

## CS480 – Java and Internet Applications

### Homework (week11)(Fall 2015)

*Implement all your programs in Eclipse/Netbeans. Please include your student id in the beginning. Please submit the homework by uploading the zip file that contains all the source code files and screen-shots/captures of the inputs and outputs of the programs. In addition have all the programs and screenshots in one document.*

1. {50 points} Design a new **Triangle** class that extends the abstract class **GeometricObject** class. Write a test program that prompts the user to enter the 3 sides of the triangle, a color, and a Boolean value 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 area, perimeter, color and true or false to indicate whether it is filled or not. (s=side)

Area of a triangle = Square-root of  $((s*(s-1)*(s-2)*(s-3)))$

2. {50 points} Write a class named **Octagon** that extends **GeometricObject** and implements **Comparable** and **Cloneable** interfaces. Assume that all eight sides of the octagon are equal. Write a test program that creates an **Octagon** object with side value 5 and displays its area and perimeter. Create a new object using the clone method and compare the objects using the compareTo method.

Area of a regular octagon =  $(2+4/\text{sqrt}(2)) * \text{side} * \text{side}$