Lab 9

What this Lab Is About:

1) Working with classes
2) Declare some class methods and call them from the main method.

Problem Description: Implement a class called Person

A person has a first name, last name, and birth year. Supply a constructor and the following methods: `getFirstName()`, `getLastName()`, `getAge()`.

Step 1: Getting Started

Create a class called **Lab9**. Use the same setup for setting up your class and main method as you did in previous labs and assignments. Be sure to name your file **Lab9.java.**

Note: Continue using the following Coding Guidelines and Assignment Documentation that you have been using in the previous labs.

Step 2: Declare the Person Class

Examining the problem, we see we need to create a Person class. For this you will need to create another class in another file but in the same project as Lab9. The class will be called **Person**, and it will be stored in a file called **Person.java**. Declaring the Person class should look as follows, for now:

```
public class Person {
}
```

Inside the class, declare some instance variables: String variables called `firstname` and `lastname`, and an integer called `birthYear`.

```
// Declare some variables of different types:
// a String called firstname
-->

// a String called lastname
-->

// an int called birthyear
-->
```

Step 3: Define the Constructor for the Person Class

Remember the main job of the constructor is to initialize the instance variables.

```
public Person(String fname, String lname, int year) {
   // write the segment of code
   // that assigns parameters to the instance variables
   -->
}
```

Step 4: Define Methods for the Person Class

Define a method called `getFirstName()` to get the first name of an Person object:

```
public String getFirstName() {
   // write a line of code that returns the first name
   -->
}
```

Define a method called `getLastName()` to get the last name of an Person object:

```
public String getLastName() {
   //write a line of code that returns last name
   -->
}
```

Finally, define a method called `getAge()` to get the age of an object Person:

```
public int getAge(int currentYear) {
   // write a segment of code that returns the age
   -->
}
```

Step 5: Create a Person object from the Lab9 “main” method

In order to use a Person, we must create a Person object. This is done by implicitly calling the constructor for the Person class with a new operation. Declaring an object looks similar to other variable definitions. We will do this from the Lab9 main method. As always, it is the main method that runs when your program is started by the JVM (Java Virtual Machine). Remember to import the Scanner package at the very top of your program (Lab9).

```
public class Lab9 {
   public static void main(String[] args) {
      // Declare variables where you will store inputs
      // from user: firstname, lastname, birthyear
      -->

      // Declare a Scanner object
      -->
      // Prompt the user for inputs: firstname, lastname, birthyear
      // and store the inputs in the declared variables
      -->

      // Declare a Person object and use new to create a new Person object
      -->
   }
}
```

Step 6: Calling Person Class Methods and Display the Results

The methods in the Person class will display the required outputs. Print the Person's age in 2019 and in 2029.

```
// Call the getFirstName(), getLastName() and getAge() methods in order to
get and then print the name and age of the Person object.
-->
```

If your Person Object variable is named `person`, then this statement will look like:

```
System.out.println(person.getFirstName() + " " + person.getLastName() +
   " is " + person.getAge(2019) + " years old in 2019 and will be " +
   person.getAge(2029) + " years old in ten years.");
```

Step 7: Display the Output

See the sample output below and make sure to display is the same format.

Below is an example of what your output should roughly look like when this lab is completed. All text in **green bold** represents user input.

Sample Run 1:

```
Enter the first name of the person: John
Enter the last name of the person: Mann
Enter the birth year of the person: 1991
John Mann is 28 years old in 2019 and will be 38 years old in ten years.
```

Sample Run 2:

```
Enter the first name of the person: Ben
Enter the last name of the person: Freeman
Enter the birth year of the person: 1981
Ben Freeman is 38 in 2019 and will be 48 in ten years.
```

Step 8: Submit your Lab

Once your program is working correctly, submit your lab on Canvas. Only upload both files: Lab9.java and Person.java.