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**Introduction:**

Book Plus, an innovative library management system designed to streamline the operations of libraries with efficiency and ease. Developed with Flask as the backend and Vue.js as the frontend, Book Plus offers a seamless user experience, combining the power of a robust backend framework with a dynamic and intuitive frontend interface.

**Project Structure:**

Project Root Folder

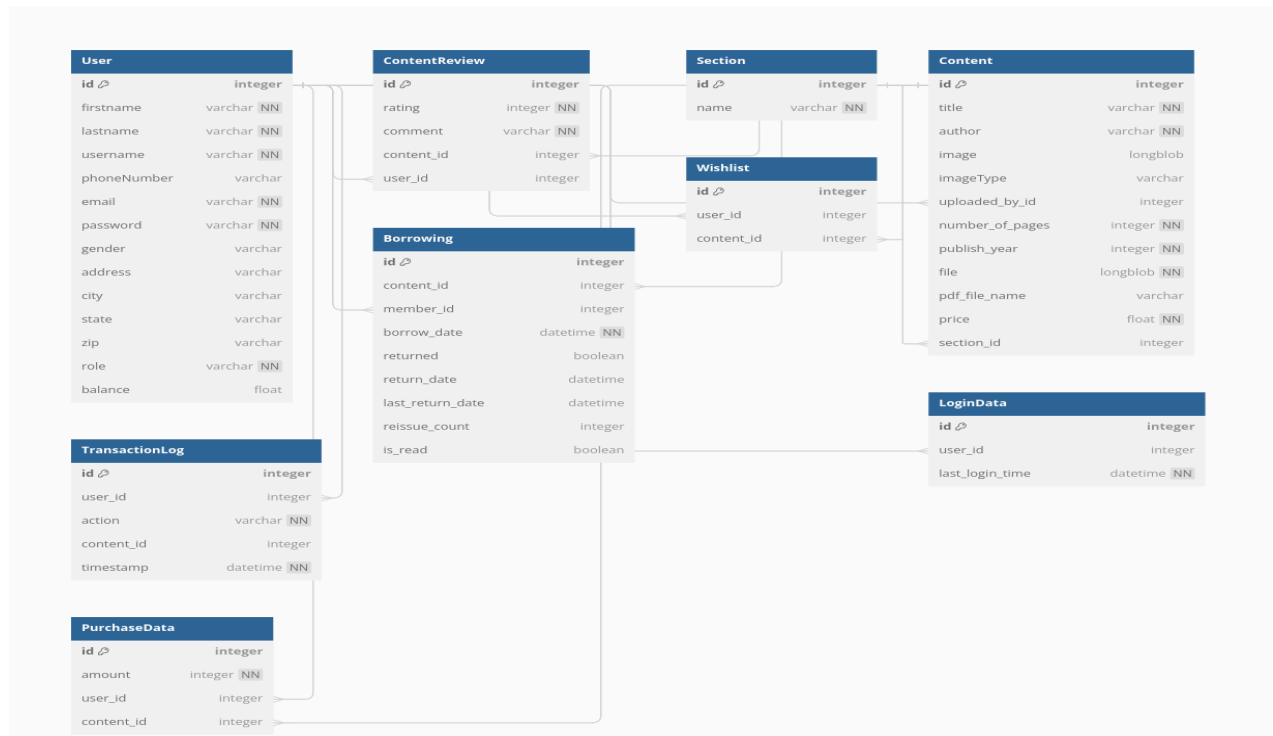
```
|
|-- Code
    |-- Backend
        |-- instance
            |-- data.db
        |-- app.py
        |-- celery_conf.py
        |-- config.py
        |-- models.py
        |-- tasks.py
    |-- Frontend
        |-- book_plus
            |-- src
                |-- asset
                    |-- css
                        |-- all styling .css files...
                    |-- logo
                        |-- all png logo images...
                    |-- bg.jpeg
                |-- components
                    |-- all components....
                    |-- .....
                |-- router
                    |-- index.js
                |-- main.js
                |-- store.js
                |-- App.vue
            |-- public
                |-- index.html
                |-- favicon.ico
            |-- VueJs application files...
|-- requirements.txt
```

**Libraries and Packages**

- Flask: A micro web framework for Python used for backend development.
- Flask-JWT-Extended: Flask extension for JSON Web Tokens (JWT) authentication.
- SQLAlchemy: A SQL toolkit and Object-Relational Mapping (ORM) library for Python.
- Celery: A distributed task queue used for asynchronous processing.
- Redis: An open-source, in-memory data structure store used as a database, cache, and message broker.
- Flask-Mail: Flask extension for sending email.
- Flask-Caching: Flask extension for caching.
- PyPDF2: A library for reading and manipulating PDF files in Python.
- PIL (Python Imaging Library): A library for image processing tasks in Python.
- Matplotlib: A plotting library for creating static, animated, and interactive visualisations in Python.

- Vue.js: A progressive JavaScript framework used for building user interfaces.
- Vue Router: Vue.js plugin for routing.
- Vuex: Vue.js state management pattern and library.
- Axios: Promise-based HTTP client for the browser and Node.js.
- Chart.js: Simple yet flexible JavaScript charting library for designers & developers.
- Date-fns: Modern JavaScript date utility library.
- jwt-decode: A small browser library that helps decoding JWTs tokens.

## Database:



## Challenges Faced:

- **User Experience Optimization:** Optimising the user experience (UX) of Book Plus to meet the diverse needs and preferences of library staff, patrons, and administrators. Designing an intuitive and user-friendly interface that facilitates easy navigation, efficient task completion, and accessibility across different devices and screen sizes required careful consideration of usability principles, interface design patterns, and user feedback.
- **Data Management and Integrity:** Managing and ensuring the integrity of the vast amount of data associated with library resources, patrons, transactions, and administrative records posed a significant challenge. Maintaining consistency, accuracy, and security across the database while accommodating complex relationships and data structures.

## Conclusion:

Book Plus stands as a testament to overcoming significant challenges in the development of a modern library management system. Through meticulous integration of Flask backend and Vue.js frontend, we've crafted a seamless user experience that simplifies library operations. Addressing hurdles in scalability, data management, and user experience design, Book Plus emerges as a robust solution, promising efficiency, reliability, and adaptability for libraries of all sizes. As technology evolves and libraries continue to modernise.

## Video Link:

[https://drive.google.com/file/d/1ZAPktPNQQAj3FfKAYhBHHwLqOK6gUPQq/view?usp=drive\\_link](https://drive.google.com/file/d/1ZAPktPNQQAj3FfKAYhBHHwLqOK6gUPQq/view?usp=drive_link)