**CIS 162 Lab 11**

**Fun with ArrayLists and File I/O**

**Objectives**

After completing this lab, you should be able to:

* *Read data from a text file, and load it into an ArrayList.*
* *Write code that iterates through an ArrayList.*

**Step 1: Create a New BlueJ Project**

**Step 2: Download the Files**

* Download the “CustomerRecords.txt” file and save it in the folder that BlueJ created for this new project. There are 1,000 entries! You will not see it from within BlueJ but you can see it from within the Windows Explorer.
* Add the provided stubbed out CustomerDatabase.java to your project.

**Step 3: Create a class called Customer**

Implement a simple class to maintain information about a customer including: a first name (String), last name (String) and email (String).

* public Customer(String first, String last, String email) - a constructor that initializes all of the instance variables to the values given by the input parameters.
* provide get and set methods for each instance variable.
* public String toString( ) - return a String containing the first name, lastname and email address (e.g. John Doe: john.doe@gmail.com
* Be sure to test this class thoroughly before moving on to the next class.

**Step 4: Complete the provided CustomerDatabase class.**

**Class Instance Variables**

Declare a private instance variable with a meaningful name:

* a reference to an ArrayList of Customer (don’t instantiate the ArrayList yet)

**Constructor**

A *constructor* is a special method with the same name as the class and generally initializes the fields to appropriate starting values.

* public CustomerDatabase ( ) - a constructor that instantiates the ArrayList of Customer. Do not add any customer to the ArrayList yet.

**Mutator Methods**

A mutator method performs tasks that may modify class fields.

* public void readCustomerData(String filename) - open the provided file and read all customer data. Read data one element at a time. Repeatedly, instantiate a new Customer and add it into the ArrayList.

**Accessor Methods**

* public ArrayList<Customer> getDB() – return the complete ArrayList of Customers. This is a single line of code.
* public int getNumberCustomers () - return the number of customers in the ArrayList of Customers. This is single line of code.
* public Customer findCustomer(String firstName, String lastName) - if found, return the Customer that matches the provided first name AND last name. If not found, return null. The search should not be case sensitive… Hint: use the equalsIgnoreCase method to do your string comparisons.
* public ArrayList<Customer> findCustomersWithSameEmailDomain(String domain) – returns all Customer records whose email contains a specific email domain. For example, if domain is @google, you should return an ArrayList of all the Customers that contain @google in the email. Hint: use the contains method of the String class.

**Step 5: Putting It All Together!**

**Note:** I am providing the main method for you. ):

These are the steps of the given main method. Look at the code to understand what it is doing.

1. Search and printout the record for Jack King, or a not found message if there is not such record.
2. Search and printout the record for Bill Gates, or a not found message if there is not such record.
3. Search and printout all customers that have a google email account

**Step 6: Add the provided CustomerGUI.java file to your project and run the GUI. You don’t have to do any changes to this class.**

**Grading Criteria**

This lab is worth a possible 10 points. Demonstrate your running program to the instructor or lab assistant.