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Department of Computer Engineering
Dharmsinh Desai University**

**B.Tech CE Semester-VI
Subject: Service Oriented Computing**

LIBRARY MANAGEMENT SYSTEM

By

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CERTIFICATE

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Service Oriented Computing and recorded in this journal is the

bonafide work of

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Contents

(1) Abstract	04
(2) Introduction	05
(3) Software Requirements Specifications	07
(4) Design	
i. Use case diagram	11
ii. Class diagram	12
iii. Data dictionary	13
(5) Implementation Details	
i. Modules	14
(6) Testing	16
i. Testing Method	16
ii. Testing Screen shot	17
(7) Screen-shots	18
(8) Conclusion	24
(9) Limitation and future extension	25
(10) Bibliography	26

(1) Abstract

Online 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 Admin 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 an Online Library becomes much simple. The Online Library Management 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 maintainance. It reduces the workload of management as most of the manual work done is reduced.

(2) Introduction

The project titled Library Management System is Library Management for monitoring and controlling the transactions in a library. The project “Library Management System” is developed using WCF, which mainly focuses on basic operations in a library like adding new books, and updating new information, and members and return books.

This project of “LIBRARY MANAGEMENT” gives us the complete information about the library. Admin can enter the record of new books, Delete books, Edit book and retrieve the details of books available in the library. Admin can issue the books to the students and maintain their records and can also check how many books are issued and stock available in the library and Student can also see the which books issued by them..

◆ **Technologies / Tools used**

Technologies:

- WCF Library
- ASP.NET Web Application(.NET framework)
- Windows Form Application(.NET framework)
- C#
- bootstrap
- HTML
- CSS

Tools:

- Git
- Visual studio
- Chrome Browser

(3) Software Requirement Specifications

(1) Manage registration/login

R.1.1: End User

R.1.1.1: Registration

Description: If User doesn't have any exiting account then they have to register themselves.

Input: User have to provide their name, email, and password.

Output: User would be redirected to login page.

R.1.1.2: Login

Description: If User already have an account then this option will be used to display home page by logging in.

Input: User have to give their username and password.

Output: User would be redirected to home page again.

R.1.1.3: logout

Description: User can logout after completion task.

Input: Click on logout option in side bar.

Output: User will be logged out and redirected to login page again.

R.1.2: Admin

R.1.2.1 : Login

Description: Admin can login here using predefined username and password.

Input: User has to give their username and password.

Output: User would be redirected to home page again.

R.1.2.2 : logout

Description: Admin can logout after completion task.

Input: Click on logout option in side bar.

Output: Admin will be logged out and redirected to login page.

(2) Manage Admin

R.2.1: Add book

Description: This function will allow user to add the book .

Input: Click on the Add book.

Output: Add book form would be displayed.

R.2.2: View book

Description: This function will show the list of all the books records along with information about it.

Input: Click on the Dashboard.

Output: List of all the books would be visible.

R.2.3: Edit book

Description: This function will let user to edit any book information and save changes to the database.

Input: Click on the edit book button.

Output: edit form would be visible where user can edit and save changes to database.

R.2.4 : Delete Book

Description: This function will let User to delete any book record.

Input: Click on delete book button.

R.2.5: Issue book

Description: Search the book which user want to issue.

Input: Click on the book user want.

Output: Confirmation of book issued or failure message.

R.2.6: Return book

Input: Click on Return the book.

Output: Issued book is updated.

R.2.7: View Issued book

Description: This function will show the list of all the books records along with information about it.

Input: Click on the Issued books.

Output: List of all the books has been issued

(3) Manage User

R.3.1: View book

Description: This function will show the list of all the books records along with information about it.

Input: Click on the Dashboard.

Output: List of all the books would be visible.

R.3.2: View Issued book

Description: This function will show the list of all the books records along with information about it.

Input: Click on the Issued books.

Output: List of all the books has been issued

(4) Manage Transaction

R.4.1: Add Transaction

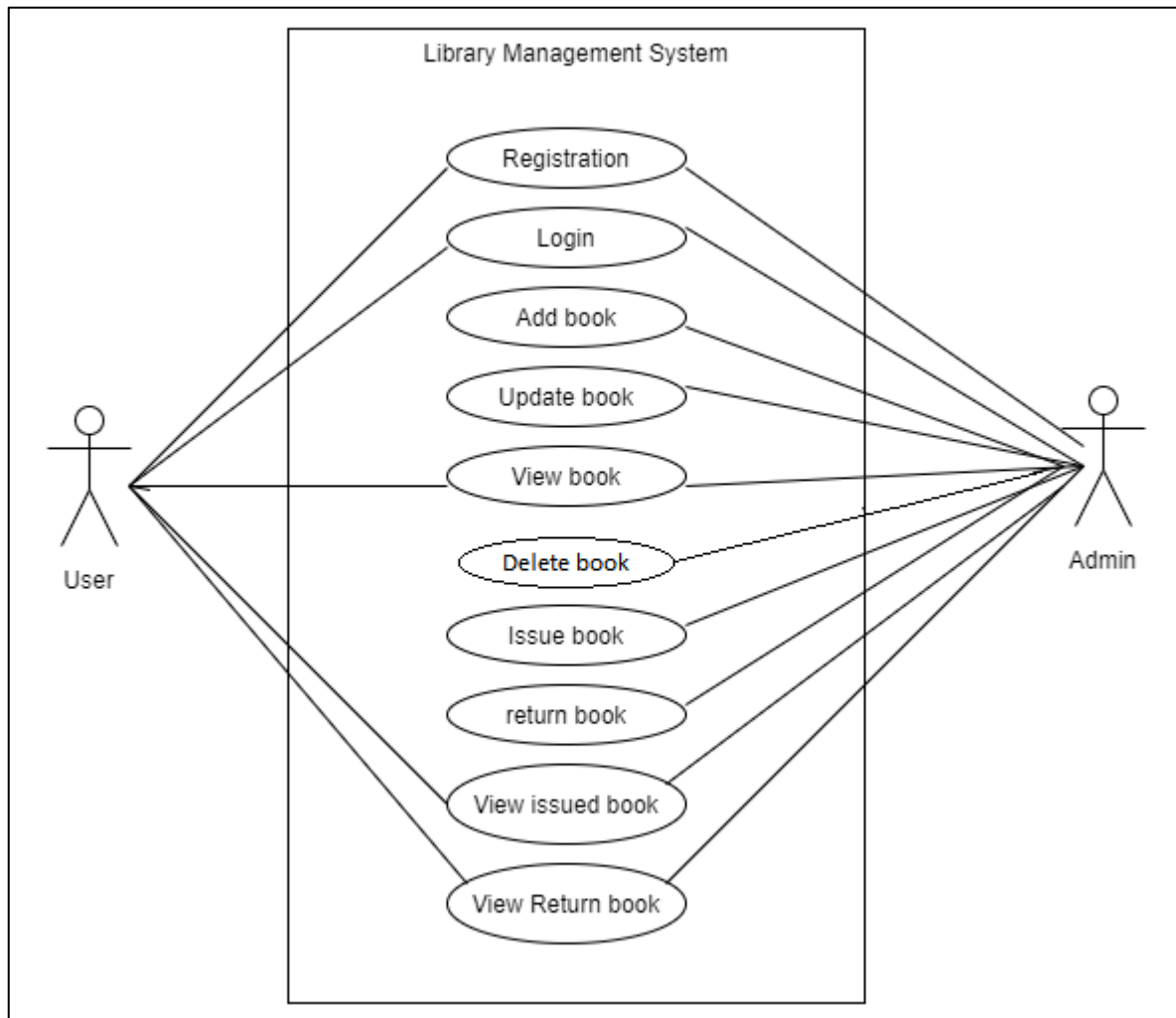
Description: This function will add book in issued book list

R.4.2: Remove Transaction

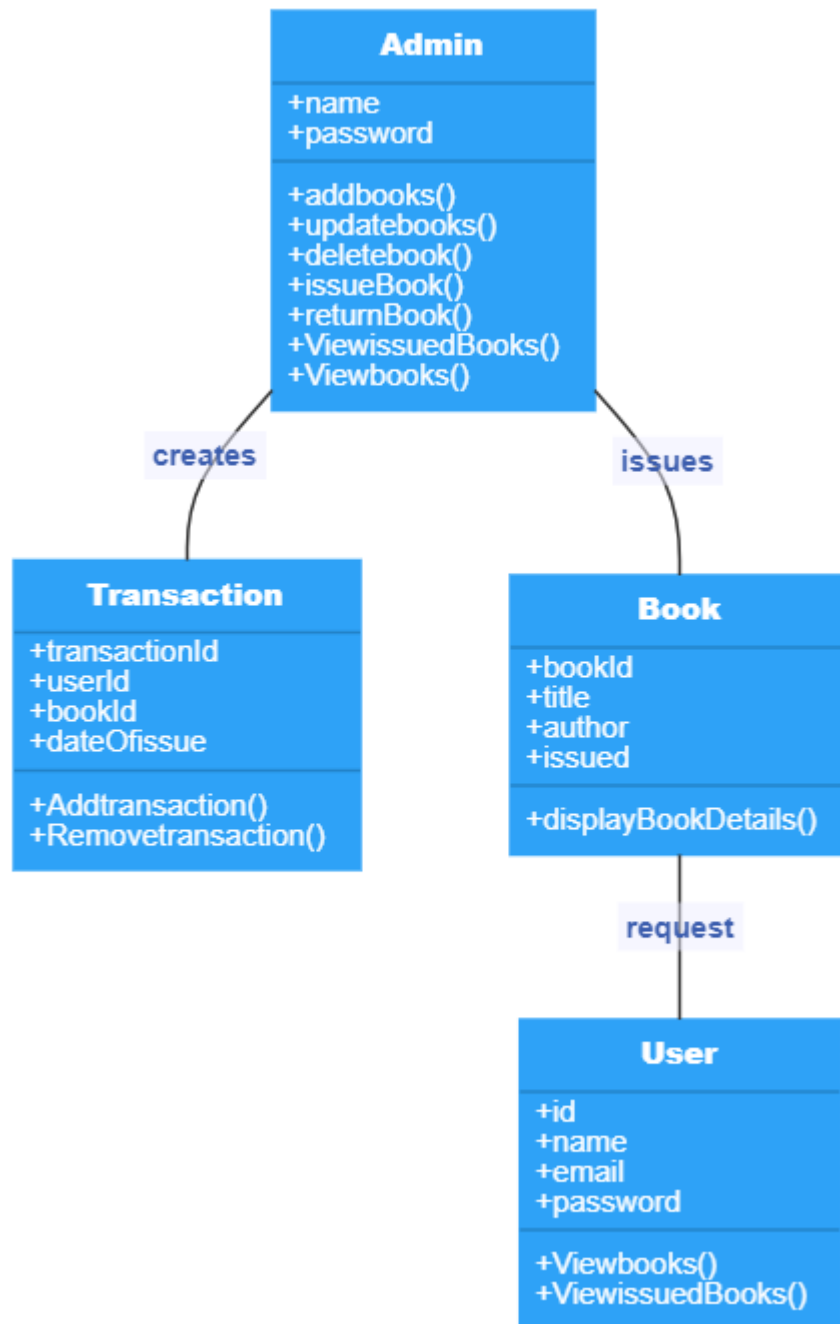
Description: This function will remove book from issued book list

(4) Design

i. Use case diagram



ii. Class diagram



iii. Data Dictionary

Users							
Sr No.	Field name	Data type	Required	Unique	PK/FK	Referred table	Description
1	_UIId	Int32	yes	yes	no	-	Autoincrement
2	name	String	yes	yes	no	-	-
3	email	String	yes	no	no	-	-
4	password	String	yes	no	no	-	-

Book							
Sr No.	Field name	Data type	Required	Unique	PK/FK	Referred table	Description
1	title	String	yes	yes	no	-	-
2	_Bid	Int32	yes	yes	no	-	Autoincrement
3	author	String	yes	yes	no	-	-
4	issued	Int32	yes	yes	no	-	-

Transaction							
Sr No.	Field name	Data type	Required	Unique	PK/FK	Referred table	Description
1	_id	Int32	yes	yes	yes	-	Autoincrement
2	_UIId	Int32	yes	yes	yes	Users	-
3	_Bid	String	yes	yes	yes	Book	-
4	Issue_date	String	yes	no	no	-	-

(5) Implementation Details

(a) Modules

◆ Login-Registration

- This module is the base for authentication authorization to ensure the security aspect of the user.
- It consist of all the login and registration functionality. User can login to the system if account already exist. User can register with unique username to create an account.
- User is supposed to provide correct credentials to successfully login to the system.
- User can logout from the system whenever he/she wants. This functions would not delete the activities performed by user.

◆ Manage Admin

- This module is for admin first it has login as admin for do the task of admin.
- Admin can add new book by entering book name and author name if it is empty give error message please enter the required field. Admin can edit book by entering details which we want to modify like book name, book author and updated data will be displayed on the home page.
- Admin can delete book by entering id.
- Admin can issue book to the student by click on issue and enter the student id whom have to issue the book.
- Admin can see all the issued books record.

◆ **Manage Student**

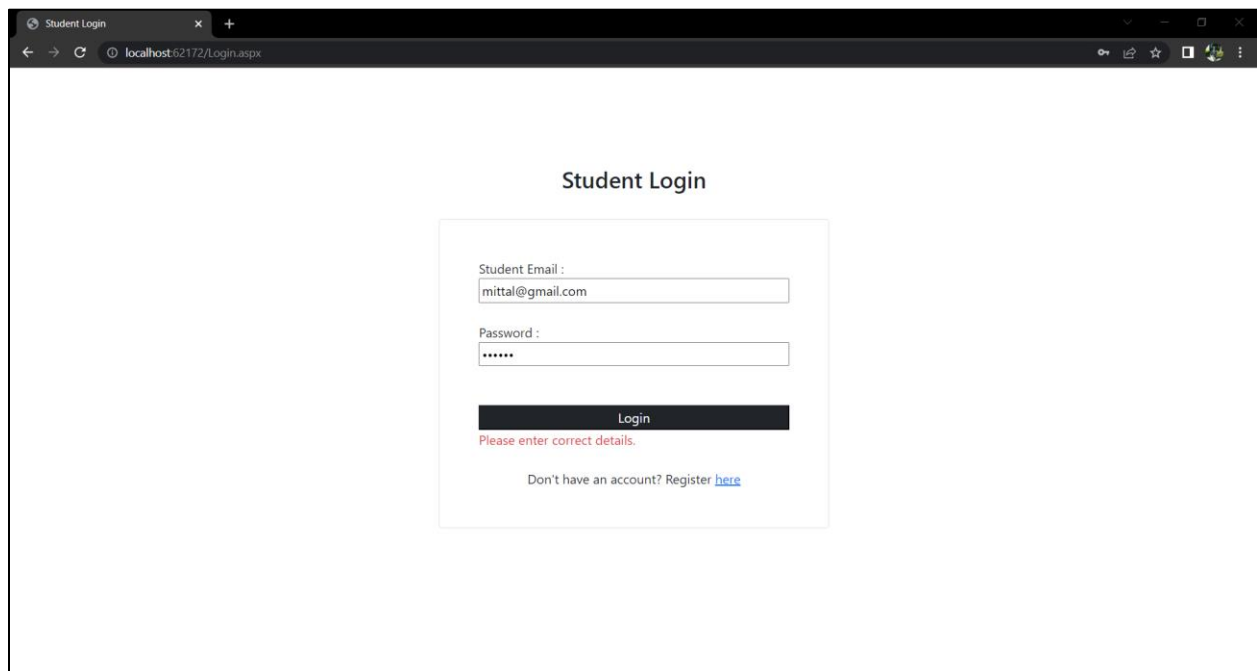
- In the home page student can see all the available books.
- Student can see all their issued book record and by clicking on return book they can return book and updated record display on home page.
- Student can update their profile by changing name, email.

(6) Testing

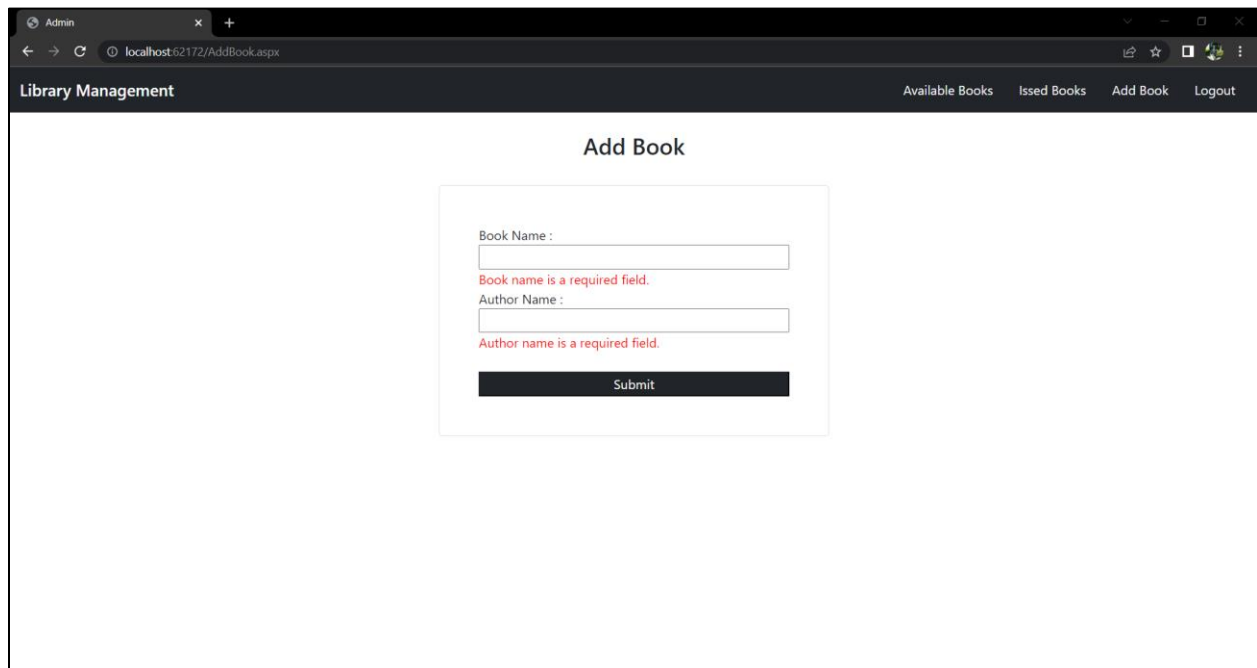
(i) Testing method: Manual testing

Sr no.	Test Scenario	Expected result	Actual result	Status
1	Login with incorrect credentials	Please enter the correct details	Please enter the correct details	Success
2	Add book to the database	Record should be added to the list of all the Record	Record is added to the list	Success
3	Add book without book name	Book name is required field	Book name is required field	Success
4	Add book without book author name	Author name is required field	Author name is required field	Success
5	Edit book record	Edit book page should be visible	Edit page is visible	Success
6	Click on issue book	Issue book page visible	Issue book page visible	Success
7	Click on Delete book	That recorded should be Deleted	Recorded Deleted	Success
8	Click on return book (student)	book has benn return	book has been return	Success
9	Click on issued book	Issued book display	Issued book display	Success

(ii) screenshots of validation



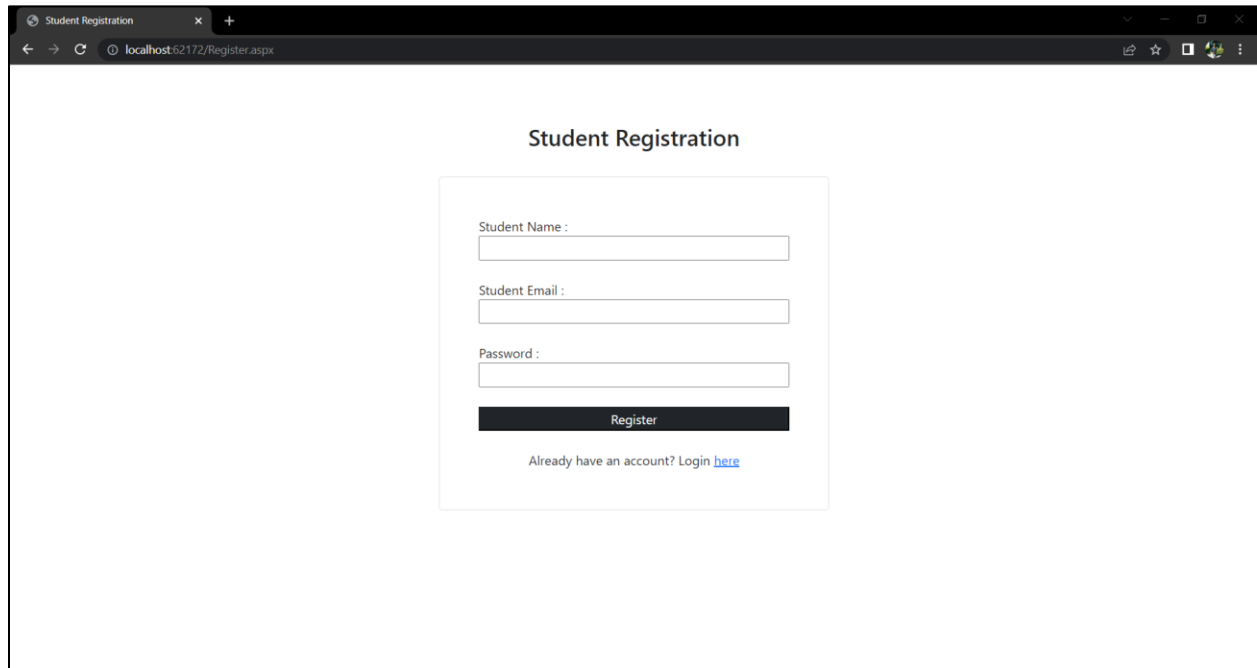
A screenshot of a web browser window titled "Student Login" with the URL "localhost:62172/Login.aspx". The page displays a login form with the title "Student Login". The form contains two input fields: "Student Email :" with the value "mittal@gmail.com" and "Password :" with masked characters "*****". Below the password field is a black "Login" button. A red error message "Please enter correct details." is displayed below the button. At the bottom of the form, there is a link: "Don't have an account? Register [here](#)".



A screenshot of a web browser window titled "Admin" with the URL "localhost:62172/AddBook.aspx". The page has a header "Library Management" and navigation links: "Available Books", "Issed Books", "Add Book", and "Logout". The main content area is titled "Add Book". It contains a form with two input fields: "Book Name :" and "Author Name :". Both fields have red error messages below them: "Book name is a required field." and "Author name is a required field." respectively. A black "Submit" button is located at the bottom of the form.

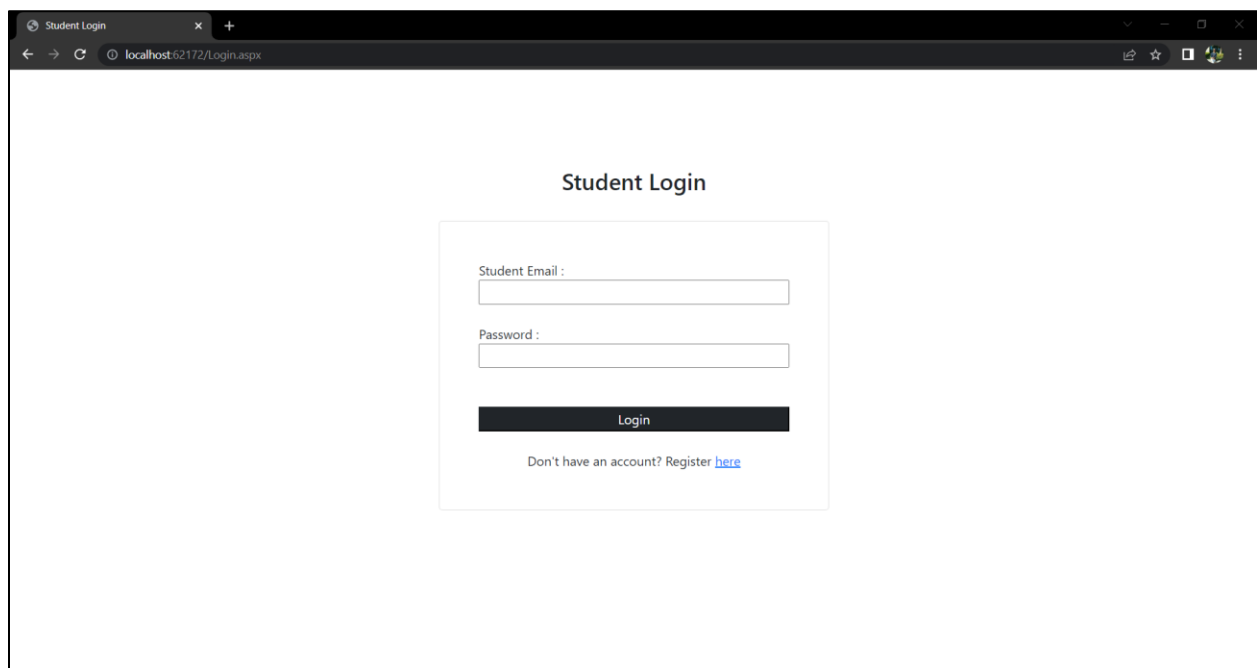
(7) Screen-shots

- **Registration (Student)**



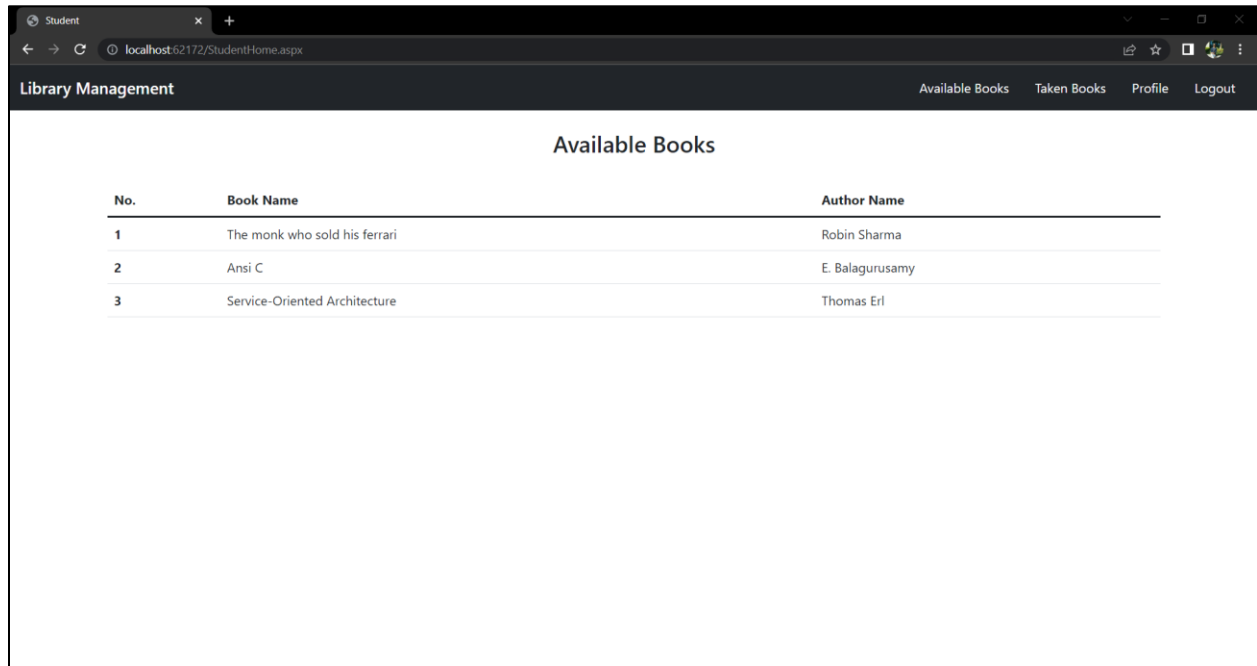
A screenshot of a web browser displaying the 'Student Registration' page. The browser's address bar shows 'localhost:62172/Register.aspx'. The page has a title 'Student Registration' and a central form. The form contains three input fields: 'Student Name', 'Student Email', and 'Password'. Below these fields is a dark 'Register' button. At the bottom of the form, there is a link: 'Already have an account? Login [here](#)'.

- **Login (Student)**



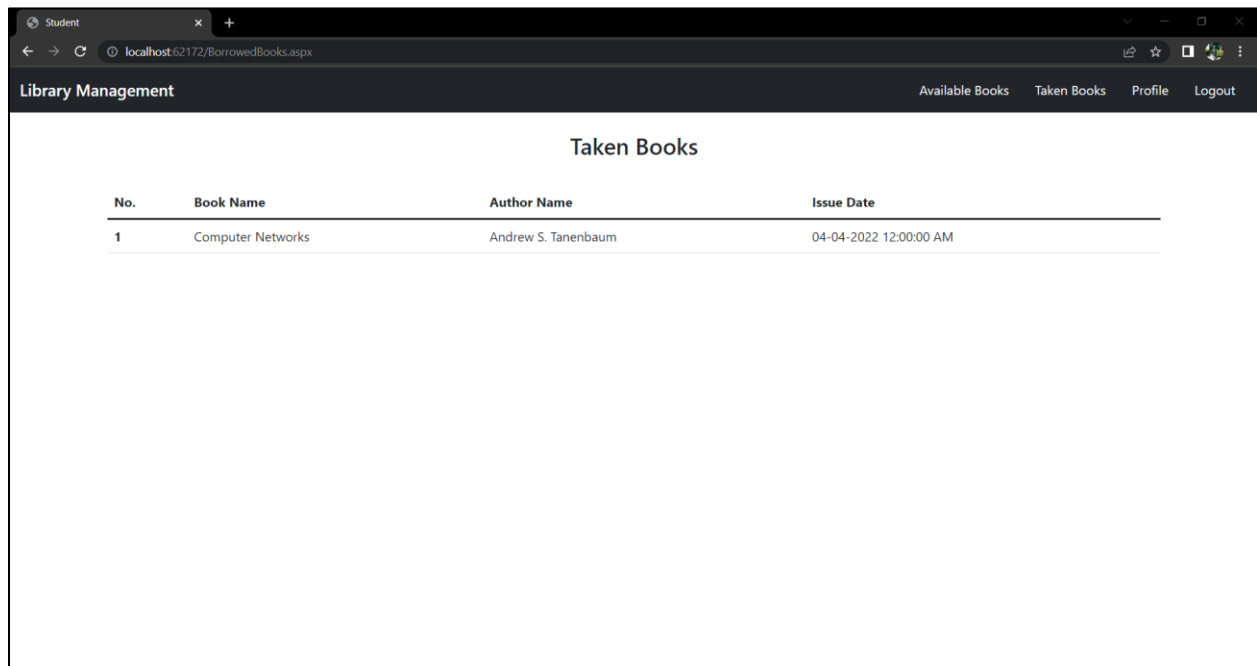
A screenshot of a web browser displaying the 'Student Login' page. The browser's address bar shows 'localhost:62172/Login.aspx'. The page has a title 'Student Login' and a central form. The form contains two input fields: 'Student Email' and 'Password'. Below these fields is a dark 'Login' button. At the bottom of the form, there is a link: 'Don't have an account? Register [here](#)'.

- **Available Books (Student)**



No.	Book Name	Author Name
1	The monk who sold his ferrari	Robin Sharma
2	Ansi C	E. Balagurusamy
3	Service-Oriented Architecture	Thomas Erl

- **Taken Books (Student)**



No.	Book Name	Author Name	Issue Date
1	Computer Networks	Andrew S. Tanenbaum	04-04-2022 12:00:00 AM

- **Profile (Student)**

Student Profile

Id :
1

Name :
Mittal

Email :
mittal@gmail.com

Edit

- **Edit Profile (Student)**

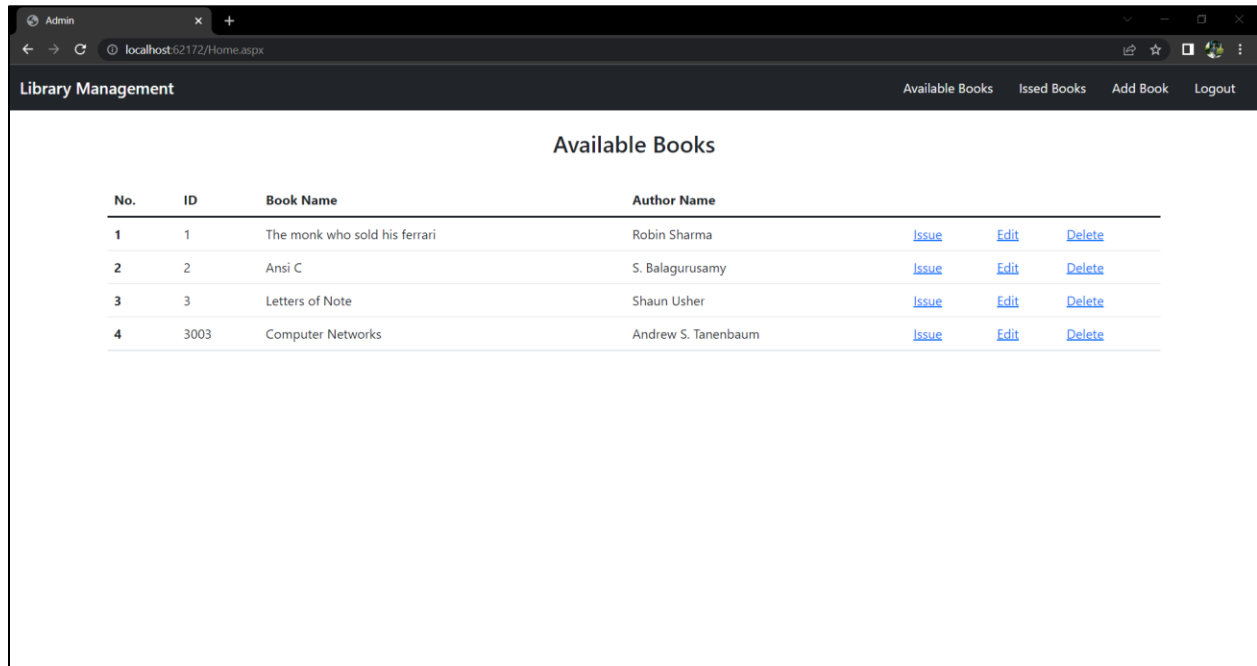
Edit Profile

Student Name :
Mittal

Email :
mittal@gmail.com

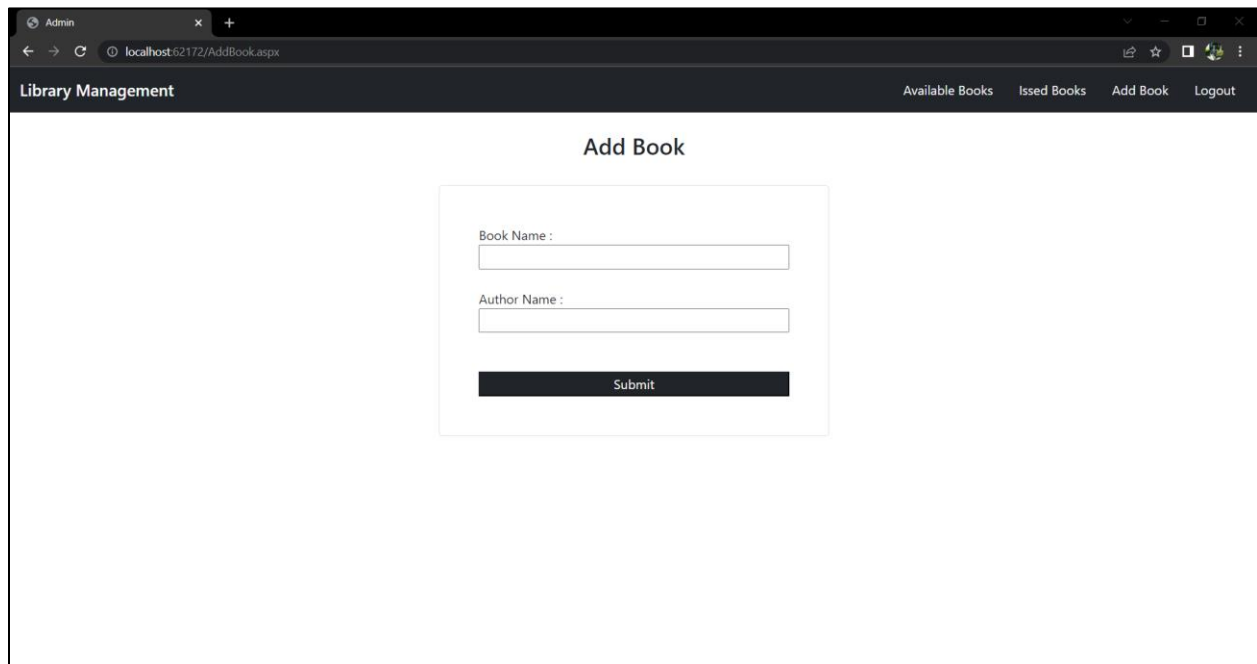
Save

- **Available Books(Admin)**



No.	ID	Book Name	Author Name			
1	1	The monk who sold his ferrari	Robin Sharma	Issue	Edit	Delete
2	2	Ansi C	S. Balagurusamy	Issue	Edit	Delete
3	3	Letters of Note	Shaun Usher	Issue	Edit	Delete
4	3003	Computer Networks	Andrew S. Tanenbaum	Issue	Edit	Delete

- **Add Book (Admin)**



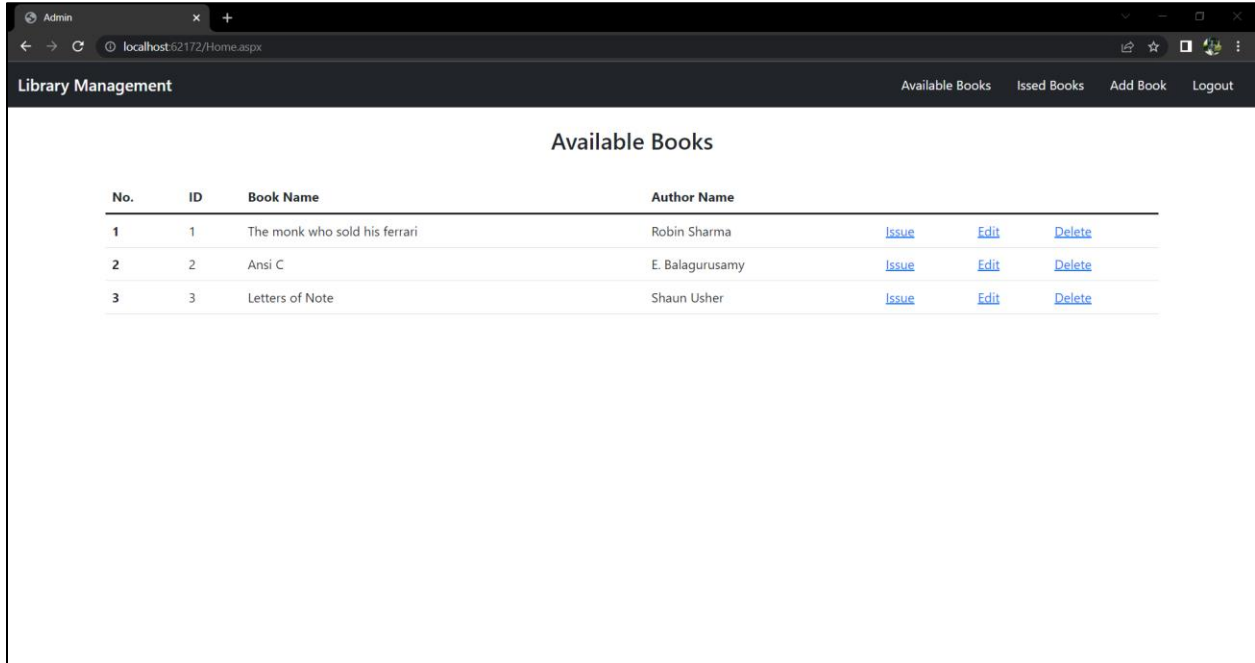
Add Book

Book Name :

Author Name :

- **Delete Book**

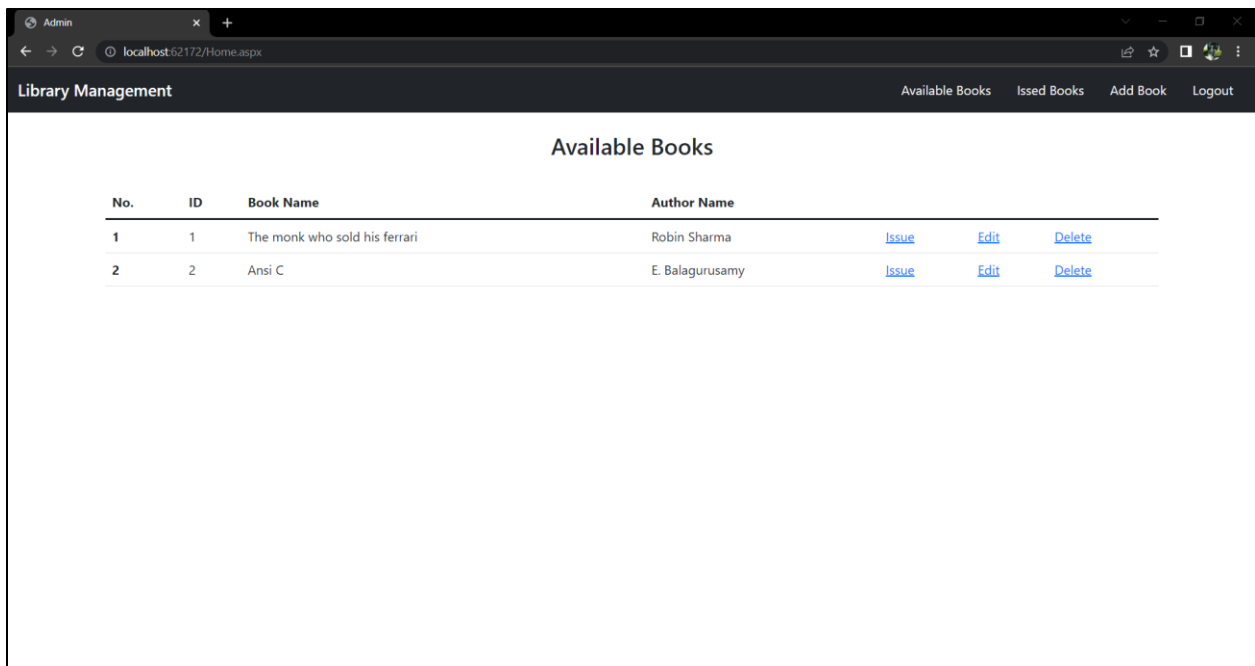
Before delete



The screenshot shows a web browser window with the URL `localhost:62172/Home.aspx`. The page title is "Library Management". In the top right corner, there are navigation links: "Available Books", "Issed Books", "Add Book", and "Logout". The main content area is titled "Available Books" and contains a table with three rows of book data. Each row has columns for "No.", "ID", "Book Name", and "Author Name", followed by three action links: "Issue", "Edit", and "Delete".

No.	ID	Book Name	Author Name			
1	1	The monk who sold his ferrari	Robin Sharma	Issue	Edit	Delete
2	2	Ansi C	E. Balagurusamy	Issue	Edit	Delete
3	3	Letters of Note	Shaun Usher	Issue	Edit	Delete

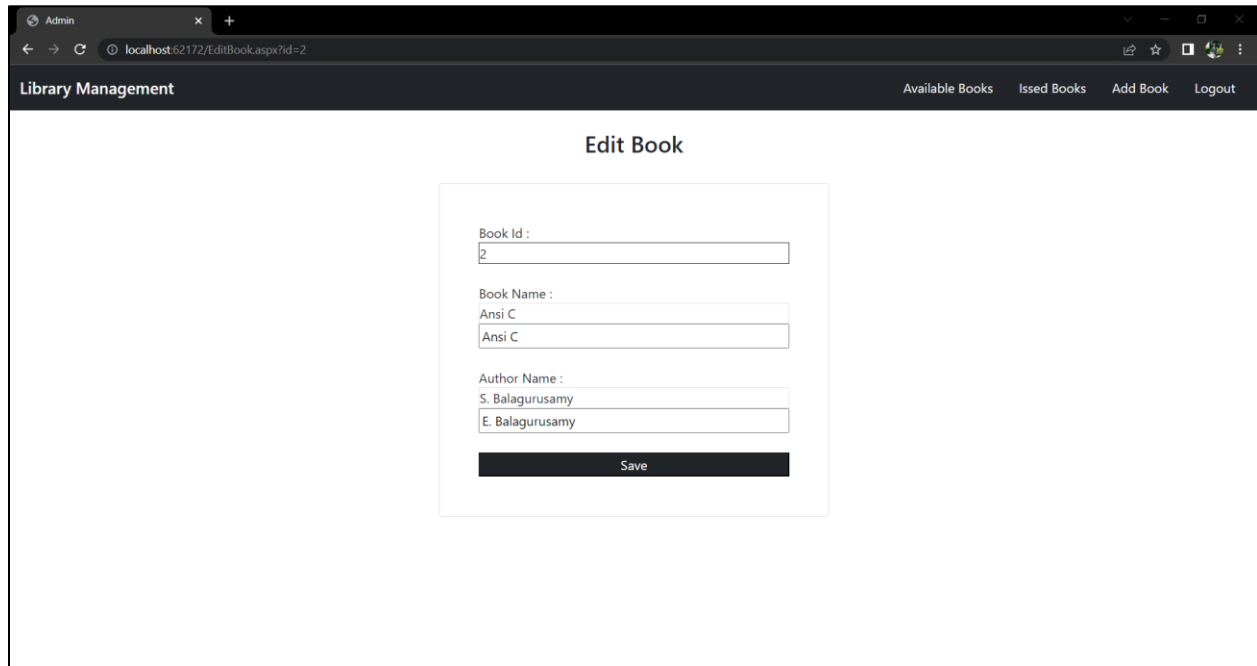
After delete



The screenshot shows the same web browser window as before, but the table now only contains two rows of book data. The row with ID 3 ("Letters of Note" by Shaun Usher) has been removed. The "Available Books" title and navigation links remain the same.

No.	ID	Book Name	Author Name			
1	1	The monk who sold his ferrari	Robin Sharma	Issue	Edit	Delete
2	2	Ansi C	E. Balagurusamy	Issue	Edit	Delete

- Updated book



The screenshot shows a web browser window with the address bar displaying 'localhost:62172/EditBook.aspx?id=2'. The page title is 'Library Management'. The main content area is titled 'Edit Book'. It contains a form with the following fields: 'Book Id' (value: 2), 'Book Name' (value: Ansi C), and 'Author Name' (value: S. Balagurusamy). There is a 'Save' button at the bottom of the form.

Admin

localhost:62172/EditBook.aspx?id=2

Library Management

Available Books Issed Books Add Book Logout

Edit Book

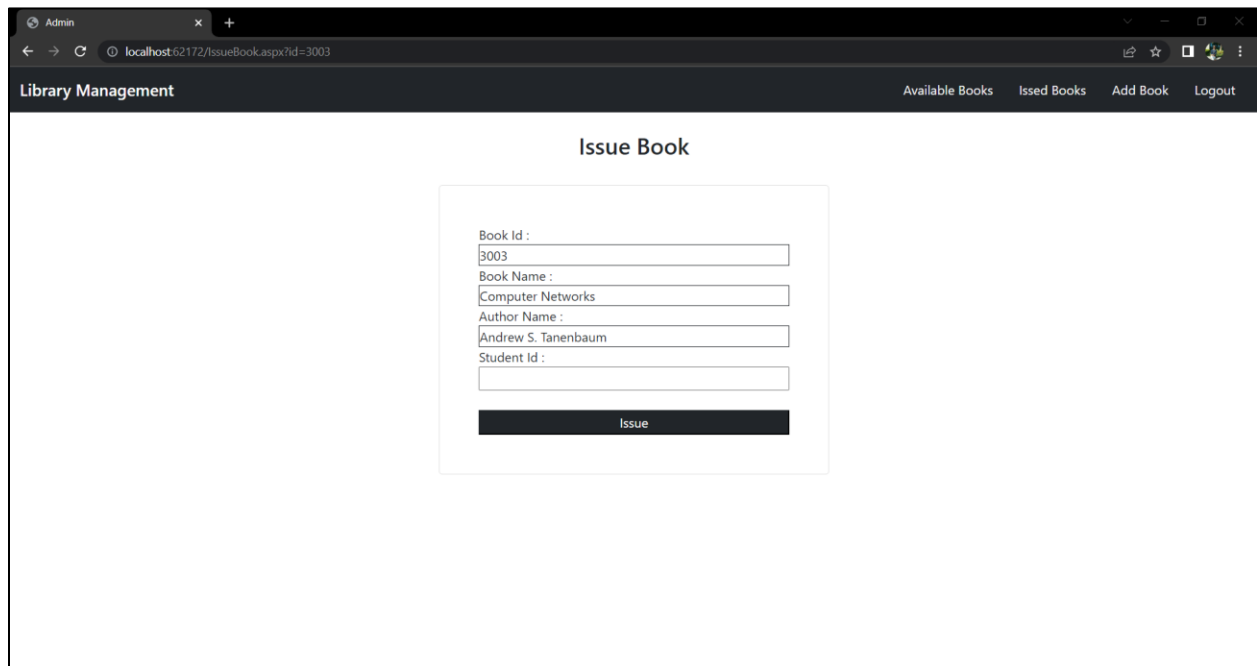
Book Id :
2

Book Name :
Ansi C

Author Name :
S. Balagurusamy

Save

- Issue Book



The screenshot shows a web browser window with the address bar displaying 'localhost:62172/IssueBook.aspx?id=3003'. The page title is 'Library Management'. The main content area is titled 'Issue Book'. It contains a form with the following fields: 'Book Id' (value: 3003), 'Book Name' (value: Computer Networks), 'Author Name' (value: Andrew S. Tanenbaum), and 'Student Id' (empty). There is an 'Issue' button at the bottom of the form.

Admin

localhost:62172/IssueBook.aspx?id=3003

Library Management

Available Books Issed Books Add Book Logout

Issue Book

Book Id :
3003

Book Name :
Computer Networks

Author Name :
Andrew S. Tanenbaum

Student Id :

Issue

- Issued books

Issued Books						
No.	Book ID	Book Name	Author Name	Student ID	Student Name	Issue Date
1	4002	Service-Oriented Architecture	Thomas Erl	2	Sweta	04-04-2022 12:00:00 AM Return Book
2	3003	Computer Networks	Andrew S. Tanenbaum	1	Mittal	04-04-2022 12:00:00 AM Return Book

- Return book

Issued Books						
No.	Book ID	Book Name	Author Name	Student ID	Student Name	Issue Date
1	3003	Computer Networks	Andrew S. Tanenbaum	1	Mittal	04-04-2022 12:00:00 AM Return Book

(8) Conclusion

The functionalities that are implemented in the system are prepared after understanding all functionalities according to software requirements specifications (SRS). Functionalities that are successfully implemented in the system are as follows:

- Login
- Registration
- User authentication
- Logout
- Add Book record
- Edit Book record
- Delete Books
- View Books
- Issue Books
- Return Books

After implementing all these functionalities, comprehensive testing was performed on the system to determine possible errors.

(9) Limitations and future extensions

Limitations:

- This project is suitable for small scale organization.

Future extensions:

- We can implement Functionality that Need admin Permission User and Admin to login.
- We can implement functionality for renew book.
- We can also implement functionality for calculating fine if book is returned after due date.

(10) **Bibliography**

Following links and websites were referred during the development of this project:

- <https://stackoverflow.com/>
- <https://www.w3schools.com/>
- <https://getbootstrap.com/docs/4.0>
- <https://docs.microsoft.com/en-us/>
- <https://www.umletino.com/>
- <https://www.encodedna.com/>