Modern Application Development I Project

Kitaabi Keeda : Library Management System

Aarush Agarwal - 22f3001115

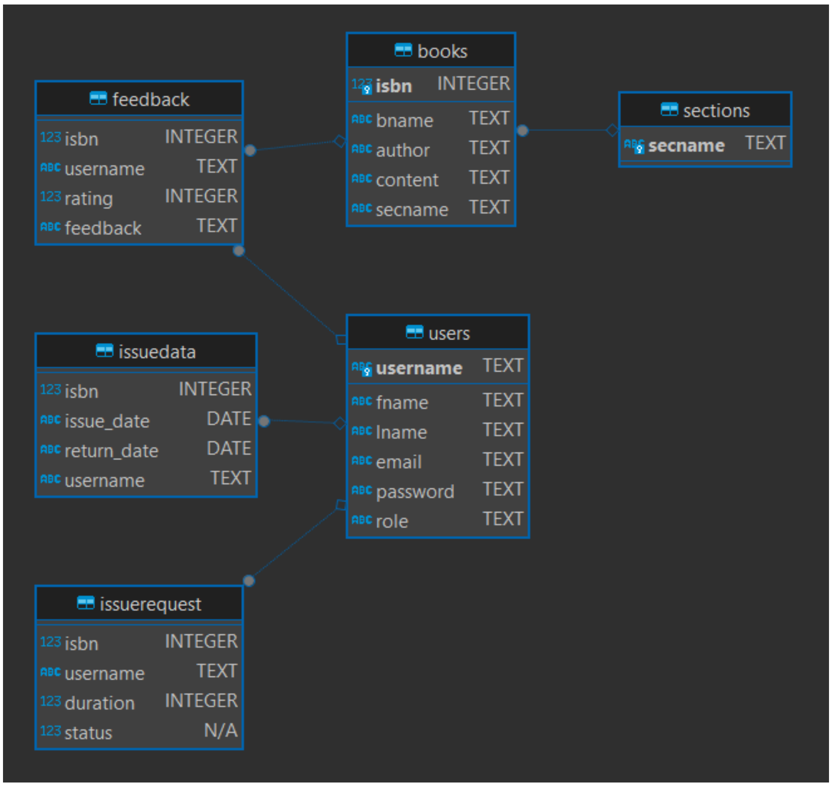
Project Synopsis

Multi-user e-book lending app facilitating seamless interaction between librarians and users, allowing users to request, read, and return e-books, while librarians manage sections, add new e-books, and control access.

Languages Used: Python, HTML/CSS, JavaScript (Minor)

Frameworks Used: Flask, SQLite3, Flask_Restful, Matplotlib, fpdf

Database Design



books	
isbn	INTEGER
bname	TEXT
author	TEXT
content	TEXT
secname	TEXT

sections	
secname	TEXT

feedback	
isbn	INTEGER
username	TEXT
rating	INTEGER
feedback	TEXT

users	
username	TEXT
fname	TEXT
lname	TEXT
email	TEXT
password	TEXT
role	TEXT

issuedata	
isbn	INTEGER
issue_date	DATE
return_date	DATE
username	TEXT

issuerequest	
isbn	INTEGER
username	TEXT
duration	INTEGER
status	N/A

Software Used
Database Engine: SQLite
Database Tool: DBeaver
Python Connectivity: SQLite3

Table Descriptions:
sections: Section names
books: book data
users: user data
feedback: user feedback on book
issuerequest: requests made by users.
issuedata: requests approved by admins.

Functionalities

1. **Login & Register (user_api) :** Single portal with auto redirects according to role

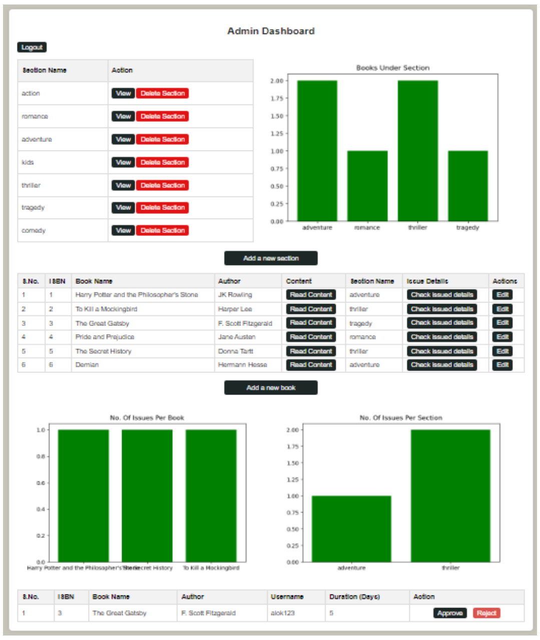
2. **Admin Dashboard**
   a. **Sections (section_api):** Ability to add, delete, edit, and view sections and books under specific sections.
   b. **Books (books_api):** Ability to add, delete, edit and view books and their corresponding data. Also shows data of borrowed books with ability to revoke those borrows.
   c. **Issue Requests (req_api):** Displays requests by users to borrow book for X days with ability to reject and approve multiple requests.
   d. **Automatic Book Issue Removal:** Automatically revokes access for books after the borrow period has ended.
   e. **Analytics (graphs_api):** Displays analytical graphs for various metrics for admin

3. **User Dashboard**
   a. **Sections:** Ability to view sections and books under each section with ability to request them from there itself
   b. **Books:** Ability to view all books arranged by their ratings and ability to request.
   c. **Requests:** Ability to request book for desired number of days
   d. **Search:** Ability to search section and search book by book name or author name
   e. **User Dashboard:** Displays latest requests and their results and issued books to read.
   f. **Return Book:** Ability to return book before return date.
   g. **Review Book:** Ability to review book at the read book page so that better books can be recommended and show up higher on book list.
   h. **Download PDF (pdf_api):** Ability to download PDF after paying.

4. **Data Checks & Security**
   a. **Automatic Field Filling:** Most forms have prefilled fields with readonly values so that backend operates properly.
   b. **SQL Injection Prevention:** Using parametrized queries prevents injection attacks.
   c. **Data Validation:** Backend APIs validate data before committing to database to maintain integrity and faults.
   d. **Form Validation:** Before submitting, forms validate data using JavaScript so that correct data is sent to backend.

Project Flow

```
KitaabiKeeda/
├── project/
|   ├── static/
|   |   └── --Contains Graphs,Images,PDF
|   ├── templates/
|   |   └── --Contains HTML files (18)
|   ├── api.py
|   ├── app.py
|   └── maindb.db
|   └── requirements.txt
└── Project Report.pdf
```



Section Name	Action
action	View Delete Section
romance	View Delete Section
adventure	View Delete Section
kids	View Delete Section
thriller	View Delete Section
tragedy	View Delete Section
comedy	View Delete Section

S.No.	ISBN	Book Name	Author	Content	Section Name	Issue Details	Actions
1	1	Harry Potter and the Philosopher's Stone	JK Rowling	Read Content	adventure	Check issued details	Edit
2	2	To Kill a Mockingbird	Harper Lee	Read Content	thriller	Check issued details	Edit
3	3	The Great Gatsby	F. Scott Fitzgerald	Read Content	tragedy	Check issued details	Edit
4	4	Pride and Prejudice	Jane Austen	Read Content	romance	Check issued details	Edit
5	5	The Secret History	Donna Tartt	Read Content	thriller	Check issued details	Edit
6	6	Demian	Hermann Hesse	Read Content	adventure	Check issued details	Edit

S.No.	ISBN	Book Name	Author	Username	Duration (Days)	Action
1	3	The Great Gatsby	F. Scott Fitzgerald	alok123	5	Approve Reject

Admin Dashboard

Business/Startup Viability (Apart from library management)

Problem Statement: New authors face a uphill battle when it comes to selling their books. They do not get a publisher easily and even if they do, they end up getting very less royalty.

Solution: Book testing platform where users can sign up for X amount and rent books after requesting the days from the indie authors. The authors can get valuable feedback and readers and the users who like reading niche authors and up and coming authors can find them. Moreover, metrics from the platform can help authors present their popularity and reviews to publishers for further publishing of their books.

Demo Video Link: https://drive.google.com/file/d/1oH88q8s8Ym5y6uboN0FJPptN0_1JTEo6/view?usp=sharing