Library Management System Project Report (MAD-1)

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Description:

This is a library web application where there is one librarian who can add, edit and delete books/sections and can grant users books and revoke them anytime. A librarian can also be able to view statistics of the library. A general user can create an account, borrow and read books from the library, view sections of different genre, search for books and sections and view their own statistics. It's a tiny e-book application.

Technologies used:

The code for this application is written using Flask framework in python.

Flask-SQLAlchemy was used for creating and manipulating models.

Flask-Login and hashlib were used for implementing the login framework and password security.

Flask-WTF and WTForms were used for enabling submissions through forms.

Jinja2 was used for generating some parts of HTML.

SQLite was used for the database.

Pillow library and matplotlib were used for saving and handling images and generating graphs respectively.

Database Schema Design:

The database behind this application has several models that are used to store

the data regarding users, books, sections, feedbacks, relationships etc.

The "User" model uses "id" as its primary key. It stores username, password(hashed), role etc.

The "Book" model uses "book_id" as its primary key. It stores bookname, file_path, author, description, image and date.

The "Section" model uses "section_id" as its primary key. It stores section_name, s_description, s_image, s_date.

The "Feedback" model uses "u_id" and "b_id" as its primary keys. It stores username, bookname and feedback as its columns.

The "User_Book" model is used to store the relationship between users and books by storing uid and bid respectively.

The "Section_Book" model is used to store the relationship between a section and books available in that section by storing sec_id and b_id respectively.

The "User_Notes" model is used to store the relationship between a user and notes of that user by storing n_id (notes id) and id_u (user_id) respectively.

Architecture and Features:

Project Structure: All the models,controllers,imports,configuration statements etc are present in the app.py file, which is present in the main project folder "bookapp". The HTML files for the application are present in the "templates" folder, which is again in "bookapp". The images uploaded through this application are stored in "bookimages", "uploads" folders, which are in "static" folder, which is in "bookapp".

Application Features: A user of this app first needs to create an account by providing a username(unique) and a password, which will be used for future logins. After logging in, the user is shown the “userfeed” page where he/she can view all the books/sections available in the library. They can view an individual book/section by clicking on “View Book/View Section” where they can be able to view the book page, it’s description and feedbacks from other users. If they wish to read it, they can click on “request” button which sends a request to librarian and after he grants the book, they can be able to view the content and provide feedback. Users can request a maximum of 5 books and can keep the book for a maximum of 7 days. Users can view their own statistics and write notes by clicking on “My Profile”. A Librarian can grant/reject books for users and can also revoke the access of a book from a user. Librarian can add, edit and delete books/sections and can view the whole library statistics in “Library Statistics” page and add their own notes for reminder purposes.

Video link:

https://drive.google.com/file/d/1NE_zVzX6TjOF6uwFQBDtGYhGTb97UDto/view?usp=sharing