

LAB PROGRAMS 1 – 12

Lab Program 1:

Q. Shell script to find if the given year is leap or not.

PROGRAM:

```
#!/bin/sh

echo "Enter the year: "

read year

if [ `expr $year % 4` -eq 0 ]

then

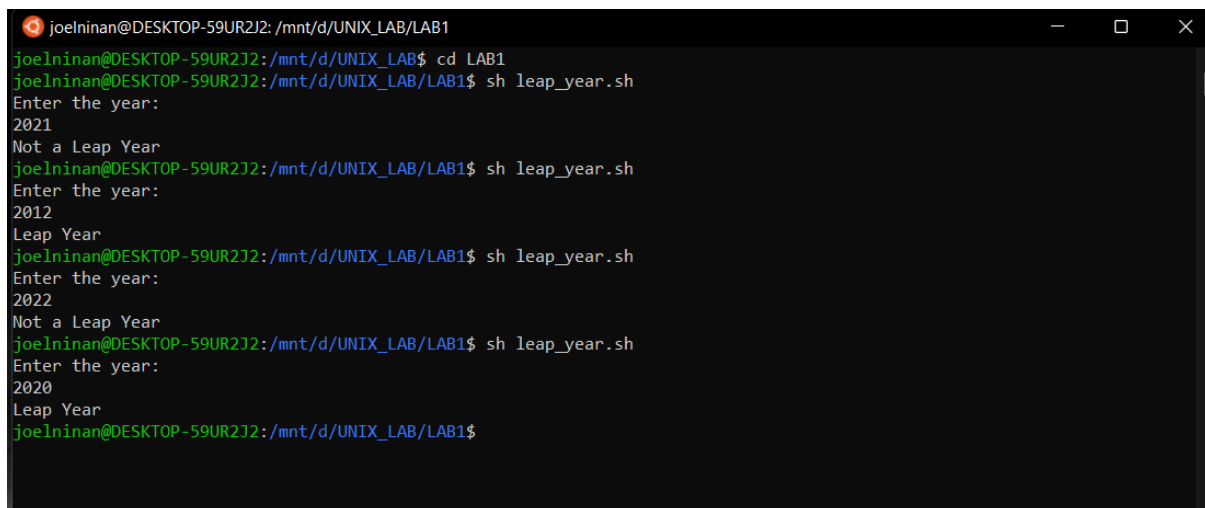
    echo "Leap Year"

else

    echo "Not a Leap Year"

fi
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB1
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$ cd LAB1
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$ sh leap_year.sh
Enter the year:
2021
Not a Leap Year
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$ sh leap_year.sh
Enter the year:
2012
Leap Year
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$ sh leap_year.sh
Enter the year:
2022
Not a Leap Year
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$ sh leap_year.sh
Enter the year:
2020
Leap Year
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB1$
```

Lab Program 2:

Q. Shell script to find the area of a circle.

PROGRAM:

```
#!/bin/sh

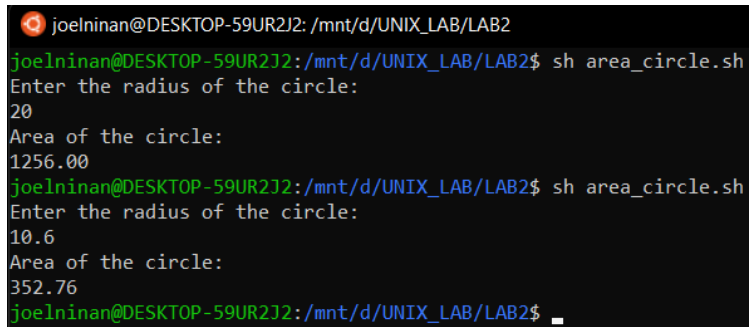
echo "Enter the radius of the circle: "

read radius

echo "Area of the circle: "

echo "3.14 * $radius * $radius" | bc
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB2
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB2$ sh area_circle.sh
Enter the radius of the circle:
20
Area of the circle:
1256.00
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB2$ sh area_circle.sh
Enter the radius of the circle:
10.6
Area of the circle:
352.76
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB2$
```

Lab Program 3:

Q. Shell script to check whether the number is zero/ positive/ negative.

PROGRAM:

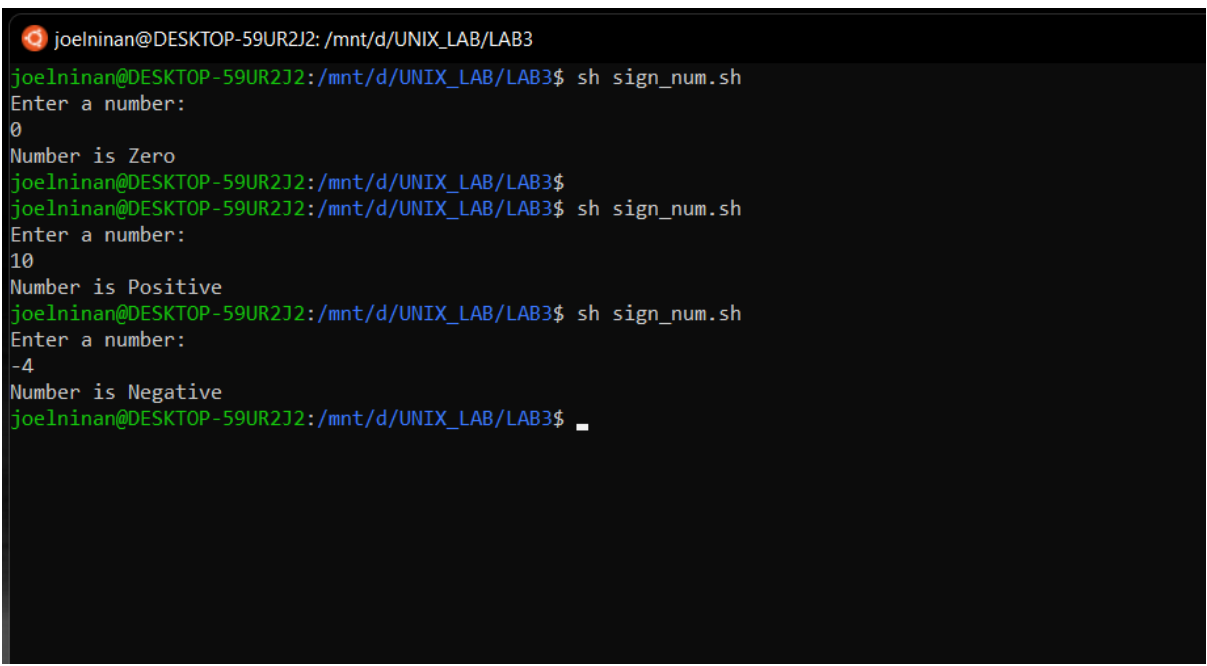
```
#!/bin/sh

echo "Enter a number: "

read num

if [ $num -eq 0 ];
then
    echo "Number is Zero"
elif [ $num -gt 0 ];
then
    echo "Number is Positive"
else
    echo "Number is Negative"
fi
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB3
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB3$ sh sign_num.sh
Enter a number:
0
Number is Zero
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB3$
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB3$ sh sign_num.sh
Enter a number:
10
Number is Positive
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB3$ sh sign_num.sh
Enter a number:
-4
Number is Negative
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB3$
```

Lab Program 4:

Q. Shell script to find the biggest of three numbers.

PROGRAM:

```
#!/bin/sh

echo "Enter three numbers: "

read x y z

if [ $x -gt $y -a $x -gt $z ]
then
    echo "$x is greatest"
elif [ $y -gt $x -a $y -gt $z ]
then
    echo "$y is greatest"
else
    echo "$z is greatest"
fi
```

OUTPUT:

A terminal window with a dark background. The prompt is 'joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB4'. The user runs 'sh greatest_num.sh'. The script prompts 'Enter three numbers:' and the user enters '2 5 9'. The script outputs '9 is greatest'. The user runs the script again, enters '5 11 5', and the script outputs '11 is greatest'. The user runs the script a third time, enters '17 4 12', and the script outputs '17 is greatest'. The prompt returns to the user.

```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB4$ sh greatest_num.sh
Enter three numbers:
2 5 9
9 is greatest
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB4$ sh greatest_num.sh
Enter three numbers:
5 11 5
11 is greatest
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB4$ sh greatest_num.sh
Enter three numbers:
17 4 12
17 is greatest
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB4$
```

Lab Program 5:

Q. Shell script to find the factorial of a number.

PROGRAM:

```
#!/bin/sh

echo "Enter a number: "

read num

fact=1

i=1

while [ $i -le $num ]

do

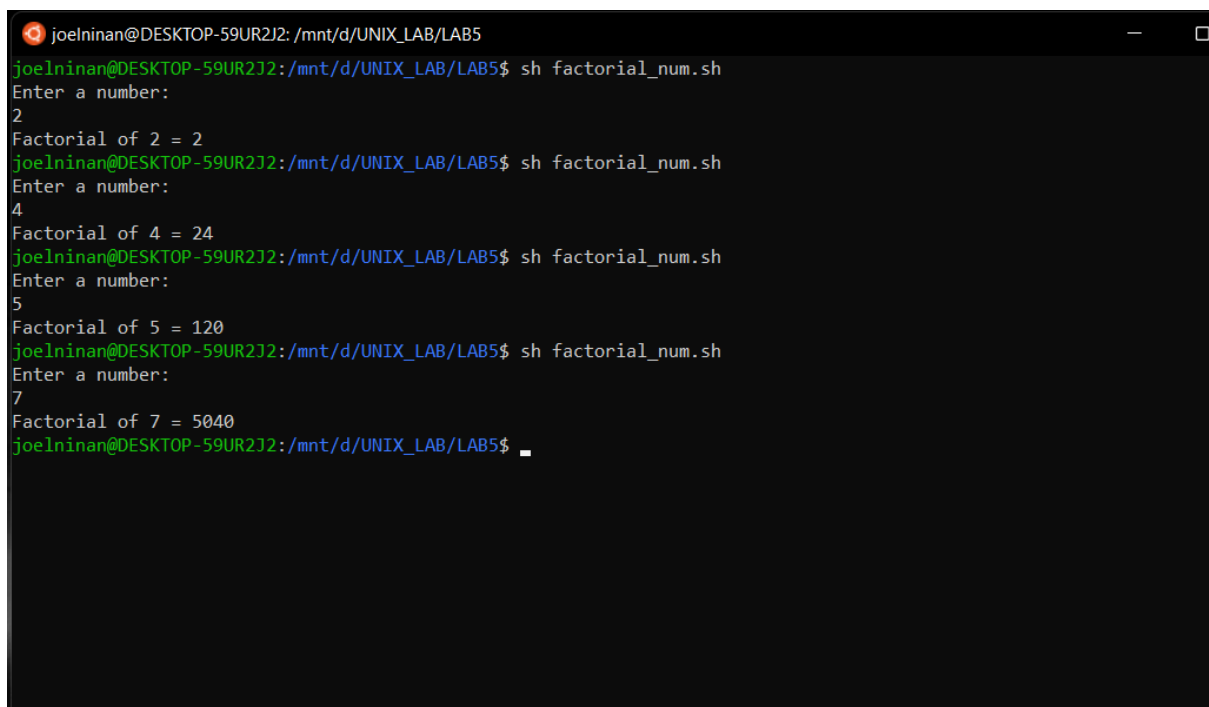
    fact=`expr $i \* $fact`

    i=`expr $i + 1`

done

echo "Factorial of $num = $fact"
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB5
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB5$ sh factorial_num.sh
Enter a number:
2
Factorial of 2 = 2
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB5$ sh factorial_num.sh
Enter a number:
4
Factorial of 4 = 24
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB5$ sh factorial_num.sh
Enter a number:
5
Factorial of 5 = 120
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB5$ sh factorial_num.sh
Enter a number:
7
Factorial of 7 = 5040
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB5$
```

Lab Program 6:

Q. Shell script to compute the gross salary of an employee.

PROGRAM:

```
#!/bin/sh

echo -n "Enter the basic salary: "

read basic

da=$(echo "0.1 * $basic" | bc)

hra=$(echo "0.2 * $basic" | bc)

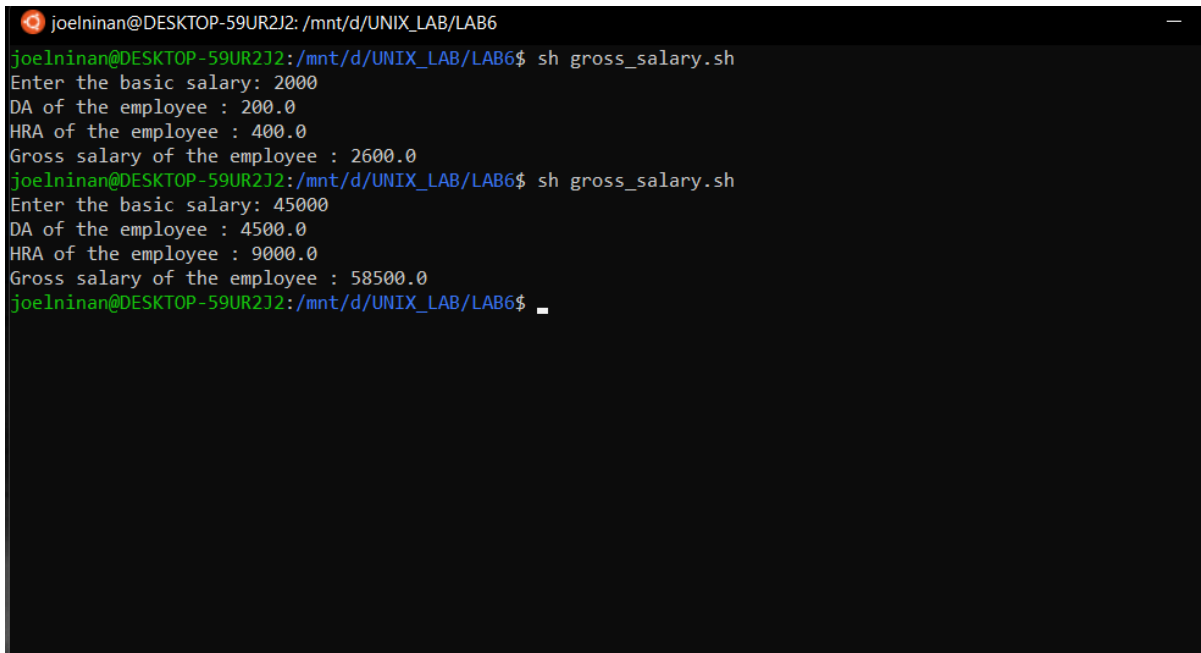
gross=$(echo "$basic + $da + $hra" | bc)

echo "DA of the employee : $da"

echo "HRA of the employee : $hra"

echo "Gross salary of the employee : $gross"
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB6
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB6$ sh gross_salary.sh
Enter the basic salary: 2000
DA of the employee : 200.0
HRA of the employee : 400.0
Gross salary of the employee : 2600.0
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB6$ sh gross_salary.sh
Enter the basic salary: 45000
DA of the employee : 4500.0
HRA of the employee : 9000.0
Gross salary of the employee : 58500.0
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB6$ _
```

Lab Program 7:

Q. Shell script to convert the temperature Fahrenheit to Celsius.

PROGRAM:

```
#!/bin/sh

echo -n "Read the temperature in Fahrenheit: "

read f

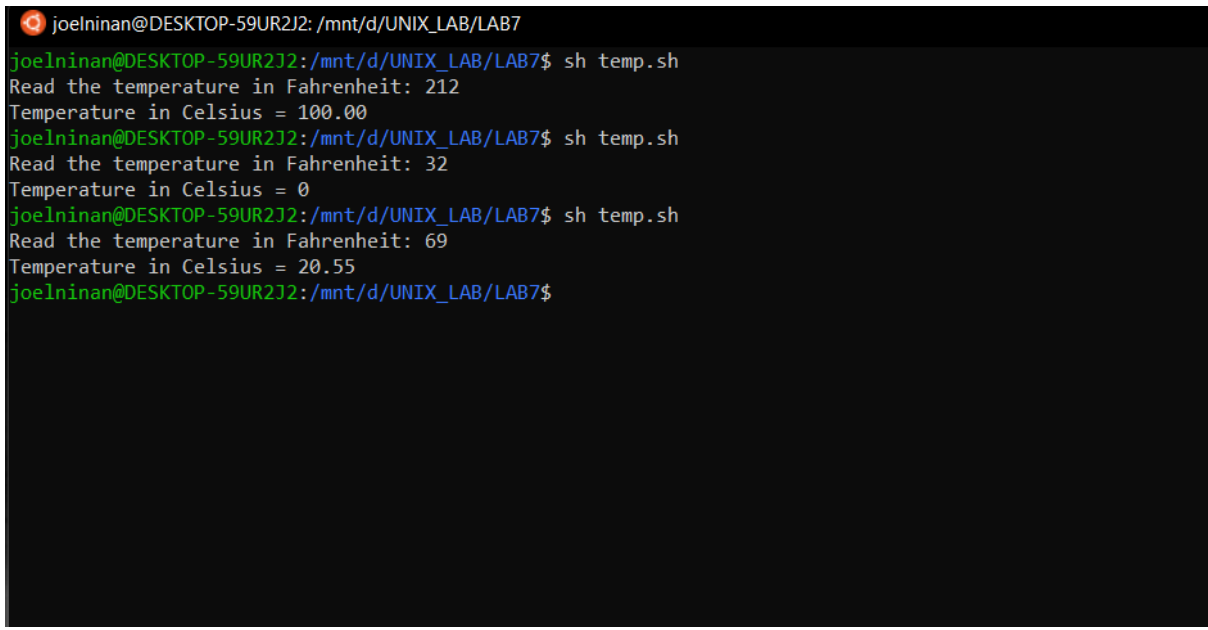
v1=$( echo "$f - 32" | bc )

v2=$( echo "$v1 * 5" | bc )

v3=$( echo "scale=2; $v2 / 9" | bc -l )

echo "Temperature in Celsius = $v3"
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB7
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB7$ sh temp.sh
Read the temperature in Fahrenheit: 212
Temperature in Celsius = 100.00
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB7$ sh temp.sh
Read the temperature in Fahrenheit: 32
Temperature in Celsius = 0
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB7$ sh temp.sh
Read the temperature in Fahrenheit: 69
Temperature in Celsius = 20.55
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB7$
```

Lab Program 8:

Q. Shell script to perform arithmetic operations on given two numbers.

PROGRAM:

```
#!/bin/sh

echo "Enter two numbers: "

read x y

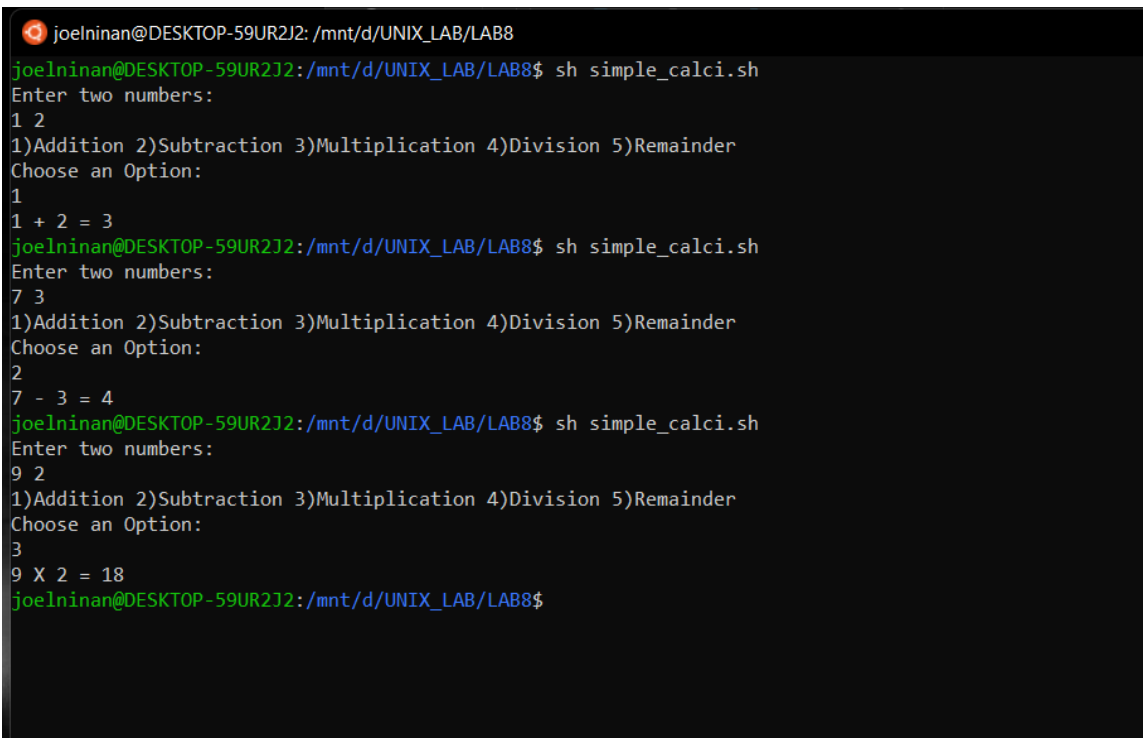
echo "1)Addition 2)Subtraction 3)Multiplication 4)Division 5)Remainder"

echo "Choose an Option: "

read ch

case $ch in
    1) echo "$x + $y = `expr $x + $y`";;
    2) echo "$x - $y = `expr $x - $y`";;
    3) echo "$x X $y = `expr $x \* $y`";;
    4) echo "$x / $y = `expr $x / $y`";;
    5) echo "$x % $y = `expr $x % $y`";;
    *) echo "Invalid Choice!!"
esac
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB8
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB8$ sh simple_calci.sh
Enter two numbers:
1 2
1)Addition 2)Subtraction 3)Multiplication 4)Division 5)Remainder
Choose an Option:
1
1 + 2 = 3
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB8$ sh simple_calci.sh
Enter two numbers:
7 3
1)Addition 2)Subtraction 3)Multiplication 4)Division 5)Remainder
Choose an Option:
2
7 - 3 = 4
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB8$ sh simple_calci.sh
Enter two numbers:
9 2
1)Addition 2)Subtraction 3)Multiplication 4)Division 5)Remainder
Choose an Option:
3
9 X 2 = 18
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB8$
```


Lab Program 9:

Q. Shell script to find the sum of even numbers up to n.

PROGRAM:

```
#!/bin/bash

echo -n "Enter a number: "

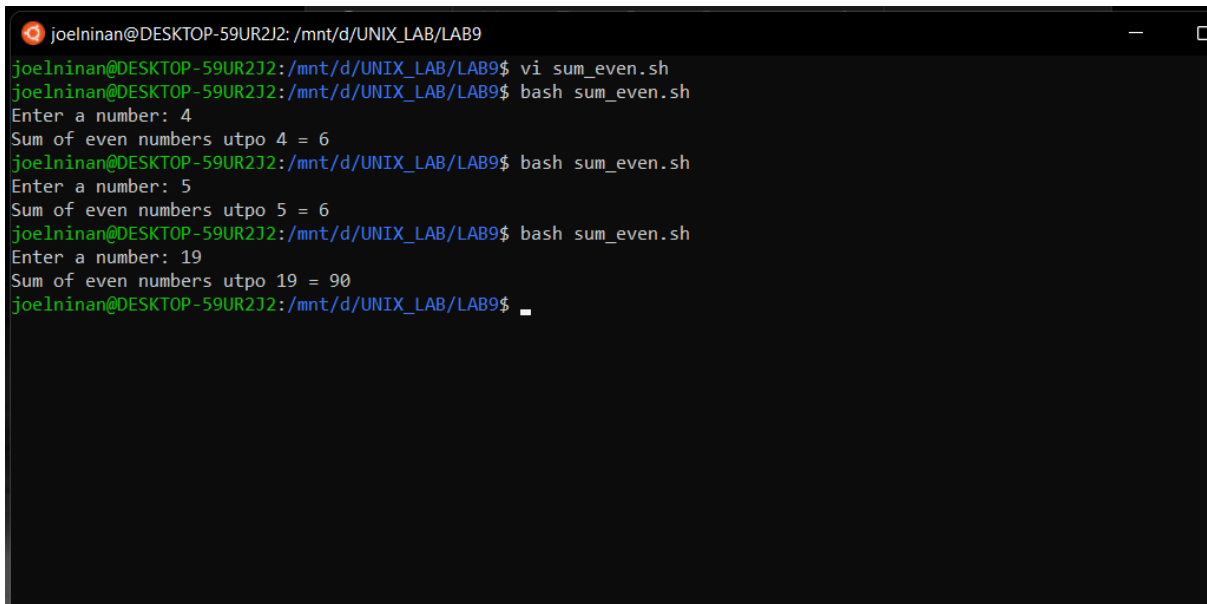
read num

sum=0

for (( i=0 ; i<=$num ; i=i+2 ))
do
    sum=$(( $sum + $i ))
done

echo "Sum of even numbers utpo $num = $sum"
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB9
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB9$ vi sum_even.sh
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB9$ bash sum_even.sh
Enter a number: 4
Sum of even numbers utpo 4 = 6
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB9$ bash sum_even.sh
Enter a number: 5
Sum of even numbers utpo 5 = 6
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB9$ bash sum_even.sh
Enter a number: 19
Sum of even numbers utpo 19 = 90
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB9$
```

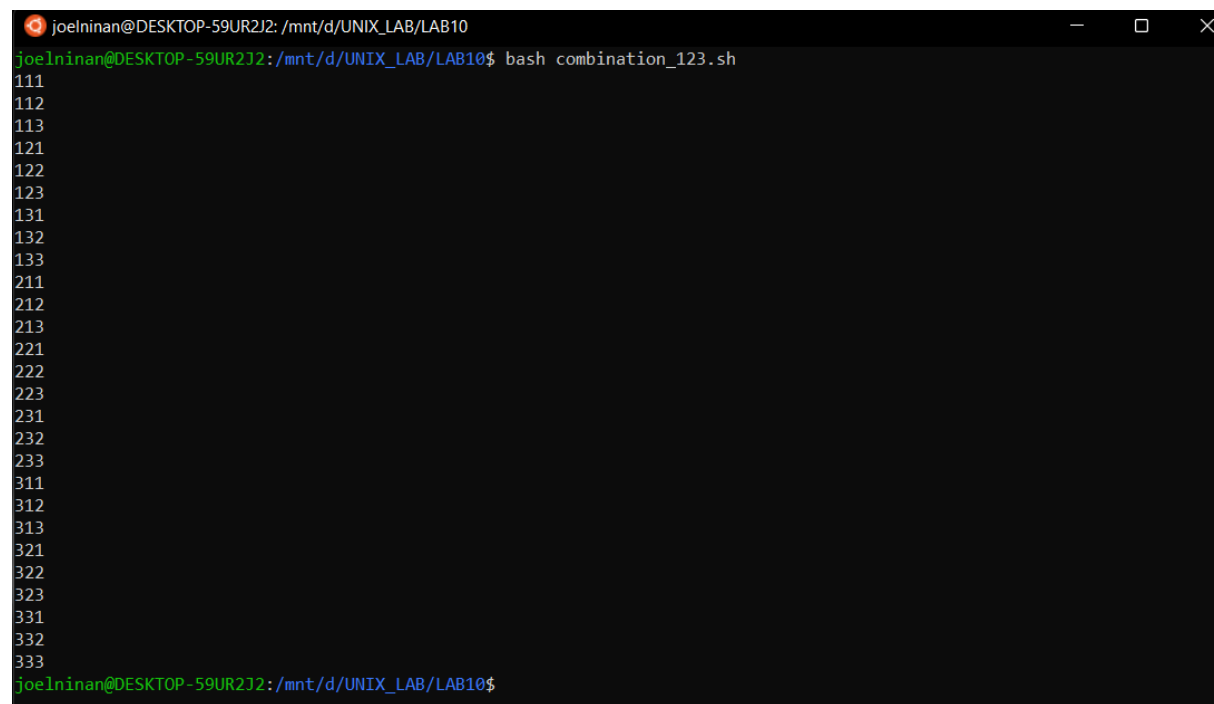
Lab Program 10:

Q. Shell script to print the combinations of numbers 123.

PROGRAM:

```
#!/bin/sh
for i in 1 2 3
do
    for j in 1 2 3
    do
        for k in 1 2 3
        do
            echo "$i$j$k"
        done
    done
done
```

OUTPUT:



```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB10
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB10$ bash combination_123.sh
111
112
113
121
122
123
131
132
133
211
212
213
221
222
223
231
232
233
311
312
313
321
322
323
331
332
333
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB10$
```

Lab Program 11:

Q. Shell script to find the power of a number.

PROGRAM:

```
#!/bin/bash

echo -n "Enter the number: "

read x

echo -n "Enter the power: "

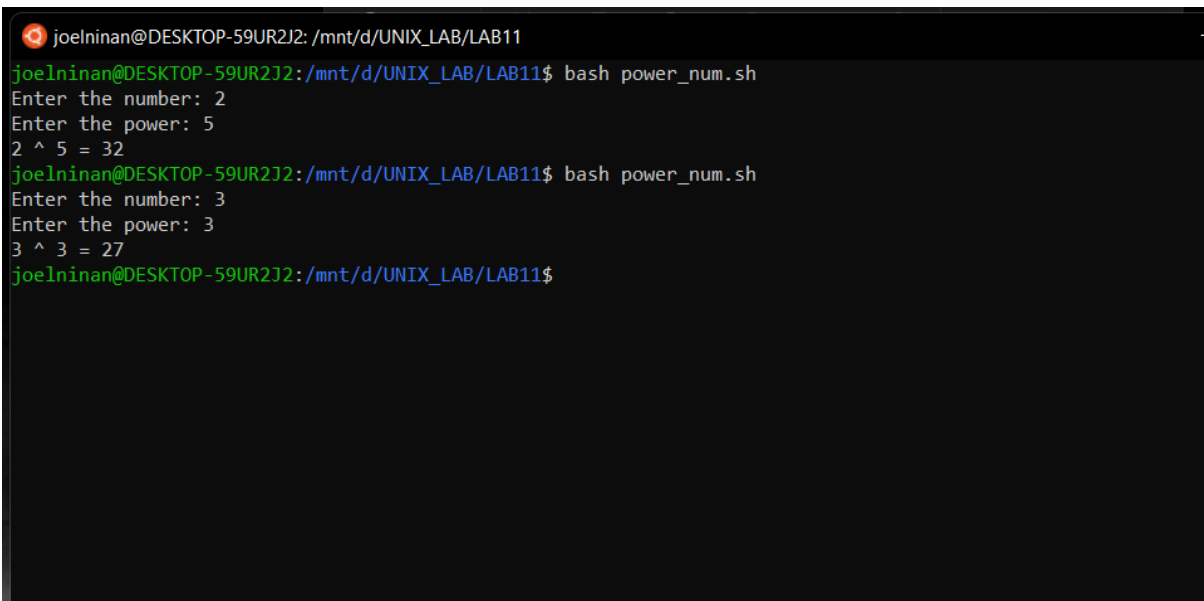
read y

res=1

for (( i=1; i<=$y; i++ ))
do
    res=`expr $res \* $x`
done

echo "$x ^ $y = $res"
```

OUTPUT:

A terminal window with a dark background and light green text. The prompt is 'joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB11'. The user runs 'bash power_num.sh'. The script prompts for a number (2) and power (5), then outputs '2 ^ 5 = 32'. The user runs the script again, entering 3 and 3, and the output is '3 ^ 3 = 27'.

```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB11
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB11$ bash power_num.sh
Enter the number: 2
Enter the power: 5
2 ^ 5 = 32
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB11$ bash power_num.sh
Enter the number: 3
Enter the power: 3
3 ^ 3 = 27
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB11$
```

Lab Program 12:

Q. Shell script to find the sum of n natural numbers.

PROGRAM:

```
#!/bin/bash

echo -n "Enter a number : "

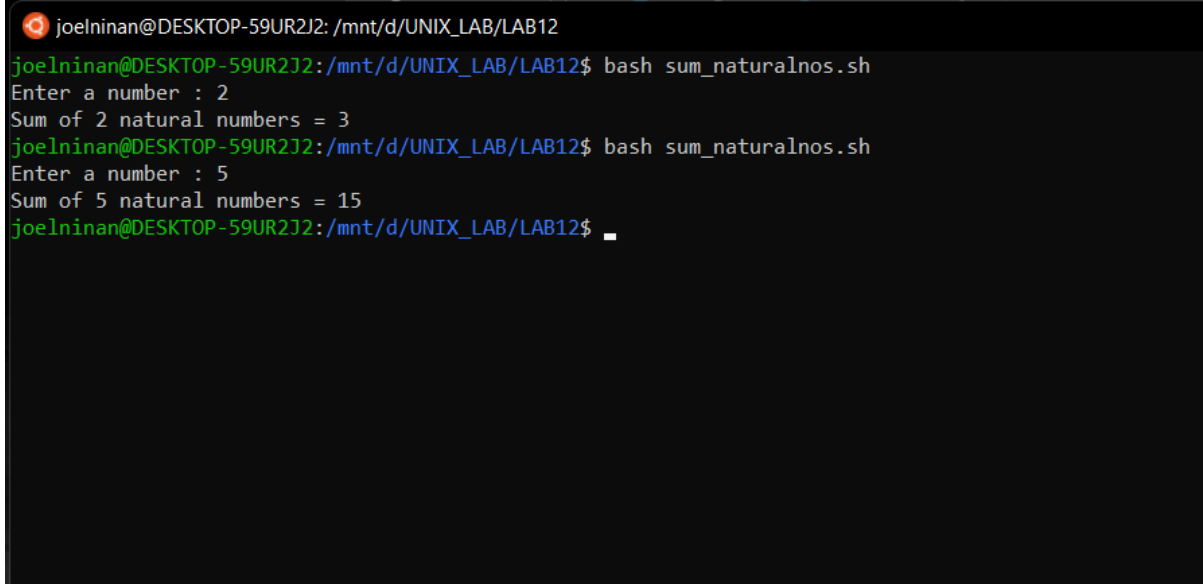
read num

sum=0

for (( i=1 ; i<=$num ; i++ ))
do
    sum=$(( $sum + $i ))
done

echo "Sum of $num natural numbers = $sum"
```

OUTPUT:

A terminal window with a dark background and light green text. The prompt is 'joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB12'. The user enters 'bash sum_naturalnos.sh'. The script prompts 'Enter a number : 2' and outputs 'Sum of 2 natural numbers = 3'. The user enters 'bash sum_naturalnos.sh' again. The script prompts 'Enter a number : 5' and outputs 'Sum of 5 natural numbers = 15'. The prompt returns to the user.

```
joelninan@DESKTOP-59UR2J2: /mnt/d/UNIX_LAB/LAB12
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB12$ bash sum_naturalnos.sh
Enter a number : 2
Sum of 2 natural numbers = 3
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB12$ bash sum_naturalnos.sh
Enter a number : 5
Sum of 5 natural numbers = 15
joelninan@DESKTOP-59UR2J2:/mnt/d/UNIX_LAB/LAB12$ _
```