

## IT314 Software Engineering

### Domain Analysis Modeling & Sequence Diagram

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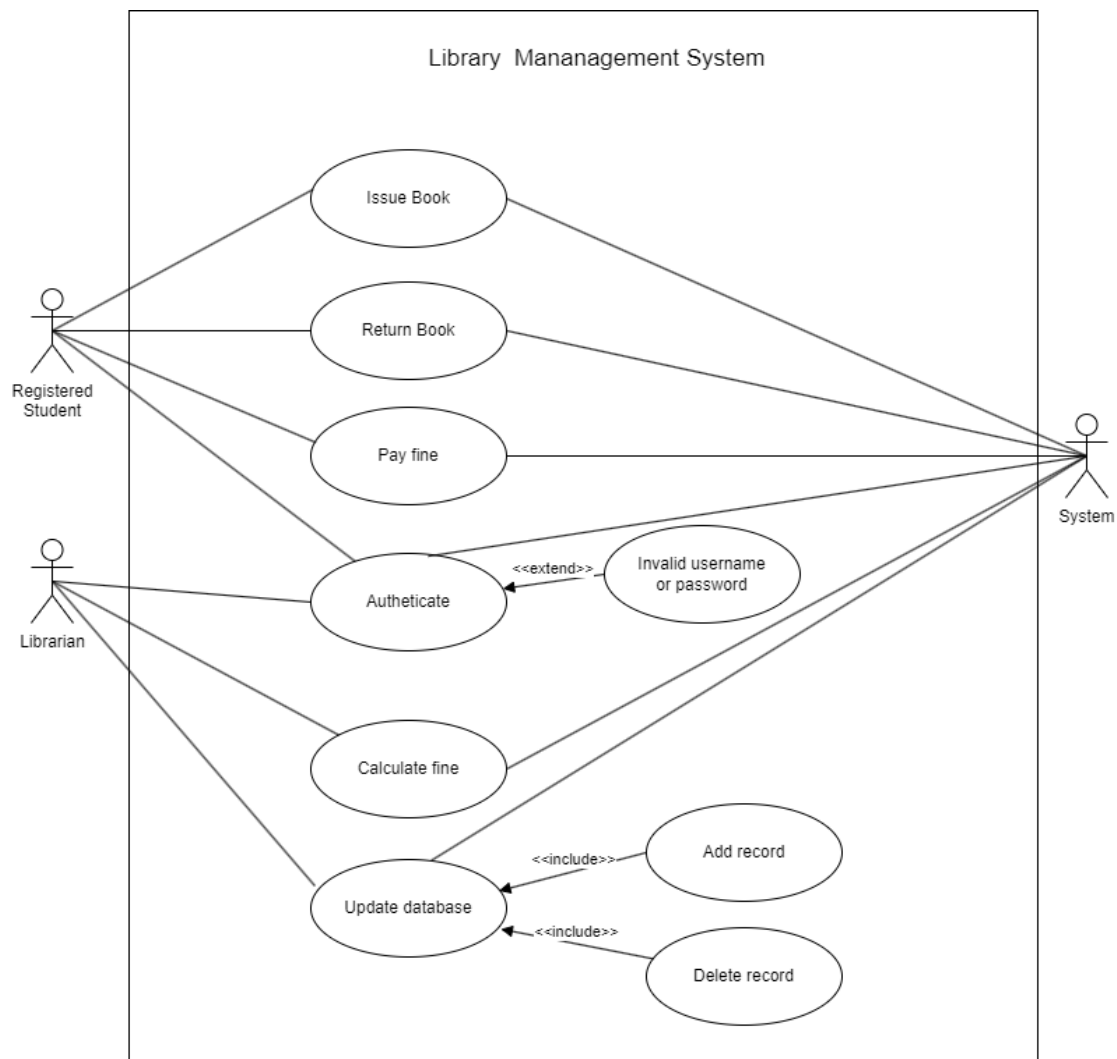
Grp: 3

Q.1. Consider the following piece of text

“A library maintains multiple reading materials which include books, journals, and magazines. The books are issued to the registered students of the institute, for a specified period of time. The issued books are to be returned back to the library. Delayed returns are subjected to stipulated fines. The issue-return process is administered by one of the librarians through an authenticated Library Management System.”

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

**Ans:**



**Documentation:**

Use Case Name: Issue Book

**Description:**

The "Issue Book" use case represents the process of issuing a book to a registered student. This use case allows a librarian to lend a book from the library's collection to a student for a specified period of time.

**Actors:**

- Librarian
- Registered Students

**Preconditions:**

- The student must be registered with the institute.
- The librarian must be logged into the authenticated Library Management System.

**Triggers:**

- The trigger for this use case is the request from a registered student to borrow a book.

**Main Flow:**

1. The librarian logs into the Library Management System.
2. The librarian receives a request from a registered student to borrow a book.
3. The librarian searches for the requested book in the library's collection.
4. Once the book is found, the librarian checks the availability and condition of the book.
5. If the book is available, the librarian records the student's details and the due date for returning the book.
6. The librarian marks the book as "issued" and updates the library's records.
7. The librarian hands over the book to the registered student.
8. The student leaves the library with the issued book.

**Alternative Flows:**

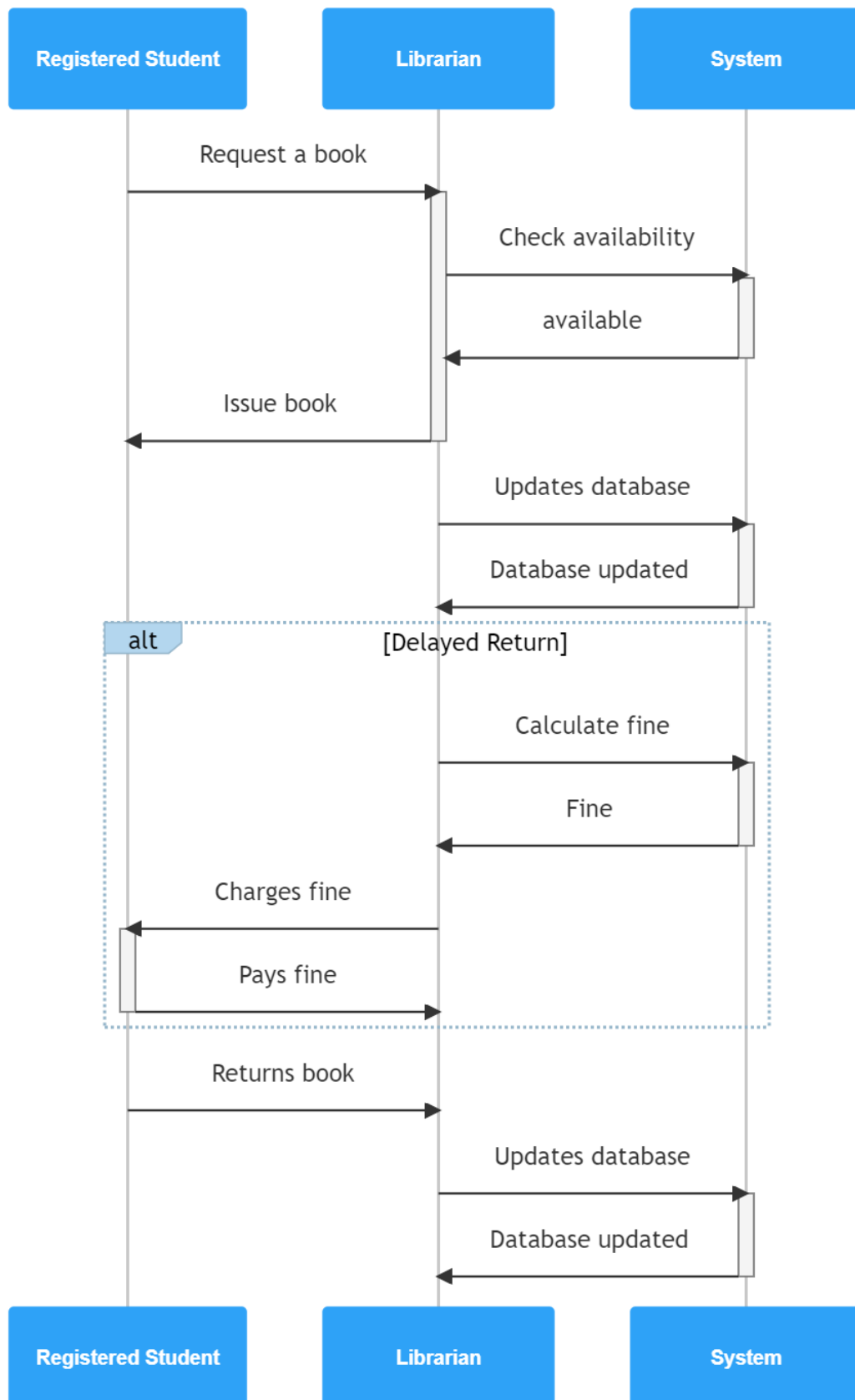
- If the requested book is unavailable, the librarian informs the student, and the use case ends.
- If the student is not authenticated by the system, as a registered student, he won't be issued the requested book.

**Postconditions:**

- The book is marked as "issued" in the library's system.
- The registered student has the book and is responsible for returning it on or before the due date. If he fails to do so, he has to pay the fine.

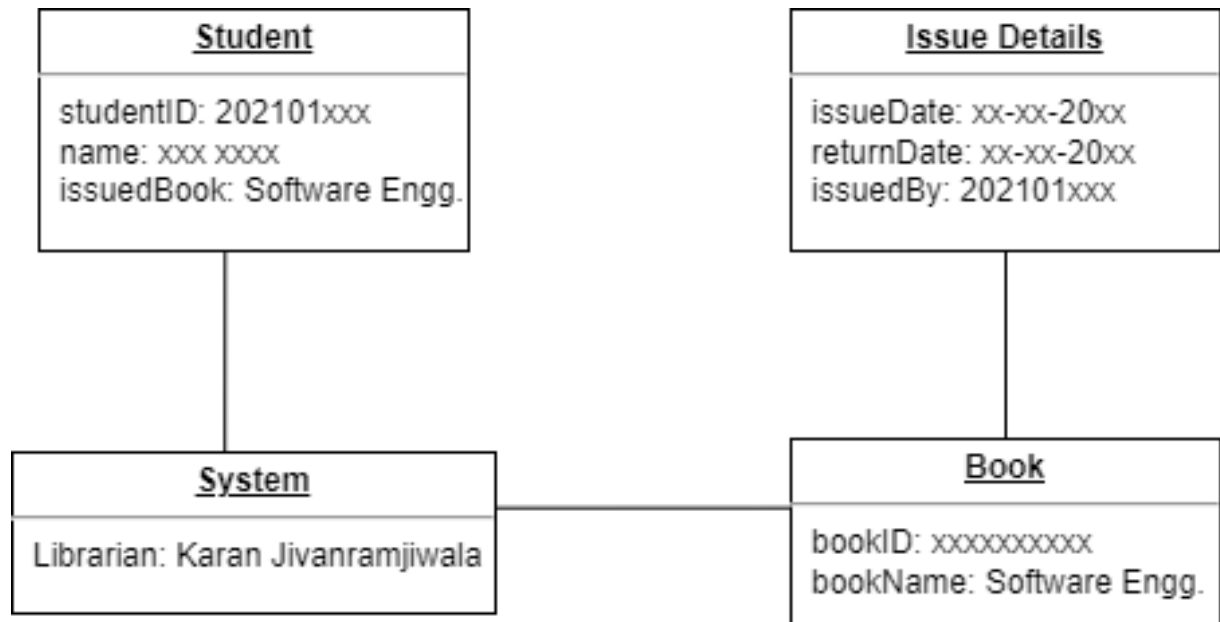
2. The sequence diagram for the “issueBook” use case.

**Ans:**



3. Draw the analysis object diagram for the “issueBook” use case analysis.

**Ans:**



Q.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.

**Ans:**

