# IT 313

# Software Engineering

## Lab 7:

Group:- 1

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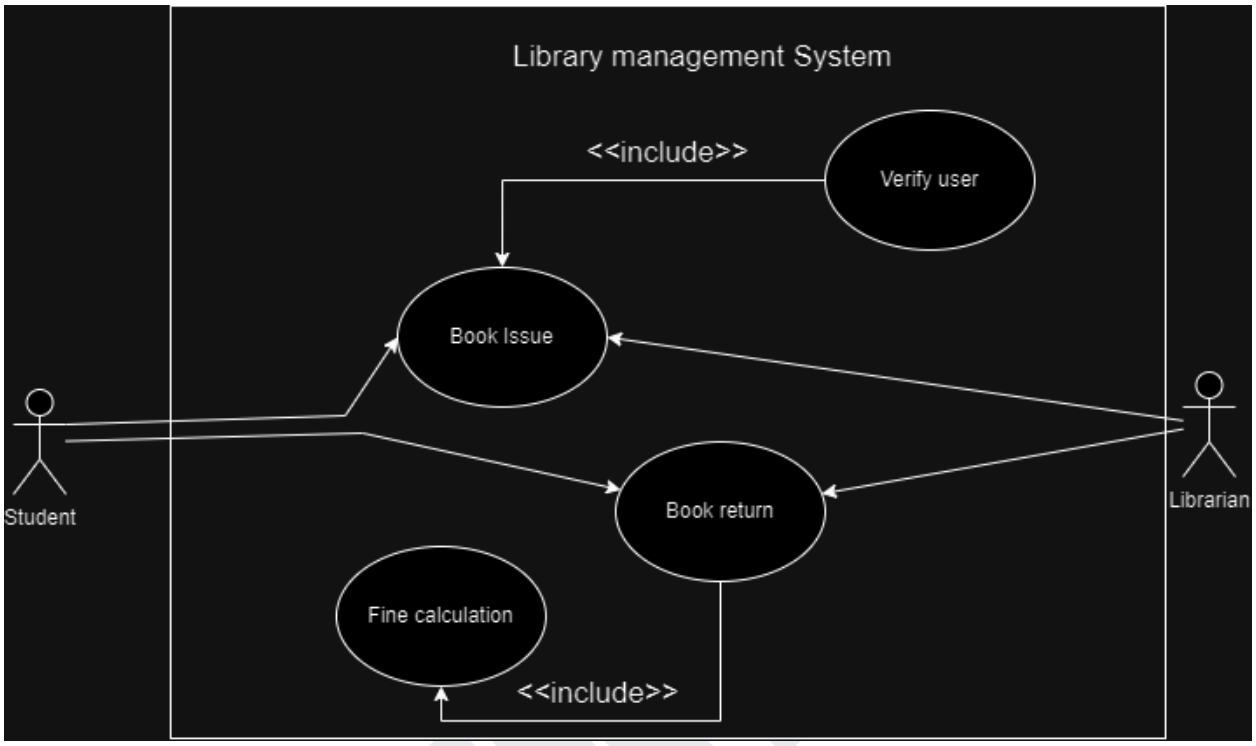
## Q.1




Issue Book

**Use Case Name**: Book Issuance

**Primary Actor:** Librarian

-**Preconditions**: Librarian must be identified and authenticated.

**Success Guarantee/Goals:**

- The book's status in the catalogue is updated to "issued."

- The student's profile records the book issuance information.

**Trigger:** A student approaches the librarian with a book to be issued.

**Main Scenario:**

1. The student arrives at the librarian's desk with a book for issuance.

2. The librarian verifies the student's library membership.

3. The librarian updates the book's status to "issued."

4. The librarian updates the student's profile to reflect the book issuance.

5. The student receives the issued book.

**Extensions:**

- If the system fails at any point:

1. The system initiates a robust recovery process.

2. If anomalies are detected in the prior state,

   a. The issuance process is canceled and restarted.

   b. The librarian can manually update the issuance process.

-If the student requests not to issue the book at any time:

1. The issuance transaction is canceled, and the book is returned to the librarian.

2. If the student's membership is invalid: The issuance transaction is canceled, and the book is returned to the librarian.

3. If the book is currently held by someone else: The issuance transaction is canceled, and the book is returned to the librarian.

**Postconditions:** The system returns to the dashboard, ready for another book issuance or return transaction.

2. The sequence diagram for the “issue book” use case.

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.
- LMS: This Library management system itself can be considered as control objects as it manages and organize all the procedure or transaction.

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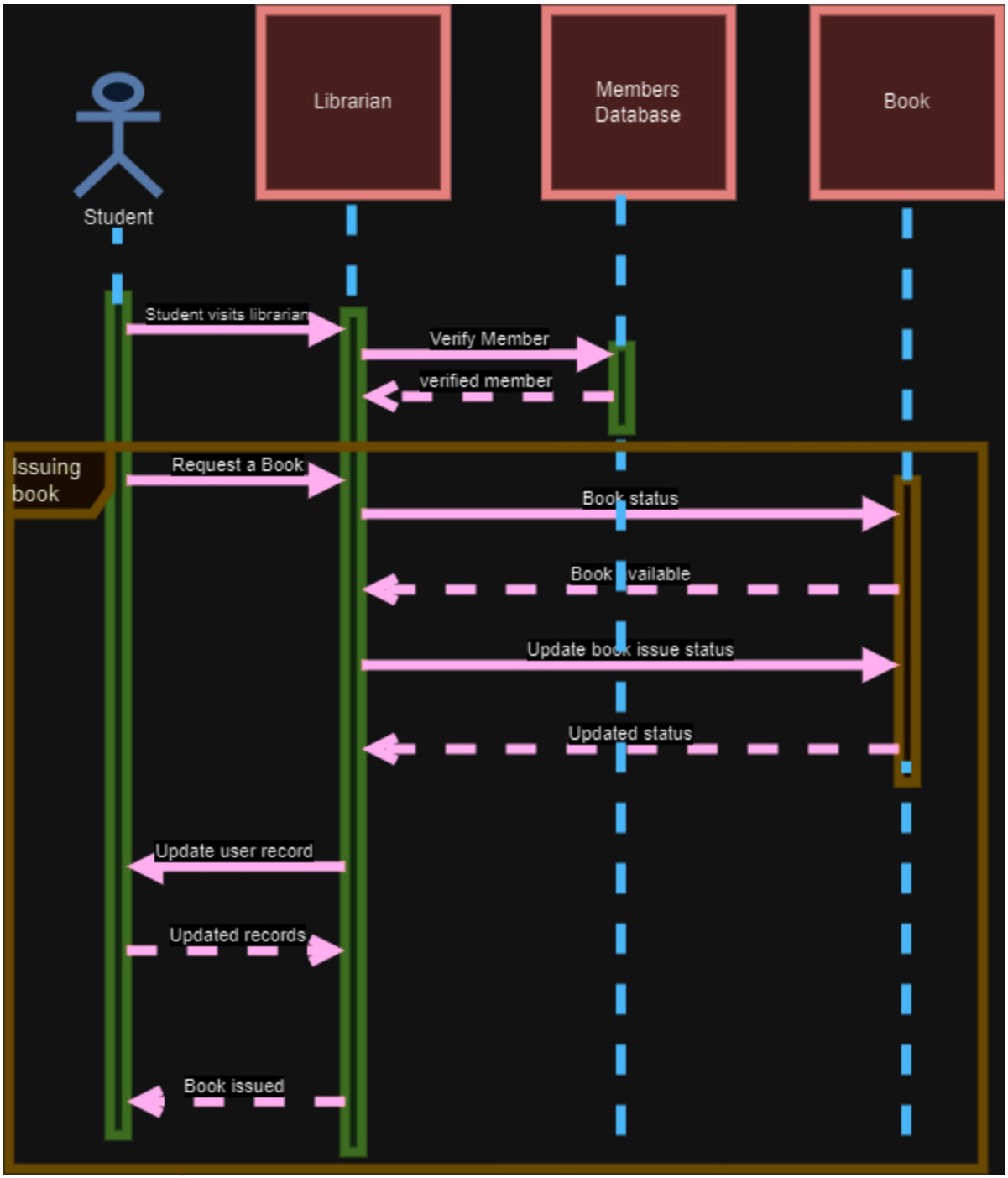
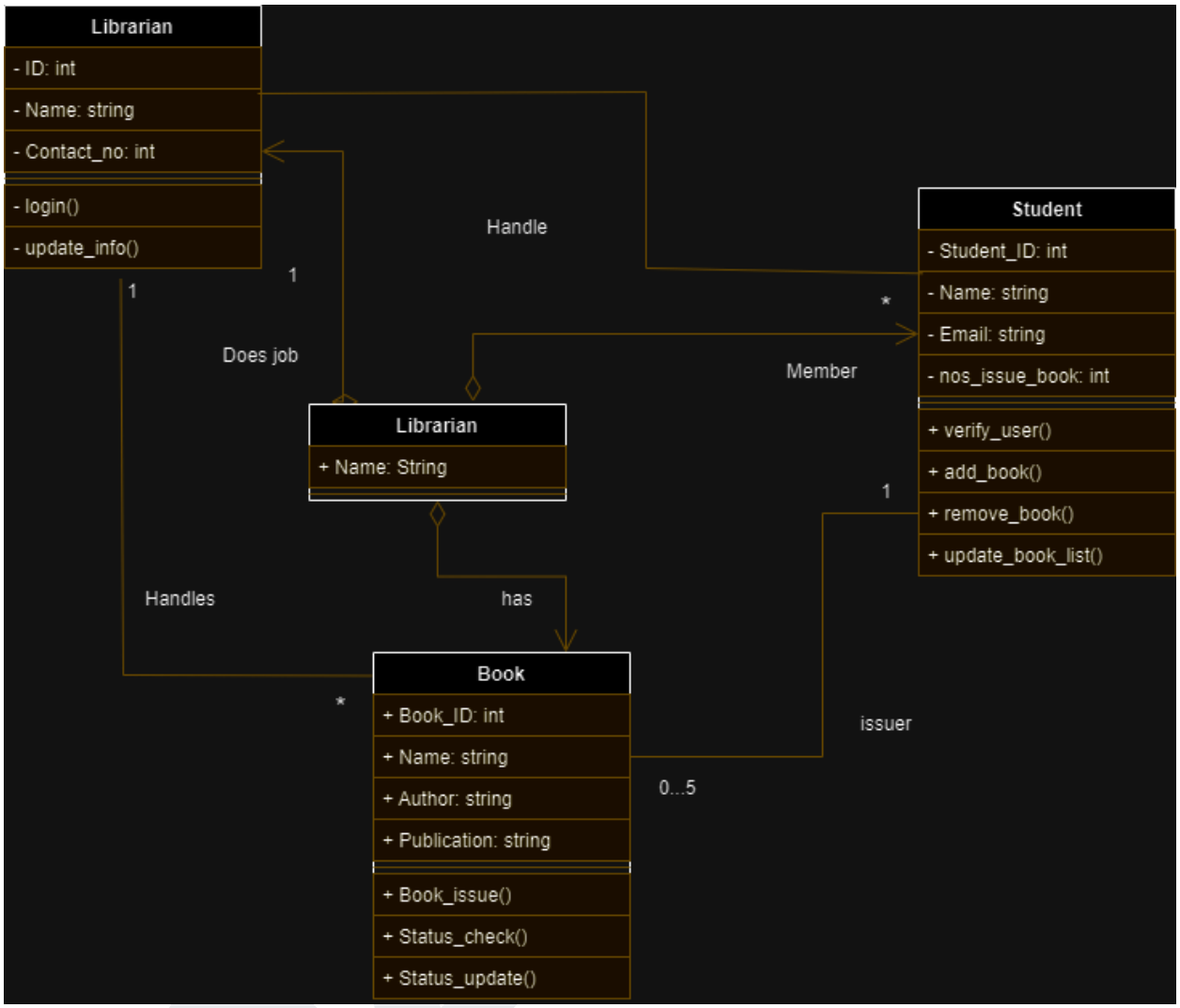
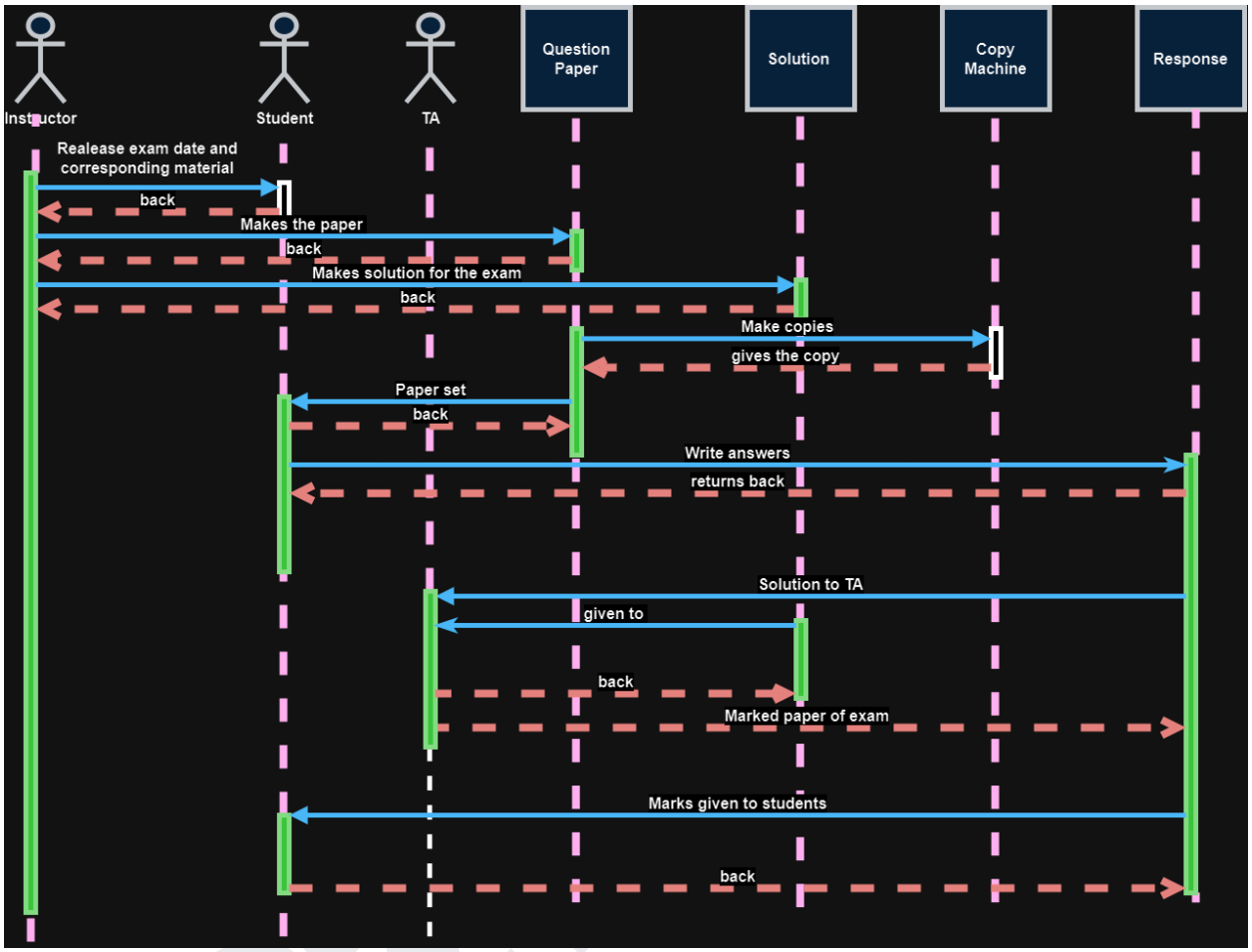

Librarian
Members Database
Book
Student
Student visits librarian
Verify Member
verified member
Issuing book
Request a Book
Book status
Book vailable
Update book issue status
Updated status
Update user record
Updated records
Book issued


Librarian
- ID: int
- Name: string
- Contact_no: int
- login()
- update_info()
Handle
Student
- Student_ID: int
- Name: string
- Email: string
- nos_issue_book: int
+ verify_user()
+ add_book()
+ remove_book()
+ update_book_list()
1
1
*
Does job
Member
Librarian
+ Name: String
1
Handles
has
Book
+ Book_ID: int
+ Name: string
+ Author: string
+ Publication: string
+ Book_issue()
+ Status_check()
+ Status_update()
*
issuer
0...5

## Q.2


Instructor
Student
TA
Question Paper
Solution
Copy Machine
Response
Realease exam date and corresponding material
back
Makes the paper
back
Makes solution for the exam
back
Make copies
gives the copy
Paper set
back
Write answers
returns back
Solution to TA
given to
back
Marked paper of exam
Marks given to students
back