Library Management system

Purpose

- Library management systems also involve maintaining the database for entering new books and recording books that have been borrowed with their respective due dates.

- The site helps the student save time to search for the book he wants. If it exists, he will reserve it through the site instead of going to the library and searching for and that will save him time and effort
- Library management systems also involve maintaining the database for entering new books and recording books that have been borrowed with their respective due dates.
- We will use Recommendation system seeks to predict the rating or preference a user would give to an

item given his old item ratings or preferences.

- **Recommender System** refers to a **system** that is capable of predicting the future preference of a set of items for a user, and recommend the top items. One key reason why we need a **recommender system** in modern society is that people have too much options to use from due to the prevalence of Internet.

Product Scope

The objectives of this project are:

- To offer a web application service which can assist the reader to find a book which may user login to site to find it.

- The software keeps track of all information about the books and their complete details.

- The system contains database where all the information will be stored safely.

-arrange, organized and preserve the information.

languages

-the application will run on all browsers, in addition to MYSQL as database , laravel as development framework .

Overall Description

- Product Functions:

Login: *enables user to login our website.*

Register: *user/admin can register by his personal detail.*

Search: *enables user to search for certain books.*

Book: *enables user to book a book for borrow.*

Delete: *enables admin to delete book or .category*

Add: *enables admin for add book or category.*

Borrow: *enables admin to complete user' booking*

For borrow.

User Classes and Characteristics:

User: anyone interested in reading.

Can be **faculty's** student, teaching staff members, or employees.

Librarian: person that manage website (admin).

Operating Environment:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows 8
- Windows 10

Stakeholders

Stakeholder	Category	Responsibility
The University	Principal	Ensure the library provides sufficient facilities for education and research
Librarian, Deputy librarian	Actor	Responsible for library system, media services, acquisition, cataloguing, video unit, counter services
System manager	Actor	Ensure system works properly; respond to problems. Communicate with the system supplier
Cataloguing librarian	Actor	Maintain catalogue enquiry facility OPAC
Senior technician	Actor	Manage the video/media unit of the library
Acquisition manager	Actor	Order new books for library
Library administrator	Actor	Manage finance and resources
Principal technician	Actor	Manage media services
Senior tutor librarian	Actor	Provide consultation, teaching, and liaison with schools, assess books for purchasing
Library assistant, information service assistant	Actor	Issue and renew library items, and deal with queries and inter-library loan requests
Library user (University staff, student, library member from other organisations)	Client	Use facilities offered by the library including borrowing library materials, inter-library loan, photocopy, fax, reservation and renewal of library materials.

Design and Implementation Constraints:

- Student user: can’t borrow more than 3 books.

- Teaching staff members' user: can’t borrow more than 5 books.

- Employee user: can’t borrow more than 2 books.

-User can renew the borrowing process for one time only.

-the maximum duration of borrow for student is a 7 days.

-the maximum duration of borrow for Teaching staff members is a 14 days.

-the maximum duration of borrow for Employee is a 14 days.

-user can't borrow the book if number of book's copies doesn't allow.

-user can't borrow :

- References in general: such as: dictionaries, manuals, knowledge.
- University messages except for Teaching staff members and for only 2 days.
- Audio-visual materials and CDs
- Scientific sessions
- Single-copy books
- United Nations Publications.

-user can’t book a book without login.

-website is developed in laravel framework , using visual studio code IDE ,bootstrap 4 Libraries and MYSQL database.

User Documentation:

for Register in website

The user enters data :

-first name

-last name

-username

-user E-mail

-user password

-confirm password

The application verify the E-mail to valid E-mail by sending unique code in verified message.

-user enter the code as input

- For login to website

The user enters data

-his E-mail

-his Password

Application check from DB e-mail and password entered.

- For Search about book

-user enter his prefer book name

-select the book

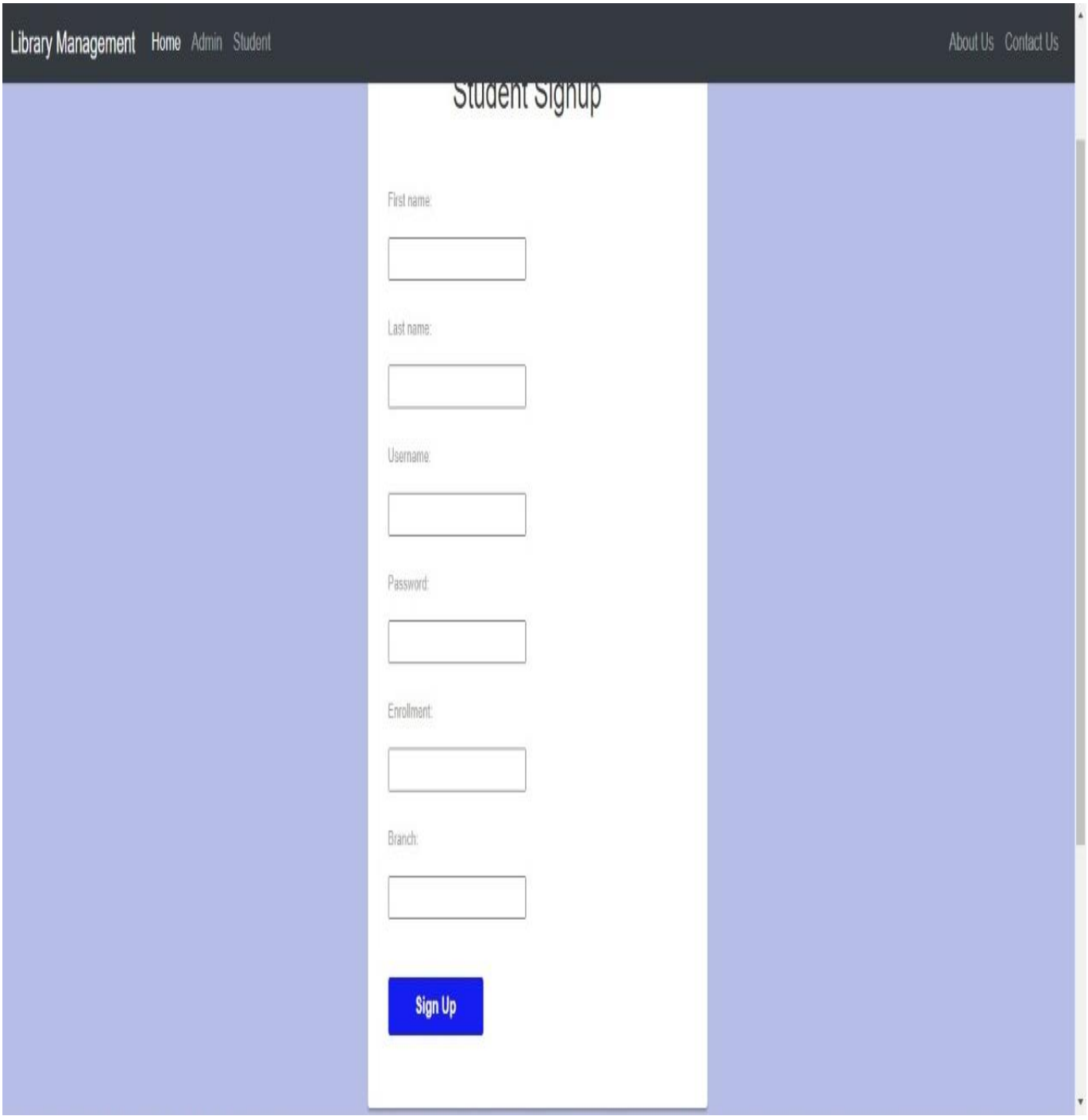
- The user can borrow book by press Book button.

External Interface Requirements

User Interfaces:

Register

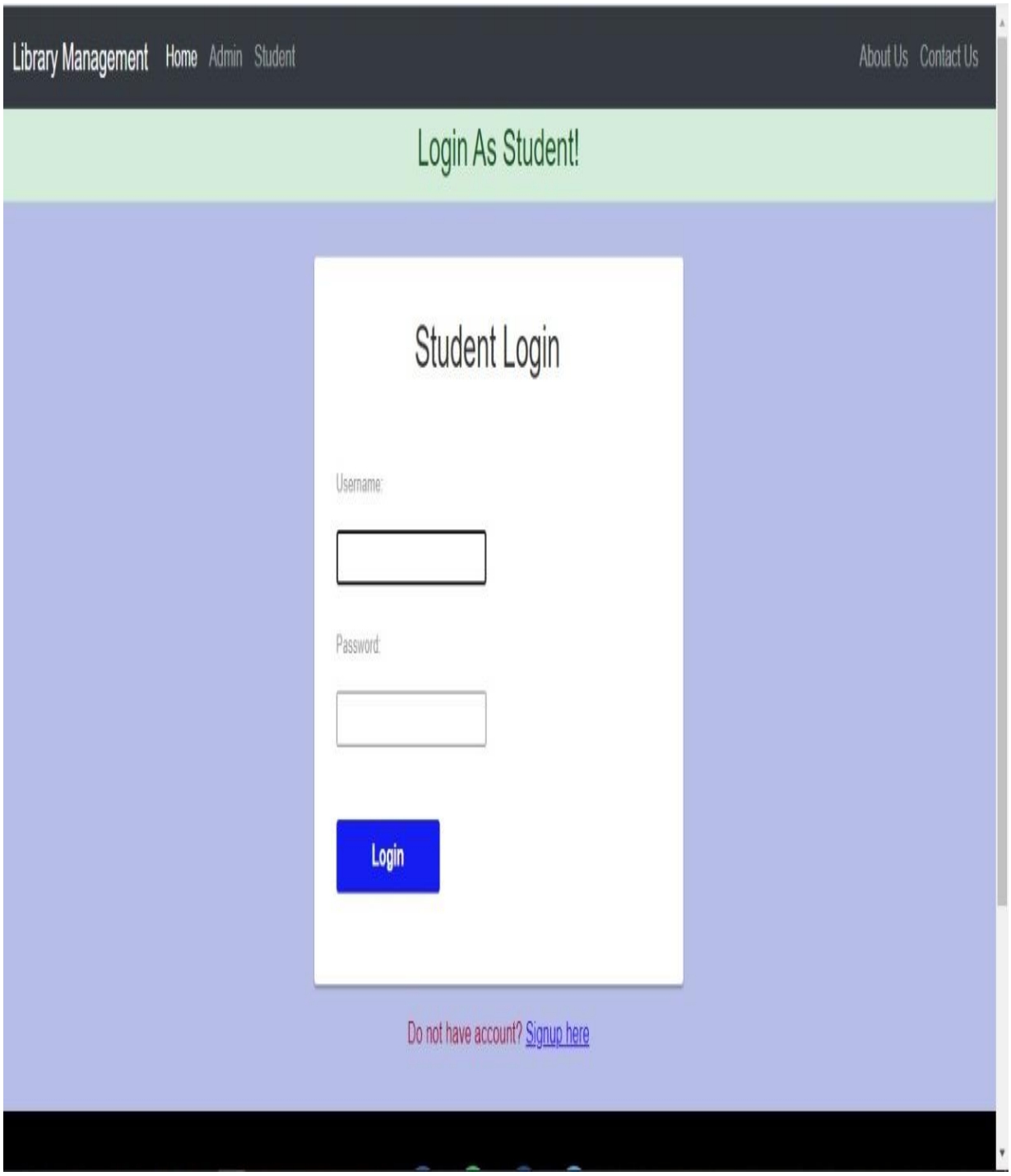
-student register



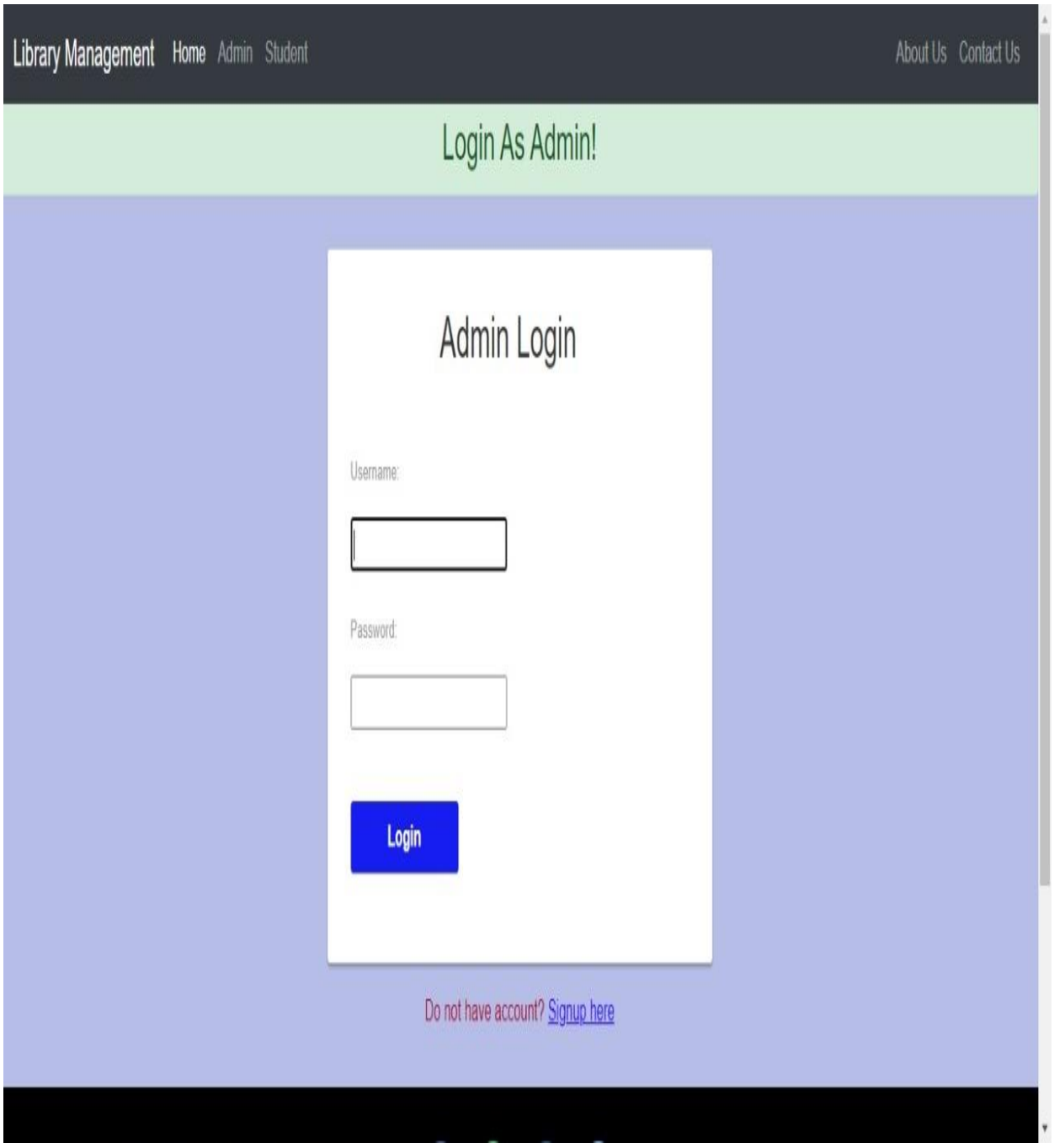
-Admin register

Login

-student login



-Admin login


Library Management
Home
Admin
Student
About Us
Contact Us
Login As Admin!
Admin Login
Username:
Password:
Login
Do not have account? Signup here

-Home page

Library Management Home Admin Student About Us Contact Us

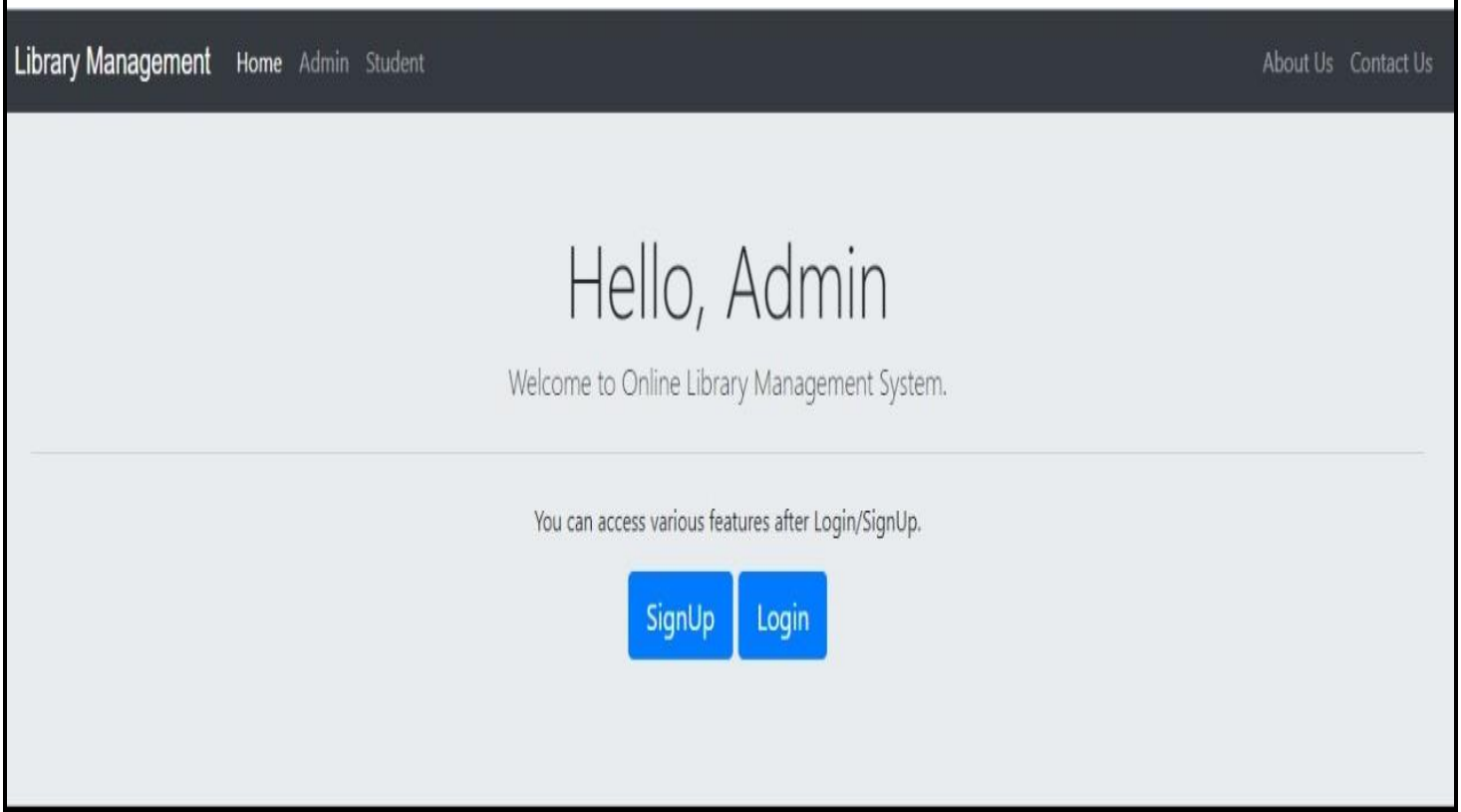
Hello, Reader!

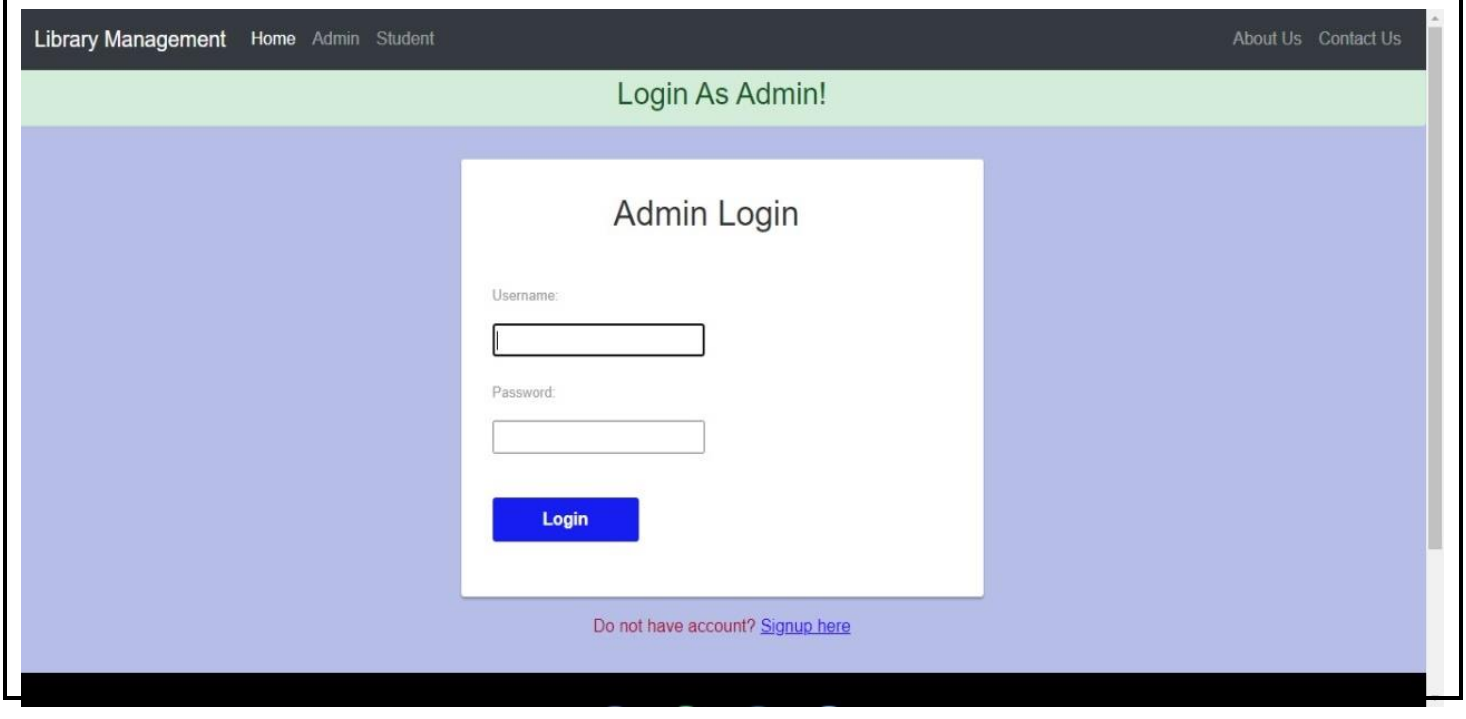
A service dedicated to Admin and Student. We provide online resources, professional support and guidance to all our students whenever, and from wherever they have chosen to study.

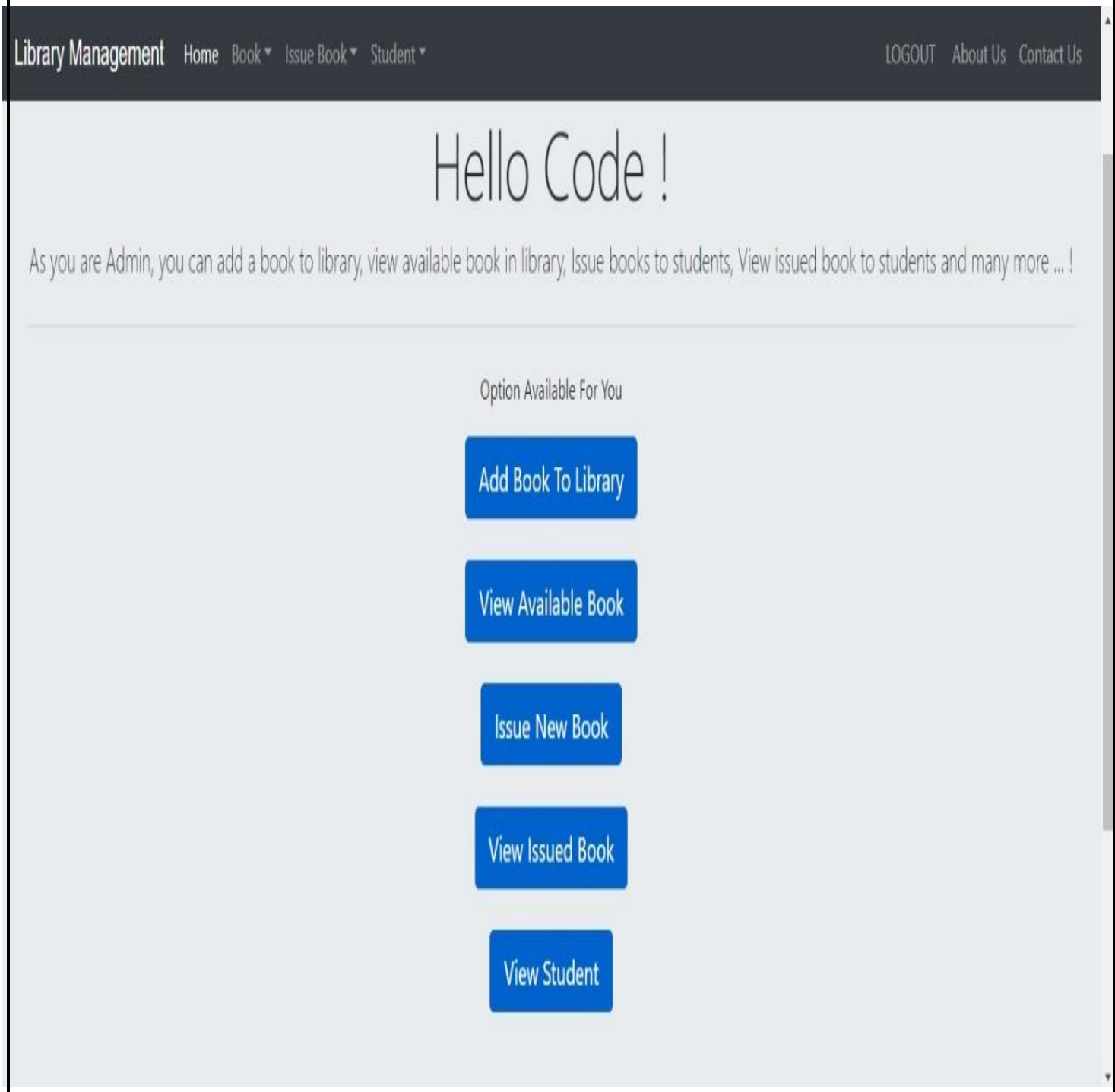
Admin

Student

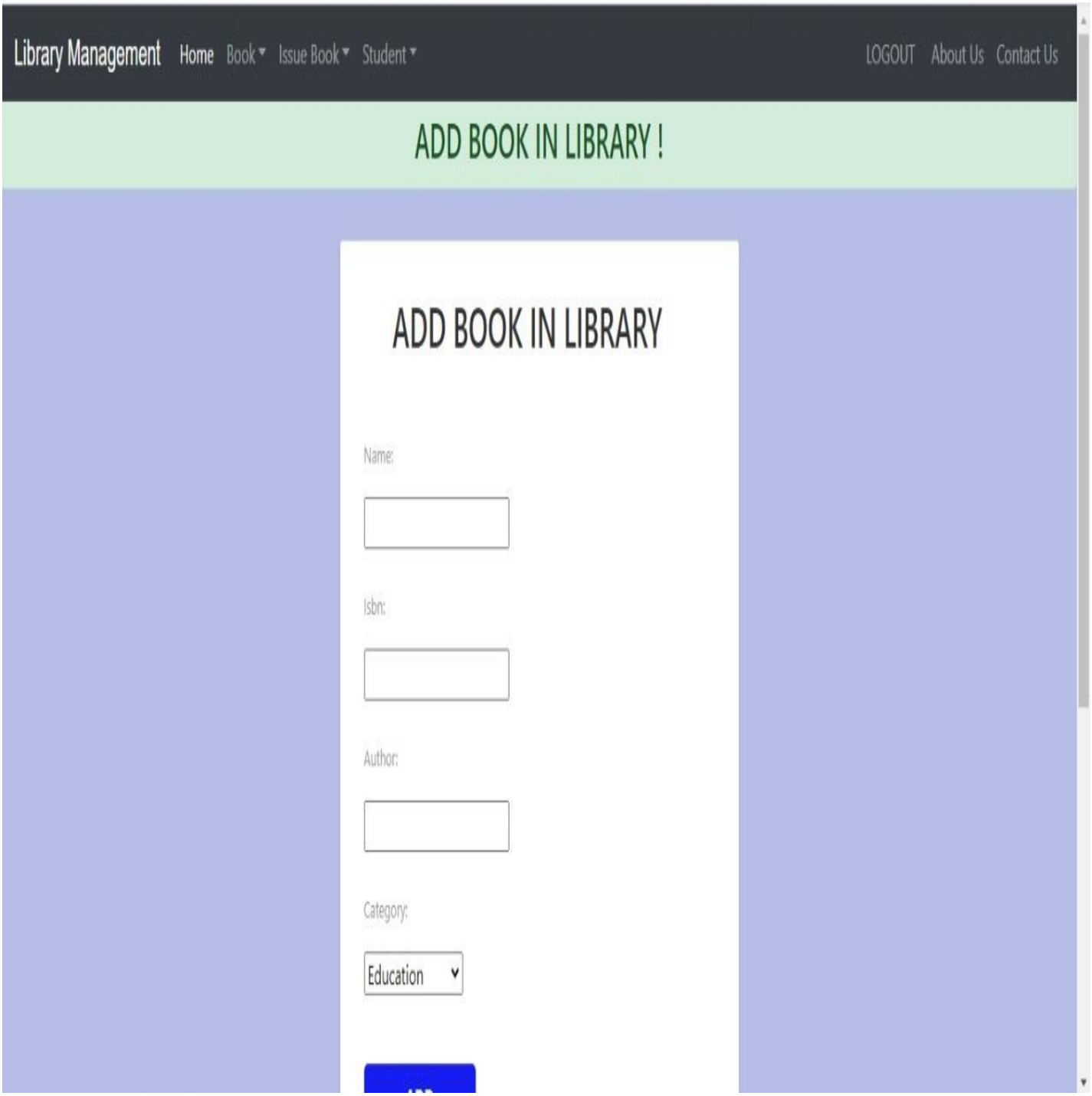
-Admin pages


Library Management
Home
Admin
Student
About Us
Contact Us
Hello, Admin
Welcome to Online Library Management System.
You can access various features after Login/SignUp.
SignUp
Login

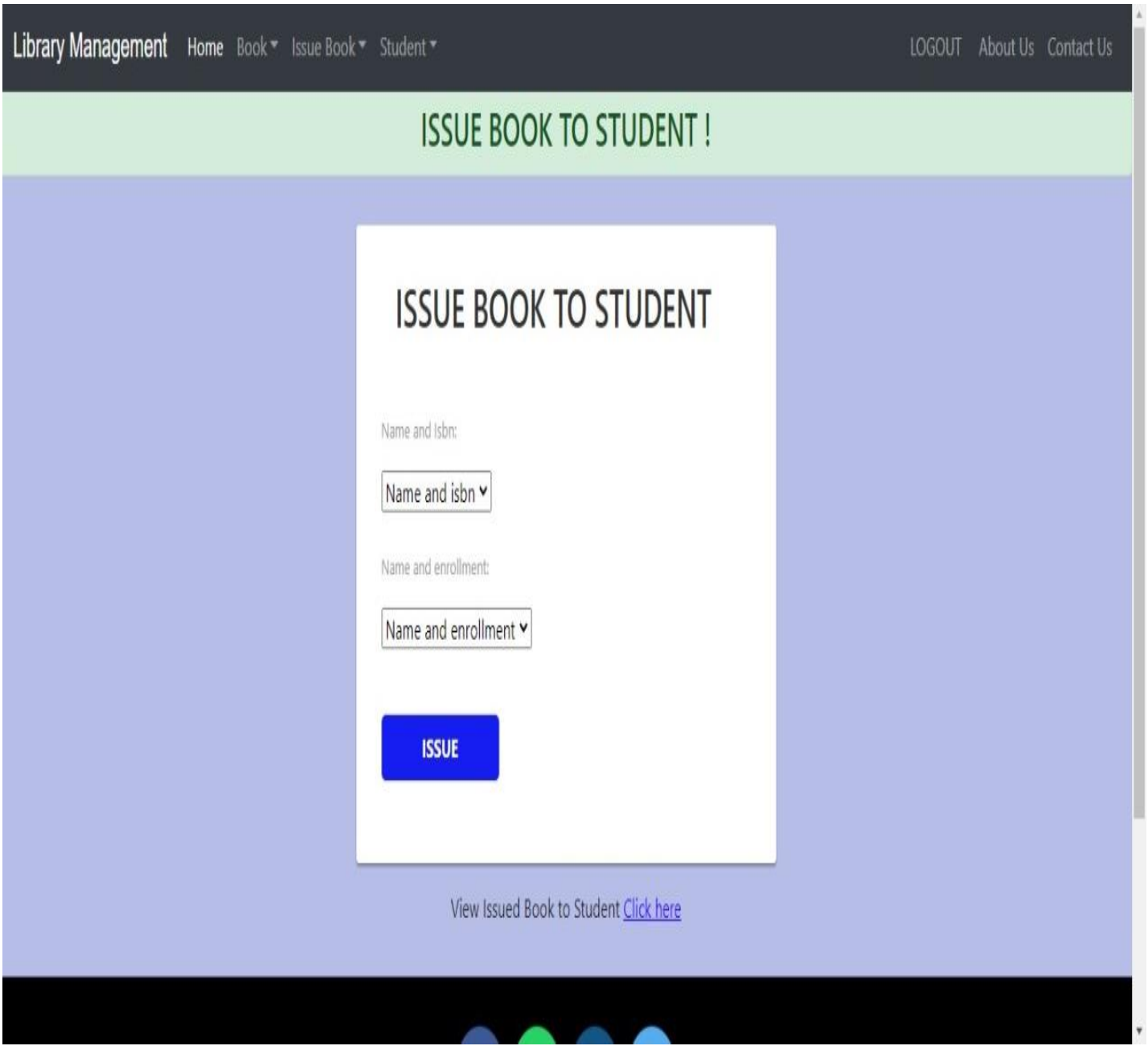

Library Management
Home
Admin
Student
About Us
Contact Us
Login As Admin!
Admin Login
Username:
Password:
Login
Do not have account? Signup here


Library Management
Home
Book
Issue Book
Student
LOGOUT
About Us
Contact Us
Hello Code !
As you are Admin, you can add a book to library, view available book in library, Issue books to students, View issued book to students and many more ... !
Option Available For You
Add Book To Library
View Available Book
Issue New Book
View Issued Book
View Student

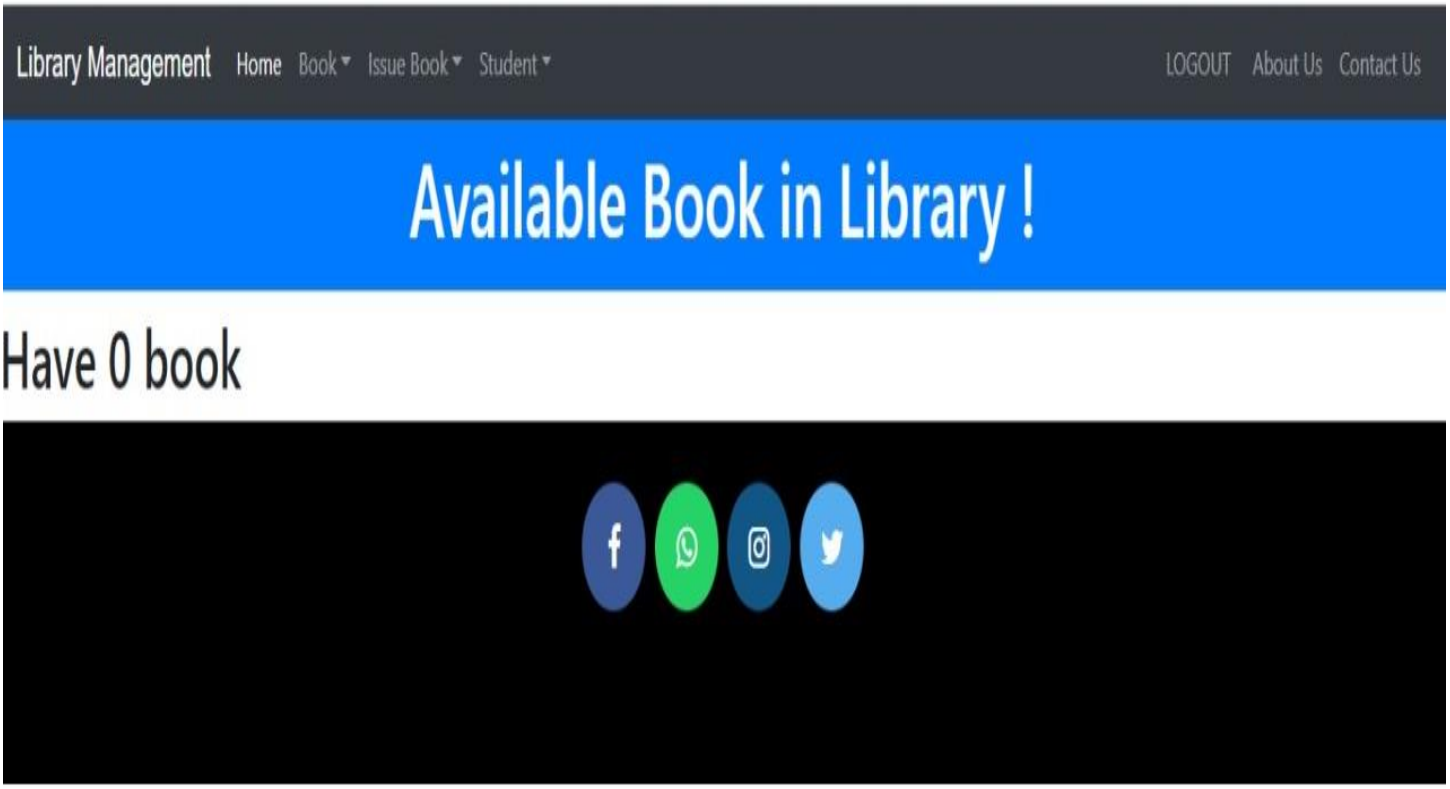
-ADD BOOK


Library Management
Home
Book
Issue Book
Student
LOGOUT
About Us
Contact Us
ADD BOOK IN LIBRARY !
ADD BOOK IN LIBRARY
Name:
Isbn:
Author:
Category:
Education

-ISSU BOOK


Library Management
Home
Book
Issue Book
Student
LOGOUT
About Us
Contact Us
ISSUE BOOK TO STUDENT !
ISSUE BOOK TO STUDENT
Name and Isbn:
Name and isbn
Name and enrollment:
Name and enrollment
ISSUE
View Issued Book to Student Click here

-AVAILABLE BOOKS



System Feature

Requirements:

-Functional Requirements

I. user requirements

-user can register with his personal details.

-user can log in system after his register

-user can select his category from(student ,education staff member, employee)

- User searches for certain book.

-user select the book that he searched about.

-user can borrow a book.

-user can give his rating for his books.

-user can request book in waiting list.

-admin receive user’s order .

-admin check user’s order .

-admin can add a book.

-admin can delete a book.

- admin can update book’s details.

-admin can review book.

-admin can check waiting list.

II. System requirements

- The system should record following user details into member
database: Name, Email, Password, Address.

- The system shall send verification message to email.

- The system should verify the user email & password against the
member database when logging in.

- After login, user should be directed to Home screen.

- The system should enable User to check for availability of a book by search for it.

- The system should enable user to issue a book.
- the system should display all information about books.

-the system enable user to give his rating for books.

-the system send notifications to user for his order in waiting list .

-the system should display recommendation list for user that logged in system.

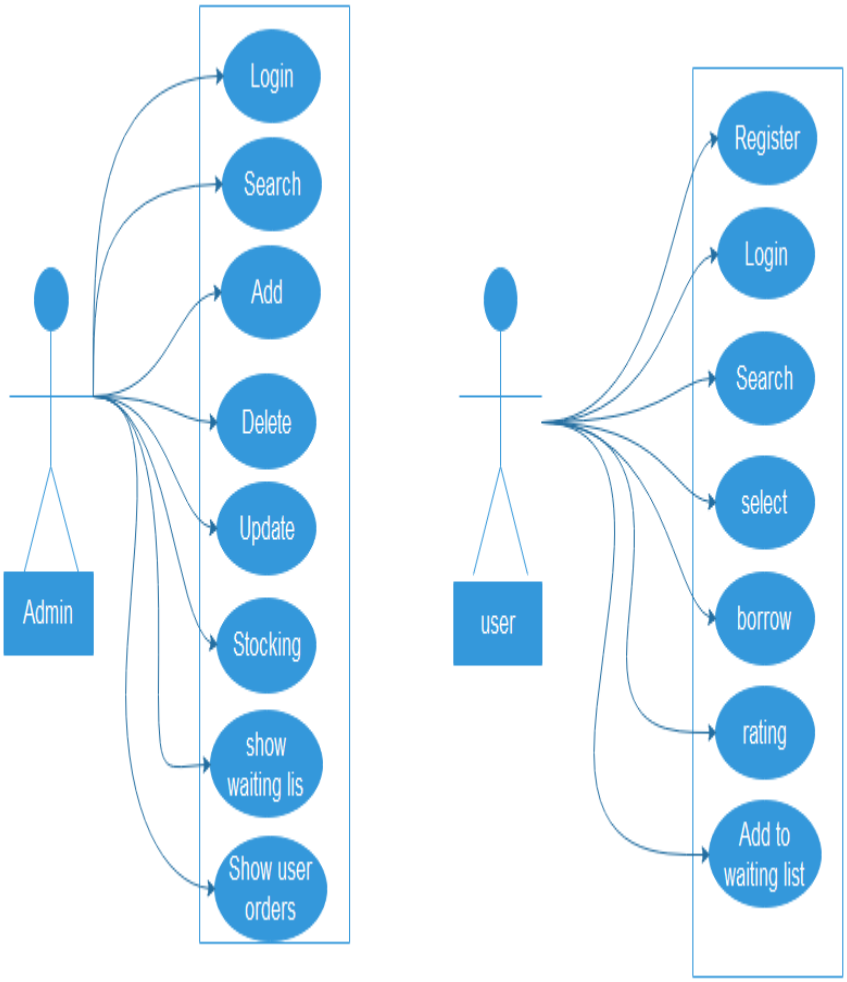
Use Case

Function	**Login.**
Description	The user enters authorized username and password in order to access the system.
Inputs	Required information from the user.
Source	user , admin
Outputs	User logged in.
Destination	Database Record.
Action	1. The user opens the 'login' page. 2. The system will display a 'login' form that accepts username and password from the user. 3. The user enters the username and password on the form. 4. The user clicks the login button. 5. The system searches the username from the database and matches it with the password. 6. If correct the system opens the authorized page. 7. If the username and password are incorrect go to step 2, 3, 4 and 5 of the basic courses of action.
Requirements	None.
Pre-condition	The user should have username and password.
Post-condition	Log in records is stored in data report.

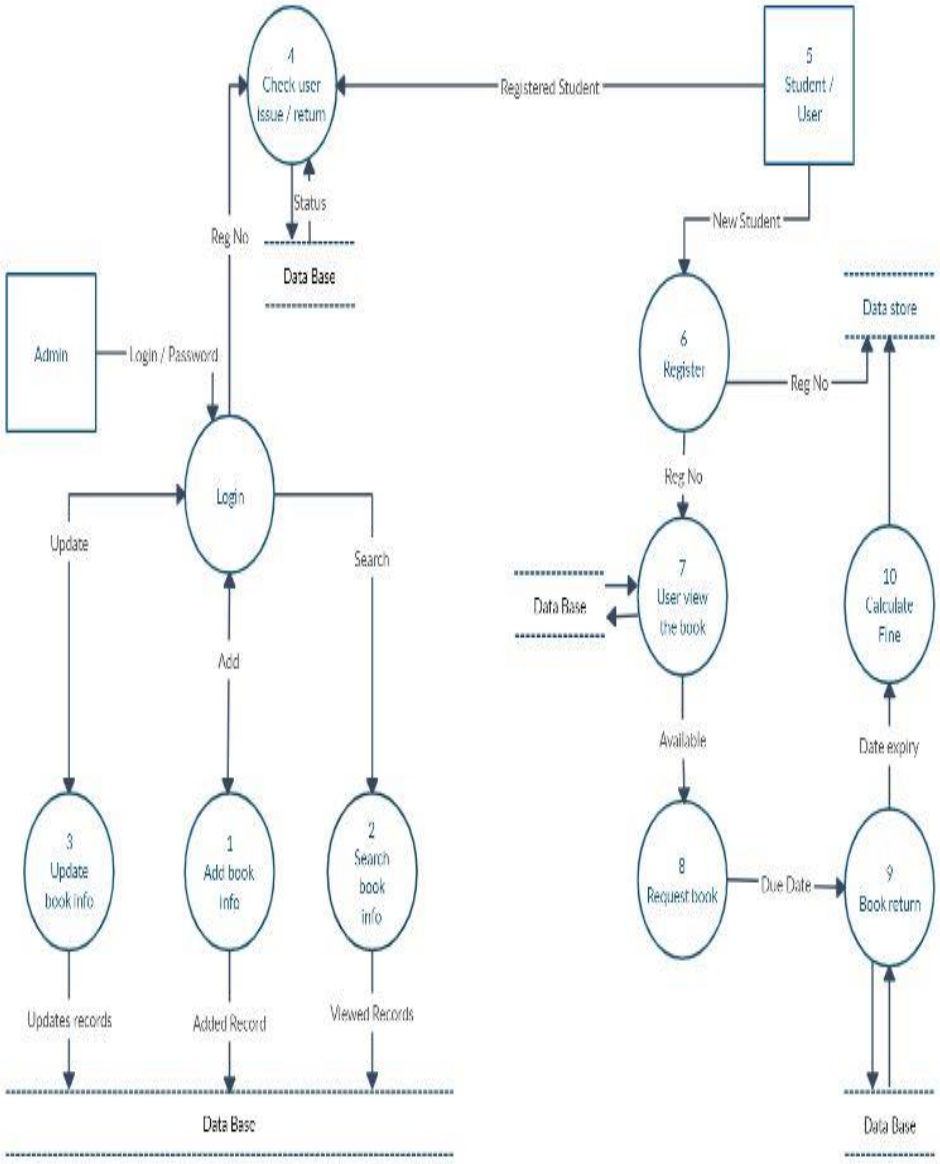
Function	**Logout.**
Description	When the user logouts when he/she wants to exit from the system.
Inputs	None
Source	user , admin
Outputs	User logged out.
Destination	Database Record.
Action	1. The user clicks the logout button. 2. The system will display the login form for the user.
Requirements	None.
Pre-condition	The user should login first.
Post-condition	Logout records is stored in data report.

Function	**update a Book**
Description	The Admin update a book .
Inputs	-book name
Source	Admin.
Outputs	The book has been updated, And the database successfully updated.
Destination	Database Record.
Action	1. The admin opens the update a book page. 2. The user clicks 'update' button. 3. The system will display a update form that contain the following: (Book name, author name....). 4. admin fills the form. 5. Admin click update button. 6. The system checks all the form fields have filled out. 7. If the form filled correctly the system display successfully updated message. 8. If the form is not filled correctly go back to step 3, 4, 5 and 6 of basic course of action.
Requirements	None.
Pre-condition	There should be a book to be updated.
Post-condition	updated record is updated in database.

Use case diagram

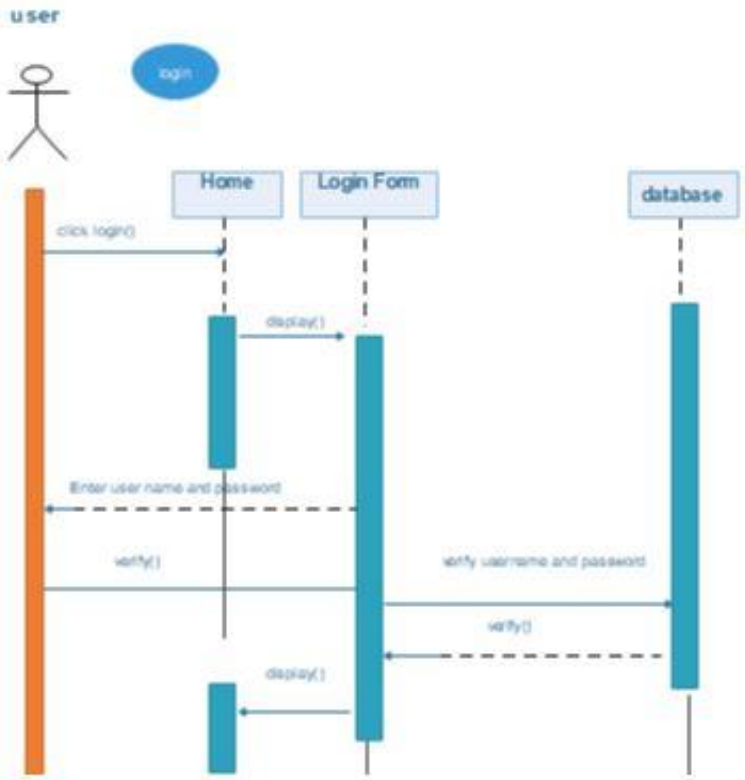


data flow Diagram

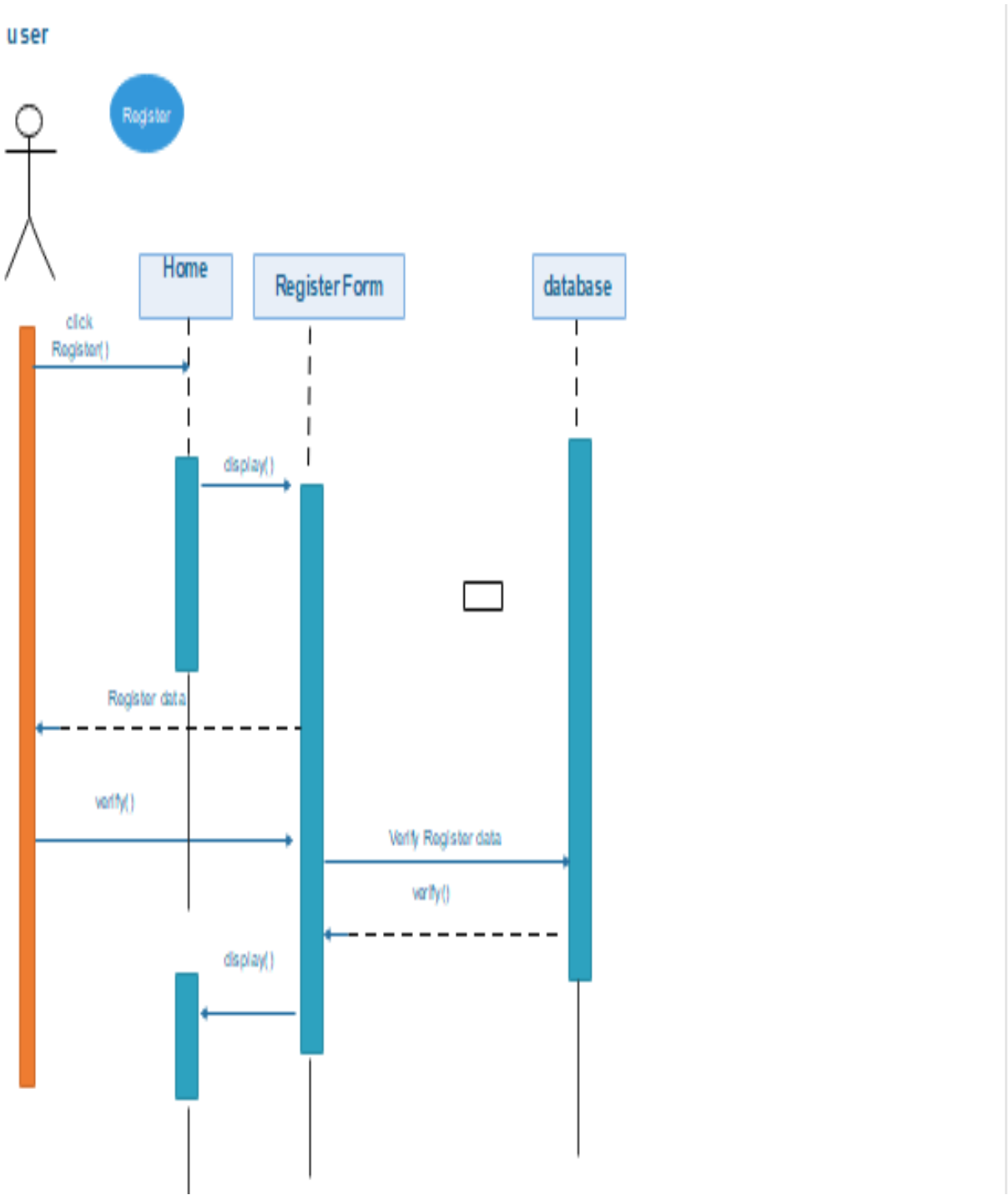


Sequence diagram

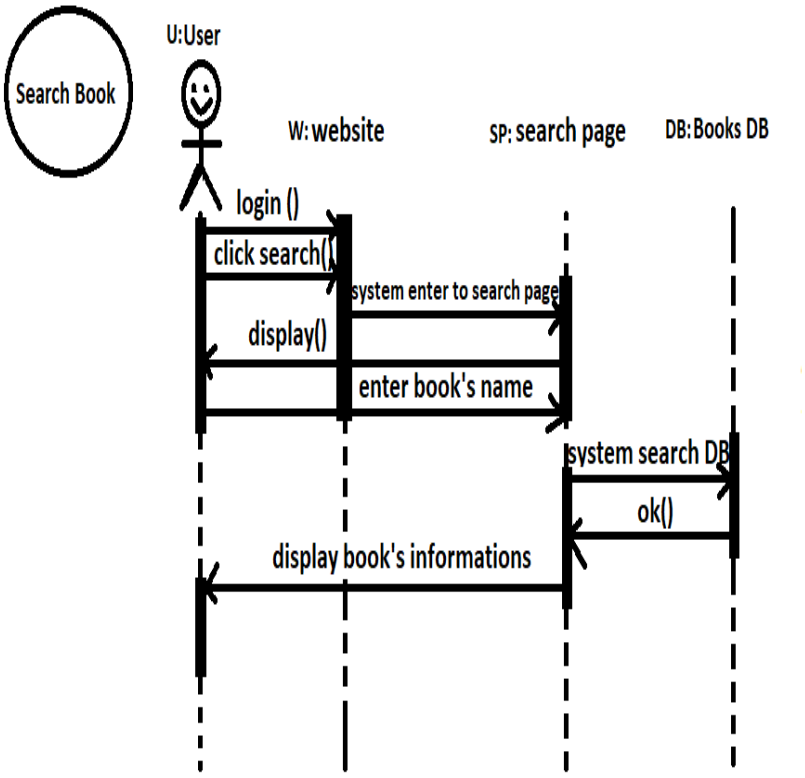
-Login



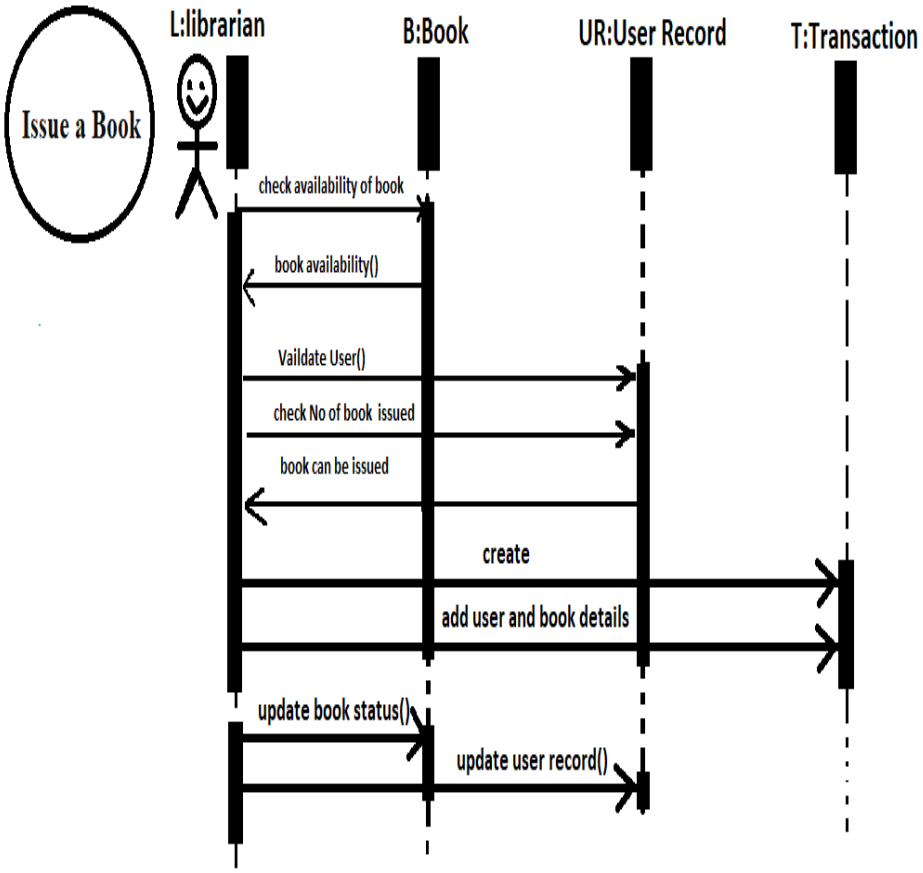
Register:


user
Register
Home
RegisterForm
database
click
Register()
display()
Register data
verify()
Verify Register data
verify()
display()

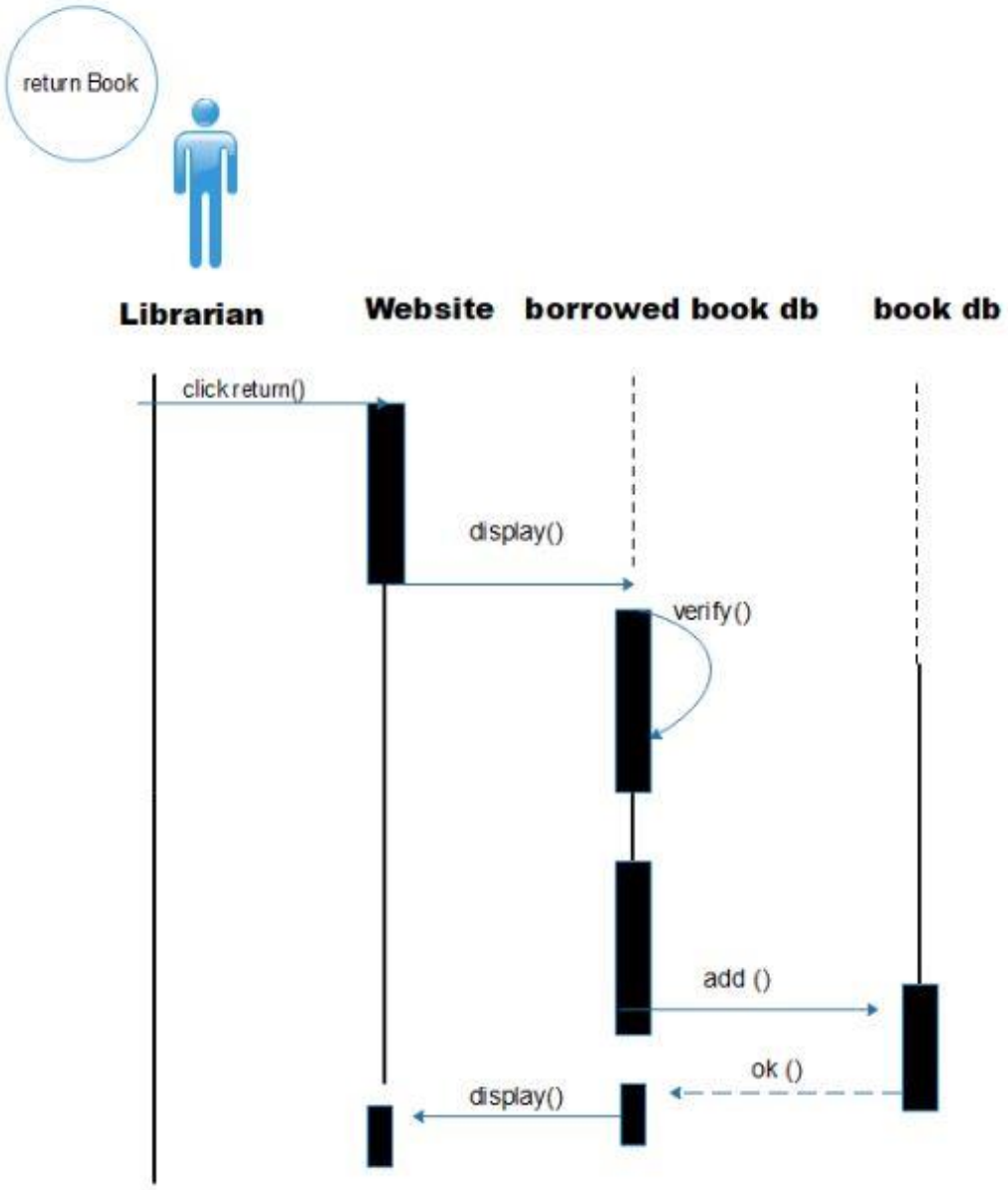
Search for Book



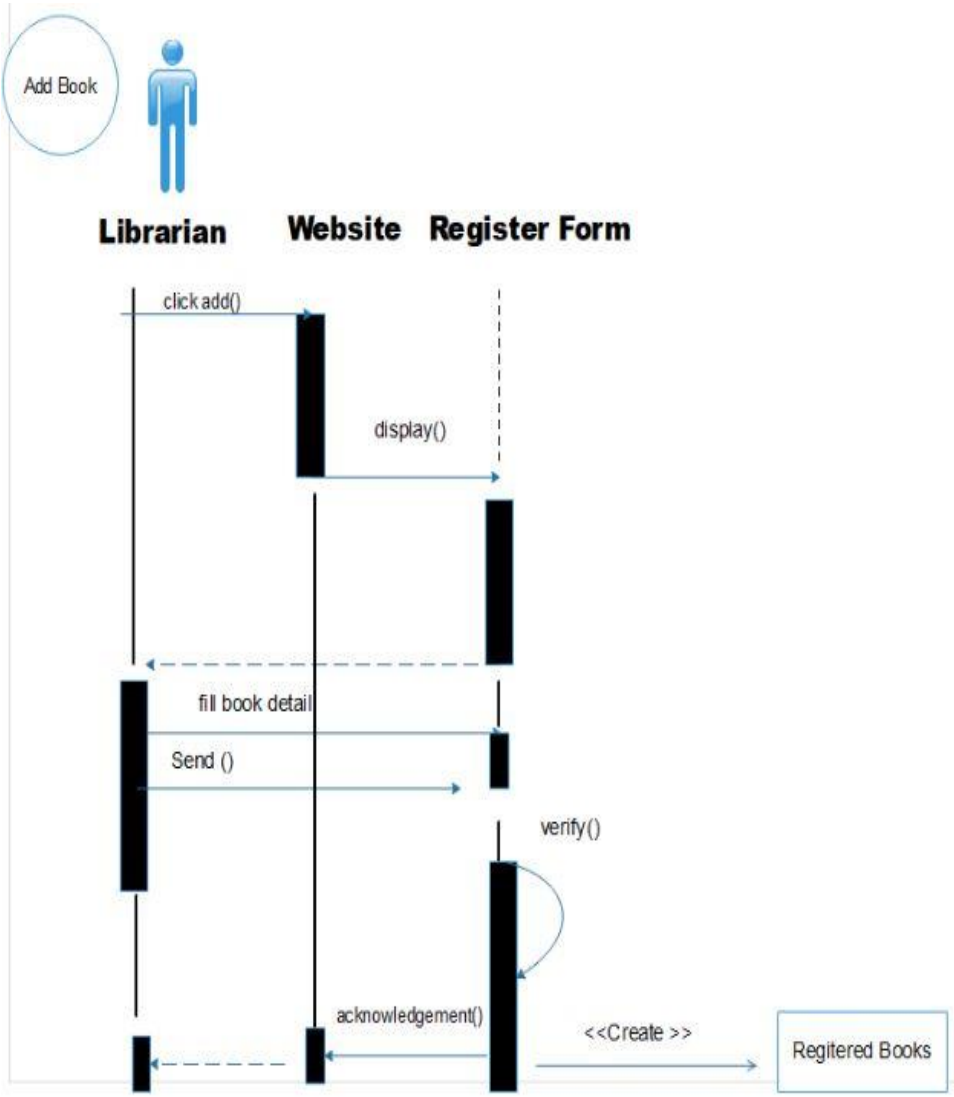
Borrow a book



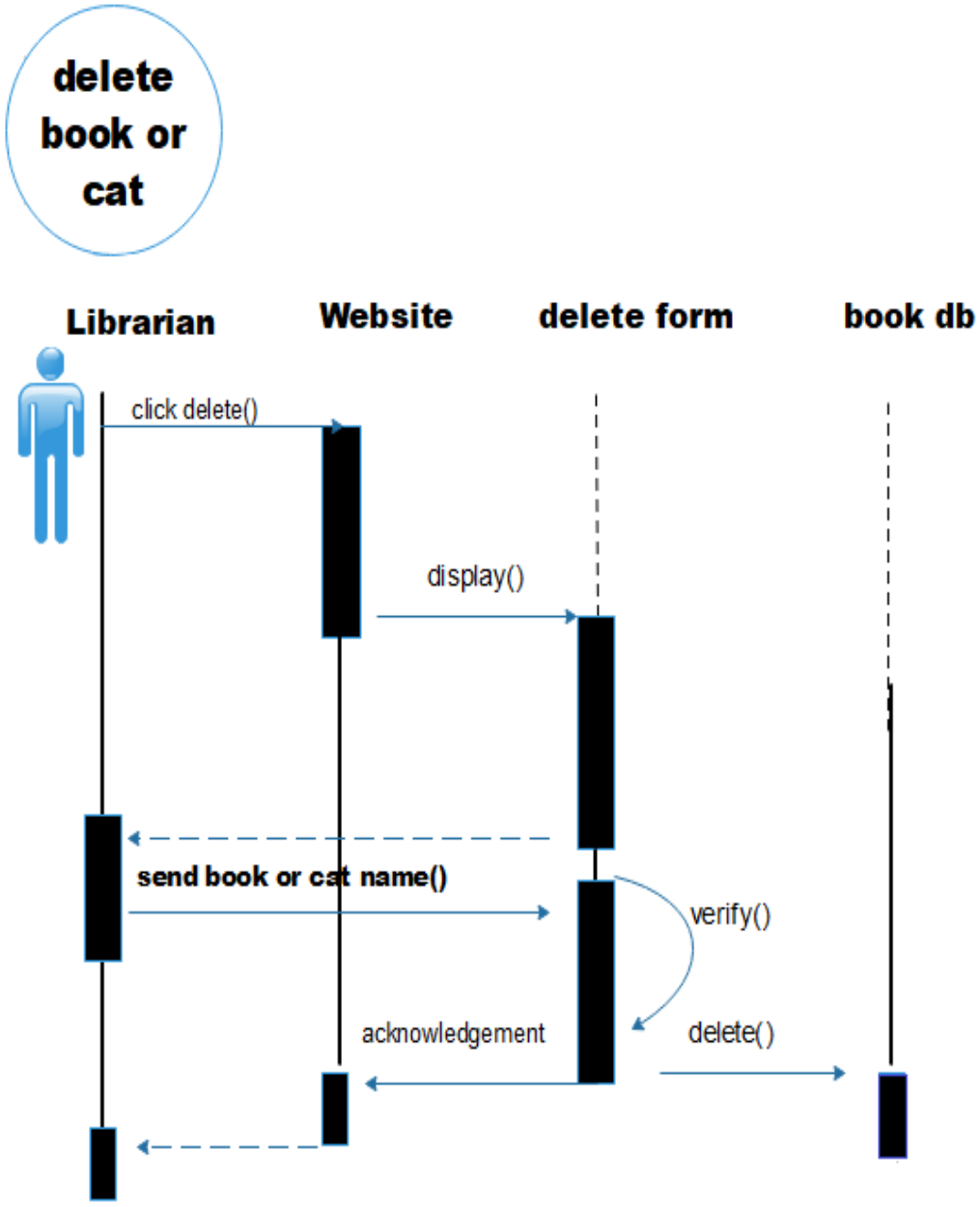
Return a book

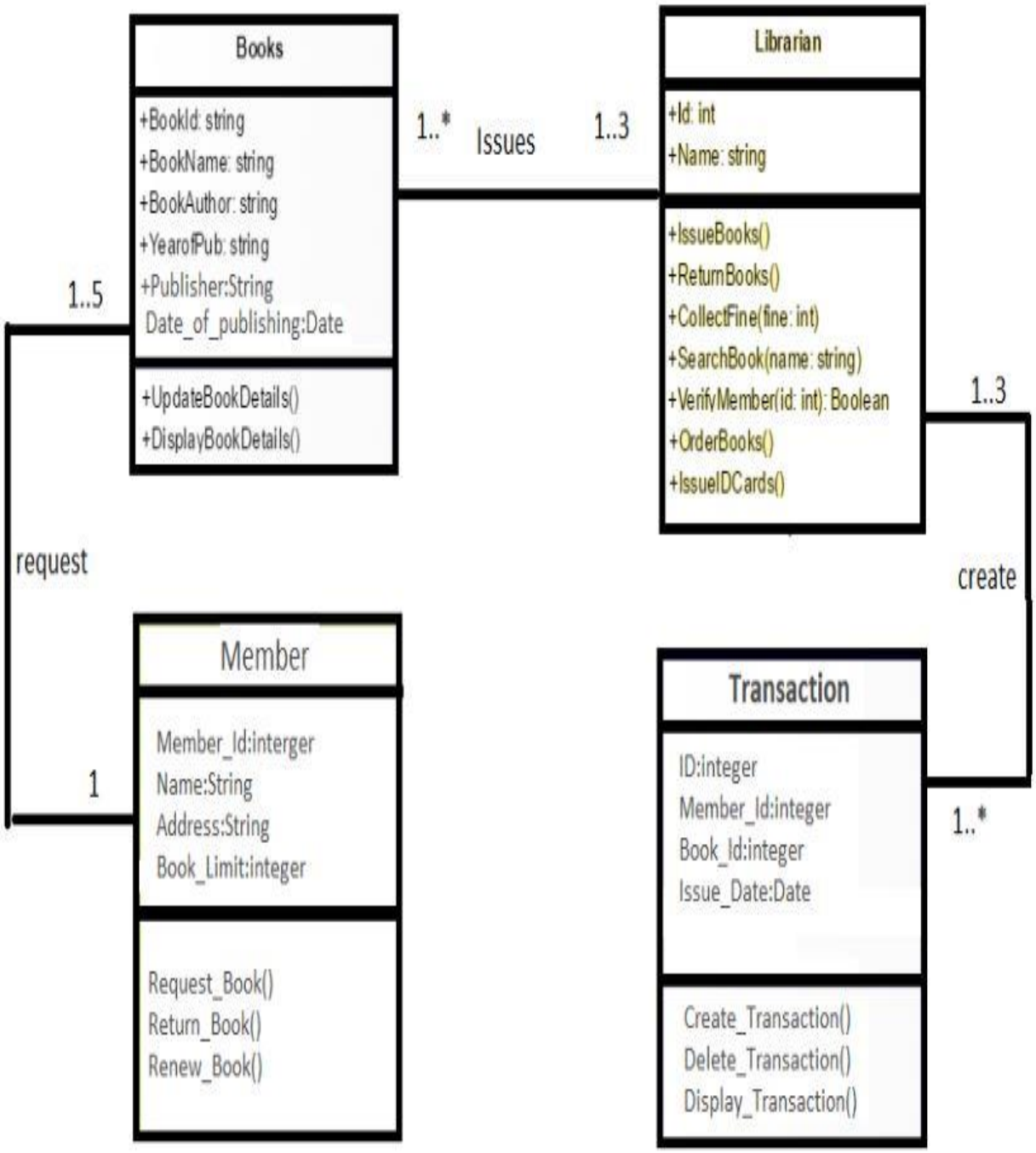

return Book
Librarian
Website
borrowed book db
book db
click return()
display()
verify()
add ()
ok ()
display()

ADD a Book

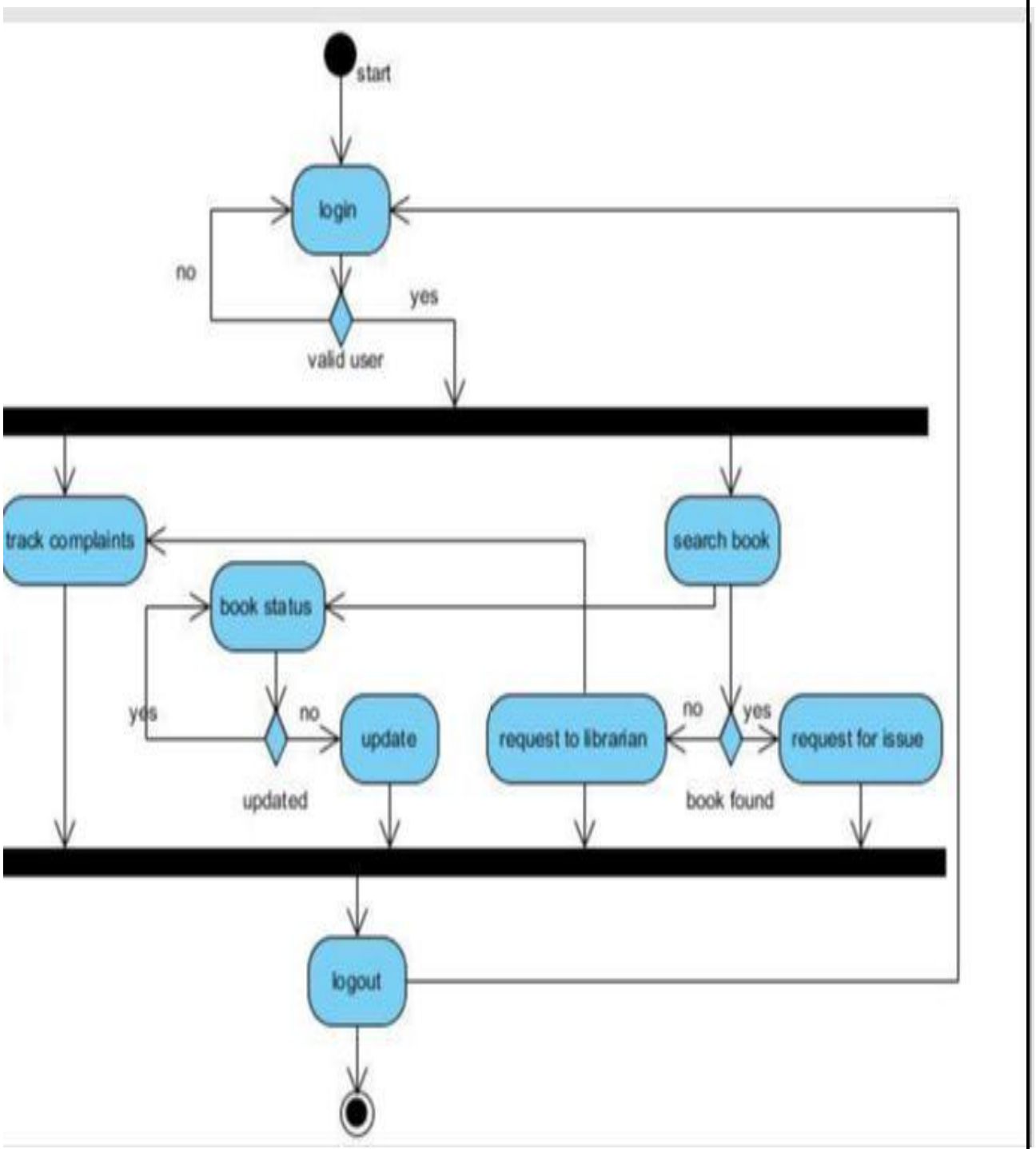

Add Book
Librarian
Website
Register Form
click add()
display()
fill book detail
Send ()
verify()
acknowledgement()
<<Create >>
Regitered Books

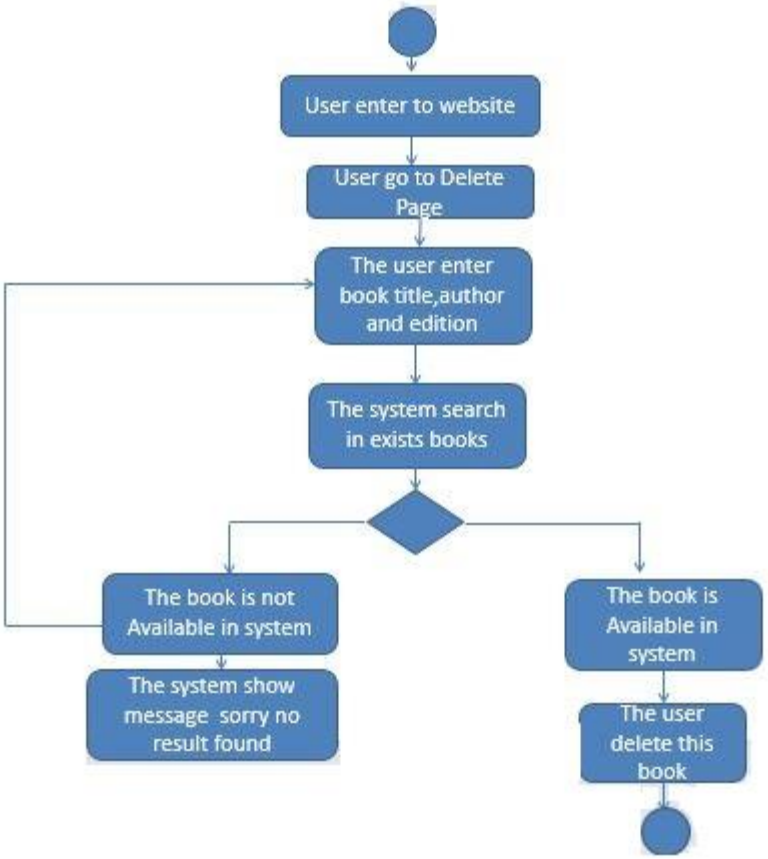
Delete

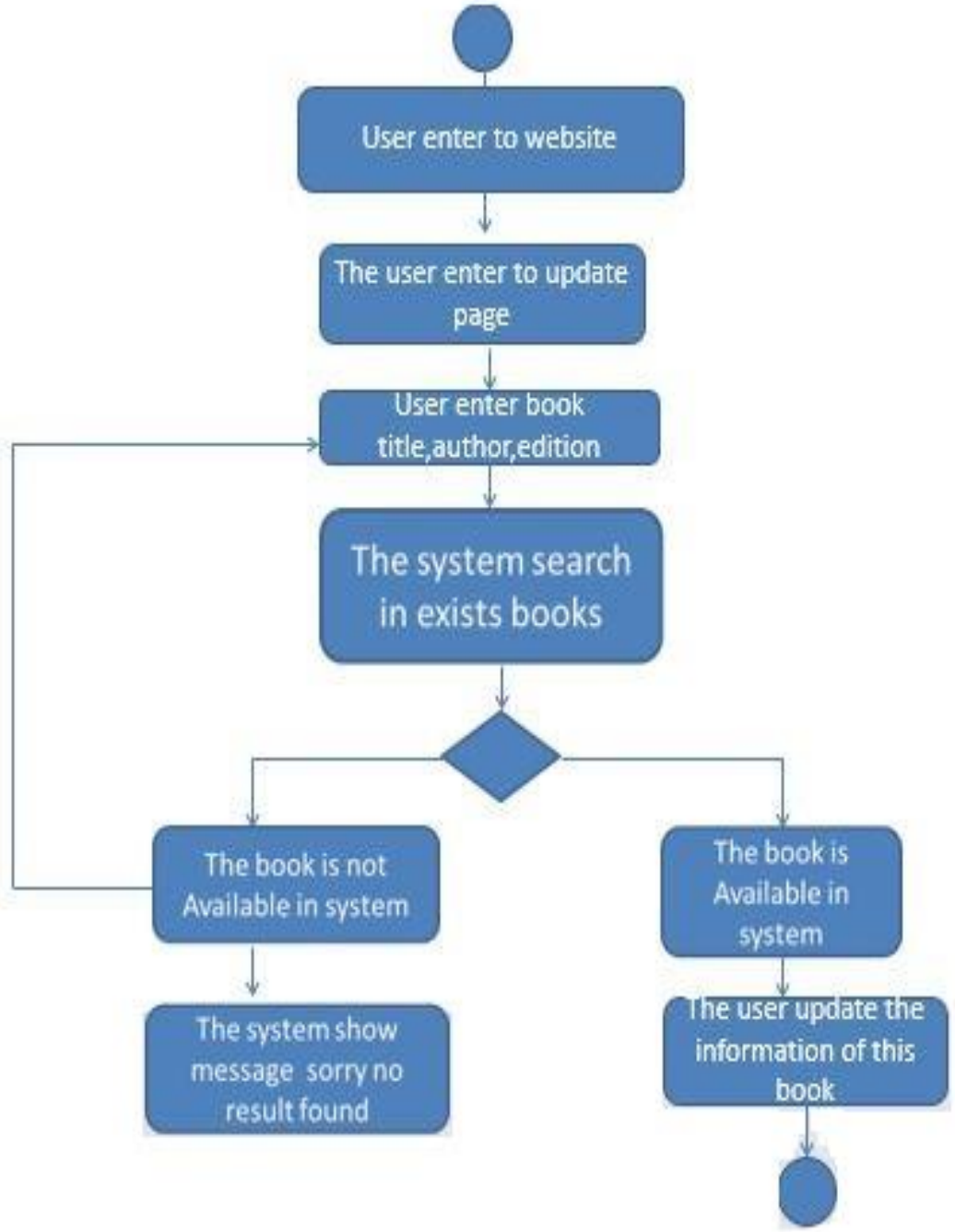

delete book or cat
Librarian
Website
delete form
book db
click delete()
display()
send book or cat name()
verify()
acknowledgement
delete()


Books
+BookId: string
+BookName: string
+BookAuthor: string
+YearofPub: string
+Publisher:String
Date_of_publishing:Date
+UpdateBookDetails()
+DisplayBookDetails()
1..*
Issues
1..3
Librarian
+Id: int
+Name: string
+IssueBooks()
+ReturnBooks()
+CollectFine(fine: int)
+SearchBook(name: string)
+VerifyMember(id: int): Boolean
+OrderBooks()
+IssueIDCards()
1..5
request
1
Member
Member_Id:interger
Name:String
Address:String
Book_Limit:integer
Request_Book()
Return_Book()
Renew_Book()
1..3
create
1..*
Transaction
ID:integer
Member_Id:integer
Book_Id:integer
Issue_Date:Date
Create_Transaction()
Delete_Transaction()
Display_Transaction()

state diagram:

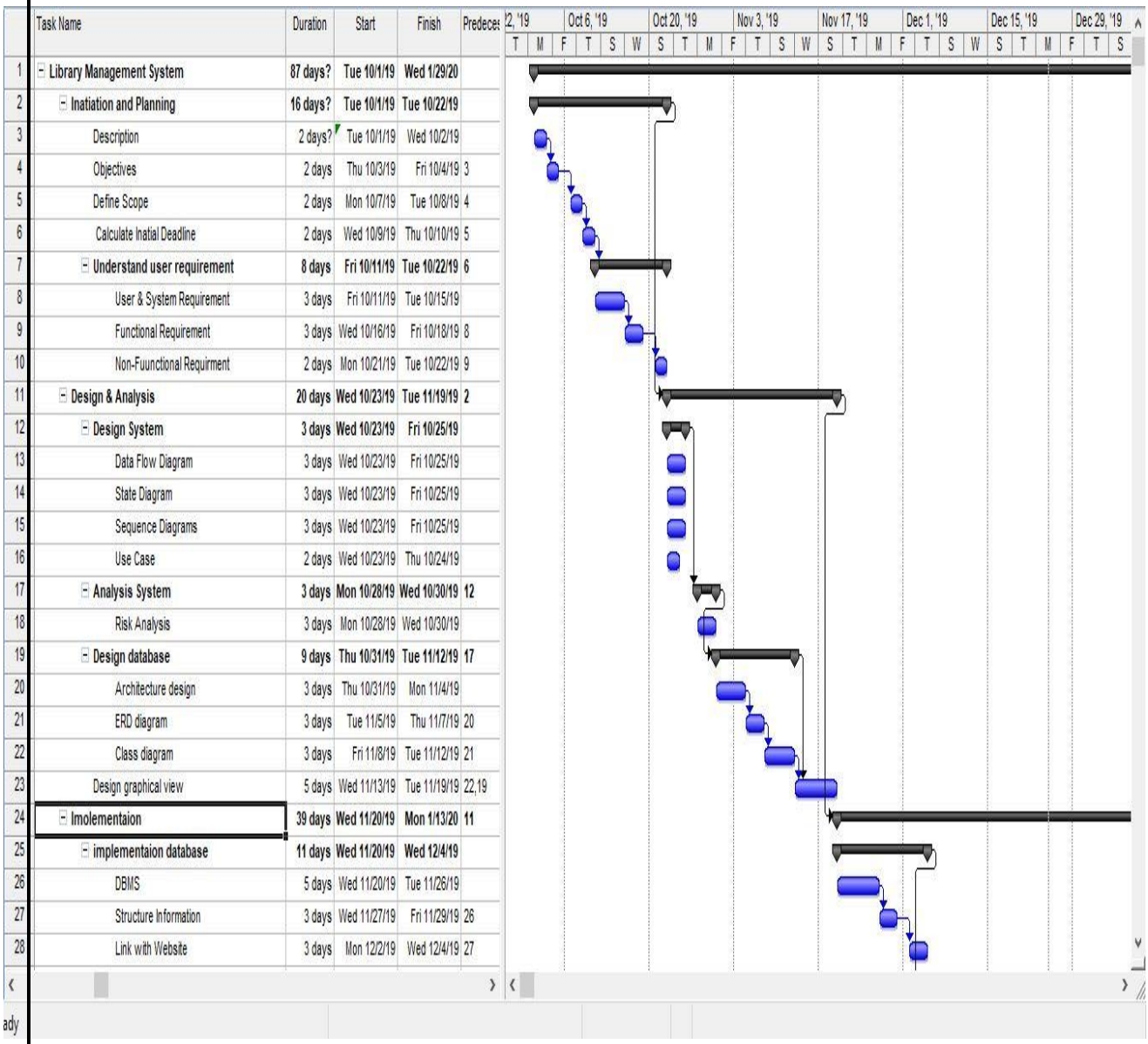



User enter to website
User go to Delete Page
The user enter book title,author and edition
The system search in exists books
The book is not Available in system
The system show message sorry no result found
The book is Available in system
The user delete this book

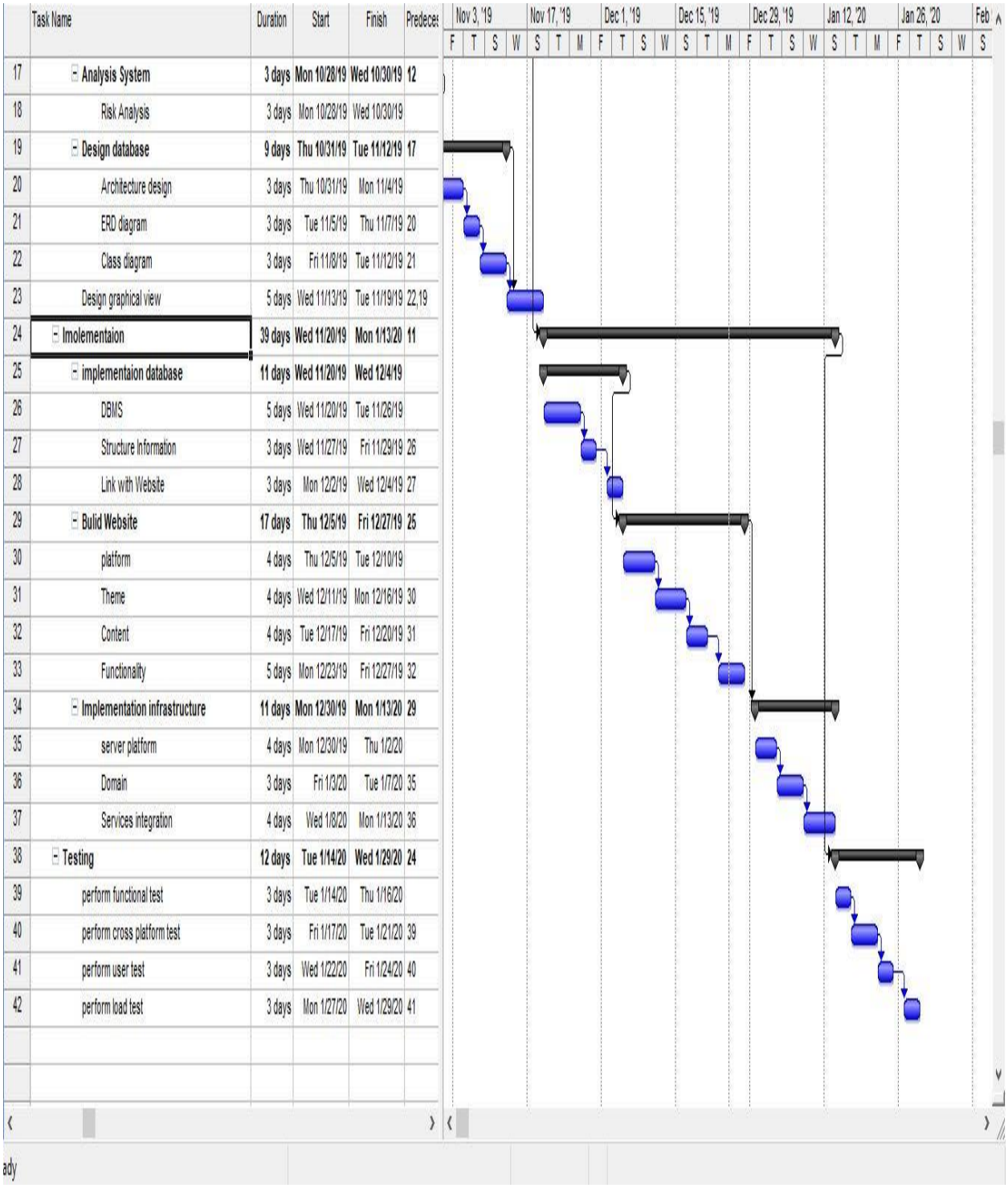

User enter to website
The user enter to update page
User enter book title,author,edition
The system search in exists books
The book is not Available in system
The system show message sorry no result found
The book is Available in system
The user update the information of this book

Work plan

Gantt Chart



	Task Name	Duration	Start	Finish	Predeces
1	Library Management System	87 days?	Tue 10/1/19	Wed 1/29/20	
2	Inatiation and Planning	16 days?	Tue 10/1/19	Tue 10/22/19	
3	Description	2 days?	Tue 10/1/19	Wed 10/2/19	
4	Objectives	2 days	Thu 10/3/19	Fri 10/4/19	3
5	Define Scope	2 days	Mon 10/7/19	Tue 10/8/19	4
6	Calculate Inatial Deadline	2 days	Wed 10/9/19	Thu 10/10/19	5
7	Understand user requirement	8 days	Fri 10/11/19	Tue 10/22/19	6
8	User & System Requirement	3 days	Fri 10/11/19	Tue 10/15/19	
9	Functional Requirement	3 days	Wed 10/16/19	Fri 10/18/19	8
10	Non-Fuunctional Requirment	2 days	Mon 10/21/19	Tue 10/22/19	9
11	Design & Analysis	20 days	Wed 10/23/19	Tue 11/19/19	2
12	Design System	3 days	Wed 10/23/19	Fri 10/25/19	
13	Data Flow Diagram	3 days	Wed 10/23/19	Fri 10/25/19	
14	State Diagram	3 days	Wed 10/23/19	Fri 10/25/19	
15	Sequence Diagrams	3 days	Wed 10/23/19	Fri 10/25/19	
16	Use Case	2 days	Wed 10/23/19	Thu 10/24/19	
17	Analysis System	3 days	Mon 10/28/19	Wed 10/30/19	12
18	Risk Analysis	3 days	Mon 10/28/19	Wed 10/30/19	
19	Design database	9 days	Thu 10/31/19	Tue 11/12/19	17
20	Architecture design	3 days	Thu 10/31/19	Mon 11/4/19	
21	ERD diagram	3 days	Tue 11/5/19	Thu 11/7/19	20
22	Class diagram	3 days	Fri 11/8/19	Tue 11/12/19	21
23	Design graphical view	5 days	Wed 11/13/19	Tue 11/19/19	22,19
24	Imolementaion	39 days	Wed 11/20/19	Mon 1/13/20	11
25	implementaion database	11 days	Wed 11/20/19	Wed 12/4/19	
26	DBMS	5 days	Wed 11/20/19	Tue 11/26/19	
27	Structure Information	3 days	Wed 11/27/19	Fri 11/29/19	26
28	Link with Website	3 days	Mon 12/2/19	Wed 12/4/19	27

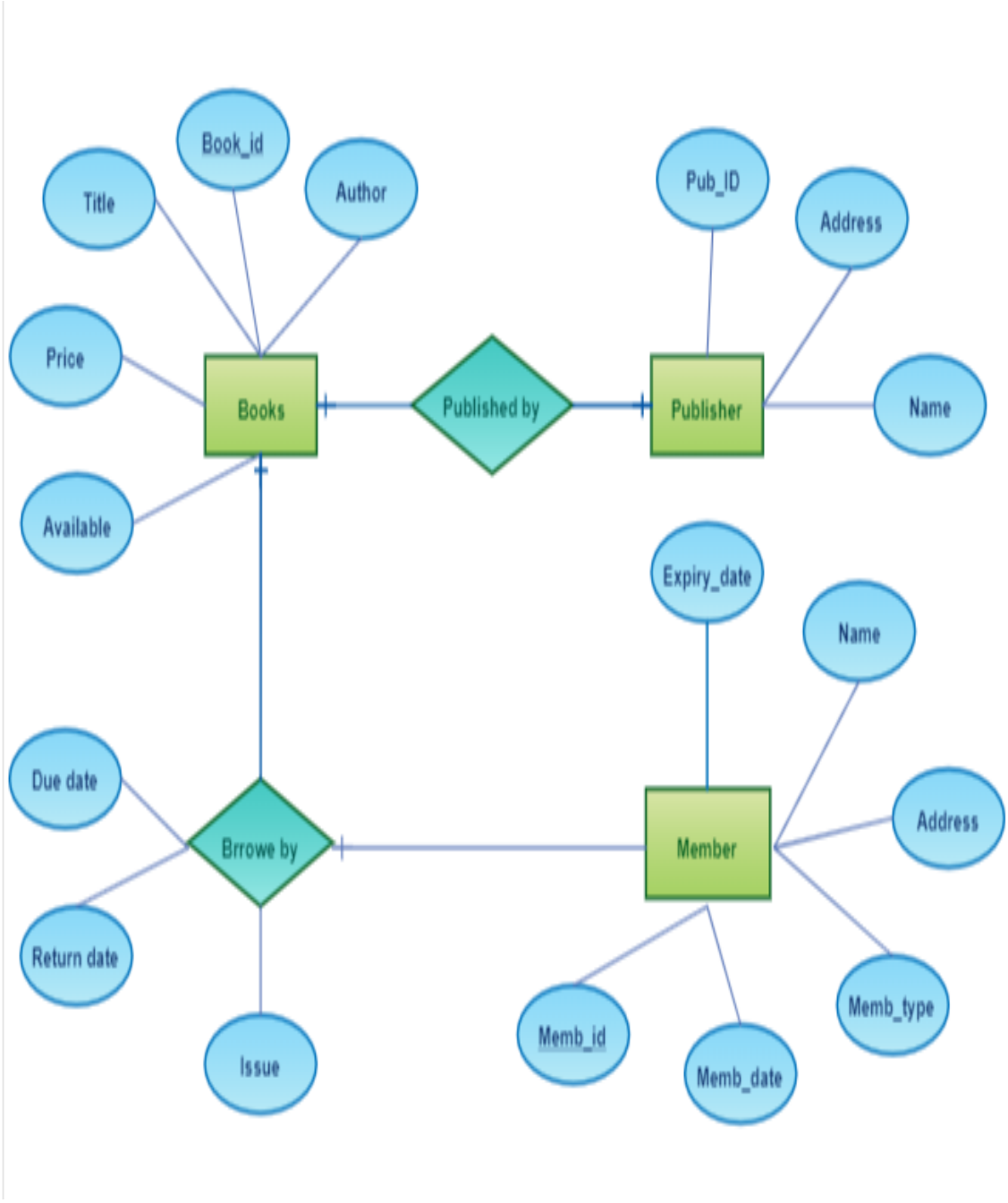


	Task Name	Duration	Start	Finish	Predeces
17	**Analysis System**	**3 days**	**Mon 10/28/19**	**Wed 10/30/19**	**12**
18	Risk Analysis	3 days	Mon 10/28/19	Wed 10/30/19	
19	**Design database**	**9 days**	**Thu 10/31/19**	**Tue 11/12/19**	**17**
20	Architecture design	3 days	Thu 10/31/19	Mon 11/4/19	
21	ERD diagram	3 days	Tue 11/5/19	Thu 11/7/19	20
22	Class diagram	3 days	Fri 11/8/19	Tue 11/12/19	21
23	Design graphical view	5 days	Wed 11/13/19	Tue 11/19/19	22,19
24	**Imolementaion**	**39 days**	**Wed 11/20/19**	**Mon 1/13/20**	**11**
25	**implementaion database**	**11 days**	**Wed 11/20/19**	**Wed 12/4/19**	
26	DBMS	5 days	Wed 11/20/19	Tue 11/26/19	
27	Structure Information	3 days	Wed 11/27/19	Fri 11/29/19	26
28	Link with Website	3 days	Mon 12/2/19	Wed 12/4/19	27
29	**Bulid Website**	**17 days**	**Thu 12/5/19**	**Fri 12/27/19**	**25**
30	platform	4 days	Thu 12/5/19	Tue 12/10/19	
31	Theme	4 days	Wed 12/11/19	Mon 12/16/19	30
32	Content	4 days	Tue 12/17/19	Fri 12/20/19	31
33	Functionality	5 days	Mon 12/23/19	Fri 12/27/19	32
34	**Implementation infrastructure**	**11 days**	**Mon 12/30/19**	**Mon 1/13/20**	**29**
35	server platform	4 days	Mon 12/30/19	Thu 1/2/20	
36	Domain	3 days	Fri 1/3/20	Tue 1/7/20	35
37	Services integration	4 days	Wed 1/8/20	Mon 1/13/20	36
38	**Testing**	**12 days**	**Tue 1/14/20**	**Wed 1/29/20**	**24**
39	perform functional test	3 days	Tue 1/14/20	Thu 1/16/20	
40	perform cross platform test	3 days	Fri 1/17/20	Tue 1/21/20	39
41	perform user test	3 days	Wed 1/22/20	Fri 1/24/20	40
42	perform load test	3 days	Mon 1/27/20	Wed 1/29/20	41

WBS

WBS
Library Management System
Initiation & Planning
Develop Project Charter
Description
Objectives
Define Scope
Calculate Initial Deadline
Understand User's Requirements
User & System Requirements
Functional Requirements
Non-Functional Requirements
Design & Analysis
Design System
Sequence Diagrams
State Diagrams
Data flow diagram
Use Case
Analyze System
Risk Analysis
Design Database
Architecture Design
ERD Diagram
Class Diagram
Design Graphical View
Implement Technical Aspect
Build Website
Platform
Theme
Content
Functionality
Implement Database
DBMS
Structure Information
Link with Website
Implement Infrastructure
Server Platform
Domain
Services Integration
Perform Tests
Perform Functional Test
Perform Cross Platform Test
Perform User Test
Perform Load Test

Erd diargram:



Database Tables:

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Author

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Edit Copy Delete	210	J.R.R. Tolkien
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Edit Copy Delete	214	Khaled Hosseini
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Other Nonfunctional Requirements:

Performance Requirements:

Scalability

- The system must upgrade when some updates will be available.
- The system must operate correctly when the number of recorded information is being increased.

Efficiency

- The system gives appropriate output based the list of inputs.
- The system operates in the shortest time with the least amount of resources.

Safety Requirements

To ensure that no one of Website's users loses any data while using our website (due to a crash or a bug of some kind) the developer team updates Website regularly. There is a bug tracker available where users can report any bugs

they have encountered so that
the developers can fix it in the next release.

Security:

- The authenticate users should have a privilege to access the database.
- The system does not allow unauthorized users to login.

Software Quality Attributes:

Availability:

- The system must operate 99% at working time**.**
- We must make sure that the system be accessible for all authorized staff and not accessibility by anyone else.

Flexibility:

- The system must support commonly usable browsers.

Speed:

- The system must have quick response time.
- The system should respond users request within maximum of 2 seconds interval.
- The system must be simple to retrieve comprehensive information.

Usability:

- The system should be easy to use by Staff.
- And our system gives direct input on how real users use the system.

Portability:

- The system must be designed for plate form independent.
- The system supports every operating system.

Reliability:

- The system that is to be developed is real not an ideal.
- The system does not allow unauthorized users to login.

Maintainability:

- Software must be developed to meet changes
- Accept the new requirement.
- Allow changing the format.