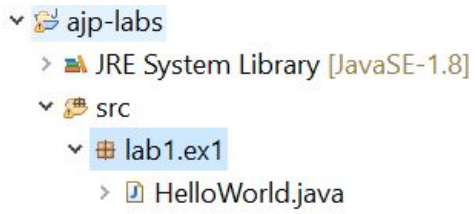
Lab : Basis

Exercice 1 - New Project

We have chosen to use Eclipse as IDE to do our lab, as we are already familiar with this IDE. We have created a new project named ajp-labs, with a package lab1.ex1. In this package is the class HelloWorld, and an object hw which prints the message “Hello World !”. To do so, we override the function toString() inherited from Object.



Exercice 2 - Library

In the exercice we have implemented a class Library containing Book objects. To do so, we have used an ArrayList of books.

3. Write a Library class containing at least one array of Book objects. Define its constructor taking the maximum number of references in argument (Have you really add a field to store the value of maximum number of references in your Library ???).

To store the maximum number of reference of our class Library, we have added a field MaxNbBooks, which is initialised in the constructor by parameter.

5. We want your add method returns false if the book is already in the library. What happens if you instantiate another book with the same properties ? Is there a method inherited from Object that could do the job ?

In the addBook method, we must check if the book already exists in the library before it is added to the library. A book already existing in the library means that the object will have all of its properties matching a book already stored. We have override the method equals inherited from Object to compare all the fields of a book. This prevents adding book which has the same properties as another book in our library.

Exercice 3 - Library growth

2. Because Newspaper and Magazine share some properties, write an abstract class Periodic that brings these properties together. Adapt the constructors of Newspaper and Magazine to exploit the one of Periodic.

The constructors of Newspaper and Magazine use the keyword super to exploit the constructor of Periodic

Exercice 4 - Multimedia library

3. Implement the methods allowing to make a search in the media database according to several criteria (artist, title, ...). These methods can returns an array of Media.

We chose to implement a search method by criterias which apply to all medias, such as the title or date of a media. Certain criteria such as the ISBN number or periodicity only apply to a specific media, therefore it is not possible to search according to them, because it would return an error (a CD does not have an ISBN field for example).

One way to avoid this problem would have been to create a mother class Media and to have Publication, CD, Movie as inherited classes. The mother class Media would implement a SearchByCriteria method, which would return null if the propriety researched does not concern an object. This would avoid having an error. For the objects concerned by the criteria researched, we would then do an override to check if the field researched matches.

Exercice 5 - Users

3. Write methods to allow a User to borrow and bring back a Media. How do you implement this behavior ?

We have added a boolean isBorrowed in Publication, CD and Movies. A User has an ArrayList of Media which contains the borrowed media by the user. When he borrows a media, it is added to the ArrayList and when he brings it back the media is deleted from the list.