Exercise Set 1: Testing for Equality

Exercise 1.1 The given code contains the following class definitions:

- **ALibRec** an abstract class of library record
- **Book** a class representing one book
- **CD** a class representing one CD
- **Person** a class representing one person (book author or CD artist)
- **ALoLR** a list of library records
- **EmptyLoLR** empty list of library records
- **ConsLoLR** constructed list of library records
- **TestSuite** collection of sample objects and some tests

The purpose of this exercise is to learn techniques for testing of different forms of equality.

- Draw the UML diagram for this class hierarchy
- Implement Comparable interface for the classes Book and CD, comparing the items by the last name of either the author or the title. You must be able to compare a CD with a Book, etc.
- Design the methods sort and insert which together will sort the list of library records. The test suite is provided - just remove the comments.
- **Object equality**
  - Design the method `eq` which determines whether two library record variables represent the same instance of a library record object. Use a similar definition in the **class Person** as a model.
  - Design the method `equalContents` which determines whether two library objects contain the same information. Use a similar definition in the **class Person** as a model.
- **Equality of collections of data.**
  - Design the method `equalsObjects` which determines whether the variables representing two lists of library records represent a collection of the same instances of library record objects.
  - Design the method `equalSortedObjects` which determines whether the variables representing two lists of library records represent a collection of the same instances of library record objects, appearing in the same order.
– Design the method `equalContents` which determines whether the two lists of library records contain records with the same contents.

– Design the method `equalSortedContents` which determines whether the two lists of library records contain records with the same contents, appearing in the same order.

• In the TestSuite define a function `EqualArrayObjects` which consumes two arrays of library records and determines whether they contain the same objects. You may assume that both arrays are sorted.

• In the TestSuite define a function `EqualArrayContents` which consumes two arrays of library records and determines whether they contain the same number of elements with the same contents. You may assume that both arrays are sorted.