ALISHBA RASHID

SP23-BSE-022

USE CASE:

ISSUE BOOK

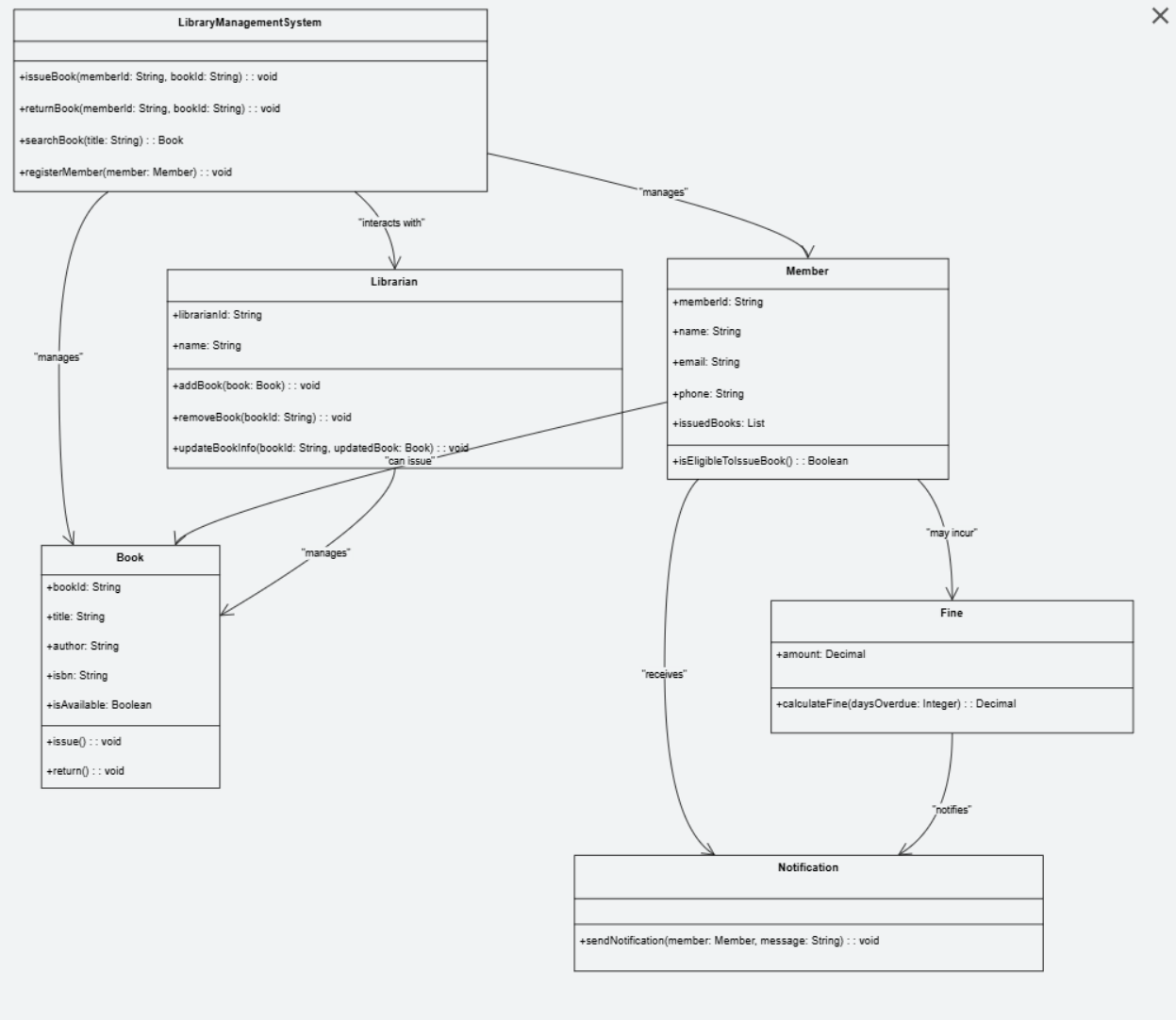
Use Case Name	Issue Book
Use case ID	UC-01
Primary Actor	Library Member(borrower)
Secondary Actors	Librarian
Brief Description	This use case describes the process by which a **librarian** issues a book to a **registered library member**. The system validates the member's eligibility (no overdue books, no fines, and within borrowing limits) and checks the book's availability. If all conditions are met, the book is issued, and the due date is recorded. The librarian then hands over the book to the member.
Pre-conditions	Member is registered and active. - No outstanding fines or overdue books. - Book is available. - Librarian is logged into the system.
Post-conditions	• Book is marked as issued. • Due date is recorded. • Borrower's account and book inventory are updated.
Trigger	A member requests to borrow a book.
Main Flow	• The **librarian** selects the **"Issue Book"** option in the system. • The **librarian** enters or scans the **member's ID**. • The **system** validates the member by checking if they have overdue books or unpaid fines: • The **librarian** enters or scans the **book ID**.

	• The **system** checks if the requested book is available (not issued or reserved): • The **system** records the book's issue date and calculates the due date based on the member's type. • The **system** marks the book as issued and updates the member's account with the issued book. • The **system** confirms the successful issuance of the book. • The **librarian** informs the member of the due date and hands over the book to the member.
Alternative Flows	• **3a. Member has overdue books or unpaid fines** 1. The system checks if the member has overdue books or unpaid fines. 2. The system detects that the member has overdue books or fines. 3. The system denies the book issue request. 4. The librarian informs the member of the issue (e.g., needs to clear fines before borrowing more books). **5a. Book is not available (already issued or reserved)** 1. The system checks the availability of the book. 2. The system detects that the book is unavailable (e.g., already issued or reserved by another member).

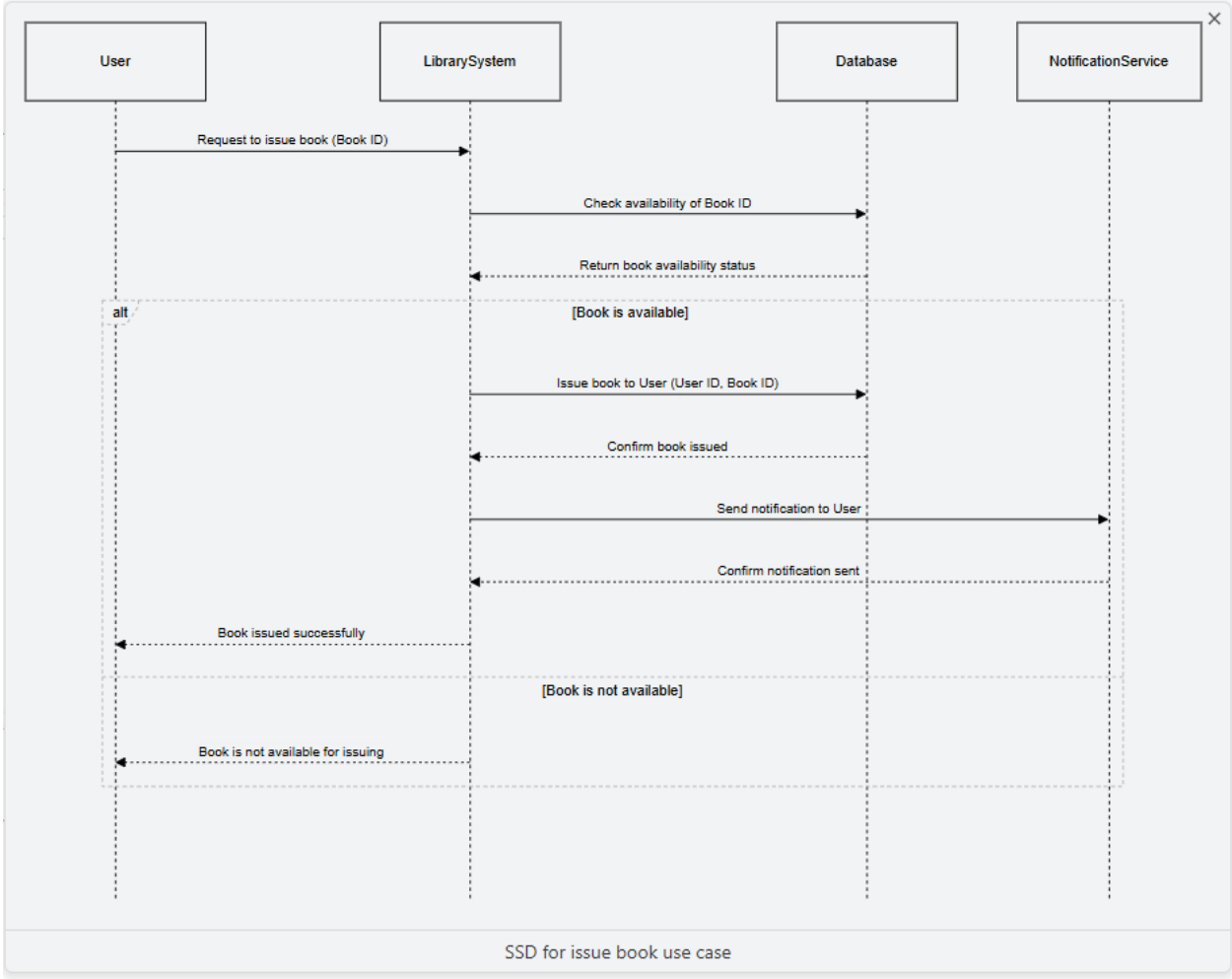
	3. The system informs the librarian that the book cannot be issued. 4. The librarian informs the member that the book is unavailable and may suggest placing a reservation for the book. • **6a. Borrowing limit reached** 1. The system checks if the member has reached their borrowing limit. 2. The system detects that the member has already borrowed the maximum number of books allowed. 3. The system denies the request to issue the book. 4. The librarian informs the member that they cannot borrow more books until they return some.
Business Rules	1. The due date is calculated based on the member's type and library policy (e.g., students may have shorter loan periods than faculty). 2. The due date is automatically recorded when a book is issued. 3. Fines are applied for overdue books and must be paid before borrowing more books. 4. If a member has any unpaid fines, they are not allowed to borrow more books until the fines are cleared. 5. If a member has overdue books, they are not allowed to borrow additional books until the overdue books are returned. 6. The system performs real-time checks for overdue books, fines, and

	borrowing limits before issuing any book.
Exceptions	• If the librarian enters an invalid or unrecognized member ID, the system displays an error message and denies the request to issue the book. • If the system encounters a failure (e.g., database connectivity issue), the librarian is informed, and the issue process is halted until the system is restored. • If the requested book is already issued or reserved, the system informs the librarian that the book cannot be issued, and the member may be asked to place a reservation. • If the member has overdue books or unpaid fines, the system denies the book issue request, and the librarian informs the member to resolve the issue before borrowing more books. • If the member has reached their borrowing limit, the system denies the book issue request, and the librarian informs the member that they must return books before borrowing more. • If the book's barcode is not scanned correctly or the system cannot find the book ID, the librarian is asked to rescan the book or manually enter the book's ID.

CLASS DIAGRAM:



System sequence diagram:



SSD for issue book use case

USE CASE:

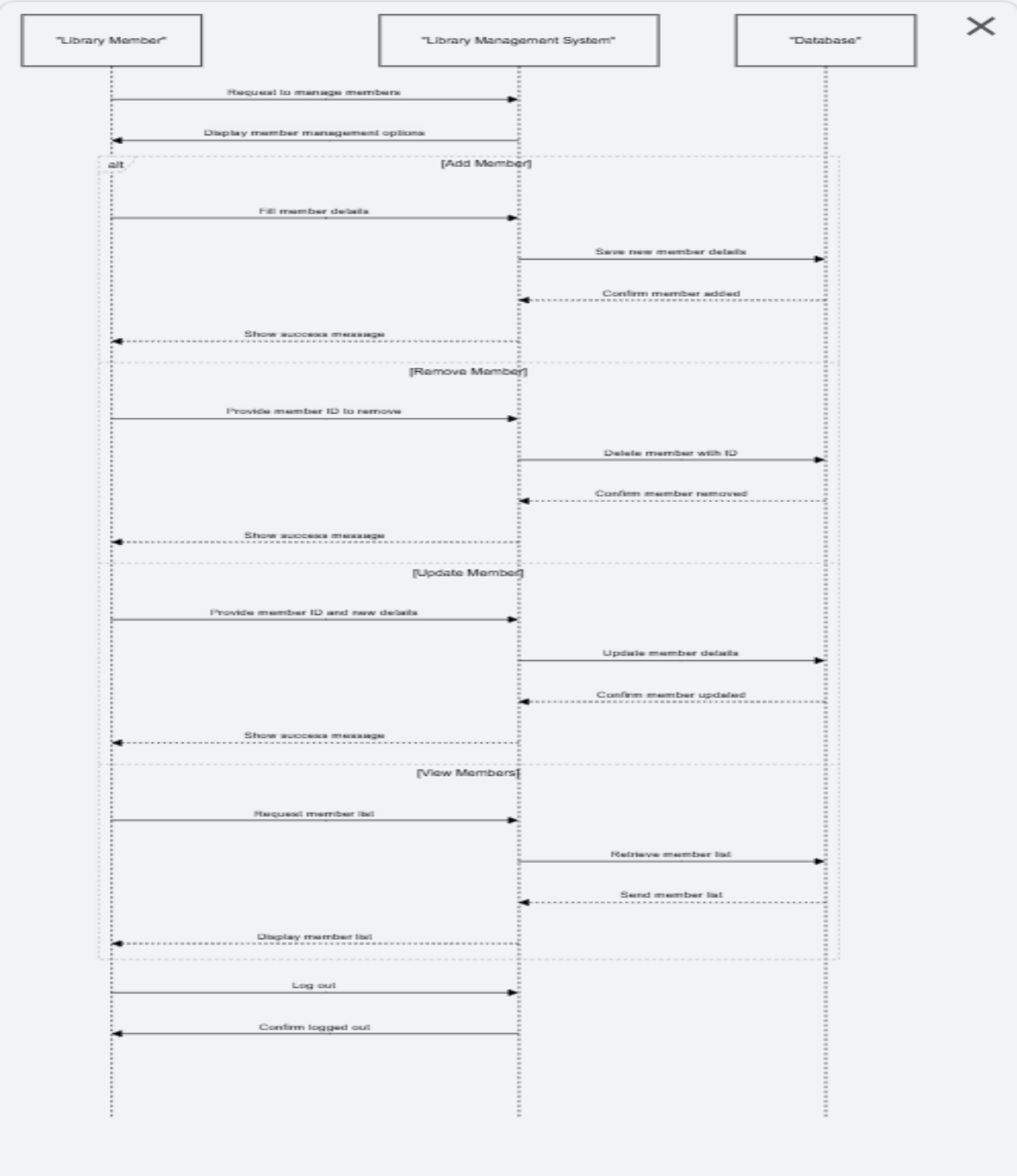
Manage Members

FULLY DRESSED USE CASE:

Element	Details
Use Case Name	Manage Members
Use Case ID	UC-02
Primary Actor	Librarian
Secondary Actors	None
Brief Description	This use case describes how a librarian manages member records including registering new members, updating details, and deactivating or deleting members. The system validates inputs and ensures rules such as unique Member ID and borrowing restrictions are enforced.

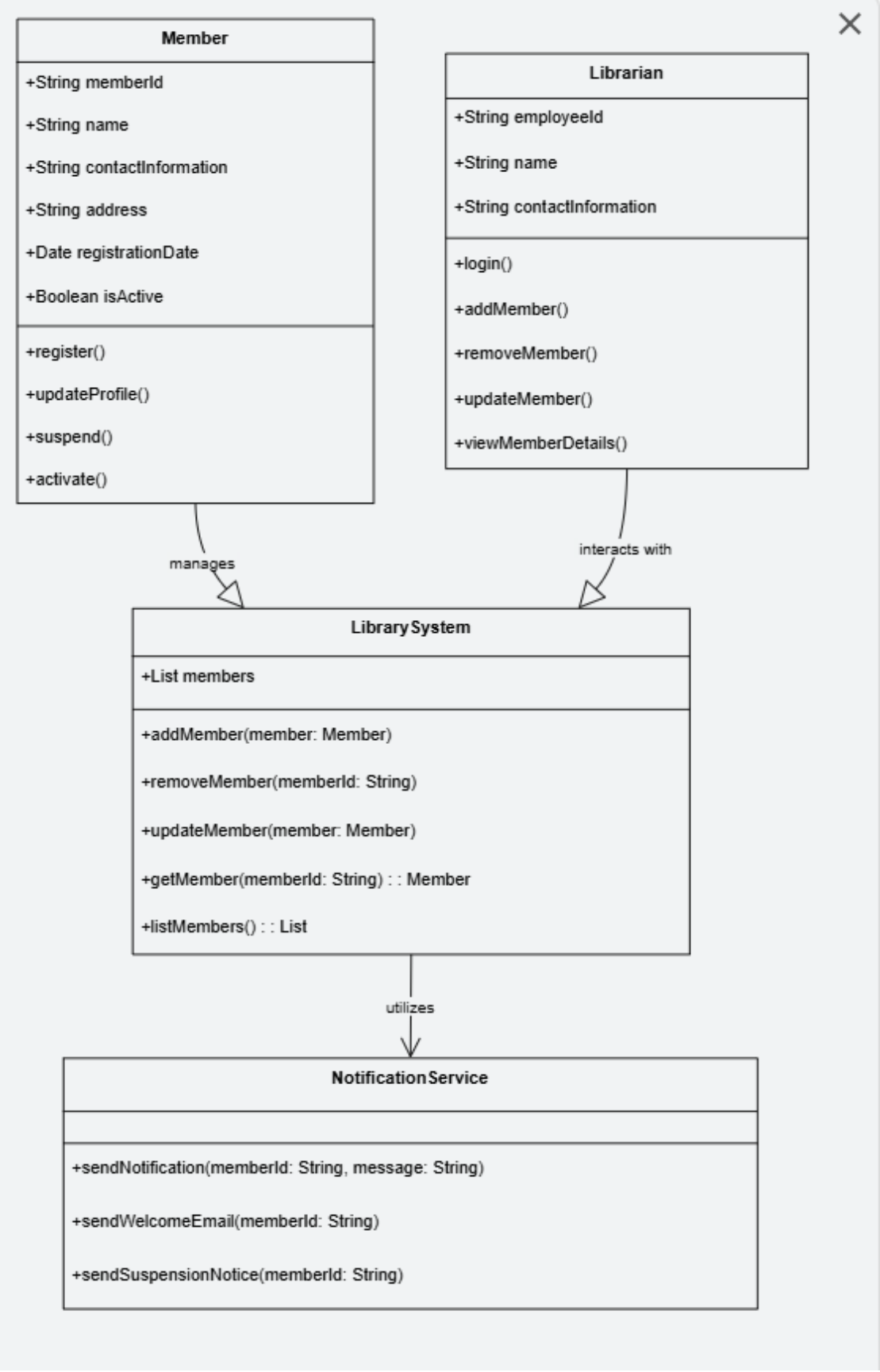
Pre-conditions	- Librarian is logged into the system - Librarian has permission to manage members
Trigger	Librarian selects the "Manage Members" option from the system menu
Post-conditions	- Member records are added, updated, or deactivated - Changes are saved in the system and available for future transactions
Main Flow	1. Librarian selects "Manage Members" 2. System displays options: Add, Edit, Delete/Deactivate 3. Librarian selects desired action 4. System prompts for input 5. Librarian enters details 6. System validates inputs 7. System saves record 8. Confirmation shown
Alternative Flows	**4a. Missing/Invalid Fields:** System shows error, librarian corrects input **6a. Duplicate Entry:** System detects duplicate ID/email, denies creation **5a. Active Loans/Fines:** System blocks deletion, suggests deactivation
Business Rules	1. Each member must have a unique Member ID and email 2. Only active members may borrow books 3. Members with loans/fines cannot be deleted 4. Deactivated members are blocked from borrowing 5. All changes must be logged with timestamp and librarian ID
Exceptions	- Invalid Member ID entered: system shows error - Database/system failure: system halts and informs librarian - Member with active loans/fines: system denies deletion - Improper input (e.g., format): prompts librarian to correct

SYSTEM SEQUENCE DIAGRAM



System sequence diagram for manage members use case of library managment system

CLASS DIAGRAM:


Member
+String memberId
+String name
+String contactInformation
+String address
+Date registrationDate
+Boolean isActive
+register()
+updateProfile()
+suspend()
+activate()
Librarian
+String employeeId
+String name
+String contactInformation
+login()
+addMember()
+removeMember()
+updateMember()
+viewMemberDetails()
manages
interacts with
LibrarySystem
+List members
+addMember(member: Member)
+removeMember(memberId: String)
+updateMember(member: Member)
+getMember(memberId: String) : : Member
+listMembers() : : List
utilizes
NotificationService
+sendNotification(memberId: String, message: String)
+sendWelcomeEmail(memberId: String)
+sendSuspensionNotice(memberId: String)