EEE 210: Software Engineering – Set B
Lab 7 Exercises for Week 10 (12 Mar. – 18 Mar.), Spring 2018

Note:
- Project folder nomenclature: Lab7_*yourname*
- After completion, zip your project folder and upload it to your Moodle account by the end of the session.
- Any queries during the lab should be discussed merely with the Instructor/TA.
- Use of the Internet or any resource other than the reference e-book and your own class notes is strictly prohibited. If found violating these basic rules, the TA is authorized to decide about your grade.
- No group discussion allowed. The assignment should be done individually.

Exercise 1:   Write a Java program to implement the **MyRectangle2D** class that should contain the features described below:

1. Two **double** fields named **x** and **y** that specify the center of the rectangle with getter and setter methods (Assume the rectangle sides are parallel to the **x**- and **y**- axes)
2. The data fields **width** and **height** with getter and setter methods.
3. A no-arg constructor that creates a default rectangle with (0, 0) for (**x, y**) and 1 for both, **width** and **height**.
4. A constructor that creates a rectangle with the specified **x, y, width**, and **height**.
5. A method **getArea()** that returns the area of the rectangle.
6. A method **getPerimeter()** that returns the perimeter of the rectangle.
7. A method **contains(double x, double y)** that returns **true** if the specified point (**x, y**) is inside this rectangle (see Figure 1a) below.
8. A method **contains(MyRectangle2D r)** that returns **true** if the specified rectangle is inside this rectangle (see Figure 1b).
9. A method **overlaps(MyRectangle2D r)** that returns **true** is the specified rectangle overlaps with this rectangle (see Figure 1c).
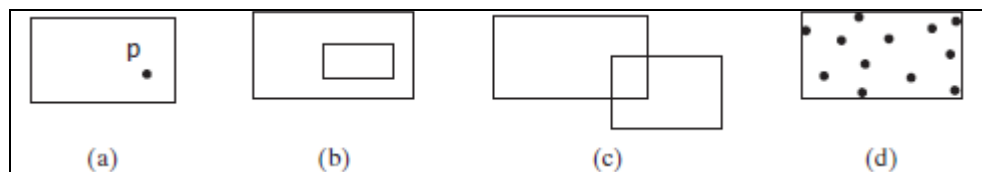

Figure 1: (a) A point is inside the rectangle. (b) A rectangle is inside another rectangle. (c) A rectangle overlaps another rectangle. (d) Points are enclosed inside a rectangle.

Write a test program that creates a **MyRectangle2D** object **r1(new MyRectangle2D(2, 2, 5.5, 4.9))**, displays it area and perimeter, and displays the result of **r1.contains(3, 3)**, **r1.contains(new MyRectangle2D(4, 5, 10.5, 3.2))**, and **r1.overlaps(new MyRectangle2D(3, 5, 2.3, 5.4))**.