Report

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Project Name: Library Management System

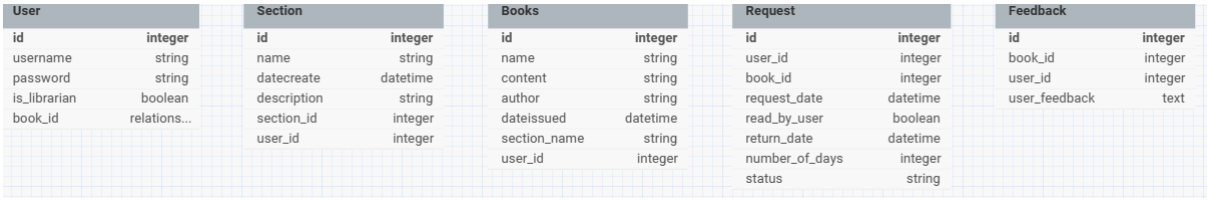
Description:

It is a multi-user application, one librarian and multiple users. There is the librarian dashboard to add e-books and sections and view requests and the user dashboard to view available books and make a request.

Technologies used:

Flask, python for backend, sqlalchemy for database and html (Bootstrap) for frontend.

Database structure:



User	
id	integer
username	string
password	string
is_librarian	boolean
book_id	relations...

Section	
id	integer
name	string
datecreate	datetime
description	string
section_id	integer
user_id	integer

Books	
id	integer
name	string
content	string
author	string
dateissued	datetime
section_name	string
user_id	integer

Request	
id	integer
user_id	integer
book_id	integer
request_date	datetime
read_by_user	boolean
return_date	datetime
number_of_days	integer
status	string

Feedback	
id	integer
book_id	integer
user_id	integer
user_feedback	text

The models and routes are in app.py.

The database file is database.db is in instance folder. The html files are in templates folder.

Models include the following tables:

User, Section, Books, Request and Feedback. For declaring the one-to-many relationship among the tables used ‘ForeignKey’. To show the many-to-many relationships, applied 'backref’ on the tables.

Sessions are implemented, from flask session is imported. If user_id in session, user will have access to the respective pages. When user logs out, user_id is removed from sessions. To restrict redundancy of code used decorators(passing a function as argument to another function). Created two functions auth_required and librarian_required to restrict the routes without authentication.

Applied Jinja template inheritance, used extends tag to extend one template from another. Created the layout template and used the template in several html pages applying the extends tag in jinja.

Flash messages used to highlight the error messages.

For styling purpose used bootstrap.

About the app:

The user registers and on logging in using the credentials, sees the available books and requests for a book mentioning the number of days requested for. The user can request for a maximum 5 books. There is the search functionality on the user dashboard to search by section name, book name or author name. On the profile page, the user can view the approved books and on clicking on read option, it redirects to an html page to read. User can submit feedback.

The librarian can add, edit or delete sections and books. Librarian will view request, may approve, reject or revoke access to the book on the return date. The librarian can view the user feedbacks.

Challenges faced:

Connecting frontend to backend, fetching data from database was a bit challenging. Took a lot of time making necessary changes to the database, the python file and the html file.

Video link: nyj-yvzi-wty (2024-03-31 00:28 GMT+5:30) - Google Drive