Assignment #4

Goals: Use methods

> This lab gives students more experience in:
> - Problem Solving
> - Writing Java programs and methods

Problem Description

In this assignment, you will perform calculations with triangles.
A triangle is defined by the x- and y-coordinates of its three corner points.
Your job is to compute the perimeter of a given triangle.

The following is a sample program output:

This program calculates the perimeter of a Triangle.

Please enter the x-coordinate of point1: 5
Please enter the y-coordinate of point1: 5
Please enter the x-coordinate of point2: 6
Please enter the y-coordinate of point2: 7
Please enter the x-coordinate of point3: 8
Please enter the y-coordinate of point3: 5

The perimeter of a Triangle with point1 (5, 5), point2 (6, 7) and point3 (8, 5)
is 8.064495

Would you like to repeat the program? No

End of the program.

Notes:

 - Appropriate error messages should be displayed in case of invalid inputs. This should be done by creating and calling a method called ***verify_input*** in your program
     - You may only accept positive integer numbers for the x- and y-coordinates of the three points.
     - You may only accept the points located on the 40 X 40 grid.
     - You may reject the input if the three points make a line and not a triangle.
 - To calculate the square root of a number stored in variable "data", use the Math.sqrt(data).

- You may use the Pythagoras' theorem to calculate the length of the triangle sides.
- Your program should be repeated as long as the user wishes.
- Please use methods for this assignment. For example, create a method to verify the input and display appropriate error messages in the case of invalid input.

```
public static boolean verify_input (int point1_x, int point1_y,
                                    int point2_x, int point2_y,
                                    int point3_x, int point3_y)
{
   ….
}
```

Marking Scheme

[10 marks] Presentation/Style: Organization, readability, descriptive identifier, indentation, bracket placement.
[50 marks] Correctness: Program (using methods) works without bugs
[20 marks] Error checking: Appropriate error message to the user when invalid data is entered.
[10 marks] using methods: at least two methods including main should be used in the program
[10 marks] Documentation: Internal