National University of Computer & Emerging Sciences
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LIBRARY MANAGEMENT SYSTEM

Project Proposal
Object-Oriented Programming
Section: F

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Project Proposal

● Introduction

The Library Management System (LMS) is a software application designed to manage and automate library operations. This system will provide an efficient way to handle books, members, and transactions, making it easier for librarians to manage their resources and for members to access library services.

● Existing System

Current library management systems often lack user-friendly interfaces and advanced features such as detailed reporting and member categorization. Many systems are either too complex for small libraries or too simplistic to handle the needs of larger institutions. Additionally, some systems do not utilize modern programming paradigms like Object-Oriented Programming (OOP), which can lead to code that is difficult to maintain and extend.

● Problem Statement

The existing systems often have the following issues:

- Lack of user-friendly interfaces.
- Limited features for member categorization and reporting.
- Inefficient handling of transactions and book availability.
- Poor utilization of modern programming techniques.

Our proposed system aims to address these issues by introducing a more intuitive interface, advanced features for member management, and efficient transaction handling. We also intend to leverage OOP principles to create a maintainable and extensible codebase.

● Proposed Solution

Our solution involves developing a Library Management System that incorporates the following improvements:

- User-Friendly Interface: A menu-driven interface that is easy to navigate.
- Advanced Member Management: Categorization of members (e.g., Student, Faculty) with different borrowing limits and privileges.
- Efficient Transaction Handling: Streamlined processes for borrowing and returning books, including fine calculation.
- Detailed Reporting: Generation of reports on book availability, borrowed books, and member details.
- Modern Programming Techniques: Utilization of OOP concepts such as encapsulation, inheritance, polymorphism, and templates.

● Salient Features

- Book Management: Add, update, delete, and search for books.
- Member Management: Add, update, delete, and search for members with categorization.
- Transaction Management: Handle book borrowing and returning with fine calculation.

- Reporting: Generate detailed reports on various library operations.
- File Handling: Save and load data from files for persistent storage.
- Exception Handling: Implement error handling for invalid inputs and operations.

- **Tools & Technologies**
- Programming Language: C++
- Framework: Standard Template Library (STL)
- Operating System: Windows, Linux
- Development Environment: Integrated Development Environment (IDE) such as Visual Studio.