Toronto Metropolitan University

Department of Electrical, Computer, & Biomedical Engineering
Faculty of Engineering & Architectural Science

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Introduction

We were tasked with designing a Book Store Application. The app has a graphical user interface (GUI) based. The app has a single-window GUI which is available to the user of the app. If a user of the app were to click a button to obtain a new screen, the last screen of the apply will be replaced with a new screen in the same window.

When the user clicks the “x” button at the top right of the app window, all the relevant data in the app will be rewritten into two relevant files: books.txt and customers.txt. Whenever the “x” button is clicked, the old data in books.txt and customers.txt will be overwritten by the current data present in the relevant data structures of the app. When the app is started the data from the two files will be loaded in the data structures of the app.

This app has two users:
-Owner (1 user)
-Customer (0 or more users)

The app will begin with a login-screen.

The login screen has three GUI items:

-username field
-password field
-button (login)

Objective

The objective of this lab is to analyze, design, and implement a bookstore application based on the given objectives. Our objective was to design with UML diagrams, use state design patterns in the software design, and then implement the system.

This project was completed in a group.

Use-Case Description

The use-case that has been chosen to be analyzed is the “Add_Books” function. “Add_Books” is initiated by the Owner.

Entry Conditions:

-The owner must be logged into the system
-The owner can see the list of the books and will be able to access the feature “Add_Books”

When the owner enters a name for the book, they will then be asked to enter a price for the book. The application will then verify that the price is valid (not negative and over $0). When the book name and price have been entered to the list of books for the owner to view, the owner can exit. If the price is not over 0, an error message is displayed on the screen for the owner to see. If a book can not be added to the list, an error message will be displayed.

State Design Pattern

For both the owner and customer, the application will go to its first state in the login screen. The user will be prompted to enter a username and password. Then, the application will go to the next state to verify the information. If the information is correct, the application will move onto the next state. The next state will have the appropriate home screen which differs depending on the user, one for the Owner and another for the Customer. If the login information is incorrect, the application will give the user an error message, leave the verification state, and then return back to the login screen state. It will continue to do so until the user provides correct information. When the user has successfully logged in, the owner and customer will have different sets of functions which reflect the state design pattern.

The application is also tasked with determining different reward levels for the user. The application will determine if the customer is eligible to be given Gold status by entering a state that examines a customer's total points. If the customer's points exceed 1000, the application will move to a state that will assign the customer with Gold status. If the customer has less than 1000 points, the application will enter a state that assigns the customer with Silver status. The owner will be able to add/delete books from the applications database. The owner will be sent to the state that allows them to delete and add books.

Conclusion

This lab was successful because all the objectives were met and implemented successfully.