Dhirubhai Ambani
Institute of Information and Communication Technology

Subject: Software Engieering

Subject code: IT314

Lab 7

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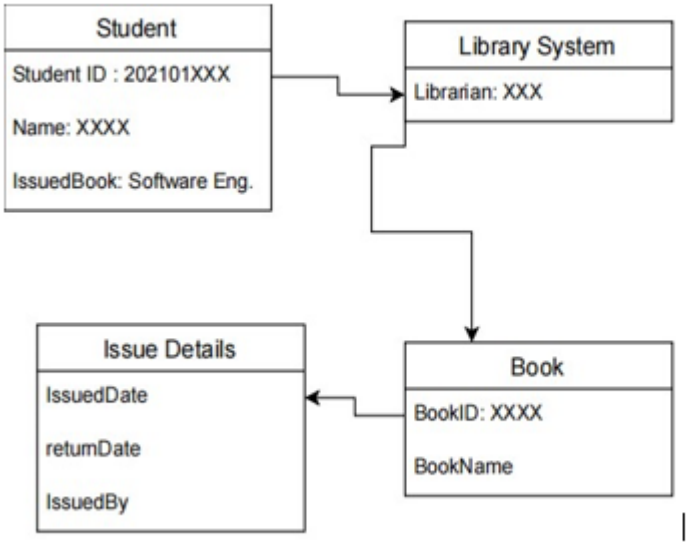
Q1)Consider the following piece of text

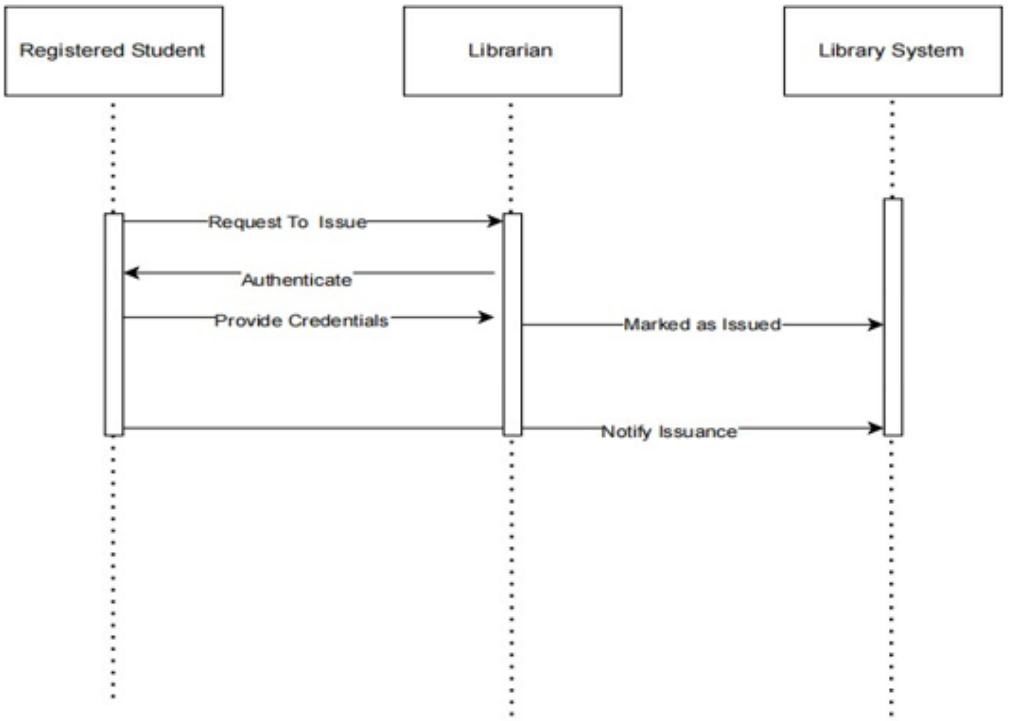
"A library maintains multiple reading materials which include books, journals, and magazines. The books are issued to the registered students of the institute, for a specified period of time. The issued books are to be returned back to the library. Delayed returns are subjected to stipulated fines. The 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.

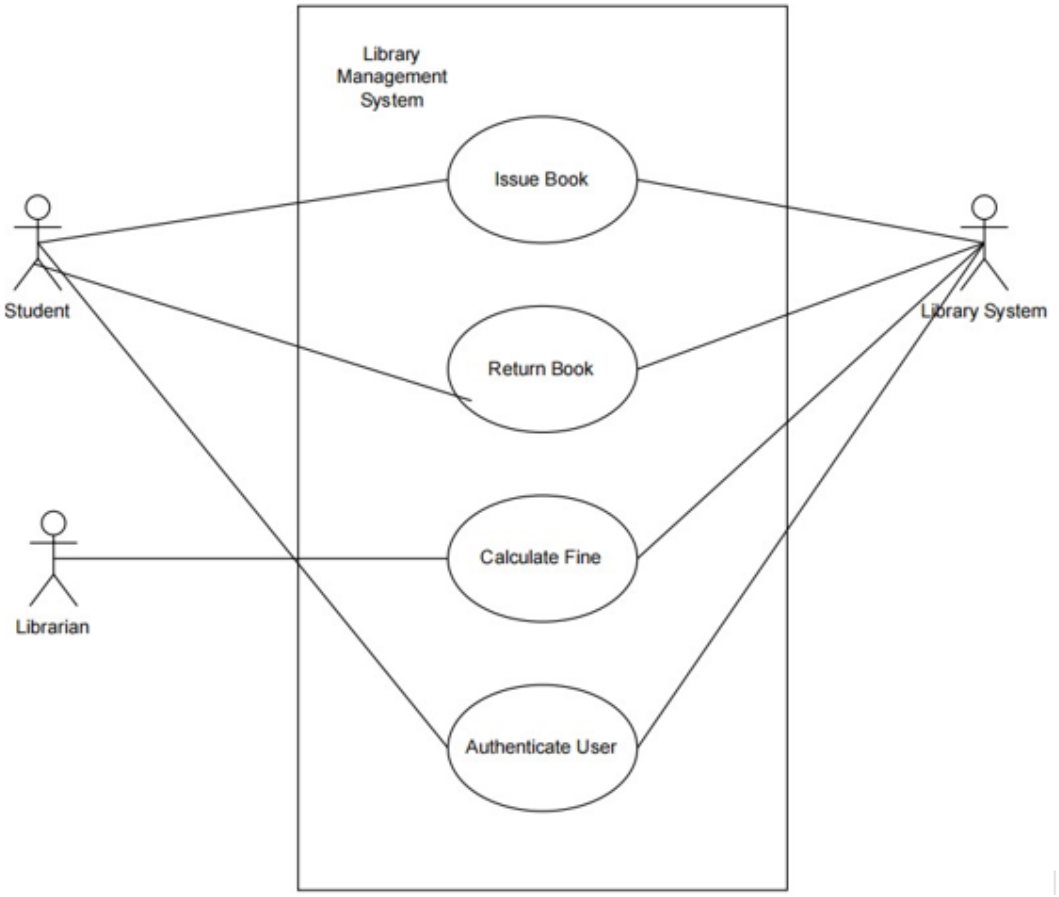


2. The sequence diagram for the “issueBook” use case.

(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.)



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



Use Case Name: issueBook

Scope: Library Management System

Primary Actor: Librarian

Secondary Actors: Member

Preconditions:

1. The Librarian is logged into the Library Management System.

2.The Member has a valid library card.

Main Flow of Events:

1. The Librarian selects the "issueBook" function from the Library Management System.

2. The System prompts the Librarian to enter the Member's library card number.

3. The Librarian enters the Member's library card number.

4. The System validates the card number and confirms the Member's identity.

5. The System displays a list of available books or prompts the Librarian to search for a specific book.

6. The Librarian selects a book from the list or performs a search to find the desired book.

7. The System validates the availability of the selected book.

8. The Librarian selects the book for issuance.

9. The System records the issuance by associating the Member's card number, book information, and the current date.

10. The System updates the book's status to "checked out" and decrements its available quantity.

11. The System generates a due date for the book based on library policies.

12. The System confirms the issuance and displays a confirmation message, including the due date.

13. The Librarian provides the book to the Member.

Postconditions:

1. The selected book is checked out to the Member.

2. The Member is informed of the due date for returning the book.

Alternate Flow:

1. If the Member's library card is invalid or blocked, the System displays an error message, and the use case terminates.

2. If the book is not available, the Librarian is informed, and the use case terminates.

3. If there are no books matching the search criteria, the System informs the Librarian and allows for a new search or use case termination.

Exception Flow:

1. If there are technical issues or system errors during the process, the System displays an error message and allows the Librarian to retry or contact technical support.

Special Requirements:

1. The System should have access to the library catalog and Member records.

2. The due date for book issuance should adhere to the library's policies.

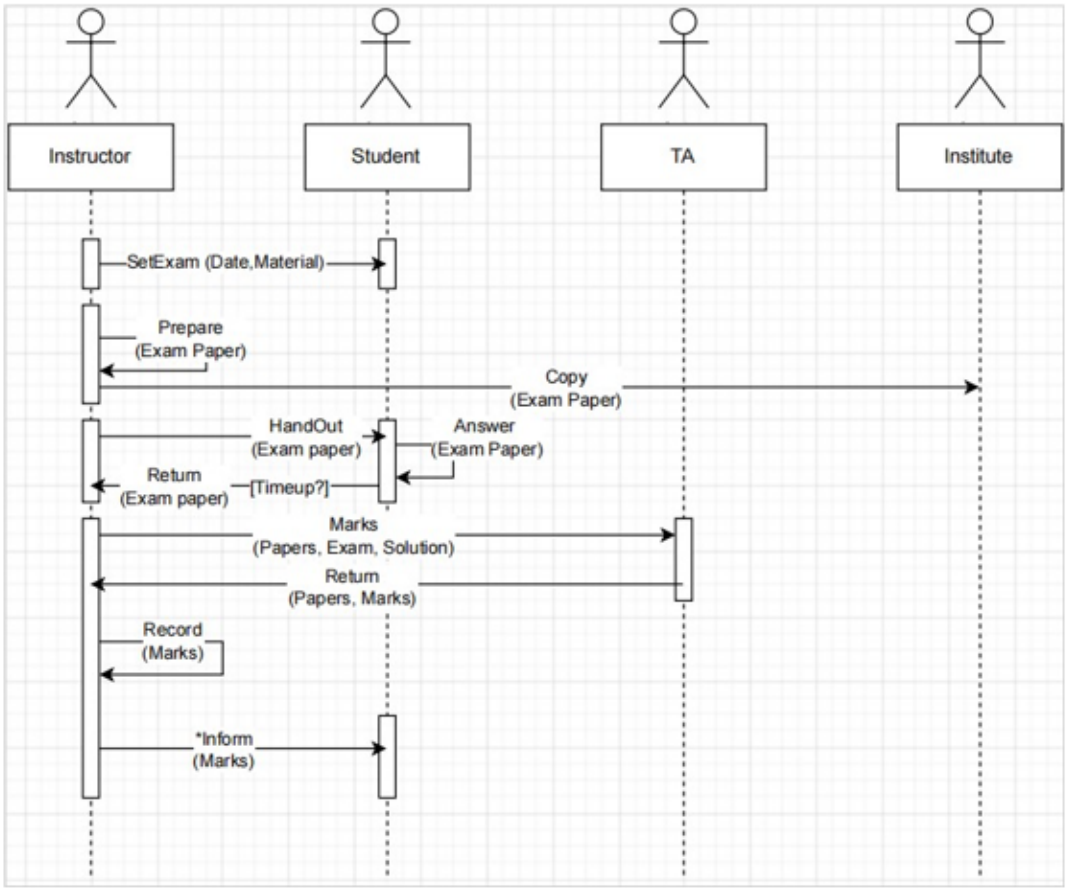
3. The System should provide a user-friendly interface for the Librarian to perform the "issueBook" function.

4. The System should keep a record of issued books, including the Member's name, book information, and issuance date.

5. The Librarian should have the ability to cancel the issuance process at any point and return to the main menu.

Preconditions, main flow, postconditions, alternate flow, exception flow, and special requirements should be documented for a comprehensive understanding of the "issueBook" use case in a Library Management System.

Q2) 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.


Instructor
Student
TA
Institute
SetExam (Date,Material)
Prepare
(Exam Paper)
Copy
(Exam Paper)
HandOut
(Exam paper)
Answer
(Exam Paper)
Return
(Exam paper)
[Timeup?]
Marks
(Papers, Exam, Solution)
Return
(Papers, Marks)
Record
(Marks)
*Inform
(Marks)