4. 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));
}
```

```
// String representation of the point
@Override
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 (5, 6): "
+ point2.distance (point1));
System.out.println("Distance from Point 2 to Point 1: " +
System.out.println("Distance from Point 2 to origin: " +
9
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 (5, 6): 0.0

Distance from Point 2 to Point 1: 2.8284271247461903

Distance from Point 2 to origin: 5.0
```