## CSCI212 Spring 2018 Lab-6

## Goals

- To write classes with constructors.
- To practice writing static methods in object classes.
- To learn to write equals method.

## Problem 1

- 1. Defile a class named BankAccount.
- 2. The class has two instance variables: Account holder's name, a string variable and balance, a double variable.
- 3. It has a default constructor and a constructor with two parameters, name and balance.

Now think about the methods you need to use this account for your everyday use. What methods does this need? By now, you know that every class needs getter or accessor methods to get information, and setter methods to set certain information.

Now improve this class by adding the following instance variables and methods.

- 1. A private int data field named **id** for the account number(default 0).
- 2. A private double data field named **annualInterestRate** that stores the current interest rate (default 0). Assume that all accounts have the same interest rate.

**Hint:** The method getMonthlyInterest() is to return monthly interest, not the interest rate.

• Monthly interest is (balance \* monthlyInterestRate).

- Monthly interest rate is annualInterestRate/12.
- Note: AnnualInterestRate is a percentage %, e.g., like 4.5%. You need to divide it by 100.

Write a test program that creates an Account object with an account ID of 1122, a balance of \$20,000, and annualInterestRate of 4.5%. Use the withdraw method to withdraw \$2,500, use the deposit method to deposit \$3,000, and print the balance, the monthly interest.

- 2. Design a class named MyInteger. The class contains
- An int data field named **value** that stores the int value represented by this object.
- A constructor that creates a MyInteger object for the specified int value.
- A getter method that returns int value.
- The methods is Even(), is Odd(), and is Prime() that return true if the value in this object is even, odd, or prime, respectively.
- The static methods is Even(int), is Odd(int), and is Prime(int) that return true if the specified value is even, odd, or prime, respectively.
- The static methods is Even(MyInteger), is Odd(MyInteger), and is Prime(MyInteger) that return true if the specified value is even, odd, and prime, respectively.
- The methods equals(int) and equals(MyInteger)that return true if the value in this object is equal to the specified value.
- A static method parseInt(char[]) that converts an array of numeric characters to an int value.
- A static method parseInt(String) that converts a string into an int value.

Draw the UML diagram for the class and then implement the class. Write a client program that tests all methods in the class.