**CS211 - Project**

**Problem: Customers Management System**

Storing of a simple CUSTOMER directory is a core step in a Tele-communication Company management systems. Customer data are stored in a (text) file that contains Contract\_ID, Name, Nationality, Phone, Current\_Bill\_Amount, and Accumulated\_Bill\_Amount. In such management systems, user wants to be able to insert a new customer, delete an existing customer, search for a customer using Contract\_ID or Phone, sort the list of customers based on their names, etc. User also wants to save any changes of the customers list in the data (text) file.

**INPUTS**

**Initial customer directory:** Data about each customer will be read from separate lines of a text file. The entries for all customers will be read in sequence until all entries are read.

**Additional entries:** Each entry is typed by the user at the keyboard when requested.

**OUTPUTS**

**Customer’s information:** All information about a customer are displayed on separate output lines.

**Updated customer directory:** Data about each customer will be written to separate lines of the text file. The entries will be written in sequence until all entries are written.

**Part 1. Array Implementation**

* Create a class called “Customer” which can be used to store the Contract\_ID, Name, Nationality, Phone, Current\_Bill\_Amount, and Accumulated\_Bill\_Amount. (2 Marks)
* Create a class called “ArrayCustomerList” which stores list of “Customer” objects. Use an array of size (MAXSIZE = 1000) to hold the list. (3 Marks)

**Notes:**

Add appropriate data fields to the class “ArrayCustomerList”,

Add the operations (methods) to the class “ArrayCustomerList”. For example, insert, delete, linearSearch, binarySearch, insertionSort, heapSort, … .

* Create an appropriate GUI that use the class “ArrayCustomerList” to solve the Customers management system problem defined above. This means, the GUI allows the user to print all customers list, insert a new customer, delete a customer, search for a customer using its ID or Phone, sorting the customers list, etc. (3 Marks)

**Part 2. Linked List Implementation**

* Create a class called “CustomerLinkedList” which stores list of “Customer” objects. Use a linked list (SLL or DLL) to hold the list. (3 Marks)

**Notes:**

Use the class “Customer” which you have created in Part1.

Add appropriate data fields to the class “CustomerLinkedList”,

Add all of the required operations to the class “CustomerLinkedList”. For example, insert, linearSearch, binarySearch, insertionSort, heapSort, … .

* Create an appropriate GUI that uses the class “CustomerLinkedList” to solve the Customer management system problem defined above. You can also use the same interface that has been used in Part 1, but this time with the class “CustomerLinkedList”. (3 Marks)

**Instructions**

**Software Platform:** NetBeans

**Submission:** This project to be performed by a group of students (2-3 students each), and any identical submissions will be regarded as plagiarism attempt and all will be given zero marks.

It is required to submit for each part of the project (before the due date) the following:

* A copy of the project on a CD or you can upload the softcopy of the project on the blackboard.
* A Hard copy document that includes both the used GUI (as a picture) and the code for the Java classes in the project.

Best Wishes

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