

Library Management System

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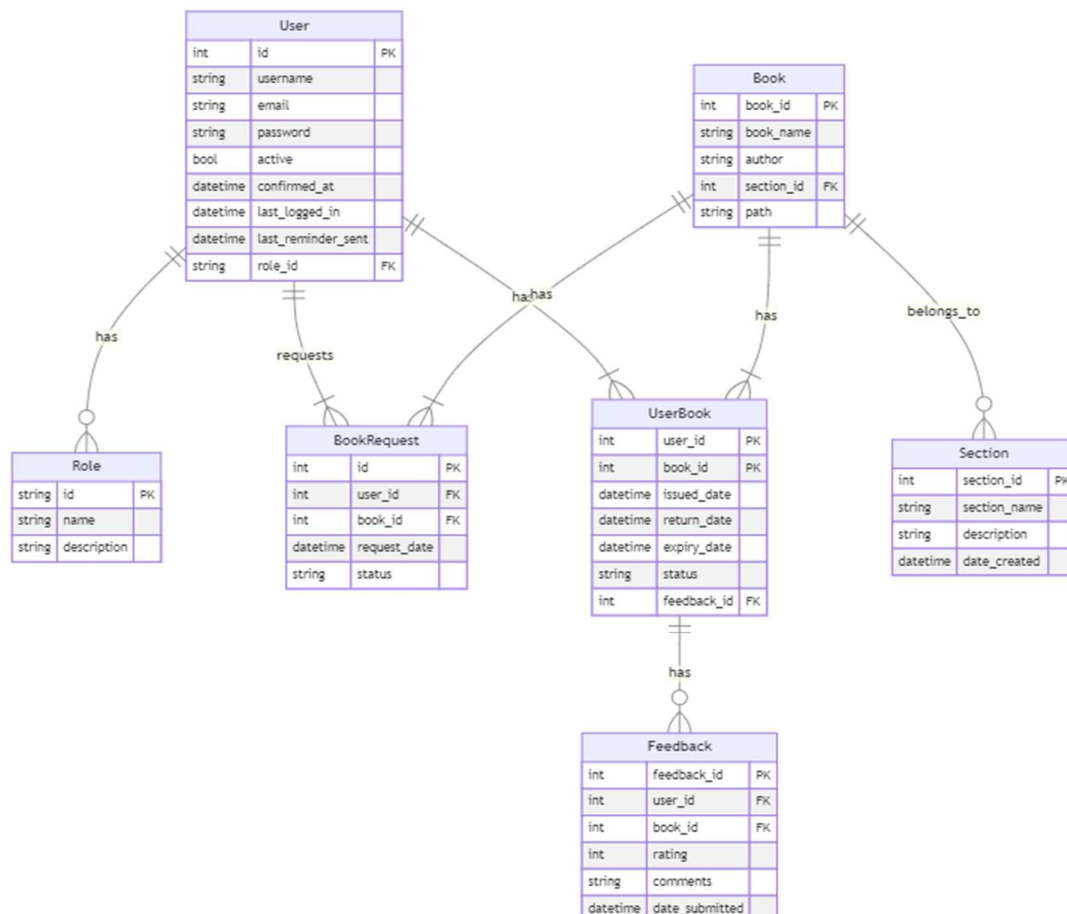
Description:

The Library Management System is a web application that allows general users to browse, request, and access e-books from an online library, while a librarian can manage sections, e-books, and user access. It incorporates features such as search functionality, daily reminders, monthly activity reports, APIs for CRUD operations, and input validation. The system is built using Flask, Vue.js, SQLite, Redis, and Celery.

Technologies used:

- Flask 3.0.2 - For app routing, template rendering, and redirecting.
- Flask-SQLAlchemy - For connecting the SQLite database as a server with the flask application.
- Celery [Redis] – For caching and scheduling asynchronous tasks.
- Flask_JWT_Extended – For Tokenization
- VueJS – For frontend tasks
- Bootstrap – For Styling

DB Schema Design Tables



API Design

1. Authentication and Authorization:

- The API uses JSON Web Tokens (JWT) for user authentication and authorization.
- It provides endpoints for user registration (`/register`), user login (`/login`), and refreshing access tokens (`/refresh`), user logout (`/logout`).
- The `jwt_required` decorator is used to secure routes, ensuring that only authenticated users can access them.
- The `role_required` decorator is used to restrict access to certain routes based on the user's role (e.g., librarian).

2. Sections and Books Management:

- The API provides endpoints for managing sections (categories) and books.
- Librarians can create, update, and delete sections (`/sections`).
- Librarians can create, update, and delete books (`/books`).
- Users can retrieve the content of a book (`/books/read/<int:book_id>/content`).
- Users can get a list of books for a specific section (`/sections/<int:section_id>/books`).

3. User Management:

- The API provides endpoints for retrieving user information (`/users/all`, `/users/<int:user_id>`).

4. User Book Management:

- Users can retrieve a list of books they have borrowed (`/users/<int:user_id>/books`).
- Librarians can issue a book to a user (`/users/<int:user_id>/books`).
- Librarians can update the return date or revoke a book from a user (`/users/<int:user_id>/books/<int:book_id>`).

5. Feedback Management:

- Users can submit feedback for a book they have read (`/feedback/users/<int:user_id>/books/<int:book_id>/feedbacks`).
- Users can retrieve and update their feedback for a specific book (`/feedback/users/<int:user_id>/books/<int:book_id>/feedbacks/<int:feedback_id>`).

6. Book Request Management:

- Users can request a book (`/request/make/<int:book_id>`).
- Users can view their book requests (`/request/view`).
- Librarians can retrieve pending book requests (`/request`).
- Librarians can approve or deny book requests (`/request/approve/<int:request_id>`, `/request/deny/<int:request_id>`).

7. Analytics and Statistics:

- The API provides endpoints for retrieving section-wise book distribution (`/analytics/section-distribution`).
- It can retrieve user login activity within a specified date range (`/analytics/user-login-activity`).
- It can retrieve counts of issued, denied, and pending book requests (`/book_requests/status_counts`).

Overall, the API is designed to manage various aspects of a library system, including user authentication, book and section management, user book borrowing, feedback, book requests, and analytics.

Architecture and Features

The project folder named Library Management System consists of all the required files. This consists of two folders named frontend and backend consisting of files such as config.py, controllers.py, database.py, and models.py, tasks.py, components of vue, App.vue, routers etc.

This is an online ticket booking application where users can book movie tickets by logging into their accounts. The application also features an administrative panel where the admin can add, edit, and delete movies and theatres. Additionally, users can view their booking information through the application.

Video Link: -

https://www.canva.com/design/DAGCrJmC9IA/Ojd2u5rx0qf7G_WCwnoilQ/watch?utm_content=DAGCrJmC9IA&utm_campaign=designshare&utm_medium=link&utm_source=editor