Library Management System Report

Problem Statement:
The Library Management System is a crucial tool designed to efficiently manage the process of issuing e-books to users. It is a multi-user application, serving both librarians and general users/students. Users can request, read, and return e-books, while librarians have additional privileges such as adding new sections and e-books, as well as issuing or revoking access to books. Each section and book in the system is characterized by specific attributes, and the system should provide functionalities like displaying recently added sections/books and sorting based on certain criteria.

Technologies Used:

Frontend:

- HTML
- CSS
- Bootstrap

Backend:

- Flask

Templating Engine:

- Jinja

Data Storage:

- SQLite

Libraries Used:

- Flask: A micro web framework for Python.
- SQL Alchemy: A Python SQL toolkit and Object-Relational Mapping (ORM) library.

- Flask-SQL Alchemy: An extension for Flask that adds support for SQL Alchemy.
- Flask-RESTful: An extension for Flask that adds support for quickly building REST APIs.
- Matplotlib: A comprehensive library for creating static, animated, and interactive visualizations in Python.
- Seaborn: A data visualization library based on Matplotlib that provides a high-level interface for drawing attractive and informative statistical graphics.

IDE Used:

- I used VS Code for the development of the project.

Features Implemented:

1. User Authentication: Users and librarians can log in to access the system.
2. Section Management: Librarians can add new sections with details like name, date created, and description.
3. Book Management: Librarians can add new books with attributes such as title, content, author(s), etc.
4. Book Issuing: Users can request books, and librarians can approve or reject these requests.
5. Book Return: Users can return books after reading.
6. Data Visualization: Graphical representation of data such as user roles distribution, book request status, and section-wise book count.
7. File Handling: Uploading and downloading e-books functionality.
8. search options: It also as search option for user to find books.

Conclusion:

The Library Management System developed using Flask and SQLite provides an efficient platform for managing e-books issuance. With features like user authentication, section and book management, and data visualization, it streamlines the process for both librarians and users. Further enhancements could include advanced search options, user reviews/ratings, and more robust security features.

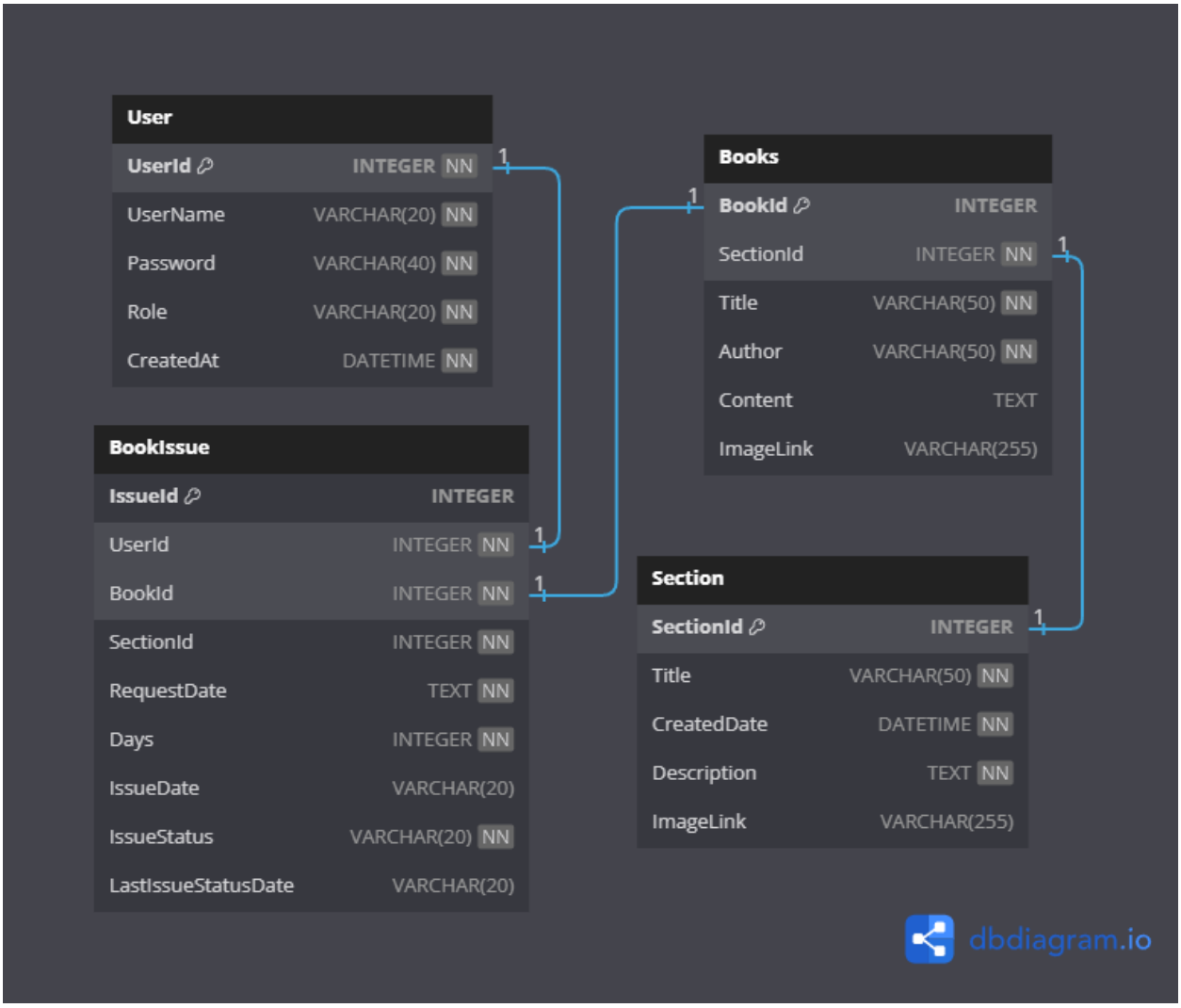
Overall, the system fulfills its objective of simplifying the management of digital library resources, contributing to a seamless experience for both administrators and users.

User Flow

There is Admin and User. Admin account can only be created from backend but user can create their account through register. I am providing some credentials for user and admin in case of any need.

ID	Password	Role
admin	admin	admin
super	user	admin
user	user	user
demo	user	user
dummy	dummy	user

Below is the ER Diagram of Database:



In data base i have also created 2 views :

First by combining Books and Section table.

Second by combining all BookIssue, Books, Section and User table.

Video Link :

Loom Video : https://www.loom.com/share/042a2b44902049268897f477150938a3?sid=0a98ea04-eb23-4676-b14b-62fd719320c4

Drive Video : https://drive.google.com/file/d/11dPxdevnwEh-1kYUT1XcnJ1lYfjFZyyZ/view?usp=sharing