KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)

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WT ASSIG -2

- Name :HITU RAJ
- Roll no. :2005025
- Branch :CSE

2005025_Hitu raj

mypackage1

Point.java

```
package mypackage1;
import java.lang.Math;

public class Point {
    double x, y, distance;

    public Point() {
        x = 0.0;
        y = 0.0;
        distance = 0.0;
    }

    public Point(double x, double y) {
        this.x = x;
```

```
        this.y = y;
    }

    public double distance() {
        distance = Math.sqrt(Math.pow(x, 2) + Math.pow(y, 2));
        return distance;
    }

    public double distance(double x, double y) {
        distance = Math.sqrt(Math.pow((this.x - x), 2) + Math.pow((this.y - y), 2));
        return distance;
    }

    public double distance(Point another) {
        distance = Math.sqrt(Math.pow((this.x - another.x), 2) + Math.pow((this.y -
another.y), 2));
        return distance;
    }
}
```

Mypackage2
Circle.java

```
package mypackage2;

import mypackage1.Point;

public class Circle {
    private double radius;
    Point center;

    public Circle(double x, double y, double radius) {
        center = new Point(x, y);
        this.radius = radius;
    }

    public double distance(Circle c1) {
        double d = this.center.distance(c1.center);
        return d;
    }

    public String checkWithin(Point p) {
        double d = this.center.distance(p);
        if (d > this.radius) {
            return "outside";
        } else if (d == this.radius) {
            return "on";
        } else {
            return "within";
        }
```

```
    }
}
```

assig2.java

```
// Define a public class Point representing a point in 2-D coordinate system inside a
package mypackage1. Also define suitable constructor(s) for the class and a list of
overloaded methods distance(), distance(double x, double y), distance(Point another)
that can find Euclidean distances of this point from the origin, from another point
having coordinate (x, y), and from any other given Point variable another,
respectively.

// Further define another public class Circle inside another package mypackage2. Class
Circle have the following private member variables: a radius (double) and a centre (an
instance of the previously defined Point class). Define suitable constructor(s) for the
Circle class, and the following methods: a distance(Circle another) method that returns
the distance from the centre of this instance to the centre of the given Circle
instance (called another), and a checkWithin (Point p) method that can check whether
the given point argument p is "within", "on", or "outside" this circle.

// Write Java Program(s) to implement above classes and demonstrate their use.


import mypackage1.Point;
import mypackage2.Circle;
import java.util.Scanner;

public class asiig2 {
    public static void main(String args[]) {
        double x, y, ans;
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the coordinates for a point: ");
        x = sc.nextDouble();
        y = sc.nextDouble();
        Point p1 = new Point(x, y);
        ans = p1.distance();
        System.out.println("Distance from origin: " + ans);
        System.out.print("Enter the coordinates for another point: ");


        System.out.println("Distance between first and this point: " + ans);
        double radius;
        System.out.print("Enter the coordinates of the centre and radius of a circle:
");
        x = sc.nextDouble();
        y = sc.nextDouble();
        radius = sc.nextDouble();
        Circle c1 = new Circle(x, y, radius);
        System.out.print("Enter the coordinates of the centre and radius of another
circle: ");
```

```
        x = sc.nextDouble();
        y = sc.nextDouble();
        radius = sc.nextDouble();
        Circle c2 = new Circle(x, y, radius);
        ans = c1.distance(c2);
        System.out.println("Distance between circles: " + ans);
        System.out.print("Enter the coordinates for a point to check position: ");
        x = sc.nextDouble();
        y = sc.nextDouble();
        Point p2 = new Point(x, y);
        String ans1 = c1.checkWithin(p2);
        System.out.println("the point lies " + ans1 + " the circle.");
    }
}
```

OUTPUT

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\my codes\web tech lab\assisg 2> cd "d:\my codes\web tech lab\assisg 2\" ; if ($?) { javac asiig2.java } ; if ($?) {
 java asiig2 }
Enter the coordinates for a point: 3 4
Distance from origin: 5.0
Enter the coordinates for another point: Distance between first and this point: 5.0
Enter the coordinates of the centre and radius of a circle: 2 5 32
Enter the coordinates of the centre and radius of another circle: 1 4 22
Distance between circles: 1.4142135623730951
Enter the coordinates for a point to check position: 2 4
the point lies within the circle.
PS D:\my codes\web tech lab\assisg 2>
```

2005025_Hitu raj