Homework assignment 05

Complete the following programs for this week's homework.

Programming assignments

Library System (20 points)

Continuing our work in class the other day, Write a Class that can be used to describe books including the following information:

- Title
- Author
- Year published
- Page count
- Genre
- A running count of how many books have been entered

Then write a test class that asks a user to enter the number of books to store, and let's the user enter each piece of information for each book. Write a method that prints out a summary for each book entered.

Example run of the program (with my responses entered):

```
How many books would you like to enter: 2
Please enter the title: The Hobbit
Please enter the author: J. R. R. Tolkien
Please enter the year published: 1937
Please enter how many pages the book has: 303
Please enter the genre: Fantasy

Please enter the title: Ross Poldark
Please enter the author: Winston Graham
Please enter the year published: 1945
Please enter how many pages the book has: 393
Please enter the genre: Historical Fiction
```
The Hobbit written by J. R. R. Tolkien was published in 1937, has 303 pages and is of the Fantasy genre.
Ross Poldark written by Winston Graham was published in 1945, has 393 pages and is of the Historical Fiction genre.
There are 2 books in the system

Note:

- When writing your class, be sure to use encapsulation (getters and setters) and private and static modifiers when appropriate

Animate an array of Balls (60 points)

Write a processing sketch that contains an array of 10 Ball objects that you create and displays them on the screen. When the user clicks the sketch, the balls should fall towards the bottom of the screen.

- The Ball class should have the following *private* data fields:
  - size
  - xPos
  - yPos
- The Ball class should have the following methods:
  - setSize (passing an int for the size)
  - setPosition (passing 2 ints for x and y position)
  - getXPostion
  - getYPostion
  - getSize
  - drop (drop method should move the ball down the screen 1 pixel at a time)

Some tips:

- Don’t try drawing the ball from the Ball class, instead, from the main class, get all the variables you’ll need to draw each ball
- This also means that you shouldn’t need to import processing or extend PApplet in the Ball class

Erect a rectangle (20 points)

Write a class named Rectangle to represent a rectangle The class should have the following:
- 2 double data fields, width and height with default values of 1
- A no-arg constructor that creates a default rectangle
- A constructor that creates a rectangle with a given width and height
- A static count object that keeps track of how many rectangles are created
- a getArea() method that returns the area
- a getPerimeter() method that returns the perimeter

**Note:** This is not a processing assignment! Don’t use any processing for this assignment.

Then write a simple test class that will create 2 rectangles, one with the no-arg constructor and one passing in the width and height. Print out the perimeter and area of each rectangle, as well as the count (from the static data field)

Remember that comments and good naming conventions factor into your grade! Don’t forget.