**Practice Coding Questions**

1. Assume you have been hired by Bank of Fairfield and tasked to develop a small banking command-line (i.e. console) application using Java, for the bank to use in managing their Customers and Accounts data. To accomplish this, you are required to code some Java classes.

A Customer can own/open **one** Account. And the Account can only be one of the following 3 types - Checking, Savings or Loan.

Using your IDE, create a new Project for a Java command‑line application and in it, implement code for the Java classes including a Customer class, an Account class and use Java constants to store the data for the AccountType. Here are the specifications of the data fields needed for these classes:

Customer:

* CustomerId : long (**note**: data type should be long)
* Name
* DateOfBirth

Account:

* AccountNumber
* Balance
* AccountType

Note: Choose/use appropriate data types for the data fields in your code.

Make your Customer and Account classes be in a package named *com.bankoffairfield.bankapp.model*.

Then, also code an executable class named BankApp, putting it in a package named *com.bankoffairfield.bankapp*.

Given below is sample data from the bank:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Customer Id | Name | Date of birth | AccountNumber | Balance ($) | AccountType |
| 9123456780 | Anna Lynn Smith | 1957/03/18 | 101-C-001 | 1,650.95 | Checking |
| 9123456782 | Bob R. Jones | 2001/04/30 | 102-S-002 | 1,500.00 | Savings |
| 9123456783 | Carlos Hernandez | 1991/10/24 | 102-L-001 | 100,650.50 | Loan |

Implement your Java code for both Customer and Account classes, to include the default constructor. And also implement your code such that objects of type, Customer, are **immutable**.

In the main method of the executable BankApp class, write code to create an array of Customers using the data given above.

Also, in this executable BankApp class, add a static method named, printCustomers(…) that takes as parameter, the array of customers, which it iterates through and prints-out each customer data in the following format:

{CustomerId: 9123456780, Name: Anna Lynn Smith, DoB: 1957/03/18, AccountNumber: 101-C-001, Balance: $1,650.95, AccountType: Checking}

{CustomerId: 9123456782, Name: Bob R. Jones, DoB: 2001/04/30, AccountNumber: 101-S-002, Balance: $1,500.00, AccountType: Savings}

{CustomerId: 9123456783, Name: Carlos Hernandez, DoB: 1991/10/24, AccountNumber: 101-L-001, Balance: $100,650.50, AccountType: Loan}

Finally, Invoke your printCustomers(…) method inside the main method and execute your program and take a screenshot of your IDE showing the code and its output in the console. Save the screenshot to a .jpeg or .png image file for submission.

1. Using your IDE, create a new Java project for a command-line application named, MySingletonDemo. In your project, implement code for a class named, DatabaseConnectionManager. Applying the Singleton Design Pattern, implement the code such that only one instance of the class can be created when the application is executed.

Add an executable class named, SingletonDemo and in the main(…) method, simply obtain the single instance of the DatabaseConnectionManager (do this three times) and print the object to the console, each time.