Library Management System Design and Implementation

The library management system project was initiated

to modernize and streamline the processes involved in managing the library’s resources, enhancing user experience, and enabling efficient book borrowing and returning.

This report outlines the design and implementation process of the library management system, including the system’s requirements, design choices, challenges faced, solutions applied, testing procedures, and the deployment process.

The LMS was designed to fulfill several key functional requirements, including:

* Catalog search and book details display
* User authentication and account management
* Borrowing, returning, renewing books
* Reservation management
* Librarian privileges for user and book management

Non-functional requirements encompassed aspects such as system performance, security, and user experience. These include:

* Fast response times for search queries
* Secure user authentication and data protection
* Intuitive and user-friendly interface
* Scability to handle increased user load

# **System Design:**

The LMS followed a three-tier architecture:

* Presentation Tier: The user interface was developed using Visual Studio’s modern design technologies.
* Application Tier: Business logic was implemented in the back-end using a microservices architecture.
* Data Tier: Data was stored in a relational database.

# Implementation:

The application was developed using C#:

1. Login Design & Coding
2. Dashboard Design & Coding
3. Add Book Design
4. Add Book Back-end Coding
5. View Book Design
6. View Book Back-end Coding
7. Add Member Design & Coding
8. View Member Design
9. View Member Back-End Coding
10. Issue Book Design
11. Issue Book Back-End Coding
12. Return Book Design
13. Return Book Back-End Coding
14. Complete Book Design & Coding