

In [19]: # 2. Write a Python program to create a calculator class. Include methods for basic arithmetic operations

```
class Calculator:
    def add(self,x,y):
        return x+y
    def subtract(self,x,y):
        return x-y
    def multiply(self,x,y):
        return x*y
    def divide(self,x,y):
        if y!=0:
            return x/y
        else:
            return("Cannot divide by zero")
calculator=Calculator()
result=calculator.add(5,5)
print("5+5=", result)
result=calculator.subtract(15,11)
print("15-11=", result)
result=calculator.divide(60,3)
print("60/3=", result)
result=calculator.multiply(50,2)
print("50*2=", result)
result=calculator.divide(42,0)
print("42/0=",result)
```

```
5+5= 10
15-11= 4
60/3= 20.0
50*2= 100
42/0= Cannot divide by zero
```

In [20]: #3. Write a Python program to create a class that represents a shape. Include methods to calculate its area and perimeter. Implement subclasses for different shapes like circle, triangle, and square.

```
import math

class Shape:
    def calculate_area(self):
        pass
    def calculate_perimeter(self):
        pass

class Circle(Shape):
    def __init__(self, radius):
        self.radius = radius
    def calculate_area(self):
        return math.pi * self.radius**2
    def calculate_perimeter(self):
        return 2 * math.pi * self.radius

class Rectangle(Shape):
    def __init__(self, length, width):
        self.length = length
        self.width = width
    def calculate_area(self):
        return self.length * self.width
```

```
    def calculate_perimeter(self):
        return 2 * (self.length + self.width)

class Triangle(Shape):
    def __init__(self, base, height, side1, side2, side3):
        self.base = base
        self.height = height
        self.side1 = side1
        self.side2 = side2
        self.side3 = side3
    def calculate_area(self):
        return 0.5 * self.base * self.height
    def calculate_perimeter(self):
        return self.side1 + self.side2 + self.side3

r = 7
circle = Circle(r)
circle_area = circle.calculate_area()
circle_perimeter = circle.calculate_perimeter()

print("Radius of the circle:",r)
print("Circle Area:", circle_area)
print("Circle Perimeter:", circle_perimeter)

l = 5
w = 7
rectangle = Rectangle(l, w)
rectangle_area = rectangle.calculate_area()
rectangle_perimeter = rectangle.calculate_perimeter()
```

Run Code

```
rectangle = Rectangle(1, w)
rectangle_area = rectangle.calculate_area()
rectangle_perimeter = rectangle.calculate_perimeter()
print("\nRectangle: Length =", l, " Width =", w)
print("Rectangle Area:", rectangle_area)
print("Rectangle Perimeter:", rectangle_perimeter)

base = 5
height = 4
s1 = 4
s2 = 3
s3 = 5

print("\nTriangle: Base =", base, " Height =", height, " side1 =", s1, " side2 =", s2, " side3 =", s3)
triangle = Triangle(base, height, s1, s2, s3)
triangle_area = triangle.calculate_area()
triangle_perimeter = triangle.calculate_perimeter()
print("Triangle Area:", triangle_area)
print("Triangle Perimeter:", triangle_perimeter)

Radius of the circle: 7
Circle Area: 153.93804002589985
Circle Perimeter: 43.982297150257104

Rectangle: Length = 5 Width = 7
Rectangle Area: 35
Rectangle Perimeter: 24

Triangle: Base = 5 Height = 4 side1 = 4 side2 = 3 side3 = 5
Triangle Area: 10.0
Triangle Perimeter: 12
```

Run Code

In [27]: # Write a Python program to create a class representing a Circle. Include methods to calculate its area and perimeter.

```
import math
class Circle:
    def __init__(self, radius):
        self.radius = radius

    def calculate_circle_area(self):
        return math.pi * self.radius**2

    def calculate_circle_perimeter(self):
        return 2 * math.pi * self.radius

radius = int(input("Input the radius of the circle: "))
circle = Circle(radius)
area = circle.calculate_circle_area()
perimeter = circle.calculate_circle_perimeter()
print("Area of the circle:", area)
print("Perimeter of the circle:", perimeter)

Input the radius of the circle: 6
Area of the circle: 113.09733552923255
Perimeter of the circle: 37.69911184307752
```

In [ ]: