**CSCI 470/502 In-Class Exercise 2 Fall 2018**

**Classes and Methods**

**30 points**

**Savings Account Class**

Create class SavingsAccount. Use a static variable annualInterestRate to store the annual interest rate for all account holders. Each object of the class contains a private instance variable savingsBalance indicating the amount the saver currently has on deposit. Provide method calculateMonthlyInterest to calculate the monthly interest by multiplying the savingsBalance by annualInterestRate divided by 12 – this interest should be added to savingsBalance. Provide a static method modifyInterestRate that sets the annualInterestRate to a new value. Write an app class to test class SavingsAccount. Declare an ArrayList of SavingsAccount objects, instantiate five or six savingsAccount objects with various balances adding each to the ArrayList. Set annualInterestRate to 4%, then process the ArrayList calculating the monthly interest for each of 12 months and print the new balances for each of the SavingsAccount objects in the ArrayList. Next, set the annualInterestRate to 5%, and repeat the process. Provide a static method in the app class named displayBalances that uses DecimalFormat to print the balances as described below. Be sure to call this method each time the interest rate changes. Use only the set and get methods in SavingsAccount only if needed. Add a header to the output and column headers for the 1 through 12 months of new balances as monthly interest is applied.

Do not validate data and do not use try…catch blocks.

Use DecimalFormat class to display all balances with a floating dollar sign, commas where necessary and rounded to two decimal places.

Here is an example use of the DecimalFormat class:

import java.text.DecimalFormat;  
  
public class DecimalFormatTest

{  
 public static void main(String[] args)

{  
 double dollars = 34502.99;

DecimalFormat moneyFormat = new DecimalFormat("$###,##0.00");

System.out.printf("%11s\n", moneyFormat.format(dollars));

}  
}

Submit each .java file individually. Only the app class needs a documentation box with the name(s) of the developers.

**Sample Output** Monthly Interest Growth

Month Month Month Month Month

Accounts 1 2 3 4 5 etc.

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Account 1 $4,020.78 $4,080.45 etc.

Account 2 etc. (Note: Your columns will need to be wider.)