

# **LIBRARY MANAGEMENT SYSTEM**

## **OOAD – LAB PROJECT**

**B.E – COMPUTER SCIENCE AND ENGINEERING**

**FROM**

**GOVERNMENT COLLEGE OF ENGINEERING,**

**DHARMAPURI – 636704.**



**SUBMITTED BY: -**

**DHINESHKUMAR D (613520104008)**

**SIVASAKTHI V (613520104036)**

## **Table of Contents**

1. Problem Statement.....	
2. Software Requirement Specifications	
2.1 Purpose.....	
2.2 Scope.....	
3. Project Description	
3.1 Product Perspective	
3.2 User characteristics	
3.3 Constraints	
4. Specific Requirements	
4.1 External interfaces	
4.2 Functions	
4.3 Performance requirements	
4.4 Logical database requirements	
5. Data Dictionary	
6. Screens	
7. Use Case Diagram	
8. Class Diagram	
9. DFD Diagram	
10. Sequence Diagram	
11. Data Design	
11.1 Students	
11.2 Staffs	
11.3 Librarian	
11.4 Books	

## **1. PROBLEM STATEMENT**

A college library management is a project that manages and stores books information electronically according to student's needs. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. It becomes necessary for colleges to keep a continuous check on the books issued and returned and even calculate fine. This task if carried out manually will be tedious and includes chances of mistakes. These errors are avoided by allowing the system to keep track of information such as issue date, last date to return the book and even fine information and thus there is no need to keep manual track of this information which thereby avoids chances of mistakes.

## **2. SOFTWARE REQUIREMENT SPECIFICATIONS**

### **2.1 Purpose**

The purpose of this project is to develop an application that will automate the whole procedure of a library. The software that would be developed should have facilities like Add / Delete Members, Add / Delete Books, Issue & Return. The application should be secured, as well as with limited access. The main requirement of the project will be the ease of use, besides being the most efficient and effective tool for the purpose. The application should be user friendly.

- To provide services to all the employees for issue, return & search etc. at one place.
- To improve co-ordination in staff.
- To reduce paper filling work.
- To reduce risk of fraud.
- To reduce chances of information leaking.

## **2.2 Scope**

For Members: -

- Facility for search of Books based on Author Name or ISBN No.

For Librarian: -

- Simple and intuitive GUI for performing all functions.
- Security features like access control using passwords and username.
- Facility to ADD / DELETE Members, Library Staff & Books and Maintain an easy record of all these.

## **3. PROJECT DESCRIPTION**

### **3.1 Product Perspective**

The manual library management system includes following drawbacks:

- The existing system involves a lot of paper work and manual calculation. This has led to inconsistency and inaccuracy in the maintenance of data.
- The data, which is stored on the paper only, may be lost, stolen or destroyed due to natural calamity like fire and water.
- The existing system is sluggish and time-consuming causing inconvenience to library staff.
- Since there are many books related to different scopes thus it would be very difficult to find a specific book, or edit the data of some book.

Hence the library management system is proposed with the following Product perspective:

- The computerization of the library system will reduce a lot of paperwork and hence the load on the library staff.
- It would be easy to search a specific book.

### 3.2 User characteristics

User1:

**Librarian-** Librarian will add, delete or update book records within the system. He/she will issue the books as per requested by the member. Staff needs to have complete understanding of functionalities and internal processing of the system.

User2:

**Member-** Member will request for book issue and then will return the book. They can search for a specific book. The user does not need to have complete understanding of complex functionalities and internal processing of the system.

### 3.3 General Constraints

Any update regarding the book from the library is to be recorded to have update and correct values and any fine on a member should be notified as soon as possible and should be calculated correctly.

## 4. SPECIFIC REQUIREMENTS

### 4.1 External Interfaces

#### User Interface

Various GUI elements like forms, images and standard buttons will be included in the User Interface.

### 4.2 Functional Requirements

- **Login:**

Description: Librarian will login to the system. The user must be registered in the system before login.

Input: Enter the username and password.

Output: Librarian will be able to use the features of software.

Processing: Username and password will be checked by the system. If they are incorrect a message will be displayed.

- **Search:**

Description: The users can search a book by entering book details such as author's name, ISBN No etc.

Input: Enter the details you know about the book.

Output: The list of available books is displayed.

Processing: A message is displayed if the book related to the entered details is not available.

- **Issues book:**

Description: The Librarian checks the availability of book which the member want to get issued.

Input: Enter Register No of the Member.

Output: Confirmation for book issue or apology for failure in issue.

Processing: If selected book is available then the book will be issued and the record is updated else error will be displayed.

- **Return book:**

Description: The member wants to return the book.

Input: return the book to the library.

Output: The record will be updated.

Processing: If book is not returned.

### **4.3 Performance requirements**

There are no particular extra performance requirements at this point of time.

#### 4.4 Logical Database Requirements

Proposed database is intended to store, retrieve, update and manipulate information related to college which include:

- Books availability
- Member details

### 5. DATA DICTIONARY

Legal\_character = [a-z|A-Z]

Legal digit = [0-9]

Special\_character = [@|\$|#]

Book\_Details = isbnno + book\_name +author\_name +publishedyear+ publisher +  
edition + copies

ISBN No = (legal digit) \*

Book\_name = (legal character) \*

Author\_name = (legal character) \*

Publisher = (legal character) \*

Published Year = (Year Format)

Edition = (legal character) \*

Copies = (legal digit) \*

Student\_details = name+member\_id+gender+dob+email+department+aadharno+

username+password

Name=first\_name + last name

first\_name = (legal character) \*

member\_id= (legal digits) \*

Staff\_details = name+member\_id+gender+dob+email+department+aadharno+

username+password

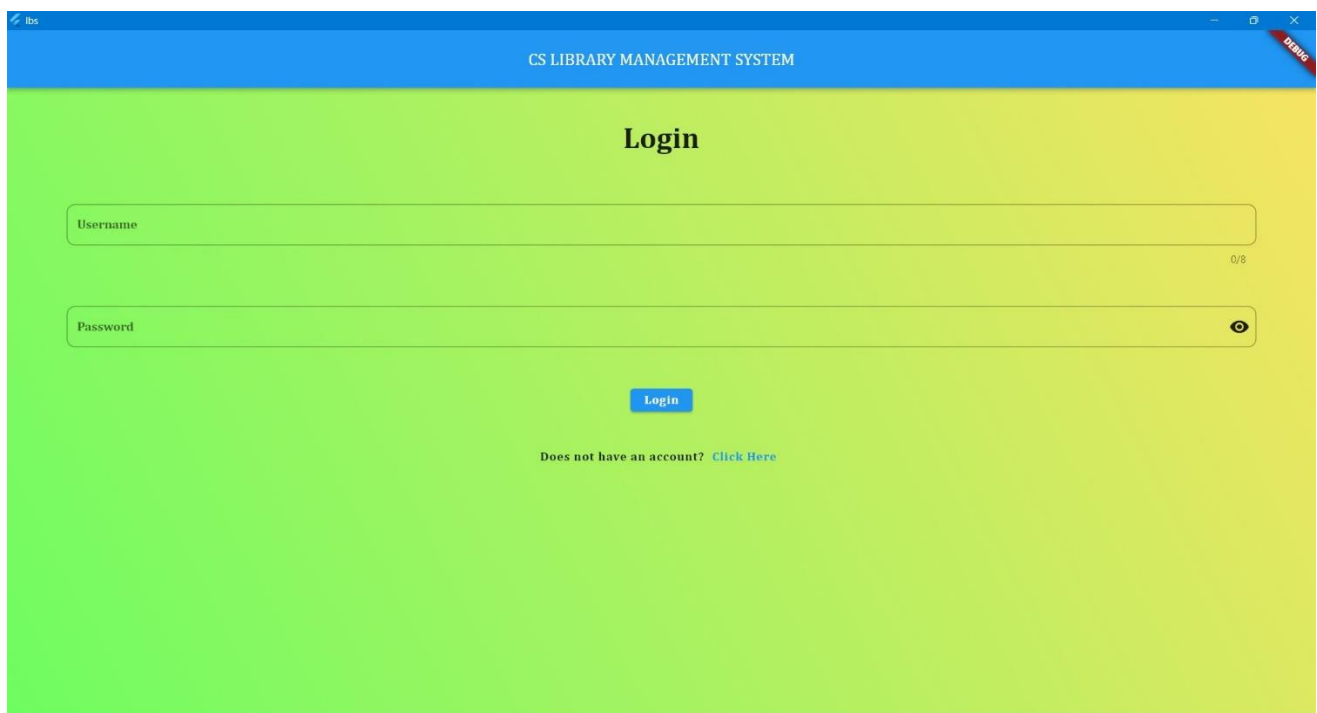
staff\_id = (legal digit) \*

login=username +password

username = (legal character + legal digit) \*

password = (legal character + legal digit) \*

## 6. SCREENS:



The screenshot shows a web browser window with the title 'lib'. The page has a blue header bar with the text 'CS LIBRARY MANAGEMENT SYSTEM'. Below the header, the word 'Login' is centered in bold. There are two input fields: 'Username' and 'Password'. The 'Username' field has a character count '0/8' on the right. The 'Password' field has a toggle icon on the right. Below the input fields is a blue 'Login' button. At the bottom, there is a link that says 'Does not have an account? Click Here'.

Figure 6.1 Librarian Login Page



The screenshot shows the 'Register' page of the 'CS LIBRARY MANAGEMENT SYSTEM'. The page has a light blue and purple gradient background. At the top, there is a green header bar with the system name. Below the header, the title 'Register' is centered. The registration form consists of several input fields arranged in a grid. The first row contains 'First Name' (with the value 'Dhineshkumar' and a character count of 0/30), 'Last Name' (0/30), 'Email ID' (0/35), and 'Mobile No' (0/10). The second row contains 'Aadhar No' (0/16), 'Librarian ID' (0/20), 'Gender' (0/20), and 'Date of Birth' (with a calendar icon). The third row contains 'Username' (0/8, with a red 'x' icon indicating an error), 'Password' (0/16, with an eye icon to toggle visibility), and 'Confirm password' (0/16, with an eye icon). At the bottom of the form, there are two buttons: 'Register' and 'Back'.

Figure 6.2 Register Librarian Page

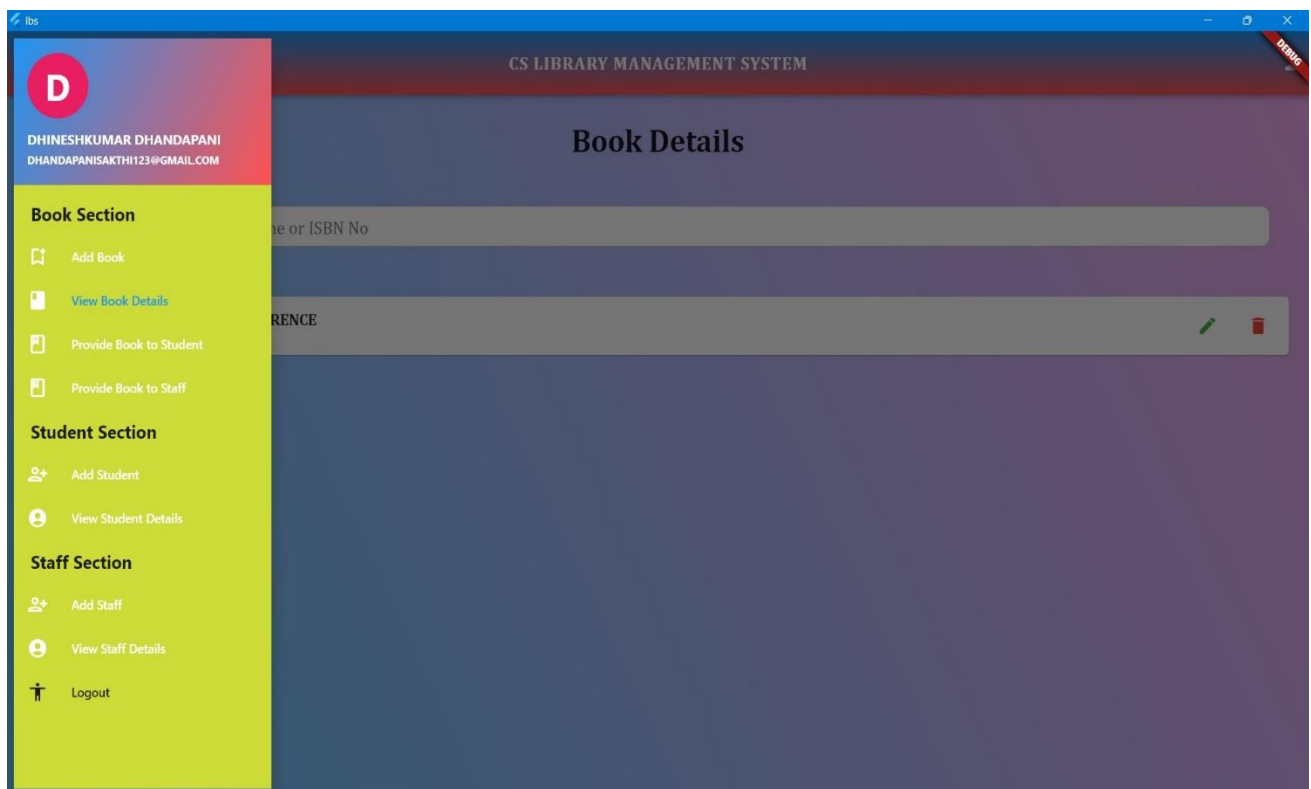



Figure 6.3 Home Page

**CS LIBRARY MANAGEMENT SYSTEM**

### Librarian Details



First Name:  12/30

Last Name:  10/30

Email ID:  29/35

Mobile No:  10/10

Aadhar No:  12/16

Librarian ID:  12/20

Gender:  4/20

Date of Birth:  11/16

Username:  5/8 ✖

Password:  11/16 👁

Confirm password:  11/16 👁

Figure 6.4 Update and View Librarian Details

**CS LIBRARY MANAGEMENT SYSTEM**

### Add Book

Book Title:  0/30

Author Name:  0/30

Email ID:  0/35

Phone No:  0/10

Edition:  0/10

Published Year:  0/20

ISBN No:  0/13

Publication:  0/16

Book Count:  0/2

Figure 6.5 Add Book Details

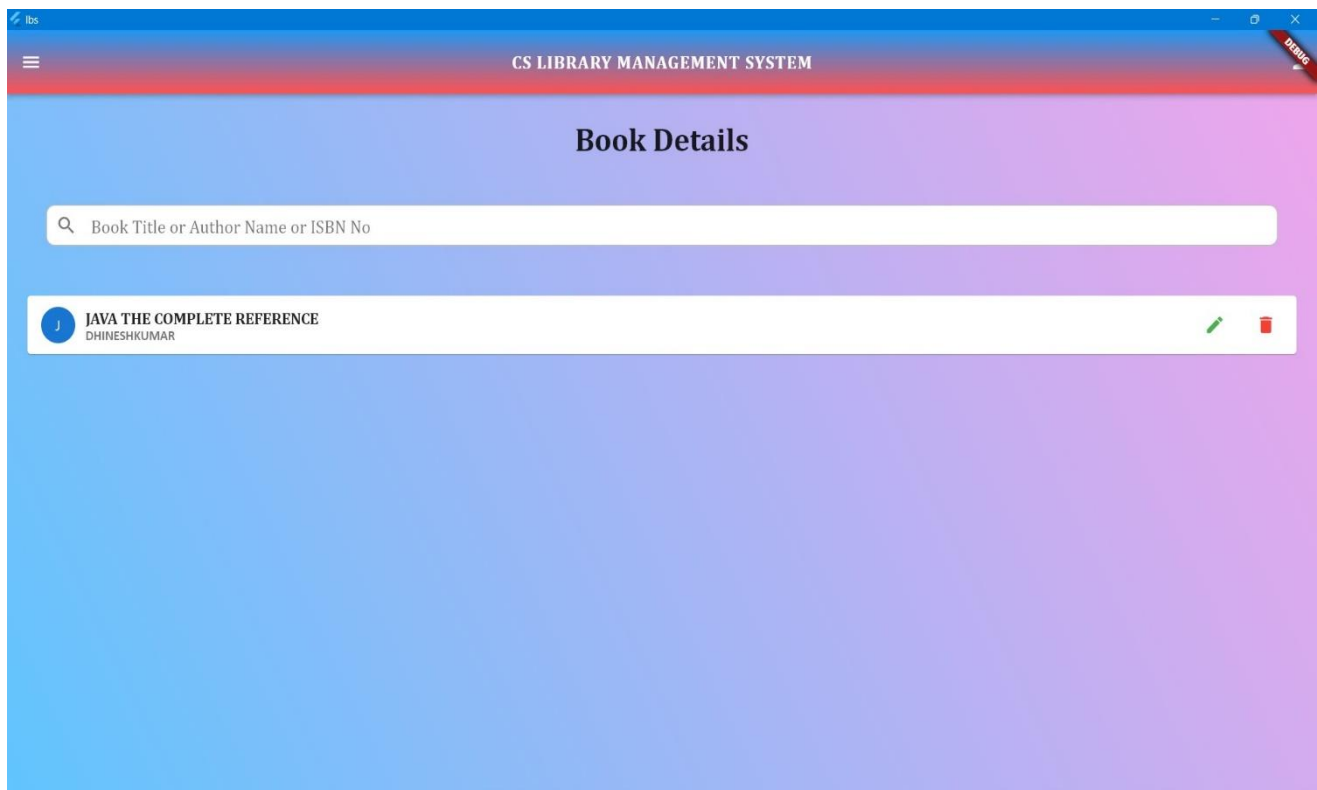


Figure 6.6 View Book Details

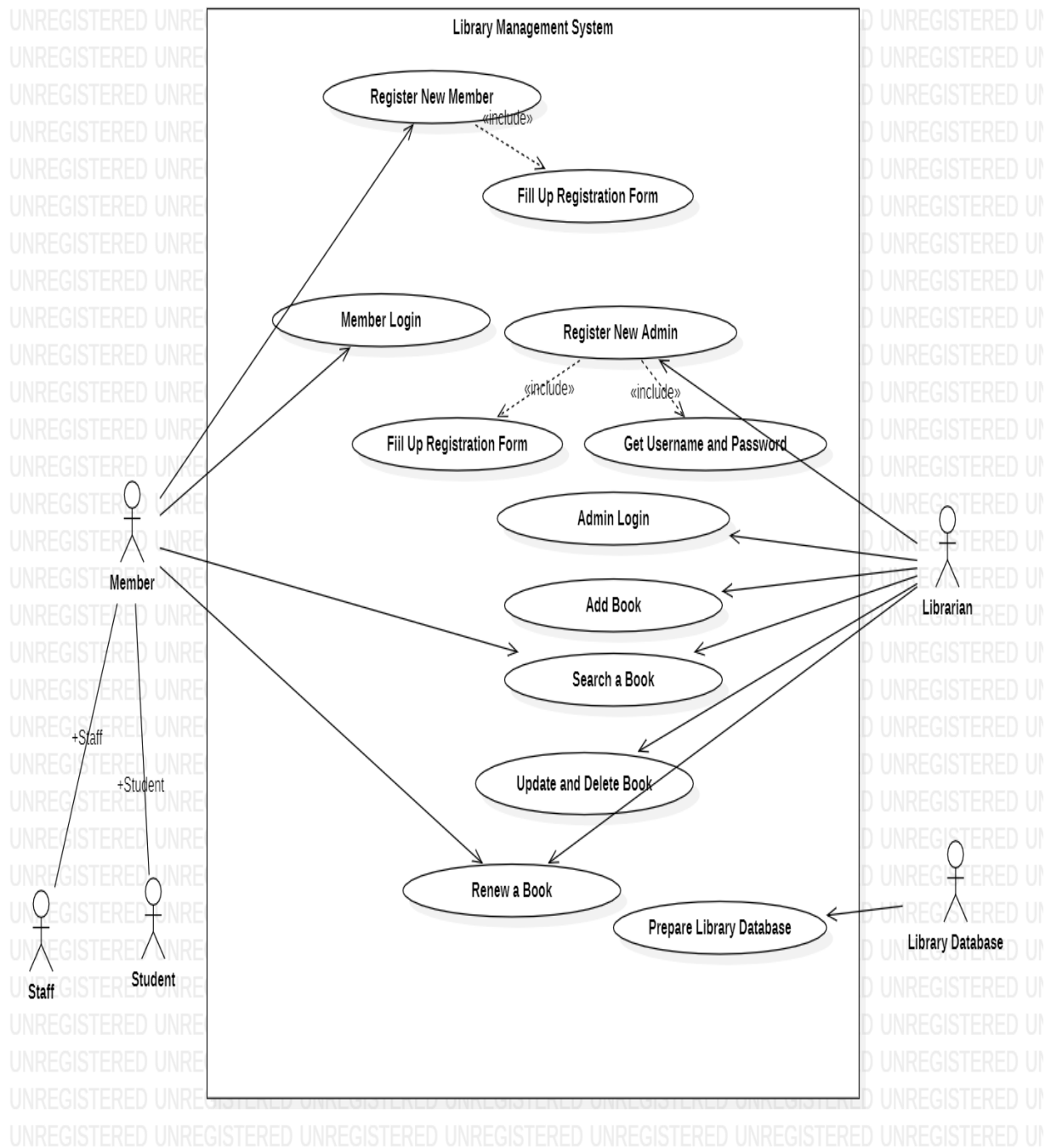
The screenshot shows a web application titled "CS LIBRARY MANAGEMENT SYSTEM". The main heading is "Update Book". Below it is a form with nine fields arranged in a 3x3 grid. Each field has a label, a value, and a character count. The fields are: Book Title (JAVA THE COMPLETE REFERENCE, 27/30), Author Name (DHINESHKUMAR, 12/30), Email ID (SJJNSJDFNJSN, 12/35), Phone No (6374831110, 10/10), Edition (FIRST, 5/10), Published Year (2004, 4/20), ISBN No (12345688758, 11/13), Publication (ORACLE, 6/16), and Book Count (4, 1/2). At the bottom center is a blue button labeled "UPDATE BOOK". The background is a gradient of blue and purple.

Figure 6.7 Update Book Details

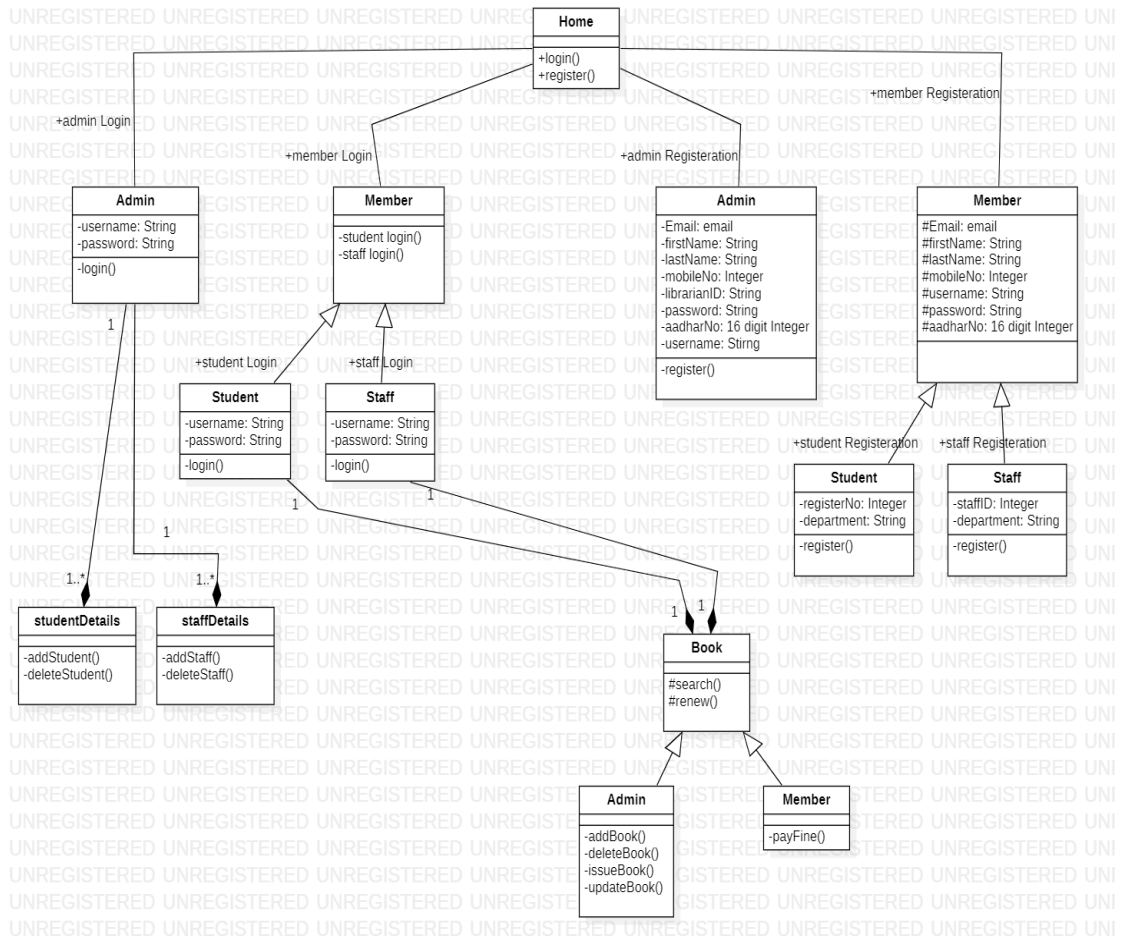
## NOTE :

- RENEW and RETURN BOOKS Facilities are available in the view students and staff Section.

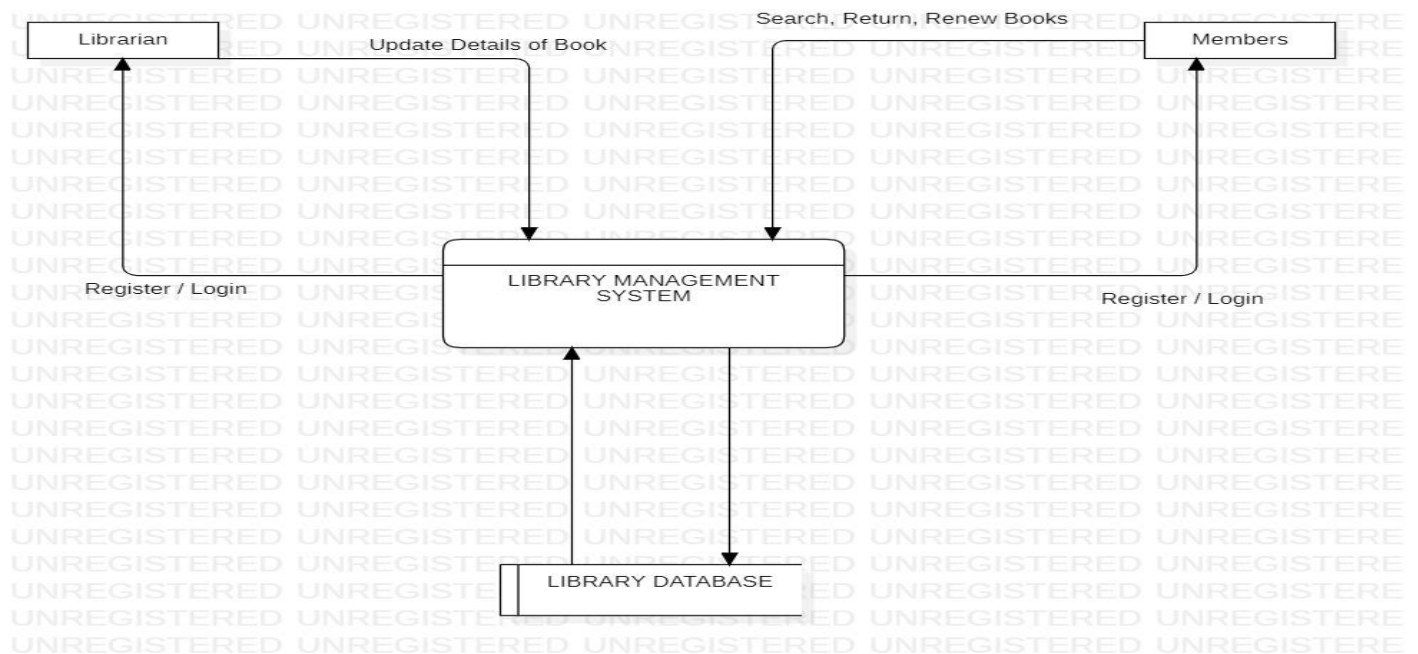
## 7. USE CASE DIAGRAM



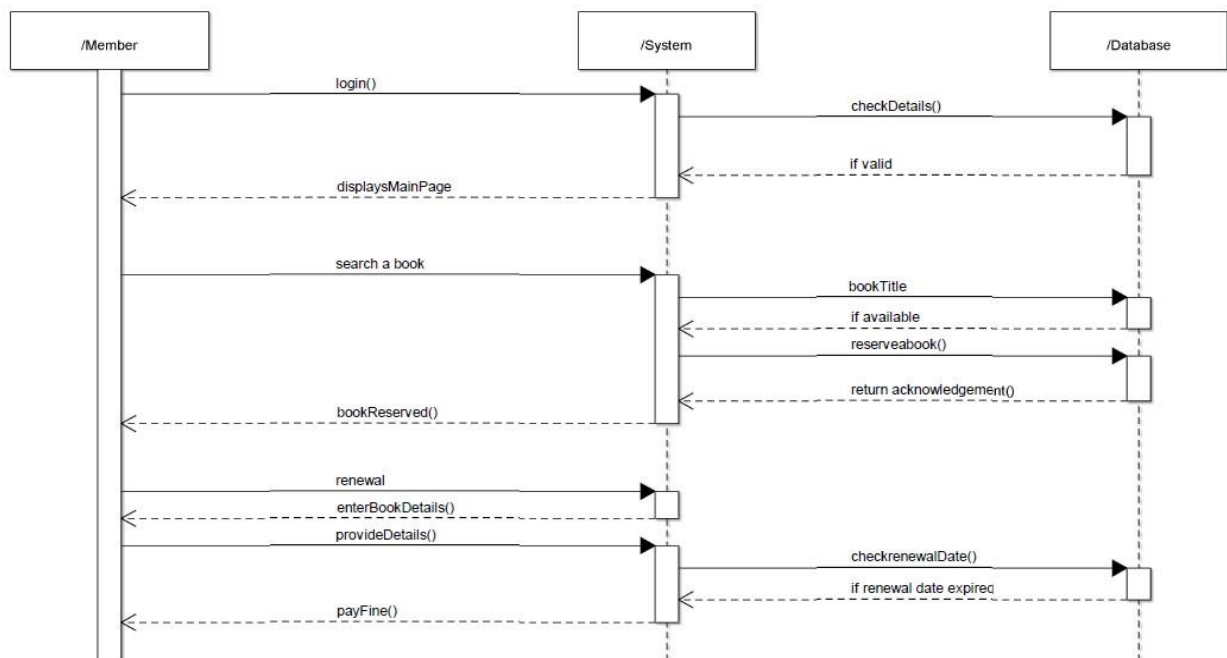
## 8. CLASS DIAGRAM



## 9. DFD DIAGRAM



## 10. SEQUENCE DIAGRAM



## 11. DATA DESIGN

### 11.1 STUDENTS:

S.No	Data Item	Type	Length	Description
1	STUDENTS		INTEGER	STRING
1.1	First Name	String	45	First Name of the Student
1.2	Last Name	String	45	Last Name of the Student
1.3	Email	String	45	Email of the Student
1.4	Mobile No	String	10	Mobile No of the Student
1.5	Aadhar No	String	16	Aadhar No of the Student
1.6	Register No	String	20	Register No of the Student
1.7	Gender	String	10	Gender of the Student
1.8	Department	String	10	Department of the Student
1.9	Year	String	10	Year of the Student
1.10	DOB	Date	10	Date of the Birth of the Student
1.11	Username	String	8	Username of the Student
1.12	Password	String	16	Password of the Student
1.13	Count	INT	10	Limit of the Borrow the Book

## 11.2 STAFFS:

S.No	Data Item	Type	Length	Description
1	STAFFS		INTEGER	STRING
1.1	First Name	String	45	First Name of the Staff
1.2	Last Name	String	45	Last Name of the Staff
1.3	Email	String	45	Email of the Staff
1.4	Mobile No	String	10	Mobile No of the Staff
1.5	Aadhar No	String	16	Aadhar No of the Staff
1.6	Register No	String	20	Register No of the Staff
1.7	Gender	String	10	Gender of the Staff
1.8	Department	String	10	Department of the Staff
1.9	DOB	Date	10	Date of the Birth of the Staff
1.10	Username	String	8	Username of the Staff
1.11	Password	String	16	Password of the Staff
1.12	Count	INT	10	Limit of the Borrow the Book

## 11.3 LIBRARIAN:

S.No	Data Item	Type	Length	Description
1	LIBRARIAN		INTEGER	STRING
1.1	First Name	String	45	First Name of the Librarian
1.2	Last Name	String	45	Last Name of the Librarian
1.3	Email	String	45	Email of the Librarian
1.4	Mobile No	String	10	Mobile No of the Librarian
1.5	Aadhar No	String	16	Aadhar No of the Librarian
1.6	Librarian ID	String	20	Librarian ID of the Librarian
1.7	Gender	String	10	Gender of the Librarian
1.8	DOB	Date	10	Date of the Birth of the Librarian
1.9	Username	String	8	Username of the Librarian
1.10	Password	String	16	Password of the Librarian

#### 11.4 BOOKS:

S.No	Data Item	Type	Length	Description
1	BOOKS		INTEGER	STRING
1.1	Book Name	String	45	Name of the Book
1.2	Author Name	String	45	Author Name of the Book
1.3	Email	String	45	Email of the Book
1.4	Mobile No	String	10	Mobile No of the Book
1.5	ISBN No	String	16	ISBN No of the Book
1.6	Published Year	String	20	Published Year of the Book
1.7	Publication	String	10	Publication of the Book
1.8	Edition	String	10	Edition of the Book
1.9	Count	INT	10	Count of the Book

***THANK YOU***