SOFTWARE ENGINEERING
Lab: 7

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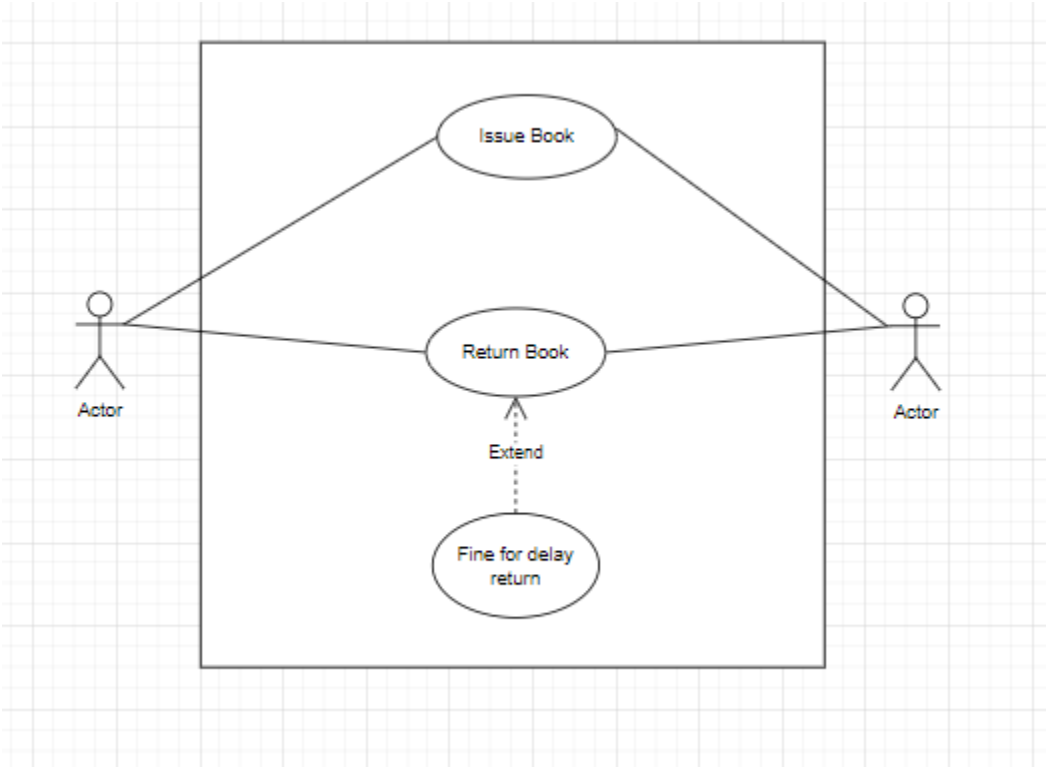
Que - 1 :

1] Use case Diagram



- **Description:-**
  This system is used by students, faculty members and staff for issuing book. In this for students, they can issue available book, and they should return the book. If the return date of book is after the due date the students have to pay some fine for that.
  This section should provide a description of both the reason for using the use case and the expected outcome of the use case.

- **Actors:-**
  Student
  Librarian
  Library

- **Preconditions:-**
  Students should register in the library.

- **Trigger:-**
  a student comes to the library for issuing the book or returning a book.

- **Postcondition:-**
  The entry of the issued or returned book should be added to the database of the library.

- **Flow:-**
  the student will come to issue a book for reading, the Librarian will check for the availability of books in the library. Then he will issue the book and record it in the library
  Database.
  At the time of returning the book, the student will return the book, and the librarian will check the due date. If the student is already late in returning then he/she should pay the fine. Libraria will accept the fine and take the book return and update the database.

- **Alternative Flows:-**
  1.If the system fails at any point
    The issuance process is canceled and restarted.
    Librarian will manually update the inventory and the student profile.

2.If book is not available

If the wanted book is not in the inventory then student can not issue the book.

3.Student is not member of Library.

Whole process will be cancelled and book will be returned to the librarian.

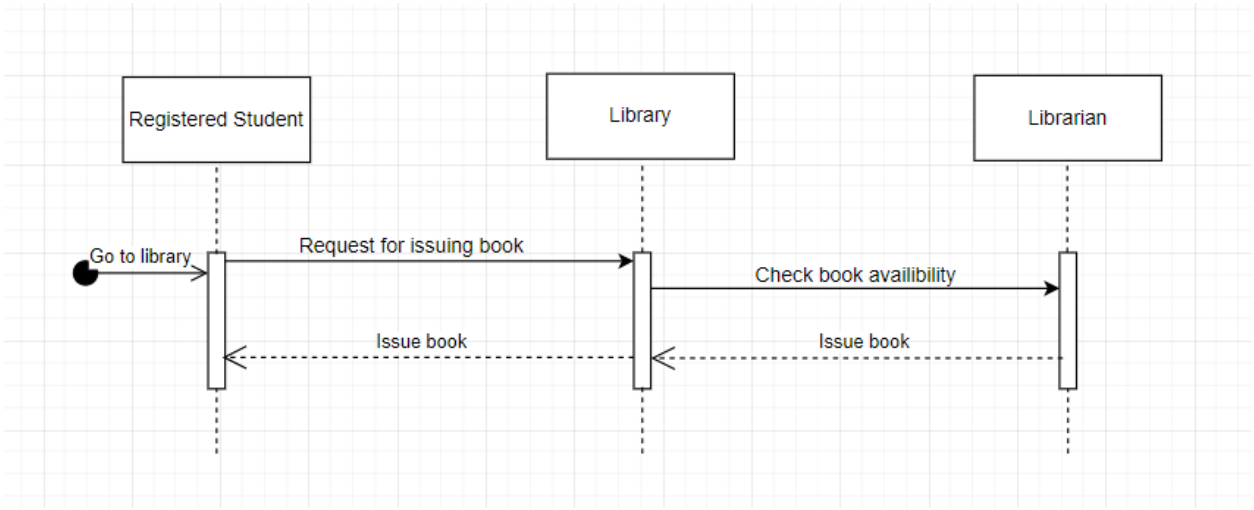
- **Special Requirements**:-

  Some Backup system to handle system failures.
  Secure the database.
  Timely check for the member account's validation.

- **Post-Conditions**:-

  After one transaction system should be ready for the another transaction.

2] Sequence Diagram



- **Entities:-**

  Book :- It represent the book with unique ISBN number.
  Student :- Student with unique I'd.
  Transaction :- Represent the book issuance process between student and librarian.

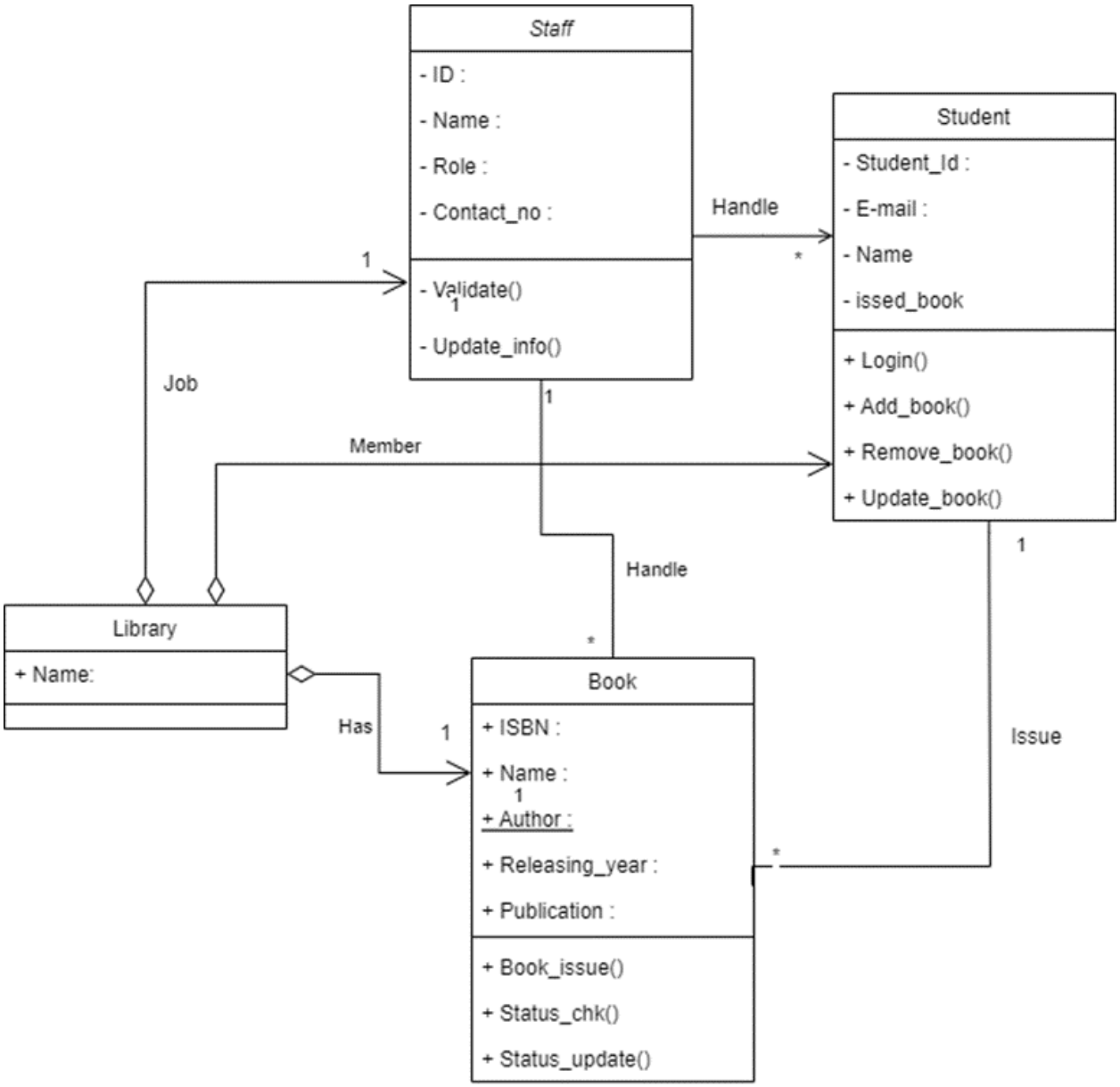
- **Boundary Object:-**

  Library Interface :- In this interface, the transaction would happen and the both of then interact.

- **Control Object:-**

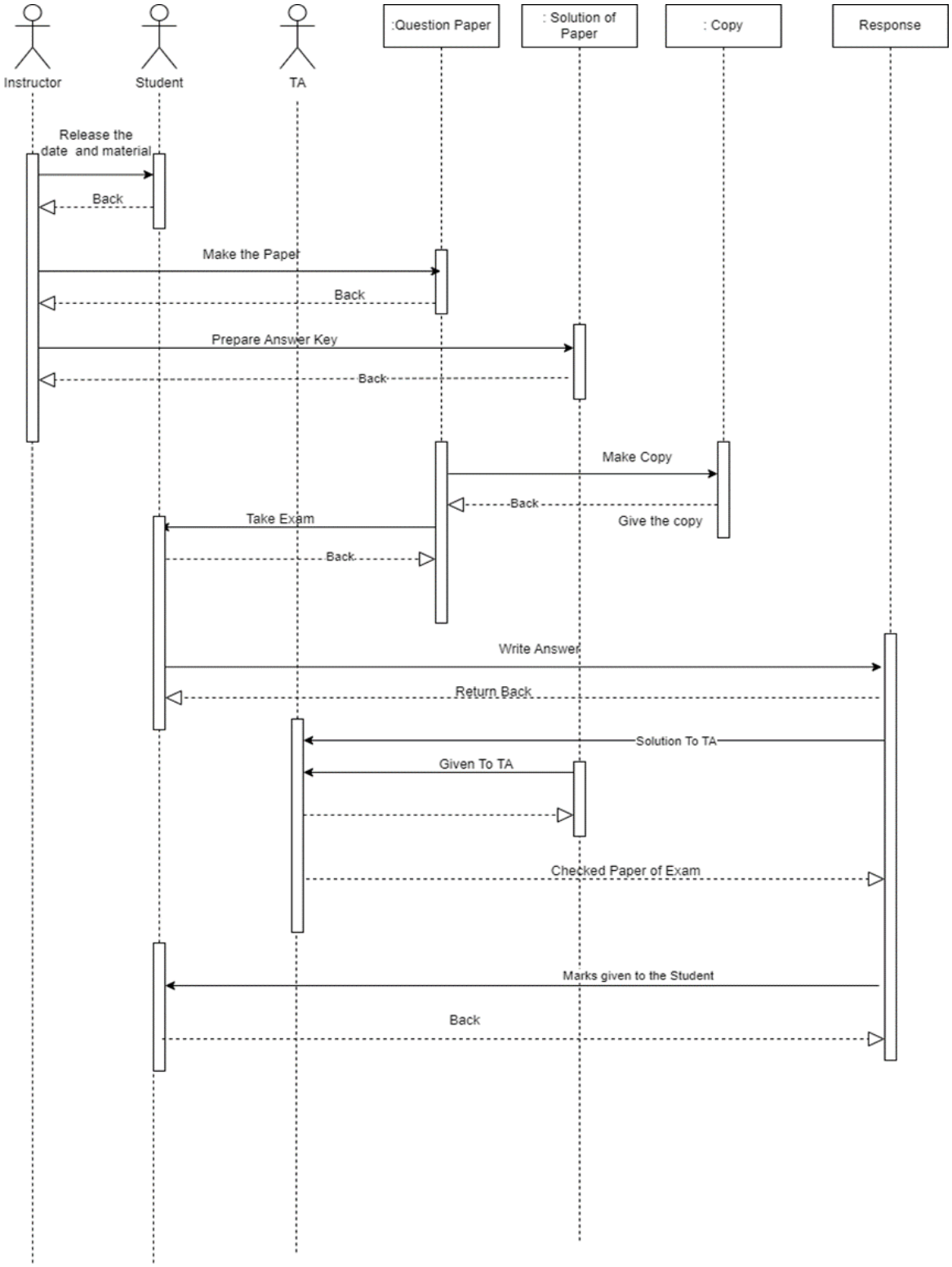
  Fine Calculator :- Calculate the fine for delayed return of the book.
  Inventory :- This database contains all the details of the book, number of its copy, availability.
  And This Library Management System is also control object in itself.

3] Object Diagram



Que - 2 :

Sequence Diagram:


Instructor
Student
TA
:Question Paper
: Solution of Paper
: Copy
Response
Release the date and material
Back
Make the Paper
Back
Prepare Answer Key
Back
Make Copy
Back
Give the copy
Take Exam
Back
Write Answer
Return Back
Solution To TA
Given To TA
Checked Paper of Exam
Marks given to the Student
Back