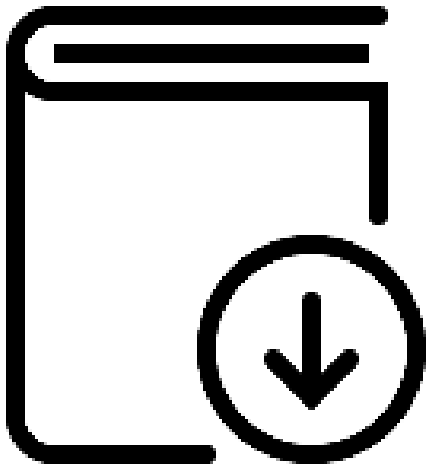
LAURENT Sacha – SIMON Eliot

BooknBorrow

Book-borrowing Management



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Project presentation

BooknBorrow book-borrowing Management

Website for book-borrowing. BooknBorrow is a platform for users to borrow books from multiple libraries and keep records of their readings and eventual fines if they bring back books too late.

Members

- LAURENT Sacha
- SIMON Eliot

Database diagrams

Entity-relationship diagram

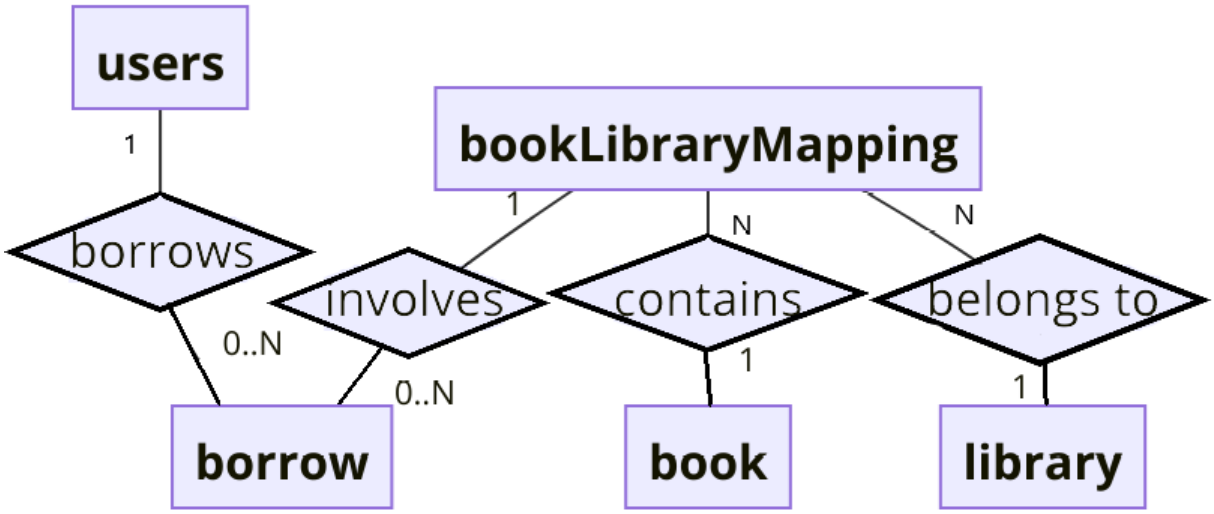
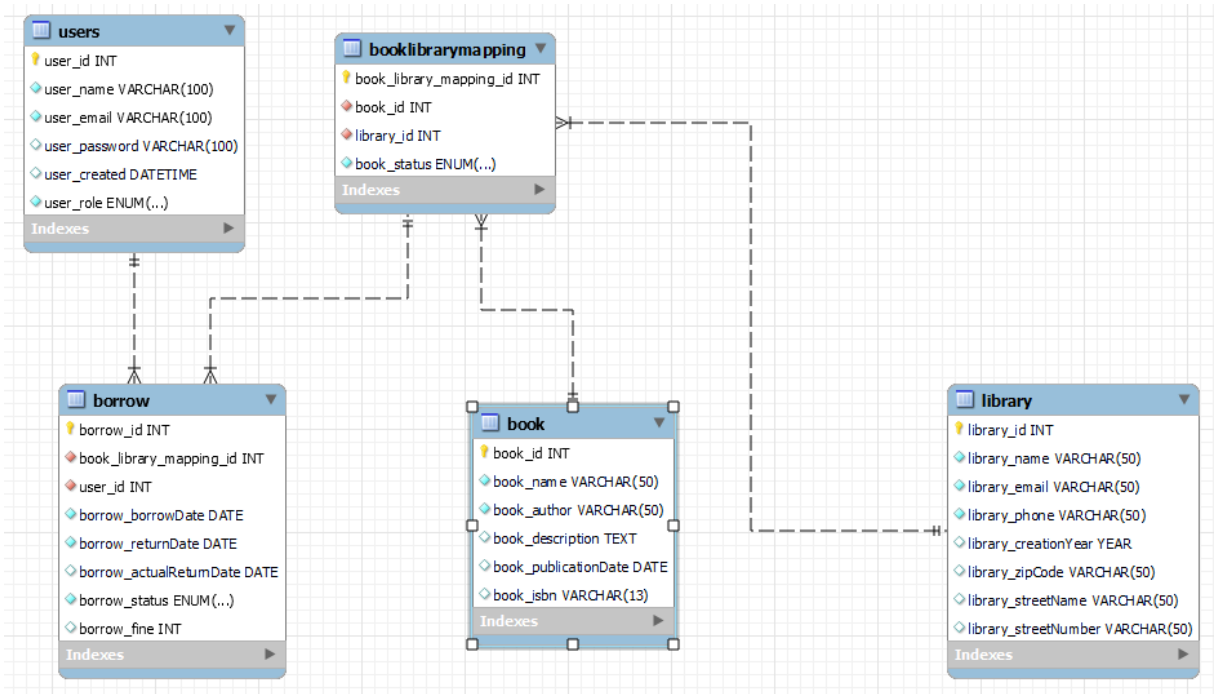
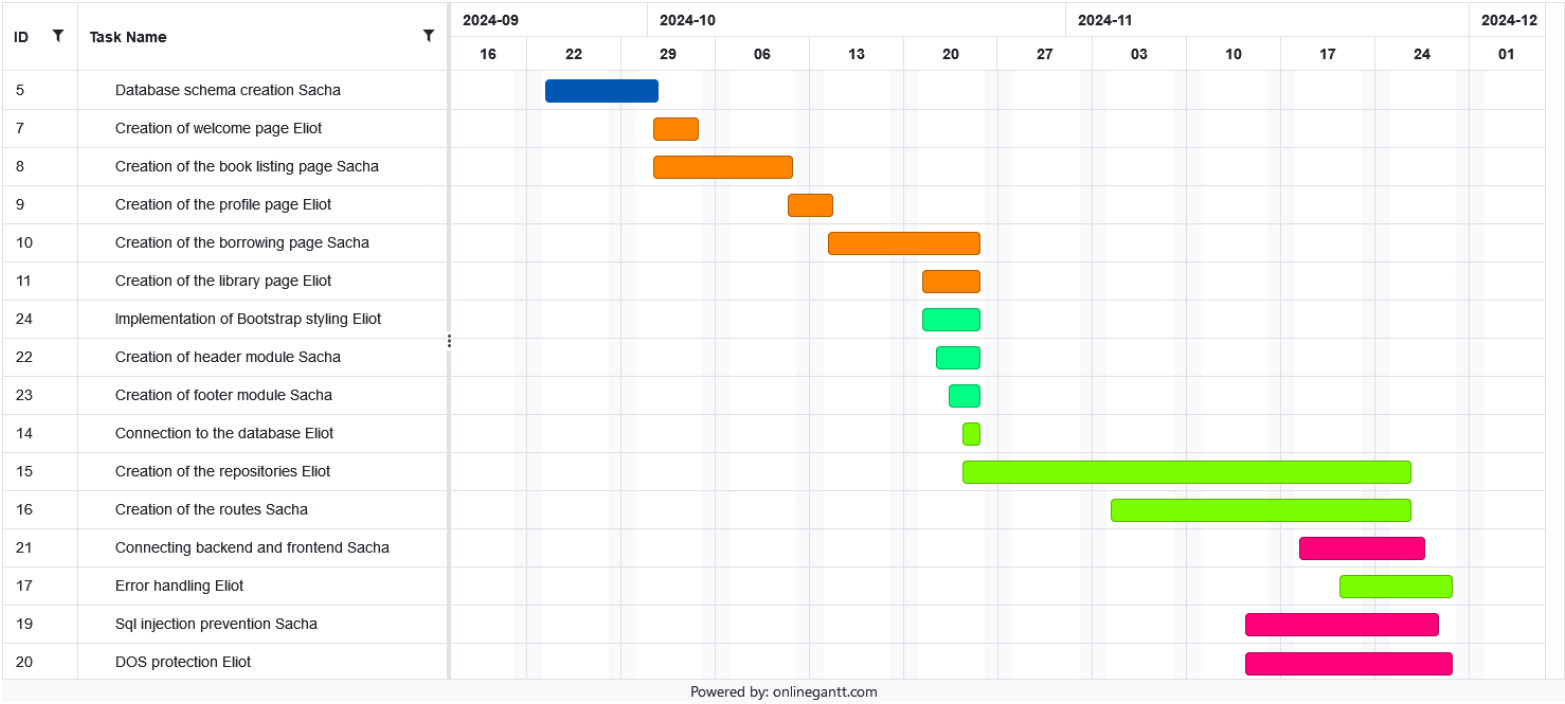


Table structure diagram



Planned gantt diagram

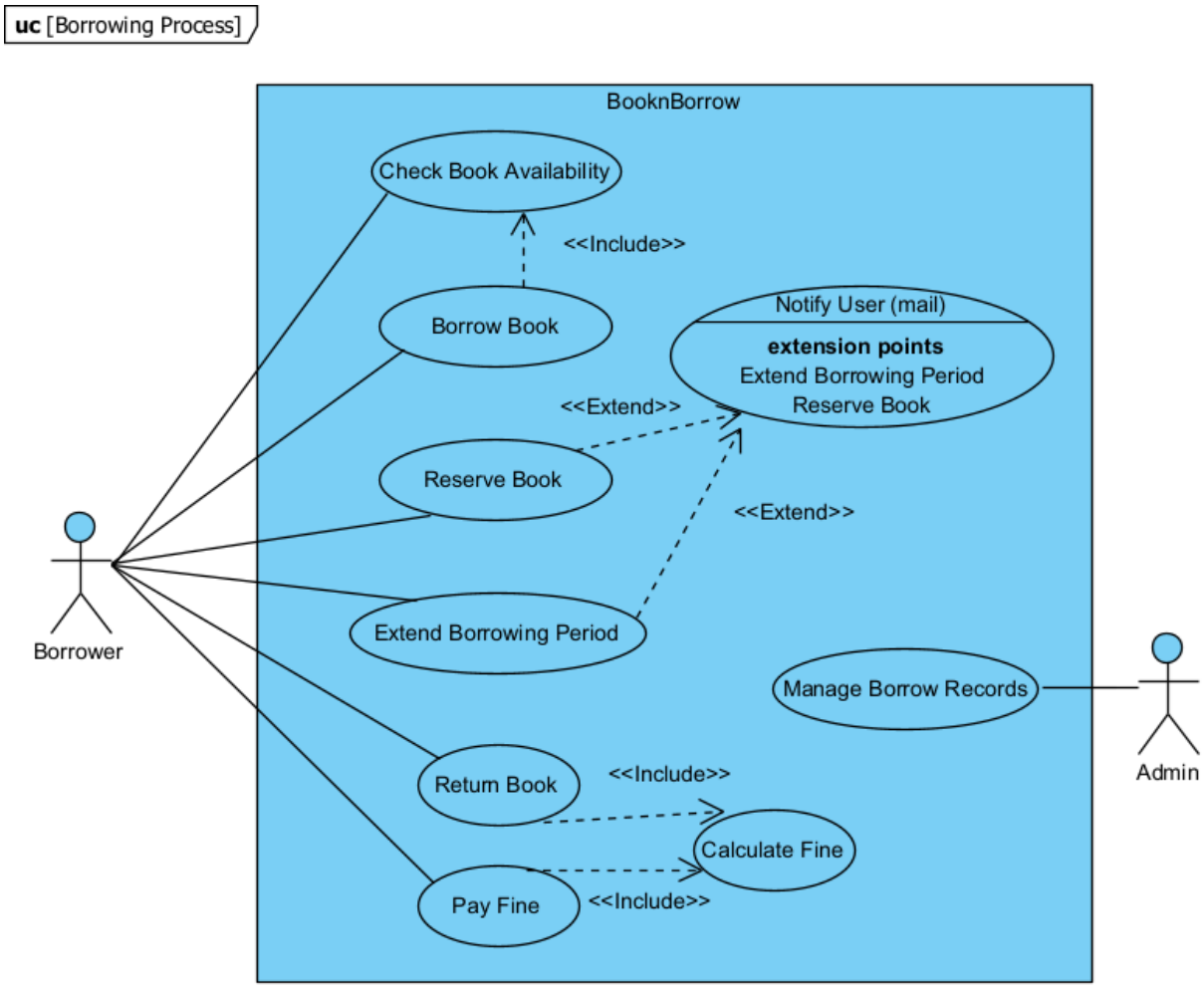


Legend:

	Clientside
	Styling
	Serverside
	Safety

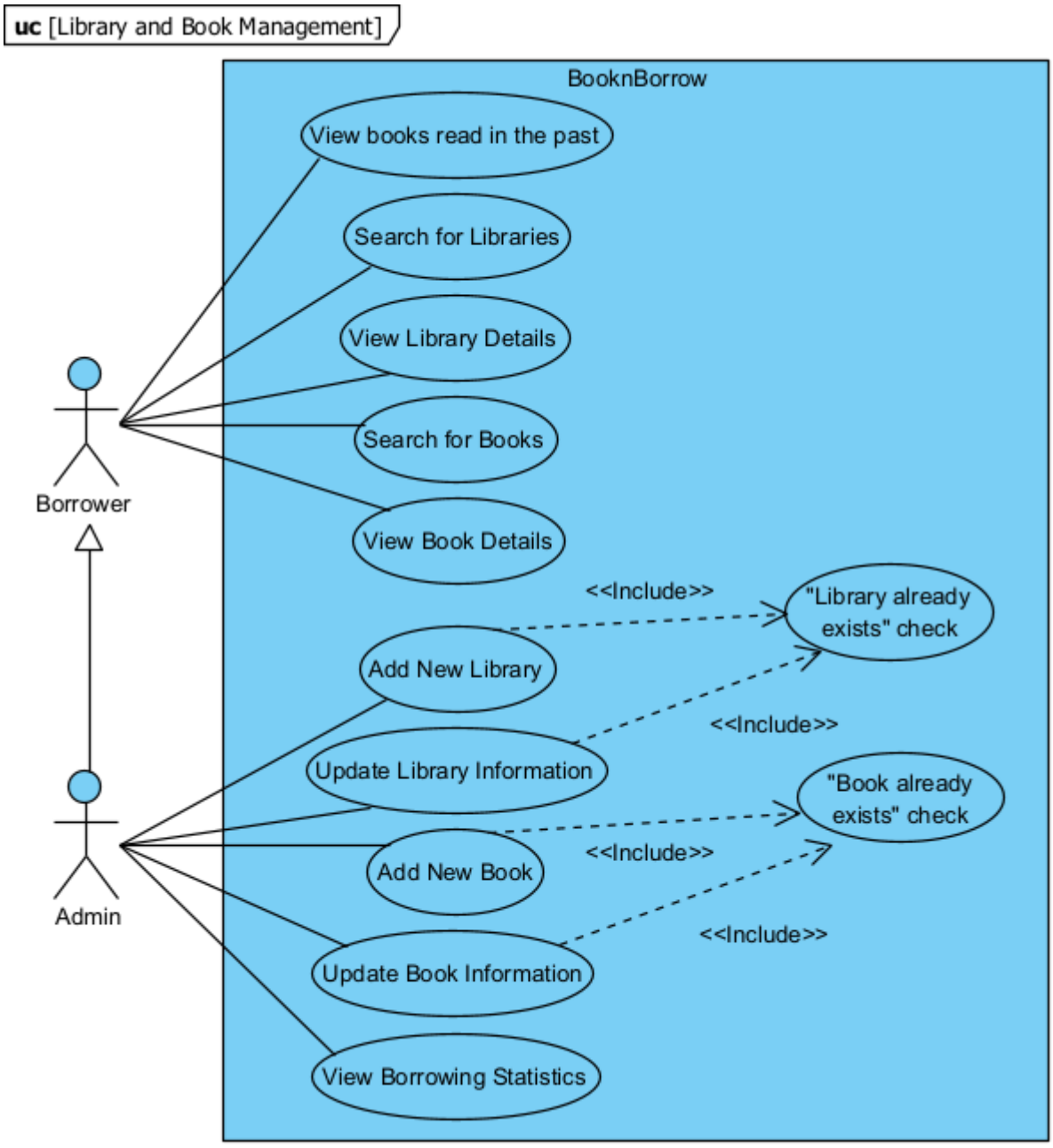
Use case diagrams

Borrowing Process Use Case Diagram



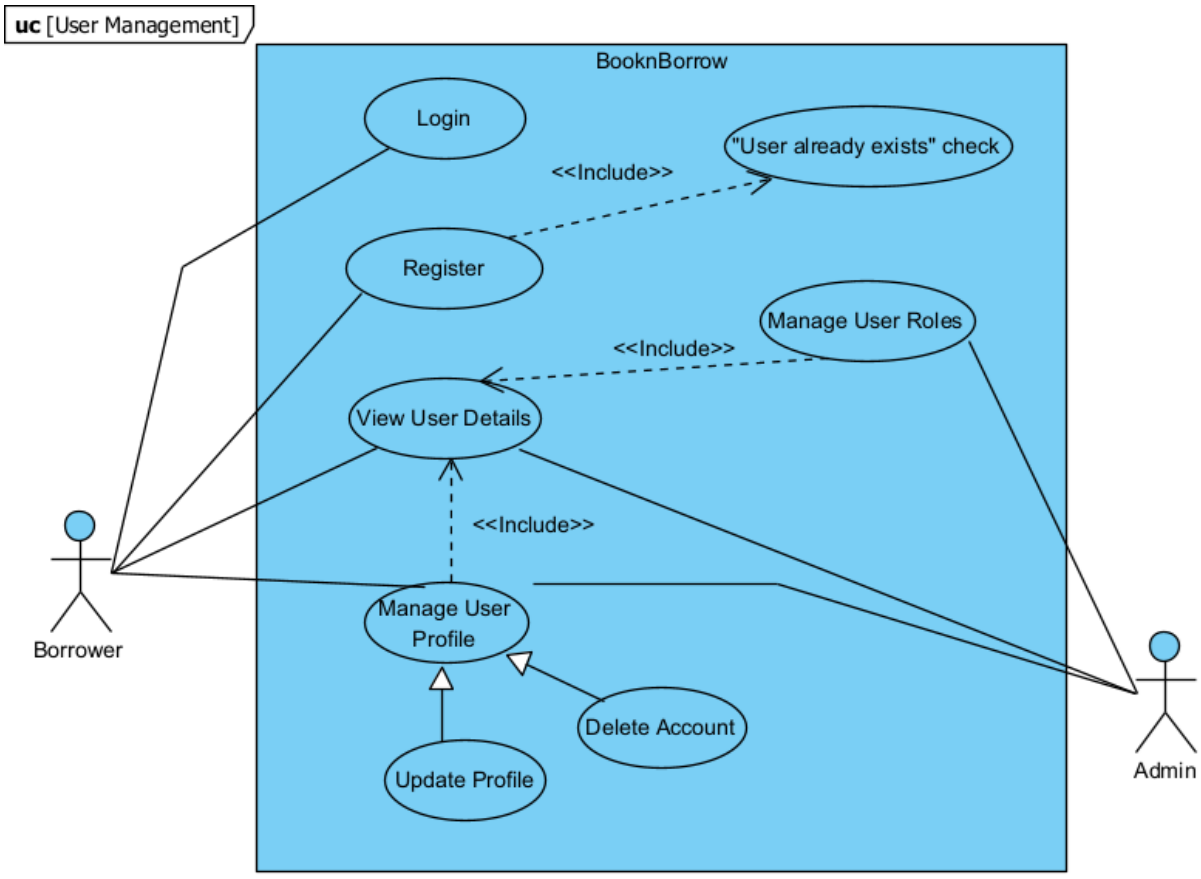
- **Actors**: User, Admin
- **Use Cases**: Borrow Book, Reserve Book, Return Book, Check Book Availability, Extend Borrowing Period, Pay Fine (User), Manage Borrow Records (Admin).

Library and Book Management Use Case Diagram



- **Actors**: Admin, User
- **Use Cases**: Add New Library (Admin), View Library Details, Add New Book (Admin), View Book Details, View books read in the past, Update Book Information (Admin), Update Library Information (Admin), Search for Books, Search for Libraries, View Borrowing Statistics (Admin).

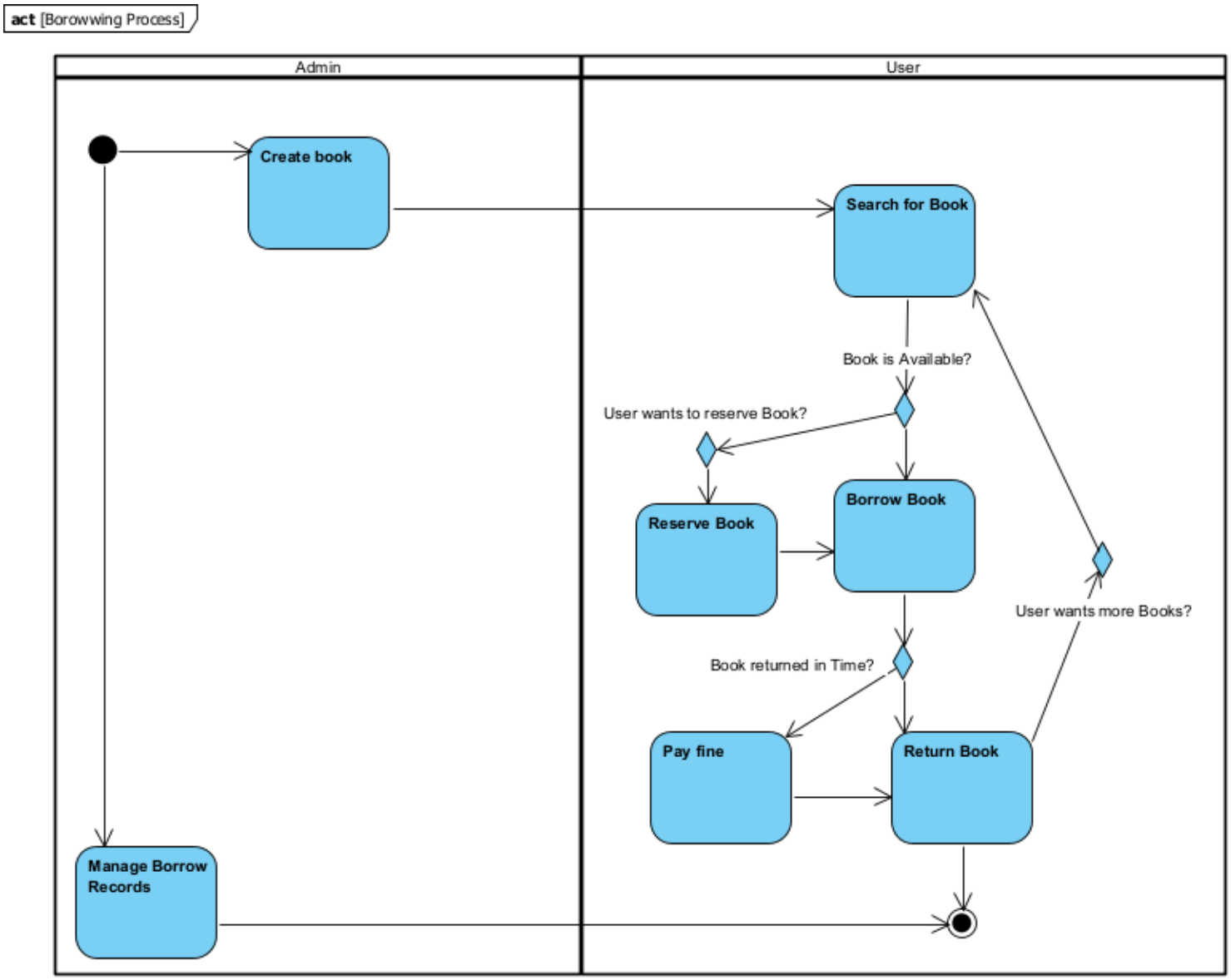
User Management Use Case Diagram:



- **Actors**: Admin, User
- **Use Cases**: Register, Login, Update Profile, View User Details, Manage User Roles (Admin only), Delete Account, Manage Users (Admin only).

Activity diagram

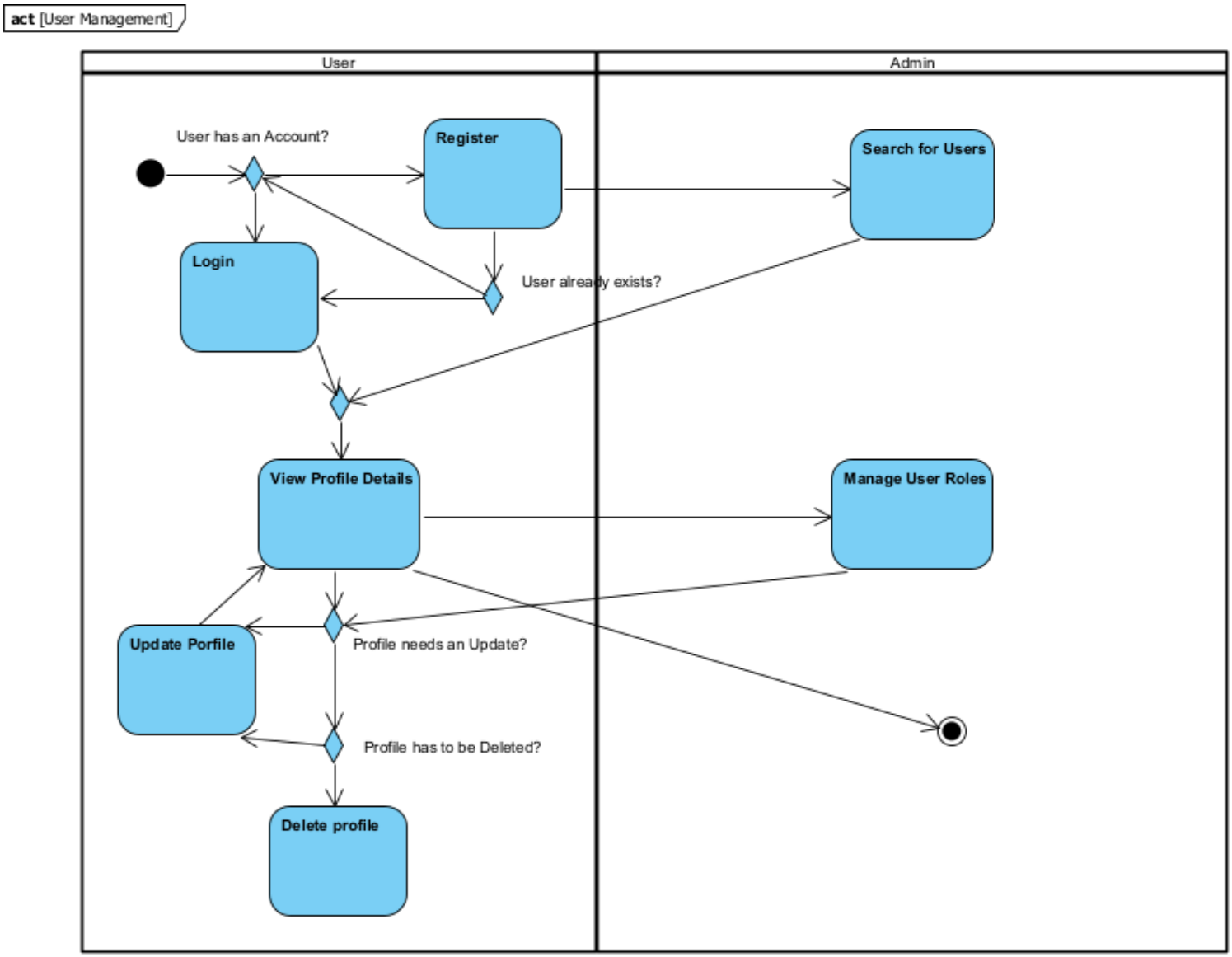
Borrowing Process



Actors: Admin, User

The Admin can initiate the process by creating a new book entry, which becomes accessible to the User for searching and borrowing. The User starts by searching for a book. If the book is available, the User can choose to borrow it or reserve it if needed. Once borrowed, the User must return the book on time. If returned late, a fine is imposed. The process also allows the User to borrow additional books after completing a transaction. Finally, the Admin manages the borrowing records to complete the process.

User Management



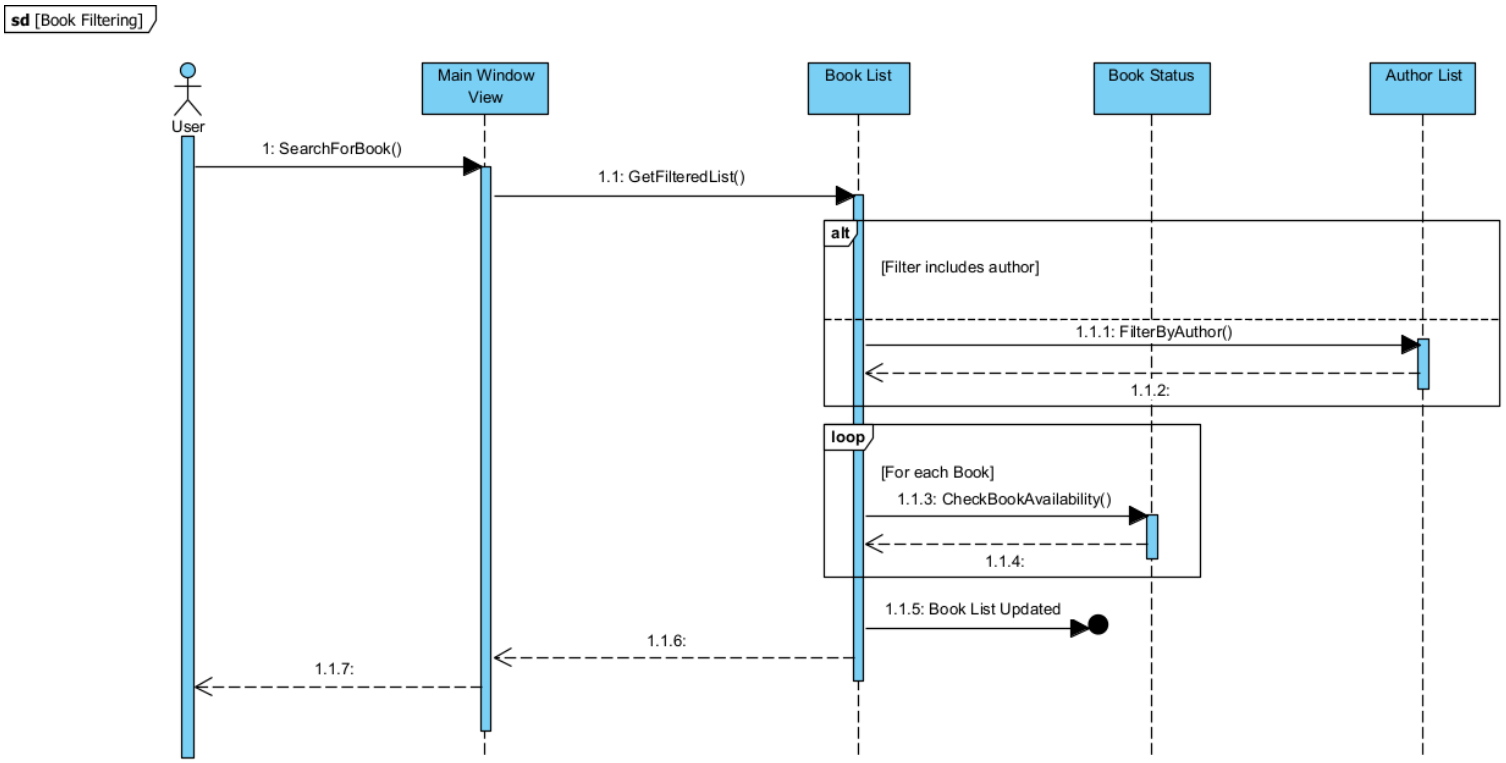
Actors: Admin, User

For Users, the process begins by checking if they already have an account. If they don't, they are prompted to register. If an account exists, they proceed to log in. Once logged in, the User can view their profile details. If necessary, the profile can be updated or deleted, depending on the User's needs.

On the Admin side, they can search for users and manage user roles, ensuring proper access control within the system. The diagram shows the various pathways that can be followed depending on the User's actions, such as updating or deleting their profile, while also illustrating the admin's ability to oversee user roles and account management.

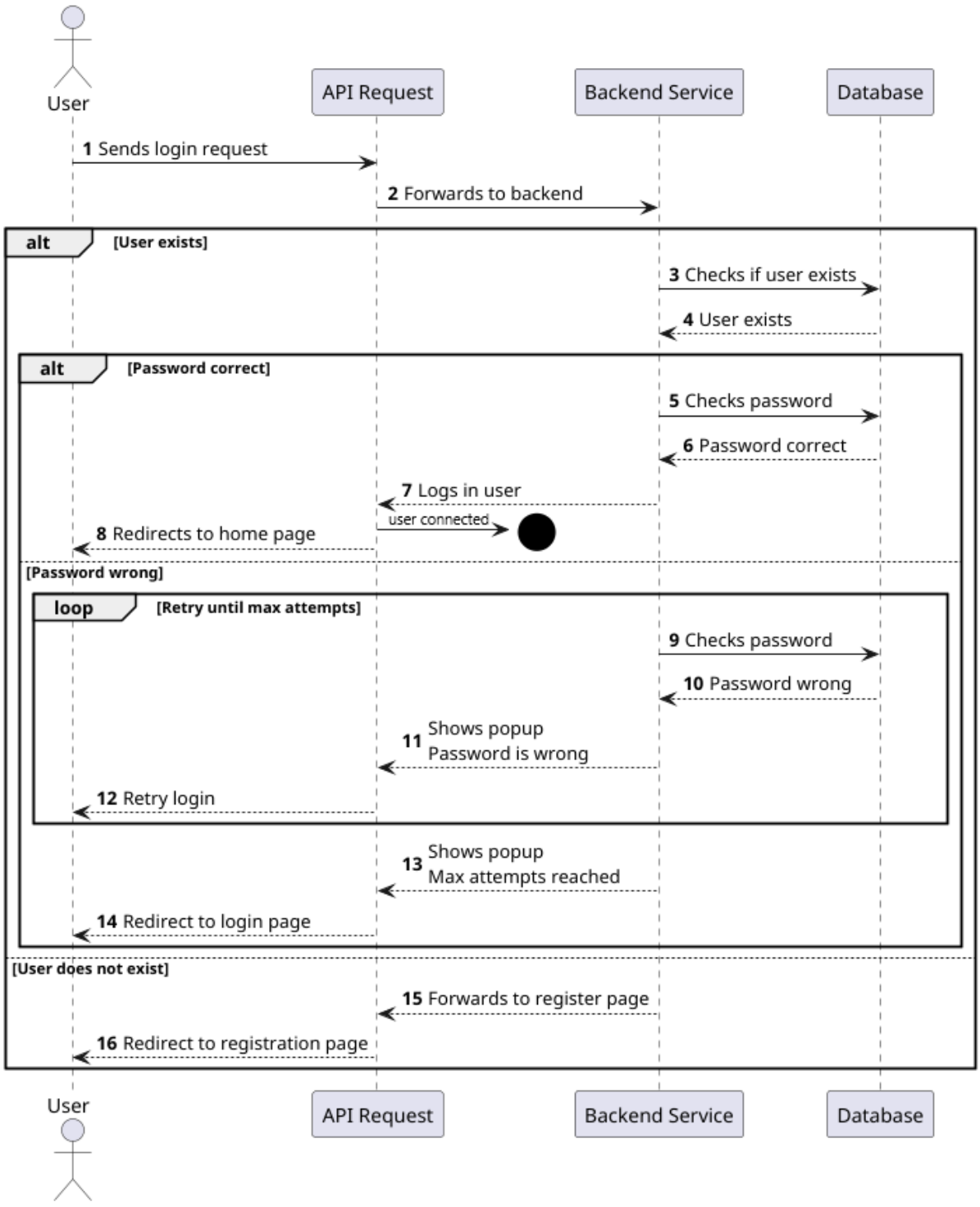
Sequence diagrams

Book Filering



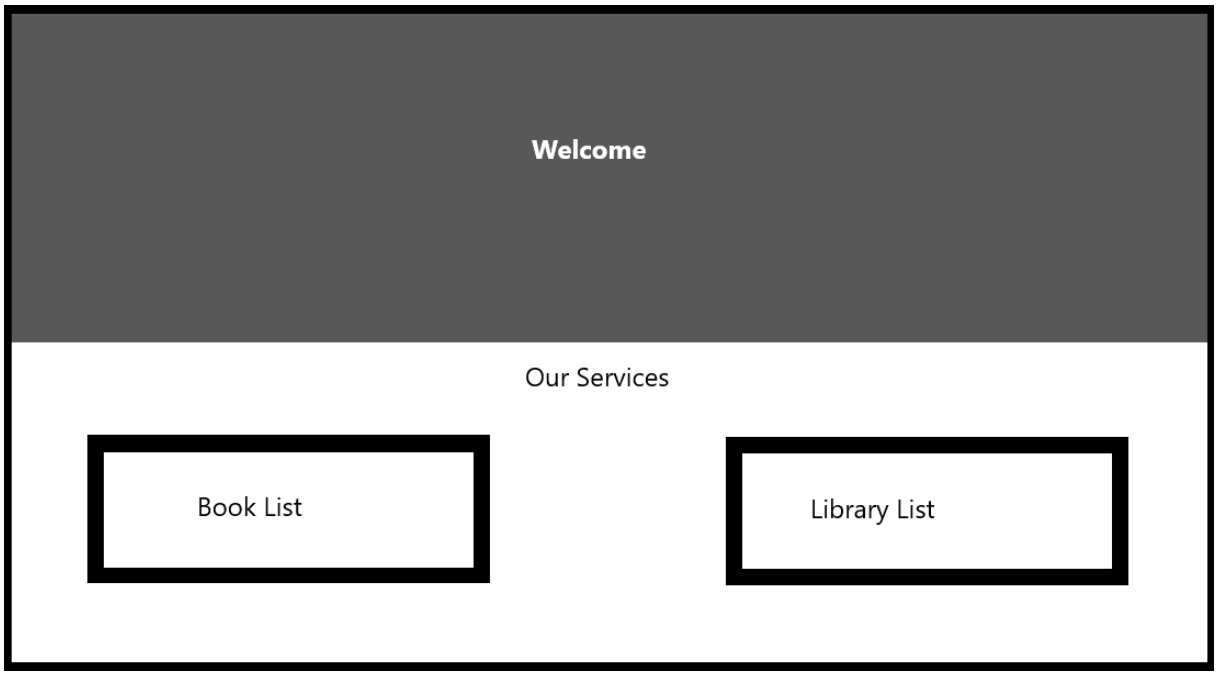
The Sequence begins with the User initiating a SearchForBook() request in the Main Window View. The Main Window View then sends a request to retrieve a filtered list of books (GetFilteredList()) to the Book List component. If the filter criteria include an author, the Book List interacts with the Author List to apply FilterByAuthor(), updating the list accordingly. Once filtered, the Book List updates, and the filtered list is returned back through the Main Window View to the User.

Login

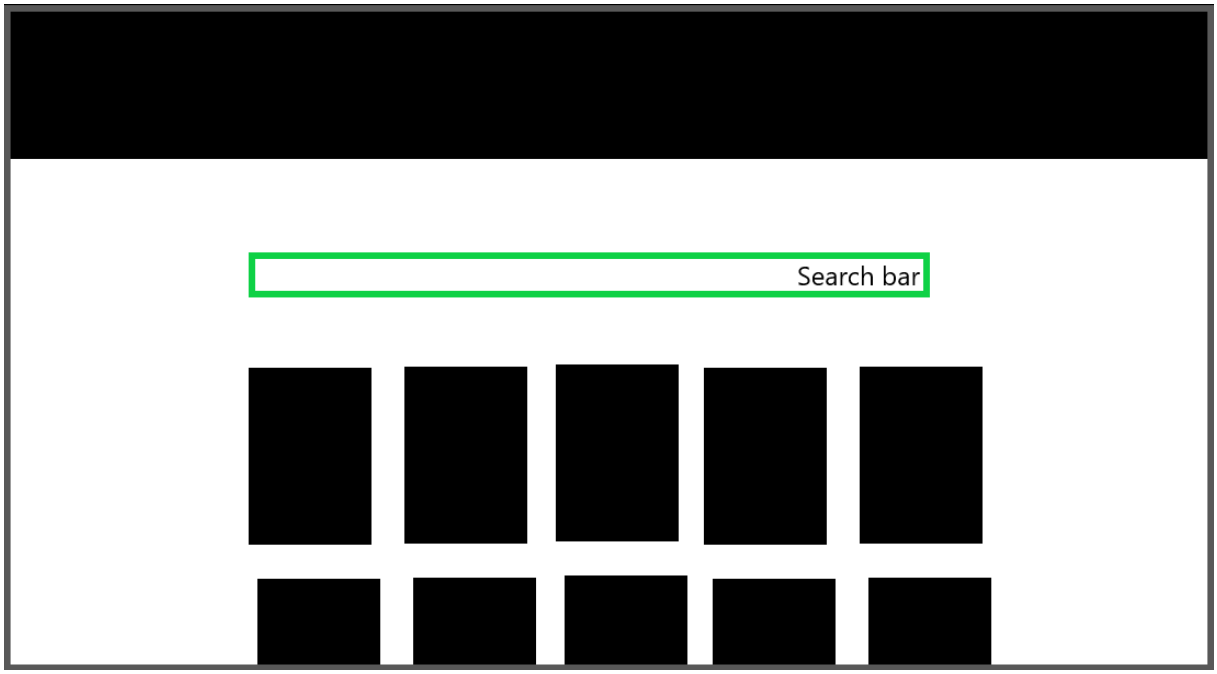

User
API Request
Backend Service
Database
1 Sends login request
2 Forwards to backend
alt
[User exists]
3 Checks if user exists
4 User exists
alt
[Password correct]
5 Checks password
6 Password correct
7 Logs in user
user connected
8 Redirects to home page
[Password wrong]
loop
[Retry until max attempts]
9 Checks password
10 Password wrong
11 Shows popup
Password is wrong
12 Retry login
13 Shows popup
Max attempts reached
14 Redirect to login page
[User does not exist]
15 Forwards to register page
16 Redirect to registration page
User
API Request
Backend Service
Database

Wireframe

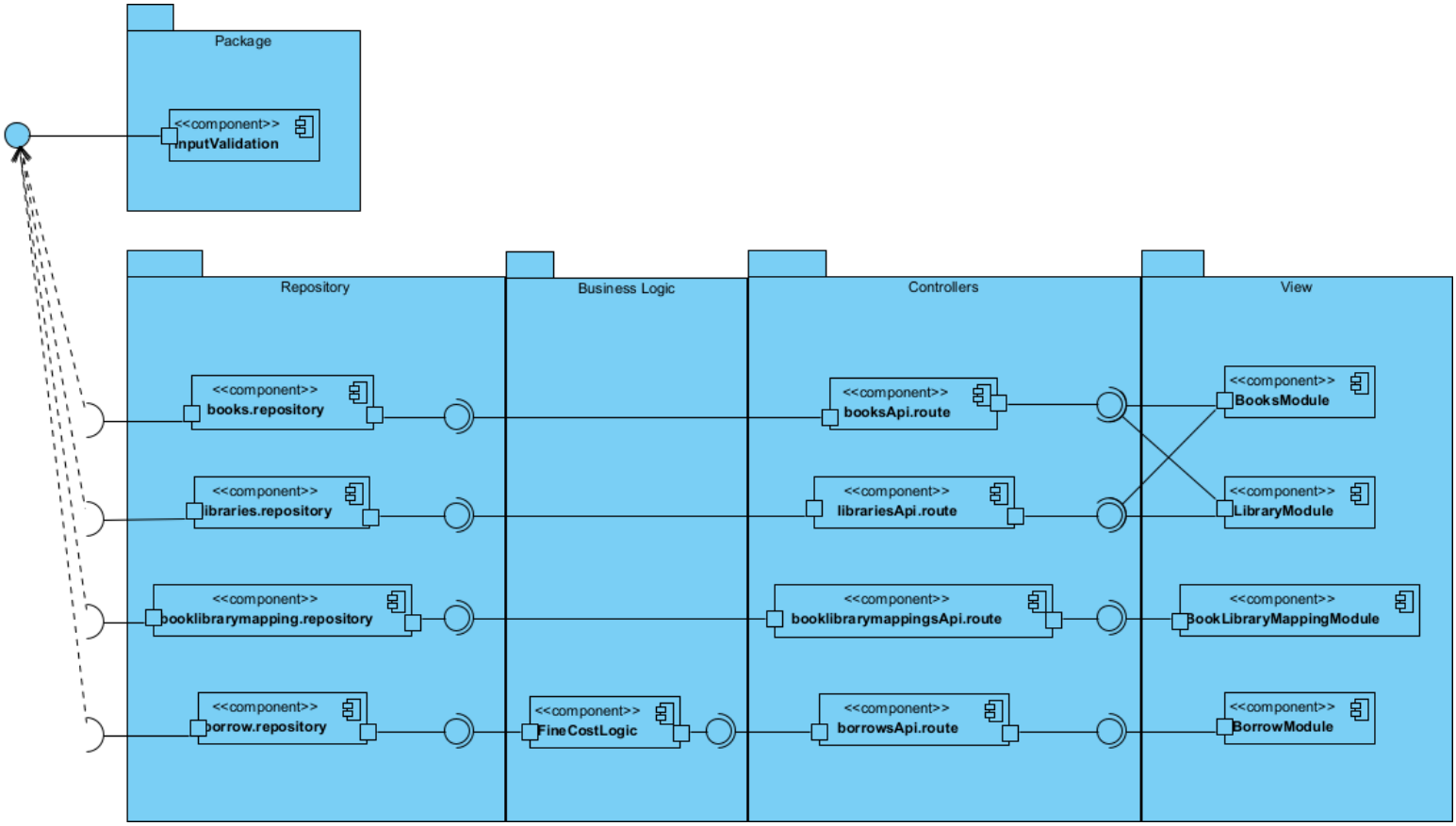
Front page



Book list page



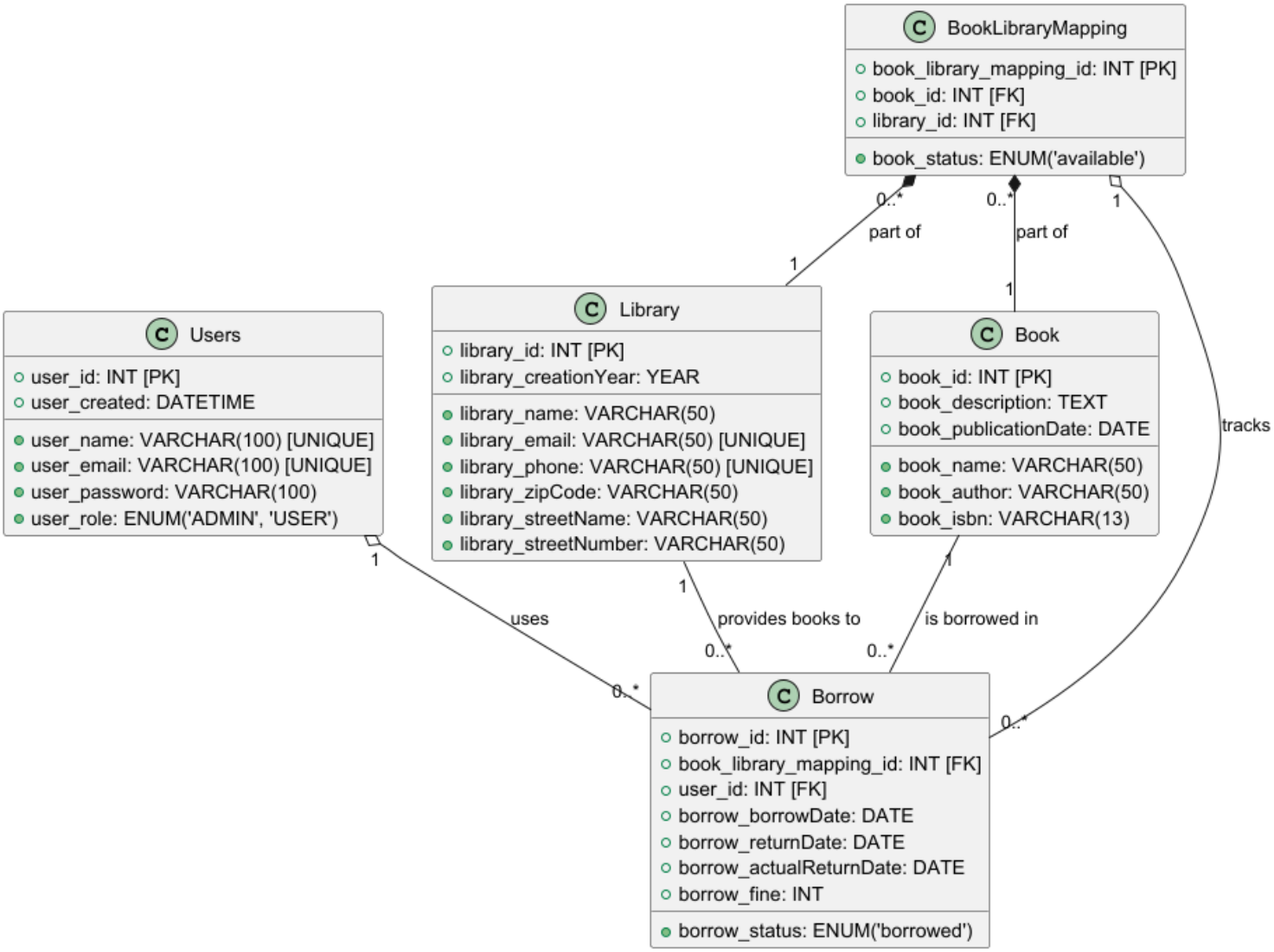
Component diagram



Subsystems:

- **Repository Layer** consists of components like books.repository, libraries.repository, and booklibrarymapping.repository, which manage database interactions for specific entities.
- **Business Logic Layer** includes a FineCostLogic component to handle fine calculations.
- **Controllers Layer** contains API route components such as booksApi.route and librariesApi.route, which coordinate between the business logic and the user-facing modules.
- **View Layer** comprises modules like BooksModule and LibraryModule, responsible for presenting data and interacting with the controllers.
- **InputValidation package** makes the system immune to SQL injection

Class diagram



Key object-oriented relationships include:

- A Library object has an association with multiple BookLibraryMapping objects, which represent the inventory of books available at that library.
- A User object can initiate multiple borrowing actions, represented as Borrow objects, each tied to a specific BookLibraryMapping.
- The Borrow class also serves as an interaction point between users and books, encapsulating borrowing-specific details like dates and fines.