

Project 10:

Your task is to build a scientific calculator that performs all the below listed functionalities.

1. Add, sub, multiply, divide, and mod (%) operations on entered integer or floating type numbers.
2. Square root, exponent (power (a, b))
3. Sine, cosine, and tangent (Trigonometric functions).
4. Conversion from radian to degree and degree to radian.

Above listed operations user can perform as many numbers of times until user hits the exit.

```
import math

print("\nWELCOME :)\n")

print("Type 'a' for addition")
print("Type 's' for subtraction")
print("Type 'm' for multiply")
print("Type 'd' for divide")
print("Type 'sq' for Square Root")
print("Type 'exp' for Exponent(Power(a,b))")
print("Type 'sin' for Sine Function")
print("Type 'cos' for Cosine Function")
print("Type 'tan' for Tangent Function")
print("Type 'rad' to Change from Radian to Degree")
print("Type 'deg' to Change from Degree to Radian")
print("Type 'exit' to take Exit From Program")
```

```
while True:
```

```
    choice = str(input("\nYour Choice: "))
```

```
    if choice=='a':
```

```
        n=int(input("How many Numbers you want to add: "))
```

```
        s=0
```

```
        for i in range(1,n+1):
```

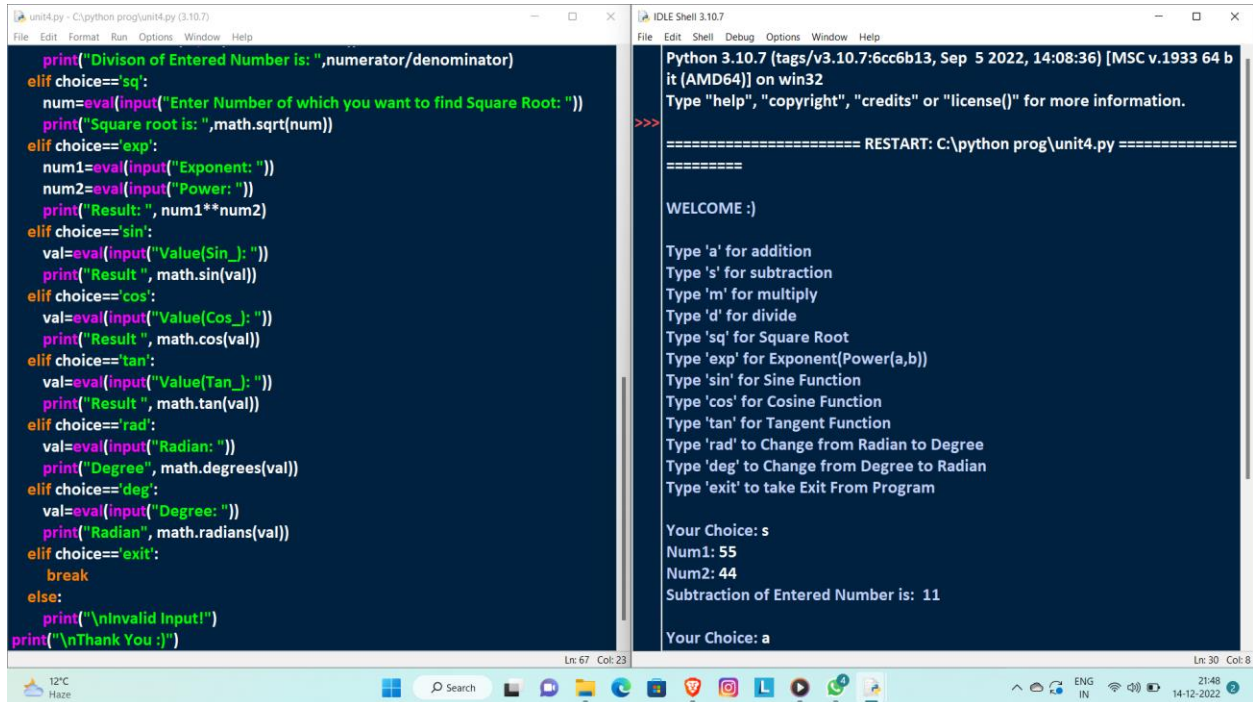
```
        add=eval(input("Number: "))
        s+=add
    print("Sum is: ",s)
elif choice=='s':
    num1= eval(input("Num1: "))
    num2= eval(input("Num2: "))
    print("Subtraction of Entered Number is: ",num1-num2)
elif choice=='m':
    m=int(input("How many Numbers You Want to Multiply:"))
    s=1
    for i in range(1,m+1):
        mul=eval(input("Number: "))
        s*=mul
    print("Multiplication of Entered Number is: ",s)
elif choice=='d':
    numerator=eval(input("Numerator: "))
    denominator=eval(input("Denominator: "))
    print("Divison of Entered Number is: ",numerator/denominator)
elif choice=='sq':
    num=eval(input("Enter Number of which you want to find Square
Root: "))
    print("Square root is: ",math.sqrt(num))
```

```
elif choice=='exp':
    num1=eval(input("Exponent: "))
    num2=eval(input("Power: "))
    print("Result: ", num1**num2)
elif choice=='sin':
    val=eval(input("Value(Sin_): "))
    print("Result ", math.sin(val))
elif choice=='cos':
    val=eval(input("Value(Cos_): "))
    print("Result ", math.cos(val))
elif choice=='tan':
    val=eval(input("Value(Tan_): "))
    print("Result ", math.tan(val))
elif choice=='rad':
    val=eval(input("Radian: "))
    print("Degree", math.degrees(val))
elif choice=='deg':
    val=eval(input("Degree: "))
    print("Radian", math.radians(val))
elif choice=='exit':
    break
else:
```

```
print("\nInvalid Input!")
```

```
print("\nThank You :)")
```

Output Screenshots



This screenshot shows the initial execution of a Python program in an IDE. The left pane displays the source code, and the right pane shows the output.

```
print("Divison of Entered Number is: ",numerator/denominator)
elif choice=='sq':
    num=eval(input("Enter Number of which you want to find Square Root: "))
    print("Square root is: ",math.sqrt(num))
elif choice=='exp':
    num1=eval(input("Exponent: "))
    num2=eval(input("Power: "))
    print("Result: ", num1**num2)
elif choice=='sin':
    val=eval(input("Value(Sin_): "))
    print("Result ", math.sin(val))
elif choice=='cos':
    val=eval(input("Value(Cos_): "))
    print("Result ", math.cos(val))
elif choice=='tan':
    val=eval(input("Value(Tan_): "))
    print("Result ", math.tan(val))
elif choice=='rad':
    val=eval(input("Radian: "))
    print("Degree", math.degrees(val))
elif choice=='deg':
    val=eval(input("Degree: "))
    print("Radian", math.radians(val))
elif choice=='exit':
    break
else:
    print("\nInvalid Input!")
print("\nThank You :)")
```

Python 3.10.7 (tags/v3.10.7:6cc6b13, Sep 5 2022, 14:08:36) [MSC v.1933 64 b it (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

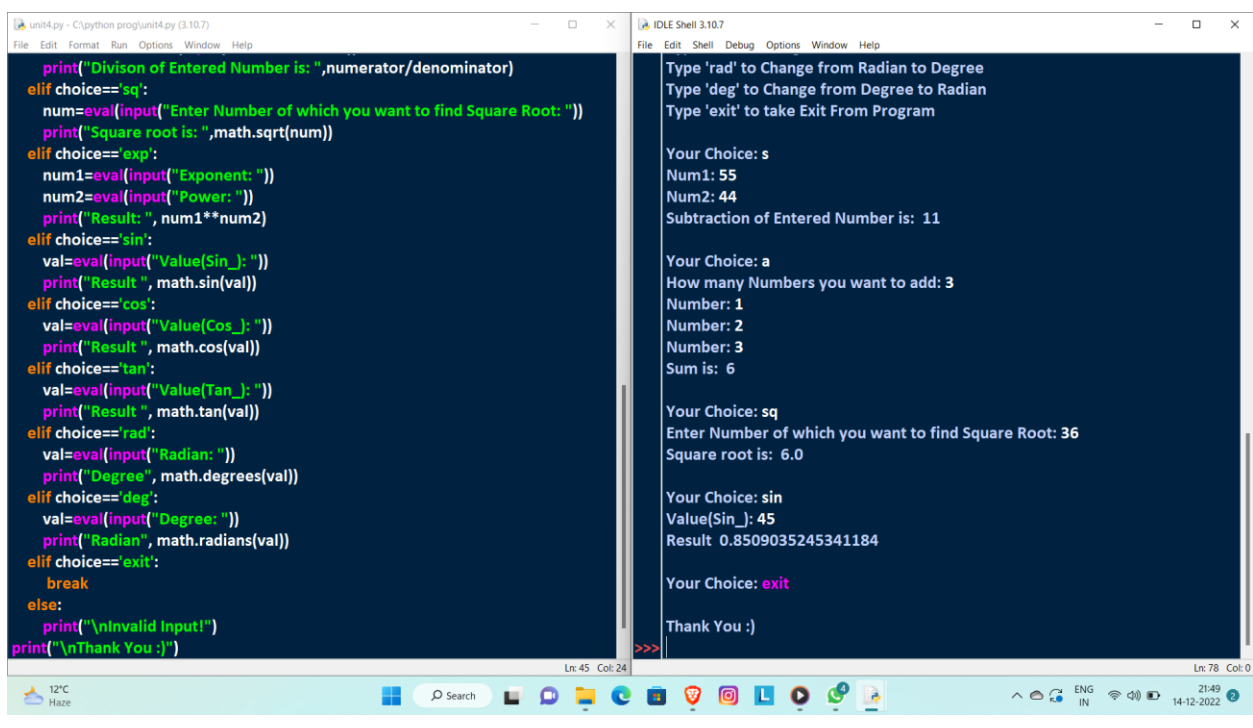
===== RESTART: C:\python prog\unit4.py =====

WELCOME :)

Type 'a' for addition
Type 's' for subtraction
Type 'm' for multiply
Type 'd' for divide
Type 'sq' for Square Root
Type 'exp' for Exponent(Power(a,b))
Type 'sin' for Sine Function
Type 'cos' for Cosine Function
Type 'tan' for Tangent Function
Type 'rad' to Change from Radian to Degree
Type 'deg' to Change from Degree to Radian
Type 'exit' to take Exit From Program

Your Choice: s
Num1: 55
Num2: 44
Subtraction of Entered Number is: 11

Your Choice: a



This screenshot shows the program's output after several user inputs. The left pane displays the source code, and the right pane shows the output.

```
print("Divison of Entered Number is: ",numerator/denominator)
elif choice=='sq':
    num=eval(input("Enter Number of which you want to find Square Root: "))
    print("Square root is: ",math.sqrt(num))
elif choice=='exp':
    num1=eval(input("Exponent: "))
    num2=eval(input("Power: "))
    print("Result: ", num1**num2)
elif choice=='sin':
    val=eval(input("Value(Sin_): "))
    print("Result ", math.sin(val))
elif choice=='cos':
    val=eval(input("Value(Cos_): "))
    print("Result ", math.cos(val))
elif choice=='tan':
    val=eval(input("Value(Tan_): "))
    print("Result ", math.tan(val))
elif choice=='rad':
    val=eval(input("Radian: "))
    print("Degree", math.degrees(val))
elif choice=='deg':
    val=eval(input("Degree: "))
    print("Radian", math.radians(val))
elif choice=='exit':
    break
else:
    print("\nInvalid Input!")
print("\nThank You :)")
```

Type 'rad' to Change from Radian to Degree
Type 'deg' to Change from Degree to Radian
Type 'exit' to take Exit From Program

Your Choice: s
Num1: 55
Num2: 44
Subtraction of Entered Number is: 11

Your Choice: a
How many Numbers you want to add: 3
Number: 1
Number: 2
Number: 3
Sum is: 6

Your Choice: sq
Enter Number of which you want to find Square Root: 36
Square root is: 6.0

Your Choice: sin
Value(Sin_): 45
Result 0.8509035245341184

Your Choice: exit

Thank You :)