Business Requirements Document (BRD)

Library Management System (LMS)

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1. Introduction

1.1 Purpose

The purpose of this document is to define the business requirements for the **Library Management System (LMS)**. This system will provide a digital solution to manage library operations, including book cataloging, user registration, book lending, and overdue tracking.

1.2 Scope

The LMS will be a **full-stack web application** designed for **librarians and library members**. It will allow:

- **Librarians** to manage books, track lending records, and administer library members.
- **Library Members** to search for books, borrow, return, and track due dates.

1.3 Business Objectives

- Improve **efficiency** in managing books and members.
- Reduce manual paperwork and **human errors** in book tracking.
- Provide **real-time updates** on book availability.
- Automate overdue tracking and notifications.
- Enhance **user experience** with a user-friendly web interface.

1.4 Assumptions & Constraints

- The system will be **web-based** and accessible via browsers.
- Users must have **valid login credentials** to access functionalities.
- Only **librarians** can manage book inventory and users.
- System performance must support at least **100 concurrent users**.

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2. Business Requirements

2.1 Stakeholders

Role	Responsibility
Library Administrator	Manages books, members, and lending policies.
Library Members	Searches, borrows, reserves, and returns books.

System Administrator   Manages system settings and user roles.

2.2 Functional Requirements

ID	Requirement Description	Priority
FR1	Users can register, log in, and reset passwords.	High
FR2	Librarians can **add, edit, delete, and search** books.	High
FR3	Members can **search and filter books** based on title, author, category.	High
FR4	Members can borrow books and track due dates.	High
FR5	Members can **renew or return books** before the due date.	Medium
FR6	System automatically **calculates overdue fines** and restricts borrowing if unpaid.	High
FR7	Librarians can track **borrowed and overdue books**.	High
FR8	Members receive **email notifications** for due dates and overdue books.	Medium
FR9	The system must support **role-based access control** (Librarians vs Members).	High

2.3 Non-Functional Requirements

ID	Requirement Description	Priority
NFR1	System must be **accessible via web browsers** (Chrome, Firefox, Edge).	High
NFR2	System must support **100 concurrent users**.	Medium
NFR3	Login authentication must be secured with **JWT and bcrypt hashing**.	High
NFR4	The database must support **backup and recovery mechanisms**.	Medium
NFR5	The system should follow **WCAG 2.1 accessibility guidelines**.	Low

3. Business Process Workflow

3.1 User Registration & Authentication

1. User registers with **name, email, and password**.
2. System verifies email and **activates the account**.
3. User logs in and is **assigned a role** (Librarian or Member).

3.2 Book Borrowing Process

1. Member searches for a book.

2. If available, they can **borrow it**.
3. The system records the **due date**.
4. Members can **return or renew** before the due date.

3.3 Overdue Management

1. System checks overdue books **daily**.
2. Overdue fines are **automatically calculated**.
3. Members receive **reminders via email**.

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4. Use Case Diagram

Actors:

- **Librarian**
- **Member**
- **System**

Use Cases:

- Login/Logout
- Manage Books (CRUD)
- Search Books
- Borrow & Return Books
- Manage Members
- Overdue Tracking

📌 **(Attach UML Use Case Diagram here)**

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5. Data Requirements

Table Name	Attributes
Users	`id, name, email, password, role`
Books	`id, title, author, category, copies_available`
Lending	`id, book_id, member_id, borrow_date, return_date, status`
Fines	`id, member_id, amount_due, paid_status`

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6. Risk Assessment

Risk	Impact	Mitigation

Data Loss	High	Implement **database backups**.
Security Breach	High	Use **JWT authentication & password encryption**.
System Downtime	Medium	Deploy on **cloud-based infrastructure**.

7. Acceptance Criteria

- All **core functionalities** (User registration, Book Management, Borrowing, Overdue) must work.
- System must be **secure and responsive** across devices.
- Automated **email notifications** for overdue books must function properly.
- System should be **tested with at least 50 users** before deployment.

8. Project Timeline

Milestone	Deliverables	Timeframe
Project Setup	Repo setup, Backend/Frontend init	**Week 1**
User Authentication	JWT-based login system	**Week 2**
Book Management	CRUD operations for books	**Week 3**
Borrow & Return Features	Lending system implementation	**Week 4**
Overdue & Notifications	Automated fine calculation & emails	**Week 5**
Testing & Deployment	Final QA and cloud hosting	**Week 6**

9. Conclusion

The **Library Management System (LMS)** will streamline **library operations** by automating book lending, tracking overdue books, and managing users. It will be built as a **secure, scalable, and user-friendly web platform**.