Department of Electrical,
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Faculty of Engineering & Architectural Science

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Section 1: Use - Case Summary

A use case is a description of the steps in which a user interacts with a system. This description can help represent the success scenarios, failure scenarios, and any variations or exceptions within the system. This can be usually represented visually with a model or it can be written. A textual description of this use- case for the bookstore application can be described in parts:

1. System Name: Book Store Application

2. Users: Owner and Customers

3. Scenarios:

    3.1. For adding a new row for a book to the table, the owner should enter the title and price of the book by clicking the [Add] button. The owner could also delete a book from the Book table by selecting the specific row and clicking the [Delete] button.

    3.2. Just like for books, to add a new customer to the customer table, the owner enters the customer's username and password by clicking on the [Add] button. The owner can delete the customer from the customer table by selecting the corresponding row and clicking the [Delete] button.

    3.3. To buy books, the customer will need to select the checkboxes present on the corresponding row of the book and click [Buy]. If the customer wants to redeem their points, they can click [Redeem and Buy], for which 1 CAD will be deducted from the total cost for every 100 points redeemed.

    3.4. The total cost is calculated after purchase. If the purchase was made without redeeming points, the new points are updated. For every 1 CAD spent, the customer receives 10 points. Depending on the points the customer has, their status would be updated to Silver or Gold.

4. Start Command: This command will commence the system when the Owner and Customer are logged in to the system.

5. Exit Command: This command will terminate the system when the Owner and Customer are logged out of the system.

6. Exceptions: An exception placed here would be when the user puts an incorrect username or password. This will print "invalid" and an exception will be thrown.

Section 2: Use - State Diagram Pattern

The state design pattern is used to allow objects to change their behaviour based on the current state. This change must occur during the runtime of the system. In the State Diagram pattern, we can create objects that can illustrate different states and a context object whose behavior varies as its state object changes.

In this system, the user will be one of the two states: Owner and Customer. Both states will have different functions to operate. Following on what a state diagram generally would look like, the User class would be the “client”, and the “GUI” class would be the “context”. Each state will have 3 sub-states. The first main state would be the Owner or the Admin. Three sub-states for this state are: “Books”, “Customers” and “Logout”. “Books” will go to the list of books, “Customers” will go to the list of customers, and if “Logout” is clicked, it will log out from the application and go back to the login screen. Finally, for the Customer state, the three sub-states are: “Buy”, which would show the total cost and status, “Redeem and Buy”, which show the cost, the customer’s remaining points and status, and finally “Logout”, which will log the customer out of the application.