Library Management System

Hackathon Submission

Use Case Title:

Library Management System

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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:

1. **Books** – Book ID (Primary Key), Title, Author, Genre, ISBN (Unique), Availability Status
2. **Users** – User ID (Primary Key), Name, Contact Info, Membership Type
3. **Transactions** – Transaction ID (Primary Key), Book ID (Foreign Key), User ID (Foreign Key), Issue Date, Return Date, Status

Data flow:

1. When a book is issued, a record is added to the Transactions table.

2. 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.

Github link:
https://github.com/mku60422sca010/Hackathon-SQL-Quires.git