Library Management System - Hackathon Submission

Use Case Title:

Library Management System

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Date of Submission:

18 - 03 - 2025

1. Problem Statement

Libraries need efficient management systems to handle book lending, track borrowed books, and maintain an organized database of available books. The challenge is to develop a database system that efficiently manages library operations using SQLite 3.

2. Proposed Solution

The proposed solution is to create a Library Management System using SQLite 3 that will include features like:
Adding new books with details like title, author, genre, and availability status.
Tracking book loans, including issue and return dates.

Monitoring overdue books and generating reports on late returns.
Managing users, allowing students to borrow and return books efficiently.

3. Technologies & Tools Considered

SQLite 3
SQL for query management and data retrieval
ERD for designing database relationships

4. Database Schema & Data Flow

The Library Management System will have the following tables:
Books – Book ID (Primary Key), Title, Author, Genre, ISBN (Unique), Availability Status
Users – User ID (Primary Key), Name, Contact Info, Membership Type
Transactions – Transaction ID (Primary Key), Book ID (Foreign Key), User ID (Foreign Key), Issue Date, Return Date, Status

Data flow:
When a book is issued, a record is added to the Transactions table.

When a book is returned, the status is updated in both the Books and Transactions tables.

5. Feasibility & Challenges

Feasibility:
The solution is practical because SQLite 3 is lightweight and supports relational data efficiently.

Challenges:
Ensuring data consistency and integrity using primary and foreign keys.
Handling concurrent access and large datasets.

6. Expected Outcome & Impact

The Library Management System will improve library operations by:

- Reducing manual work for library staff.
- Improving book tracking and reducing loss.
- Offering quick access to book availability and user history.

7. Future Enhancements

- Integration with a mobile app for remote access.
- Notification system for overdue books.
- Adding a recommendation engine for book suggestions.