EduBridge

A
PROJECT REPORT
On
Library Management System Using Rest API

By
(**Batch: 2022-7469**)

Pooja Yadav	**EBEON0522606589**
Bushra Khan	**EBEON0522606347**
Priyanka Deore	**EBEON0522601610**
Dimpal Raghuvanshi	**EBEON0522604637**
Saloni More	**EBEON0522608243**

Under the Supervision of
MS. Pooja Mehta

EduBridge

India's leading Workforce Development Platform

EduBridge

INDEX

EduBridge

ABSTRACT

Library Management System is a system which maintains the information about the books present in the library, their authors, the members of library to whom books are issued, library staff and all. This is very difficult to organize manually. maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of a Library becomes much simple. The Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations. This computerization of library helps in many instances of its maintenances. It reduces the workload of management as most of the manual work done is reduced.

Hence in the existing system for Library Management System, the performance evaluation system and the maintenance are done manually.

EduBridge

1. INTRODUCTION

A library is a collection of sources of information and similar resources , made accessible to a defined community for references and borrowing. It provides physical and digital access to material, and may be physical building or room, or a virtual space, or both. Library is collection of books, periodicals, newspapers, manuscripts, films, documents, CDs, e-books, audiobooks. databases, and other formats.
Owing to the advancement of technology, organization of a Library becomes much simple.
The Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations. This computerization of library helps in many instances of its maintenances. It reduces the workload of management as most of the manual work done is reduced.

1.1 OBJECTIVES

- The objective of library management system is to handle the entire activities of a library. This software will keeps track of all the information about the books in the library, their complete details and total number of books available in the library.
- The user will find this system very user friendly automated system rather than using the manual writing system.
- The main objective of this system is that it required less man power, it is very cost effective with capacity to handle huge amount data with ease.
- To maintain and preserve books, materials and resources with historical, cultural, social, economic and archival value, and other related materials in an organized collection to provide members of the community these materials and enriched their personal and professional lives.
- The main objective of this project is to keep track of all the information about library activities, their complete details, and total number of transactions done in the library.

EduBridge

2. Existing System

In early days, libraries were managed manually. It required lot of time to record or to retrieve the details. The employees who have to record the details must perform their job very carefully. Even a small mistake would create a lot of problems. Security of information is very less. Report generations of all the information was very tough task. Maintenance of Library catalogue and arrangement of the books to the catalogue was very complex task. In addition to its maintenance of member details, issue dates and return dates etc. manually is a complex task. All the operations must be performed in perfect manner for the maintenance of the library without any degradation which may finally result in the failure of the entire system.

EduBridge

3. PROPOSED SYSTEM

To overcome the inconveniences as mentioned in the existing system, a Library Management System is proposed.

The proposed system contains the following features:

- The students will register them through Online
- Individually each member will have his account through which he can access the information he needs.
- Book details like authors, number of copies totally maintained by library, present available number of books, reference books, non-reference books etc. all this information can be made handy.
- Regarding the members designation, number of books was issued.
- Issue dates and returns of each member is maintained separately and fine charged if there is any delay in returning the book.
- Administrator can add, update, delete the books.
- Time consuming is low, gives accurate results, reliability can be improved with the help of security.

The proposed system has divided into further modules:

3.1 User/ Member Module

This module is further divided into various sub-modules describing the user in a better way:

New User Register:

To sign up a new user to this system.

Student Login:

So as to confirm that only an authenticated user is using the project.

Search Book:

The user can search book based on book id, book name, or by author name.

Issue Book:

To help the user get the required books issued.

Return Book:

To return the book before the last date without fine, or after the specified time duration with a late fine.

3.2 Admin Module

It is to be operated by the admin with a unique id and password. The admin is the person who decides authentication and authorization for all the different users of the application.

It further can be subdivided as:

- Register user.
- Issue Book.
- Maintain books in a stack, which means record the availability at a regular time interval.

3.3 Book Module

These are the basic building block of this system as well as any library. In other words, the main purpose of any library and the cause to develop systems like this.

Book-Name:

The name of the book which is almost unique in some way.

Author Name:

The one who has written the book. As sometimes the book's series becomes more popular by the author's name rather than the book name.

Book Price:

The market value of the book is also required to maintain in the record, as sometimes it is needed to arrange and sort based on this, secondly, it is also required for compensation in case of loss or damage, as fine charges.

Book Department Name:

The name of the department in which the book is almost unique in some way.

EduBridge

4. SOFTWARE AND HARDWARE REQUIREMENTS

4.1 SOFTWARE REQUIREMENTS

- **Spring Boot**

Spring Boot is a java framework used for develop standalone application. Mostly all applications are developed by spring boot.Because it was very secure no one hack the information.Spring Boot is an opensource Java-based framework usedto create a micro Service. It is developed by Pivotal Teamand is used to build stand-alone and production ready spring applications.

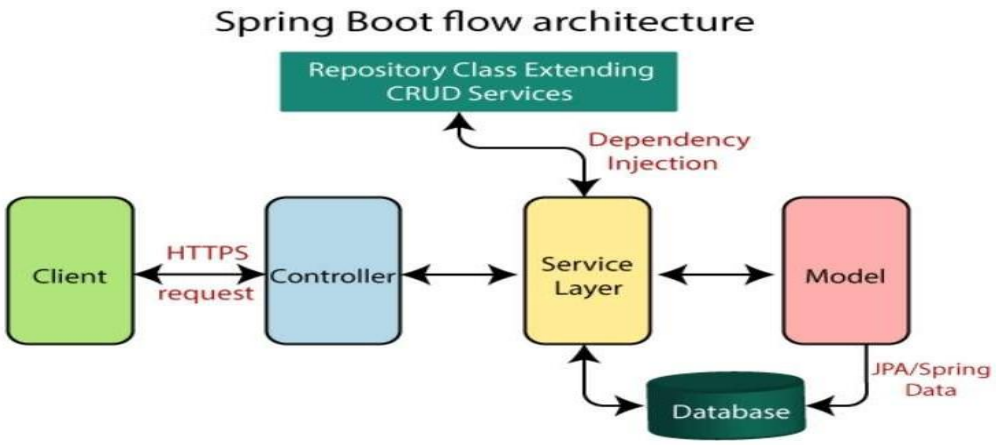


Fig. Spring Boot flow architecture.

- **HTML**

- HTML stands for Hyper Text Markup Language
- HTML is the standard markup language for creating Web pages
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.

- **CSS**

Cascading Style Sheets (CSS) is used to format the layout of a webpage.

With CSS, you can control the color, font, the size of text, the spacing between elements, how elements are positioned and laid out, what background images or background colours are to be used, different displays for different devices and screen sizes, and much more!

CSS can be added to HTML documents in 3 ways:

- **Inline** - by using the style attribute inside HTML elements
- **Internal** - by using a <style> element in the <head> section
- **External** - by using a <link> element to link to an external CSS file

4.2 HARDWARE REQUIREMENTS

- Intel core i5 2nd generation is used as a processor because it is fast than other processors an provide reliable and stable and we can run our pc for longtime. By using this processor, we can keep on developing our project without any worries.

- Ram 2 GB is used as it will provide fast reading and writing capabilities and will in turn support in processing.

EduBridge

5. ANNOTATION

- @Autowired:

Spring provides annotation-based auto-wiring by providing @Autowired annotation. It is used to auto wire spring bean on setter methods, instance variable, andconstructor. When we use @Autowired annotation, the spring container auto-wires the bean by matching data- type.

- @RequestMapping:

It is used to map the web requests. It has many optional elements like consumes, header, method, name, params, path, produces, and value.

- @RestController:

It is a convenience annotation for creating Restful controllers. It is a specialization of @Component and is autodetected through classpath scanning.

- @GetMapping:

It maps the HTTP GET requests on the specific handler method. It is used to create a web service endpoint that fetches It is used instead of using: @RequestMapping(method = RequestMethod.GET).

- @PostMapping:

It maps the HTTP POST requests on the specific handlermethod. It is used to create a web service endpoint that creates It is used instead of using: @RequestMapping(method = RequestMethod.POST)

- @PutMapping:

It maps the HTTP PUT requests on the specific handler method. It is used to create a web service endpoint that creates or updates It is used instead of using: @RequestMapping(method = RequestMethod.PUT)

- @DeleteMapping:

It maps the HTTP DELETE requests on the specific handler method. It is used to create a web service endpoint that deletes a resource. It is used instead of using:@RequestMapping(method =RequestMethod.DELETE)

- @PatchMapping:

It maps the HTTP PATCH requests on the specific handler method. It is used instead

of using: @RequestMapping(method = RequestMethod.PATCH)

- @NotNull:

It is actually, an explicit contract declaring that: A method should not return null. Variables (fields, localvariables, and parameters) cannot hold a null value.

- @SpringBootApplication:

This annotation is used to mark a configuration class thatdeclares one or more @Bean methods and also triggers auto-configuration and component scanning.

- @Id:

This annotation is inherited from javax.persistence.Id, indicating the member field below is the primary key of the current entity.

- @Generated:

The Generated annotation is used to mark source code thathas been generated.

- @ManyToOne:

This mapping means that many instances of this entity aremapped to one instance of another entity – many items inone cart.

- @ GeneratedValue:

This annotation specifies the generation strategies for thevalues of primary keys

- @ Column:

This annotation is used for Adding the column the namein the table of a particular MySQL database.

- @JoinTable:

This specifies the mapping of associations. It is applied tothe owning side of an association.

- @Service:

It is also used at class level. It tells the spring that classcontains the business logic.

- @Entity:

This annotation defines that a class can be mapped to a table. And that is it, it is just a marker, like for example Serializable interface.

- @JoinColumn:

Specifies a column for joining an entity association orelement collection.

6. UML DIAGRAM

6.1 USE CASE DIAGRAM

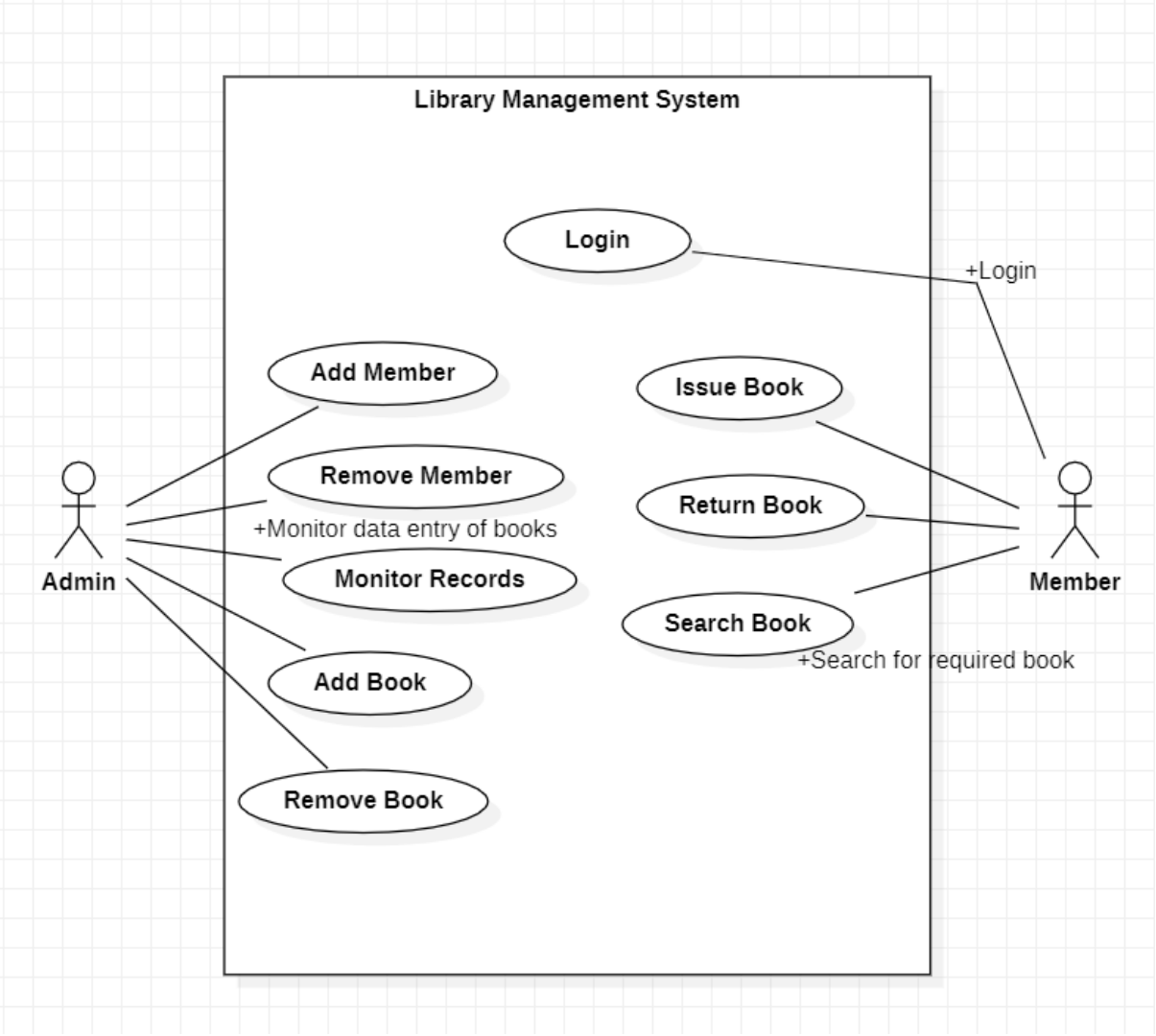


Fig.Use case diagram for Library management System

- **USECASE DESCRIPTION**
  - **LOGIN**

EduBridge

1. Brief Description:

This use case describes how an actor login into the 'Library Management System'.

2. Actors:

Admin, Member/User

3. Flow of events:

a. Basic Flow:

This use case starts when the actor wishes to log into the 'Library Management System'.
The system requests the actor to enter the username and password.
The actor enters his/her username and password.
The system validates the username and password and then the actor is logged into the system.

b. Alternative flows:

If in the basic flow, the actor enters an invalid name or password, the system displays an error message.
The actor can use to either return to the beginning of the basic flow or cancel the login at the point where use case ends.

- **ADD/REMOVE_MEMBER**

1.Brief Description:

This use case describes how an actor adds or deletes the user's record in the system.

2. Actors:

Admin

3.Flow of events:

a. Basic Flow:

This use case starts when the actor(Admin) has to add or remove users/members within the 'Library Management System'.

The actor fills the details of the member.
The member is then added to the system now the member got registered for further uses.
The actor can delete a member by filling the appropriate details.

b. Alternative flows:

If in the basic flow the actor fills wrong details while deleting a member then the system displays an error message.
The actor can either return to the beginning of the basic flow or can cancel the deletion of the member from the system.

- **ISSUE BOOK**

1. Brief Description:

This use case describes how the admin issues book when requested by the member.

2. Actors:

Admin, Member

3. Flow of events:

a. Basic Flow:

If a member wants to borrow a book it is important that the staff should login to the system.
If login is successful the admin should enter the member id to be searched.
If the member search is successful the admin should enter the book id.
If the book is available then it can be borrowed.

b. Alternative flows:
If the login fails then the admin should re- register themselves.
If the member search is unsuccessful then the staff should re-register the student.
If the book search is unsuccessful and book data is not found then admin must enter the book in requisition report.

- **RETURN BOOK**

1. Brief Description:

This use case describes how the return book procedure carried out when requested by the member.

2. Actors:

Admin, Members

3. Flow of events:

a. Basic Flow:

Member gives the book to be returned to the admin
Admin checks if the book is returned on time.
Admin update the book records.

b. Alternative flows:

In the basic flow the admin checks if the book is returned on time if it is not on the time then he/she generates slip of calculated fine.
The member submits the fine.

- **MAINTAIN MEMBER RECORD**

1. Brief Description:

This use case describes how the actor maintains the record of members which includes edit or view the member's data.

2. Actors:

Admin

3. Flow of events:

a. Basic Flow:

Staff member login to the system and selects the menu option to change the data of specific member.
Enter the name of categories that he/she want to change.
The system save the change in membership record and update previous record.
To view the record of a member the actor selects from the menu option.
LMS presents the record of members.

b. Alternative Flows

If the password is incorrect then a message is printed on the screen and admin is returned to

the beginning.
If the name of changed to be category is not among the existing categories a message is printed on the screen and the actor is returned to the menu screen.
.

- **SEARCH A BOOK**

1. Brief Description:

This use case describes how the actor can search for a particular book.

2. Actors:

Member
Admin

3. Flow of events:

a. Basic Flow:

Member or staff enters the book name or ISBN or author name and presses search
If the search is successful then that book is displayed on the screen.

- **ADD/DELETE BOOK**

1. Brief Description:

This use case describes how the actor adds or removes the books.

2. Actors:

Admin

3. Flow of events:

a. Basic flow:

The admin login to the system.
If login is successful then to add a book the admin must search for the book.
If the book is not found then it is checked in the requisition list.
If the book is not currently available and is part of the requisition list it can be

added to the book database.
To remove a book it is again searched in the library system.
If it is found it should be checked in borrower record.
If it is not in the borrowed list it can be removed.

- **MAINTAIN BOOK RECORD**

1. Brief Description:

This use case describes how the actor maintains the book record in the database of the system which includes added, issued or returned books record

2. Actors:

Admin

3. Flow of events:

a. Basic flow:

The admin selects the menu option to add record of different books. He/ She enters the name , Author's name, edition etc. or he/she can use a barcode.
To enter the record of issued book the admin goes to menu option.

LMS presents the menu for maintaining the issued books record which contains two options
a. Add issued books record
b. Edit issued books record.

6.2 E-R DIAGRAM

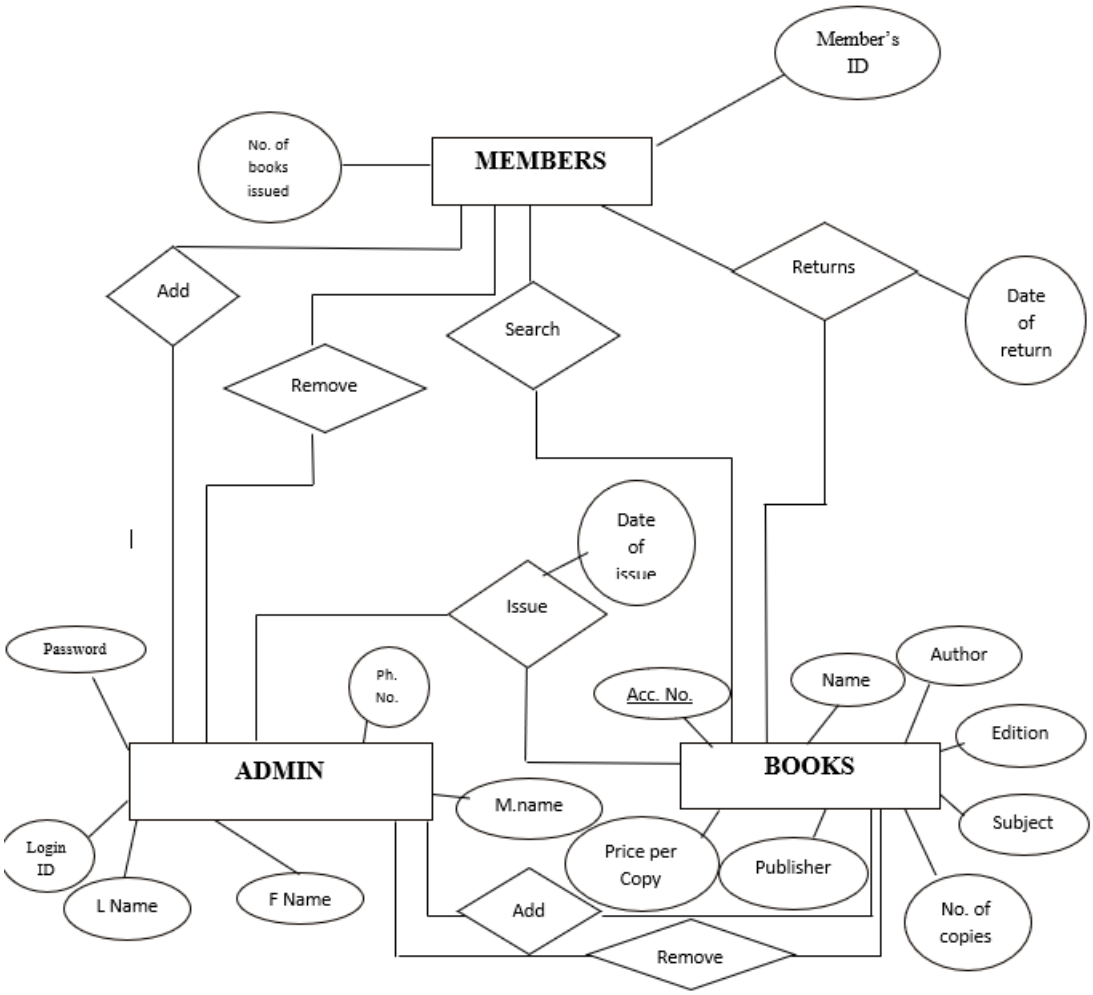
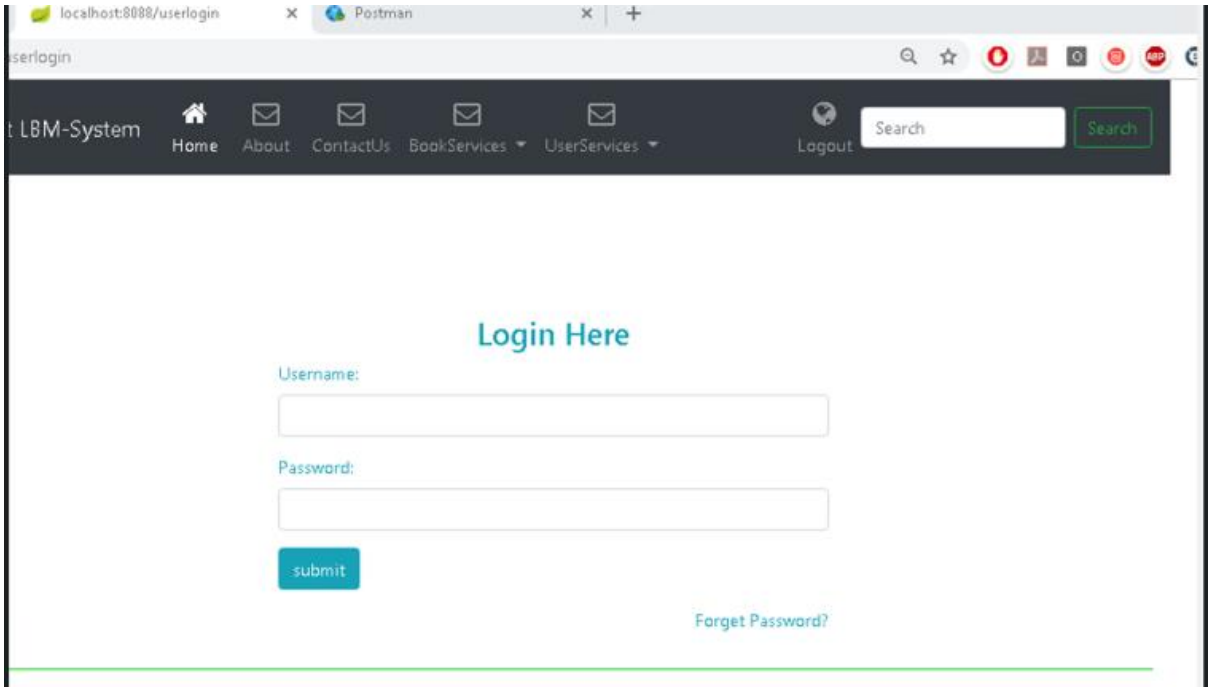
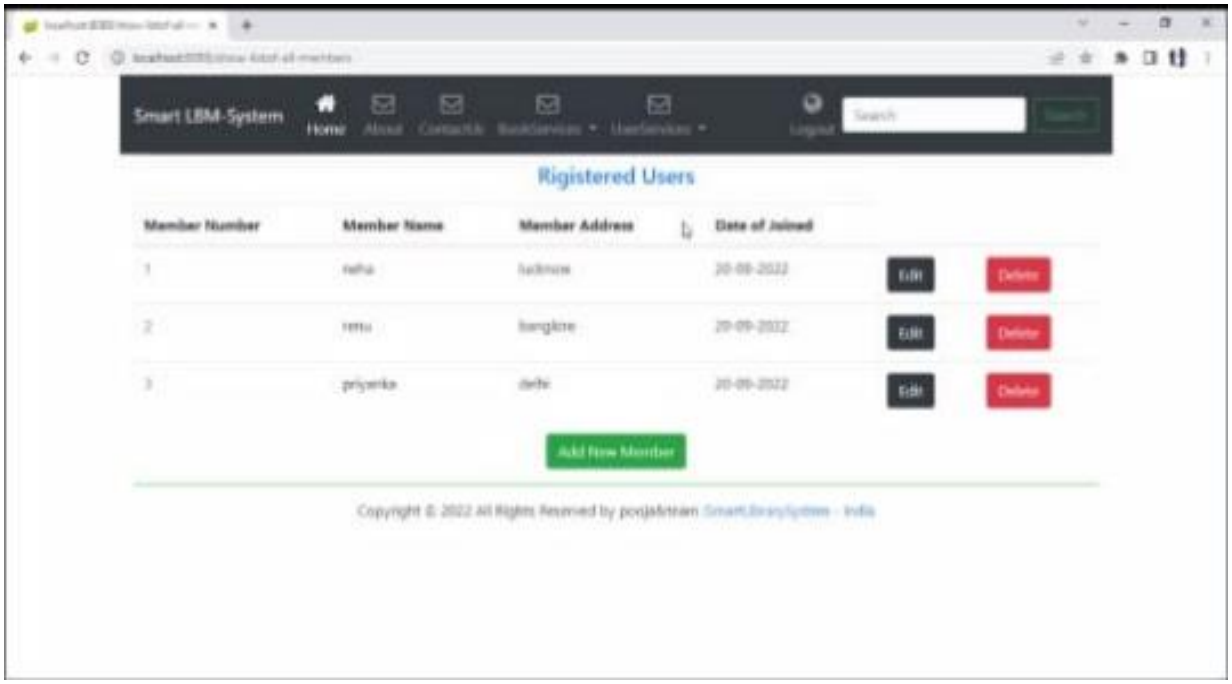


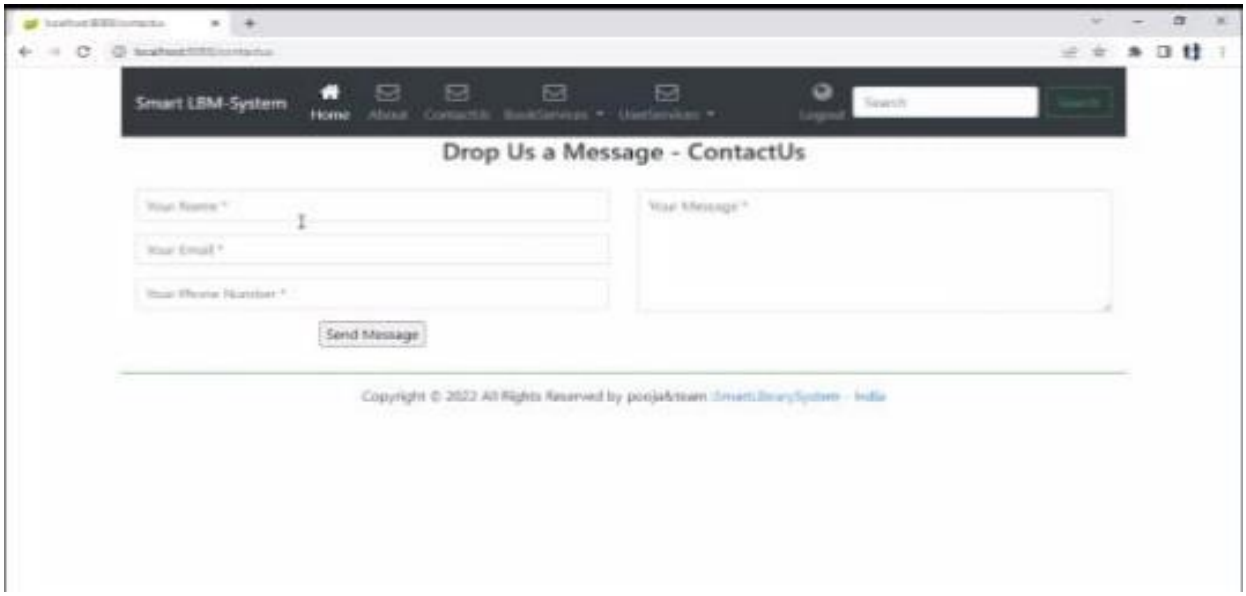
Fig. E-R Diagram for Library Management System

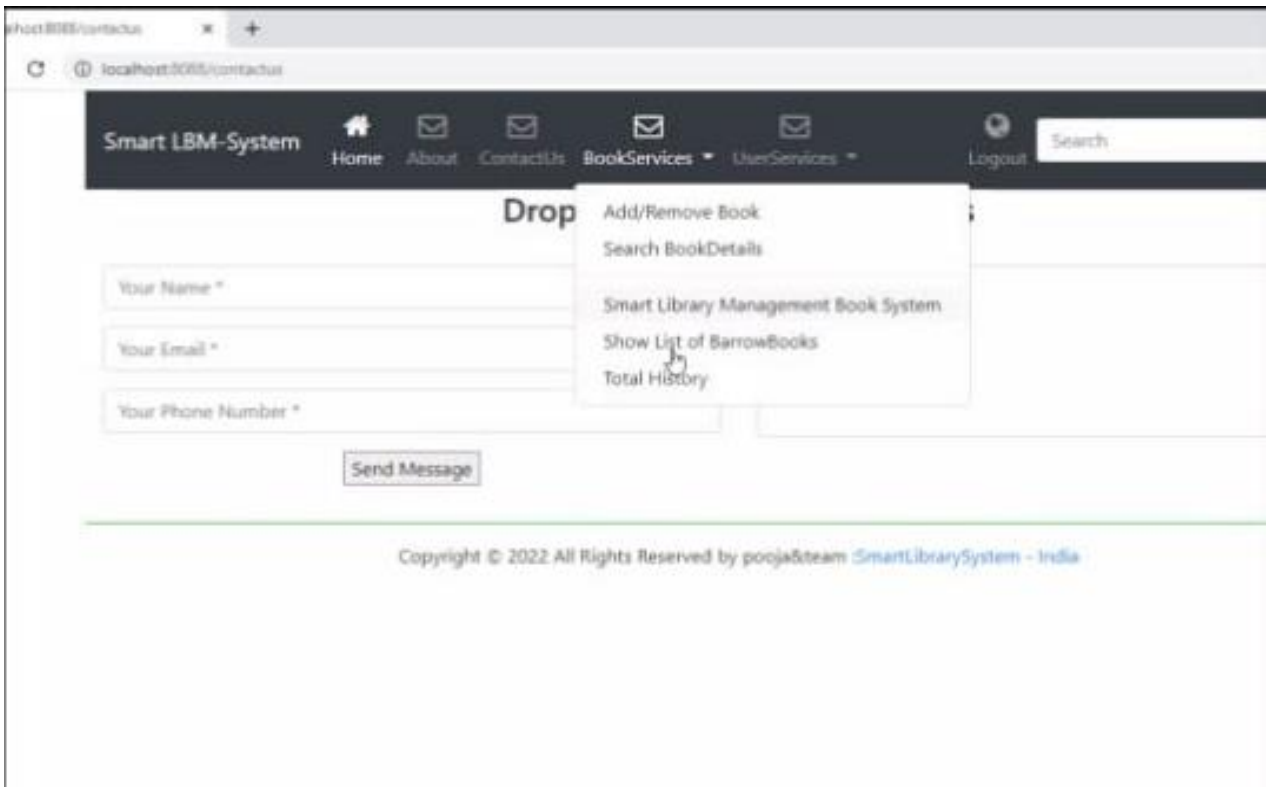
7. IMPLEMEMTATION



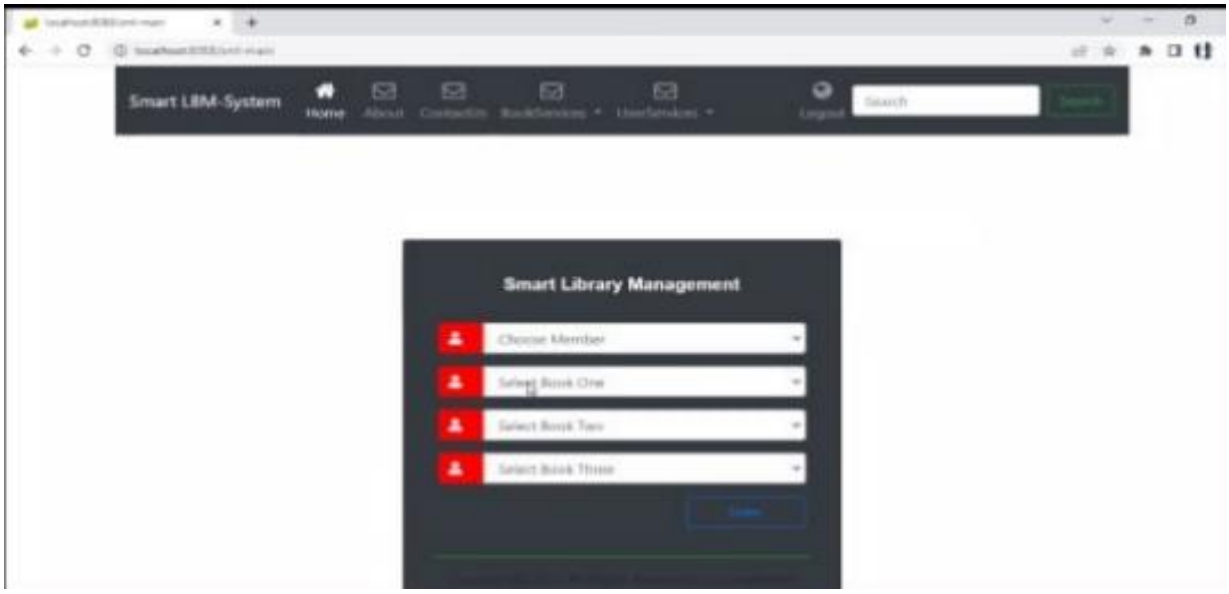


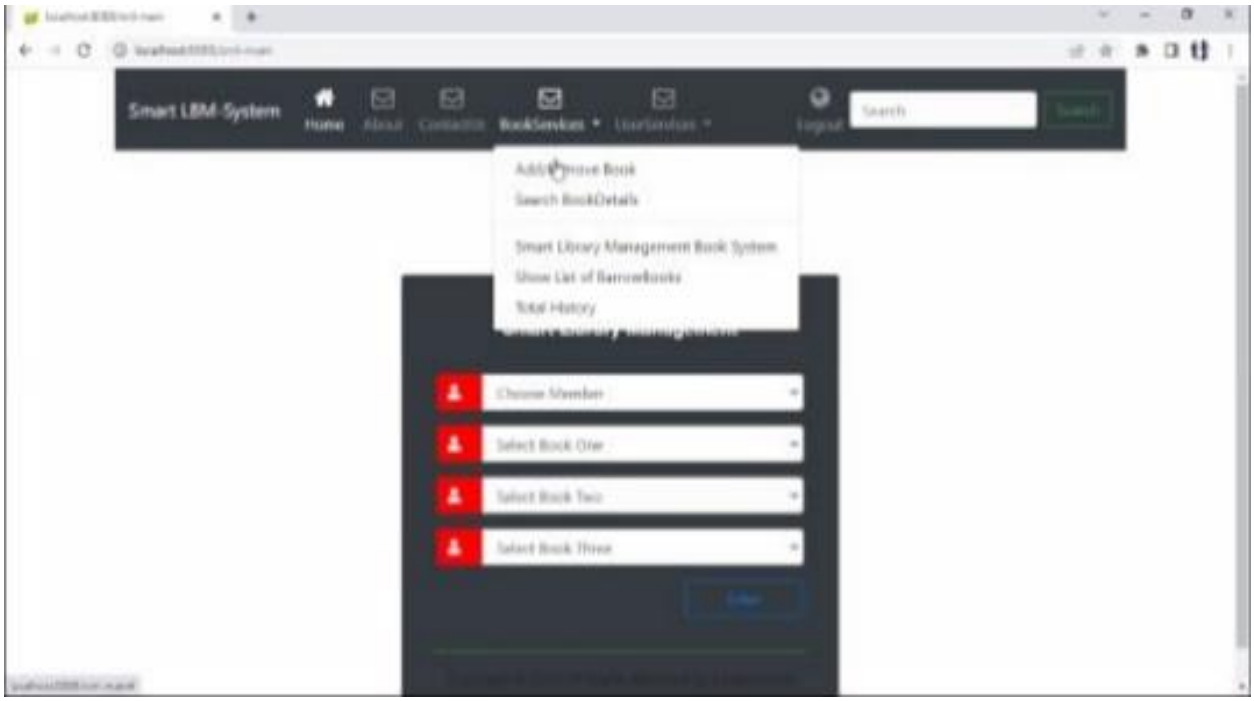
EduBridge


Smart LBM-System
Home
Drop Us a Message - ContactUs
Send Message

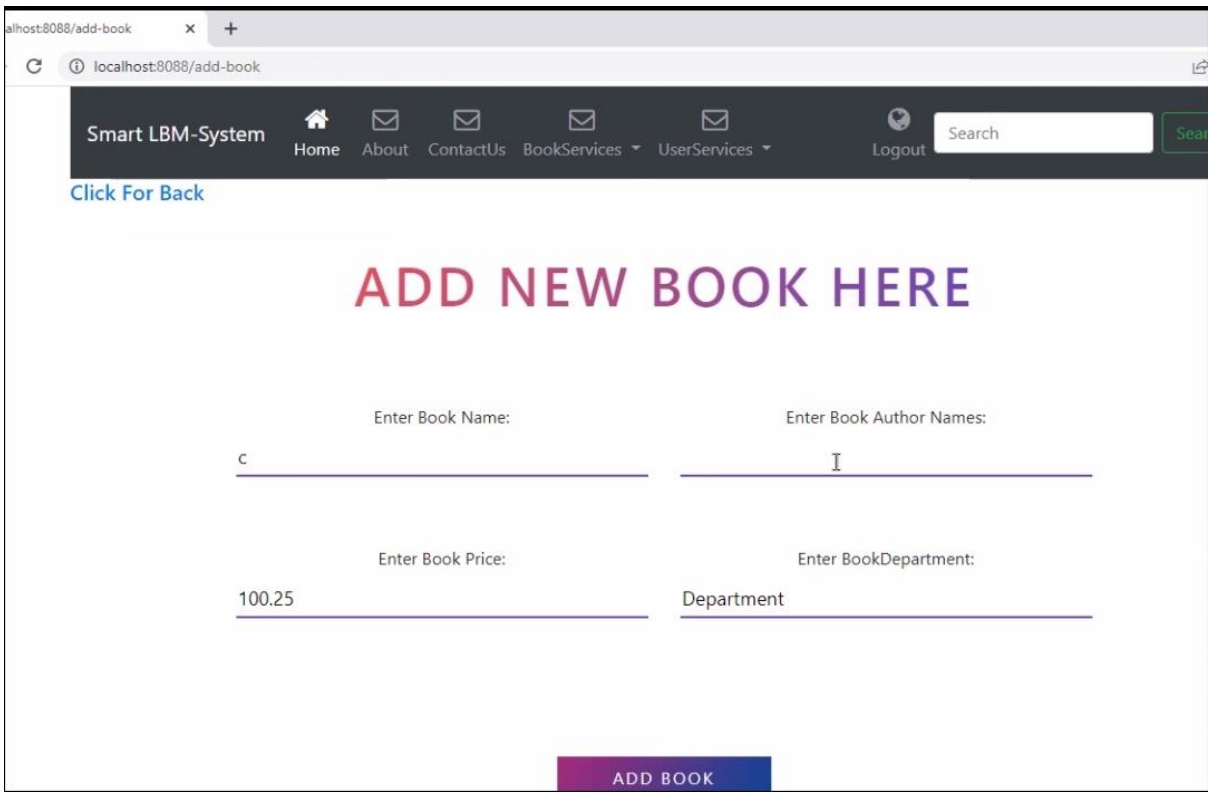

Smart LBM-System
Home
About
ContactUs
BookServices
UserServices
Logout
Search
Add/Remove Book
Search BookDetails
Smart Library Management Book System
Show List of BarrowBooks
Total History
Your Name *
Your Email *
Your Phone Number *
Send Message
Copyright © 2022 All Rights Reserved by poojaSteam SmartLibrarySystem - India

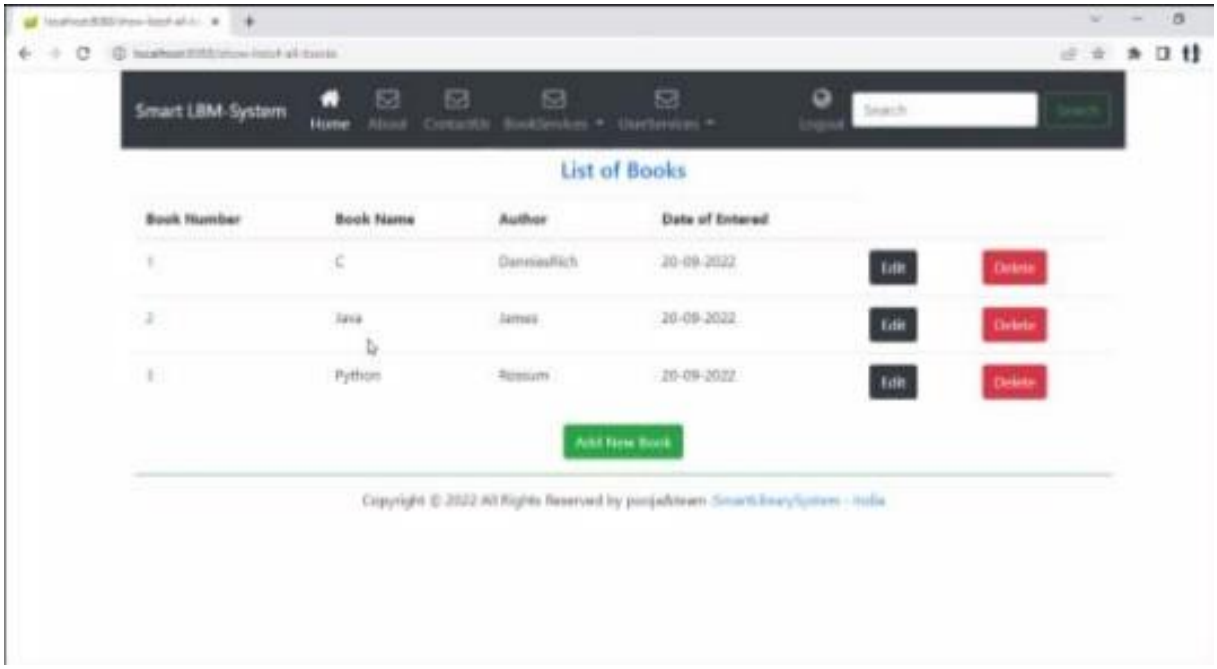
EduBridge


Smart LBM-System
Home
About
Smart Library Management

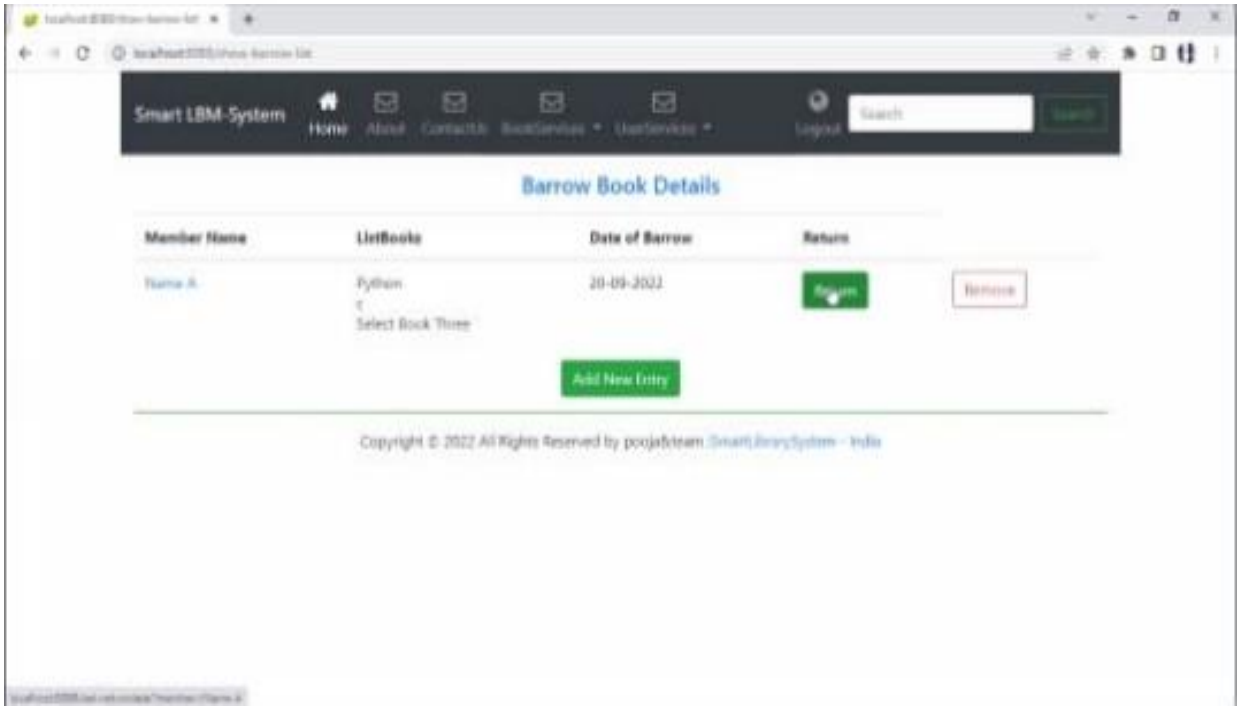

Smart LBM-System
Home
About
Smart Library Management Book System
Show List of BarrowBooks
Total History

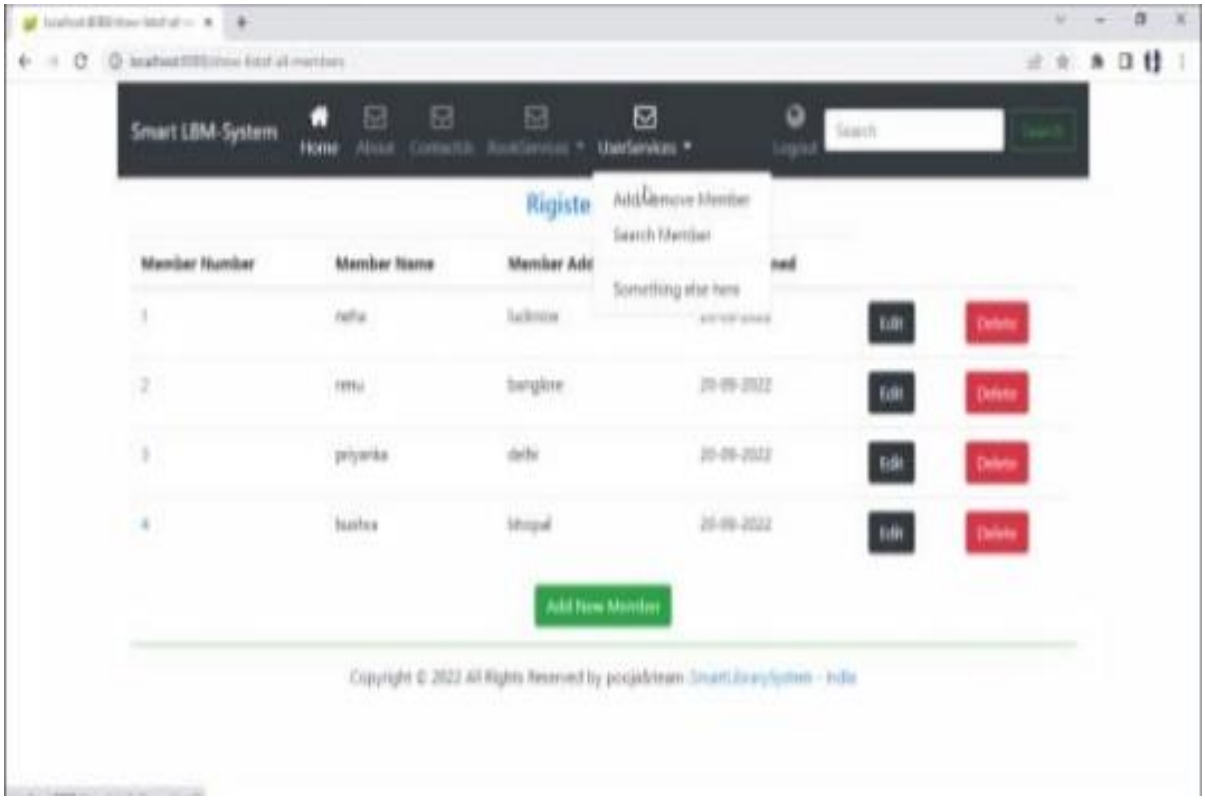
EduBridge

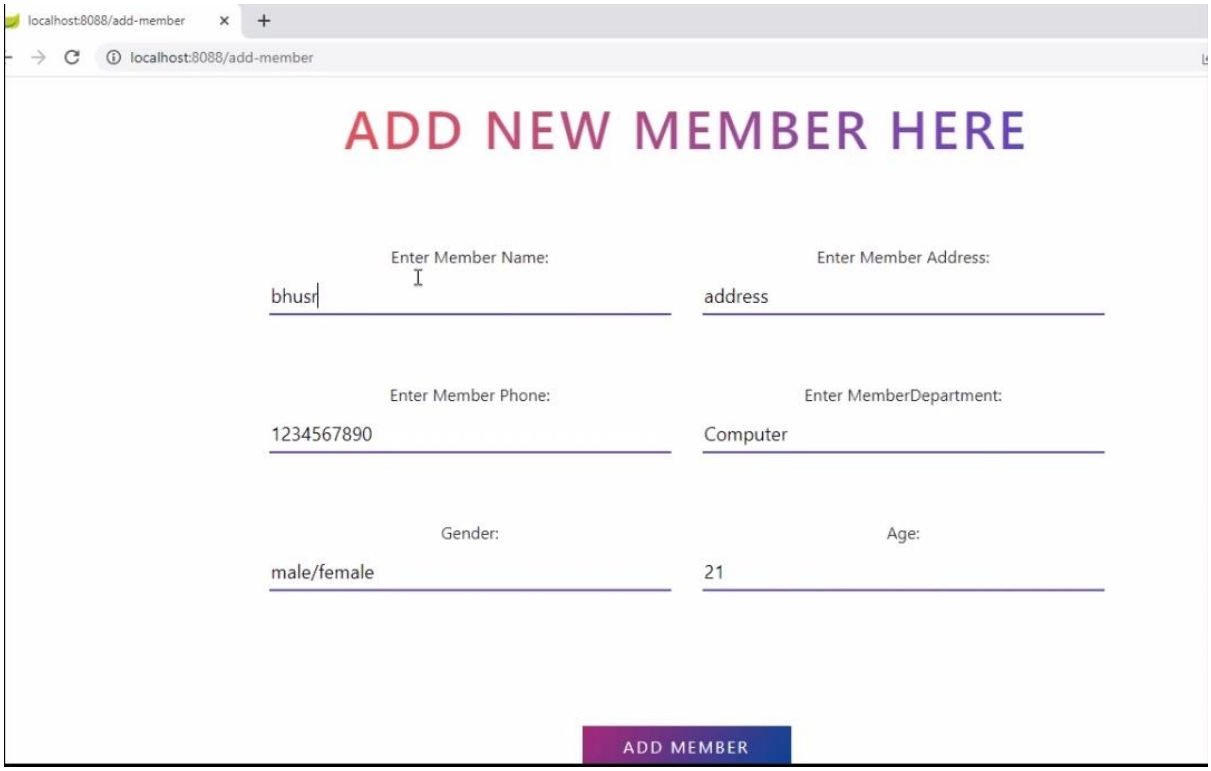

localhost:8088/add-book
Smart LBM-System
Home
About
ContactUs
BookServices
UserServices
Logout
Search
Click For Back
ADD NEW BOOK HERE
Enter Book Name:
C
Enter Book Author Names:
Enter Book Price:
100.25
Enter BookDepartment:
Department
ADD BOOK

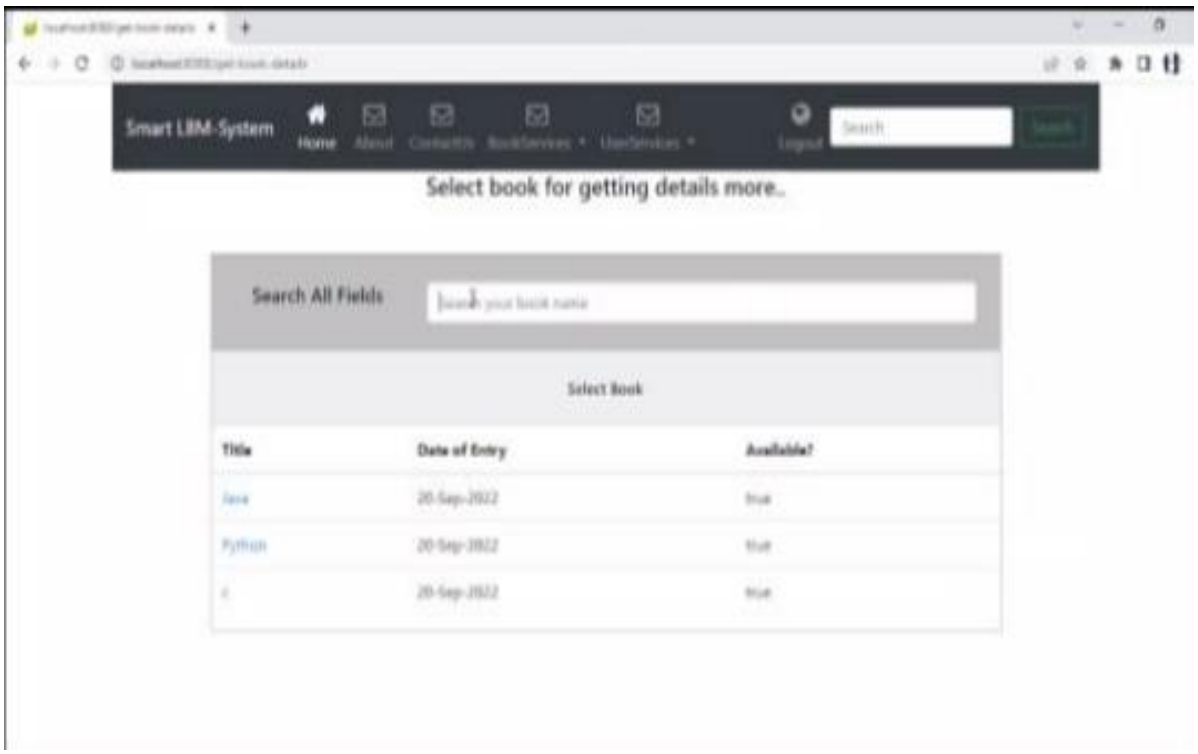

Smart LBM-System
Home
List of Books
Book Number
Book Name
Author
Date of Entered
C
Java
Python
20-09-2022
Edit
Delete

EduBridge

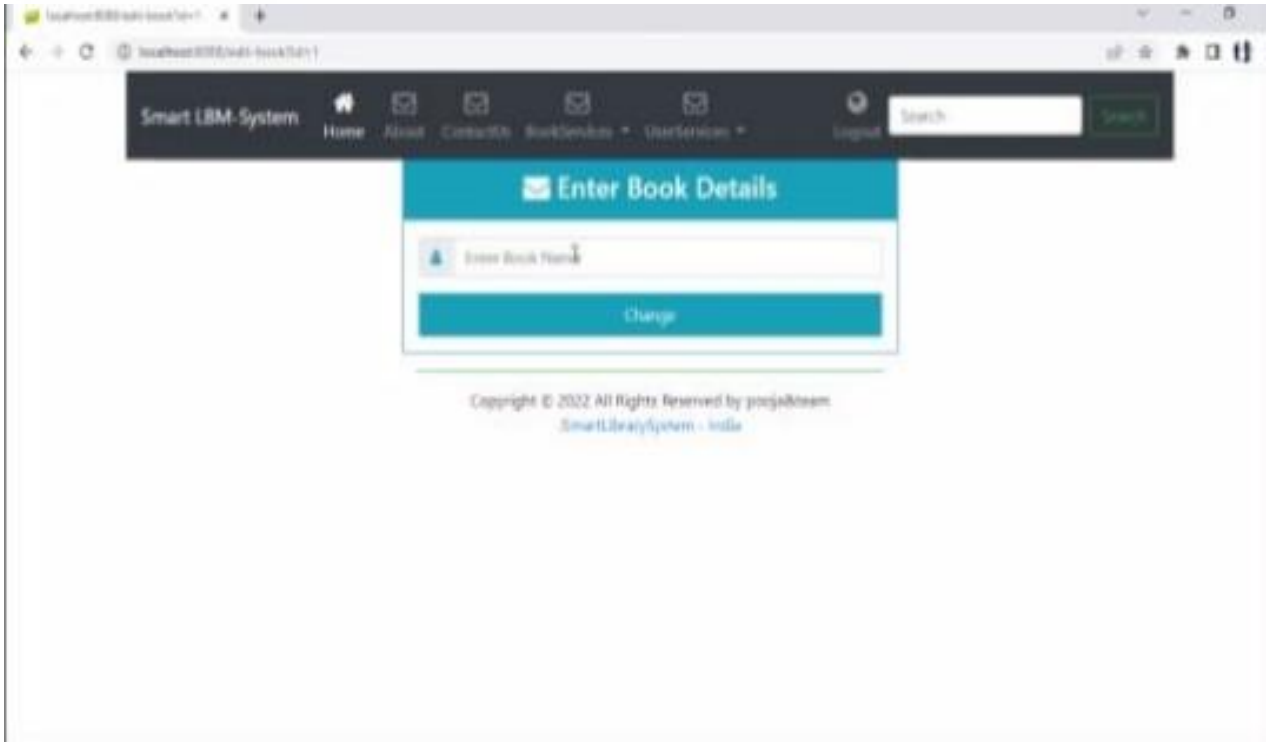

Smart LBM-System
Home
Barrow Book Details
Member Name
ListBooks
Date of Barrow
Return
Add New Entry


Smart LBM-System
Home
UserServices
Search Member
Member Number
Member Name
Edit
Delete
Add New Member


localhost:8088/add-member
localhost:8088/add-member
ADD NEW MEMBER HERE
Enter Member Name:
bhusr
Enter Member Address:
address
Enter Member Phone:
1234567890
Enter MemberDepartment:
Computer
Gender:
male/female
Age:
21
ADD MEMBER


Smart LBM-System
Home
Select book for getting details more..
Search All Fields
Select Book
Title
Date of Entry
Available?

EduBridge



CONCLUSION

This project provides a computerized version of library management system which will benefit the students as well as the staff of the library. It makes entire process online where user can search books, admin can generate reports and do book transactions. It also has a facility for user login where user/member can login and can see status of books issued as well request for book or give some suggestions.

FUTURE SCOPE

There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility , a feature Of group chat where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfills each users need in the best way possible

EduBridge

REFERENCES

- http://www.w3schools.com/html/html_intro.asp
- http://www.w3schools.com/js/js_datatypes.asp