

# Homework #4

Assigned: 2/21/25

Due: **3/7/25** by 5 PM

This assignment will continue with multi-object Java programs by asking you to design a few more classes using some initial data structures. For this programming problem, submit each .java file to the Homework #4 link on Brightspace (and remember to ensure the .java files are included **and not .class files!**). There are three .java files expected (one for each class, defined below).

Write a program intended to manage a library. Your program should create an interface for users to perform a series of operations, and define the following classes:

## ⑩ **Book:**

- Contains two strings for a *title* and *genre*
- Implements a parameterized constructor for setting the above
- Implements a ToString() method that will print *only* the title of the book

## ⑩ **BookShelf:**

- Contains a character representing the first letter of the title of each book in this shelf
- Contains an ArrayList of **Books**. This should contain a maximum of eight books
- Implements a default constructor and getter/setters for the above
- Implements a void method that will add a **Book** to this shelf if the **Book**'s title begins with the correct letter for the shelf. If the Book is not appropriate for this shelf, simply return
- Implements a void method that will remove a **Book** from this shelf
- Implements and overrides the ToString() method, which will print each **Book** title in the shelf on a single line. Each title should be separated by three spaces. If there are no books in the shelf, print "Empty" instead

## ⑩ **LibraryTester:**

- Contains only a main method that performs the following:
  - ✦ Instantiate two different **BookShelf** objects, with bookshelf titles being 'O', 'T'.
  - ✦ Print both **BookShelf** objects
  - ✦ Instantiate the following four **Books**
    - ⑩ "The Heart of the Betrayed" - Crime
    - ⑩ "Our Hill of Stars" - Fantasy
    - ⑩ "One of a Kind" - Science Fiction
    - ⑩ "The Vision of Roses" - Romance
  - ✦ Print each of these **Books** (from top to bottom)
  - ✦ Attempt to add each **Book** to *both* shelves
  - ✦ Print both **BookShelf** objects, starting with the **BookShelf** intended for book titles starting with 'O' (then 'T')

**Expected output:**

*Empty*  
*Empty*  
*The Heart of the Betrayed*  
*Our Hill of Stars*  
*One of a Kind*  
*The Vision of Roses*  
*Our Hill of Stars   One of a Kind*  
*The Heart of the Betrayed   The Vision of Roses*

When you're ready to submit your work, package your **.java files** (and not .class files) in a zip file using the following naming convention:

*lastname-firstname-cos225-hw04.zip*

Submit this .zip file containing each of the above .java files, along with a Github repository link, to the Brightspace link for Homework #4.