

Library Management System

INFO-C451 SYSTEM IMPLEMENTATION

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Part 1:

1. Customer Problem Statement

Problem Statement: As a library patron I do find it hard to find a locate books. Sometimes I'm unsure if they have any copies available to rent. As a librarian I find it hard to maintain member information and would like it if I could view and edit member information. I expect the database to be very user friendly for the staff and members and guest. It would be important to mention the easier the interface the better we could assist patrons with technical help if needed. As a member I would like to find my book with a few clicks of a button.

- Login: Enter username and password.
Only administrators (librarian) and members
 - Registration: Adding new user to system which stores each member information.
- Search for book: The system should process a request by the user to look up book information.
- Add new book: The system should prompt the admin to enter book ISBN and the number of its copies while updating the system.
 - Delete Book: The admin should be prompted for the book ISBN and the entry should be deleted from the system.

2. System Requirements: Functional Requirements

The Librarian does the following function:

- **Add Book**

New entries must be entered in database

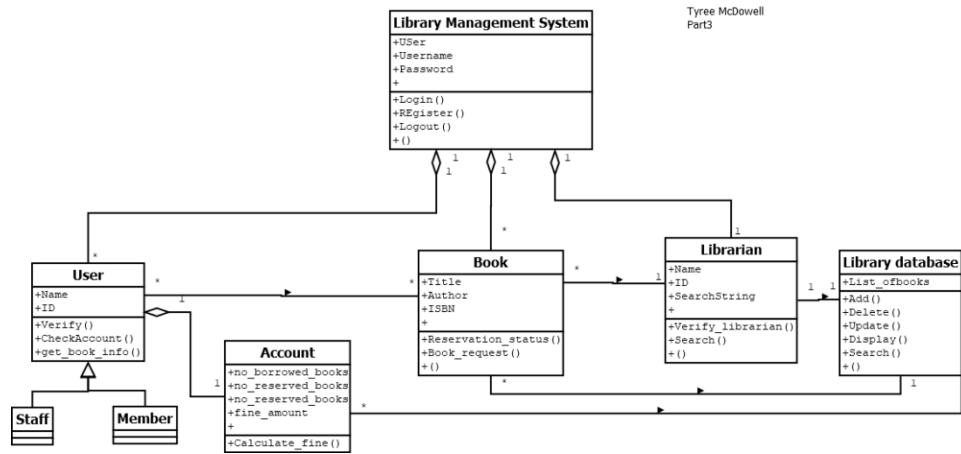
- **Update Book**

Any changes in book should be updated in case of update

- **Delete Book**

Wrong/Expiry/Un-usuable entry must be removed from system

- **Inquiry Members**



Contract C1: Login()

<p>Operation: Cross References: Preconditions: Postconditions:</p>	<p>Login(): username, and password Use case: Member is beginning to log into his/her account. -Once logged in the system with verifying user(association)</p> <ul style="list-style-type: none"> - The system will check the account for borrowed books and reserved books. (association)
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Contract C2: Search()

<p>Operation: Cross References: Preconditions: Postconditions:</p>	<p>Search(): (Title, Author, ISBN) Use case: none</p> <ul style="list-style-type: none"> - The system will generate a list of books in the database. (association) - The display operation will bring up book info. (association)
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Contract C3: Book_request()

<p>Operation: Cross References: Preconditions: Postconditions:</p>	<p>Book_request() Use case: Reservation_status</p> <ul style="list-style-type: none"> - Depending on if the book is available the system will display its availability. (association)
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- The system will allow the member to add, delete, and update the member's account before reserving.(Association)

Contract C4: Calculate_fine()

Operation:	Calculate_fine()
Cross References:	Use case:
Preconditions:	Reservation_status
Postconditions:	<ul style="list-style-type: none">- Once finalize the system will calculate a fee for the borrowed book. (association)- The system will then update members account on when it was borrowed and returned.

Because this is a simple library management system the task for this project will be fairly easy.

However, the important aspect of this project is accuracy. I will need to make sure to review and test the system continuously to ensure it's working efficiently for the user.

By the start of week 8, I will begin the coding process which will take less than 2 weeks to finish while integrating the model. Between weeks 10 and 12 will be extensive system testing to ensure it's up and running by the end of the semester

Reference

1. <https://itstillworks.com/library-management-information-system-6616606.html>
2. http://csis.pace.edu/~marchese/CS616/Lec6/se_l6.htm
3. <https://studentprojectguide.com/project-report/library-management-system-case-study/>

Inquiry all current enrolled members to view their details
Inquiry Issuance

Inquiry of all database book.

- **Check out book**

To issue any books must be checked out

- **Check In book**

After receiving any book, the system will reenter book back into database

- **Inquiry waiting for approvals**

Librarian will generate all newly application which is in waiting list

- **Reserve Book**

This use case is used to reserve any book with the name of librarian, it can be pledged

- **Set user Permission**

From this user case Librarian can give permission categorically, also enabling/disabling of user permission can be set through this case.

MEMBER does the following function:

- **Authentication**

User must be authenticated before accessing system.

- **Search Book**

User can search any book title.

- **Request Book**

After successful searching member mark this book as requested book.

- **Check Account**

This use case is used to check account details

Extract and list the requirements from the problem statement in the table shown below.

No.	Priority Weight	Description
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REQ-1 (show the unique label of the requirement)	The priority weight of the requirement	Describe the requirement briefly
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- **Functional Requirements**

Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup.

- **Security Requirements**

We are going to develop a secured database for the university.

There are different categories of users namely library staff, members, and guest.

Depending upon the category of user the access rights are decided. It means if the user is an administrator, then he can be able to modify or delete the data.

All other users other than library staff only have the rights to retrieve the information about database.

- **Software Quality Attributes**

The Quality of the database is maintained so it can be user friendly to all the users of the database.

- **Hardware Constraints**

The system requires a database in order to store data.

- **Software Constraints**

The development of the system will be constrained by the availability of required software such as database and development tools.

List the nonfunctional requirements ([FURPS \(Links to an external site.\)](#)), sort them by priority and describe them. List these items below the table shown above.

- **Login Page**

The user must enter its user ID and a keyword a password in order to access library system.

Member Account Page

Once successfully logged in the user can now search for any book title or check account for current rentals.

Librarian Page:

The library staff will be able to management the system from this page.

Books List:

The member or guest will be able to see what books are available in the library system.



Demo date
Presentation

MONDAY

EVENING MAY

2ND 2022

Website

<https://github.com/tymcdow/LMS>

by Tyree McDowell



Library
Management
System

By Tyree McDowell

System Requirements

Library staff will be able to:

- Add Book
- Update Book
- Delete Book
- Inquiry Members
- Check out book
- Check In book
- Reserve Book

Members will be able too

- Search book
- Add book
- Remove book
- Borrow book
- Return book



Features

Users will be able to

- **Add/Update/Delete Book records**

New entries must be entered in database

Any changes in account will be updated.

User will be able to delete material from pre check out.

- **Register/Login Users**

Registered users will be able to safely login

- **Issue/Return Book**

User will be able to issue and receive book.

- **Search Book**

User will be able to search for book.

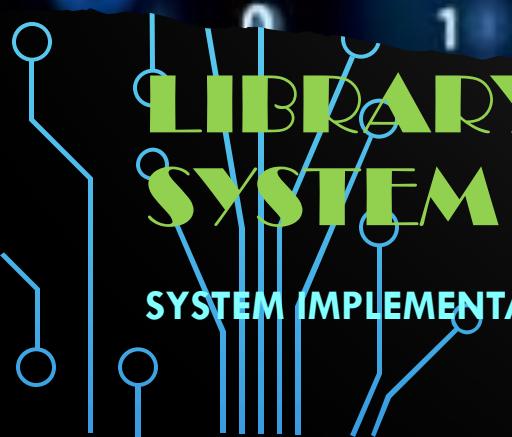
- **Fine Calculation**

Will be able to see exact cost at great rates.

Design Preview [Home]

The screenshot shows a blue-themed application window titled "Design Preview [Home]". At the top right, it says "Welcome to Library Management". Below the title, there's a decorative graphic of a computer monitor displaying a starry space scene. The main area is divided into sections: "Operation" (with icons for New Book, Statistics, and New Member), "Action" (with icons for Issue Book, Return Book, and Help), and a footer section. Each section has a small descriptive text label below its corresponding icon.

Section	Action	Description
Operation	New Book	Icon: Book with a plus sign
	Statistics	Icon: Bar chart
	New Member	Icon: Plus sign inside a circle
Action	Issue Book	Icon: Books with a circular arrow
	Return Book	Icon: Book with a circular arrow
	Help	Icon: Question mark inside a circle



LIBRARY MANAGEMENT SYSTEM – DEMO

SYSTEM IMPLEMENTATION: 24343



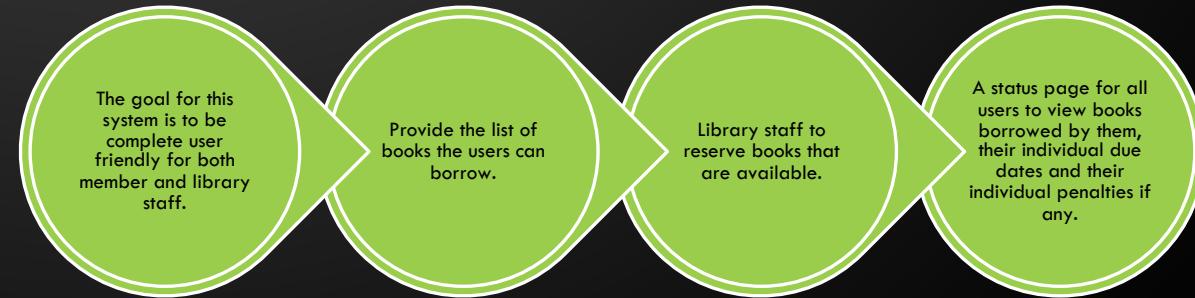
WHAT IS A LIBRARY SYSTEM?

A Library Management System is a software built to handle the primary housekeeping functions of a library.

The library system helps to keep the records of all transactions made by the member while updating the system books availability.

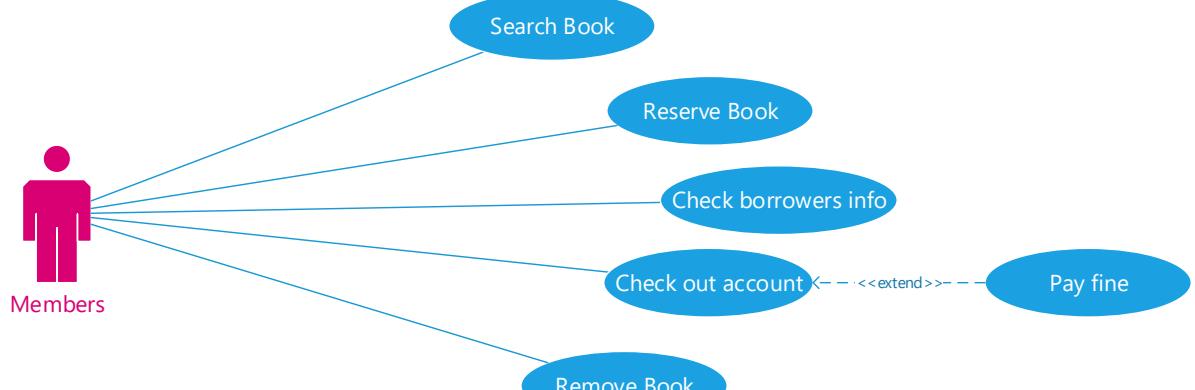
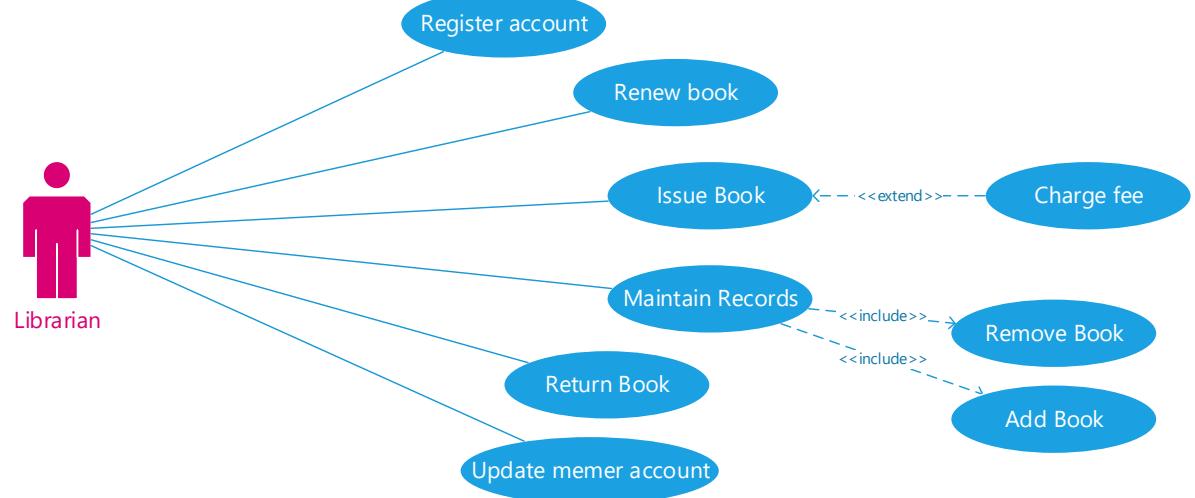
The sole purpose of this new Library system is to provide better and efficient service to all users of this system.

SCOPE



WHO CAN USE THIS PRODUCT?

- Library members
Members can search the book, check-out, reserve, renew, and return a book.
- Library staff
Responsible for adding and modifying books, book items, and users. The Librarian can also reserve, issue, and return book items..



SCENARIOS

- The member or librarian will login into account.
- The user will select member and will be able to login with a user and password.
- Once the member successfully logs in the member will be able to look for available books in the system by searching title, author, or subject of the book.
- If available the member can reserve, place in cart, remove from cart, or issue book.
- Once checked out the system will charge the member a fee while the system updates the members account and books issued.
- The member can now sign out once finished.

PRODUCT ROADMAP

Current

- Presentation

Final thoughts

This system does exactly what it was made to do which were to provide the member with error free experience.

Future updates

- I plan on updating the login process by adding second layer of security.
 - Also updating the GUI interface to add for aesthetic.