Customer Problem Statement

Problem Statement:

In our busy library, managing our extensive collection of media items has become a cumbersome task. Patrons often struggle to find the materials they need due to inefficient catalog organization, and manual processes for borrowing and returning items lead to long wait times and frustration. Additionally, the lack of a reservation system means patrons miss out on accessing popular items when they become available. As a library patron, I expect a modern software system to streamline the catalog management process, facilitate easy checkouts and returns, and provide a reservation system to ensure fair access to desired materials.

Glossary of Terms:

Library Media Catalog Database System: A software system designed to manage library resources, including books, DVDs, CDs, magazines, and other media items, through a centralized database.

Checkout System: A component of the library system allowing patrons to borrow media items from the library.

Return System: A component of the library system enabling patrons to return borrowed media items.

Reservation System: A feature of the library system allowing patrons to reserve media items in advance for future checkout.

System Requirements

Functional Requirements:

No.	Priority Weight	Description
REQ-1	High	The system should have a database to store information about media items, including title, author, genre, and availability status.
REQ-2	High	Patrons should be able to search the library catalog online by title, author, or genre to find desired media items.
REQ-3	High	Patrons should be able to borrow media items through a checkout process, updating availability status in the database.
REQ-4	High	The system should facilitate the return of borrowed media items, updating availability status in the database.
REQ-5	Medium	Patrons should be able to reserve media items that are currently unavailable, with automated notifications when reserved items become available.

Nonfunctional Requirements

Functionality:

- The system should be intuitive and easy to use for both library staff and patrons.

Usability:

- The system should provide quick access to media item information and facilitate efficient checkout and return processes.

Reliability:

- The system should maintain accurate data records and ensure consistent availability status updates.

Performance:

- The system should handle simultaneous user interactions efficiently without significant latency.

Supportability:

- The system should be easily maintainable and upgradable to accommodate future library needs.

User Interface Requirements

1. Create Account
2. Login
3. Search
4. Checkout
5. Reserve
6. Return

Plan of Work:

✓Requirement Gathering

✓Database Design

✓Frontend Development

(✓)Backend Development

(✓)Implementation

Testing

Final Demo

Stakeholders:

- Library members/patrons
- Library staff/management
- People in the community

Actors/ Goals:

User:

- Anyone in the community who might need help finding something at the library.

- Users can create an account, update their account info, and browse, checkout, reserve, and return media at the library with ease.

Media Catalog/Library Database:

- This is the relational database that will contain all of the information pertaining to the media items available at the library as well as its users and their accounts. It updates the availability status of media items accordingly based on reservations, check-outs and returns.

- The goal of the media catalog library database is to provide accurate and easily accessible information regarding media items at the library, as well as an easy-to-use library system for patrons.

Use Cases:

DB Design (total: 10)

- Create Account: User creates an account (2)
- Update User Info: User updates their account information (2)
- Account Log-In: User logs into their account (4)
- Change Password: User changes their password (2)

Media Catalog (total: 12)

- Browse Media Catalog: User browses the media catalogue (4)
- View Media Info: View information about a piece of media in the catalogue (4)
- Update Availability Status: Availability status of a piece of media is updated in the catalog database (4)

Checkout System (total: 12)

- Check-Out Media: User checks-out a piece of available media in the catalog (4)
- View Checked-Out Media: User views their currently checked-out media (4)
- View Check-Out History: User views their previously checked-out media (4)

Return System (total:4)

- Return Media: User returns a piece of media (4)

Reservation System (total: 6)

- Reserve Media: User reserves a piece of media in the catalog (4)
- Notify User of Media Item Becoming Available: User is notified of a piece of media they have reserved becoming available (6)

Activity Diagrams

User Log-In:

States

- Initial State: User is trying to log into their account through the webpage.
- Final State: User successfully logs into their account.

Actions

The user begins by entering in their account credentials (username/password). The database is then queried to validate the entered credentials. If the database is not available, the system returns an error. If the database is available, and the credentials entered are not valid, the account lockout threshold counter is increased by 1, up to a maximum of 3, which upon reaching, locks the account temporarily. If the credentials entered are valid, the user successfully logs into their account.

Checkout Media Item:

States

- Initial State: User is browsing the Media Catalog, looking to checkout an item.
- Final State: User either successfully checks out a media item, or if unavailable, reserves the media item.

Actions

The user begins by selecting the media item they wish to check out, then the user selects the “checkout” button. A new box pops up for checkout. If the media item is not available, the system will ask the user if they want to reserve it. If they choose “No”, the box will close. If the user selects “Yes” a prompt to confirm a reservation will pop up, if the user confirms, they are sent a confirmation, and the box closes. If the media item is available, the user will be prompted to confirm their checkout selection, and after confirmation, the media item’s availability status will be updated.

Sequence Diagrams

Reserve Media Item:

Actor: User

Objects: Website, Library Media Catalog, Reservations, Library Database

1. User selects media item
2. User selects “reserve”
3.User is prompted to confirm reservation

4. User confirms reservation
5. Reservation info is updated
6. Updated info is recorded in the database
7. User is sent a confirmation of their reservation

Checkout Media Item:

Actor: User

Objects: Website, Library Media Catalog, Checkout, Library Database

1. User selects media item
2. User selects “checkout”
3.User is prompted to confirm checkout
4. User confirms checkout
5. Media item availability status and user checkout history info is updated in DB
6. User is sent a confirmation of their checkout

View Checkout History:

Actor: User

Objects: Website, Library Database

1. User selects “checkout history”
2. Database is queried for user’s checkout history
3. User’s checkout history is displayed on-screen for the user