

TD 04: HÉRITAGE

Exercice 01

```
public class Point2D {
private int x, y;
// Constructors
public Point2D() { // default constructor
this.x = 0;
this.y = 0;
}
public Point2D(int x, int y) {
this.x = x;
this.y = y;
}
public int getX() {
return this.x;
}
public void setX(int x) {
this.x = x;
}
public int getY() {
return this.y;
}
public void setY(int y) {
this.y = y;
}
public String toString() {
return "(" + this.x + "," + this.y + ")";
}
public static double distance(Point2D pd, Point2D pf){
double dx = pf.x - pd.x;
double dy = pf.y - pd.y;
return Math.sqrt(dx*dx + dy*dy);
}
```

```

public class Point3D extends Point2D {
// Private instance variables
private int z;
// Constructors
public Point3D() { // default constructor
super(); // x = y = 0
this.z = 0;
}
public Point3D(int x, int y, int z) {
super(x, y);

this.z = z;
}
// Getters and Setters
public int getZ() {
return this.z;
}
public void setZ(int z) {
this.z = z;
}
// Return "(x,y,z)"
@Override
public String toString() {
return "(" + super.getX() + "," + super.getY() + "," + this.z + ")";
}
public static double distance(Point3D pd, Point3D pf)
{
double dx = pf.getX() - pd.getX();
double dy = pf.getY() - pd.getY();
double dz = pf.z -pd.z;
return Math.sqrt(dx*dx + dy*dy+ dz*dz);
}

```

La classe JavaTest

```

public class Javatest {
public static void main(String[] args) {
/* Test Point2D */
Point2D p2a = new Point2D(1, 2);
System.out.println(p2a); // toString()
Point2D p2b = new Point2D();
System.out.println(p2b);
// Test Setters and Getters
p2a.setX(3); // Test setters
p2a.setY(4);
System.out.println(p2a); // toString()
System.out.println("x is: " + p2a.getX());
System.out.println("x is: " + p2a.getY());
Point2D p2b = new Point2D(1,2);

```

```
Double dis=distance(p3a,p3b)
System.out.println("la distance entre les deux points vaut:"+dis);
/* Test Point3D */
// Test constructors and toString()
Point3D p3a = new Point3D(11, 12, 13);
System.out.println(p3a); // toString()
Point2D p3b = new Point3D();
System.out.println(p3b);
// Test Setters and Getters
p3a.setX(21); // in superclass
p3a.setY(22); // in superclass
p3a.setZ(23); // in this class
System.out.println(p3a); // toString()
System.out.println("x is: " + p3a.getX()); // in superclass
System.out.println("y is: " + p3a.getY()); // in superclass
System.out.println("z is: " + p3a.getZ()); // in this class
Point3D p3b= new point3D(1,1,1);
Double dis=distance(p3a,p3b)
System.out.println("la distance entre les deux points vaut:"+dis);
}
}
}
```