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Course Project: Grocery Billing

The course project requires the creation of a GUI grocery billing system using JavaFX. The system should be able to add, update, and remove items from a list (cart) given the following fields: item code, item name, item quantity, item price, and item discounts. The system should be able to store any number of items and be able to compute the total price of all the items including discounts and tax. The program should also contain a reward points system. For every $1, 1 point is accumulated. When you make a purchase and you have more than 100 points, an additional 10% discount is applied and the reward points are reset to 0.

I began the project by reading the given instructions carefully to determine what the goal of the project would be. From my reading I gathered that I needed to create the following:

1. Java file containing the main method and the JavaFX application.
2. Custom class to conveniently store the details of each item in an object.
3. This research paper.

Before I began coding, I had to plan what instance variables I wanted the custom Item class to have. I decided that an item code, item name, item quantity, item price, item discount, item discount amount, item discounted price, item tax, item tax amount, and item final price would be needed. This way each object could contain every piece of information needed for the printing process. I also added several static variables to act as a running total of the list of items. These static variables are cart subtotal, cart savings, cart reward points, cart tax, and cart grand total. After I had decided on the variables, I created the item class including a constructor, setter, and getter methods. I also added a calculations method to efficiently calculate price, discounts and tax given item quantity, price, tax amount, and discount percentage. A clear cart and the remove item methods were necessary to interact with the cart totals as needed. A reward discount method checks to see if the user qualifies for the bonus 10% discount. After the item class was complete I began working on the JavaFX application in the main class. After all coding was done, I wrote this essay.

The grocery billing application consists of a JavaFX stage that is split in half vertically. The left being the interactive side while the right displays all the current items that have been added to the cart. The application begins with no items in the cart and displaying 4 buttons to begin an action. The “Add an item” button changes the left pane to display text fields and a checkbox to input an item’s attributes. Once all text fields have been filled in, the user can press the “add new item” button to create an item and add it to the cart. The “update and item” button shows a pane with the same fields. When the “update” button is clicked, the program checks the items in the cart for a matching code. If one is found, that item is removed and a new one is created using the new information. The “Remove an item” button displays only an item code field. If an item in the cart is found with a matching code, it is removed from the list. The final button is the “Print” button. This button will display a detailed description of the items in the cart including subtotal, savings, tax amount, grand total and reward points. If the user had 100 or more reward points, an extra 10% discount is applied, and the reward points are reset to 0.

This grocery billing system is a good demonstration of what we have learned through the class. JavaFX, loops, classes and many other great Java utilities were used. Even though the program does everything listed in the project requirements, it is not ready to be implemented in a real world situation. The program lacks many features including saving data after the program closes and a way to export the cart details to a printer.