

Lab-7

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Q-1. 1 : The Use Case Diagram

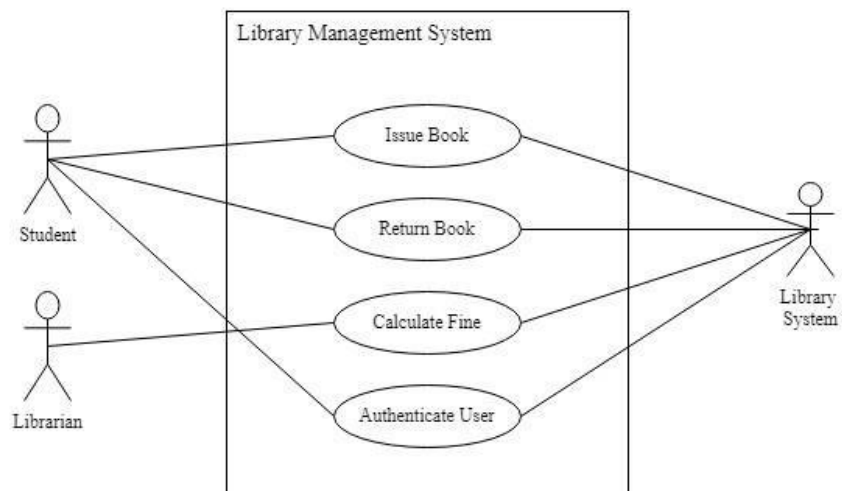


Figure 1: Use Case Diagram

Use Case Documentation

Primary Actor: Librarian/Library

Secondary Actor: Student

Preconditions:

- **The librarian is logged into the authenticated Library Management System.**

- **The student is registered in the system.**

Postconditions:

- **The book is marked as "issued" to the student.**
- **The due date for return is set.**

Normal Flow:

1. **Librarian selects "Issue Book" from the Library Management System.**
2. **System prompts librarian to enter the student's ID or search for the student.**
3. **Librarian enters the student's ID or searches for the student.**
4. **System displays student information.**
5. **Librarian selects the book to be issued from the available books.**
6. **System marks the book as "issued" and assigns a due date for return.**
7. **Librarian confirms the issue.**

Alternative Flow (Student Not Found):

- **If the system cannot find the student, it prompts the librarian to re-enter the student's information.**

Alternative Flow (Book Not Available):

- **If the selected book is not available, the system informs the librarian and prompts for an alternative book selection.**

Exceptional Flow (Late Return):

- **If the book is returned after the due date, the system calculates the fine and updates the student's account.**

Exceptional Flow (Book Not Returnable):

- **If the book is not in a condition to be issued (e.g., damaged), the librarian updates the book status in the system and informs the student.**

Notes:

- **The due date is calculated based on the institute's policies.**
- **The librarian has the authority to override the due date if necessary (e.g., special circumstances for a student).**

**Q-1. 2 : The Sequence Diagram for the “issueBook”
use case**

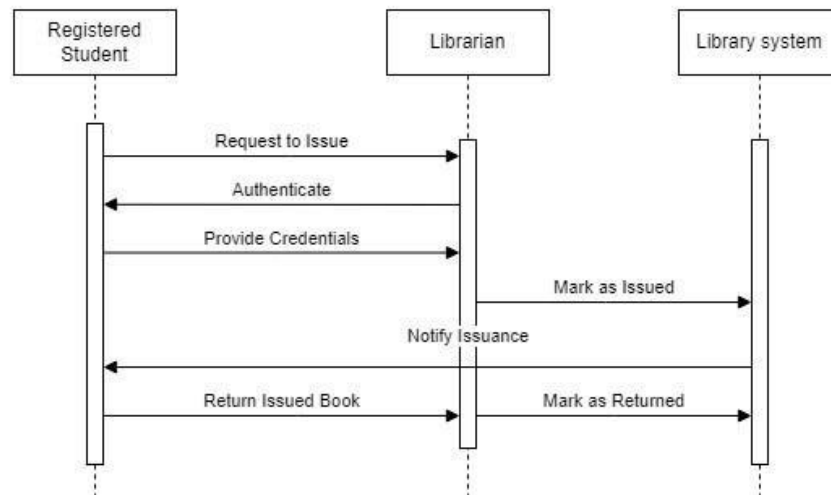


Figure 2: Sequence Diagram

Q-1. 3 : The Object Diagram for the “issueBook” use case

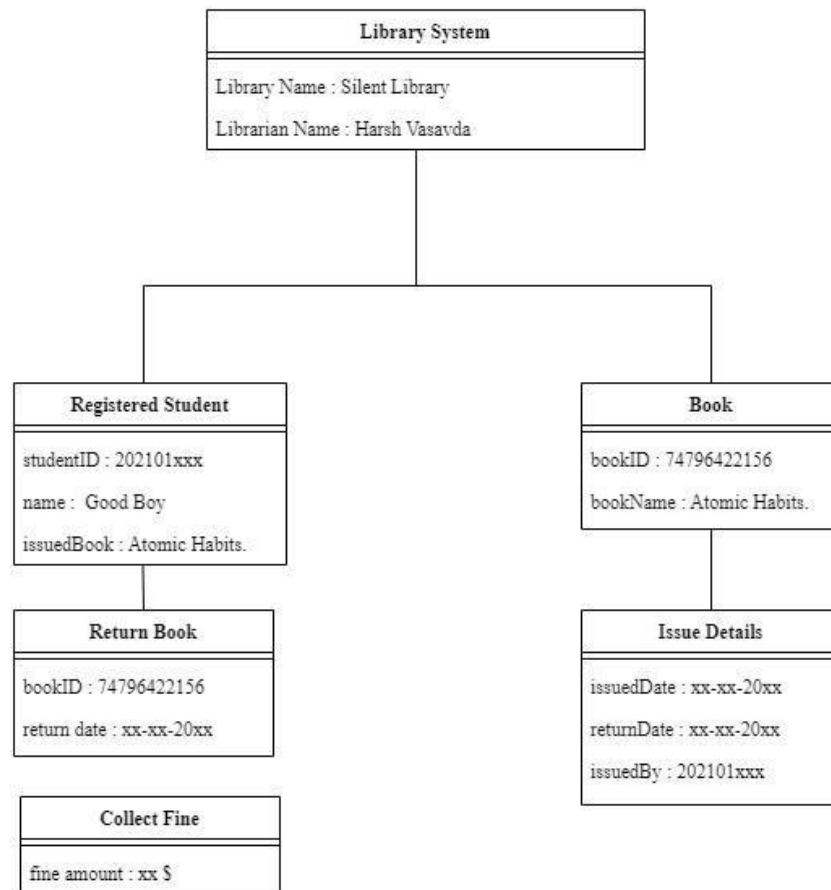


Figure 3: Object Diagram

Q-2. The Sequence Diagram and Operations

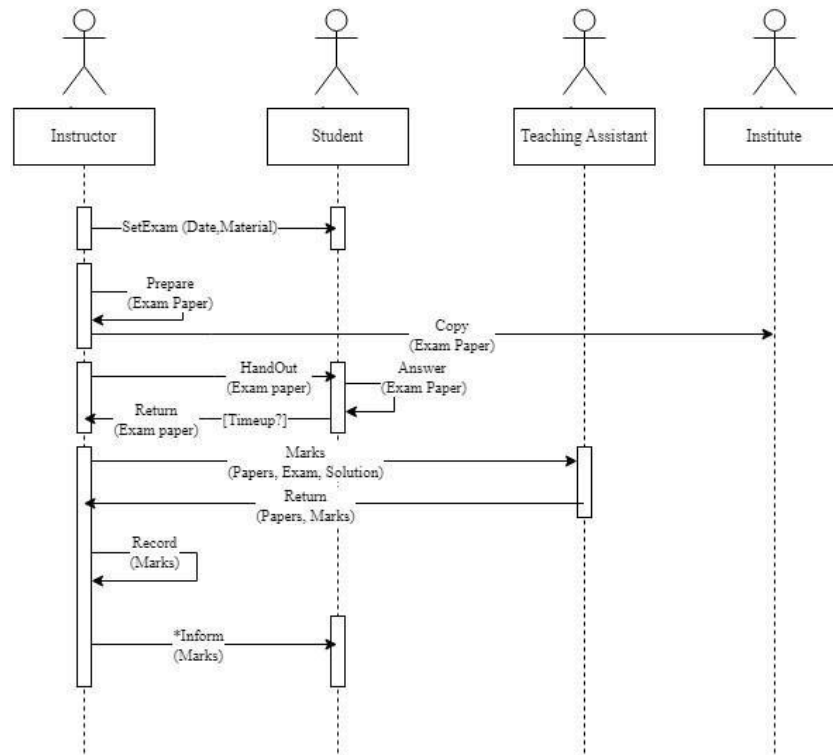


Figure 4: Sequence Diagram and operations