

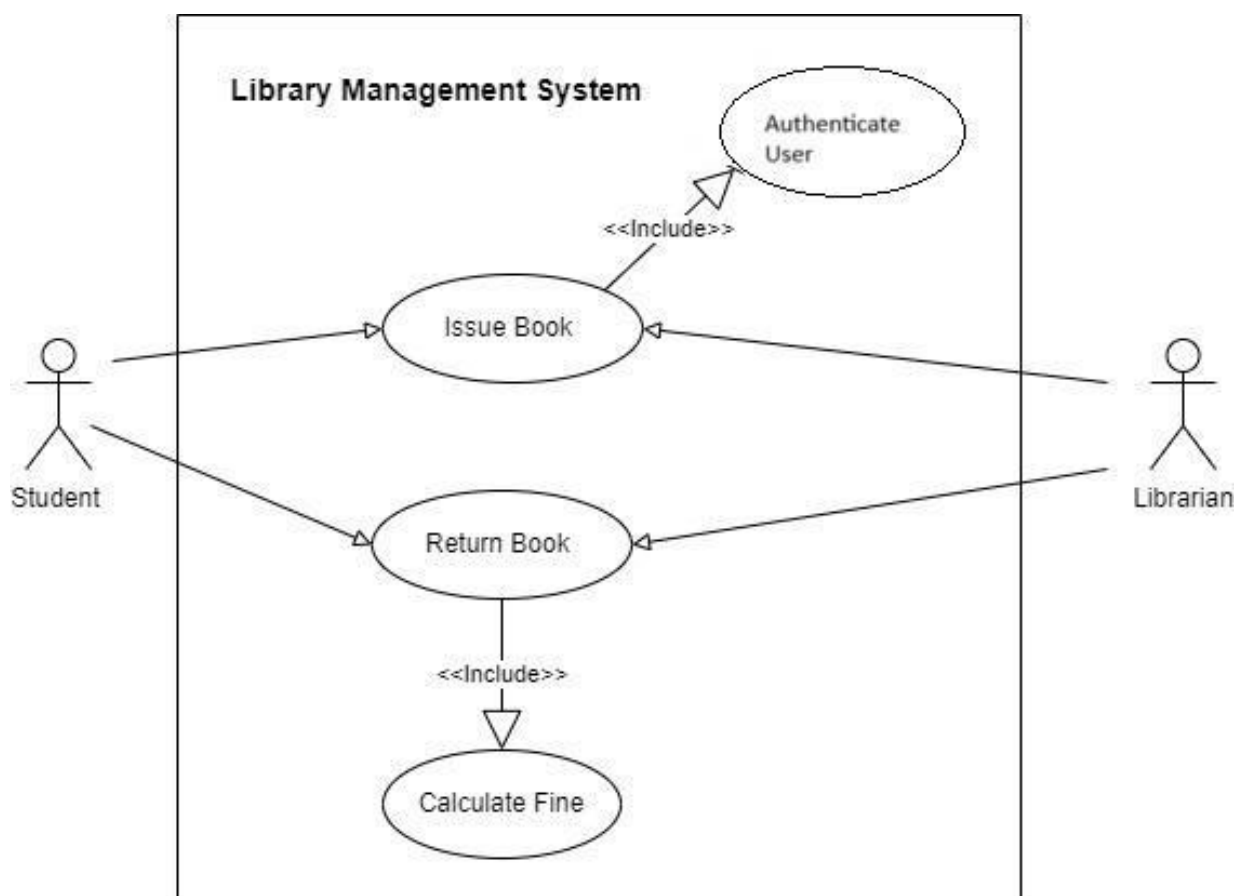
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**Q1 Develop the following documents for the Library ManagementSystem.**

**1. Use case Diagram: -**



Use Case Description: -

**Use case name:** Issue Book

**Description:** Represents the process of Issuing book **Primary**

**Actors:** Registered Students

**Secondary Actors:** Library, Librarian

**Pre-conditions:**

- Registered student must be logged in and authenticated by the librarian.
- The book being issued must be available in the library.

**Post-conditions:**

- The book is marked as issued to the student.
- The due date for returning the book is set.
- The student is notified of the successful issuance.

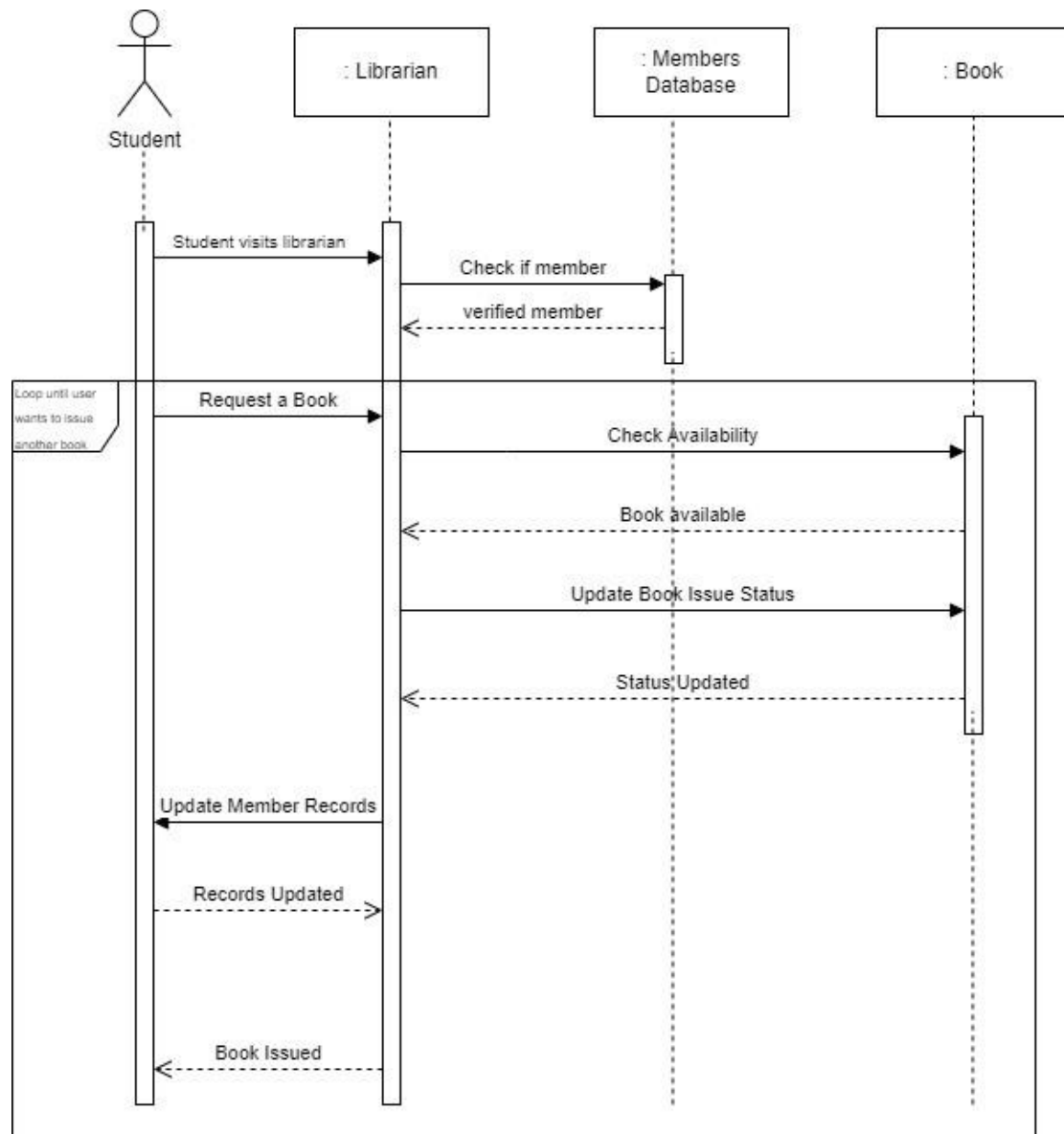
**Main flow:**

- The registered student requests to issue a book.
- The system validates the student's authentication status.
- The system checks if the requested book is available.
- If the book is available, the system marks it as issued to the student.
- The system sets the due date for returning the book.
- The system notifies the student and the librarian about the successful issuance.

**Alternate Flows:**

- If the book is not available, the system notifies the student that the book cannot be issued at the moment.
- If the user is not authenticated, the system notifies the librarian.

## 2. Sequence Diagram: -



### Entities:

- Book: Represents individual book with ISBN to check availability
- Student: Student with unique student ID borrow books from library
- Transaction: Represents any interaction between student and library.

### Boundary objects:

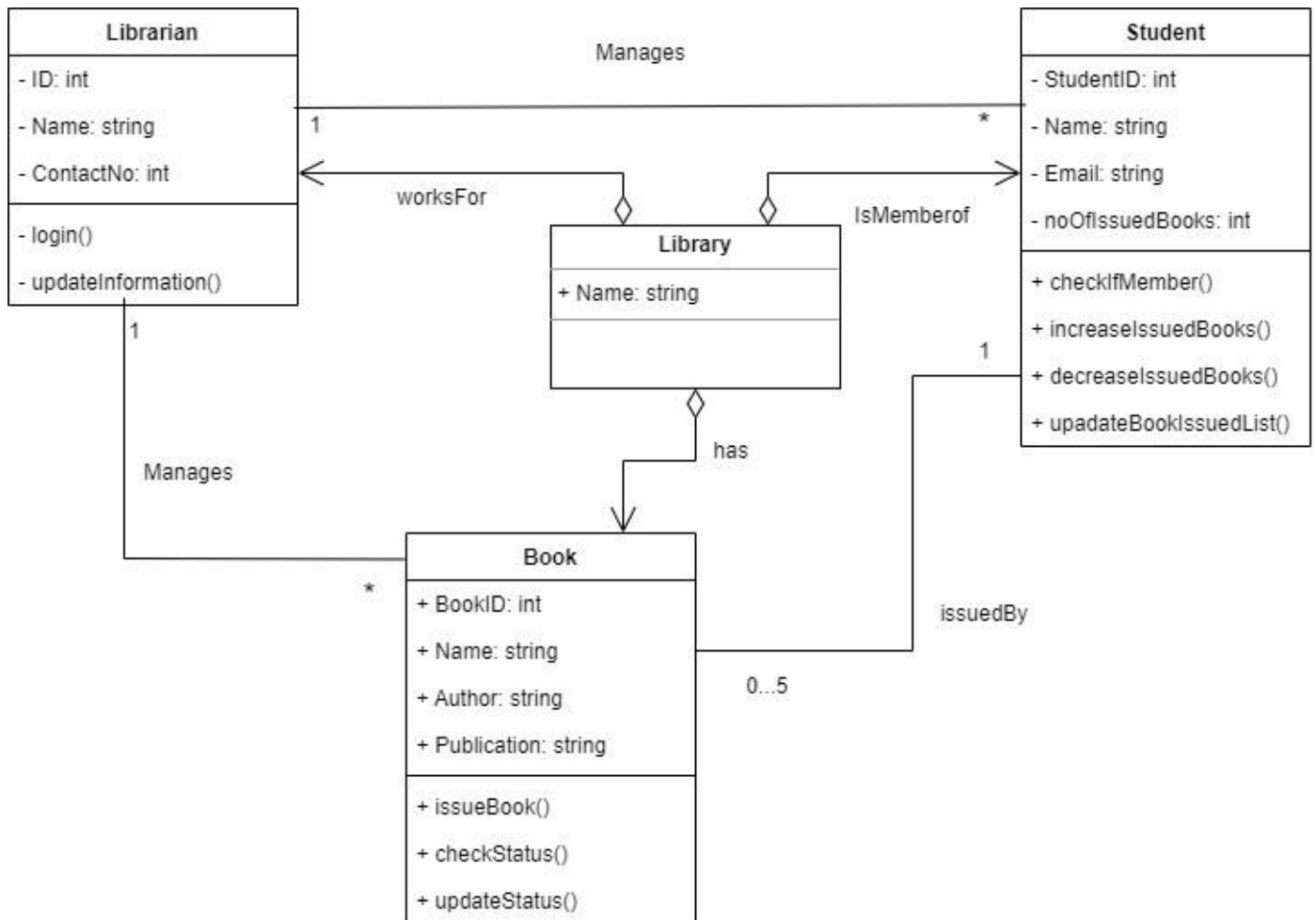
- Librarian/Student Interface: The library management system has the interface where the transaction would happen and both of them interact.
- Barcode reader (If available): Can be considered as a hardware component used to read barcode on the book.

### Control objects:

- Fine calculator: Calculates fine for the delayed submitted books.

- Database system: Has the collection of information of books, verified librarian and student information.
- Library management system: This Library management system itself can be considered as a control object as it manages and organizes all the procedure or transaction.

### 3. Analysis Object Diagram: -



**Q2 Draw a sequence diagram for the given Examination Management Process.**

