

## TP 4: INHERITANCE

**Exercise01**

Implement a class called *Point2D*, which models a point with coordinates x and y, and contains:

1. Two instancevariables x and y.
  2. A default (or "no argument") constructor that constructs a point at the default location of (0, 0).
  3. Another constructor that constructs a point with the given x and y coordinates.
  4. Access methods and modifiers for instance variables x and y.
  5. A *toString()* method that returns a string description of the instance in the format "(x, y)".
  6. A method called *distance* which returns the distance between two given points.
- Apply the notion of inheritance to create a *Point3D* class which models a point with the coordinates x, y, and z. with all the methods mentioned
  - Give an example of the *Javatest.class* class to test the two classes *Point2D* and *Point3D*.

**Exercise2:**

Consider the *Document* class which contains the following private attributes:

1. **Title** ( *title* of the document), **Number of pages** ( *Number* of pages) , Format (digital format or paper format). Let the *Book* class be derived from the *Document* class *and* contain the additional private attributes:

- **Author**: designates the author of the book and there can be several authors.
- **EdYear** ( *the* year of publication), **EdHouse** (*the publishing* house ) Genre (educational, novel, etc.) Let the *Dictionary* class be derived from the *Book* class , which also contains the private attributes:

- **Nbrelang** ( *number* of languages), **NbreTerme** (number of terms) **LangPr** (main language)

2. Implement the three (03) classes. For each class, automatically create the methods:

- Default constructor and constructor to initialize all fields.
- The modifier methods (*Setters*), accessors (*Getters*) and the *toString()* method.

3. Implement a *Manipulation* class then:

- Create three (03) *Book* type objects and two (02) *Dictionary* type objects from the table following:

<i>Title</i>	<i>Npage</i>	<i>Format</i>	<i>Author</i>	<i>Edyear</i>	<i>Ed House</i>	<i>Genre</i>
XML: Cours et exercices	299	pdf	Brillant A	2007	Eyrolles	éducatif
Les phénomènes électromagnétiques	515	pdf	Paul Lorrain, Dale Corson,	2002	Dunod	éducatif
Le Crime De L'Orient Express	67	papier	Agatha Christie	2014	Hachette	Roman
Les dictionnaires						
<i>Title</i>	<i>NLang</i>	<i>Nbreterme</i>	<i>Langue</i>	<i>EdYear</i>	<i>EdHouse</i>	<i>Npage</i>
Dictionnaire Anglais-Français	02	100 000	Anglais	2008	Hachette	500
El moundjid	01	250 000	Arabe	1988	Aalem el kitab	418

4. Add author *François Lorrain* for the second book.
5. For the third book change the number of pages to 80.