Library Management System Report

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Description

The Library Management System is a web-based application designed to manage a library's resources efficiently. It allows users to browse books, search for specific titles or authors, borrow books, and manage their account information. Additionally, librarians have access to features such as adding new books and sections and managing them.

Technologies Used:

- **Flask:** Utilized as the backend framework for handling HTTP requests and responses, providing a robust foundation for the application's logic.
- **Flask-SQLAlchemy**: Integrated to interact with the database seamlessly and define the application's models, ensuring efficient data management.
- **SQLite:** Chosen as the database management system for storing application data, ensuring reliability and ease of use for small to medium-scale applications.
- **Flask Caching:** Utilized for caching data and improving application performance by reducing database queries and response times.
- **Flask-Security**: Integrated for managing authentication, authorization, and user roles within the application, enhancing security measures.
- **Celery:** Implemented for asynchronous task execution, allowing background processing of tasks such as sending emails, processing data, etc., improving application responsiveness.
- **Redis:** Used as a key-value store and cache server to support Celery for task queue management, providing scalability and performance benefits.
- **Vue.js:** Employed for the frontend development, enabling the creation of dynamic and interactive user interfaces with reactive components

Database Schema

- **RolesUsers Table:** Manages the relationship between users and roles, facilitating role assignment to users within the system.
- **User Table:** Stores essential information about library users such as usernames, email addresses, passwords (hashed), and active status.
- **Role Table:** Defines distinct roles that users can have in the system, allowing for role-based access control and permissions.
- **Section Table:** Represents different sections or categories within the library's book collection, aiding in organized access and management.
- **Book Table:** Houses comprehensive details about individual books including titles, authors, content, quantities, and associations with library sections.
- **BookIssuance Table:** Records information about books issued to users, tracking issuance dates, return dates, and user-book relationships.
- **Feedback Table:** Stores feedback provided by users for books, including text feedback, ratings, and timestamps of feedback submission.

Features and Functionality:

- **User Registration and Authentication:** Users can register for an account and log in securely to access library services.
- **Browsing and Searching:** Users can browse through different sections and search for books based on titles, authors, or content.
- **Book Management**: Administrators can add new books to the library, update existing book details, and delete books as needed.
- **Section Management:**Administrators can add new sections to the library, update existing sections and delete sections as needed.
- **Issue Management:** Users can borrow books, and administrators can handle book issuance and return processes.
- **Feedback Collection:** Users can provide feedback and ratings for books they have read, helping improve the library's collection.
- **Role-Based Access Control**: Different roles such as admin and customer have distinct permissions and access levels within the system.
- **Monthly Reports and Daily Reminders**: The system automatically generates and sends monthly reports to administrators, summarizing feedback and ratings. Additionally, users receive daily reminders enhancing communication and user engagement.

A short demo video link is here Video link .