

Library Management System (LMS)

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INFO- C 451: SYSTEM IMPLEMENTATION

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TABLE OF CONTENTS

Problem Statement & System Requirements	3
Functional Requirements Specification	5
System Sequence Diagram	6
Activity Diagram	8
User Interface Specification	10
Project Plan	17
References	17
Highlighted Changes	17

Problem Statement

A library management system is utilized to trace book transactions, which include book check-ins and check-outs, and current inventory. The current system keeps track of everything through physical media (e.g., pen and paper), which has resulted in inefficient check-ins and check-outs, librarians failing to keep locating and updating information due to lost paperwork and other acts of human error, and user inconvenience.

To rectify this issue, a digital library management system will provide an opportunity to make library operations more effective by reducing manual errors and improving the user experience. By automating how librarians manage the book database and the process of borrowing and returning books, employee physical workload will be reduced, and users will be able to locate books in real time and therefore increase system efficiency.

System Requirements:

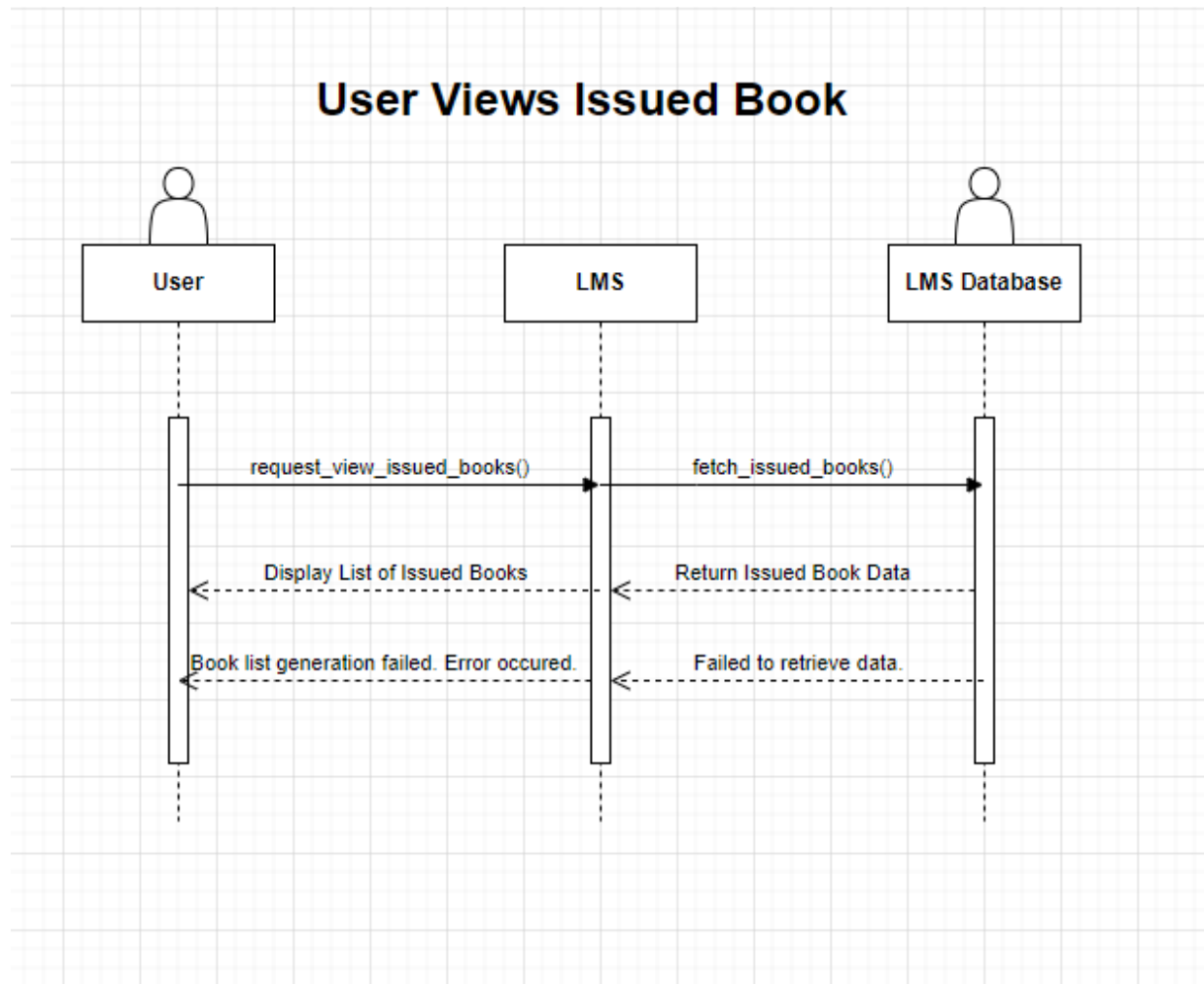
- Software
 - Operating System
 - Windows OS
 - Back-end
 - PHP
 - MySQL
 - Front-end
 - HTML
 - Framework
 - Bootstrap

- Hardware
 - Standard desktop for librarians and users
- Server Requirements
 - CPU: Quad-Core Processor (Intel or AMD)
 - RAM: 16 GB
 - Storage: 500 GB SSD (expandable)
- Network
 - 1 Gbps LAN Connection
 - Wi-Fi Access for staff and users
 - WP2 or WP3 Recommended

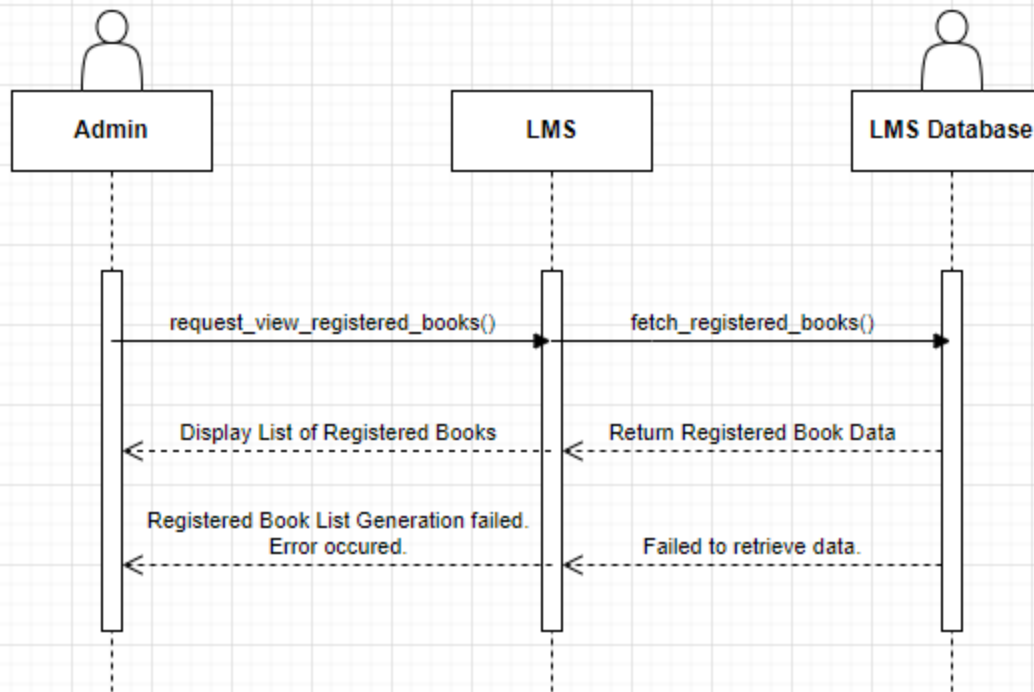
Functional Requirements Specification

Requirement	Description	Priority
User Registration	Users should be able to sign up with a unique email and password.	High
User Login	Users should be able to log in with valid credentials.	High
Password Reset	Users should be able to change/reset passwords securely.	Medium
Admin Authentication	Admins should have separate login credentials with higher privileges.	High
View Profile	Users should be able to view their personal information.	High
Edit Profile	Users should be able to update their details.	Medium
Admin User Management	Admins should be able to view, update, and delete user accounts.	High
Add Books	Admins should be able to add books with relevant details.	High
Update Books	Admins should be able to update book details.	High
Delete Books	Admins should be able to remove books.	Medium
View Books	Users should be able to browse all available books.	High
Search Books	Users should be able to search for books by title, author, or category.	High
Add Authors	Admins should be able to add new authors.	Medium
Edit Authors	Admins should be able to update the author's details.	Low
Add Book Categories	Admins should be able to create and manage book categories.	Medium
Issue Books to Students	Admins should be able to assign books to students.	High
Track Issued Books	Maintain a record of issued books, including issue date.	High
Return Books	Admins should be able to mark books as returned.	High
Check Book Availability	Users should be able to check if a book is available.	Medium
User View	Users should be able to see the books they have borrowed.	High
Admin View	Admins should be able to see all the books issued and the students who borrowed them.	High
Overdue Notifications	Notify users and admins if a book is overdue.	Medium
Issuance/Return Notifications	Users should receive confirmations on book transactions.	Low
Manual Logout	Users should be able to log out securely.	High
Access Control	Regular users should not be able to access admin features.	High

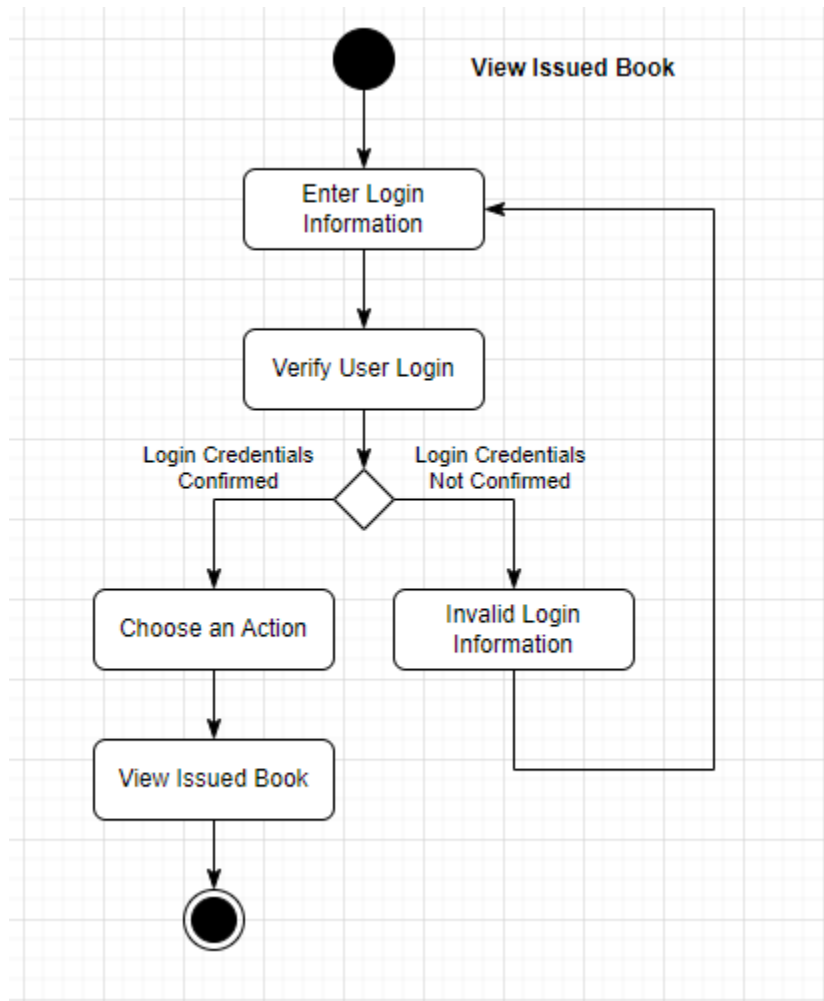
System Sequence Diagram

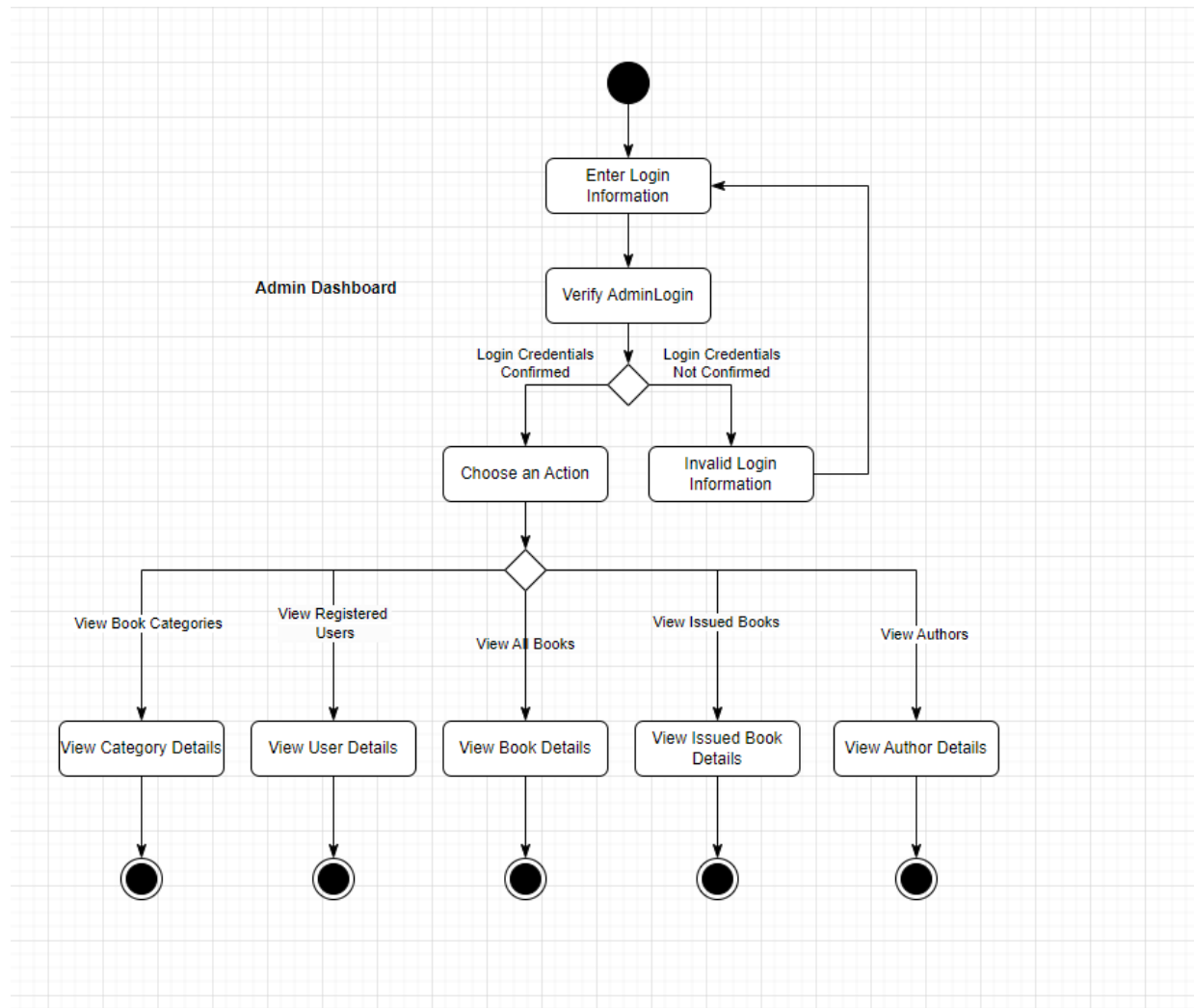


Admin Views Registered Users



Activity Diagram





User Interface Specification

Library Management System

[User Login](#) [Admin Login](#) [Signup](#)

User Login Form

Email ID:

Password:

Login

[Sign Up](#)

User Registration Form

Full Name:

Email ID:

Password:

Mobile:

Address:

Register

Library Management System (LMS)

Welcome: user

Email: user@gmail.com

My Profile ▾ Logout

Book Issued

No of book issued: 2

View Issued Books

Issued Books Details

Name	Author	Book Number
Data structure	D S Gupta	6541
The Shining	Stephen King	1111

Library Management System (LMS)

Welcome: admin

Email: admin@gmail.com

My Profile ▾ Logout

[Dashboard](#) [Books ▾](#) [Category ▾](#) [Authors ▾](#) [Issue Book](#)

Registered User

No. total Users: 6

[View Registered Users](#)

Total Book

No of books available: 8

[View All Books](#)

Book Categories

No of Book's Categories: 9

[View Categories](#)

No. of Authors

No of Authors: 10

[View Authors](#)

Book Issued

No of book issued: 10

[View Issued Books](#)

Registered Books			
Name	Author	Price	Number
Software Engineering	M D Guptaa	3	4518
Data Structures	Chetan Bhagat	300	6541
Harry Potter and the Philosopher's Stone	J.K. Rowling	450	1234
1984	George Orwell	350	5678
The Hobbit	J.R.R. Tolkien	500	7890
The Shining	Stephen King	600	1111
Murder on the Orient Express	Agatha Christie	300	2222
The Adventures of Tom Sawyer	Mark Twain	400	3333

Manage Books

Name	Author	Category	ISBN No.	Price	Action
Software Engineering	102	1	4518	3	Edit Delete
Data Structures	103	2	6541	300	Edit Delete
Harry Potter and the Philosopher's Stone	105	2	1234	450	Edit Delete
1984	106	1	5678	350	Edit Delete
The Hobbit	108	4	7890	500	Edit Delete
The Shining	109	4	1111	600	Edit Delete
Murder on the Orient Express	110	5	2222	300	Edit Delete
The Adventures of Tom Sawyer	107	5	3333	400	Edit Delete

Project Plan

Most of the functionalities have been completed, but I still need to implement critical features into the program, such as editing and deleting authors, and a way to change passwords and edit user and admin details. Additionally, there are a lot of bugs in this program that need to be rectified as demonstrated in the demo. The technological stack has been finalized to match the scope of the project and my current capabilities. I was originally going to use Python for this project, but I realized it was outside of my expertise. While I am familiar with PHP, I'm not an expert at it so figuring out errors took longer than usual. That said, I will complete as much as I can before the final implementation.

References

I used this tutorial to help me understand the scope of the project, but the tutorial itself was incomplete. I had to determine bugs and errors for the rest of the project, as well as Sprucing the UI design to match my tastes. The tutorial used a previous version of Bootstrap, so I had to update the code to match Bootstrap 5.

Tutorial: <https://www.geeksforgeeks.org/library-management-system/#er-model-of-library-management-system>

Highlighted Changes

I did not receive feedback on any of the diagrams and project proposals at the time of submission, so I cannot highlight any changes in the proposal and project.