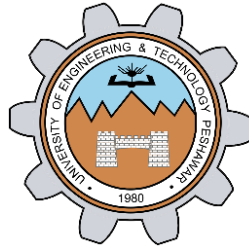


PROJECT REPORT



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

Department of Computer Systems Engineering
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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 recorded 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

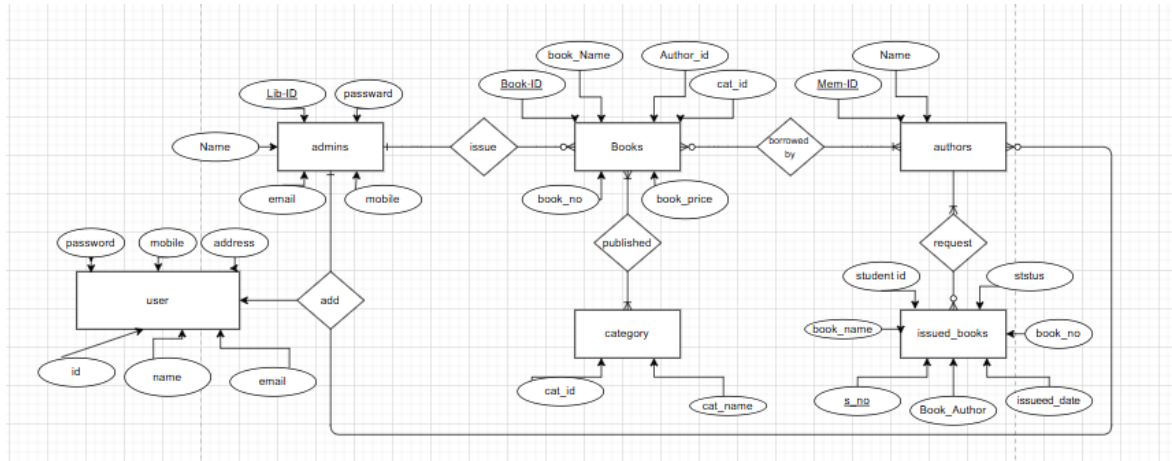
Updated Key Milestones:

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	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.

```
C:\Windows\System32\cmd.exe - mysql -u root
15 rows in set (0.003 sec)

MariaDB [(none)]> use lms
Database changed
MariaDB [lms]> show tables;
+-----+
| Tables_in_lms |
+-----+
| admins         |
| authors        |
| books          |
| category       |
| issued_books   |
| users          |
+-----+
6 rows in set (0.001 sec)

MariaDB [lms]> select * from admins;
+----+-----+-----+-----+-----+
| id | name      | email                | password | mobile |
+----+-----+-----+-----+-----+
| 1  | Umar iqbal | syedumar26013@gmail.com | admin    | 2147483647 |
| 2  | Afaq amjad | afaqamjad1122@gmail.com | admin    | 2147483647 |
| 3  | Ihsan ullah | ihsanullah1122@gmail.com | admin    | 2147483647 |
+----+-----+-----+-----+-----+
3 rows in set (0.011 sec)

MariaDB [lms]> select * from authors;
+-----+-----+
| author_id | author_name |
+-----+-----+
| 102       | M D Guptaa  |
| 103       | Chetan Bhagat |
| 104       | Munshi Prem Chand |
+-----+-----+
3 rows in set (0.007 sec)

MariaDB [lms]> select * from books;
+-----+-----+-----+-----+-----+-----+
| book_id | book_name      | author_id | cat_id | book_no | book_price |
+-----+-----+-----+-----+-----+-----+
| 1       | Software engineering | 101       | 1      | 4518    | 270        |
| 2       | Data structure      | 102       | 2      | 6541    | 300        |
+-----+-----+-----+-----+-----+-----+
```

```
C:\Windows\System32\cmd.exe - mysql -u root
MariaDB [lms]> describe admins;
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | int(11)   | NO   | PRI | NULL    | auto_increment |
| name  | varchar(100) | NO   |     | NULL    |               |
| email | varchar(100) | NO   |     | NULL    |               |
| password | varchar(250) | NO   |     | NULL    |               |
| mobile | int(10)    | NO   |     | NULL    |               |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.018 sec)

MariaDB [lms]> _
```

```

C:\Windows\System32\cmd.exe - mysql -u root

+-----+-----+-----+-----+-----+-----+
| 1 | Software engineering | 101 | 1 | 4518 | 270 |
| 2 | Data structure       | 102 | 2 | 6541 | 300 |
+-----+-----+-----+-----+-----+
2 rows in set (0.008 sec)

MariaDB [lms]> select * from category;
+-----+-----+
| cat_id | cat_name |
+-----+-----+
| 1      | Computer Science Engineering |
| 2      | Novel |
| 4      | Motivational |
| 5      | Story |
+-----+-----+
4 rows in set (0.008 sec)

MariaDB [lms]> select * from issued books;
ERROR 1146 (42S02): Table 'lms.issued' doesn't exist
MariaDB [lms]> select * from issuedbooks;
ERROR 1146 (42S02): Table 'lms.issuedbooks' doesn't exist
MariaDB [lms]> select * from issued_books;
+-----+-----+-----+-----+-----+-----+
| s_no | book_no | book_name | book_author | student_id | status | issue_date |
+-----+-----+-----+-----+-----+-----+
| 1    | 6541    | Data structure | D S Gupta | 4 | 1 | 0000-00-00 00:00:00 |
| 18   | 7845    | half Girlfriend | Chetan Bhagat | 2 | 1 | 2020-04-22 |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.007 sec)

MariaDB [lms]> select * from users;
+-----+-----+-----+-----+-----+-----+
| id | name | email | password | mobile | address |
+-----+-----+-----+-----+-----+-----+
| 4 | user | user@gmail.com | user@1234 | 2147483644 | XYZ Colony, PQR Nagar , peshawar |
| 7 | hemant | hemant@gmail.com | hemant@123 | 2147483644 | XYZ Colony, PQR Nagar , peshawar |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.010 sec)

MariaDB [lms]>

```

Milestone 04

Comprehensive Project Report with Screen Shot:

1) Login Form:

Library Management System (LMS) Admin Login Register Login

This is library mangement system. Library opens at 8:00 AM and close at 8:00 PM

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

Email ID:

Password:

[Login](#) | [Not registered yet ?](#)

Library Management System (LMS) Admin Login Register Login

This is library management system. Library opens at 8:00 AM and close at 8:00 PM

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

Admin Login Form

Email ID:

Password:

Login

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

Library Management System (LMS) Admin Login Register Login

This is library management system. Library opens at 8:00 AM and close at 8:00 PM

Library Timing

- Opening: 8:00 AM
- Closing: 8:00 PM
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What We provide ?

- Full furniture
- Free Wi-fi
- News Papers
- Discussion Room
- RO Water
- Peacefull Environment

User Login Form

Email ID:

Password:

Login | Not registered yet ?

Library Management System (LMS)

Admin Login Register Login

at 8:00 AM and close at 8:00 PM

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

Admin Login Form

Email ID:

afaqamjad1122@gmail.com

Password:

.....

Login

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:

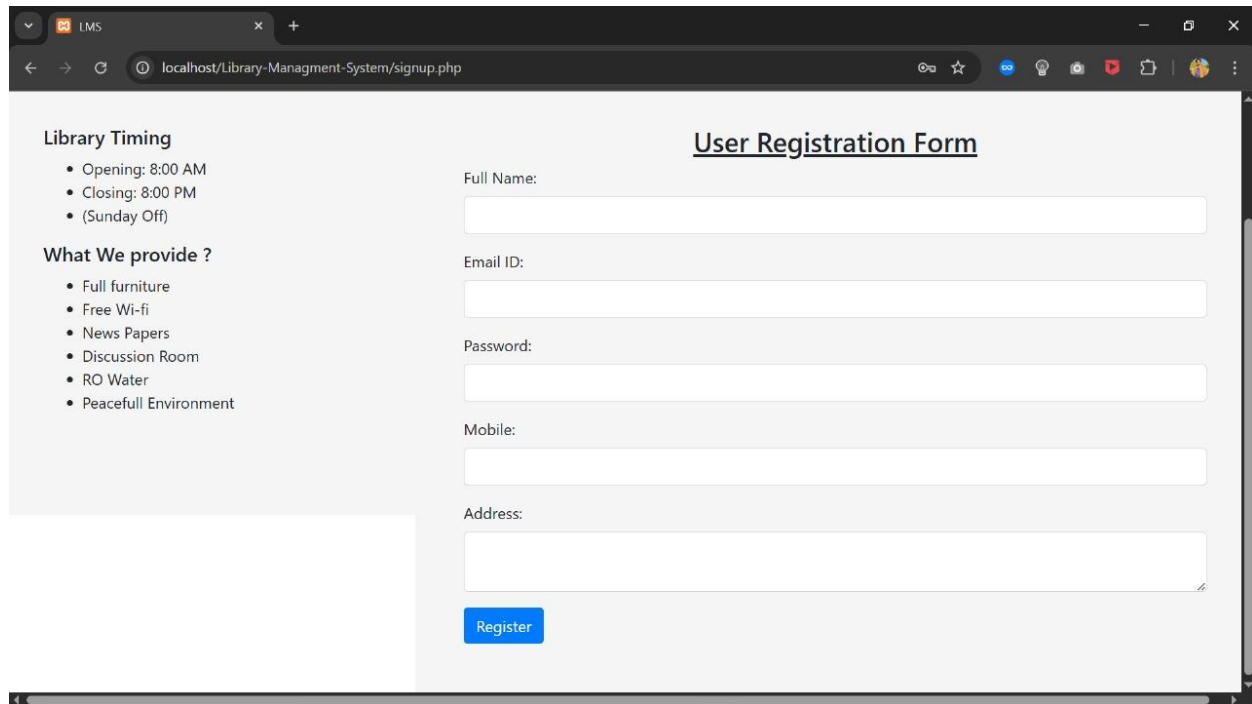
- **Library Timing:**
- Opening: 8:00 AM
- Closing: 8:00 PM
- Sunday Off
- What We Provide?:
- Full furniture
- Free Wi-fi
- News Papers
- Discussion Room
- RO Water
- Peacefull Environment

- **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:



The screenshot shows a web browser window with the address bar displaying "localhost/Library-Management-System/signup.php". The page has a light gray background. On the left side, there is a sidebar with two sections: "Library Timing" and "What We provide?". The "Library Timing" section lists: "Opening: 8:00 AM", "Closing: 8:00 PM", and "(Sunday Off)". The "What We provide?" section lists: "Full furniture", "Free Wi-fi", "News Papers", "Discussion Room", "RO Water", and "Peacefull Environment". The main content area is titled "User Registration Form" in a bold, underlined font. Below the title, there are five input fields with labels: "Full Name:", "Email ID:", "Password:", "Mobile:", and "Address:". Each label is followed by a white input field with a light gray border. At the bottom of the form, there is a blue button with the text "Register" in white.

Profile Details:

localhost / 127.0.0.1 / lms | php | Add New Book | library-managment-system.infi...

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

Library Management System (LMS) Welcome: umar Email: syedumar26013@gmail.com My Profile Logout

Dashboard Books Category Authors Issue Book

This is library mangement system. Library opens at 8:00 AM and close at 8:00 PM

Add a new Book

Book Name:

Author ID:

Category ID:

Book Number:

Registration Details:

REGISTERD CATEGORY:

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

Library Management System (LMS) Welcome: umar Email: syedumar26013@gmail.com My Profile Logout

This is library mangement system. Library opens at 8:00 AM and close at 8:00 PM

Registered Book's Category

Category Name
Computer Science Engineering
Novel
Motivational
Story

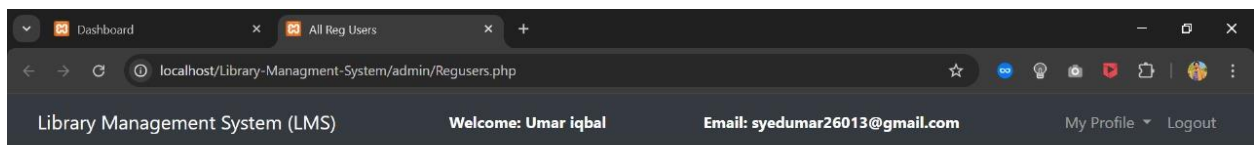
Explanations:

- 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:



This is library ma

Registered Users Detail

Name	Mobile	Email	Address
user	user@gmail.com	2147483644	XYZ Coloney, PQR Nagar , peshawar
hemant	hemant@gmail.com	2147483644	XYZ Coloney, PQR Nagar , peshawar

Explanation:

- 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.

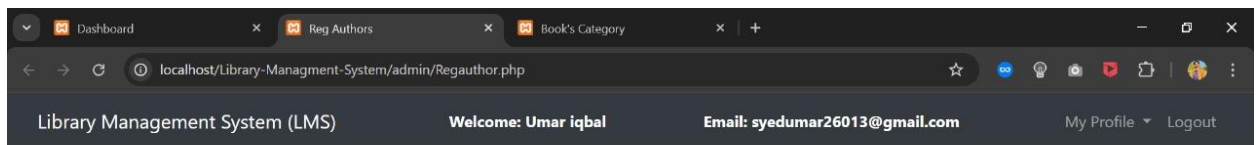
Key Features:

- **Title:** Registered Book's Category

- **Categories:**

- Computer Science Engineering
- Novel
- Motivational
- Story

REGISTERED AUTHORS:



This is library

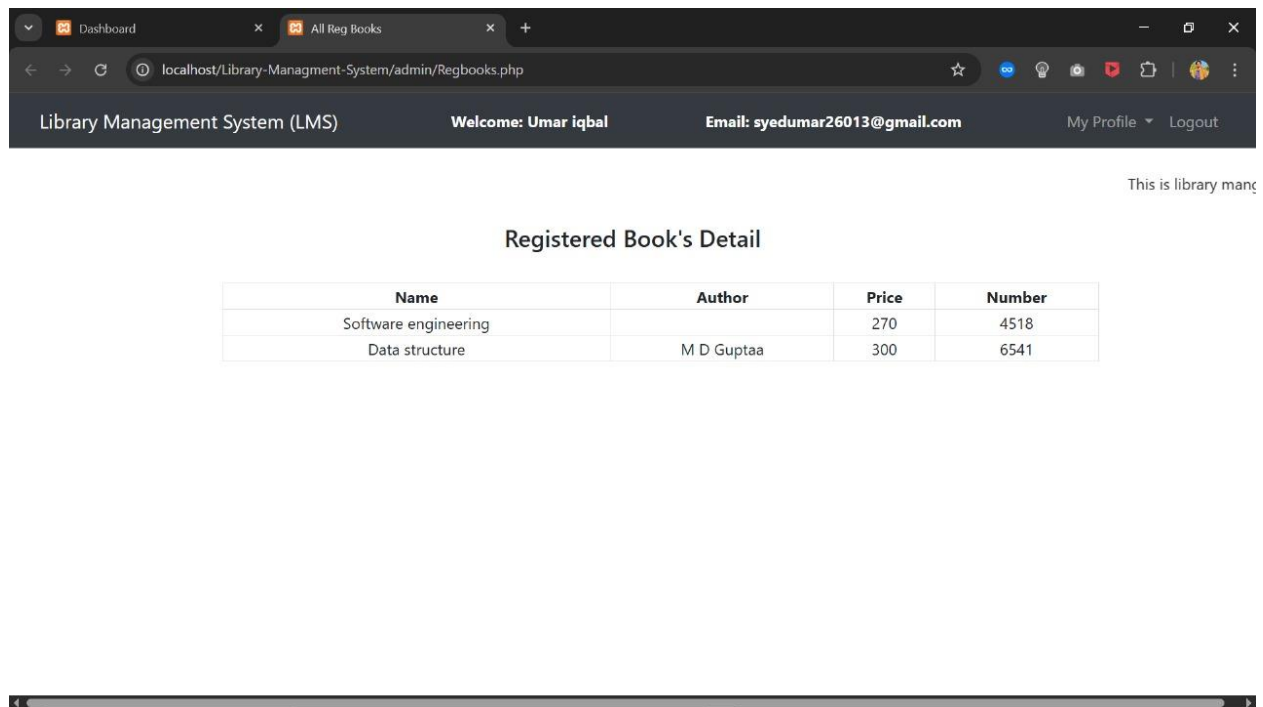
Registered Authors

Author Name
M D Guptaa
Chetan Bhagat
Munshi Prem Chand

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.

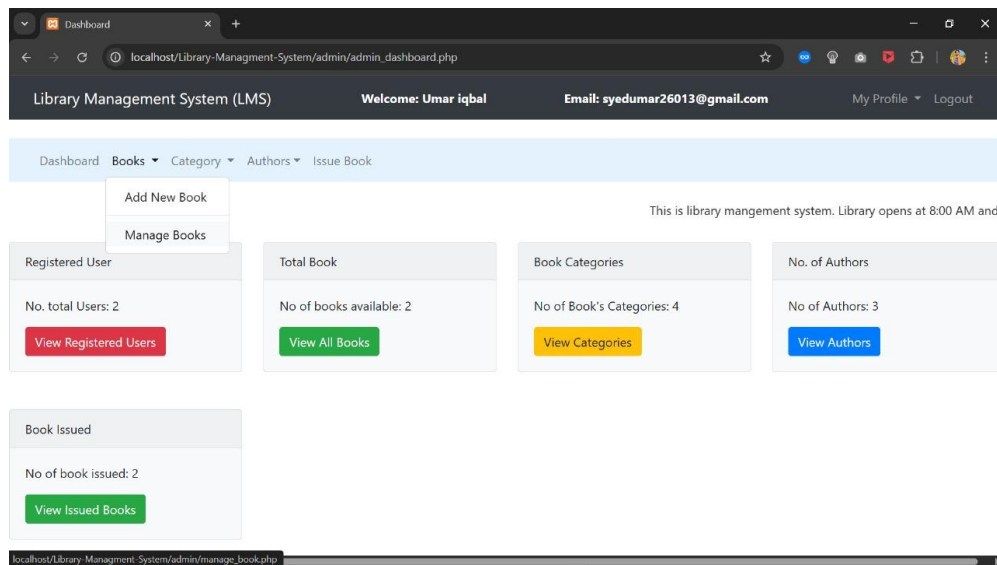
REGISTERED BOOKS:



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.

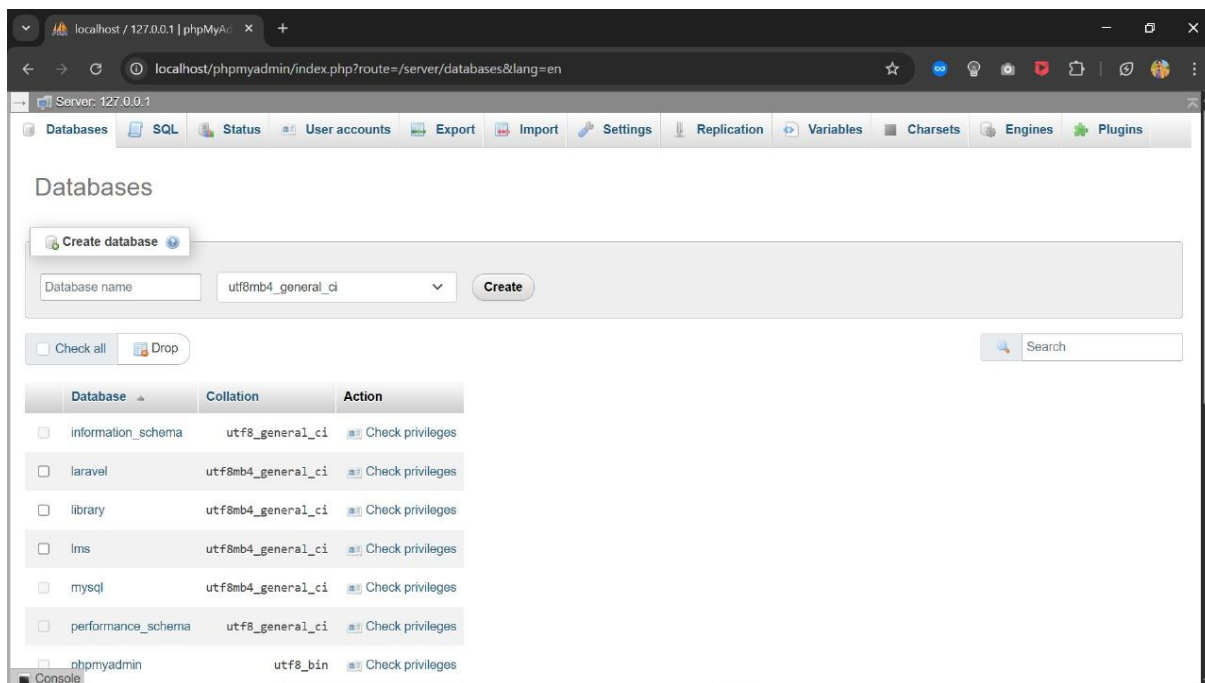
Category: This link allows the user to view and manage book categories.

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

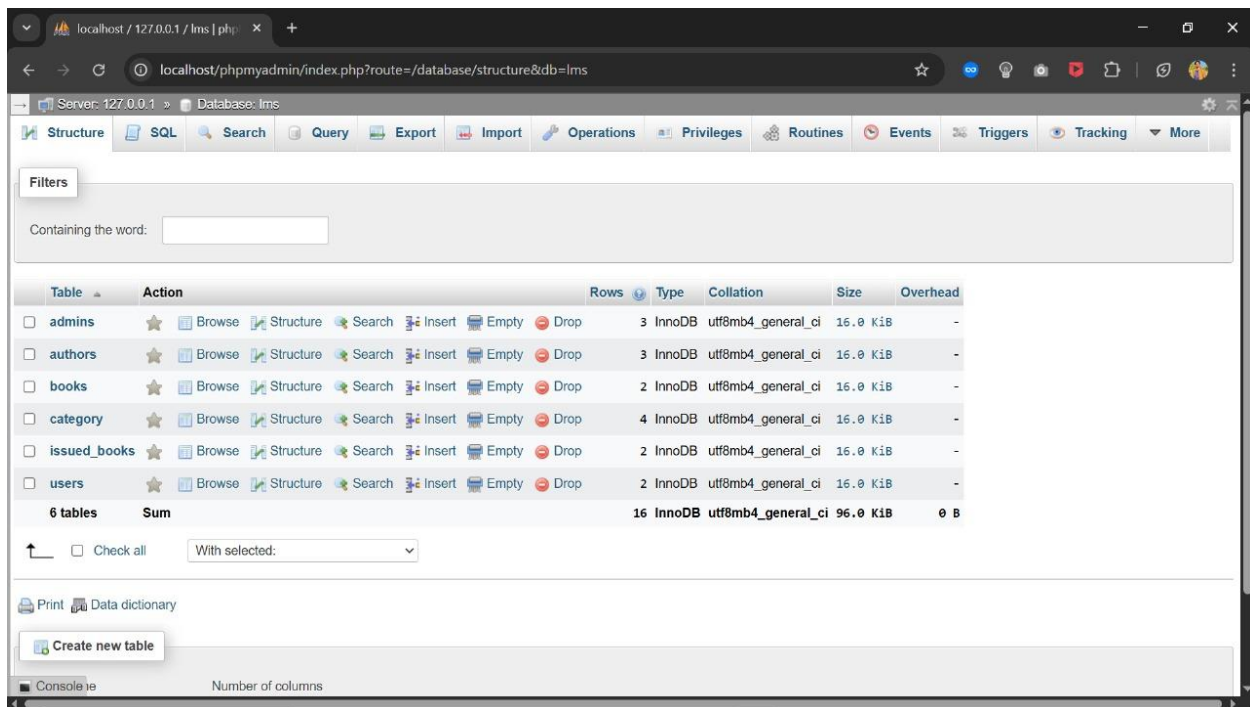
Issue Book: This link allows the user to issue books to users.

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:



Explanation:

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:

The screenshot shows a web browser window with the URL `http://library-managment-system.infinityfreeapp.com/admin/add_book.php`. The page title is "Library Management System (LMS)". The top navigation bar includes "Welcome: umar", "Email: syedumar26013@gmail.com", "My Profile", and "Logout". The left sidebar has a navigation menu with "Dashboard", "Books", "Category", "Authors", and "Issue Book". The "Authors" menu is expanded, showing "Add New Author" and "Manage Author". The main content area is titled "Add a new Book" and contains four input fields: "Book Name:", "Author ID:", "Category ID:", and "Book Number:". The "Book Name" field is the largest and is positioned at the top of the form.

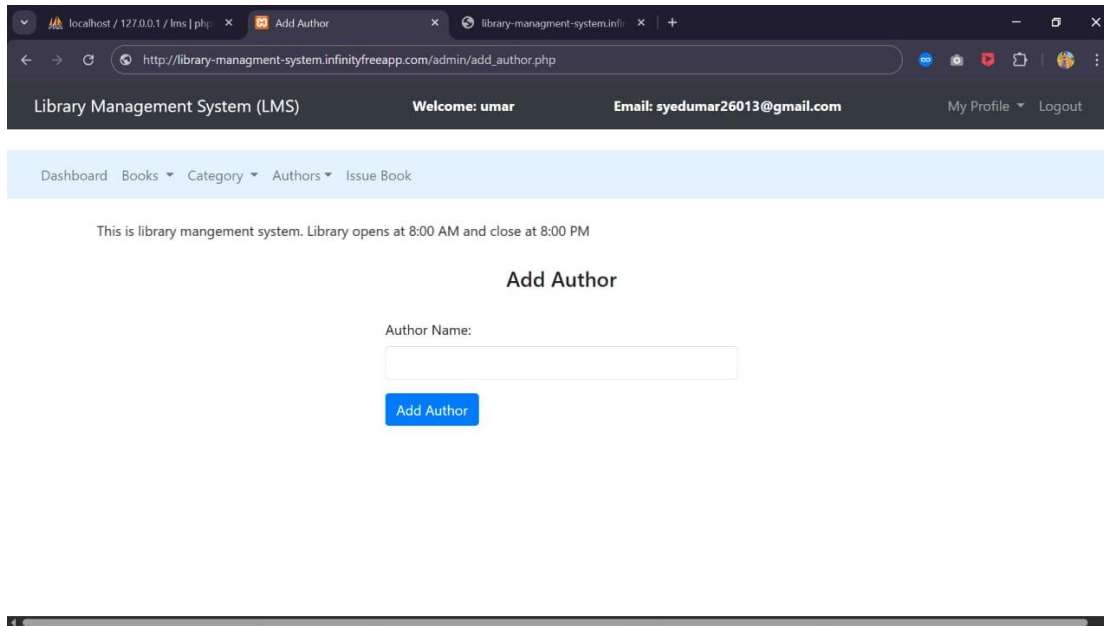
Explanations:

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:

The screenshot shows a web browser window with the URL http://library-managment-system.infinityfreeapp.com/admin/add_author.php. The page title is "Library Management System (LMS)". The user is logged in as "umar" with the email "syedumar26013@gmail.com". The navigation menu includes "Dashboard", "Books", "Category", "Authors", and "Issue Book". A message states: "This is library mangement system. Library opens at 8:00 AM and close at 8:00 PM". The main heading is "Add Author". Below it, there is a text input field labeled "Author Name:" and a blue button labeled "Add Author".

Explanations:

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>