Assignment 6 – Triangle

CS1400 Summer 2011

Description:

Assignment6 is once more dealing with triangles. However, this time we write a class that represents one single triangle. Create a new project *A6_YourName* that includes 2 files: Triangle.java and TriangleTest.java

Ad Triangle:

The class Triangle has 3 attributes that represent the three sides of a triangle. It has a constructor with three parameters and 6 methods. 3 of them are get methods that expose the values of the triangle sides (no set methods; triangles of this class cannot resize once they have been created)
The other three methods are: isTriangle, isEquilateral, and isRight.

Triangle
- side1 : Double - side2 : Double - side3 : Double
« constructor » Triangle (sideA : Double, sideB : Double, sideC : Double) + getSide1() : Double + getSide2 () : Double + getSide3 () : Double + isTriangle (sideA : Double, sideB : Double, sideC : Double) : Boolean + isEquilateral () : Boolean + isRight () : Boolean

Ad Constructor:
The class Triangle has a constructor that takes 3 parameters to initialize the three sides. However, before the arguments are assigned to the fields the constructor checks whether the arguments passed make a valid triangle. It does that by calling the isTriangle method (see below). If the three arguments don't make a valid triangle all sides will be initialized with 1f.

Ad `isTriangle`:
The method isTriangle has three parameters . It finds out whether the three sides make a valid triangle or not and it returns the corresponding boolean value.
This method needs 3 parameters because it will be called in the constructor to find out whether the arguments passed can be sides of a triangle.
Be prepared to handle arguments that are 0f or negative.

Ad `isEquilateral`:
The method isEquilateral does not need any parameters. It takes the values of the fields to find out whether the given triangle happens to be an equilateral triangle. It returns the corresponding boolean value.

Ad `isRight`:
The method isRight also takes the field values to find out whether the given triangle is a right triangle. It returns the corresponding boolean value.

Ad TriangleTest

1. Create an instance of type Scanner
2. Read in three sides and use the values provided by the user to create an instance of type Triangle
3. Display information from the rectangle
   To do that print the three values of the fields and that it is a right or equilateral triangle - it that is the case

IMPORTANT:
Watch for proper indentation. This time I'll subtract up to 2 points if the code is not properly indented.
For information on proper indentation check the Style Guide (http://www.cs.slcc.edu/style-guide.shtml)

Sample Output:

Sample output1:

```
side1: 3
side2: 4
side3: 5

Triangle (3.0, 4.0, 5.0): is right
```

Sample output2:

```
side1: 4
side2: 4
side3: 4

Triangle (4.0, 4.0, 4.0): is equilateral
```

Sample output3:

```
side1: 4
side2: 4
side3: 5

Triangle (4.0, 4.0, 5.0)
```

Turning in:

Zip up your project (the directory containing the source code and the project files) and name the file **A6_*YourName*.zip** where you substitute your first name and last name for *YourName* . Turn it in via Virtual Campus.

Maximum Points: **30 pts**