1 Objective

The purpose of this assignment is to exercise your familiarity with arrays and classes. For this assignment, you’re required to turn in one program that involves classes and arrays. You can use an IDE to write this. However, you’re also required to test it on a terminal before turning it in.

Please email your file Hexagons.java to jayarama@cs.fsu.edu

2 The Program

This program should be called Hexagons.java

For this program, you’re required to implement the Hexagons class that describes a regular hexagon. A regular hexagon is a polygon with 6 sides, where all the sides are of equal length. The class is described as follows:

- The class should be in a package called “Hex”, and should be declared public.
- The class has only one data attribute, called “sideLength”, of type double.
- Write accessor and mutator methods for sideLength. Please follow Java naming convention for these methods.
- Write a default constructor that sets the value of sideLength to 1.
- Write a parametrized constructor that sets sideLength. If the given length is 0 or negative, it should be set to the default length of 1.
- Write a method called “perimeter” that calculates the perimeter of the hexagon. Perimeter of a regular hexagon is $6 \times \text{side length}$.
- Write a method called “area” that calculates the area of the hexagon. The area of a regular hexagon is $\frac{3\sqrt{3}}{2} \times \text{side length}^2$.
- Write a method called “printHex” that prints the side length, perimeter and area of the hexagon.
- The main method should be the only static method in the class.
- In the main method, accept the number of hexagons ‘N’ from the user. Then create an array of ‘N’ objects of the Hexagons class. Read in the side lengths of the ‘N’ hexagons and use the mutator method to set the values of the side lengths to each of the Hexagons objects. Then, call the printHex method to print the properties of the hexagons, one by one. All values should be rounded to 3 decimal digits.

Sample Run

Enter the number of hexagons : 3
Enter the side lengths of the 3 hexagons:
10
-8
15.92
Hexagon 1
Side Length : 10
Perimeter : 60
Area : 259.81

Hexagon 2
Side Length : 1
Perimeter : 6
Area : 2.60

Hexagon 3
Side Length : 15.92
Perimeter : 95.52
Area : 658.47

3 Compatibility

Once your class is compiled into a classfile, I should be able to instantiate (create objects) the class in another program and use the objects. For example, I should be able to compile the Hexagons class inside the Hex directory, and then run the UsesHexagons class from the parent directory.

The UsesHexagons class can be found at [http://ww2.cs.fsu.edu/~jayarama/cgs3416/Examples/UsesHexagons.java](http://ww2.cs.fsu.edu/~jayarama/cgs3416/Examples/UsesHexagons.java).

Generic Guidelines

- Please make sure you’re only using the concepts already discussed in class. That is, please try and restrict yourself to loops, selection statements methods, arrays, and classes and objects.
- Please make sure that you’re conforming to specifications (program name, print statements, expected inputs and outputs etc.).
- Please make sure your code is readable.
- Please make sure you’ve compiled and run your program before you turn it in. Compilation errors can be quite costly.