Author

- **Name:** Akshat Kaushik
- **Roll Number:** 21f3000376
- **Email:** 21f3000376@ds.study.iitm.ac.in
- **Profile:** I am a working professional with a Bachelor's degree from Delhi University and now learning and pivoting into a new field of Data Sciences and Applications.

Project Description

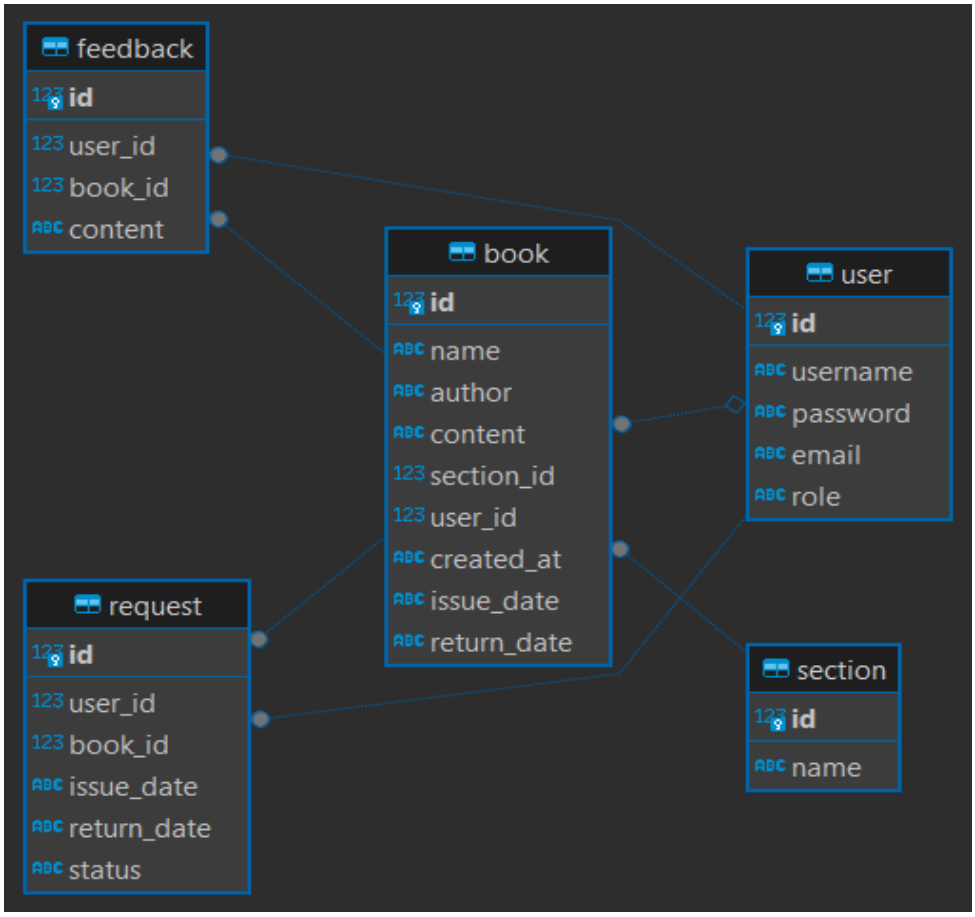
This project is about creating a Library Management System where there is one admin (librarian) and multiple users. Users can browse through different sections, read or purchase books. The librarian has the capability to perform CRUD operations on both sections and books and can monitor the status of each book issued. Additionally, this project includes advanced features like scheduled tasks and caching, along with a responsive frontend.

Technologies Used

- **Frontend:**
  - **Vue 3:** Framework for building the user interface.
  - **Chart.js:** Library for creating charts and graphs.
- **Backend:**
  - **Flask:** Web framework for building the application.
  - **Flask-RESTful:** For creating REST APIs.
  - **Flask-SQLAlchemy:** ORM for database management.
  - **Flask-JWT:** For role-based access control (RBAC).
- **Database:**
  - **SQLite:** Database management system.
  - **Redis:** For caching and scheduling tasks.
  - **Celery:** For background task processing.
- **CORS:** For enabling cross-origin resource sharing.

DB Schema Design

- **User:** Stores user credentials and roles, and links to book requests and feedback.
- **Section:** Represents different sections within the library, each containing multiple books.
- **Book:** Contains detailed information about each book, including its association with a section and issued user.
- **Feedback:** Allows users to leave feedback for books they have read or purchased.
- **Request:** Tracks which books users have requested, including the issue and return dates.



Architecture and Features

The project architecture separates concerns by using different files for routes, models, and configurations, ensuring a clean and maintainable codebase. Key features include:

- **Authentication and User Management:** Registration, login, and profile management for users and librarians.
- **CRUD Operations:** Admin interfaces to manage books and sections.
- **User Transactions:** Handling book requests, issues, and returns.
- **Search Functionality:** Allows users and admins to search for books by name, author, or section.
- **Feedback System:** Users can leave feedback on books they have read.
- **PDF Download:** Users can download pdf of the book but for a price.
- **Visualization:** Stats & bar charts used to visualize the number of books in each section, users, issued books.

Video
https://drive.google.com/file/d/1KJO02NYKevrroGpm4CdDU0Ft2JQE4WAr/view?usp=sharing