GALGOTIAS UNIVERSITY

PROJECT NAME :- LIBRARY MANAGEMENT SYSTEM

TEAM NAME :- BITWISE BROS

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Library Management System Project Report

Project Title

Library Management System

Technology Stack

- **Frontend & Backend: Java (Swing/AWT)**
- **IDE: NetBeans**
- **Database: MySQL**
- **Connector: JDBC (Java Database Connectivity)**

Objective

The objective of this project is to design and develop a desktop-based Library Management System that allows librarians to manage books, borrowers, and transactions efficiently.

Scope of the Project

This system helps in:

- **Maintaining a record of books.**
- **Managing member (student/staff) data.**
- **Issuing and returning books.**
- **Calculating fines for late returns.**
- **Searching and reporting on books and members.**

Modules of the System

Admin Login

- Secure login for admin/librarian.

- CRUD operations access.

Book Management

- Add, update, delete, and search books.

- Categories, authors, ISBN, and quantity.

Member Management

- Add, update, delete, and view members.

- Track borrowing history.

Issue/Return Book -

Issue books to

members.

- Return books with date checks.

- Calculate fines if overdue.

Reports

- View issued/returned books.

- Generate overdue reports.

- Search functionality for books and members.

Tools & Technologies Used

- Java: Application logic and GUI

- NetBeans IDE: Development environment

- MySQL: Backend database

- JDBC: Connection between Java & MySQL

Database Design

Main Tables:

- **books - stores book information.**

- **members - stores user/member details.**

- **issued_books - logs of issued/returned books.**

- **admins - login credentials for admins.**

System Architecture

1. **Frontend (Swing GUI): Handles user interactions.**

2. **Backend (Java Logic): Processes input/output and business rules.**

3. **Database (MySQL): Stores persistent data.**

4. **JDBC Layer: Facilitates communication between Java and MySQL**.

Testing

- **Unit testing for individual modules.**

- **Manual functional testing for UI.**

- **Database validation for CRUD operations**.

Challenges Faced

- **Managing database relationships.**

- **Handling concurrency in issue/return.**

- **Ensuring input validation.**

Future Enhancements

- **Integration with RFID/barcode scanners.**

- **Web or mobile version.**

- **Email reminders for due books.**

- **User role management.**

Conclusion

This Library Management System successfully meets the basic requirements of a small to medium library, providing a user-friendly interface, robust backend support, and efficient record management.