CSE101 - Introduction to Programming
Lab 6

Instructions:

1. Keep in mind the concept of pass by reference and pass by value.
2. Think of the logic for the sub-tasks and then code them.
3. For finding the mirror point, you can consider the below resource:

   https://math.stackexchange.com/questions/1013230/how-to-find-coordinates-of-reflected-point

You are given a module a1.py containing 3 classes Point, Line and Circle.
Point class has 2 data members:

1. x: x-coordinate of the point
2. y: y-coordinate of the point

Line class has 3 data members: a, b, c denote the coefficients of the line: ax + by + c = 0.
Circle has 3 data members:

1. centre_x: x-coordinate of the centre of the circle
2. centre_y: y-coordinate of the centre of the circle
3. radius: radius of the circle.

Create a separate module and complete the following tasks:

Task 1:
Create a function **findMirrorPoint(p, l)**: This function takes an object ‘p’ of Point class and an object ‘l’ of Line class and overwrites the x-coordinate and y-coordinate attributes of object ‘p’ with its mirror point with the line ‘l’ acting as the mirror.

Task 2:
Create a function **checkSides(p1, p2, l1, l2)**: This function takes 2 points, p1 and p2, and returns if the mirror point of point p1 with respect to line l1 and point p2 are on the same side of the line l2 or not.

Task 3:
Create a function **checkIntersection(c1,c2)**: This function takes 2 circles, and returns if they’re intersecting or not. (**Hint**: Think in terms of distance between the centres of the two circles and their radii.)

Now, make a new file named as “test.py” to test the above tasks using **introcs**. Check at least 2 test cases for each subtask. Try to think of corner cases. If all the test cases pass, print “DONE”.