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**Analysis:**

**(Describe the purpose, processing, input and output in your own words.)**

The purpose of the project is to get familiar with parent class and child/sub class concept by implementing a parent class GeometricObject and its subclass Triangle.

The processing of the classes followed object oriented development ideas where data are kept private, and accessor / mutator methods are used to access and modify the data if needed. The subclass extends the parent GeometricObject class and inherits public methods.

No GUI component was developed for user inputs for this project. System.out.println() method was used to print various statements to the console. More precisely, toString() methods were defined for both the GeometricObject class and the Triangle class to print information about the objects.

**Design:**

**Draw the UML class diagrams for GeometricObject and Triangle.**

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| **GeometricObject** |
| -color: String  -filled: boolean  -dateCreated: java.util.Date |
| +GeometricObject()  +GeometricObject(color: String, filled: boolean)  +getColor(): String  +setColor(color: String): void  +isFilled(): boolean  +setFilled(filled: boolean): void  +getDateCreated(): java.util.Date  +toString(): String |

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| **Triangle** |
| -side1: double  -side2: double  -side3: double |
| +Triangle()  +Triangle(side1: double, side2: double, side3: double)  +getSide1(): double  +getSide2(): double  +getSide3(): double  +setSide1(side1: double): void  +setSide2(side2: double): void  +setSide3(side3: double): void  +calculateArea(): double  +calculatePerimeter(): double  +toString(): String |

Testing:

**Run the DemoTriangle and copy the output and paste the output here.**

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| **Table 1** |
| DemoTriangle.main({ });  The values of the three sides of the triangle are: 1.0, 1.5, 1.0  The color of the triangle is: null  Is triangle filled? false  The area of the triangle is: 0.496  And the perimeter of the triangle is: 3.5  ----------------------------------------------------------------------  The values of the three sides of the triangle are: 1.0, 1.5, 1.0  The color of the triangle is: yellow  Is triangle filled? true  The area of the triangle is: 0.496  And the perimeter of the triangle is: 3.5 |

**Comment out the toString() method in the Triangle class and run the DemoTriangle again and copy and paste the output here.**

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| **Table 2** |
| DemoTriangle.main({ });  Created on Fri Dec 05 15:50:57 EST 2014  color: null and filled: false  -------------------------------------------------------------------------------------  Created on Fri Dec 05 15:50:57 EST 2014  color: yellow and filled: true  ------------------------------------------------------------------------------------- |

**What is the difference in the outputs? Explain the difference.**

The output presented in Table 1 overrides the toString() method defined in the parent GeometricObject class, and uses toString() method defined under the Triangle class, thus prints information particular to a Triangle object.

In contrast, the output presented in Table 2 is using the toString() method defined under the GeometricObject class, as no toString() method is defined under the Triangle class. Not all GeometricObject might be a Triangle, thus only properties defined under the GeometricObject class was printed.