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1  package edu.lmu.cs.networking;
2
3  import java.io.*;
4
5  class Point3d extends Point2d implements Serializable {
6      private int z;
7
8      public Point3d( int px, int py, int pz) {
9          super (px, py);
10         z = pz;
11     }
12     public Point3d () {
13         super ();
14         z = 0;
15     }
16     public Point3d(Point3d pt) {
17         super ((Point2d) pt);
18         z = pt.getZ();
19     }
20     public void setZ(int pz) {
21         dprint("setZ(): Changing value of z from " + z + " to " + pz);
22         z = pz;
23     }
24     public int getZ () { return z; }
25     public void setXYZ(int px, int py, int pz) {
26         setXY(px, py);
27         setZ(pz);
28     }
29     public double distanceFrom (Point3d pt) {
30         double xyDistance = super.distanceFrom ((Point2d) pt);
31         int dz = Math.abs (z - pt.getZ());
32         dprint ("distanceFrom(): deltaZ = " + dz);
33         return Math.sqrt((xyDistance * xyDistance) + (dz * dz));
34     }
35     public double distanceFromOrigin () { return distanceFrom (new Point3d ( )); }
36     public String toStringForZ() {
37         String str = ", " + z;
38         return str;
39     }
40     public String toString() {
41         String str = toStringForXY() + toStringForZ() + ")";
42         return str;
43     }
44     public static void main (String[] args) {
45         Point3d pt1 = new Point3d ();
46         System.out.println ("pt1 = " + pt1);
47         Point3d pt2 = new Point3d (1,2,3);
48         System.out.println ("pt2 = " + pt2);
49         pt1.setDebug(true);
50         System.out.println ("Distance from " + pt2 + " to " + pt1 + " is " +
51             pt2.distanceFrom(pt1));
51         System.out.println ("Distance from " + pt1 + " to the origin (0, 0) is " +
52             pt1.distanceFromOrigin());
52         System.out.println ("Distance from " + pt2 + " to the origin (0, 0) is " +
53             pt2.distanceFromOrigin());
53         pt1.setXYZ(3, 5, 7);
54         System.out.println ("pt1 = " + pt1);
55         pt2.setXYZ(-3, -5, -7);
56         System.out.println ("pt2 = " + pt2);
57         System.out.println ("Distance from " + pt1 + " to " + pt2 + " is " +
58             pt1.distanceFrom(pt2));
58         System.out.println ("Distance from " + pt2 + " to " + pt1 + " is " +
59             pt2.distanceFrom(pt1));
59         pt1.setDebug(false);
60         System.out.println ("Distance from " + pt1 + " to the origin (0, 0) is " +
61             pt1.distanceFromOrigin());

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61         System.out.println ("Distance from " + pt2 + " to the origin (0, 0) is " +  
        pt2.distanceFromOrigin());  
62     }  
63 }
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