LAB 04:
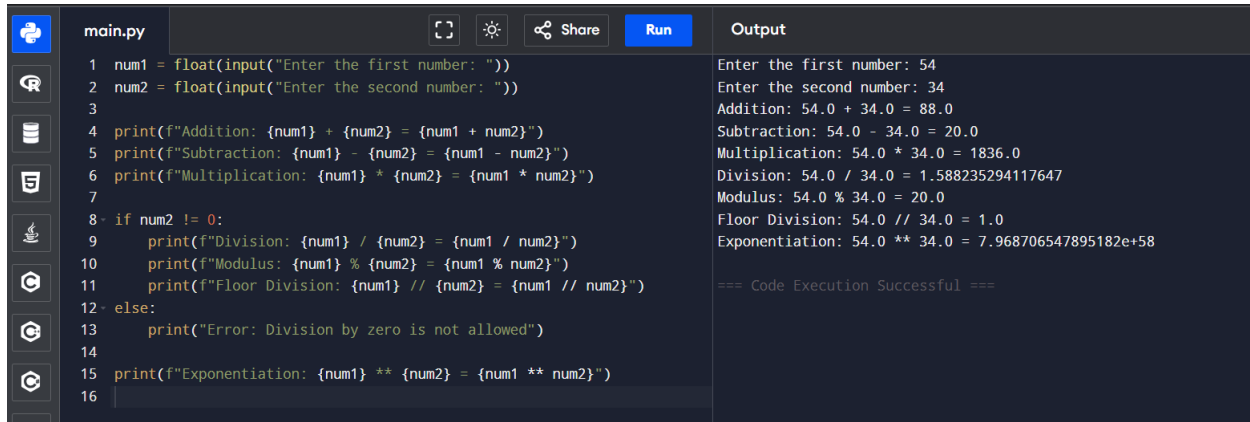
Q. Write a python program to take two numbers as input and perform all arithmetic operators on them.
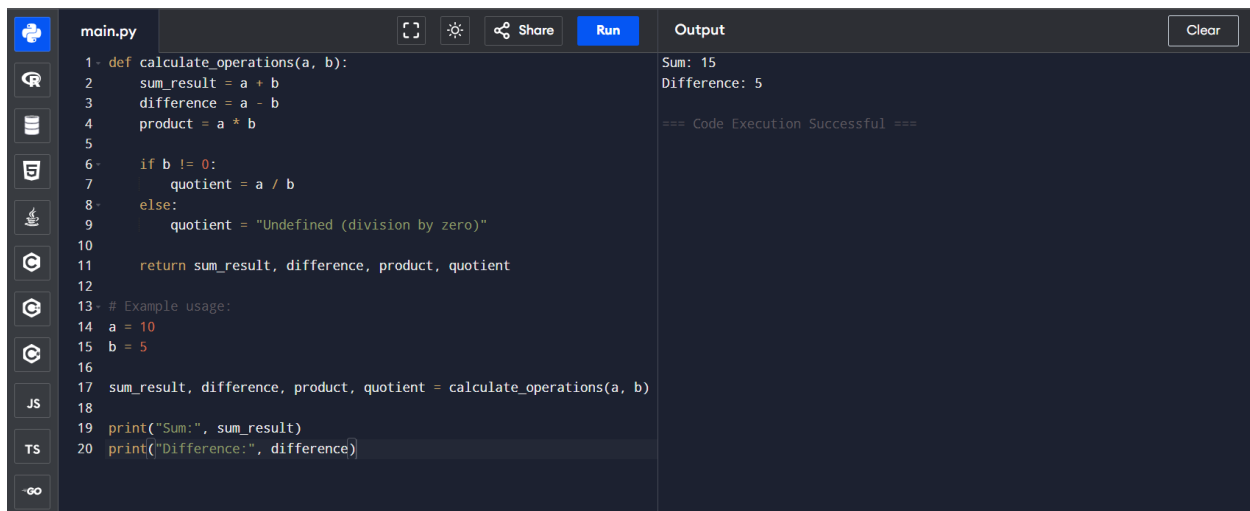
```python
1   num1 = float(input("Enter the first number: "))
2   num2 = float(input("Enter the second number: "))
3
4   print(f"Addition: {num1} + {num2} = {num1 + num2}")
5   print(f"Subtraction: {num1} - {num2} = {num1 - num2}")
6   print(f"Multiplication: {num1} * {num2} = {num1 * num2}")
7
8   if num2 != 0:
9       print(f"Division: {num1} / {num2} = {num1 / num2}")
10      print(f"Modulus: {num1} % {num2} = {num1 % num2}")
11      print(f"Floor Division: {num1} // {num2} = {num1 // num2}")
12  else:
13      print("Error: Division by zero is not allowed")
14
15  print(f"Exponentiation: {num1} ** {num2} = {num1 ** num2}")
16
```

Output
```
Enter the first number: 54
Enter the second number: 34
Addition: 54.0 + 34.0 = 88.0
Subtraction: 54.0 - 34.0 = 20.0
Multiplication: 54.0 * 34.0 = 1836.0
Division: 54.0 / 34.0 = 1.588235294117647
Modulus: 54.0 % 34.0 = 20.0
Floor Division: 54.0 // 34.0 = 1.0
Exponentiation: 54.0 ** 34.0 = 7.968706547895182e+58

=== Code Execution Successful ===
```

Q. Create a function that takes two numbers & returns their sum-sub-product-division.

```python
1   def calculate_operations(a, b):
2       sum_result = a + b
3       difference = a - b
4       product = a * b
5
6       if b != 0:
7           quotient = a / b
8       else:
9           quotient = "Undefined (division by zero)"
10
11      return sum_result, difference, product, quotient
12
13  # Example usage:
14  a = 10
15  b = 5
16
17  sum_result, difference, product, quotient = calculate_operations(a, b)
18
19  print("Sum:", sum_result)
20  print("Difference:", difference)
```
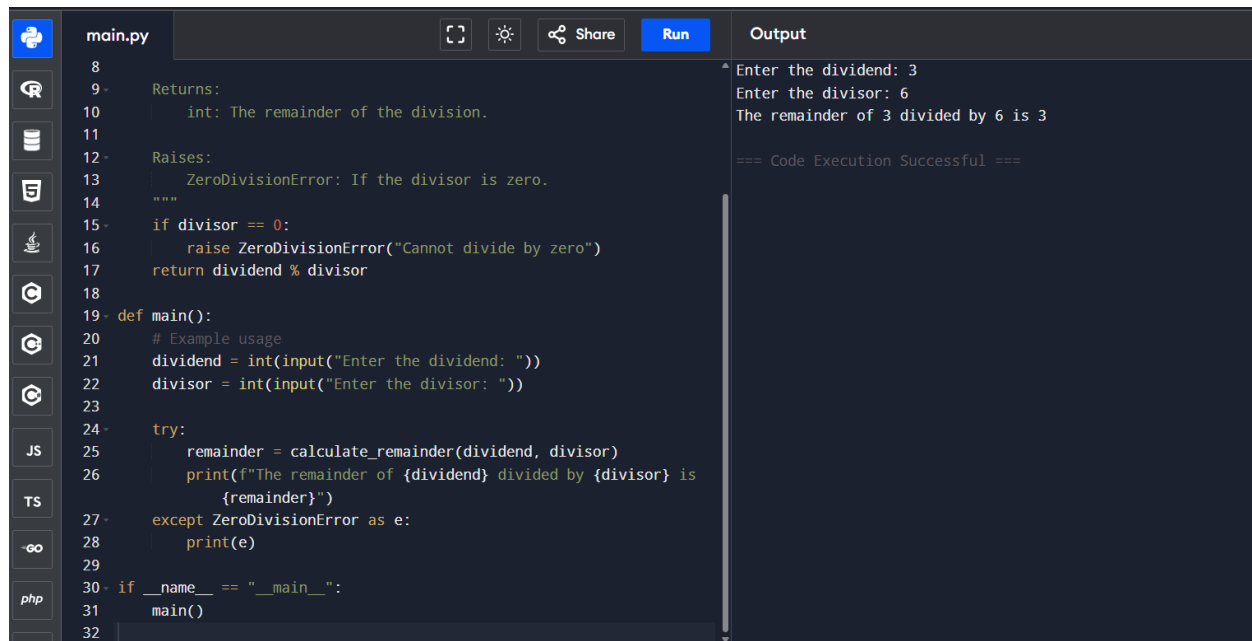
Output
```
Sum: 15
Difference: 5

=== Code Execution Successful ===
```

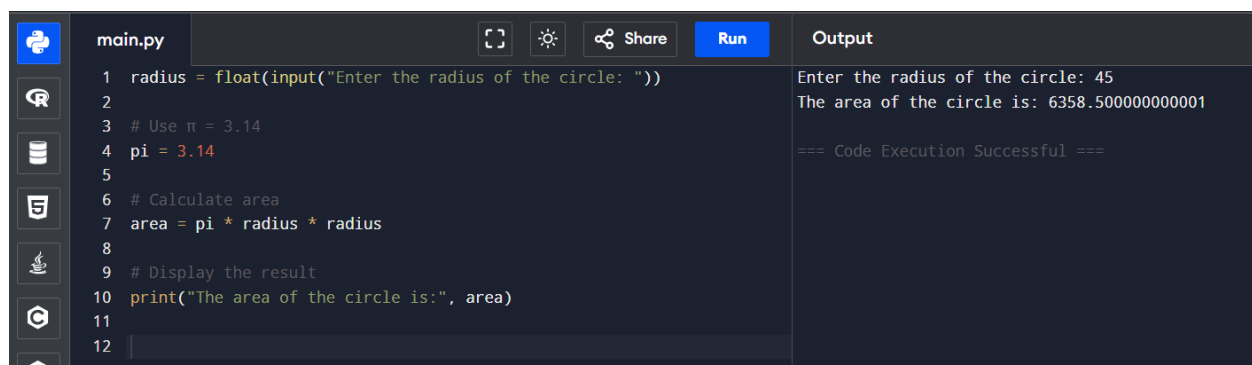## Q. Write a python script to find the remainder when one number is divided by another.

```python
8
9        Returns:
10            int: The remainder of the division.
11
12        Raises:
13            ZeroDivisionError: If the divisor is zero.
14        """
15        if divisor == 0:
16            raise ZeroDivisionError("Cannot divide by zero")
17        return dividend % divisor
18
19   def main():
20        # Example usage
21        dividend = int(input("Enter the dividend: "))
22        divisor = int(input("Enter the divisor: "))
23
24        try:
25            remainder = calculate_remainder(dividend, divisor)
26            print(f"The remainder of {dividend} divided by {divisor} is
                    {remainder}")
27        except ZeroDivisionError as e:
28            print(e)
29
30   if __name__ == "__main__":
31        main()
32
```

Output
```
Enter the dividend: 3
Enter the divisor: 6
The remainder of 3 divided by 6 is 3

=== Code Execution Successful ===
```

Q. Write a program to calculate the area of circle using the formula (Area =π*r^2).

```python
1    radius = float(input("Enter the radius of the circle: "))
2
3    # Use π = 3.14
4    pi = 3.14
5
6    # Calculate area
7    area = pi * radius * radius
8
9    # Display the result
10   print("The area of the circle is:", area)
11
12
```

Output
```
Enter the radius of the circle: 45
The area of the circle is: 6358.500000000001

=== Code Execution Successful ===
```

Q. Implement a program that takes a number as input & returns its square & cube using exponential.

```
main.py                                    Share   Run        Output
38              print(f"{num1} - {num2} = {subtract(num1, num2   Simple Calculator
                )}")                                             1. Addition
39                                                               2. Subtraction
40      elif choice == '3':                                      3. Multiplication
41          print(f"{num1} * {num2} = {multiply(num1, num2       4. Division
                )}")                                             Enter your choice (1/2/3/4): 54
42                                                               Invalid choice. Please enter a number between 1 and 4.
43      elif choice == '4':                                      Enter your choice (1/2/3/4): 2
44          try:                                                 Enter first number: 345
45              print(f"{num1} / {num2} = {divide(num1, num2     Enter second number: 2435
                )}")                                             345.0 - 2435.0 = -2090.0
46          except ZeroDivisionError as e:                       Do you want to calculate again? (yes/no):
47              print(e)
48
49          again = input("Do you want to calculate again? (yes
                /no): ")
50          if again.lower() != 'yes':
51              break
52
53      except ValueError:
54          print("Invalid input. Please enter a number.")
55
56  else:
57      print("Invalid choice. Please enter a number between 1
            and 4.")
```

Q. Create a simple calculator in python that allows the user to choose an operation (addition, subtraction,etc) & inputs two numbers.

```
main.py                                    Share   Run        Output
1  def square_and_cube(num):                                  Enter a number: 3
2      square = num ** 2                                       Square of 3.0: 9.0
3      cube = num ** 3                                         Cube of 3.0: 27.0
4      return square, cube
5                                                              === Code Execution Successful ===
6  num = float(input("Enter a number: "))
7  square, cube = square_and_cube(num)
8
9  print(f"Square of {num}: {square}")
10 print(f"Cube of {num}: {cube}")
11
```