

Requirements Specification: Simple Library Management System (LMS) - v1.0

1. Introduction

This document outlines the functional requirements for the Simple Library Management System (LMS). The system aims to provide librarians with tools to manage book inventory and member checkouts.

2. User Roles

- **Librarian:** Primary user responsible for managing books and member checkouts.
- **Member:** (Future Scope - Not included in v1.0 functionality described here)

3. Functional Requirements

3.1 Book Management

- **FR-BM-01: Add New Book:**
 - The Librarian must be able to add new books to the system inventory.
 - Required information for each book: ISBN (13 digits, unique), Title, Author, Genre, Publication Year (4 digits), Number of Copies (integer ≥ 1).
 - The system shall validate that the ISBN is exactly 13 digits long and contains only numbers.
 - The system shall prevent adding a book with an ISBN that already exists in the inventory. An error message "ISBN already exists" must be shown.
 - Upon successful addition, a confirmation message "Book '[Title]' added successfully" should be displayed.
- **FR-BM-02: Search Books:**
 - The Librarian must be able to search for books using Title, Author, or ISBN.
 - Search results should display Title, Author, ISBN, and Number of Available Copies.
 - The search should support partial matching for Title and Author fields (case-insensitive).
 - If no books match the search criteria, the system should display "No books found".
- **FR-BM-03: View Book Details:**

- From the search results, the Librarian must be able to select a book to view its full details (all fields entered during addition).
- The Language field should also be shown in the book's full detail view.

3.2 Member Checkout Management

- **FR-CO-01: Checkout Book:**

- The Librarian must be able to record a book checkout for a library member.
- Inputs required: Member ID (must exist in a separate member registry - *assume registry exists for v1.0*), Book ISBN (must exist in inventory).
- The system must check if there are available copies (Number of Copies > 0) of the selected book (based on ISBN).
- If no copies are available, an error message "No available copies for ISBN [ISBN]" must be displayed, and checkout should fail.
- If copies are available, the system shall decrease the Number of Available Copies for that ISBN by 1.
- The system shall record the checkout transaction (Member ID, ISBN, Checkout Date).
- A confirmation message "Book [ISBN] checked out successfully to Member [Member ID]" should be displayed.

- **FR-CO-02: Return Book:**

- The Librarian must be able to record a book return.
- Inputs required: Book ISBN being returned.
- The system shall increase the Number of Available Copies for that ISBN by 1.
- The system shall mark the corresponding checkout transaction as complete (or remove it, depending on design).
- A confirmation message "Book [ISBN] returned successfully" should be displayed.

4. Non-Functional Requirements (Examples)

- **NFR-PERF-01:** Book search results should be displayed within 3 seconds on average.
- **NFR-USAB-01:** Error messages should be clear and informative.