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FACULTY KIT

Objective –

The goal of this faculty kit is to outline the roles, responsibilities, and tools necessary for successful project implementation of the E-Library System by students. This system involves students, librarians, and admins interacting through various functionalities such as accessing, uploading materials, book subscriptions, job postings, and a payment module. This kit will guide the process and ensure that the faculty can effectively manage and oversee the development, progress, and testing of the system.

Requirements Specification –

The E-Library system will include:

- **User Authentication**: Secure user login and role management (Admin, Librarian, and Student).
- **Material Upload/Download**: Facilitate access to educational materials, including eBooks, PDFs, and videos.
- **Subscription & Payment**: Subscription-based access to digital books with a payment gateway for secure transactions.
- **Search Functionality**: Advanced search options for materials, books, and resources.
- **Admin Control**: Admin will manage user roles, materials, and subscriptions.
- **Payment Integration**: Integration with payment providers for subscriptions.

Technology Familiarization –

The project will use **Spring Boot** for backend development, enabling the implementation of REST APIs and database interactions. The frontend will be developed using **React.js**, providing a dynamic, responsive user interface. For the database, **SQL** and **NoSQL**

databases will be utilized to store user information, materials, and subscriptions. The integration of payment functionality will use **Stripe** or similar payment gateway.

Database Creation –

The E-Library System will use relational and non-relational databases to handle different data types:

- **SQL Database** for structured data (user data, materials, subscriptions).
- **NoSQL Database** for unstructured data such as user logs or metadata of materials.
- **User**: User details, role (Admin, Librarian, Student).
- **Material**: Information about the resources available for students.
- **Subscription**: Data regarding user subscriptions for access to materials.

High-Level and Detailed Design –

System Overview:

The system consists of three layers:

- **Frontend**: A React-based user interface allowing seamless interaction for material management, subscriptions, and payments.
- **Backend**: Spring Boot handles the server-side logic, database interactions, and communication with third-party services like payment gateways.
- **Database**: SQL (for user, materials, and transactions) and NoSQL (for unstructured data) ensure scalable, fast, and reliable data storage.

Detailed Design:

The backend will expose RESTful APIs for user authentication, material uploads, subscription management, and payment integration. The frontend will consume these APIs to render real-time data to users.

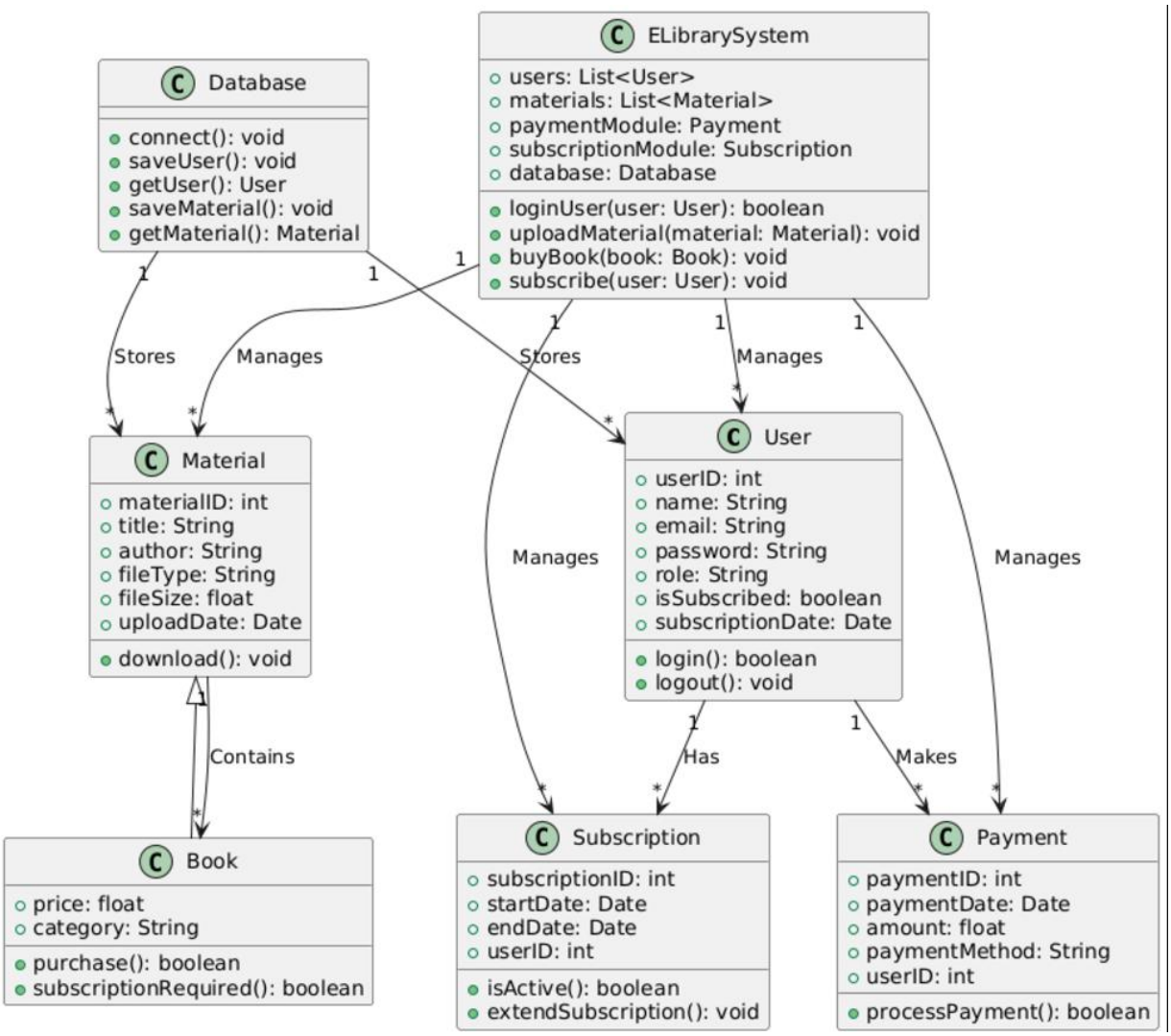

Fig :-Detailed Design

Frontend Implementation –

React.js will be used for building the user interface. The UI will have sections for login, registration, material browsing, search, and payment processing. Each user type (Admin, Librarian, Student) will have different permissions and views:

- **Students**: Browse materials, make subscriptions, and access content.
- **Admins/Librarians**: Manage resources, handle subscriptions, and monitor system activity.

Integrating the Frontend with the Database –

To integrate the frontend with the database, the backend will expose REST APIs using **Spring Boot**, which will handle HTTP requests. These requests will perform CRUD

operations on the database, such as fetching materials, updating subscription status, and processing payments. React.js will consume these APIs via Axios, providing dynamic content to the user interface based on the data stored in the databases.

Test Plan Review -

Testing will be conducted at various stages, ensuring all system functionalities are working as expected:

- **Unit Testing**: Backend logic for APIs will be tested for correctness.
- **Integration Testing**: Testing the interaction between frontend and backend.
- **UI/UX Testing**: Ensuring the frontend is user-friendly and functional.
- **Performance Testing**: Ensuring the system can handle high loads during usage.

Final Review -

At the conclusion of the project, a final review will be conducted to ensure the system meets all specified requirements. This will include validating user authentication, material access, subscription functionality, and payment module. Additionally, user feedback will be gathered to make improvements.

Documents/References that May Aid the Process of Evaluation-

- **Spring Boot Documentation**: For backend implementation and API development.
- **React.js Documentation**: For frontend development and UI handling.
- **SQL and NoSQL Database Tutorials**: For database design and integration.
- **Stripe API Docs**: For payment gateway integration.
- **Agile Methodology Resources**: For project management and sprint planning.

Conclusion –

The **Faculty Kit** serves as a comprehensive guide for faculty members involved in the development and deployment of the E-Library System. Through its structured approach, it ensures that all aspects of the project, from initial planning to final review, are

thoroughly covered. The kit aids faculty members in understanding the various technologies, systems, and modules implemented in the project, including database creation, front-end implementation, and integration with the back-end system.

The technology familiarization section prepares faculty members to oversee the adoption of Spring Boot, React, and SQL/NoSQL databases. High-level and detailed design stages provide a clear roadmap for the technical architecture of the system. The front-end implementation process highlights the creation of an intuitive and responsive user interface, while integrating the front-end with the database ensures seamless data flow and interaction.

Furthermore, the test plan review and final review sections allow faculty to evaluate the system's functionality and ensure all project requirements are met. The Faculty Kit not only supports the development phase but also guides faculty through the quality assurance process, ensuring that the E-Library system is scalable, secure, and user-friendly for both students and staff. This kit is essential for ensuring that the project meets its educational objectives and provides a valuable learning experience for students involved in its creation.