MAD 1 PROJECT REPORT

Presentation Video link:

https://drive.google.com/drive/u/0/folders/19hEfE4ooOvsOgmz21zj4Dpnn_OAHQpEx

Introduction:

This project deals with the simulation of a library management system which is designed to facilitate the management of a library's resources. This project has a clear demarcation of roles between the user and the administrator (in this case, the librarian). We allow the users to register, login, search for the books that they need, and borrow them. The users also give ratings for the books which can be seen by other users to enhance their reading experience. Librarians have additional privileges to manage sections, books, and user requests. The system aims to provide an efficient and user-friendly interface for both users and librarians to interact with the library's resources.

Objectives:

- Provide a platform for users to register, login, and manage their borrowing activities.
- Enable librarians to manage sections, books, and user requests effectively.
- Implement search functionality to allow users to find books based on various criteria.
- Enable librarians to monitor user activity.
- Generate statistics and reports to track library usage and book borrowing trends for both the librarian and the user.
- Ensure data security and user privacy through robust authentication and authorization mechanisms.

Overall System Design:

➔ Authentication and Authorization:

- Users can register, login, and logout.
- There are two types of users: regular users and librarians.
- Librarians have additional privileges such as managing sections, books, and requests.

➔ Library Management:

- Librarians can manage sections by adding, editing, and deleting them.
- They can also add, edit, and delete books within each section.

➔ Request Management:

- Users can request to borrow books from the library.

- Librarians can view and manage these requests, including accepting or rejecting them.
- When a request is accepted, the book is issued to the user, and the return date is set.
- Users can view their borrowed books, return them, and rate the books they have read.

➔ Search Functionality:

- Users can search for books by title, author, or section.
- Search results are displayed to users based on their search query.

➔ Dashboard and Statistics:

- Both users and librarians have access to a dashboard displaying relevant information.
- Users can view statistics related to their borrowing history, such as the number of books borrowed over time.
- Librarians can view more comprehensive statistics about book borrowing and reading habits across the library.

➔ Frontend Templates:

- HTML templates are provided for various functionalities, such as user authentication, library management, request handling, search results, and dashboard views.

Technologies Used:

- Flask: Python-based web framework for building the backend server.
- SQLAlchemy: Python SQL toolkit and Object-Relational Mapper (ORM) for database management.
- HTML/CSS/JavaScript: Frontend technologies for rendering user interfaces and enabling interactivity.
- SQLite: Lightweight relational database management system used for storing application data.
- Jinja2: Template engine for generating dynamic HTML content within Flask applications.

Conclusion:

The Library Management System provides a robust and efficient solution for managing library resources, catering to both users and librarians' needs. By leveraging modern web technologies and following best practices in software development, the system aims to streamline library operations and enhance the overall user experience. With continuous improvement and feedback from users, the system can evolve to meet the changing needs of the library community.