**A class called MyPoint, which models a 2D point with x and y coordinates, is designed as**

**follows: Two instance variables x (int) and y (int).**

** A default (or "no-arg") constructor that construct a point at the default location of (0, 0).**

** A overloaded constructor that constructs a point with the given x and y coordinates.**

** A method setXY() to set both x and y.**

** A method getXY() which returns the x and y in a 2-element int array.**

** A toString() method that returns a string description of the instance in the format "(x, y)".**

** A method called distance(int x, int y) that returns the distance from this point to another**

**point at the given (x, y) coordinates**

** An overloaded distance(MyPoint another) that returns the distance from this point to the**

**given MyPoint instance (called another)**

** Another overloaded distance() method that returns the distance from this point to the**

**origin (0,0) Develop the code for the class MyPoint. Also develop a JAVA program (called**

**TestMyPoint) to test all the methods defined in the class.**

Save Filename As: TestMyPoint.java

Solution:-

class MyPoint

{

private int x;

private int y;

// Default Constructor

public MyPoint ()

{

this(0, 0);

}

// Overloaded Constructor

public MyPoint (int x, int y)

{

this.x = x;

this.y = y;

}

// Setters

public void setXY (int x, int y)

{

this.x = x;

this.y = y;

}

// Getters

public int[] getXY ()

{

int[] coordinates = { x, y };

return coordinates;

}

// Calculate distance to another point (x, y)

public double distance (int x, int y)

{

return Math.sqrt (Math.pow (this.x - x, 2) + Math.pow (this.y - y, 2));

}

// Calculate distance to another MyPoint object

public double distance (MyPoint another)

{

return Math.sqrt (Math.pow (this.x - another.x, 2) + Math.pow (this.y - another.y, 2));

}

// Calculate distance to the origin (0,0)

public double distance ()

{

return Math.sqrt (Math.pow (this.x, 2) + Math.pow (this.y, 2));

}

public String toString ()

{

return "(" + x + ", " + y + ")";

}

}

public class TestMyPoint

{

public static void main (String[] args)

{

MyPoint point1 = new MyPoint (); // Default constructor

MyPoint point2 = new MyPoint (3, 4); // Overloaded constructor

point1.setXY (5, 6); // Set x and y

int[] coordinates = point2.getXY (); // Get x and y

System.out.println ("Point 1: " + point1);

System.out.println ("Point 2: " + point2);

System.out.println ("Point 2 coordinates: (" + coordinates[0] + ", " + coordinates[1] + ")");

System.out.println ("Distance from Point 1 to (1, 2): "+ point1.distance (1,2));

System.out.println("Distance from Point 2 to Point 1: " +point2.distance(point1));

System.out.println("Distance from Point 2 to origin: " + point2.distance());

}

}

**Compile As: javacTestMyPoint.java**

**Run As: java TestMyPoint**

Output:

Point 1: (5, 6)

Point 2: (3, 4)

Point 2 coordinates: (3, 4)

Distance from Point 1 to (1, 2): 5. 656854249492381

Distance from Point 2 to Point 1: 2.8284271247461903

Distance from Point 2 to origin: 5.0