Spring 2022: CS 203 - Object-Oriented Programming

Lab3

Objectives:

- Introduction to OOP with JAVA
- Review Book Class
- Implement Person class with corresponding methods

OVERVIEW:

Today you will have a couple exercises in Java involving classes, objects, and methods! Along with this file will be an example of a simple class of Book and a tester class, please download the `Book.java` and `BookTester.java` files. The Book.java files contain constructors, variables, and methods. Try to understand why things work the way they do. You can run this program and see how I tested the methods on a new Book object in the main method. You will be preparing your own class and can use the Book class as a model.

CHALLENGES:

1. Create a Java class to model a Person. Call the class "UABPerson". Include a constructor to create a new UABPerson object. **All member variables should be private.** The variables for UABPerson should be as follows: a String field 'name' , a String field for the "gender", an integer field 'age' , and a String field 'blazerID.' **You need to implement set/get methods to change or read the values from the private variables.** Create 'get' and 'set' methods for each variable field. Here's a couple tips:

- Classes contain the data used to create objects
    - Remember: an object is just a variable that store variables and functions
- The class name and the file name must match
    - If the class is called UABPerson, the .java file must be named UABPerson.java
- Eclipse has a way of automatically generating getters and setters
    - Right click on your variable name > Source > Generate Getters and Setters...
- Do NOT put the main method in this class! public static void main(String[] args)

2. Add the following methods to your UABPerson class **(do not make them static!)**

```
public boolean checkPalindrome() {

     //TODO

}
```

- This method will check the name of the given UABPerson object and return True if the name is a palindrome (the same forward as backward, i.e. Hannah) and False otherwise.

```
public int yearsUntilRetirement() {

//TODO

}
```

- This method will determine how many years away from retirement the person is based on the given age of the UABPerson object. (For this exercise we will assume retirement age to be 65 and all people created are younger than 65.)

```
public String toString() {

//TODO

}
```

- This method will print out the object it is called on in the following format: "NAME is AGE years old."

3. Create the main class creating another .java file called `UABPersonTester.java` and inside this file include the main method (public static void main...). Create two UABPerson objects with different names, ages, and genders. Run the methods above on both objects.

***** REMEMBER! All member variables should be private, you need to implement set/get methods to change or read these values *****