OOP Practice Problems

Md. Romizul Islam

Lecturer, Dept. of CSE

United International University

Class, Object

Shapes

Point

- Write a class named ***Point*** having two member variables **x(int)** and **y(int)**.
- Write a method ***distance*** inside the ***Point*** class to calculate the distance between two points. The function looks like this -

  public double distance(Point p){ // codes }

  Formula for distance between two points ***(x1, y1)*** and ***(x2, y2)*** -

$$\sqrt{(x1 - x2)^2 + y1 - y2)^2} \tag{1}$$

Circle

- Write another class named ***Circle*** having two instance variables **center(Point)** and **radius(double)**.
- Write a method inside ***Circle*** class that checks if a point resides inside a circle.The function looks like this -

  public boolean pointInsideCircle(Point p){ // codes }

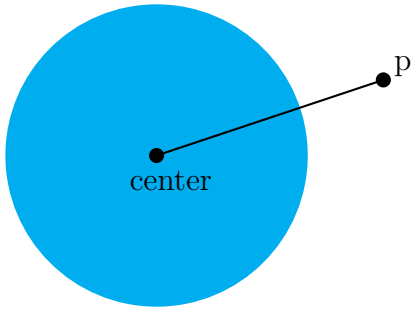

Figure 1: Check if the point p is inside the blue circle

- Write a method named ***circleInsideCircle*** inside ***Circle*** class that checks if a circle resides into another circle. The function looks like this -

  public boolean circleInsideCircle(Circle C){ // codes }

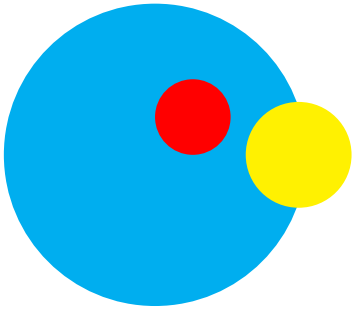

Figure 2: Red colored circle is inside of the Blue colored circle, but the yellow one is not inside

Rectangle

- Write a class ***Rentangle*** having two instance variables ***bottomLeft(Point)*** and ***topRight(Point)***.

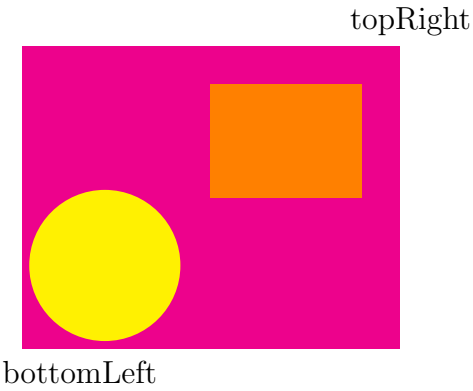

Figure 3: Check for the yello wcircle and orange rectangle if they are inside of the big traigle

- Write a method named ***circleInsideRectangle*** inside ***Rectangle*** class that checks if a circle resides into a Rectangle. The function looks like this -

  public boolean circleInsideRectangle(Circle R){ // codes }

- Write a method named ***RectangleInsideRectangle*** inside ***Rectangle*** class that checks if a Rectangle resides into another Rectangle. The function looks like this -

  public boolean RectangleInsideRectangle(Rectangle R){ // codes }

BangladeshiFlag

- Write a class ***BangladeshiFlag*** having two instance variables ***R(Rectangle)*** and ***C(Circle)***.

- Write a method named ***isBalanced*** inside ***BangladeshiFlag*** class that checks if a flag is well-balanced. You need to check if the circle resides exactlly in the middle of the rectangle without touching the rectangle. The function looks like this -

  public boolean isBalanced(){ // codes }

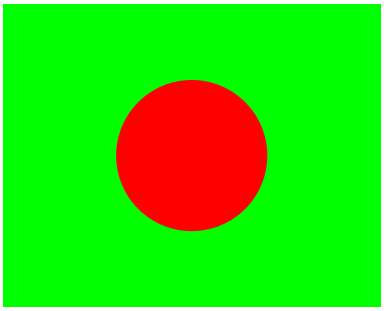

Figure 4: ***Joy Bangla, Joy Bangabandhu***