

## EEE 210: Software Engineering – Set A

### 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 **Circle2D** class that should contain the features described below:

1. Two **double** fields named **x** and **y** that specify the center of the circle with getter methods.
2. A data field **radius** with a getter method.
3. A no-arg constructor that creates a default circle with (0, 0) for (**x**, **y**) and 1 for **radius**.
4. A constructor that creates a circle with the specified **x**, **y**, and **radius**.
5. A method **getArea()** that returns the area of the circle.
6. A method **getPerimeter()** that returns the perimeter of the circle.
7. A method **contains(double x, double y)** that returns **true** if the specified point (**x**, **y**) is inside this circle (see Figure 1a) below.
8. A method **contains(Circle2D circle)** that returns **true** if the specified circle is inside this circle (see Figure 1b).
9. A method **overlaps(Circle2D circle)** that returns **true** if the specified circle overlaps with this circle (see Figure 1c).

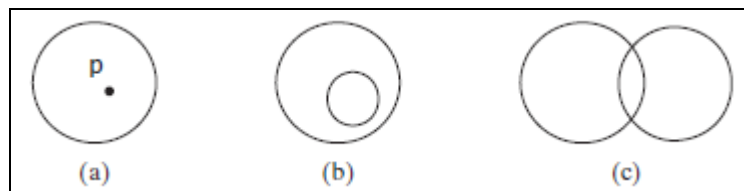


Figure 1: (a) a point is inside the circle. (b) A circle is inside another circle. (c) A circle overlaps another circle.

Write a test program that creates a **Circle2D** object **c1(new Circle2D(2, 2, 5.5))**, displays its area and perimeter, and displays the result of **c1.contains(3, 3)**, **c1.contains(new Circle2D(4, 5, 10.5))**, and **c1.overlaps(new Circle2D(3, 5, 2.3))**.