IT-314 Software Engineering

Name : Patel Ketvi
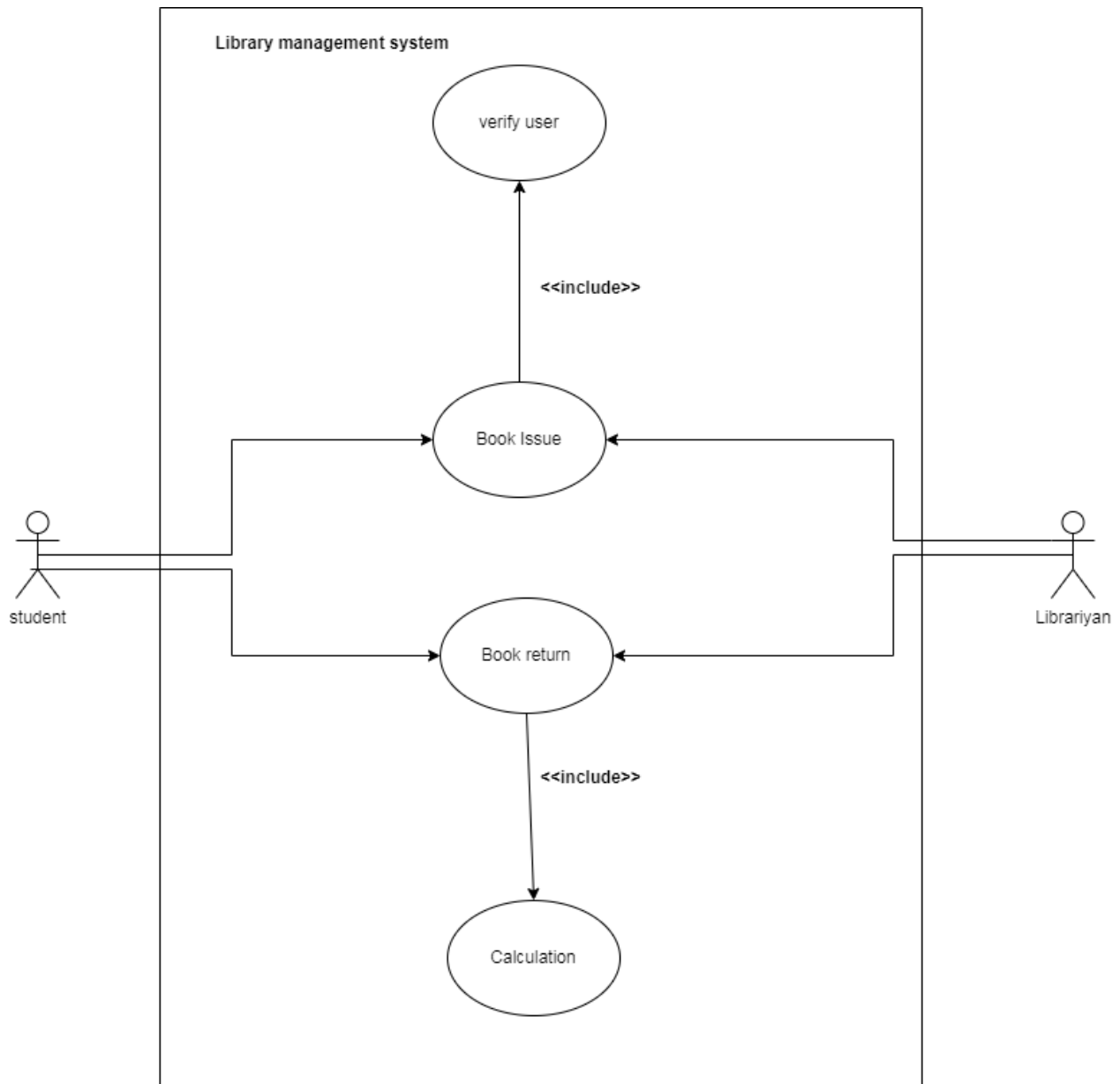
Date : 9/27/2023

Lab Group : 4

Lab VII: Domain Analysis Modeling & Sequence Diagram

Question 1:

1. Complete the use case diagram for the above problem text along with use case documentation for "issueBook" use case.

Use Case Documentation: Issue Book

Use Case Name: Book Issuance

   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.
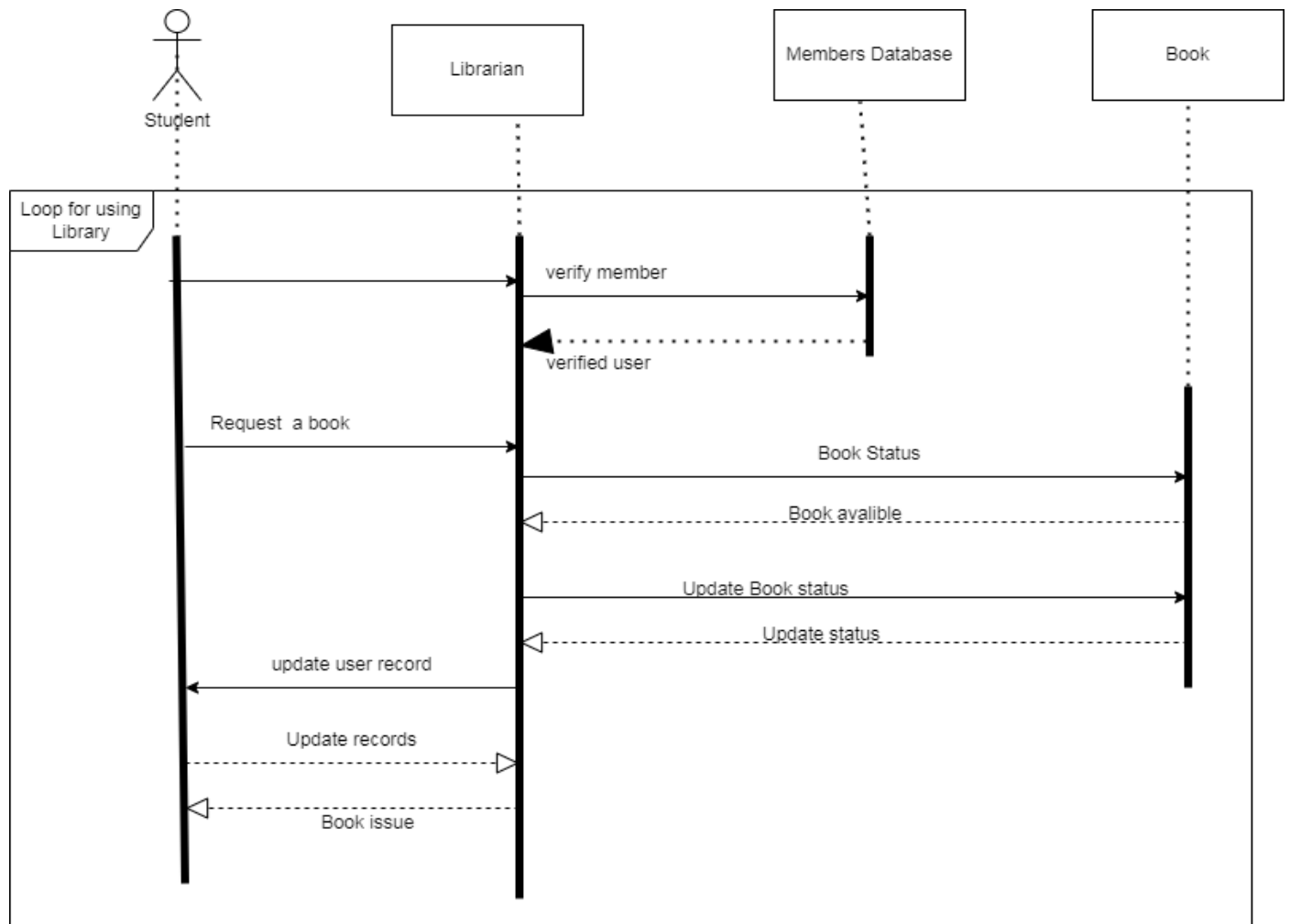
Special Requirements:

- Robust recovery mechanisms to handle system failures.

- Swift authorization response for efficient processing.

- Timely updates to the system to ensure accurate records.

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

2. The sequence diagram for the "issueBook" use case.

(Hint: Here you need to identify various analysis objects (corresponding to entity, boundary, and control classes), and show their interaction to realize the "issueBook" use case.)

Entities:

- Book: Represents individual book with ISBN to check availability

- Student: Student with unique student ID borrow books from library

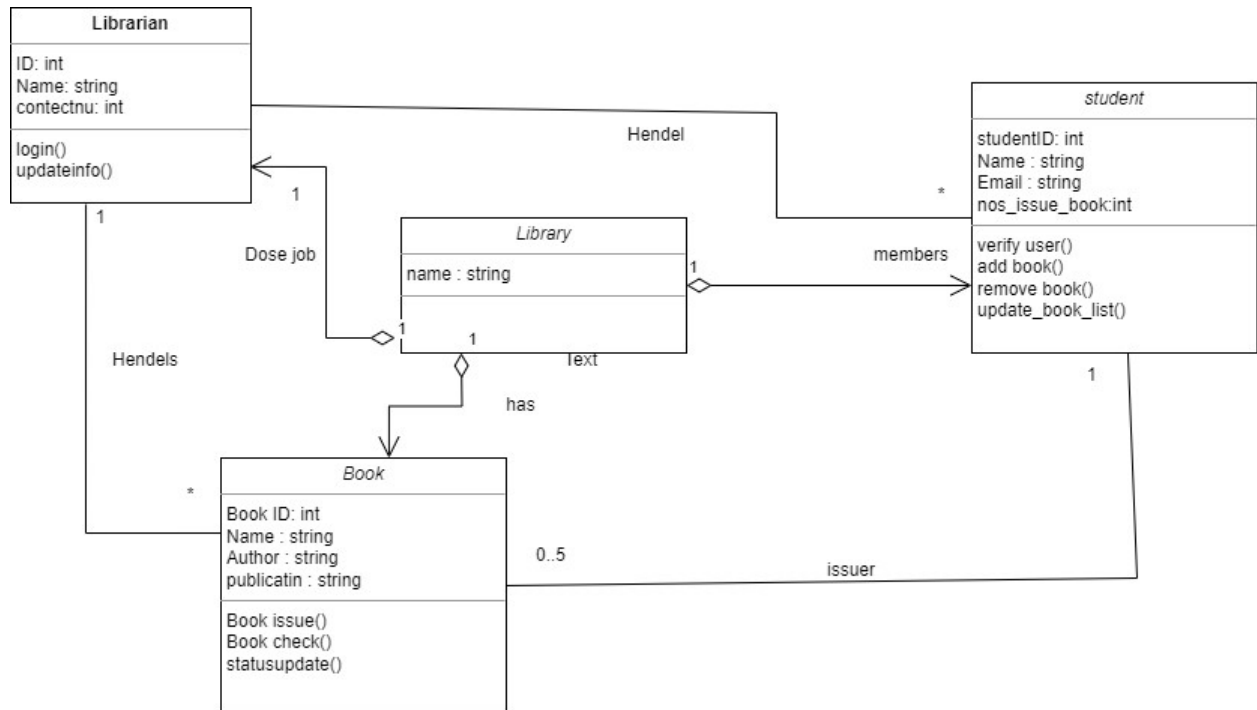- Transaction: Represents any interaction between student and library.

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.

3. Draw the analysis object diagram for the "issueBook" use case analysis.

Question 2:

To give an exam, an instructor first notifies the students of the exam date and the material to be covered. She then prepares the exam paper (with sample solutions), gets it copied to produce enough copies for the class, and hands it out to students on the designated time and location. The students write their answers to exam questions and hand in their papers to the instructor. The instructor then gives the exam papers to the TAs, along with sample solutions to each question, and gets them to mark it. She then records all marks and returns the papers to the students.