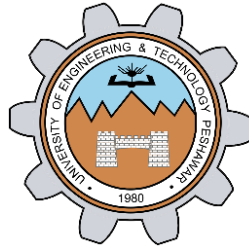**PROJECT REPORT**

Spring 2025

CSE403L Database Management System Lab

Project Members:

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Class Section: A

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Student Signature: _____

Submitted to:

Engr. Summayea Salahuddin

8TH JULY 2025

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Library Management System

Introduction

A Library Management System (LMS) is a software application designed to manage and automate the daily operations of a library. It provides a centralized platform for librarians to efficiently manage books, users, borrowing activities, and other library resources.

Key Features of LMS:

1. Book Management: Cataloging, tracking, and managing books, including title, author, publisher, and availability.

2. User Management: Registering and managing library users, including students, faculty, and staff.

3. Borrowing Management: Issuing, renewing, and returning books, with automated reminders and notifications.

4. Search and Retrieval: Easy searching and retrieval of books by title, author, subject, or keyword.

5. Reporting and Analytics: Generating reports on book usage, user activity, and other library metrics.

Benefits of LMS:

1. Improved Efficiency: Automating manual tasks, reducing errors, and increasing productivity.

2. Enhanced User Experience: Providing users with easy access to library resources and services.

3. Better Resource Utilization: Optimizing book collections, reducing losses, and improving resource allocation.

4. Data-Driven Decision Making: Informing library decisions with data-driven insights and analytics.

Features:

- We have an admin who is the master of this LMS.
- Admin can add categories, authors, books and issue books.
- User can borrow books.

Searching of Books:

In this system, one can search any book easily.

Issuing and Returning of Books:

Admin who is the librarian can issue and return a book and can implement a fine. The list of issued and returned books is recoded while the system also shows how many times it has issued and returned a book.

Record of Members:

A list of all the registered members is recorded and shown in a table while also displaying the status that whether the registered member is active or inactive.

Admin Controls:

Admin has many controls adding author, books, categories and students. In simple words the admin controls the library management system.

Purpose

It has digitized all the physical records of a Library and made life easier.

Languages used:

We have used the following languages in our project.

- HTML
- CSS
- PHP
- MYSQL
- BOOTSRAP

Updated Key Milestones:

Milestone 01

E-R Diagram:

Made in Draw.io
https://drive.google.com/file/d/1wS_0O5jt39HgJw6jplTxAJPu15WitWfk/view?usp=sharing
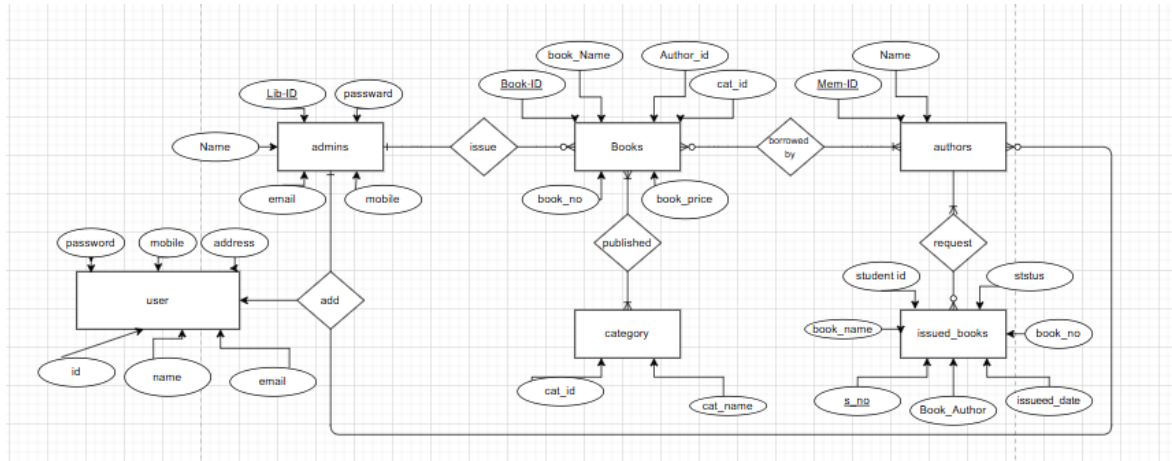
Milestone 02

Normalized Relational Schema:

```
+----------+       +--------+       +----------+
| Author  |<----Writes---->|  Book  |<----Published By----| Publisher |
+----------+       +--------+       +----------+
              |
              | Borrows (via Loan)
              v
+----------+       +--------+       +-----------+
| Member  |<----Loan---->|  Loan  |<----Manages----| Librarian  |
+----------+       +--------+       +-----------+
```

Converted Relational Schema

Entities and Relationships:

Table name	Attributes (primiary keys)	Foreign keys
Publisher	PublisherID, Name, Address, Contact	None
Book	ISBN, Title, PublishedYear, Genre, Availability	PublisherID → Publisher.PublisherID

Member	MemberID, Name, Email, Phone, JoinDate	None
Loan	LoanID, IssueDate, DueDate, ReturnDate ReturnDate	MemberID → Member.MemberID, ISBN → Book.ISBN, LibrarianID → Librarian.LibrarianID
Book_Author	ISBN, AuthorID	ISBN → Book.ISBN, AuthorID → Author.AuthorID
Author	AuthorID, Name, Nationality	None
Publisher	Librarianid, name, Email	None

Normalization Process

1NF (First Normal Form)

Ensured all attributes are atomic.

Example: The Book_Author table resolves the many-to-many relationship between Book and Author.

2NF (Second Normal Form)

Removed partial dependencies.

Example: Loan table uses LoanID (surrogate key) to ensure all attributes depend on the full PK.

3NF (Third Normal Form)

Removed transitive dependencies.

Example: Publisher table stores only publisher-specific attributes (no redundancy).

Final 3NF Relations

Publisher:

Publisher (PublisherID, Name, Address, Contact)

PK: PublisherID

No transitive dependencies: All attributes directly depend on PK.

Book

Book (ISBN, Title, PublisherID, PublishedYear, Genre, Availability)

PK: ISBN

FK: PublisherID → Publisher.PublisherID

3NF Compliance: No attributes depend on non-PK fields.

Author

Author (AuthorID, Name, Nationality)

PK: AuthorID

Member

Member (MemberID, Name, Email, Phone, JoiningDate)

PK: MemberID

Librarian

Librarian (LibrarianID, Name, Email)

PK: LibrarianID

Loan

Loan (LoanID, MemberID, ISBN, LibrarianID, IssueDate, DueDate, ReturnDate)

PK: LoanID

FK: MemberID → Member.MemberID, ISBN → Book.ISBN, LibrarianID → Librarian.LibrarianID

Book_Author

Book_Author (ISBN, AuthorID)

Composite PK: ISBN, AuthorID

FK: ISBN → Book.ISBN, AuthorID → Author.AuthorID

Milestone 03 (Database)

TABLES :

Below is the screenshot for the tables that are included in the following project.

Milestone 04

Comprehensive Project Report with Screen Shot:

1) Login Form:

Figure 1: Admin User Login Form (Ihsan Ullah) for Library Management System

Explanations:

The image shows a screenshot of a library management system (LMS) login page. The page is divided into two sections: the left side contains information about the library's timing and services, while the right side features a user login form.

Library Information Section:
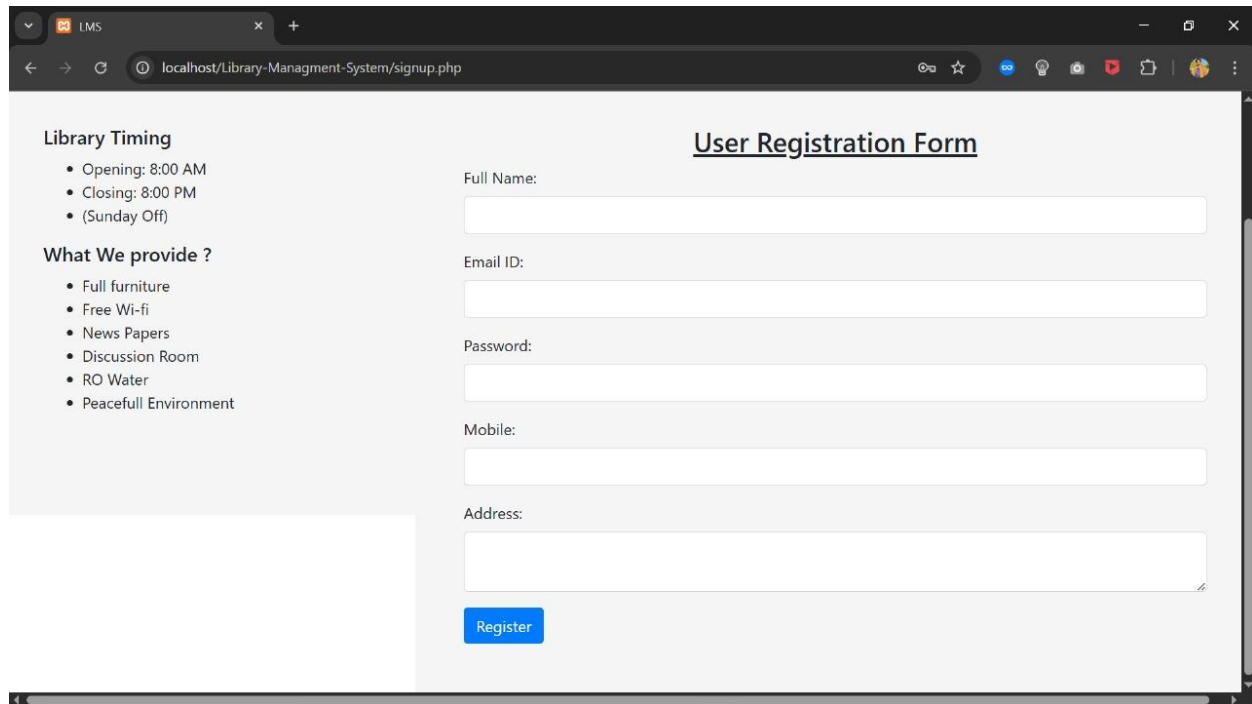
- **Library Timing:**
- Opening: 8:00 AM
- Closing: 8:00 PM
- Sunday Off
- What We Provide?:
- Full furniture
- Free Wi-fi
- News Papers
- Discussion Room
- RO Water
- Peacefull Environment

- **User Login Form Section:**

- Email ID: [input field]
- Password: [input field]
- Login [button]
- Not registered yet? [link]

The top navigation bar includes options for Admin Login, Register, and Login. The page title is "Library Management System (LMS)".

USER REGISTRATION FORM:

Profile Details:

Registration Details:

REGISTERD CATEGORY:

Explanations:

- The image shows a screenshot of a web page displaying a library management system.
- The page is titled "Library Management System (LMS)" and has a dark gray header with white text. Below the header, there is a section that reads,
- "This is library management system. Library opens at 8:00 AM and close at 8:00 PM."

Below this section,

- there is a table with the title "Registered Book's Detail" that lists two books:
- "Software engineering" by M D Gupta
- "Data structure" by an unknown author.
- The table includes columns for the book name, author, price, and number.
- The prices are listed as 270 and 350, respectively,
- the numbers are 4518 and 6541.

REGISTERD USERS:
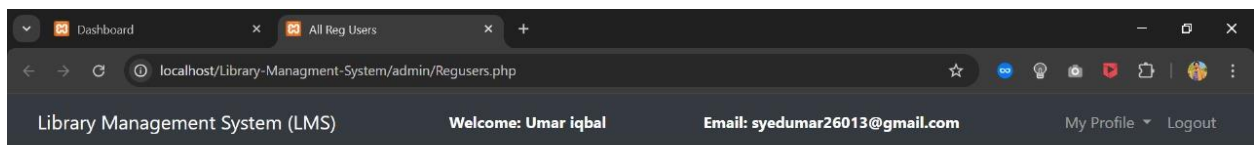
Explaination:

- The image shows a screenshot of a web page for a Library Management System (LMS).
- The page is titled "Registered Book's Category"

Lists four categories:

- Computer Science Engineering, Novel, Motivational, and Story.

Key Features:

- Title: Registered Book's Category

- Categories:

- Computer Science Engineering
- Novel
- Motivational
- Story

REGISTERED AUTHORS:
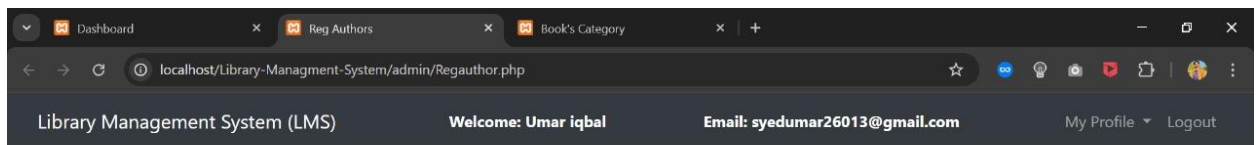
Explanations:

- The image shows a screenshot of a web page displaying a library management system.
- The page lists three registered authors: "M D Guptaa", "Chetan Bhagat", and "Munshi Prem Chand".
- The top navigation bar includes options like "My Profile" and "Logout".
- The user's email address is displayed as "syedumar26013@gmail.com".
- The library's operating hours are mentioned as 8:00 AM to 8:00 PM.

REGISTERED BOOKS:
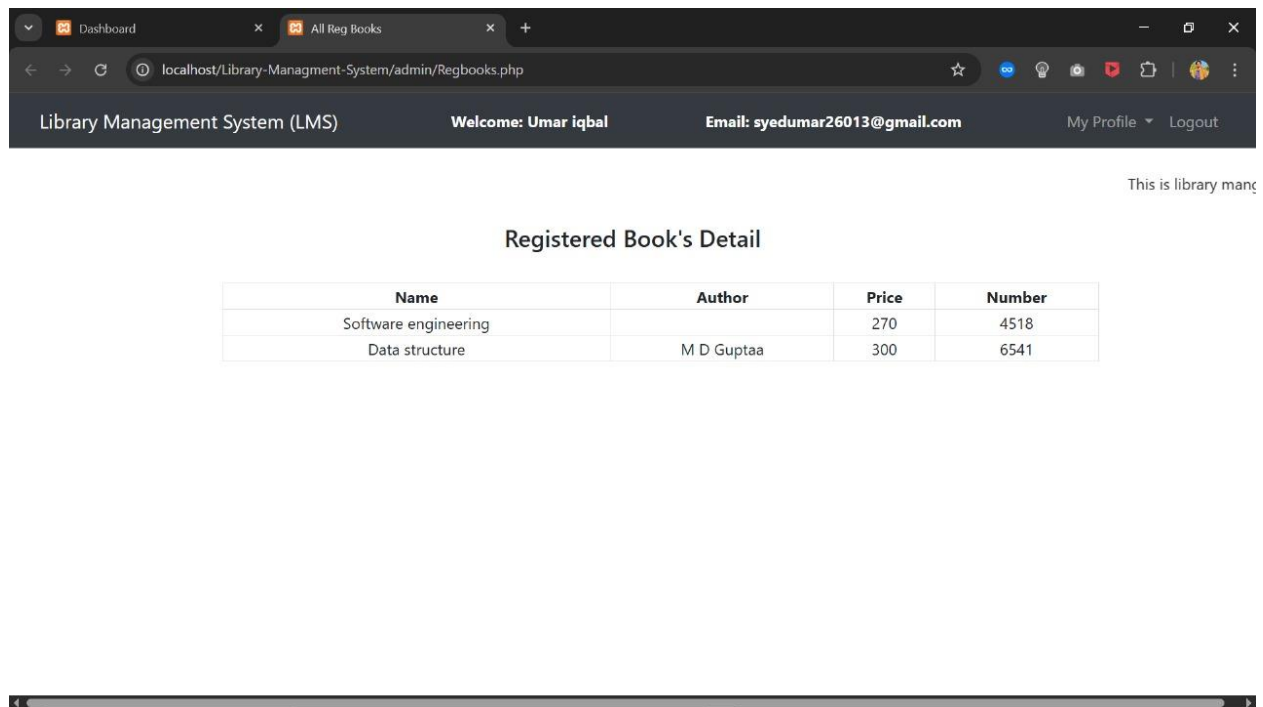
Explanations:

- The image shows a screenshot of a web page displaying a library management system.
- The page lists two books: "Software engineering" and "Data structure."
- The table includes columns for book name, author, price, and number.
- The prices are 270 and 350, and the numbers are 4518 and 6541.
- The page has a navigation bar with options like "My Profile" and "Logout."

- The dashboard is the main page.. It gives detail regarding the books listed, total books issued, total books returned, registered users, author listed and categories listed.
- Then we have categories and in categories we defines from which category a book belongs to as in our project we have defined two categories i-e engineering and novel.
- In author section, admin can add and remove authors of the books included in the library.
- Then comes books in which admin add and remove books.
- Issue book allows us to issue new books and return then while managing the issued books.
- Reg students show us the table of registered students and their status.

Main Page (Frontend):
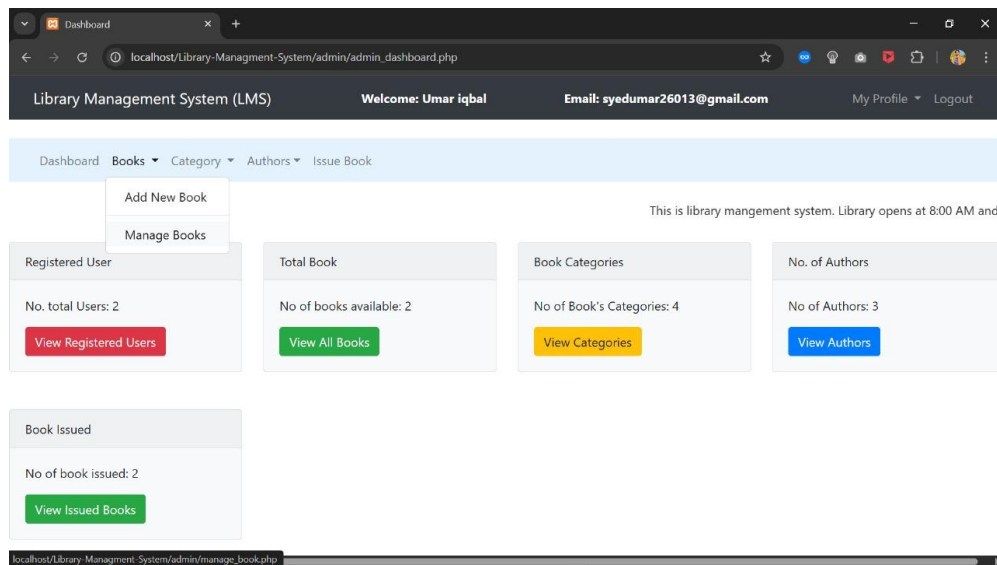
Explanations:

The image shows a screenshot of a Library Management System (LMS) dashboard. The LMS is a web-based application that allows librarians to manage the daily operations of a library, including tracking books, users, and borrowing activities.

Dashboard Overview

The dashboard is divided into several sections, each providing an overview of a specific aspect of the library's operations. The sections include:

Registered User: This section displays the total number of registered users in the library, which is 3 in this case. There is also a button to view all registered users.

Total Book: This section shows the total number of books available in the library, which is 2. There is also a button to view all books.

Book Categories: This section displays the number of book categories available in the library, which is 4. There is also a button to view all categories.

No. of Authors: This section shows the total number of authors whose books are available in the library, which is 3. There is also a button to view all authors.

Book Issued: This section displays the number of books that are currently issued to users, which is 2. There is also a button to view all issued books.

Additional Information

The dashboard also provides some additional information, including:

Library Opening Hours: The library opens at 8:00 AM and closes at 8:00 PM.

Welcome Message: A welcome message is displayed at the top of the dashboard, addressed to the user "umar".

Email Address: The email address of the user is also displayed, which is "syedumar26013@gmail.com".

Navigation Menu

The dashboard has a navigation menu at the top, which includes links to various sections of the LMS, such as:

Dashboard: This link takes the user back to the dashboard.

**Books:** This link allows the user to view and manage books in the library.

Category: This link allows the user to view and manage book categories.

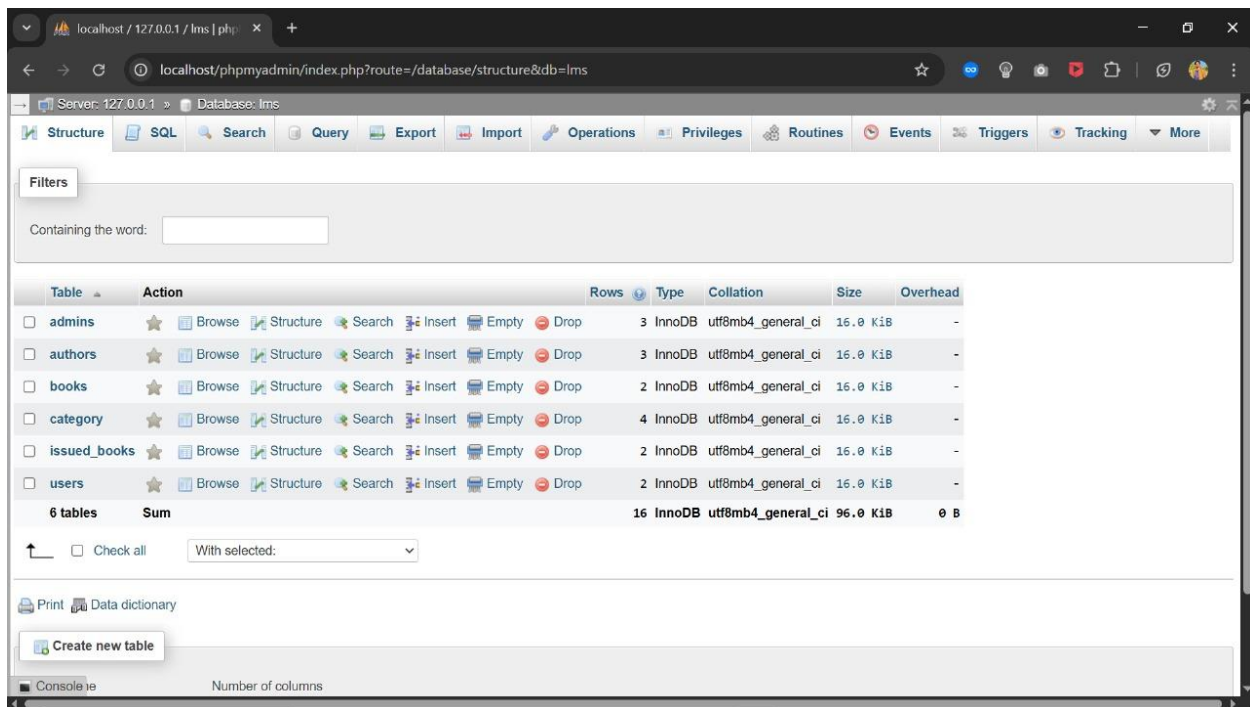**Authors:** This link allows the user to view and manage authors.

Issue Book: This link allows the user to issue books to users.

Overall, the LMS dashboard provides a comprehensive overview of the library's operations and allows librarians to easily manage various aspects of the library.

Databases:
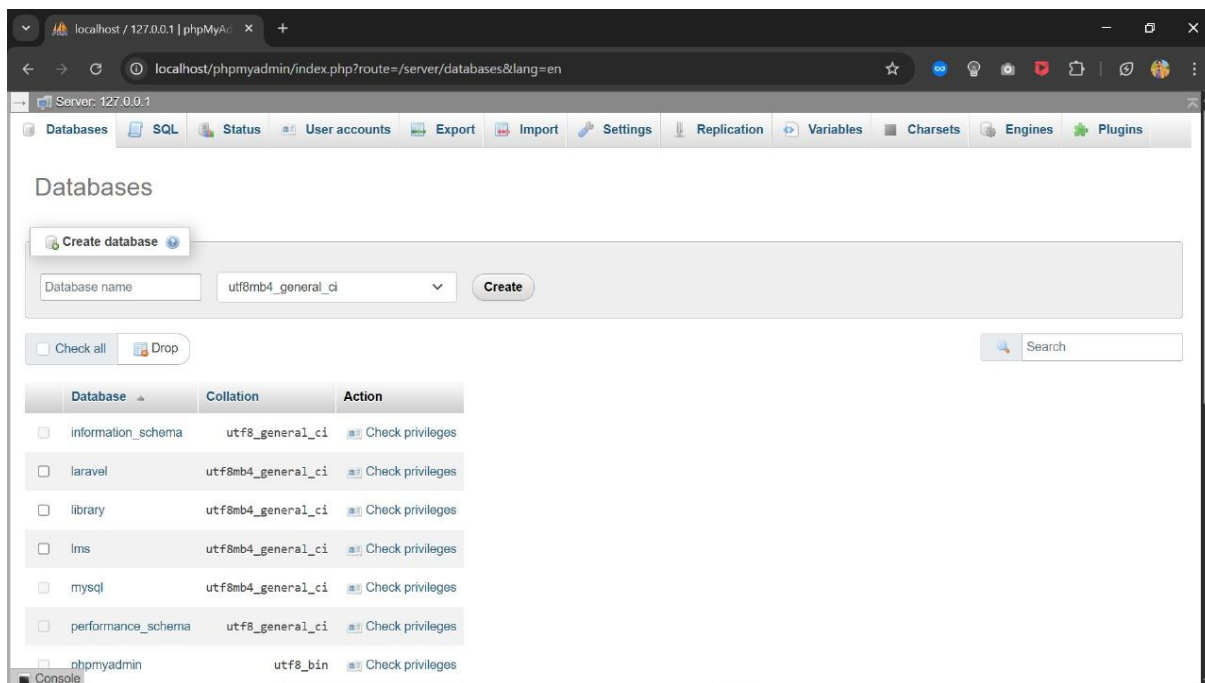
Database Structure:

Explaination:

The image shows a screenshot of phpMyAdmin, a web-based interface for managing MySQL databases. The screenshot displays the structure of a database named "lms" with six tables: admins, authors, books, category, issued_books, and users.

➢ Database Information

 - Server: 127.0.0.1

 ➢ Database:

   lms

• Table List
• admins
    ➢ Rows: 3

 - Type: InnoDB

 - Collation: utf8mb4_general_ci

 - Size: 16.0 KiB

 - Overhead: -

   ➢ authors

 - Rows: 3

- Type: InnoDB

- Collation: utf8mb4_general_ci

- Size: 16.0 KiB

- Overhead: -

  ➢ books

- Rows: 2

- Type: InnoDB

- Collation: utf8mb4_general_ci

- Size: 16.0 KiB

- Overhead: -

  ➢ category

- Rows: 4

- Type: InnoDB

- Collation: utf8mb4_general_ci

- Size: 16.0 KiB

- Overhead: -

  ➢ issued_books

- Rows: 2

- Type: InnoDB

- Collation: utf8mb4_general_ci

- Size: 16.0 KiB

- Overhead: -

  ➢ users

- Rows: 2

- Type: InnoDB

- Collation: utf8mb4_general_ci

- Size: 16.0 KiB

- Overhead: -

- **Summary**

 - Total Tables: 6

- Total Rows: 16

- Total Size: 96.0 KiB

- Total Overhead: 0 B

The image provides a detailed view of the database structure, including the number of rows, data type, collation, size, and overhead for each table.
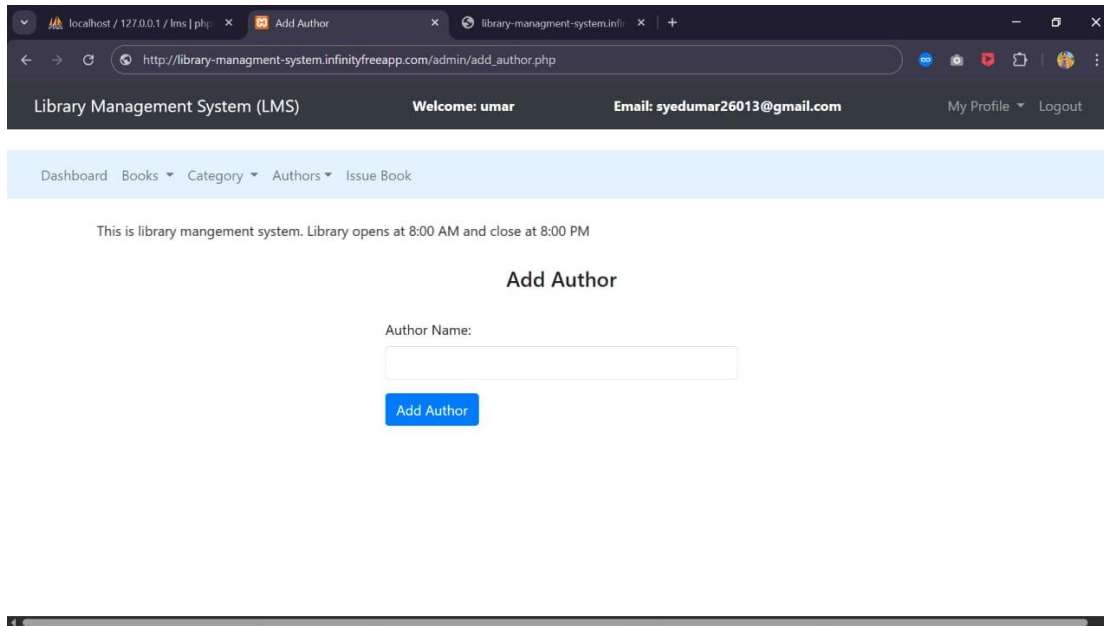
Add New Book:

Explanations:

Key Features:

- **Dashboard:** A navigation menu at the top of the page provides access to various sections of the LMS, including Books, Category, Authors, and Issue Book.
- **Add New Book:** A form is displayed on the page, allowing administrators to add new books to the library's collection. The form includes fields for:
- Book Name
- Author ID
- Category ID
- Book Number
- **Category Management**: A dropdown menu on the left side of the page allows administrators to add new categories or manage existing ones.
- **User Information:** The top-right corner of the page displays the user's email address and a link to their profile.

Functionality:

- The LMS allows administrators to add new books to the library's collection by filling out the form and submitting it.
- The system likely includes functionality for managing authors, categories, and book issues

Add Author:

Explainations:

To add an author to the library management system, follow these steps:

1. Enter the author's name in the text field labeled "Author Name:".

2. Click the blue button that says "Add Author".

This will add the author to the system.

Deployment Link:

http://library-managment-system.infinityfreeapp.com/admin/index.php

References:

PHP Gurukul & CSE Tutorial Channel:

https://www.youtube.com/playlist?list=PL-6FWL4WVVWX4M7o2mYBm2wiDNUi9fO