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Project: The Triangle Class

Problem Description:

Design a class named Triangle that extends GeometricObject. The class contains:

• Three double data fields named side1, side2, and side3 with default values 1.0 to denote three sides of the triangle.

• A no-arg constructor that creates a default triangle.

• A constructor that creates a triangle with the specified side1, side2, and side3.

• 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 toString() that returns a string description for the triangle.

For the formula to compute the area of a triangle, see Exercise 5.19. The toString() method is implemented as follows:

return "Triangle: side1 = " + side1 + " side2 = " + side2 +

" side3 = " + side3;

Draw the UML diagram that involves the classes Triangle and GeometricObject. Implement the class. Write a test program that creates a Triangle object with sides 1, 1.5, 1, color yellow and filled true, and displays the area, perimeter, color, and whether filled or not.

```
Enter three side of the triangle: 1 1.5 1
Enter a color: yellow
Is the triangle filled (true / false)? true
Triangle: side1 = 1.0 side2 = 1.5 side3 = 1.0
Area: 0.49607837082461076
Perimeter: 3.5
Color: yellow
Triangle isfilled
```

Design: Draw the UML class diagram here

/***********************************

* GeometricObject   *

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* -color: String   *

* -filled: boolean   *

* -dateCreated: java.util.Date   *

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* +GeometricObject()   *

* +GeometricObject(color: String, *

*   filled: boolean)   *

* +getColor(): String   *

* +setColor(color: Stirng): void   *

* +isFilled(): boolean   *

* +setFilled(filled: boolean): void *

* +getDateCreated(): java.util.Date *

* +toString(): String   *

***********************************/

```
/********************************************************
*                   Triangle                   *
*------------------------------------------------------*
* -side1: double                      *
* -side2: double                      *
* -side3: double                      *
* +Triangle()                    *
* +Triangle(side1: double, side2: double, side3: double) *
* +getSide1(): double                 *
* +getSide2(): double                 *
* +getSide3(): double                 *
* +getArea(): double                  *
* +getPerimeter(): double                *
* +toString(): String               *
********************************************************/
```
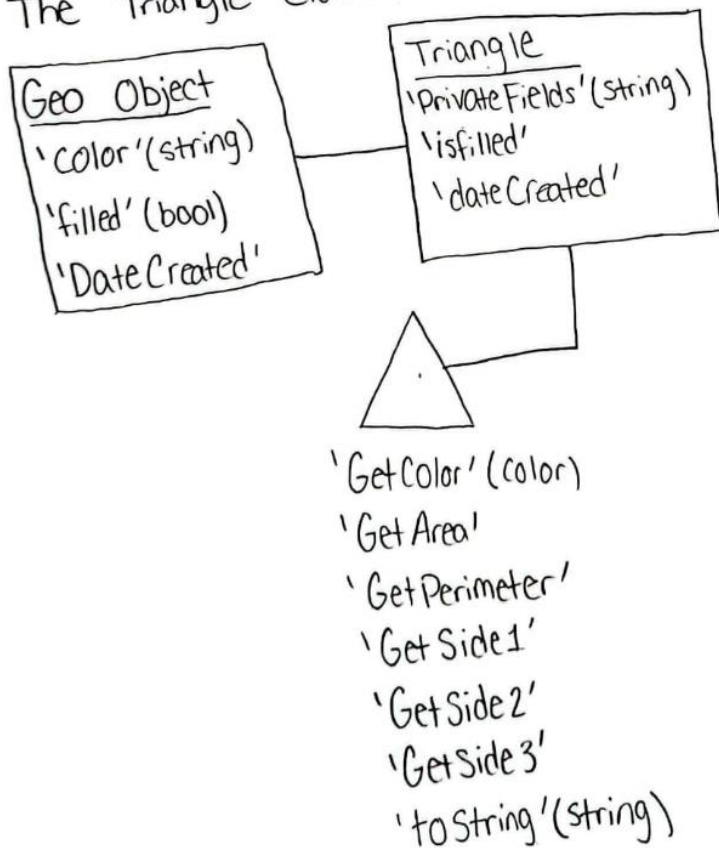
The "-" symbol indicates private visibility, meaning these members can only be accessed within the class itself.

The "+" symbol indicates public visibility, meaning these members can be accessed from outside the class.

The Triangle Class

Geo Object
'color' (string)
'filled' (bool)
'Date Created'

Triangle
'Private Fields' (string)
'isfilled'
'date Created'

'Get Color' (color)
'Get Area'
'Get Perimeter'
'Get Side 1'
'Get Side 2'
'Get Side 3'
'to String' (string)

Coding: Submit the following items:

1. Print this Word file and Submit to me before the class on the due day.

2. Compile, Run, and Submit