

12.1 (The **Triangle** class) Design a class named **Triangle** that extends the **GeometricObject** class. The **Triangle** class contains:

- Three float data fields named **side1**, **side2**, and **side3** to denote the three sides of the triangle.
- A constructor that creates a triangle with the specified **side1**, **side2**, and **side3** with default values **1.0**.
- The accessor methods for all three data fields.
- A method named **getArea()** that returns the area of this triangle.
- A method named **getPerimeter()** that returns the perimeter of this triangle.
- A method named **__str__()** that returns a string description for the triangle.

For the formula to compute the area of a triangle, see Exercise 2.14. The **__str__()** method is implemented as follows:

```
return "Triangle: side1 = " + str(side1) + " side2 = " +  
       str(side2) + " side3 = " + str(side3)
```

Draw the UML diagrams for the classes **Triangle** and **GeometricObject**. Implement the **Triangle** class. Write a test program that prompts the user to enter the three sides of the triangle, a color, and **1** or **0** to indicate whether the triangle is filled. The program should create a **Triangle** object with these sides and set the color and filled properties using the input. The program should display the triangle's area, perimeter, color, and **True** or **False** to indicate whether the triangle is filled or not.