

6.092: Assignment 4

The libraries of SmallTownX need a new electronic rental system, and it is up to you to build it. SmallTownX has two libraries. Each library offers many books to rent. Customers can print the list of available books, borrow, and return books.

Problem

We provide two classes, `Book` and `Library`, that provide the functionality for the book database. You must implement the missing methods to make these classes work.

Step One: Implement Book

First we need a class to model books. Start by creating a class called `Book`. Copy and paste the skeleton below. This class defines methods to get the title of a book, find out if it is available, borrow the book, and return the book. However, the skeleton that we provide is missing the implementations of the methods. Fill in the body of the methods with the appropriate code. The `main` method tests the methods. When you run the program, the output should be:

```
Title (should be The Da Vinci Code): The Da Vinci Code
Rented? (should be false): false
Rented? (should be true): true
Rented? (should be false): false
```

Hint: Look at the `main` method to see how the methods are used, then fill in the code for each method.

Step Two: Implement Library

Next we need to build the class that will represent each library, and manage a collection of books. All libraries have the same hours: 9 AM to 5 PM daily. However, they have different addresses and book collections (i.e., arrays of `Book` objects).

Create a class called `Library`. Copy and paste the skeleton below. We provide a `main` method that creates two libraries, then performs some operations on the books. However, all the methods and member variables are missing. You will need to define and implement the missing methods. Read the `main` method and look at the compile errors to figure out what methods are missing.

Notes

- Some methods will need to be *static* methods, and some need to be *instance* methods.
- Be careful when comparing Strings objects. Use `string1.equals(string2)` for comparing the contents of `string1` and `string2`.
- You should get a small part working at a time. Start by commenting the entire `main` method, then uncomment it line by line. Run the program, get the first lines working, then uncomment the next line, get that working, etc. You can comment a block of code in Eclipse by selecting the code, then choosing Source → Toggle Comment. Do the same again to uncomment it.
- You must *not* modify the `main` method.

The output when you run this program should be similar to the following:

```
Library hours:
Libraries are open daily from 9am to 5pm.
```

```
Library addresses:
10 Main St.
228 Liberty St.
```

Borrowing The Lord of the Rings:
You successfully borrowed The Lord of the Rings
Sorry, this book is already borrowed.
Sorry, this book is not in our catalog.

Books available in the first library:
The Da Vinci Code
Le Petit Prince
A Tale of Two Cities

Books available in the second library:
No book in catalog

Returning The Lord of the Rings:
You successfully returned The Lord of the Rings

Books available in the first library:
The Da Vinci Code
Le Petit Prince
A Tale of Two Cities
The Lord of the Rings

Submission Instructions

Submit both files (`Book.java` and `Library.java`) via Stellar.

Good luck!

Book.java

```
public class Book {  
  
    String title;  
    boolean borrowed;  
  
    // Creates a new Book  
    public Book(String bookTitle) {  
        // Implement this method  
    }  
  
    // Marks the book as rented  
    public void borrowed() {  
        // Implement this method  
    }  
  
    // Marks the book as not rented  
    public void returned() {  
        // Implement this method  
    }  
  
    // Returns true if the book is rented, false otherwise  
    public boolean isBorrowed() {  
        // Implement this method  
    }  
  
    // Returns the title of the book  
    public String getTitle() {  
        // Implement this method  
    }  
}
```