Project Report: Library Management System

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1. Introduction:

The Library Management System is a web-based application designed to efficiently manage the operations of a library. This system allows users to browse through available books, search for specific categories, issue books, and provide feedback. Additionally, librarians have administrative privileges to manage the entire system, including book management, user management, and feedback management.

2. Technologies Used:

The Library Management System is developed using the following technologies:

- HTML: For creating the structure and layout of web pages.
- CSS: For styling the web pages and enhancing the user interface.
- Flask: A micro web framework for Python used for server-side development and handling backend operations.
- SQLite: A lightweight relational database management system used for storing and managing library data.

3. System Features:

The key features of the Library Management System include:

- User Registration and Authentication: Users can register and login to the system using their credentials.
- Browse Books: Users can browse through the collection of books available in the library.
- Search and Filter: Users can search for books based on categories, titles, authors, or keywords.
- Issue Books: Users can issue books by providing necessary details such as book ID and user information.
- Feedback Submission: Users can provide feedback on books they have read, helping other users make informed decisions.
- Librarian Privileges: Librarians have access to additional functionalities such as adding new books, managing book inventory, managing users, and reviewing feedback.

4. System Architecture:

The Library Management System follows a client-server architecture where the client interacts with the server through a web interface. The server-side logic is implemented using Flask, which handles requests from clients, processes data, and communicates with the database.

5. User Interfaces:

The user interfaces are designed to be intuitive and user-friendly. HTML and CSS are used to create visually appealing web pages with responsive design for compatibility across devices.

- Home Page: Displays featured books, categories, and navigation links.
- Book Listing Page: Displays a list of books with search and filter options.
- Category Listings Page: Displays a list of categories with search and filter options.
- User Dashboard: Allows users to manage their profile, view issued books, and submit feedback.
- Librarian Dashboard: Provides access to administrative functions such as adding/editing books, managing users, and reviewing feedback.

6. Database Schema:

The Library Management System employs a relational database model using SQLite to manage various entities efficiently. The database schema includes tables for the following entities:

- Users: Stores information about registered users including user ID, username, password, email, and role (user or librarian).
- Books: Contains details about each book such as book ID, title, author, category ID, availability status, and quantity.
- Categories: Stores information about different categories of books including category ID and category name.
- Cart: Tracks the books added to the user's cart before issuing them. It includes details like cart ID, user ID, book ID, and quantity.
- Order: Records the issued books by users. It includes order ID, user ID, book ID, issue date, and return date.
- Feedback: Stores feedback provided by users for books they have read, including feedback ID, user ID, book ID, rating, and comments.

By organizing data into these tables and establishing relationships between them, the database efficiently manages user information, book inventory, issued books, and feedback submissions, facilitating seamless operations within the Library Management System.

7. Conclusion:

The Library Management System is a comprehensive solution for efficiently managing library operations. By leveraging web technologies such as HTML, CSS, and Flask, it provides an intuitive and user-friendly interface for both users and librarians. With features such as browsing books, issuing books, and providing feedback, the system enhances the overall library experience for patrons while simplifying administrative tasks for librarians.