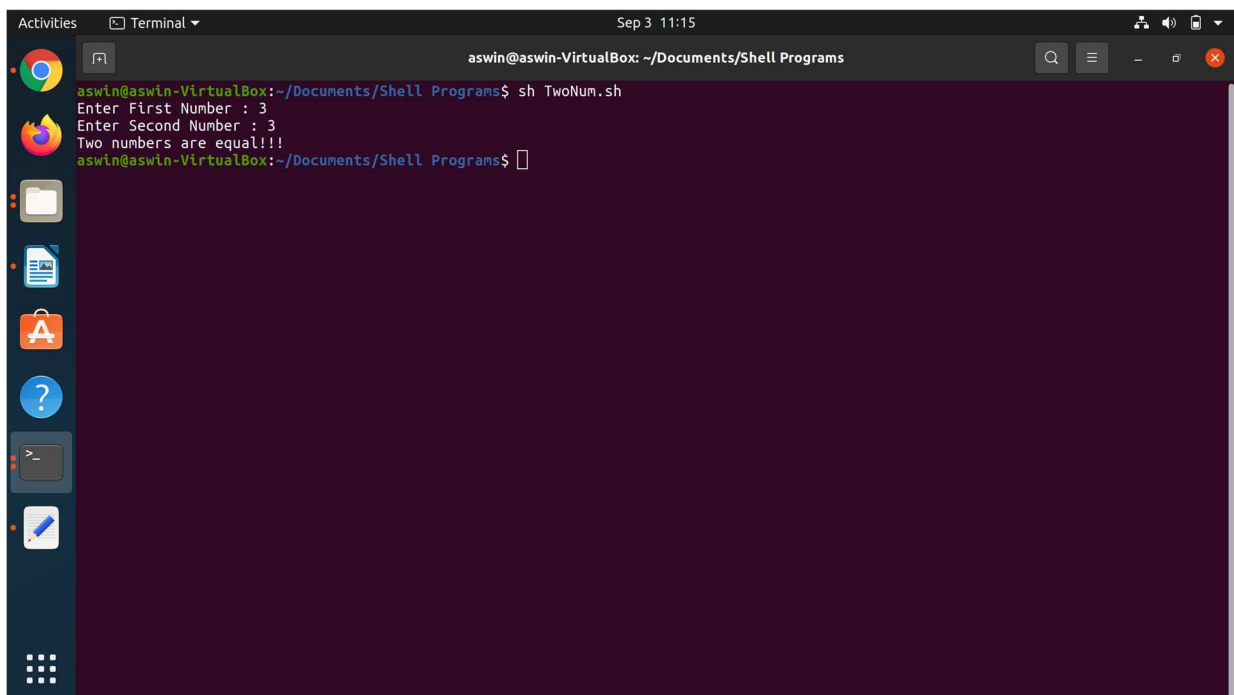
2. Write a shell script to print whether two numbers are equal or not

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

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 "TwoNum.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user enters "sh TwoNum.sh". The script prompts "Enter First Number : 3" and "Enter Second Number : 3". The output is "Two numbers are equal!!!". The prompt returns to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal has a dark purple background and a sidebar on the left with various application icons.

```
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$
```

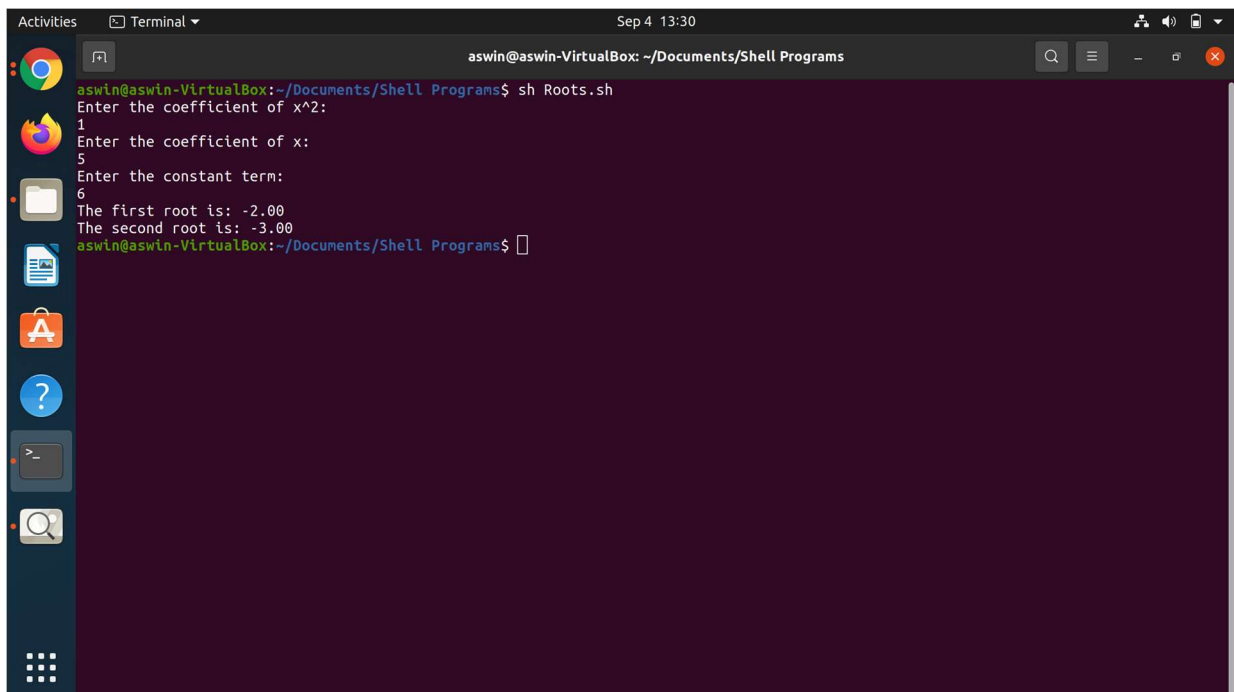
3. Write a Shell Program to find the roots of the quadratic equation.

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

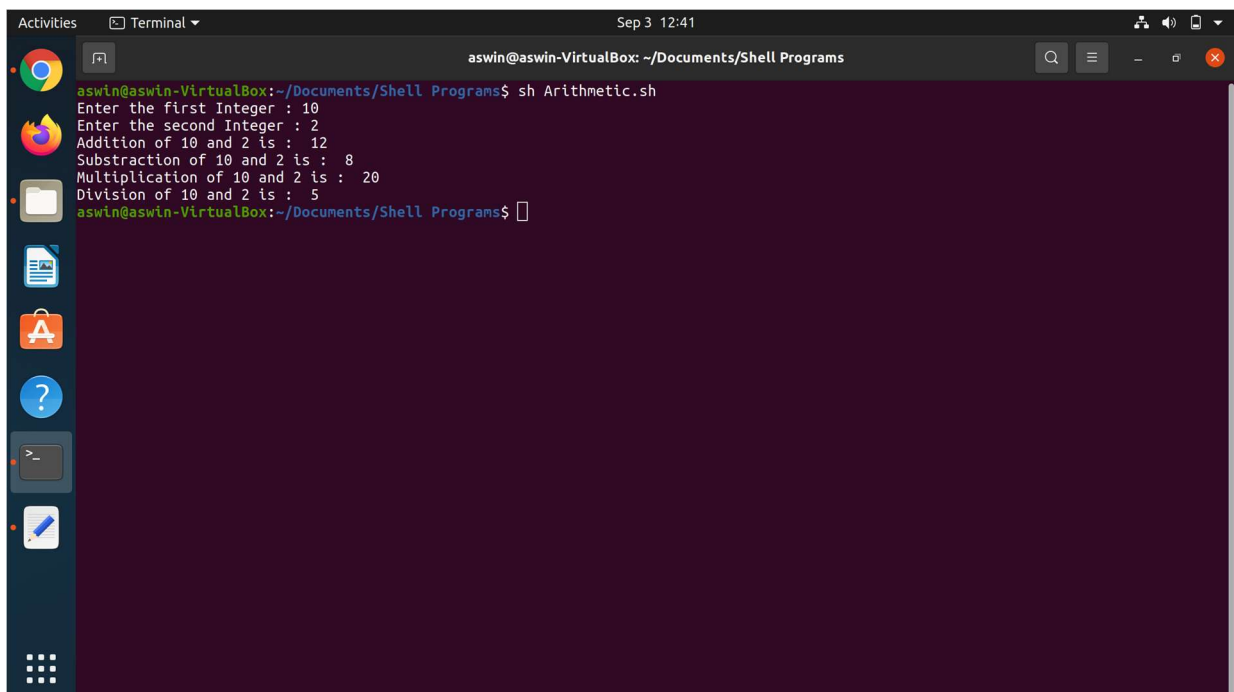
```
#!/bin/bash

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. The title bar shows 'Activities', 'Terminal', and the date 'Sep 3 12:41'. The terminal content shows a user running a script named 'Arithmetic.sh'. The script prompts for two integers, 10 and 2, and then displays the results of addition (12), subtraction (8), multiplication (20), and division (5). 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 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.

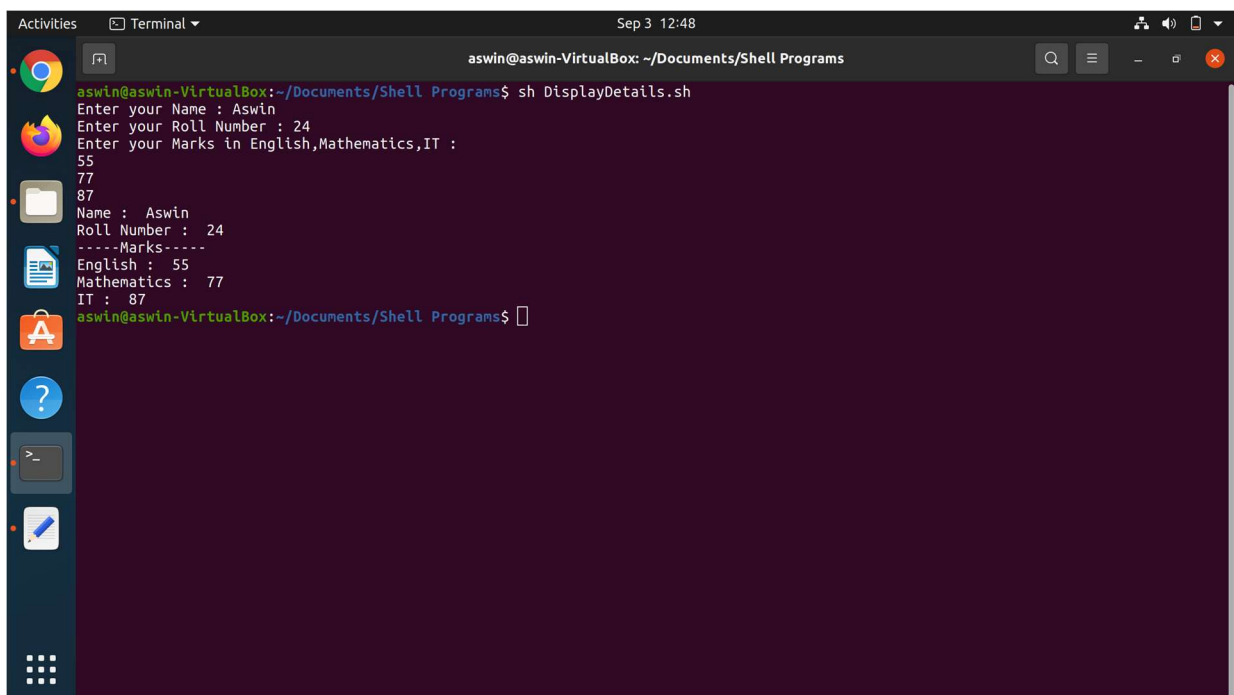
Source Code

```
#!/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



```
aswin@aswin-VirtualBox: ~/Documents/Shell Programs
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"

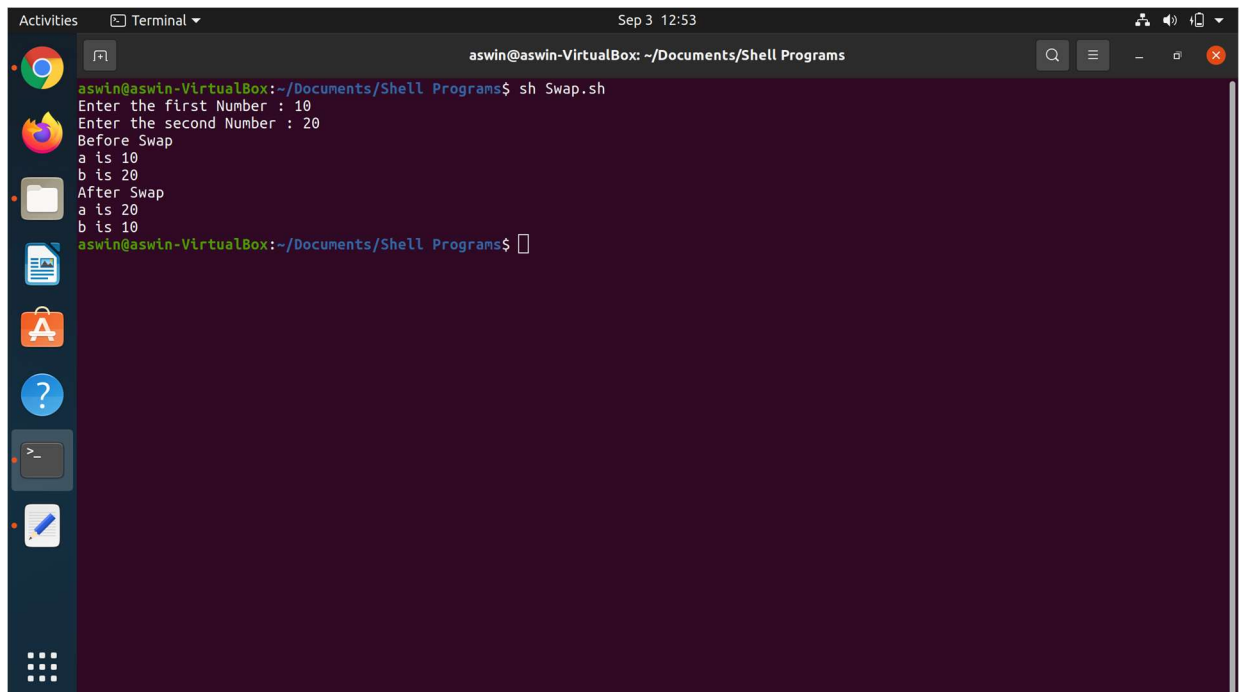
echo "a is $a"
echo "b is $b"

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. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Swap.sh". The user enters "10" for the first number and "20" for the second number. The output shows "Before Swap" with "a is 10" and "b is 20", followed by "After Swap" with "a is 20" and "b is 10". The terminal has a dark purple background and a sidebar on the left with various application icons.

```
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$
```

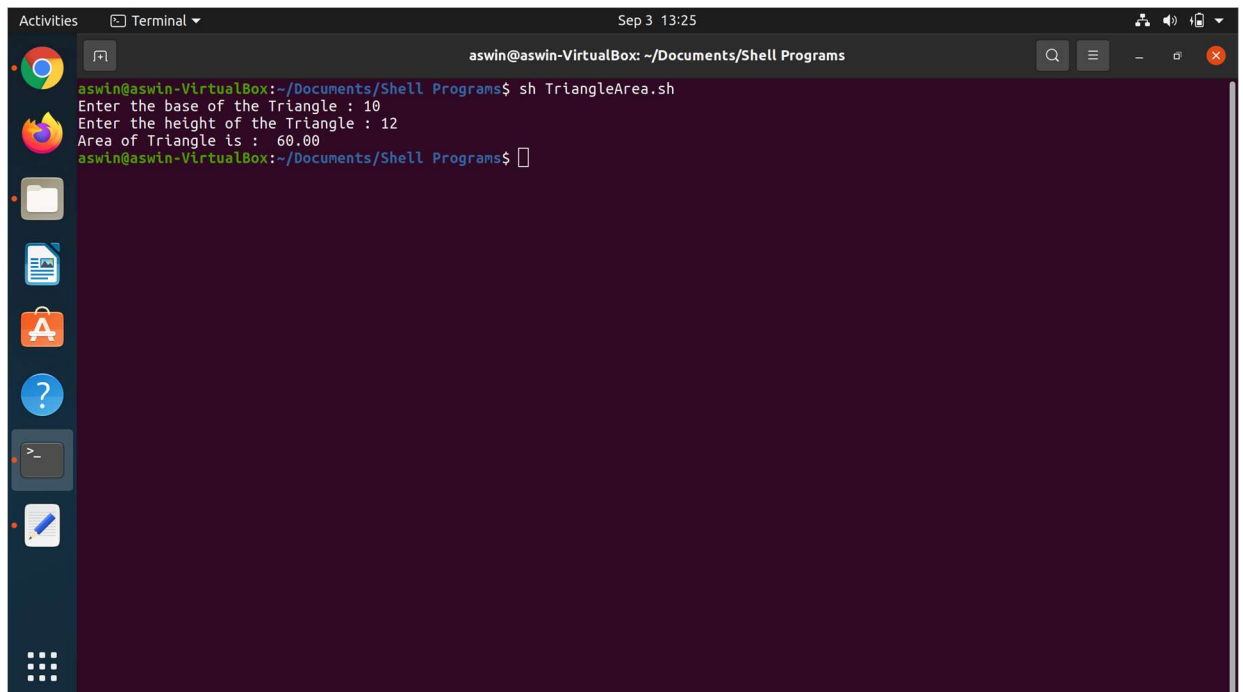
7. Write a shell program to find the area of a triangle.

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



The screenshot shows a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The user has executed the command `sh TriangleArea.sh`. The script prompts for the base and height of a triangle. The user enters 10 for the base and 12 for the height. The script then outputs "Area of Triangle is : 60.00".

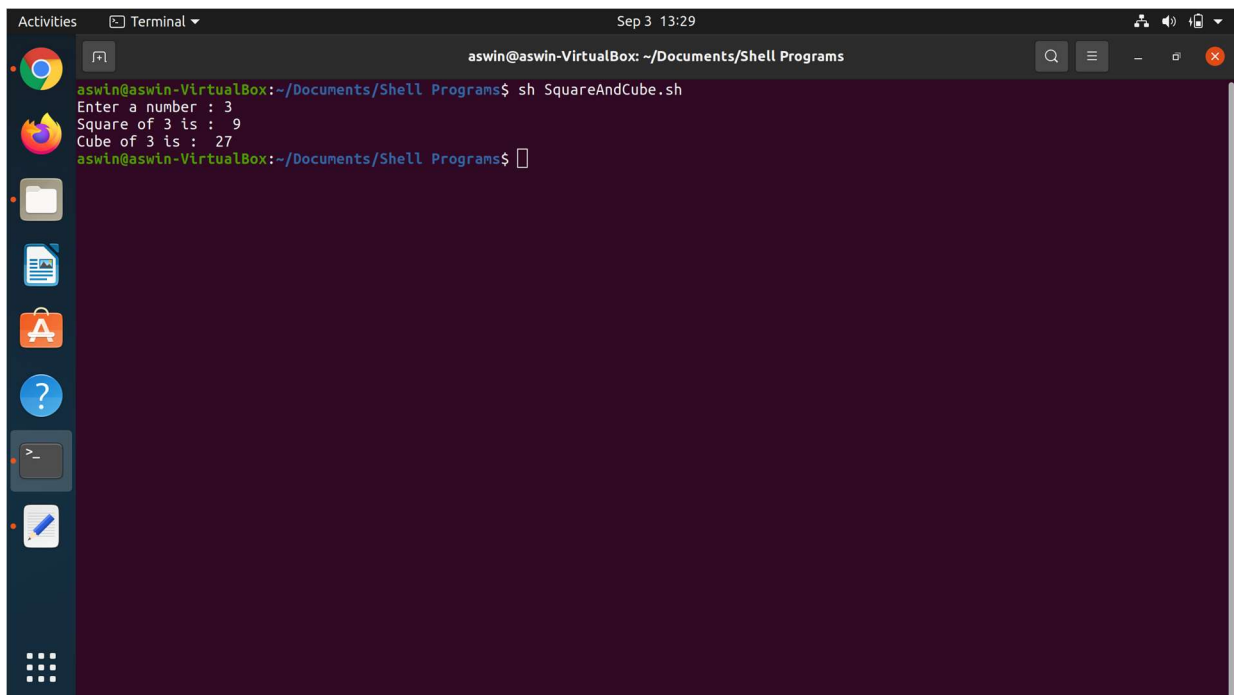
```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh TriangleArea.sh
Enter the base of the Triangle : 10
Enter the height of the Triangle : 12
Area of Triangle is : 60.00
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```


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 "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "SquareAndCube.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user enters "sh SquareAndCube.sh". The script prompts "Enter a number : 3". The script then outputs "Square of 3 is : 9" and "Cube of 3 is : 27". 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 3 13:29".

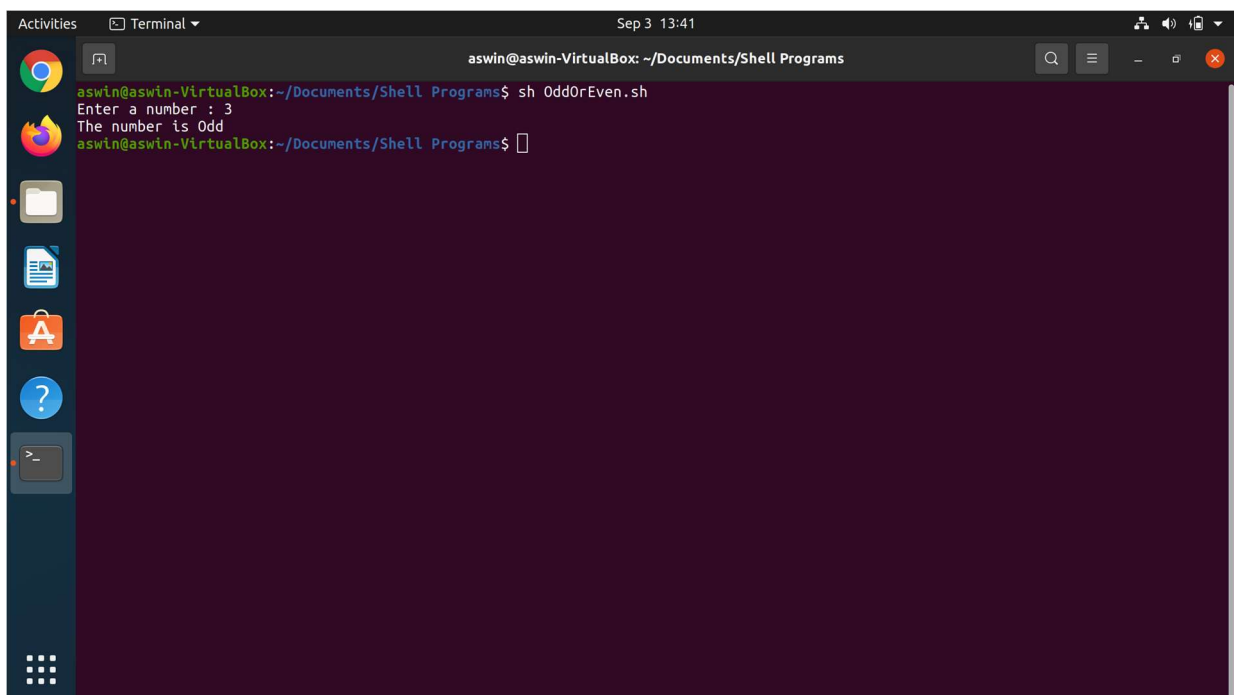
```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh SquareAndCube.sh
Enter a number : 3
Square of 3 is : 9
Cube of 3 is : 27
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

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 terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "OddOrEven.sh". The prompt is "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$ sh OddOrEven.sh". The script prompts "Enter a number : 3". The output is "The number is Odd". 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 bar shows "Activities", "Terminal", and the date/time "Sep 3 13:41".

```
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.

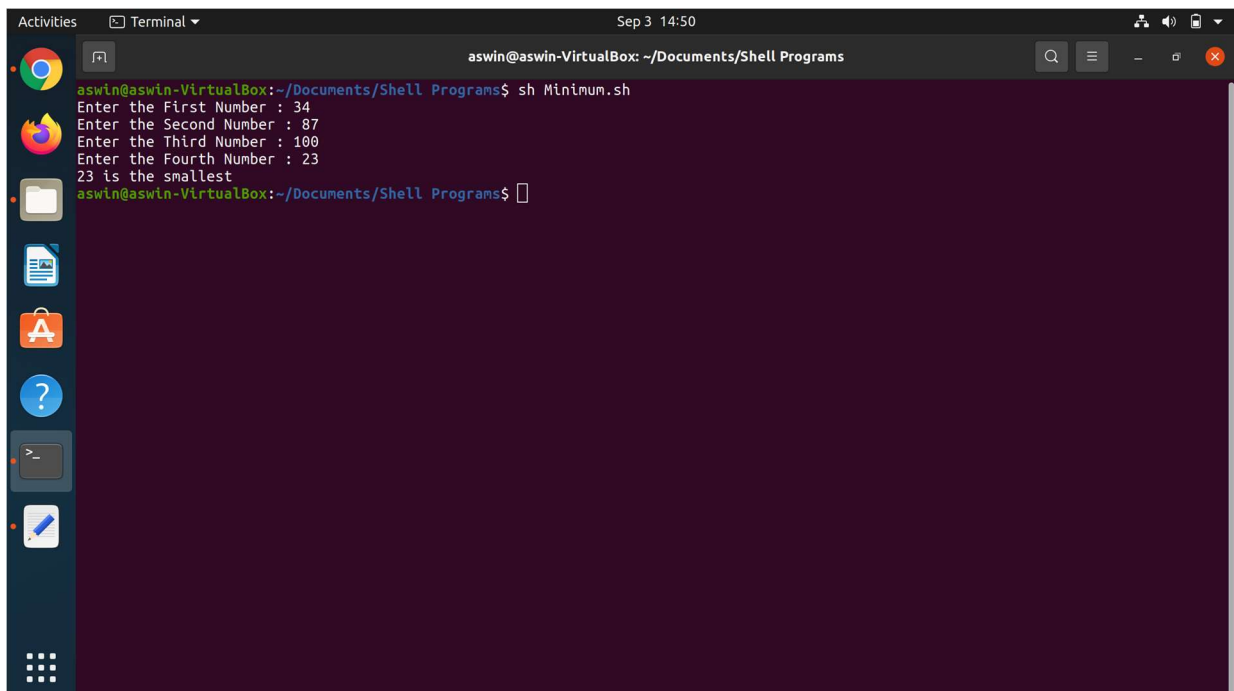
Source Code

```
#!/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 terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the execution of a script named "Minimum.sh". The user enters four numbers: 34, 87, 100, and 23. The script outputs "23 is the smallest". The terminal window has a dark background and a sidebar on the left with various application icons.

```
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

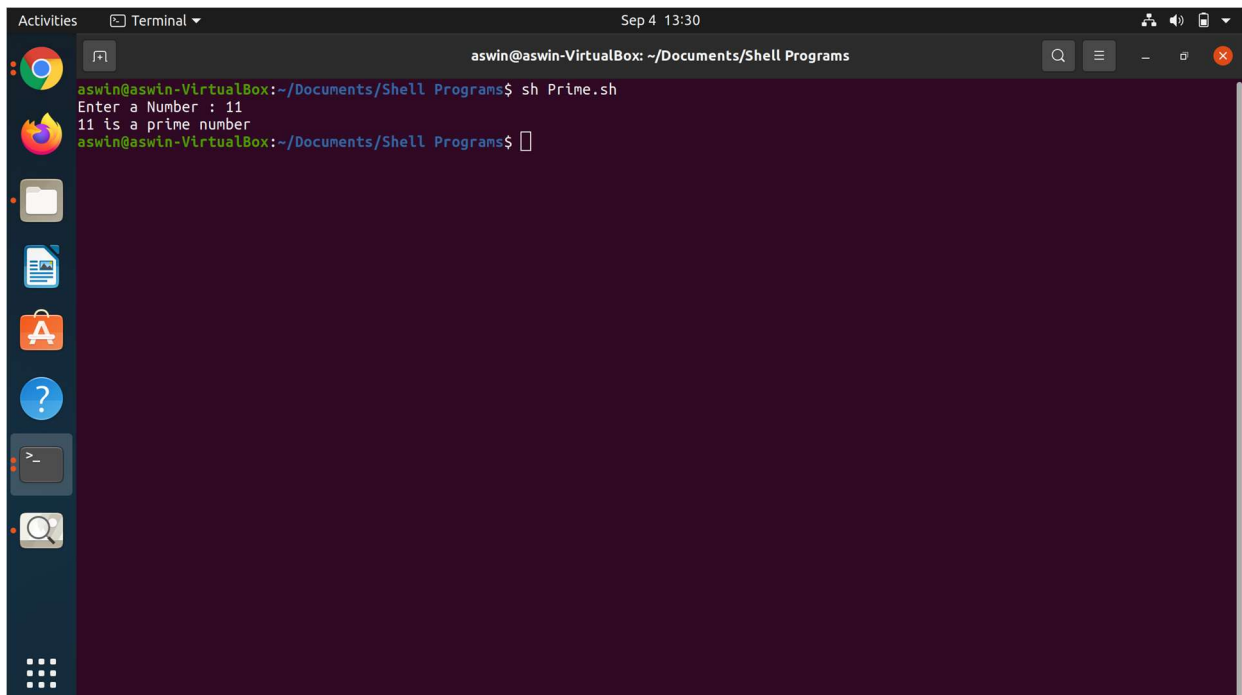
flag=0

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 command "sh Prime.sh" being executed. The output of the script is "Enter a Number : 11" followed by "11 is a prime number". The prompt "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$" is visible at the bottom of the terminal. The terminal window is part of a desktop environment with a sidebar on the left containing icons for various applications like a web browser, file manager, and terminal. The top of the window shows system status icons and the date/time "Sep 4 13:30".

```
aswin@aswin-VirtualBox:~/Documents/Shell Programs$ sh Prime.sh
Enter a Number : 11
11 is a prime number
aswin@aswin-VirtualBox:~/Documents/Shell Programs$
```

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 : " $area;;
3) echo "-----Rectangle-----"
read -p "Enter The Length : " l
read -p "Enter The Breadth : " b
area=$(( $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;;

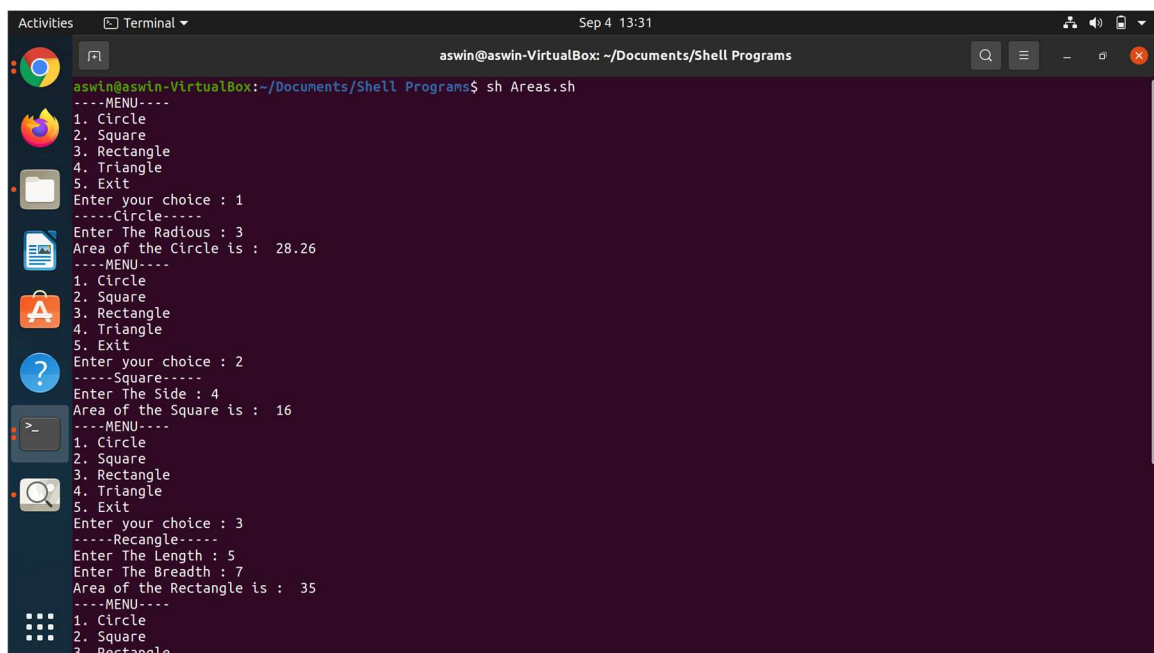
*)echo "Invalid Input"

esac

done

```

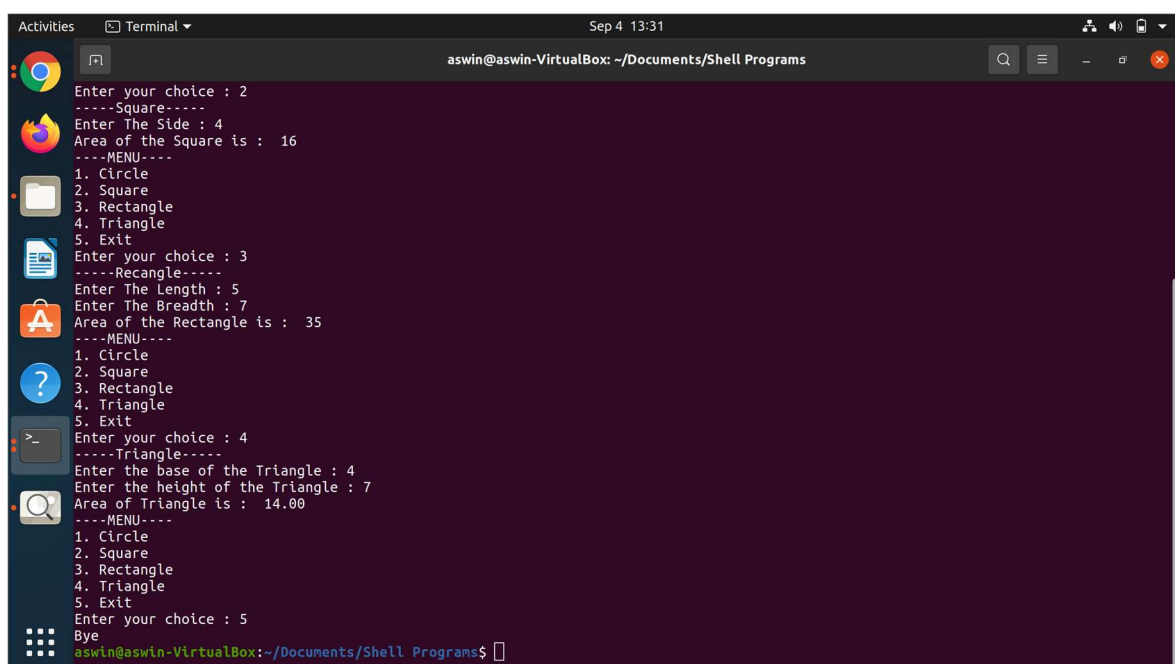
Output



```

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$

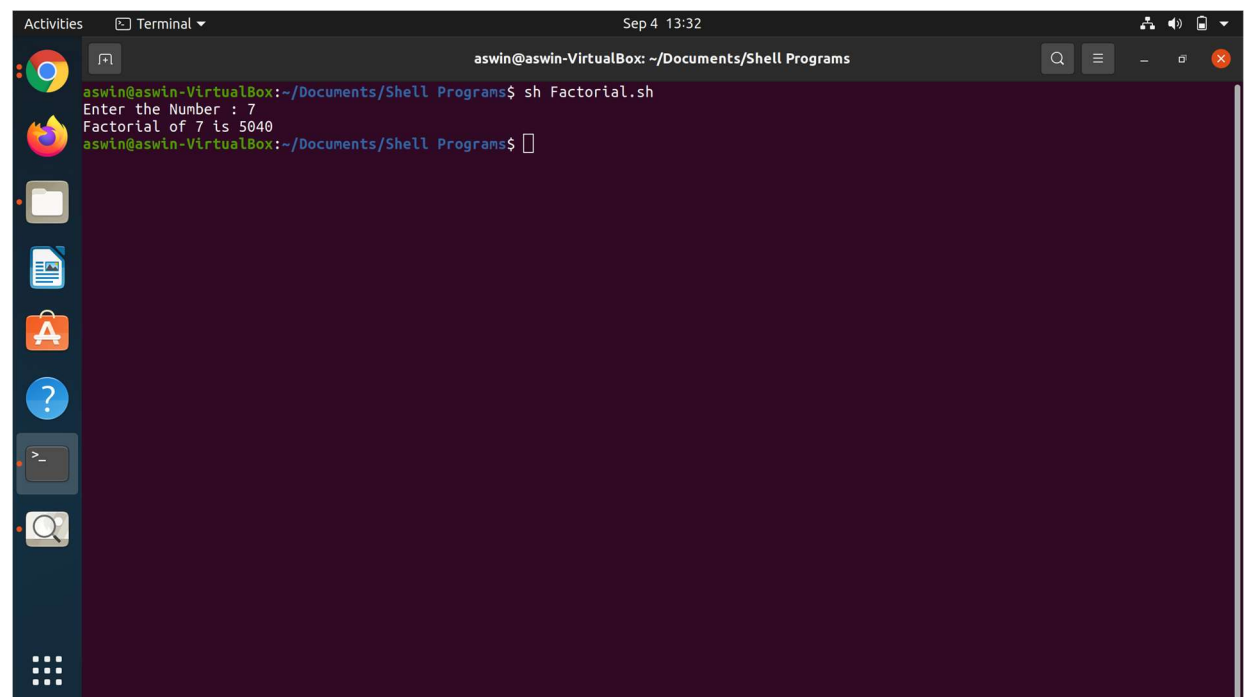
```

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

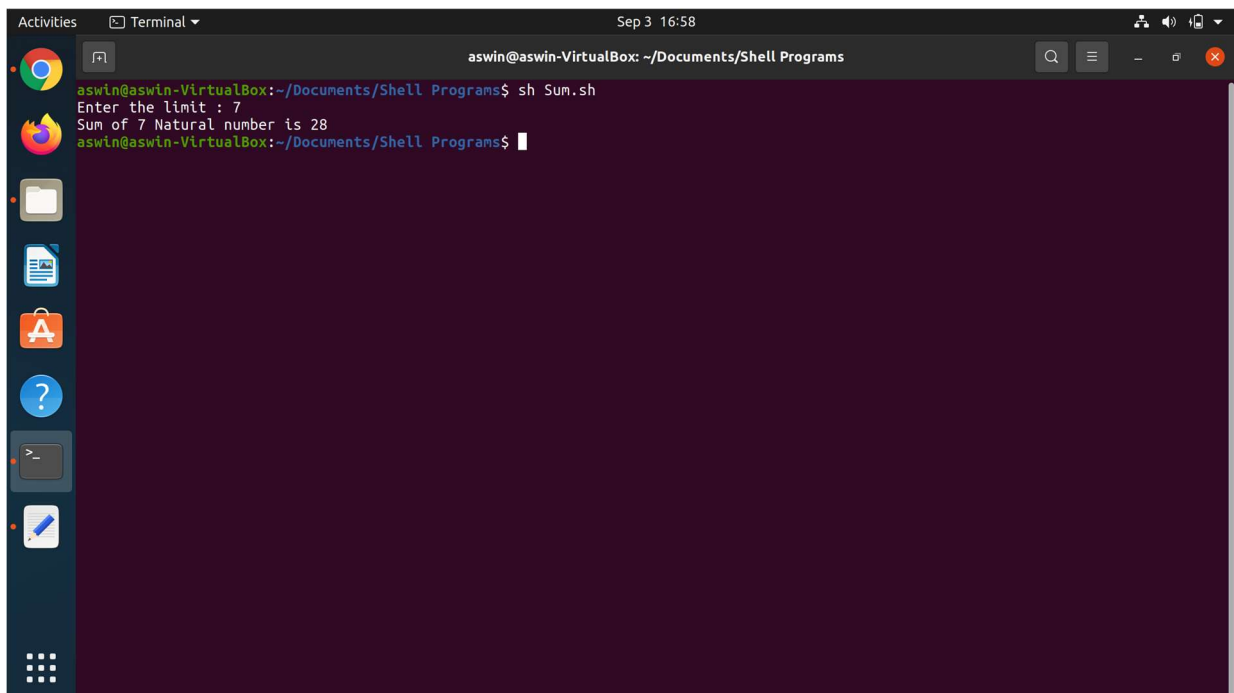
A screenshot of a Linux terminal window. The window title is "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The terminal shows the command "sh Factorial.sh" being executed. The output of the script is "Enter the Number : 7" followed by "Factorial of 7 is 5040". The prompt "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$" is visible at the bottom. The terminal has a dark purple background and a sidebar on the left with various application icons. The top of the window shows system information like "Sep 4 13:32" and window control buttons.

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



The screenshot shows a terminal window titled "aswin@aswin-VirtualBox: ~/Documents/Shell Programs". The user has executed the command `sh Sum.sh`. The script prompts for a limit, and the user enters 7. The script then outputs "Sum of 7 Natural number is 28".

```
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

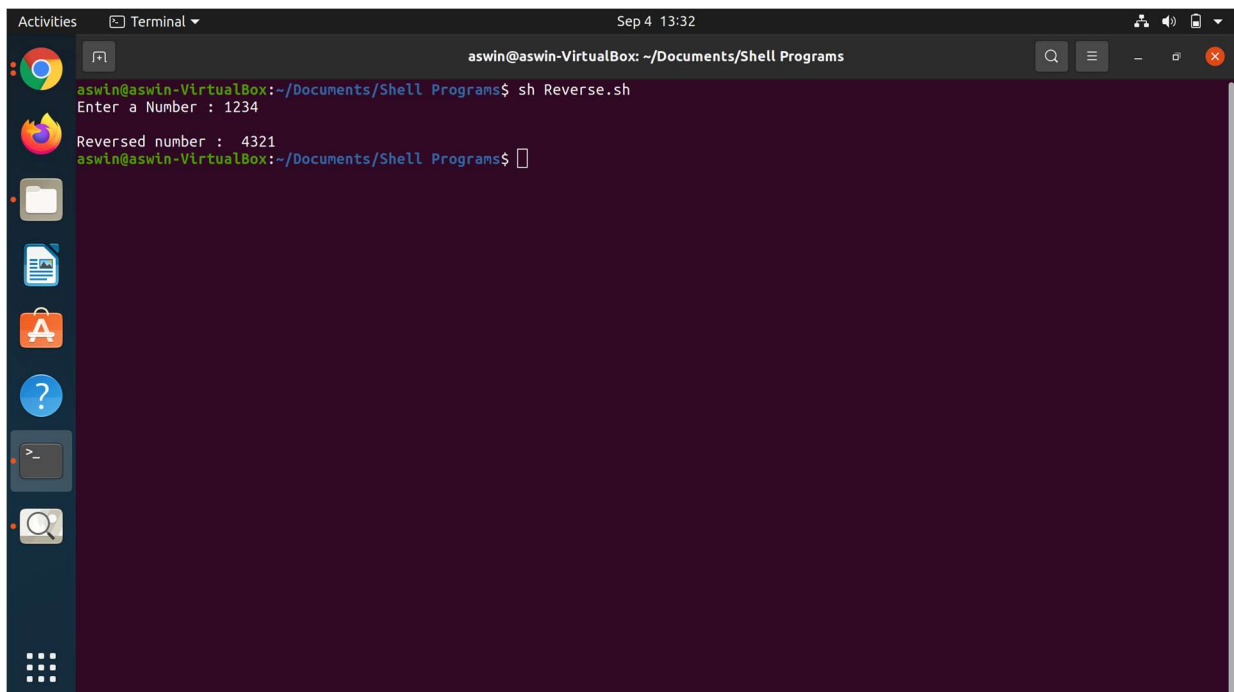
read -p "Enter a Number : " n

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 Linux terminal window. The window title is "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\$". The user enters "sh Reverse.sh". The prompt changes to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The user enters "1234". The prompt changes to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The output is "Reversed number : 4321". The prompt changes to "aswin@aswin-VirtualBox:~/Documents/Shell Programs\$". The terminal window has a dark background and a light-colored text. The left sidebar shows various application icons. The top bar shows the date and time "Sep 4 13:32".