

LIBRARY MANAGEMENT SYSTEM

A MINI PROJECT REPORT

Submitted by

Srikanth Devendla B181850

Anusha Uppu B181473

Jaya Kishore Boya B181890

of

Bachelor of Technology

Under the guidance of

Mr. B Venkat Raman

Assistant Professor



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES
BASAR, NIRMAL (DIST.), TELANGANA – 504107**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

CERTIFICATE

This is to certify that the Mini Project Report entitled '**Library Management System**' submitted by **Srikanth Devendla, B181850, Anusha Uppu, B181473, Jaya Kishore Boya, B181890**, Department of Computer Science and Engineering, Rajiv Gandhi University Of Knowledge Technologies, Basar; for partial fulfillment of the requirements for the degree of Bachelor of Technology in Computer Science and Engineering; is a bonafide record of the work and investigations carried out by him/her/them under my supervision and guidance.

PROJECT GUIDE

Mr. B Venkat Raman

Assistant Professor

EXTERNAL EXAMINER



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

DECLARATION

I/We hereby declare that the work which is being presented in this mini project entitled, "**'Library Management System'**" submitted to **RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR** in the partial fulfillment of the requirements for the award of the degree of **BACHELOR OF TECHNOLOGY** in **COMPUTER SCIENCE AND ENGINEERING**, is an authentic record of my/our own work carried out under the supervision of **"B Venkat Raman", Assistant Professor in Department of Computer Science and Engineering, RGUKT, Basar.**

The matter embodied in this project report has not been submitted by me/us for the award of any other degree.

Place: RGUKT,Basar.

Name of the Students

Date: 30.08.2023.

Srikanth Devendla	B181850
Anusha Uppu	B181473
Jaya Kishore Boya	B181890

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Vision Statement

Introducing RGULiB(Library Management System): Empowering Knowledge at RGUKT, Basar. Our visionary project embarks on a mission to revolutionize the way students, faculty, and librarians engage with information through a cutting-edge Library Management System Website. Dedicated to RGUKT, Basar's Central Library, RGULiB envisions a seamless, comprehensive solution that redefines library management.

Amidst the tech-driven era, RGULiB aspires to foster a vibrant community of learners. Our platform transcends conventional library experiences, cultivating an environment where students and faculty can effortlessly discover, access, and engage with a treasure trove of knowledge. Seamlessly checking book availability, streamlining borrowing procedures, and offering intuitive resource management, RGULiB is the bridge between curiosity and wisdom.

Objectives:

- **Educational Insight:** Elevate education with RGULiB: RGUKT Basar's visionary Library Management System. Uniting tech and academia, we revolutionize learning. Seamlessly access resources, collaborate, and inspire. RGULiB: Where knowledge evolves, and minds thrive.
- **Hands-On Learning:** Through a practical and interactive approach, "Library Management System" equips participants with real-world knowledge of building and operating a simplified Library platform.

Targets:

- **Students and Learners:** The project caters to individuals seeking a practical understanding of the mechanisms governing Library websites, making it an invaluable resource for students and self-learners.
- **Tech Enthusiasts:** Aspiring developers and technology enthusiasts will find "Library Management System" as a stepping stone to demystify the technology stack and development processes associated with online platforms.

Benefits:

- **Practical Exposure:** our website offers participants an opportunity to gain hands-on experience in creating user interfaces, managing databases, and integrating websockets for real-time Authentication.
- **Concept Clarity:** By dissecting the different modules of a Library platform, participants can develop a solid understanding of user authentication, books management, and interaction mechanisms.
- **Transferable Skills:** The skills acquired through this project are transferable to various industries, enhancing employability and practical problem-solving abilities.

Milestones:

- **User Registration and Authentication:** Students, faculty, and librarians can create user accounts and securely log in to the system with appropriate privileges.
- **Book Availability and Borrowing:** Users can check the availability of books and place requests for borrowing.
- **User Profile and History:** Users have access to their profile information, including borrowed books. Lending history is available to Admin.
- **Admin Dashboard:** Librarians or administrators have a dedicated interface to manage the library system, update book records, Add users and so on.

Our Library Website aspires to be a catalyst for learning, providing a valuable educational tool that empowers individuals to unravel the mysteries of Library website mechanics while gaining practical experience in web development and technology integration.

Project Overview

Introduction

The RGULiB (RGUKT Library Management System) is a website designed to provide a comprehensive library management solution for the Central Library of RGUKT, Basar. The system aims to streamline the library operations and enhance the experience for students, faculty, and librarians by offering convenient access to book availability information and enabling efficient borrowing and management of library resources.

TECH STACK

- **MySQL (Database)**

MySQL is an open-source relational database management system. It's used to store, manage, and retrieve structured data. It's commonly used for various applications, from small-scale projects to large enterprise-level systems, to efficiently organize and access data.

- **Express.js (Backend Framework)**

Express.js is a fast and minimalistic web application framework for Node.js. It simplifies the process of building robust and scalable web applications by providing tools and features for handling routing, middleware, and other backend functionalities.

- **React.js (Frontend Library)**

React.js is a JavaScript library used for building user interfaces in web applications. It allows developers to create reusable UI components that efficiently update and render as data changes, providing a smooth and dynamic user experience.

- **Node.js (Runtime Environment)**

Node.js is a server-side JavaScript runtime environment. It allows developers to execute JavaScript code outside of the browser, making it possible to build server applications. It's known for its non-blocking, event-driven architecture, which makes it well-suited for building scalable and high-performance network applications.

This Tech Stack is one of the popular and simple combination of technologies used to develop modern web applications. It encompasses both the frontend and backend components of a web application, enabling developers to build dynamic and interactive websites.

Requirements Document:

Business Rules

User Roles and Permissions

- Main user roles: Student and Faculty.
- User can create accounts, see books availability, borrow books, return books, and gain valuable knowledge
-

Book Borrowing Guidelines

- Users should have an account in Library system for borrowing any book available in library.
- Return the book in time.
- Offensive, abusive, or inappropriate action will be subject to removal.

Data Privacy and Security

- User passwords will be stored using secure encryption methods.
- Users' personal information will not be shared with any third parties.
- The platform will implement HTTPS to secure data transmission.

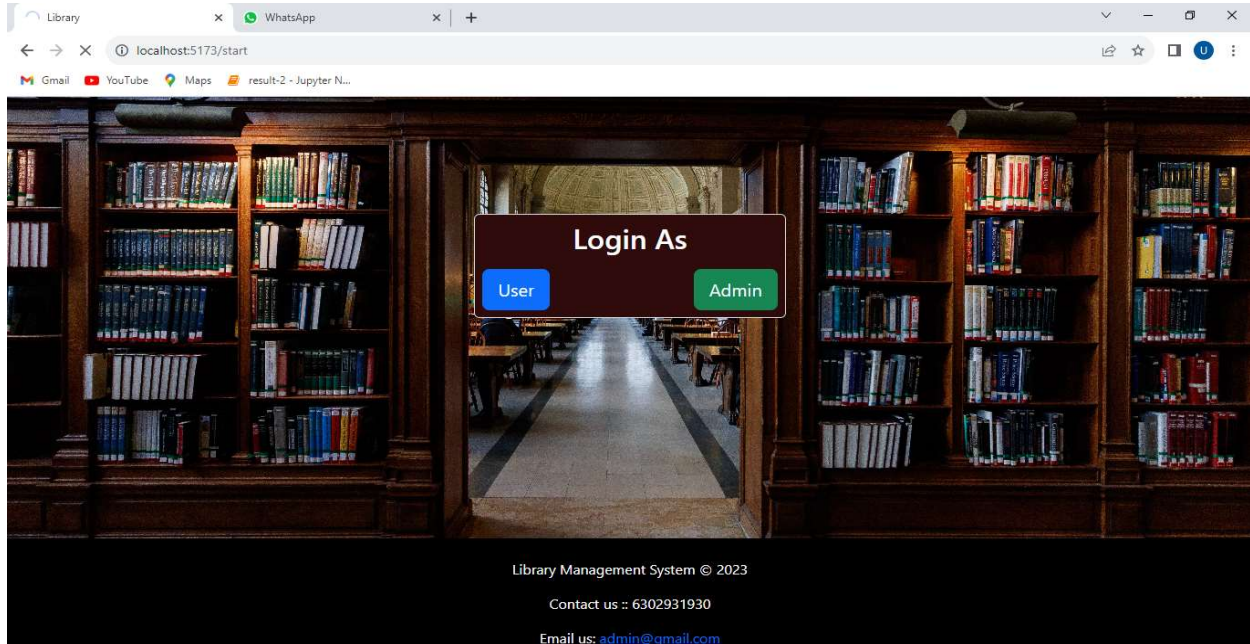
Functional Requirements

User Registration and Authentication

- Users must log in using email and password..
- Passwords must meet complexity requirements.
- Users can log in using their registered email and password.

User Interfaces

Starting Page View :



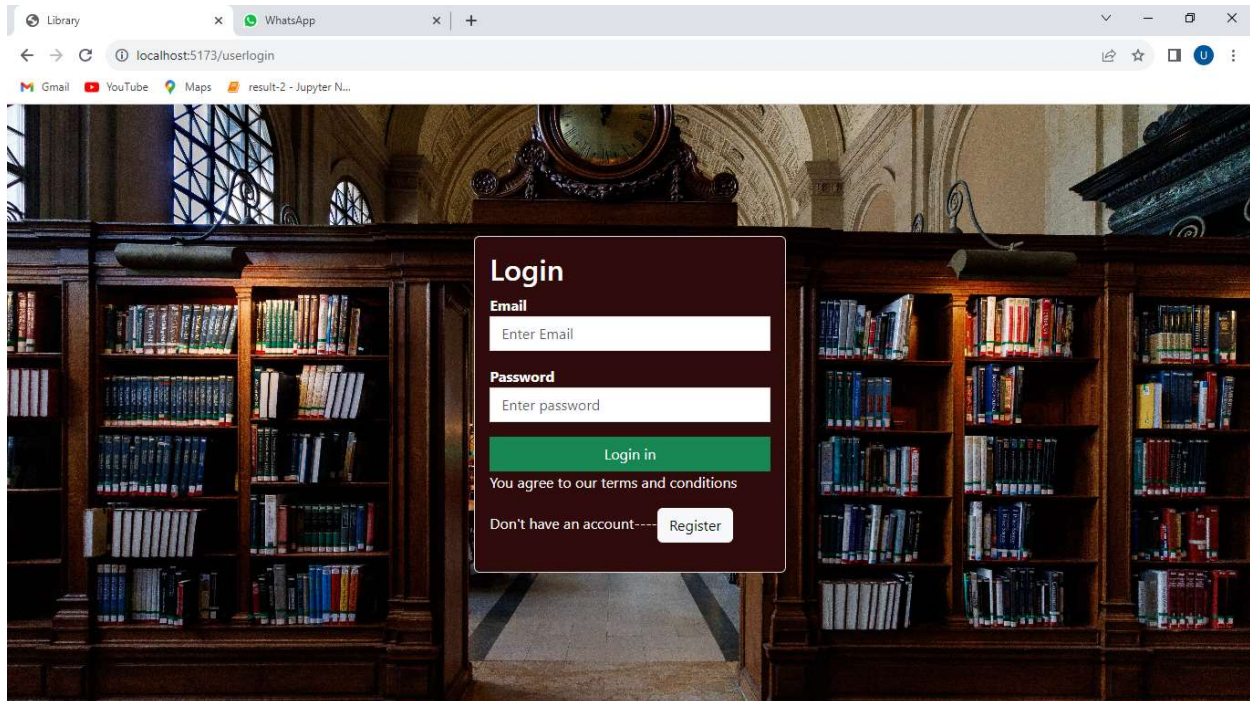
Starting page of our website contains two buttons which are User Login and Admin Login.

Login Page

The login page of our Library website features clear error messages, aiding users by providing specific feedback for incorrect login attempts. Whether due to invalid credentials, empty fields, the system communicates issues with accuracy, ensuring a user-friendly login experience."

User-Friendly Error Handling

- **Invalid Credentials:** When users input incorrect login credentials (username or password), a clear error message is displayed below the respective input field.
 - Example: "Unauthorised login."
- **Empty Fields:** If users attempt to submit the login form without entering both the username and password, an error message informs them of the missing information.
 - Example: "Please fill in both username and password."



Registration Page:

The registration page is designed to facilitate a seamless and secure onboarding process for new users. It incorporates various features to ensure a user-friendly and protected experience:

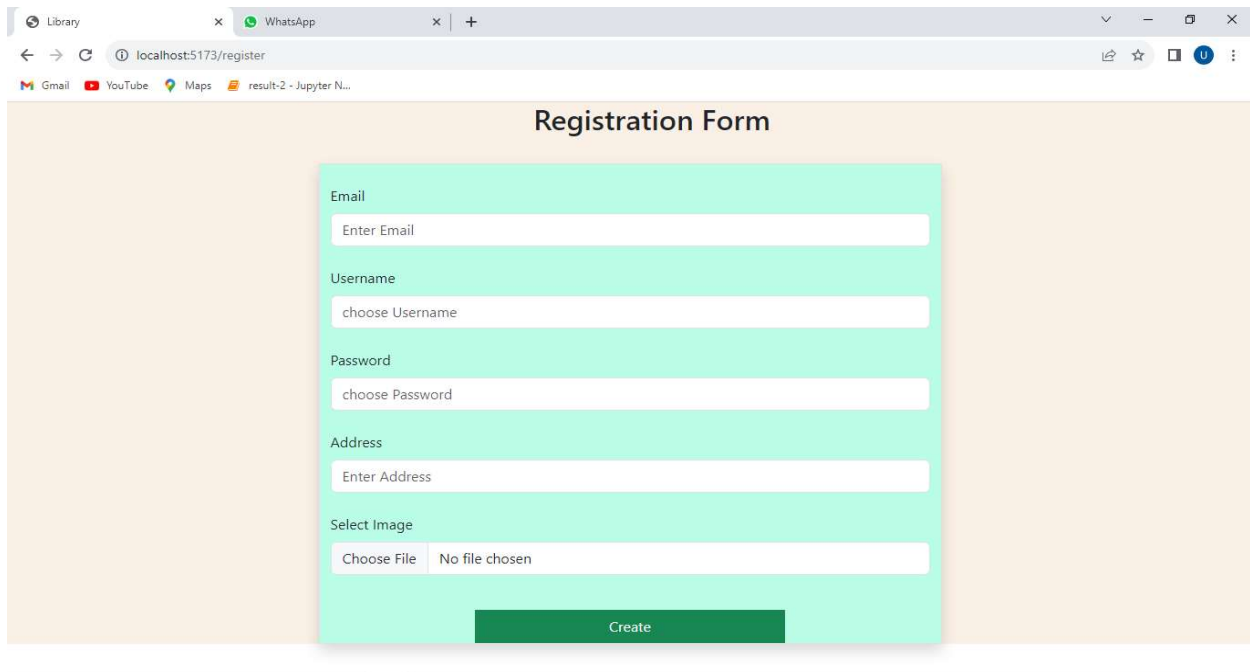
Email Address: Users input their email addresses, which serve as a means of communication and account verification.

Password: A strong password is mandated, with a minimum length of 8 characters, to enhance account security.

Username: Unique username for every user.

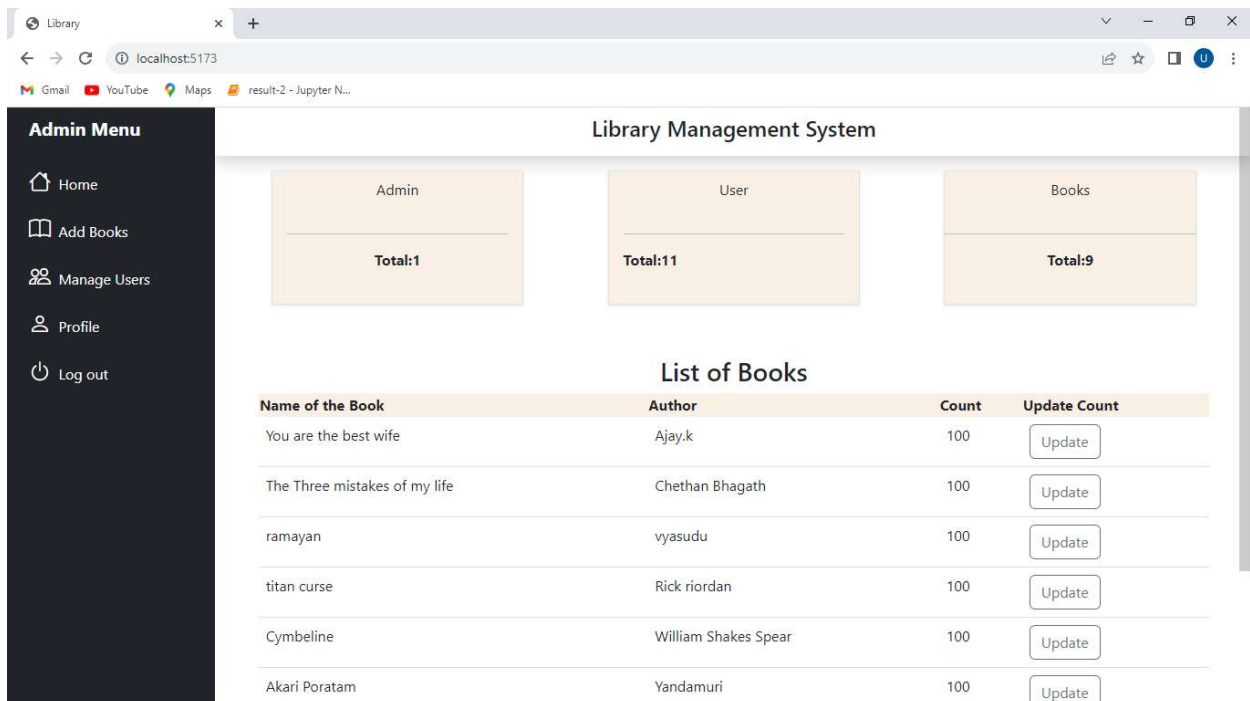
Address: Address bar for user.

Profile Image: Can keep Profile pics for their account.



A screenshot of a web browser showing a registration form at localhost:5173/register. The form is titled "Registration Form" and is set against a light orange background. It contains several input fields: "Email" with placeholder "Enter Email", "Username" with placeholder "choose Username", "Password" with placeholder "choose Password", and "Address" with placeholder "Enter Address". Below these is a "Select Image" section with a "Choose File" button and the text "No file chosen". A green "Create" button is at the bottom of the form.

Home Page (Admin):



A screenshot of the Admin Dashboard for the "Library Management System". The dashboard features a dark sidebar with an "Admin Menu" containing links for Home, Add Books, Manage Users, Profile, and Log out. The main content area displays three summary cards: "Admin" with a total of 1, "User" with a total of 11, and "Books" with a total of 9. Below these cards is a "List of Books" table.

Name of the Book	Author	Count	Update Count
You are the best wife	Ajay.k	100	<button>Update</button>
The Three mistakes of my life	Chethan Bhagath	100	<button>Update</button>
ramayan	vyasudu	100	<button>Update</button>
titan curse	Rick riordan	100	<button>Update</button>
Cymbeline	William Shakes Spear	100	<button>Update</button>
Akari Poratam	Yandamuri	100	<button>Update</button>

Upon Admin logging in, Admin's Dashboard will be visible. Admin can see no.of admins, users, List of books. Admin can Add Books, Manage users, update count of books etc.

Add Books Page:

The screenshot shows a web browser at `localhost:5173/addbooks`. On the left is a dark sidebar with an 'Admin Menu' containing links for Home, Add Books, Manage Users, Profile, and Log out. The main content area is titled 'Library Management System' and 'Add Books'. It features a light green form with four input fields: 'Name of the book' (placeholder: 'Enter Name of the Book'), 'Author Name' (placeholder: 'Enter Author Name'), 'Count' (placeholder: 'Count of Book'), and 'ID' (placeholder: 'Enter ID (should be unique)'). A green 'ADD' button is at the bottom of the form.

Admin can add New Books from this page with attributes like Name of the book, Author name, Count of Books and ID(Unique Book ID).

Update Book Count:

The screenshot shows a web browser at `localhost:5173/updatecount/You%20are%20the%20best%20wife`. The sidebar is identical to the previous page. The main content area is titled 'Library Management System' and 'Update Count'. It features a light orange form with a 'Count:' label and a text input field containing the value '145'. A green 'Update' button is at the bottom of the form.

Admin can update Book count from home page under the section of List of Books

Manage Users Page:

Library Management System

[Add users](#)

User List

Email	UserName	Profile Photo	Action
sanghoon@gmail.com	SS		View History
ravikatrevela@gmail.com	Ravi		View History
uppuanusha3@gmail.com	ANUSHA		View History
zenitsu@gmail.com	ZENITSU_AGATUMA		View History
nikki@gmail.com	NISHIMURA_RIKKI		View History
tanjiro.kamando@gmail.com	TANJIRO_KAMANDO		View History
anitha@gmail.com	ANITHA		View History

Admin can see all the registered users here and also can add users manually. Admin can also View current borrowed book history of User from here.

Library Management System

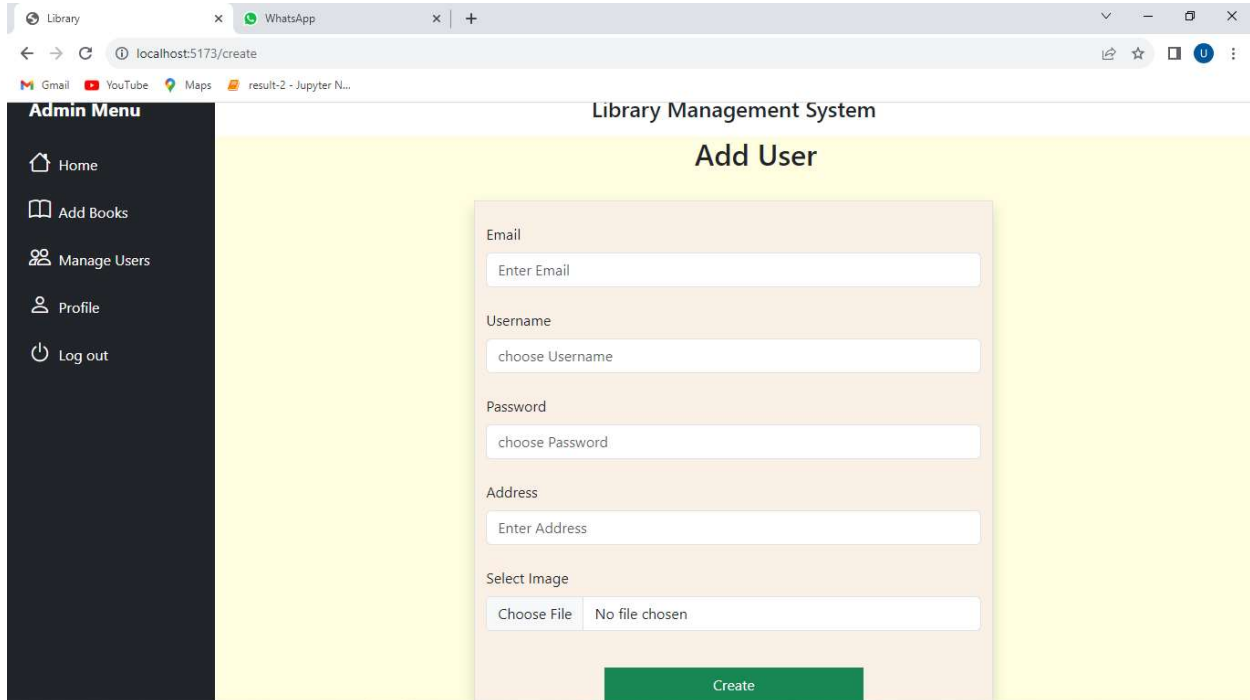
Books Taken by: SS

List of Books

Name of the book
No books Taken

Above Image shows Current books taken history of User named SS.

Adding User Page:



Library Management System

Add User

Email
Enter Email

Username
choose Username

Password
choose Password

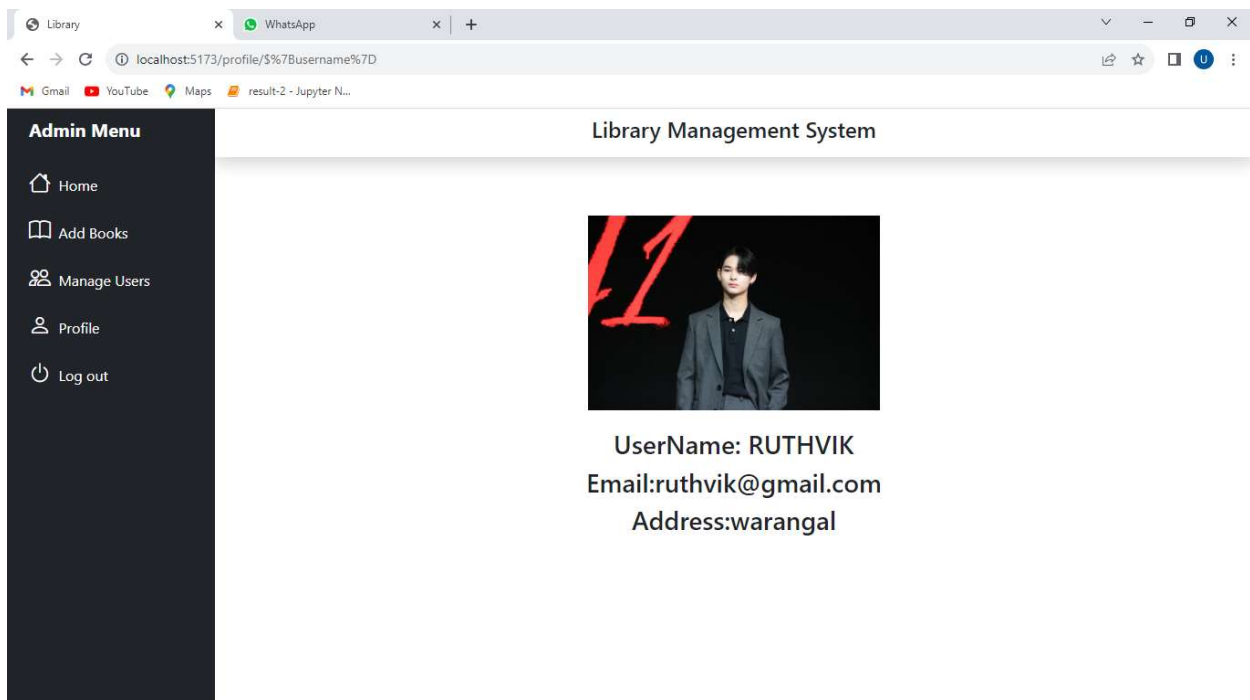
Address
Enter Address

Select Image
Choose File No file chosen

Create

This is the manual registration page of user by Admin.

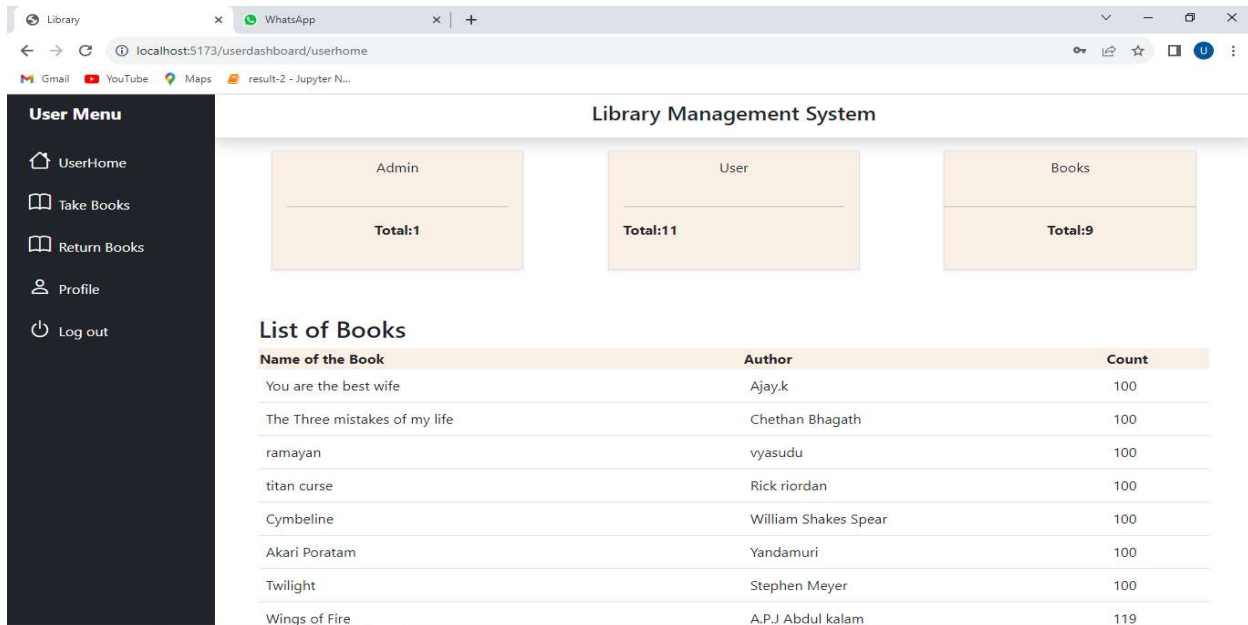
Sample Admin Profile Page:



Library Management System

UserName: RUTHVIK
Email:ruthvik@gmail.com
Address:warangal

Home Page(User):



User Menu

- UserHome
- Take Books
- Return Books
- Profile
- Log out

Library Management System

Admin: Total:1

User: Total:11

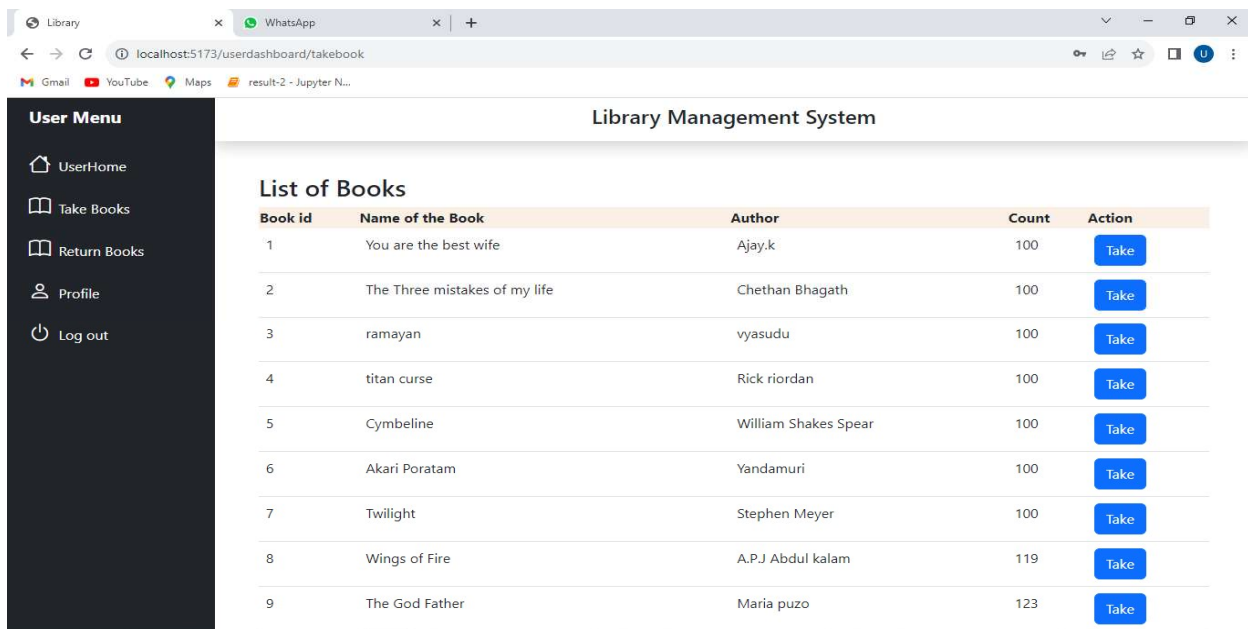
Books: Total:9

List of Books

Name of the Book	Author	Count
You are the best wife	Ajay.k	100
The Three mistakes of my life	Chethan Bhagath	100
ramayan	vyasudu	100
titan curse	Rick riordan	100
Cymbeline	William Shakes Spear	100
Akari Poratam	Yandamuri	100
Twilight	Stephen Meyer	100
Wings of Fire	A.P.J Abdul kalam	119

Upon User logging in, User's Dashboard will be visible. User can see no.of users, admins, List of books. User can Take Books, Return Books, see profile etc.

Take Books Page:



User Menu

- UserHome
- Take Books
- Return Books
- Profile
- Log out

Library Management System

List of Books

Book id	Name of the Book	Author	Count	Action
1	You are the best wife	Ajay.k	100	<button>Take</button>
2	The Three mistakes of my life	Chethan Bhagath	100	<button>Take</button>
3	ramayan	vyasudu	100	<button>Take</button>
4	titan curse	Rick riordan	100	<button>Take</button>
5	Cymbeline	William Shakes Spear	100	<button>Take</button>
6	Akari Poratam	Yandamuri	100	<button>Take</button>
7	Twilight	Stephen Meyer	100	<button>Take</button>
8	Wings of Fire	A.P.J Abdul kalam	119	<button>Take</button>
9	The God Father	Maria puzo	123	<button>Take</button>

Here User can Select the book he/she wanted to take. By clicking "Take" button it will take to Borrow Book page where the book borrowing is confirmed.

Borrow Books Page:

The screenshot shows a web browser window with the URL `localhost:5173/userdashboard/borrow/You%20are%20the%20best%20wife`. The page is titled "Library Management System" and "Borrow Books". On the left is a "User Menu" with options: UserHome, Take Books, Return Books, Profile, and Log out. The main content area contains a form with three input fields: "Username" (filled with "TANJIRO_KAMANDO"), "Email" (filled with "tanjiro.kamando@gmail.com"), and "Bookname" (filled with "You are the best wife"). Below the fields is a green "Borrow" button.

Here when user selects any book, automatically his details are filled in the table. By clicking Borrow, the book is borrowed by user and his/her details are stored in Borrow table in the Database.

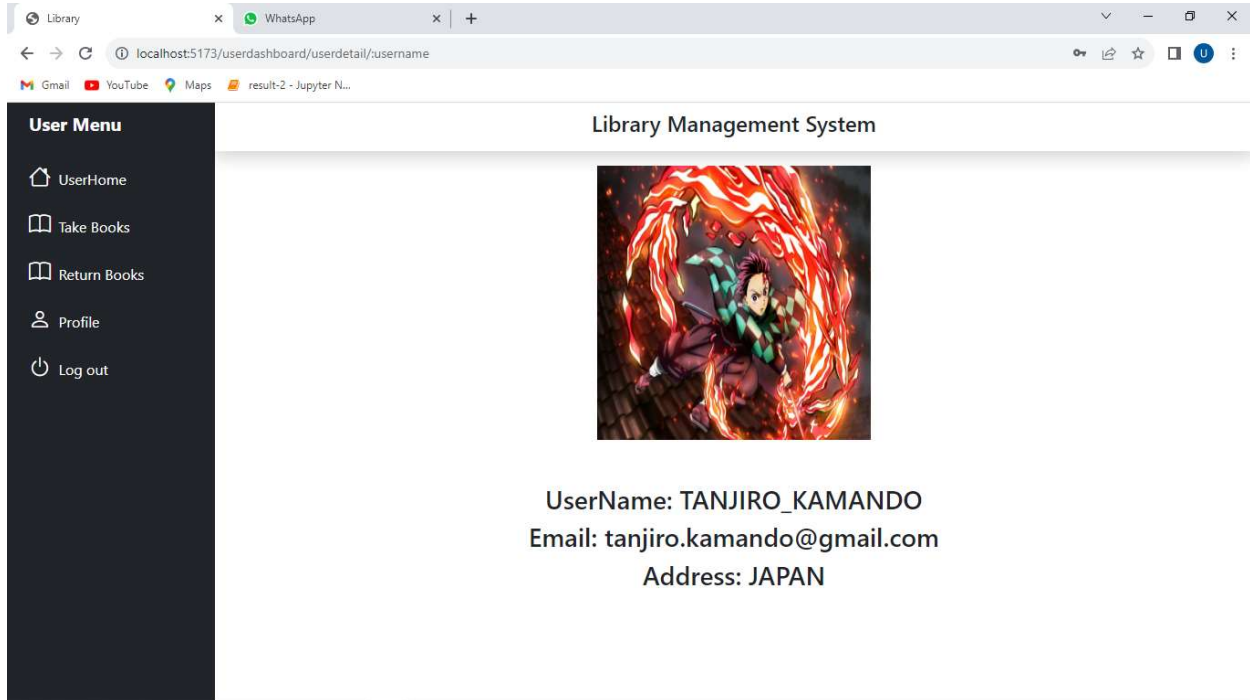
Return Books Page:

The screenshot shows a web browser window with the URL `localhost:5173/userdashboard/returnbook`. The page is titled "Library Management System" and "Return The Book". On the left is a "User Menu" with options: UserHome, Take Books, Return Books, Profile, and Log out. The main content area shows a table with the following data:

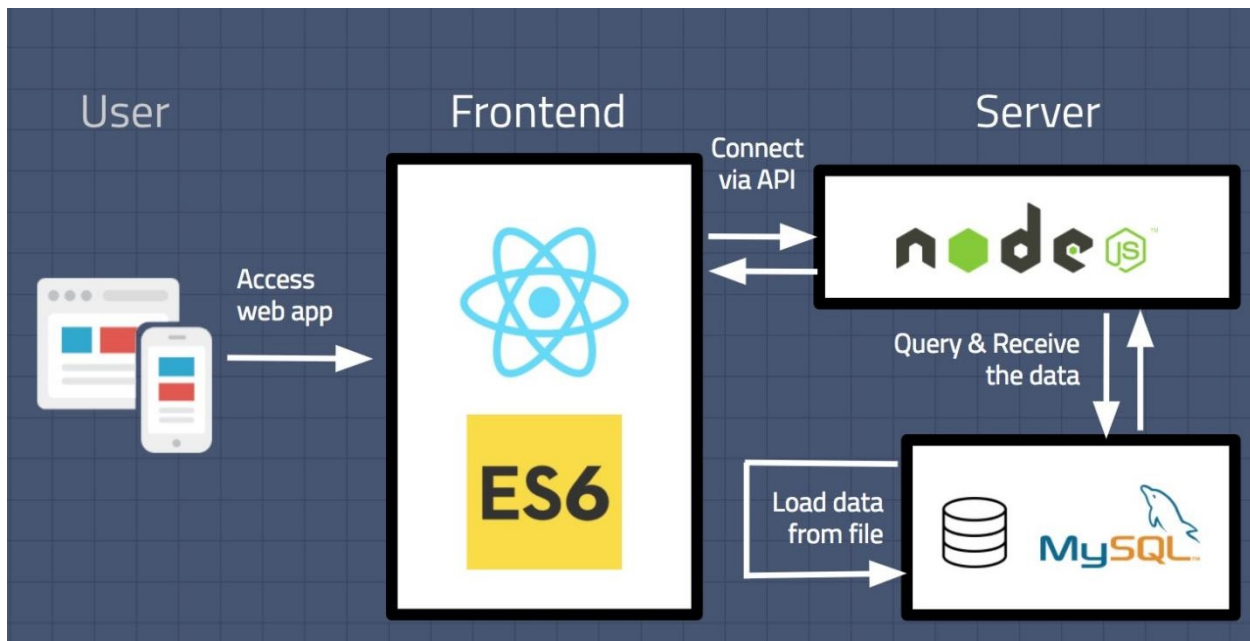
Name of the Book
Akari Poratam <button>Return</button>
Cymbeline <button>Return</button>
You are the best wife <button>Return</button>

Whatever the books taken by the user are shown here. When he clicks on the Return button the book will be returned. And the details in Borrow table and Book table will be updated in the database.

Sample User Profile Page:

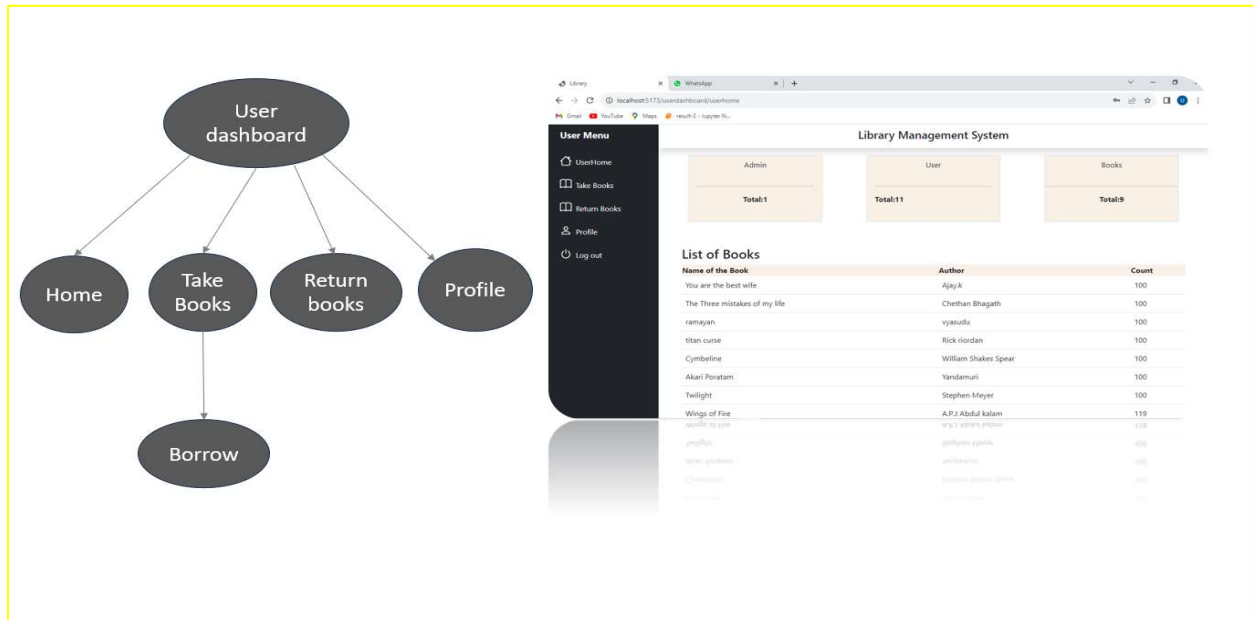


Project Structure :

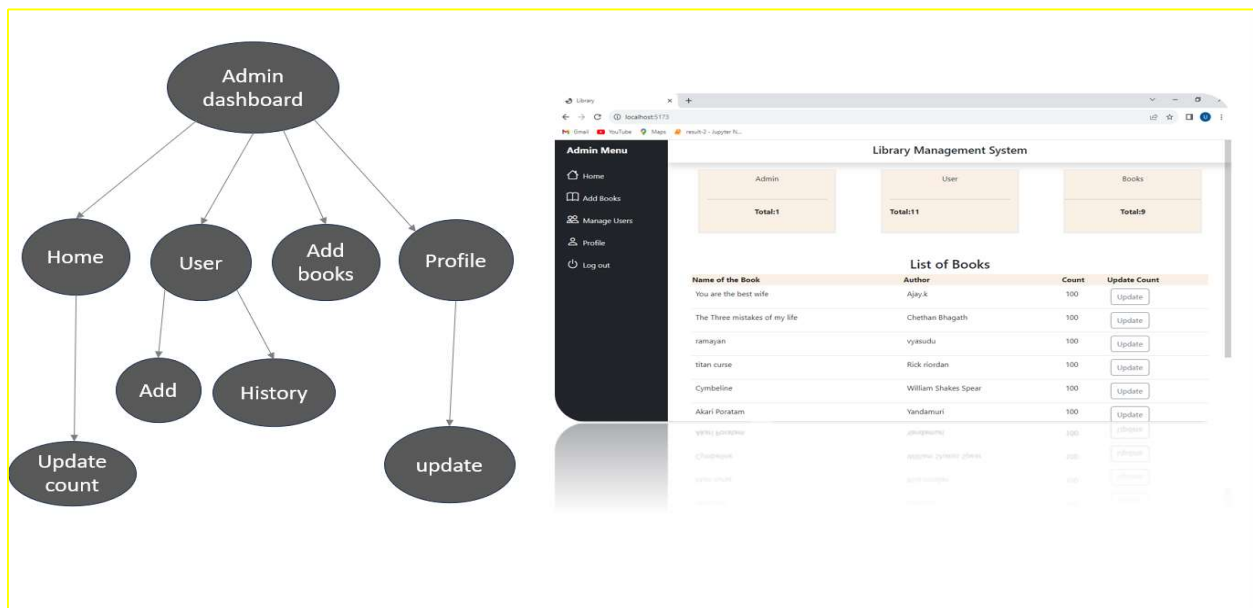


Interface Block Diagrams:

User's Block



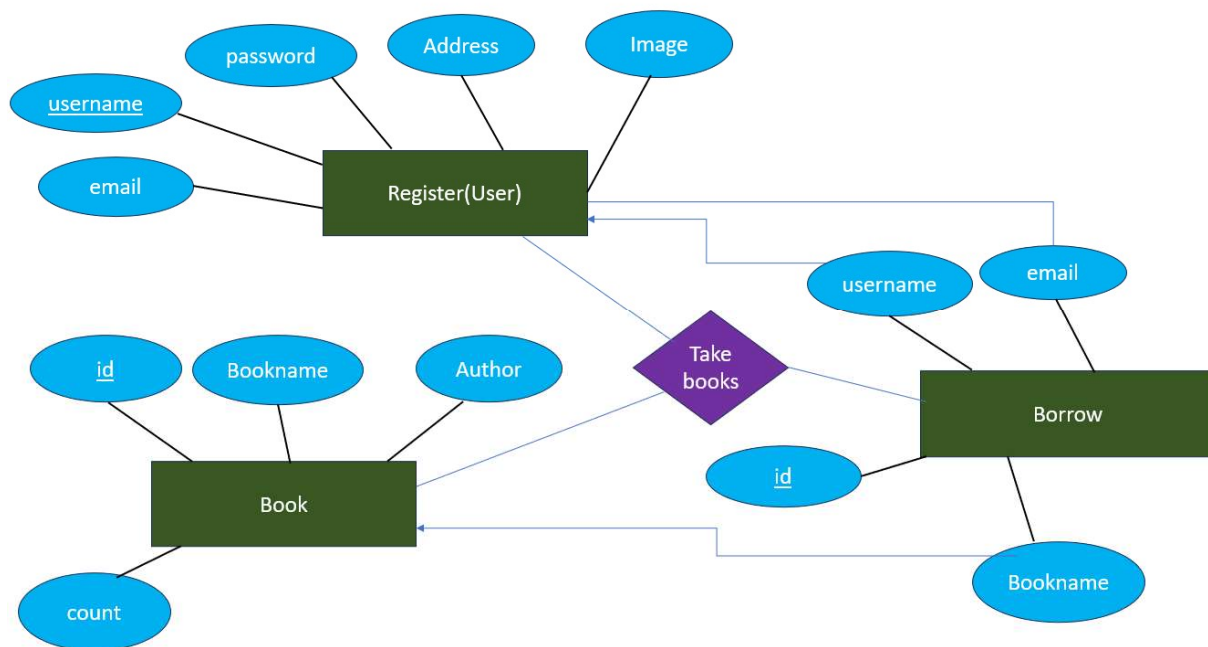
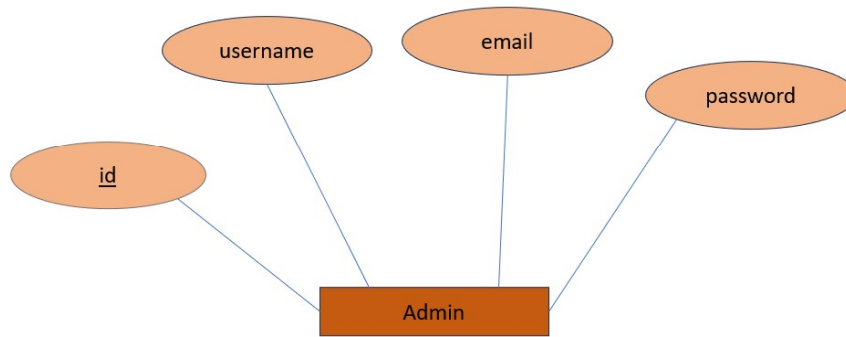
USER DASHBOARD IS THE PARENT PAGE AND HOME,TAKE BOOKS ETC ARE CHILD PAGES TO THAT.



Admins' Block

Dashboard is the parent page to the home and user and add books etc

ER Diagram of Library Management System



User Guidelines:

The user manuals and guides for our Library Website are tailored to provide users with comprehensive resources to navigate and utilize the platform effectively. These documents encompass a range of materials, catering to varying levels of user familiarity and requirements.

Quick Start Guide

The Quick Start Guide offers a concise overview of the essential functionalities and immediate actions users can take upon joining **our Library Management System RGULiB website**:

- **Account Creation:** Step-by-step instructions for registering a new account.
- **Login Process:** Guidance on how to log in to the platform using created credentials.
- **Book Selection:** How to take and return books

Comprehensive User Guide

- The Comprehensive User Guide delves deeper into the intricacies of **Library Management System** offering detailed explanations and step-by-step instructions for a broader range of features.
- For users seeking a deeper understanding of the technical underpinnings of **Library Management System**, the Technical Documentation provides insights into the system architecture, data flow, and integration of technologies like Node.js for real-time Authentication.
- The user manuals and guides are designed to cater to a diverse audience, ensuring that both newcomers and advanced users can harness the full potential of **Library Management System** while aligning with their varying levels of expertise and requirements.