Scenario:

You have been hired by Mary’s Movers, a Prince William based moving company. Mary’s Movers is a small company and only performs local moves within Prince William County. You have been asked to create an application to help track their moving clients. The company needs to be able to add new clients to their database and print invoices for each client. Currently, the company has the capacity to handle up to 58 clients.

Clients must be exclusively classified as either residential or commercial. All clients have a name, address, phone number, and number of floors. A valid phone number is only in the format DDD-DDD-DDDD, where D is a number. All other attributes must have reasonably appropriate validation.

Residential clients have a base cost determined by the following:

* 1 floor (Small) – TK 206
* 2-3 floors (Medium) – TK 557
* More than 3 floors (Large) – TK1207

Residential clients have the option for fragile care on valuables. This service ensures all items deemed fragile will be packaged using special material. Items deemed fragile will be guaranteed to have no damage. Fragile care service costs an additional TK206 per floor.

Commercial clients are charged a base cost of TK1206 per floor and moves are limited to 999 items. A list containing the weight of every item, in tons, should be kept. This will help managers track down the necessary resources required to make the move possible. Anything that weighs more than 2.06 tons is considered industrial equipment. An additional TK306 is charged for each item that is considered industrial equipment.

An invoice for a client, should be well-formatted, listing the client type (residential or commercial), name, address, phone number, number of floors, base cost, and total moving cost. For residential clients, the invoice should include if the option for fragile care was requested. For commercial clients, the invoice should include the number of items considered to be industrial equipment.

Create an efficient, object-oriented solution, using good design principles, with a polished user interface that will allow Mary’s Movers to manage their clients. At the start of the application, a user must be presented with a menu that contains the following options:

1. Add Client
2. Print All Residential Invoices
3. Print All Commercial Invoices
4. Print Accounts Receivable Report
5. Quit

The “Add Client” option should allow a user to select the type of client they wish to enter (residential or commercial) and enter in all information about their moving client. If the user already has entered 58 clients, the user should see a message indicating he/she has reached the limit of clients that can be added.

The “Print All Residential Invoices” option should print only the invoices associated to residential clients, according to the invoice specification identified above.

The “Print All Commercial Invoices” option should print only the invoices associated to commercial clients, according to the invoice specification identified above.

The “Print Accounts Receivable Report” should create a well-formatted report, listing the total number of clients, regardless of type, and the total moving cost across all invoices.

Once a user selects an option other than “Quit”, and the option is finished executing, they should be re-prompted to enter another option.

Notes:

* The only way to exit the application is to choose the “Quit” option. The application should not exit for any other reason.
* Whenever a user enters invalid data, you must re-prompt them. Think about where data validation should be used within your validation.
* When thinking about your user interface, try to think about what makes the most sense and what you might want to see as a user using the application.

Other Requirements:

* Your solution must incorporate one or more arrays. Array-Lists may not be used.
* Your solution must demonstrate use of abstract classes/methods, inheritance and polymorphism.