Bangladesh University of Business and Technology

Project Report

Library Management System

Software Development 1 (CSE 100)

Team:

ID No	Name
20234203070	Shahed Mohammed Ridoy
20234203069	Sawda Bintha Jahan
20234203072	Md Imran Hossain
20234203068	Shamsi Juma
20234203059	Ilma Khanam

Contents

Introduction

The Library Management System (LMS) project aims to develop a comprehensive solution for managing the operations of a library effectively. Libraries are vital institutions that play a crucial role in facilitating access to knowledge and information. However, manual management of library resources and membership records can be time-consuming and error prone. The LMS project seeks to address these challenges by automating various library management tasks, including book management, member registration, and transaction tracking.

Project Overview

The LMS project comprises six primary modules, each fulfilling specific functionalities essential for the efficient operation of a library:

Authentication (auth.cpp): This module provides secure access to the system through username and password authentication. It ensures that only authorized users can access the library management functionalities. Additionally, it includes functionality for password change, enhancing security and user control.

Book Management (book.cpp): The Book Management module allows librarians to add, update, and remove books from the library's collection. It captures essential book details such as title, author, publisher, publication year, price, and stock quantity. This module facilitates the organization and maintenance of the library's book inventory, ensuring that accurate and up-to-date information is available to librarians and library users.

Member Management (member.cpp): The Member Management module enables librarians to manage library members' records, including registration, updating, and removal. It captures information such as member ID, name, department (if applicable), and intake year. This module facilitates the administration of library memberships, allowing librarians to maintain a database of active library users.

Issue History (issue_history.cpp): The Issue History module records details of book issuances, including the book title, member ID, and issuance date. It maintains a comprehensive history of all book transactions, facilitating tracking and management. Librarians can use this module to monitor book circulation, identify popular titles, and track borrowing patterns.

Return History (return_history.cpp): Like the Issue History module, the Return History module records details of book returns, including the book title, member ID, and return date. It complements the Issue History module by providing a complete record of book transactions from issuance to return. Librarians can use this module to track overdue books, analyze return patterns, and ensure the timely return of borrowed materials.

Main Program (main.cpp): The Main Program serves as the entry point of the system, integrating all modules to provide a cohesive library management solution. It utilizes a menu-driven interface for user interaction, allowing librarians to access various functionalities conveniently. The Main Program orchestrates the execution of library management tasks, ensuring seamless operation and user experience.

Functionalities

The Library Management System offers the following functionalities:

Authentication: Secure login with username and password authentication. Password change functionality for user control and security.

Book Management: Addition, updating, and removal of books from the library's collection. Listing of available books with detailed information.

Member Management: Registration, updating, and removal of library members' records. Listing of active library members with relevant details.

Issue History: Recording of book issuances, including book title, member ID, and issuance date. Viewing of complete issue history for tracking and analysis.

Return History: Recording of book returns, including book title, member ID, and return date. Viewing of complete return history for monitoring and management.

Main Program: Integration of all modules to provide a comprehensive library management solution. Menu-driven interface for user interaction and execution of library management tasks.

Implementation

The LMS project is implemented in C++ programming language, leveraging object-oriented programming principles for modularity and maintainability. Each module is encapsulated within its respective class or set of functions, ensuring separation of concerns and ease of maintenance. File handling mechanisms are used for data storage and retrieval, enabling persistent storage of library resources and transaction records.

Future Enhancements

Potential future enhancements to the Library Management System include:

Integration with an online catalog system for real-time book availability and reservation.

Implementation of fine management for overdue books, including automated notifications and penalty calculation.

Integration with a notification system to remind members of upcoming due dates and outstanding fines.

Enhancement of the user interface for improved usability and accessibility, including support for mobile devices and screen readers.

Conclusion

The Library Management System project offers a comprehensive solution for managing library resources and membership records effectively. By automating routine tasks and providing robust functionality for book and member management, the system enhances the efficiency and effectiveness of library operations. With further enhancements and refinements, the LMS can serve as a valuable tool for libraries in modernizing their operations and delivering superior services to library users.

Acknowledgments

We would like to express our gratitude to Bangladesh University of Business and Technology for providing the opportunity to work on this project and to our project supervisor for their guidance and support throughout the development process.

References

- C++ Programming Language Documentation
- Standard Template Library (STL) Documentation
- Chrono Library Documentation
- Blogs from internet
- w3schools.com
- w3resource.com
- Programiz.com