

# ASSIGNMENT:1

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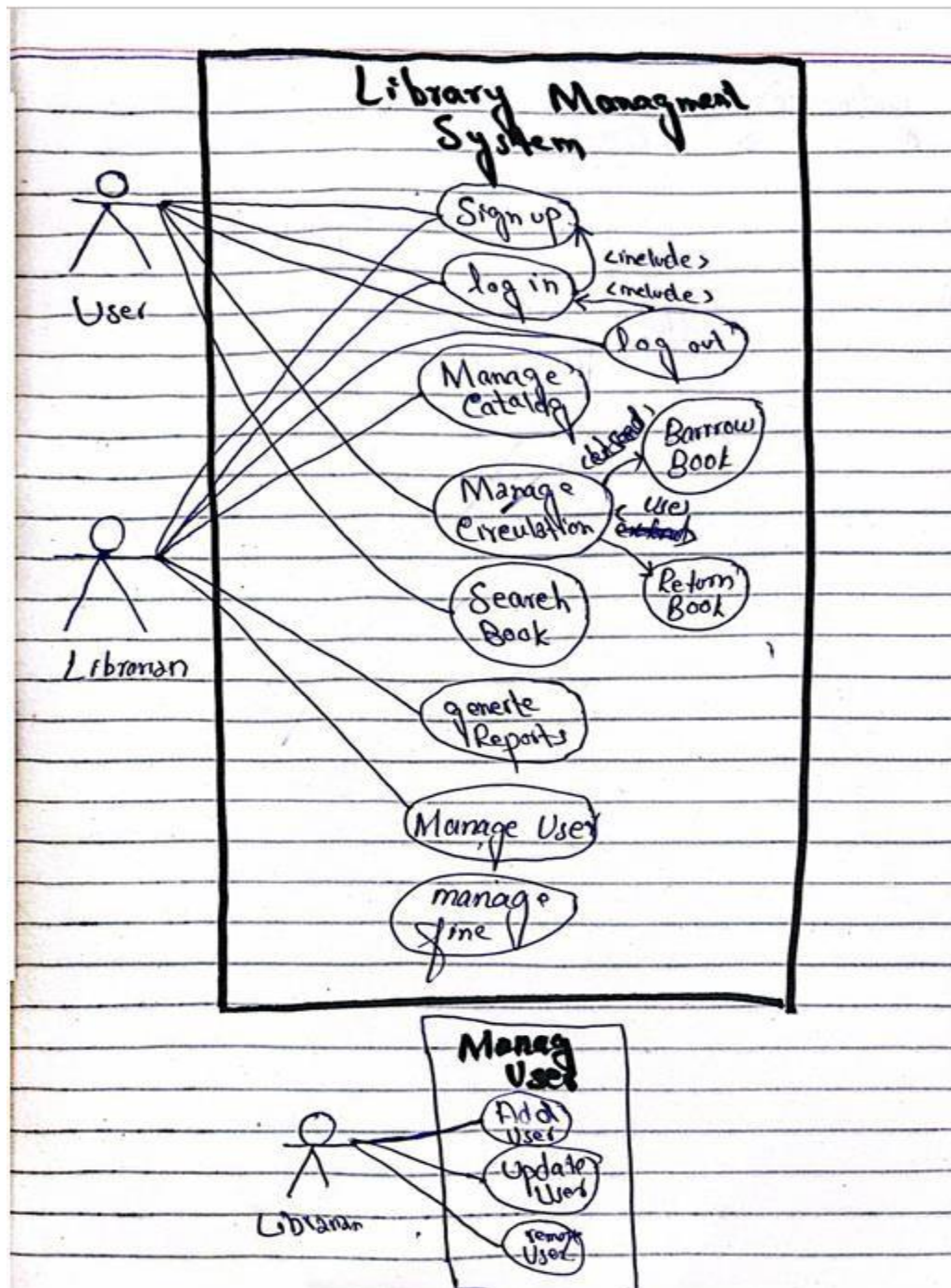
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**SOFTWARE DIAGRAMS**



**6TH NOVEMBER, 2024**

## Use Case Diagram





# Fully dressed Use Case: Borrow Book

## *Use Case Name*

Borrow Book

## *Primary Actor*

Library Member

## *Stakeholders and Interests*

- **Library Member:** Wants to borrow a book to read.
- **Librarian:** Responsible for managing book availability and ensuring books are borrowed and returned properly.
- **Library System:** Tracks the borrowing status of books and ensures books are available for borrowing.

## *Preconditions*

1. The library member is registered in the system.
2. The book to be borrowed exists in the system.
3. The book is not currently borrowed (i.e., it is available).

## *Postconditions*

- **Success Postcondition:** The book is marked as borrowed, and the library system records the transaction against the member.
- **Failure Postcondition:** The book's availability status remains unchanged, and no transaction is recorded if borrowing fails.

## *Main Success Scenario*

1. **User** initiates the "Borrow Book" operation by entering a **Book ID** and **Member ID**.
2. **System** retrieves the book details by calling `findById(bookId)` on the `BookRepository`.
3. **System** retrieves the member details by calling `findById(memberId)` on the `MemberRepository`.
4. **System** checks if:
  - The book is available for borrowing (not already marked as borrowed).
  - The member exists in the system.
5. If the checks pass:
  - **System** marks the book as borrowed by setting `book.setBorrowed(true)`.

- **System** returns a success message indicating that the book has been successfully borrowed by the member.

### *Extensions (Alternative Flows)*

- **E1. Book Not Found:**
  - If the book does not exist in the system, the system displays an error message: "Book not found."
- **E2. Member Not Found:**
  - If the member does not exist in the system, the system displays an error message: "Member not found."
- **E3. Book Already Borrowed:**
  - If the book is already marked as borrowed, the system displays an error message: "Book is already borrowed."

### *Special Requirements*

- **Response Time:** The system should respond within 2 seconds to display the status of the borrowing attempt.
- **Data Integrity:** The system must ensure that only available books can be borrowed and only registered members can perform borrowing.

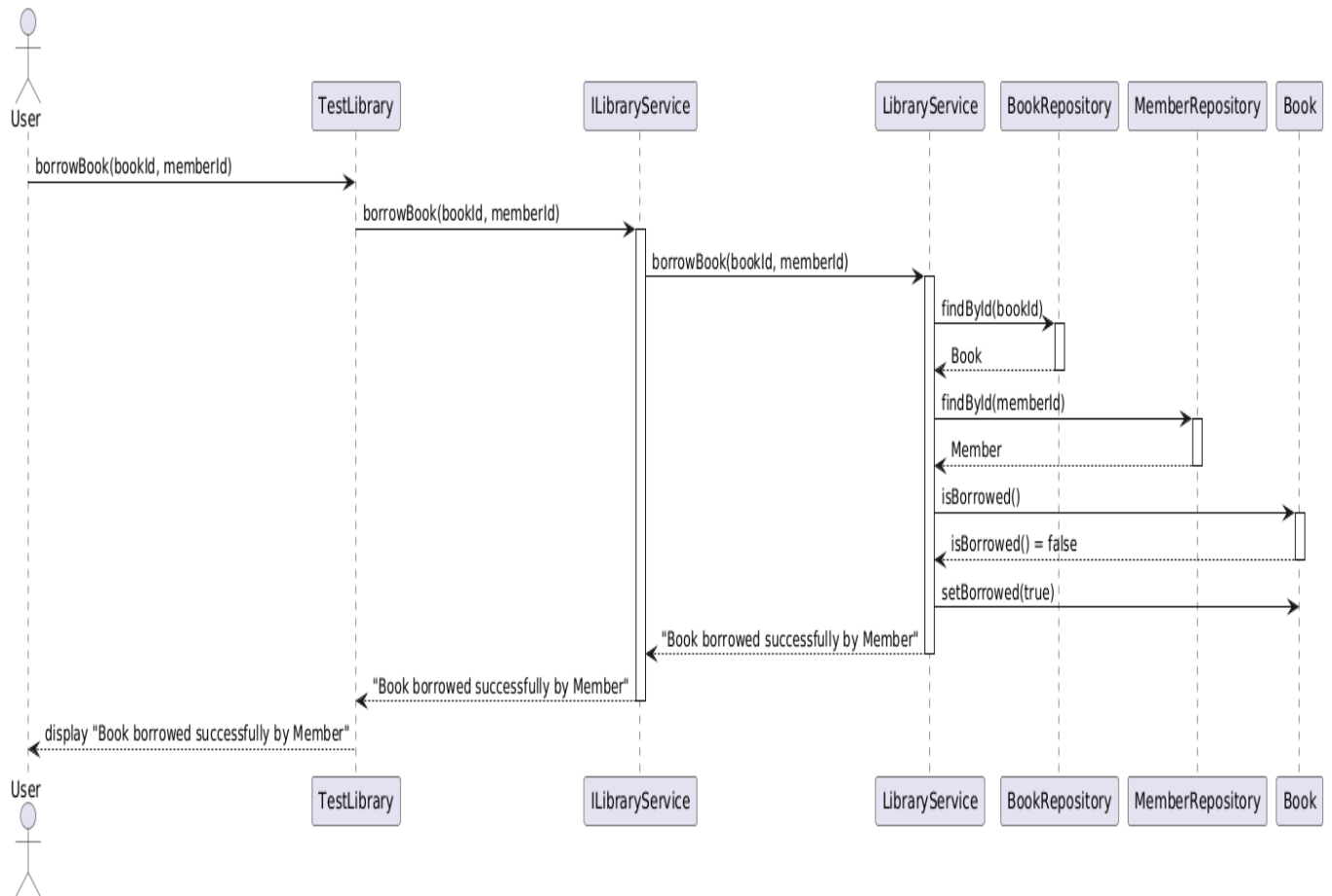
### *Technology and Data Variations List*

- **T1:** The library system uses a centralized `BookRepository` and `MemberRepository` to fetch book and member details.
- **T2:** User interface validation should ensure that only valid integers are entered as `Book ID` and `Member ID`.

### *Assumptions*

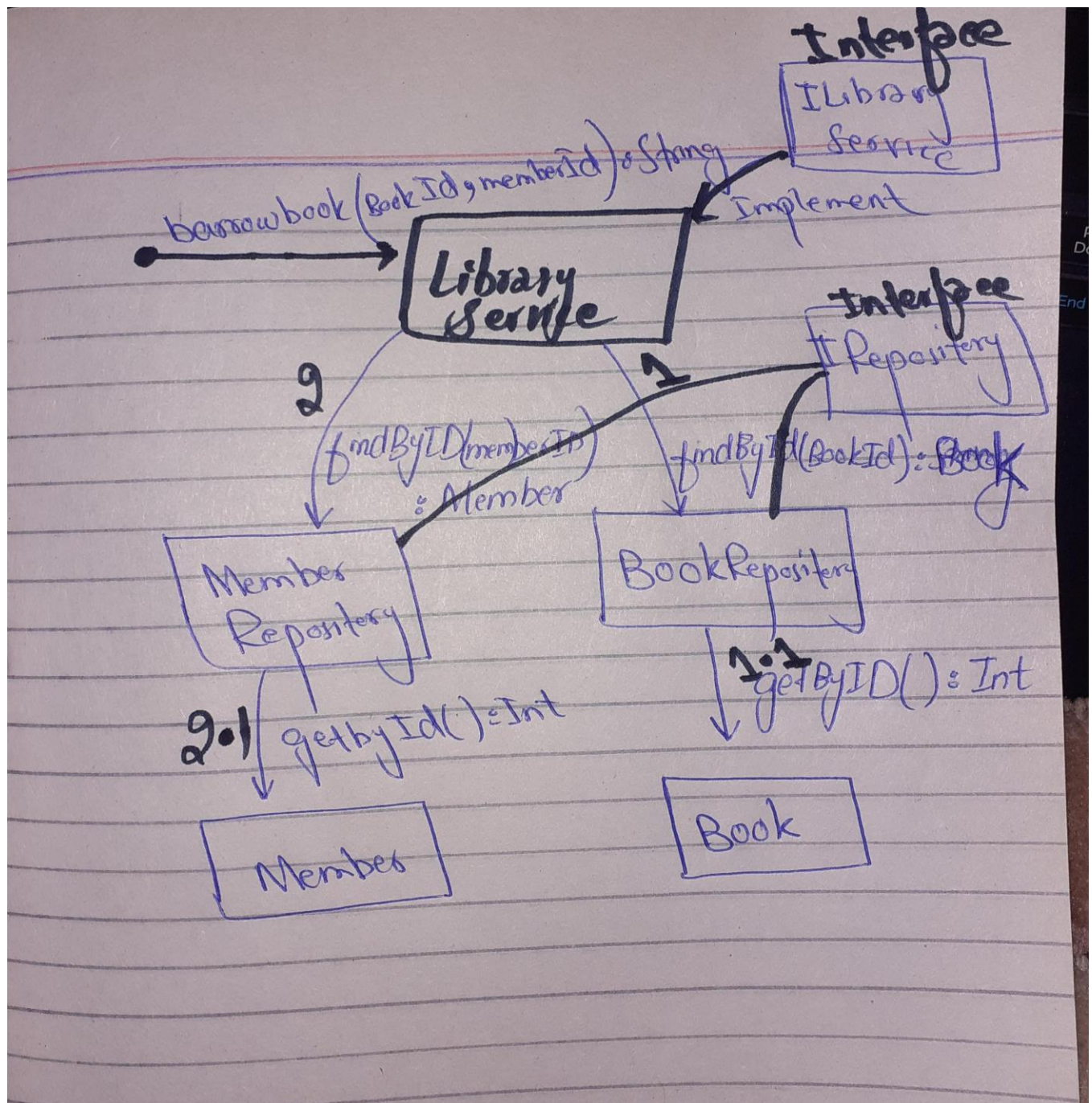
- Only registered members with valid IDs can attempt to borrow books.
- The system maintains accurate records of book status (available or borrowed).

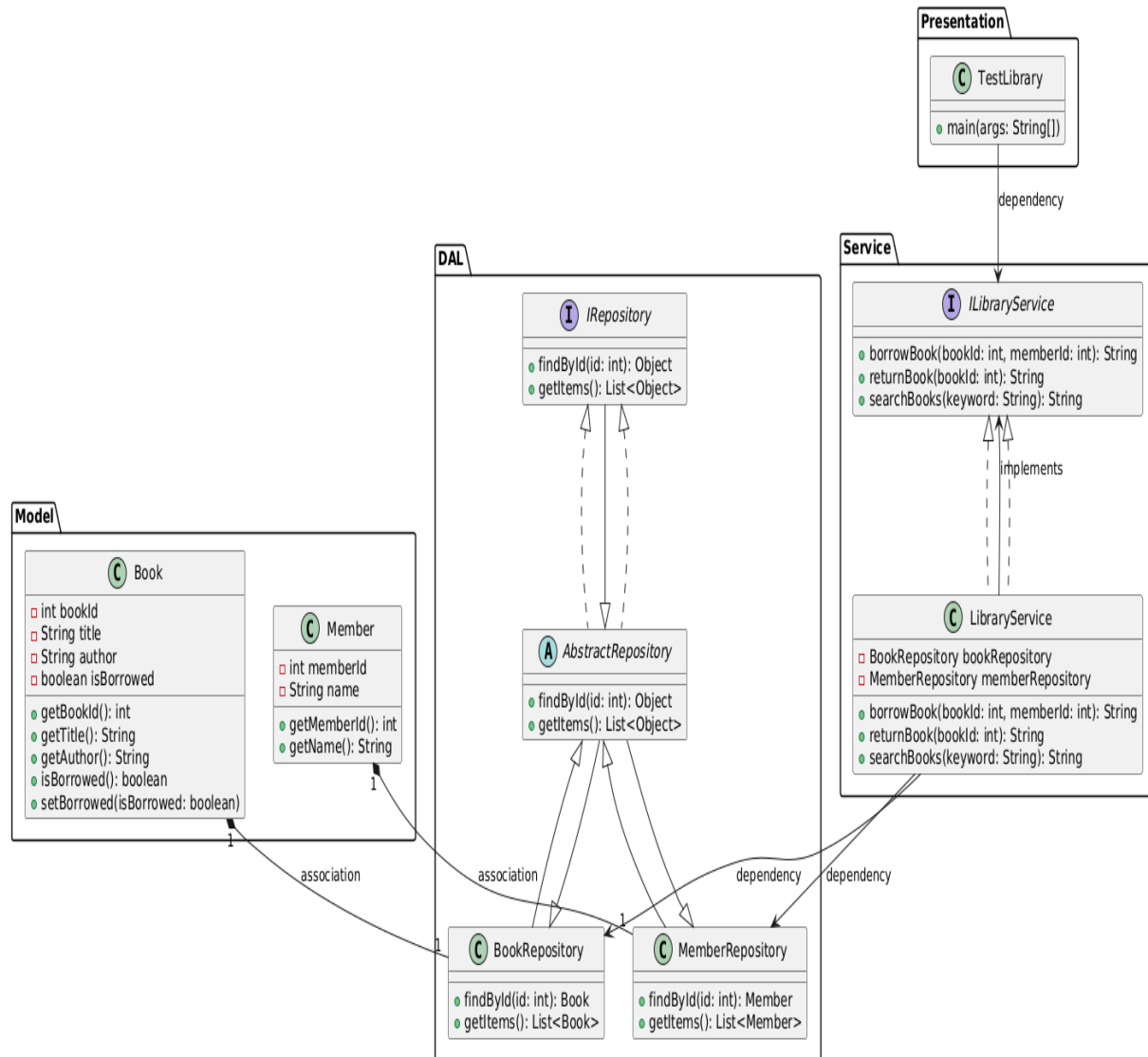
# System sequence diagram:





# Communication diagram:





# Package Diagram:

