CS401 Final Project: BiblioConnect: Integrated Library and Literary Social Network

Project Description

This project includes two parts. Part 1: Develop a library management system that allows librarians to manage books, patrons, and transactions effectively. The system should provide functionalities for adding, removing, and updating books and patrons, as well as checking out and returning books. Part 2: The BiblioConnect System is an integrated platform designed to provide users with access to library resources while also facilitating social interactions among patrons. The system aims to create a vibrant community where users can engage with each other, share knowledge, and participate in various social activities related to reading and learning.

Key Features

Library Management (Part 1):

- The system will allow the management of books and library members, as well as handling the borrowing and returning process. Students are required to use the object-oriented programming (OOP) concepts such as inheritance, composition, abstraction, and interfaces. The system will be modeled using UML and implemented with a fair amount of testing to ensure robustness.
- The library system will have several core functionalities:
    - For book management, the system should be able to add new books to the library, remove books, search for books by title, author, or ISBN, and list all available books. This will enable the librarian to maintain an up-to-date catalog of books.
    - For member (patron) management, the system should support registering new library members, removing members, updating member information, and listing all registered members. This ensures that the library can keep track of its patrons and their details.
    - In terms of borrowing and returning books, the system must allow members to borrow books, track which books are borrowed by which members, allow members to return books, and prevent borrowing of books that are already checked out. This functionality is critical for managing the circulation of library materials.

    - Additionally, the system should generate reports of all borrowed books and overdue books if implementing due dates. This feature will help librarians monitor the status of the library's inventory.
    - The system should provide a simple console-based user interface to interact with the system. The interface should offer menu options for performing various operations such as adding books, borrowing books, and viewing reports.
- To implement these requirements, the system must utilize object-oriented principles. For instance, using inheritance to create specific types of members (like students and teachers), applying composition to manage the relationships between books and authors, using abstraction to define common interfaces for various components, and employing interfaces to ensure extensibility and flexibility of the system design.

Literary Social Network (Part 2):

- Built on top of the Library Management System (Part 1), the BiblioConnect System is an integrated platform designed to provide users with access to library resources while also facilitating social interactions among patrons. The system aims to create a vibrant community where users can engage with each other, share knowledge, and participate in various social activities related to reading and learning.
- For this part, the Java implementation and testing are optional, but the design (complete UML design) must include the management of the following system features:
    - User Profiles: Each user has a profile where they can showcase their favorite books, reading habits, and literary preferences.
    - Social Interactions: Patrons can interact with each other by posting messages, commenting on posts, and liking or sharing content.
    - Groups and Discussions: Users can join or create interest-based groups and participate in discussions on various literary topics.
    - Following and Followers: Users can follow each other to stay updated on their activities, book recommendations, and discussions.
    - Events and Meetups: The platform hosts literary events, book clubs, author signings, and other literary gatherings where users can connect with like-minded readers.
- Extra credit for implementations of the above design. (extra 20%, equivalent to 30 x 20% = 6 full points in the final score)

Main Goals

BiblioConnect redefines the concept of library management by incorporating social networking elements, transforming the way users engage with books and literature. Whether it's borrowing a book, discussing a favorite novel, or connecting with fellow readers, BiblioConnect offers a dynamic and enriching experience for book enthusiasts of all ages and interests.

- Community Building: BiblioConnect fosters a vibrant and inclusive community of book lovers, providing a platform for meaningful interactions and discussions.
- Engagement: The platform encourages active participation through social interactions, group discussions, and real-time engagement with fellow readers.
- Convenience: BiblioConnect offers a seamless experience by combining library services with social networking functionalities, allowing users to manage their reading activities and connect with others in one place.

Data Store

For persistent data stores, use a database of your choice (MySQL), or the open source SQLite. Refer to the Slides that will be discussed in sessions for instructions on how to install and connect to MySQL or SQLite database.

Submission Requirements

- Due Date: 7/23/2024
- Create a Github repository (or a project within your prior repo that was used for homework assignment) that includes the following:
    - Source code
    - A readme file describes how to use your system
    - The presentation slide deck
    - A test document describes the test cases and what you observe in your tests
- Presentation:
    - Presentations by each group will be held on 7/24.
    - Each group gets about 20 min for the presentation + 5 min Q&A.
    - Mandatory parts of the presentation (**different group member to cover each part**)
        - Overall System Design in UML

        - Experience of extending the design of your system for Library System (Part 1) to cover the Literary Social Network features (Part 2)
        - Examples of how you apply what we have learned in software engineering while designing and developing for the project
        - Demonstration of the key features of your system through test cases
- Submission:
    - Pointer to Github repositories or projects (invite me to your github repo or projects). One repo or project per group.
    - Demonstration video, one per group (<10min), any of the following options should be Ok:
        - submit video through zipped file
        - use google drive, provide pointers
- Group Project Notes:
    - All group members get same score
    - Help each other, lagging ones may drag the whole group score down
    - Extra credit if Part 2 is implemented and tested (also see notes in Part 2).