IT313 Software engineering

Lab7 Domain Analysis Modeling & Sequence Diagram

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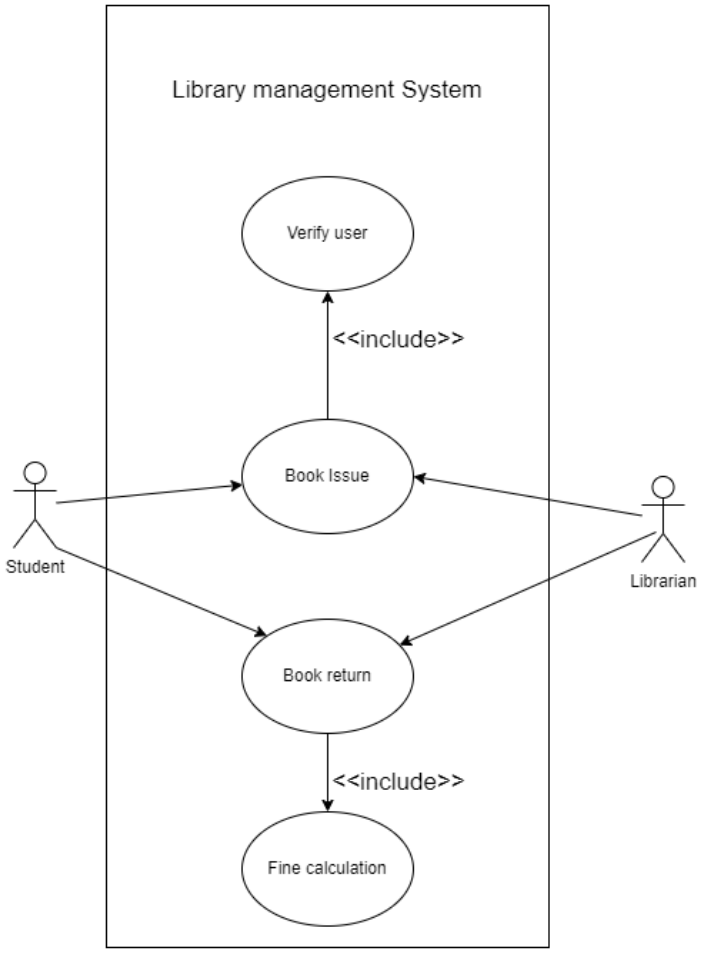
Group-1

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



-Primary Actor: Librarian

-Other Actors: Student, Database (Book Catalogue, Members)

Stakeholders and Interests

- Librarian: Aims to ensure efficient book issuance, checking student membership, and maintaining accurate book and student records.
- Student: Desires to successfully borrow a book from the library.

-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.

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.)

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-**Entities:**

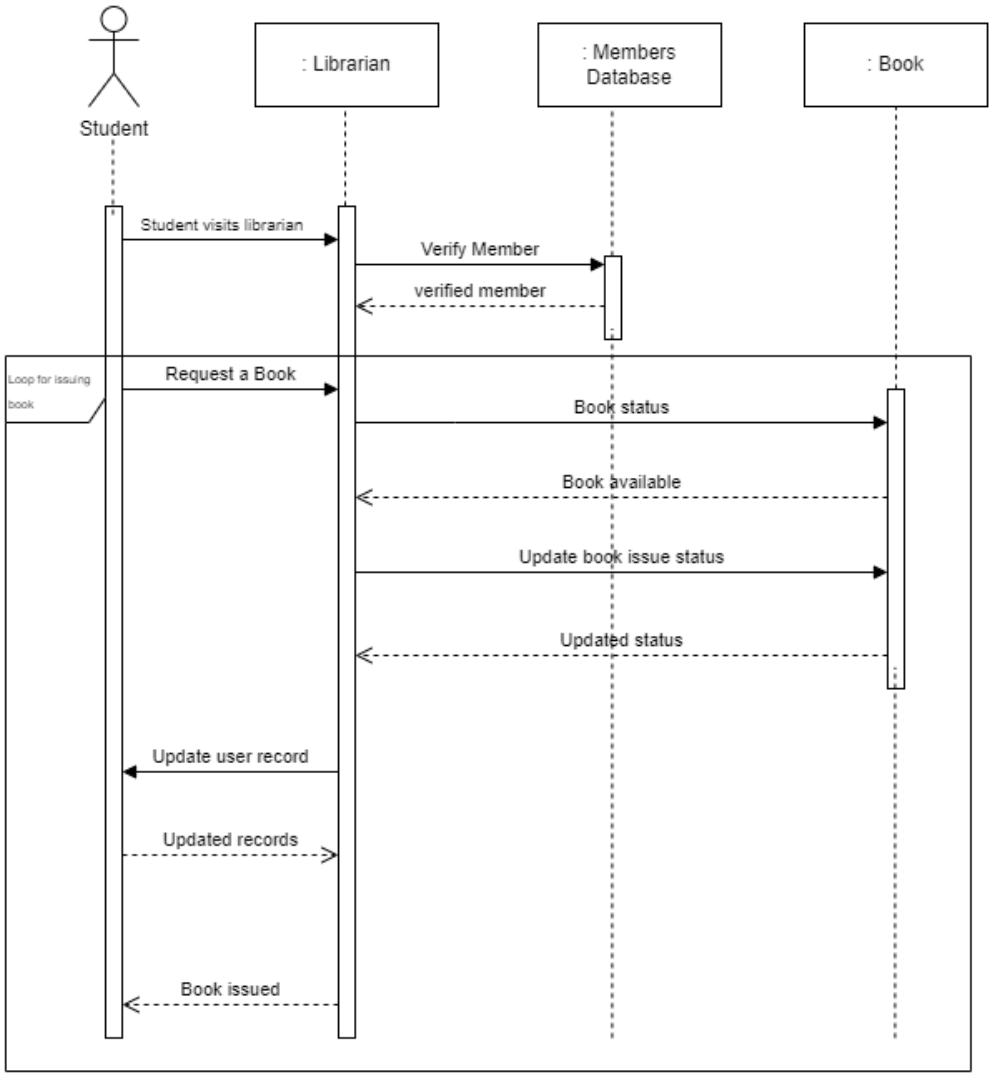
- Book: Represents individual book with ISBN to check availability
- Student: Student with unique student ID borrow books from library
- Transaction: Represents any interaction between student and library.

-**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.
- zDatabase 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.

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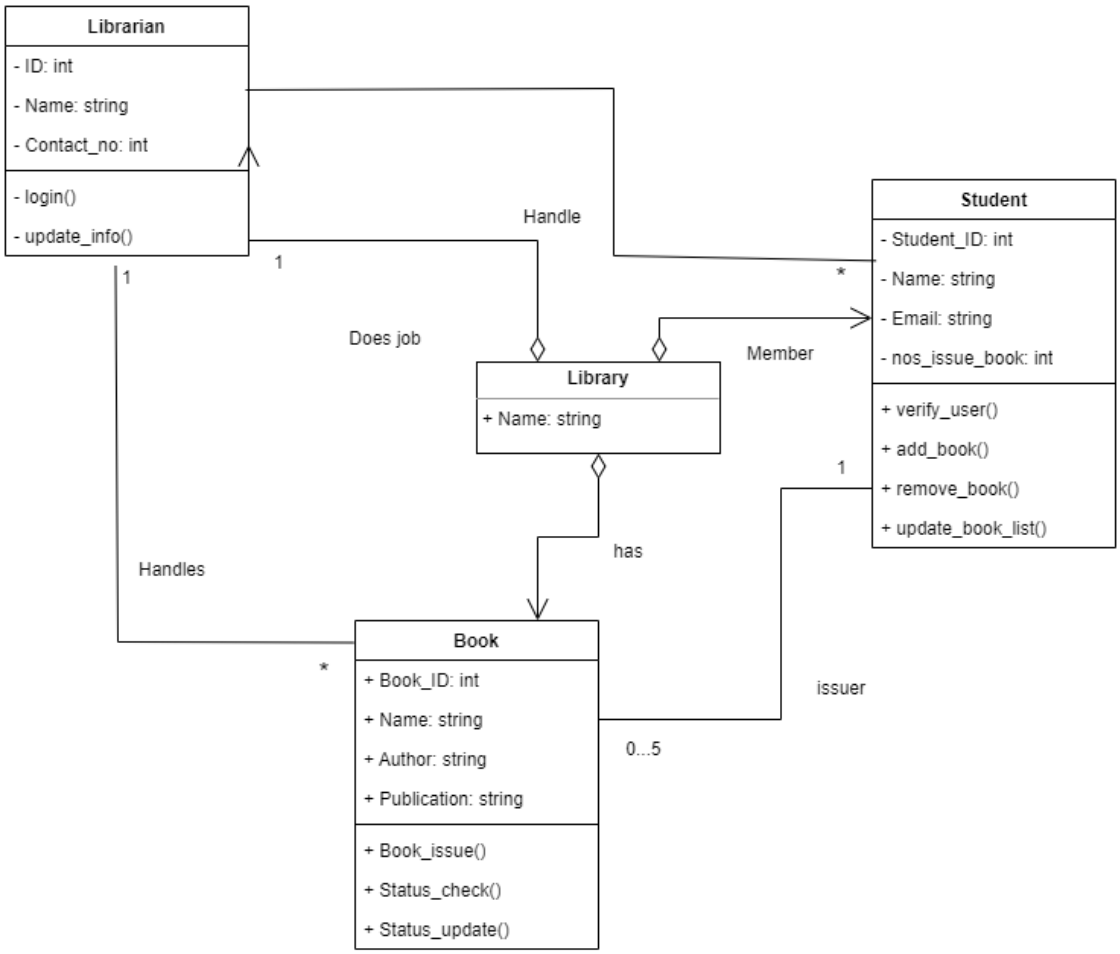

Question-2

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.

Draw a sequence diagram that represents this process. Make sure to show when is each actor participating in the process. Also, show the operation that is carried out during each interaction, and what its arguments are.

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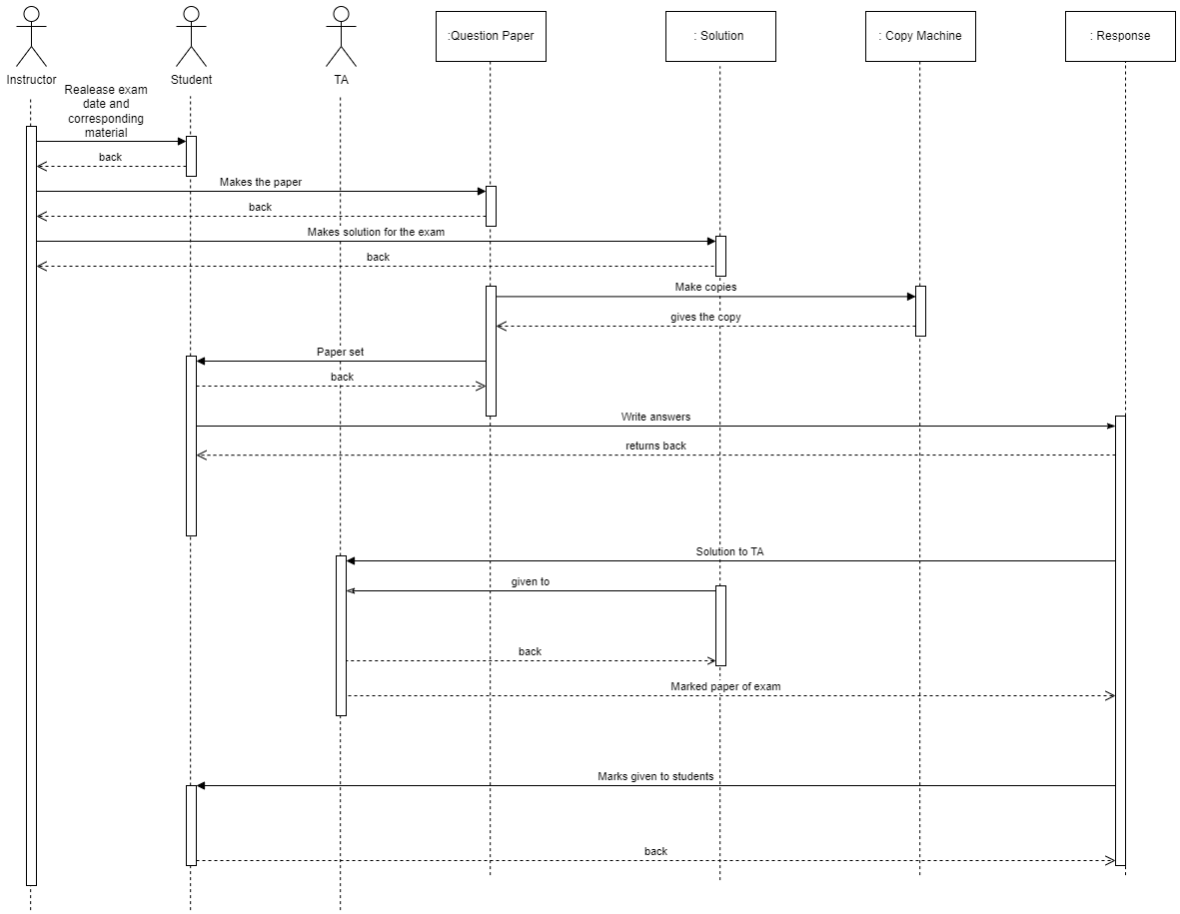
Instructor
Student
TA
:Question Paper
: Solution
: Copy Machine
: Response
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back
Makes the paper
back
Makes solution for the exam
back
Make copies
gives the copy
Paper set
back
Write answers
returns back
Solution to TA
given to
back
Marked paper of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