

Java - Assignment 1 - 2 - v1

Write a Geometry program that allows the user to create an array of at least three triangles by entering the coordinates (x, y) of the vertices. The program then displays the perimeter of each triangle and a message indicating whether they are one of the triangles mentioned below or not. Your program must be object oriented and modular.

Triangle types:

- Isosceles : it is a triangle with two equal sides.
- Equilateral triangle : is an isosceles triangle in which all sides all have the same length.
- The formula for calculating the distance between two points (x1, y1) and (x2, y2) is: square root of $(x1 - x2)^2 + (y1 - y2)^2$.
- Java provides the Math.sqrt () method to calculate the square root. This method takes a non-negative number as a parameter.

Notes:

- Your program should take the input from the user, validate the input and display outputs
- Your program should display if each of the created triangle is one of the following types:
 - Isosceles
 - Equilateral
 - Unknown
- Think about the objects you would like to use in the program. For example, you could represent the triangle with a Triangle class and its points with a Point class. A third class Geometry could host the main method.
- Think about the variables (attributes) and instance methods that would be useful for each class. For example, the coordinates of the points can be entered in the main program using the method scanner.nextDouble ().
- The perimeter can be calculated as the sum of the distances between the vertices.

Extra mark (15%)

- Take a point from the user and display a message if the point is inside the triangle or not
- Find the area of the triangle