Title: Online Library System

***Description:** The Online Library System allows users to browse, borrow, and manage books online. Users can register, login, search for books, borrow books and view their borrowed books.

1-Scope: The SSD covers the main functionalities of the Online Library System, including user authentication, book management, and borrowing operations.

2-Architecture: The system follows a client-server architecture, where the client interacts with the server via HTTP requests.

3-Functionalities: 1-User Authentication:

- Description: Users can register for an account or login to an existing account.
- Title: User Authentication
- Actors: User
- Precondition: User navigates to the login or registration page.
- Main Success Scenario:
    1. User provides valid credentials (username/email and password).
    2. System verifies the credentials.
    3. System grants access to the user dashboard.
- Postcondition: User is logged in and can access the system functionalities.

2-Book Search:

- Description: Users can search for books by title, author, or category.
- Title: Book Search
- Actors: User
- Precondition: User is logged into the system.
- Main Success Scenario:
    1. User enters search criteria (title, author, or category) in the search bar.
    2. System retrieves matching books from the database.
    3. System displays search results to the user.
- Postcondition: User sees a list of books matching the search criteria.

3-Book Borrowing:

- Description: Users can borrow books from the library.
- Title: Book Borrowing
- Actors: User
- Precondition: User is logged into the system and has searched for a book.
- Main Success Scenario:
    1. User selects a book from the search results.
    2. System checks the availability of the book.
    3. If the book is available, the system allows the user to borrow it.
    4. System updates the user's borrowing history and the book's availability status.
- Postcondition: User successfully borrows the selected book.

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4. Functional Requirements

4.1 User Management

- **FR1:** Users shall be able to register for a new account by providing their username, email, and password.
- **FR2:** Users shall be able to log in to the system using their registered credentials.
- **FR3:** Users shall be able to update their profile information, including username and password.
- **FR4:** Users shall be able to reset their password in case they forget it.

4.2 Book Management

- **FR5:** Users shall be able to browse the list of available books in the library.
- **FR6:** Users shall be able to search for books by title, author, or category.
- **FR7:** Users shall be able to view detailed information about a book, including its description, author, and availability status.

4.3 Borrowing and Returning Books

- **FR8:** Users shall be able to borrow books from the library for a specified period.
- **FR9:** Users shall be able to view their borrowing history, including the list of borrowed books and their due dates.

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5. Non-Functional Requirements

5.1 Usability

- **NFR1:** The system shall have an intuitive and user-friendly interface.
- **NFR2:** The system shall provide clear instructions for performing various tasks.
- **NFR3:** The system shall support multiple languages to cater to users from different regions.

5.2 Performance

- **NFR4:** The system shall be responsive and provide quick search results.
- **NFR5:** The system shall be able to handle a large number of concurrent users without significant performance degradation.
- **NFR6:** The system shall have an average response time of less than 2 seconds for common user actions.

5.3 Security

- **NFR7:** User passwords shall be stored securely using encryption techniques.
- **NFR8:** The system shall implement role-based access control to restrict unauthorized access to sensitive functionalities.
- **NFR9:** The system shall use HTTPS protocol to ensure data transmission security.

6. User Interfaces

The Online Library System shall include the following user interfaces:

- Registration form
- Login form
- Dashboard
- Book browsing/searching interface
- Book details page
- Borrowing/returning interface
- Profile management interface

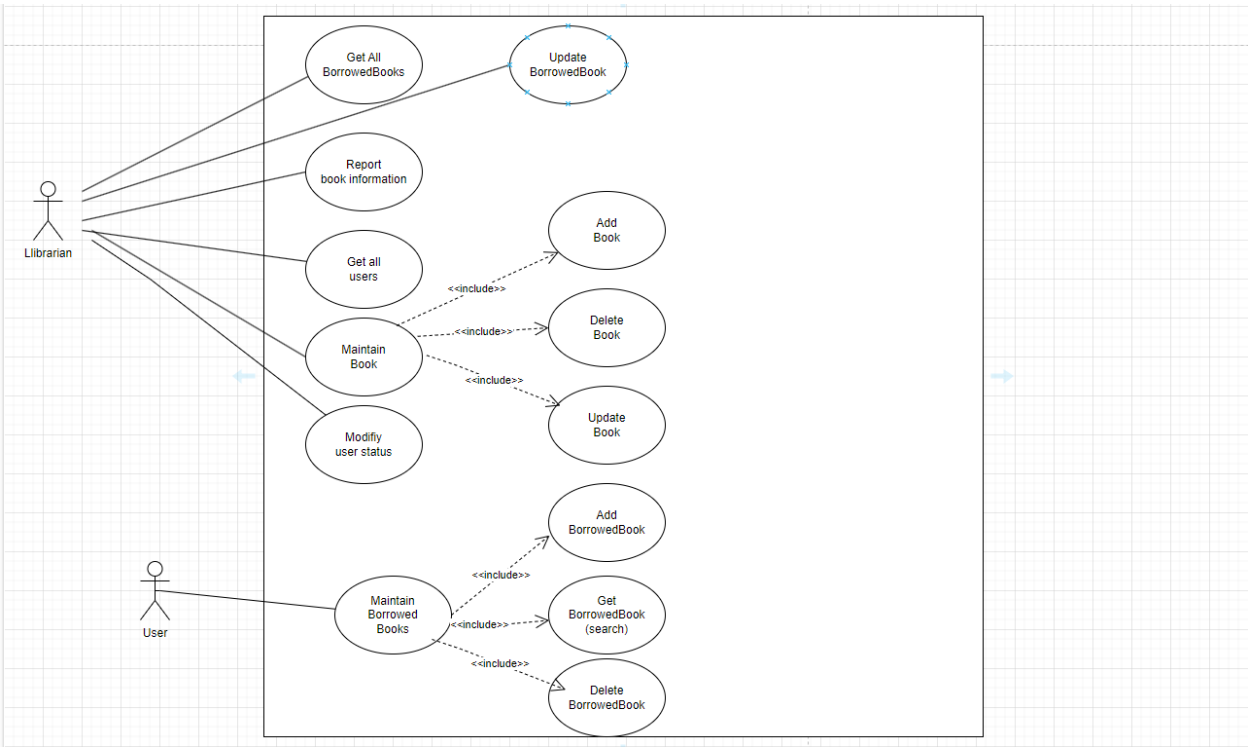
7-Technologies

-The system developed using Java Spring Boot for the backend

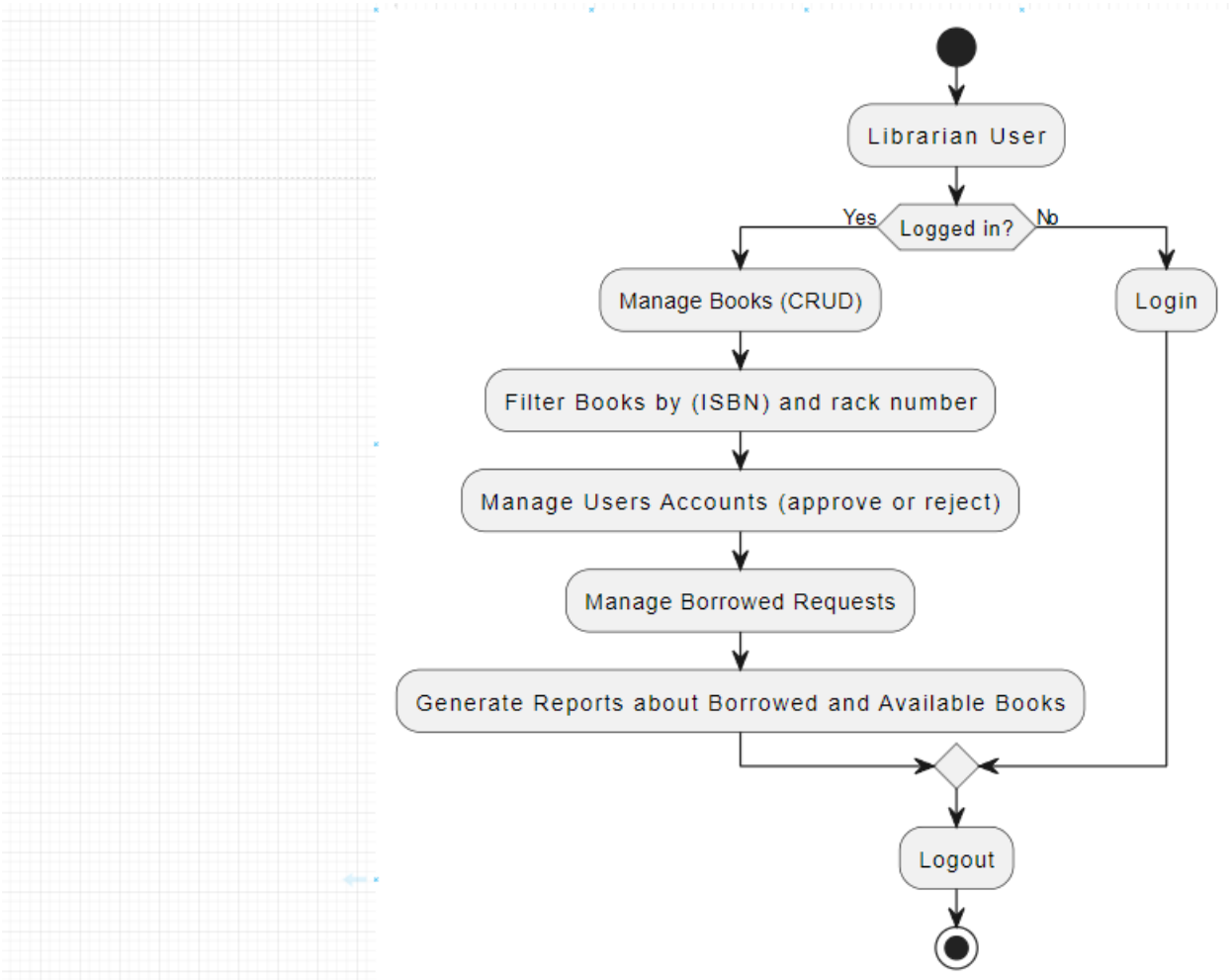
- The system developed using React for the frontend

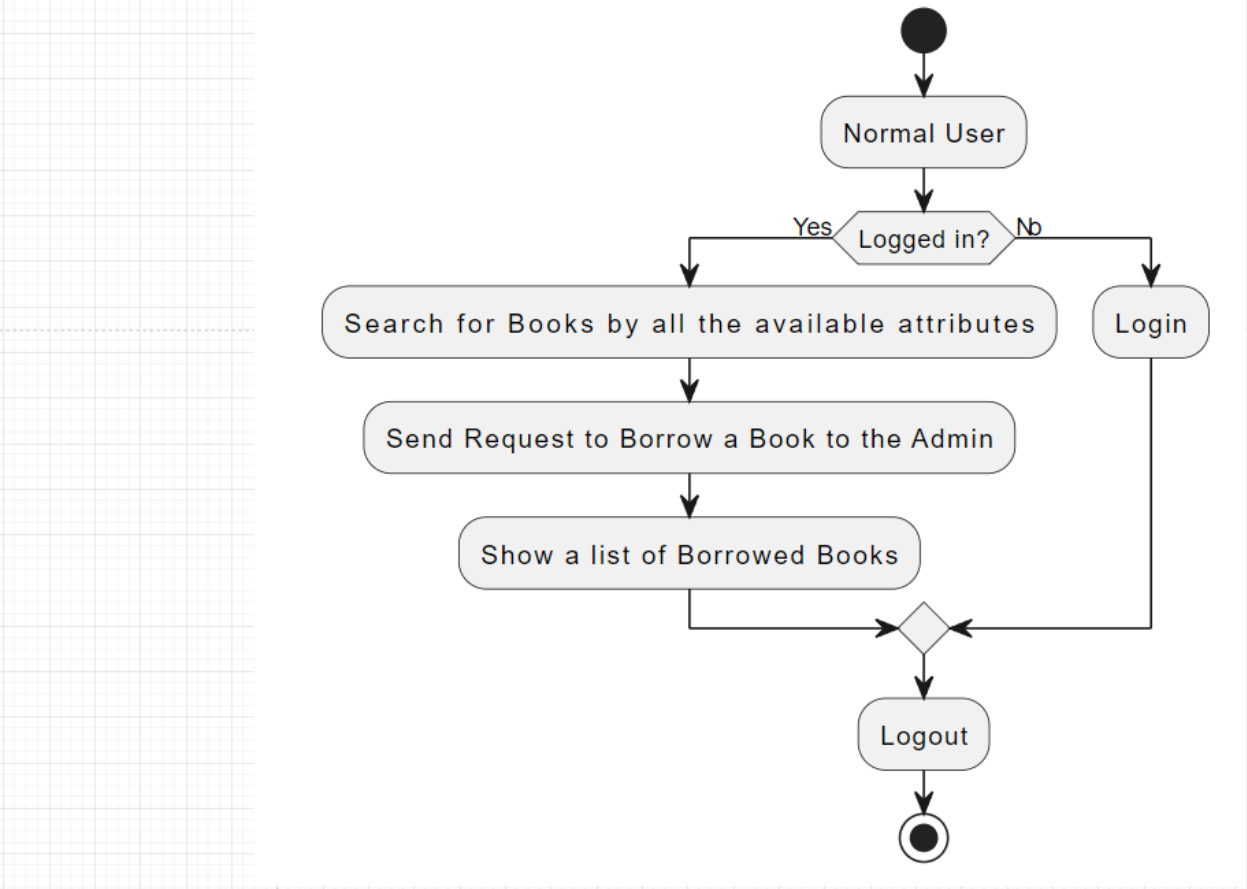
Srs(project Diagrams)

1-use case Diagram

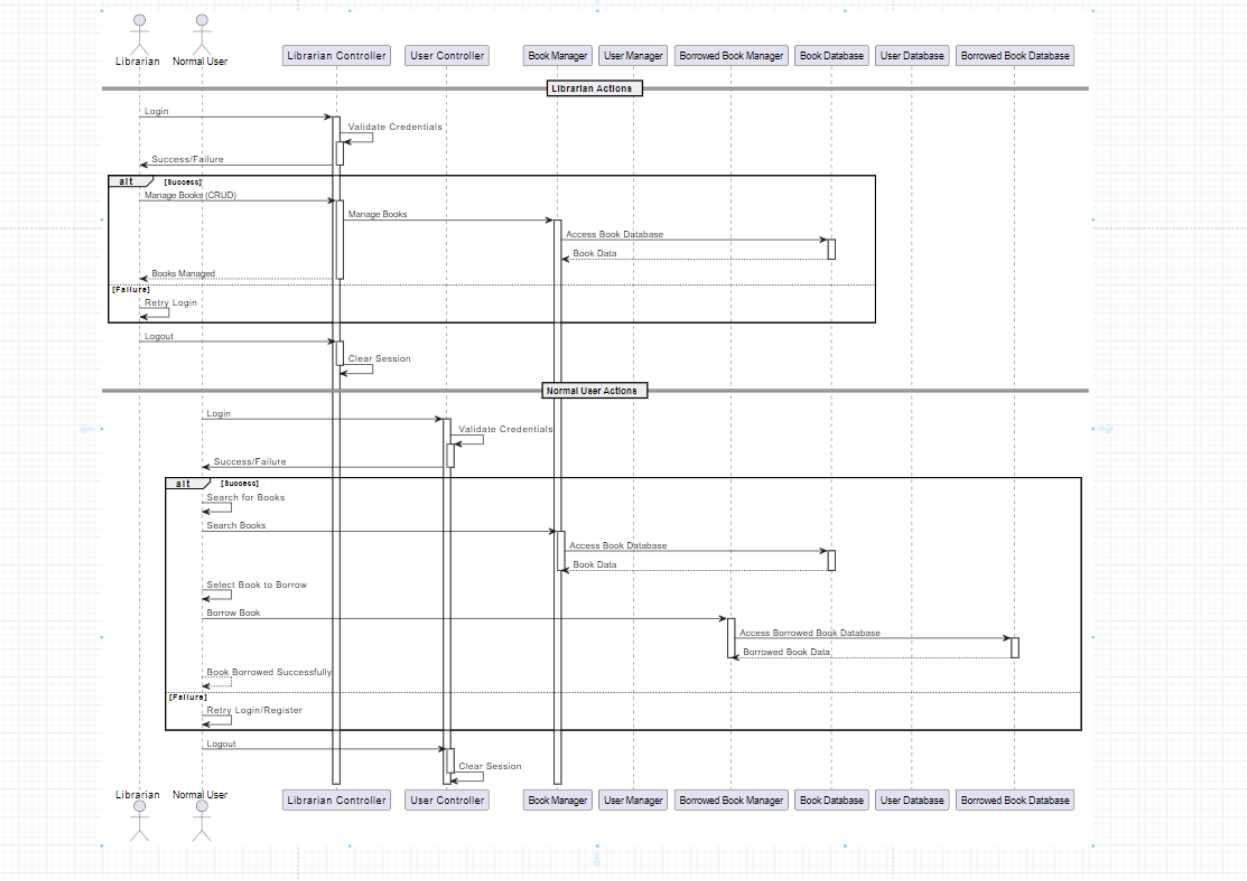


2-Activity Diagram





3-Sequence Diagram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Normal User
Librarian Controller
User Controller
Book Manager
User Manager
Borrowed Book Manager
Book Database
User Database
Borrowed Book Database
Librarian Actions
Login
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Success/Failure
alt
[Success]
Manage Books (CRUD)
Manage Books
Access Book Database
Book Data
Books Managed
[Failure]
Retry Login
Logout
Clear Session
Normal User Actions
Login
Validate Credentials
Success/Failure
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Logout
Clear Session
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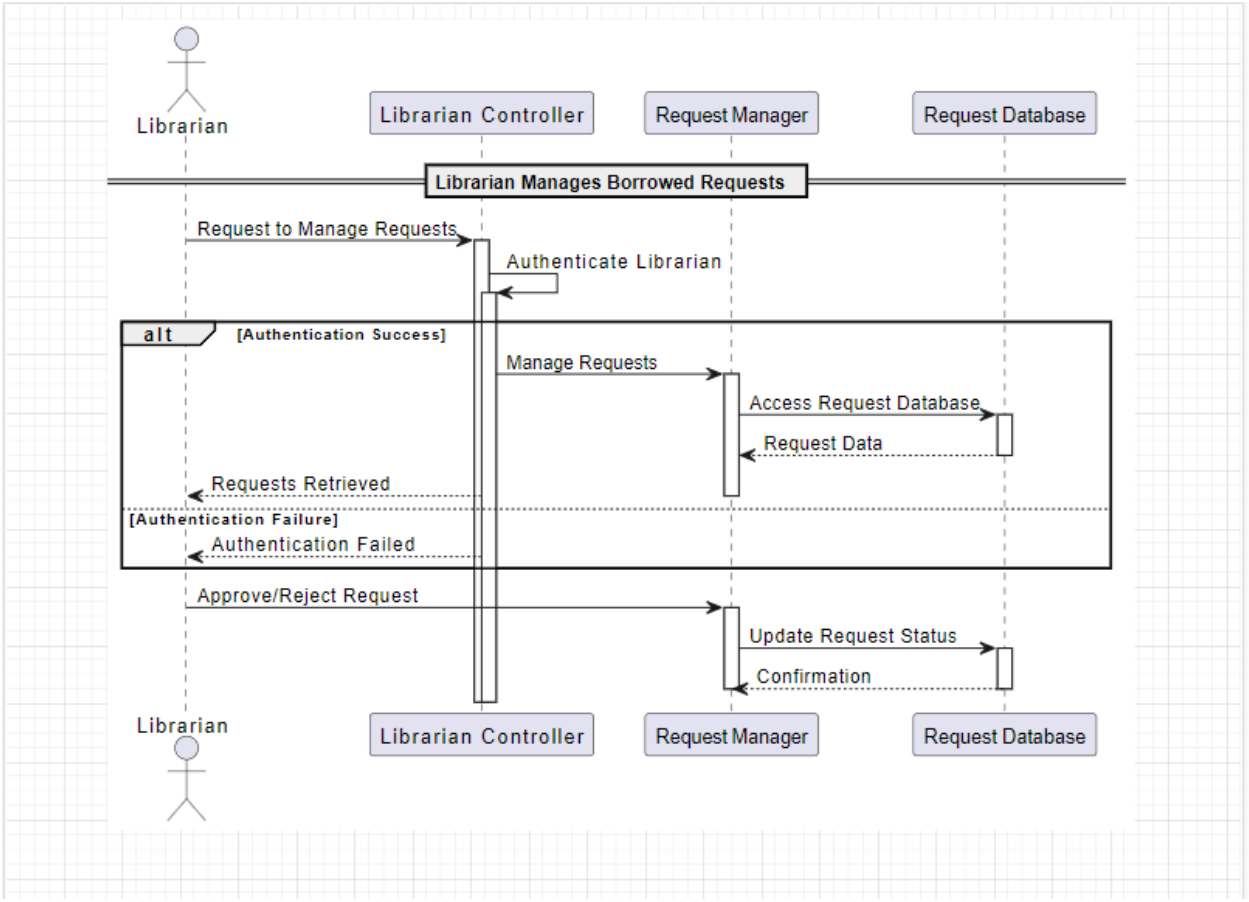
Normal User
Librarian Controller
User Controller
Book Manager
User Manager
Borrowed Book Manager
Book Database
User Database
Borrowed Book Database


Librarian
Librarian Controller
Request Manager
Request Database
Librarian Manages Borrowed Requests
Request to Manage Requests
Authenticate Librarian
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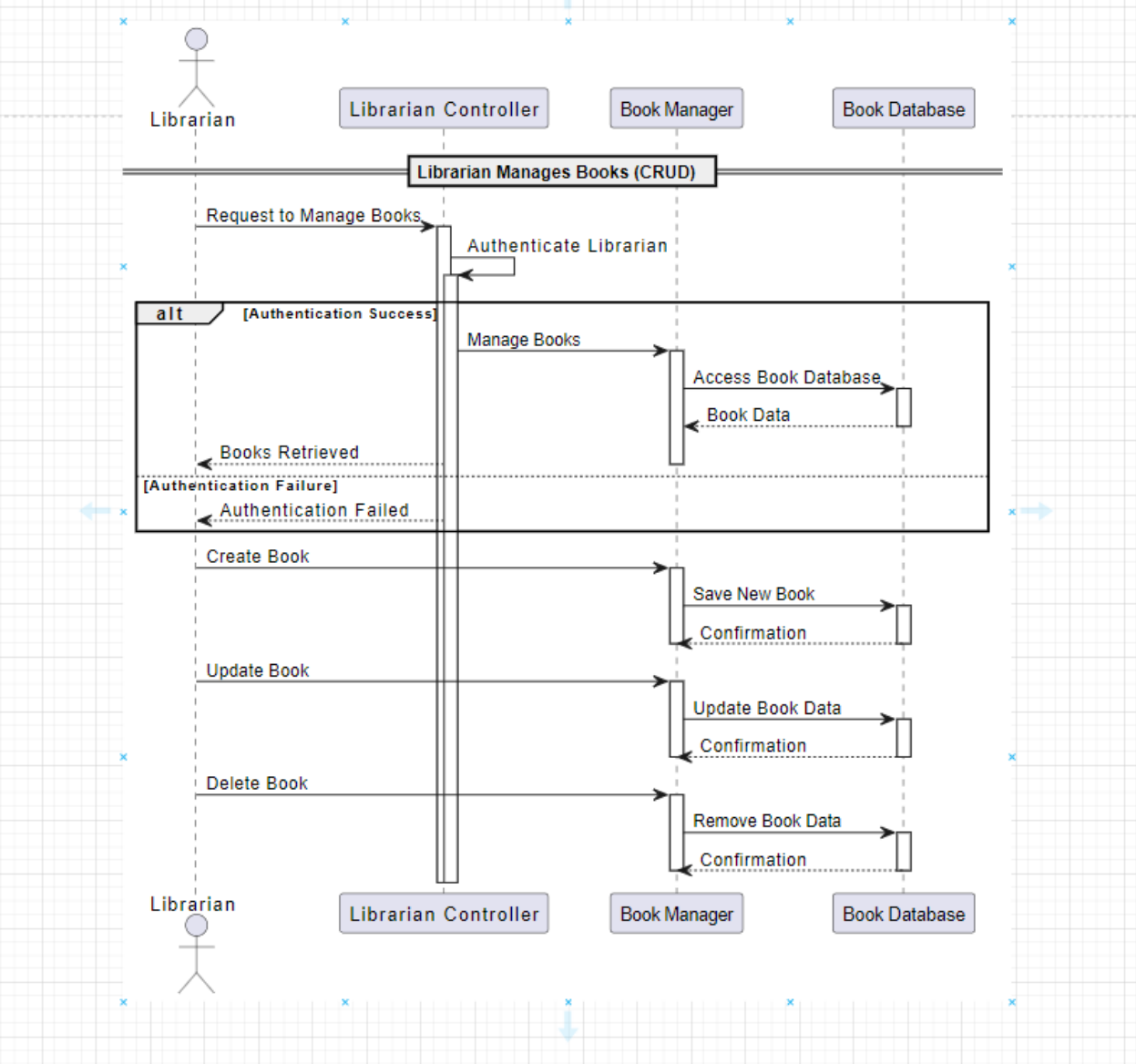
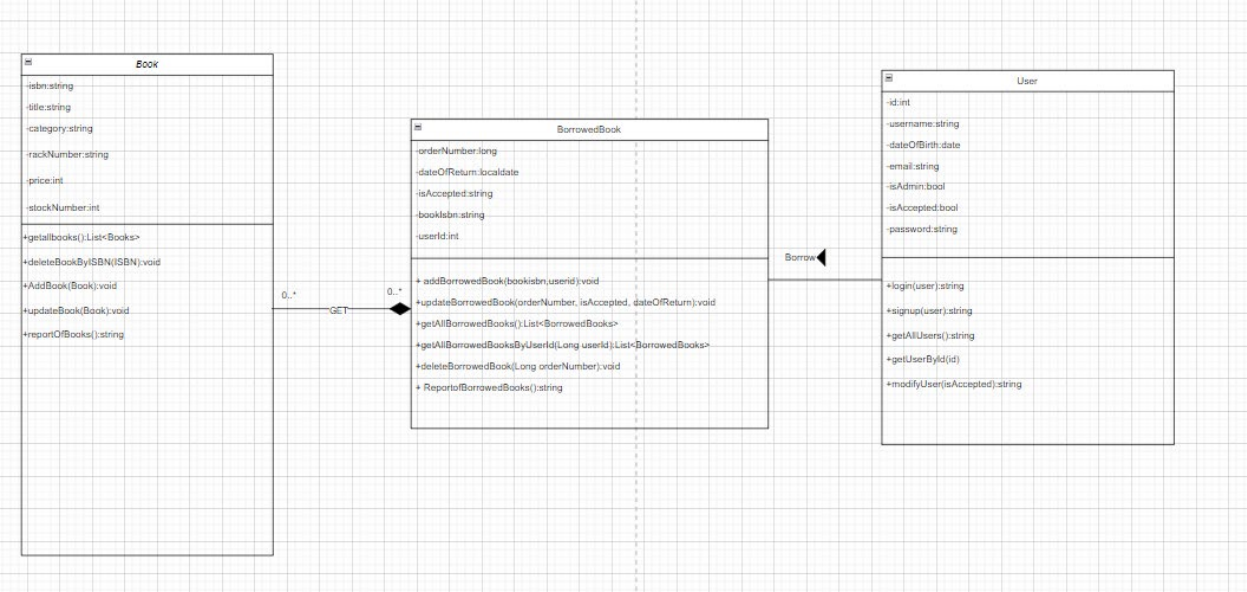
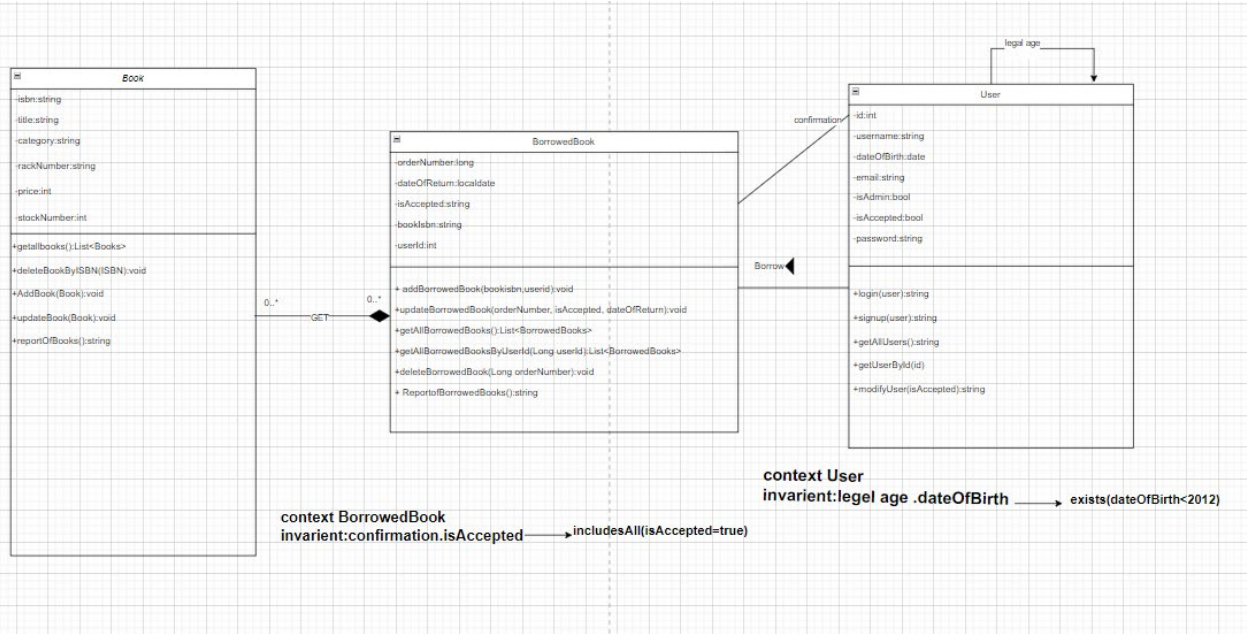
Manage Requests
Access Request Database
Request Data
Requests Retrieved
[Authentication Failure]
Authentication Failed
Approve/Reject Request
Update Request Status
Confirmation
Librarian
Librarian Controller
Request Manager
Request Database



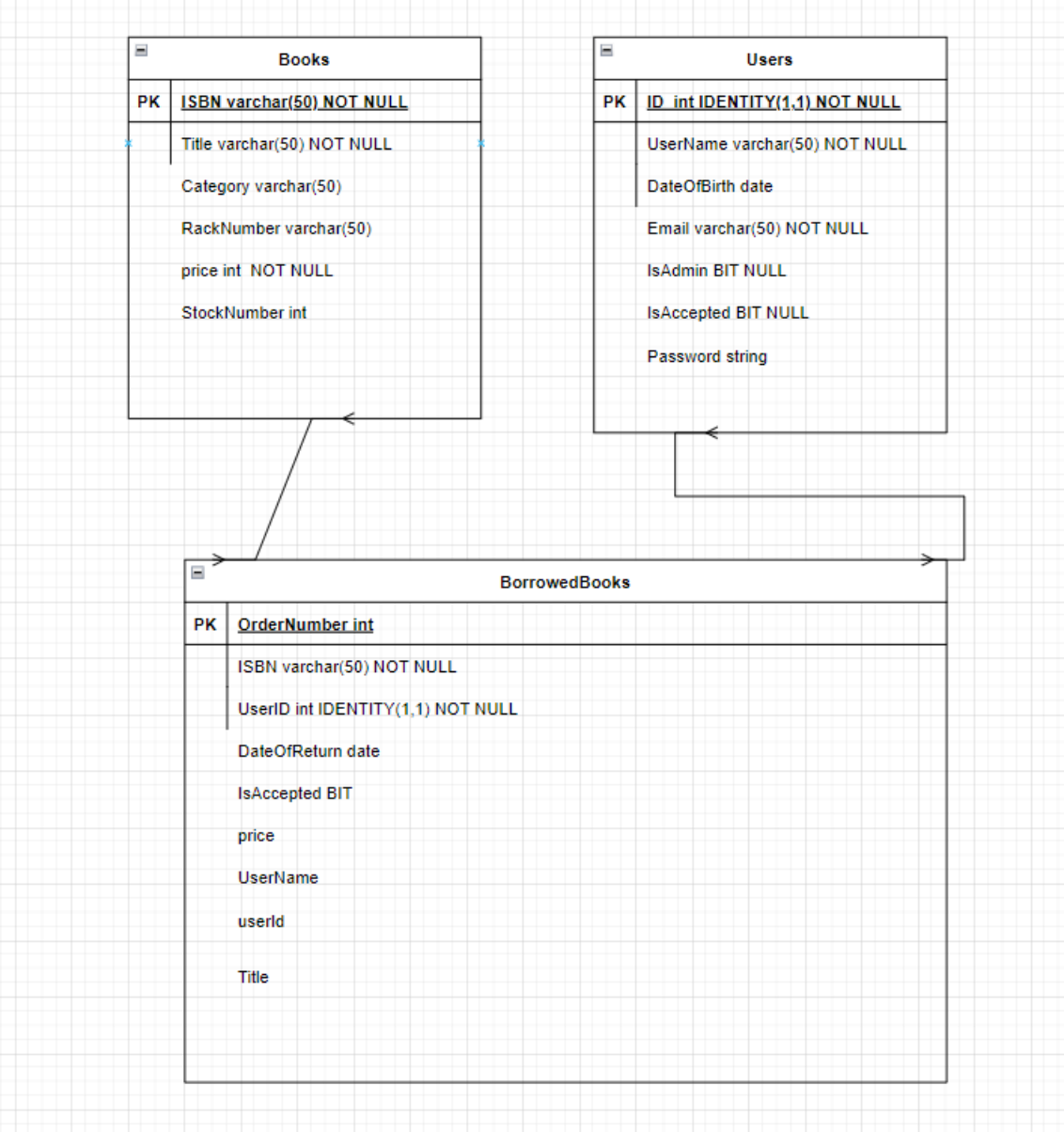
4-class Diagram



5-OCL Diagram



6-ERD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StockNumber int
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Email varchar(50) NOT NULL
IsAdmin BIT NULL
IsAccepted BIT NULL
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DateOfReturn date
IsAccepted BIT
price
UserName
userId
Title