Homework #4

Assigned: 2/25/22
Due: 3/4/22 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:

- **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

- **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 **IFF** 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.

- **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**
      - “One of a Kind” - Fantasy
      - “The Heart of the Betrayed” - Romance
      - “The Vision of Roses” - Crime
      - “Our Hill of Stars” - Science Fiction
    - 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:

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

Note: Underscores in the above example are stand-ins for attempting to print an empty string. You should see **no** text in that space at all.

Submit .java files **in a .zip file** for each of the above to Brightspace link for Homework #4.