IT-314 Software engineering

Lab 7

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Question 1)

Title: Library Book Issuance and Return System

Description:
This system serves students, faculty members, and staff for borrowing books from the library. Students can borrow available books and are responsible for returning them on time. If a book is returned after the due date, the student is required to pay a fine. This use case outlines the process of borrowing and returning books and the associated outcomes

Actors:
1. Student
2. Librarian
3. Library

System Preconditions:-
Students must be registered with the library.

Trigger:
A student visits the library to either borrow or return a book.

Postcondition:
The system updates the library's database with the information about the borrowed or returned book

Flow:

1. When a student wants to borrow a book:
    - The student approaches the librarian.
    - The librarian checks the availability of the requested book in the library.

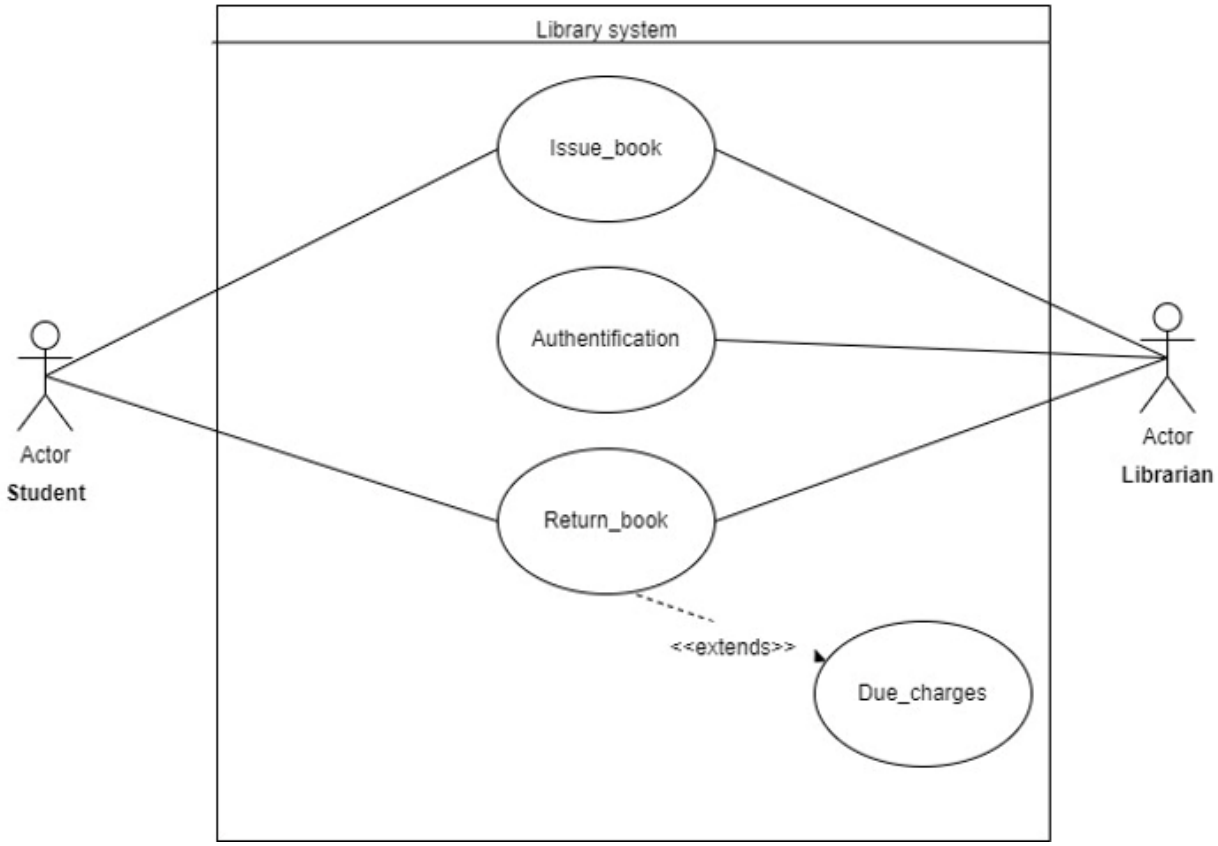
- If the book is available, the librarian issues the book to the student.
- The librarian records the transaction in the library database.

2. When a student returns a book:
   - The student returns the book to the librarian.
   - The librarian checks the due date of the book.
   - If the student has exceeded the due date, the librarian calculates the fine.
   - The librarian accepts the fine from the student and processes the book return.
   - The librarian updates the library database with the returned book information.

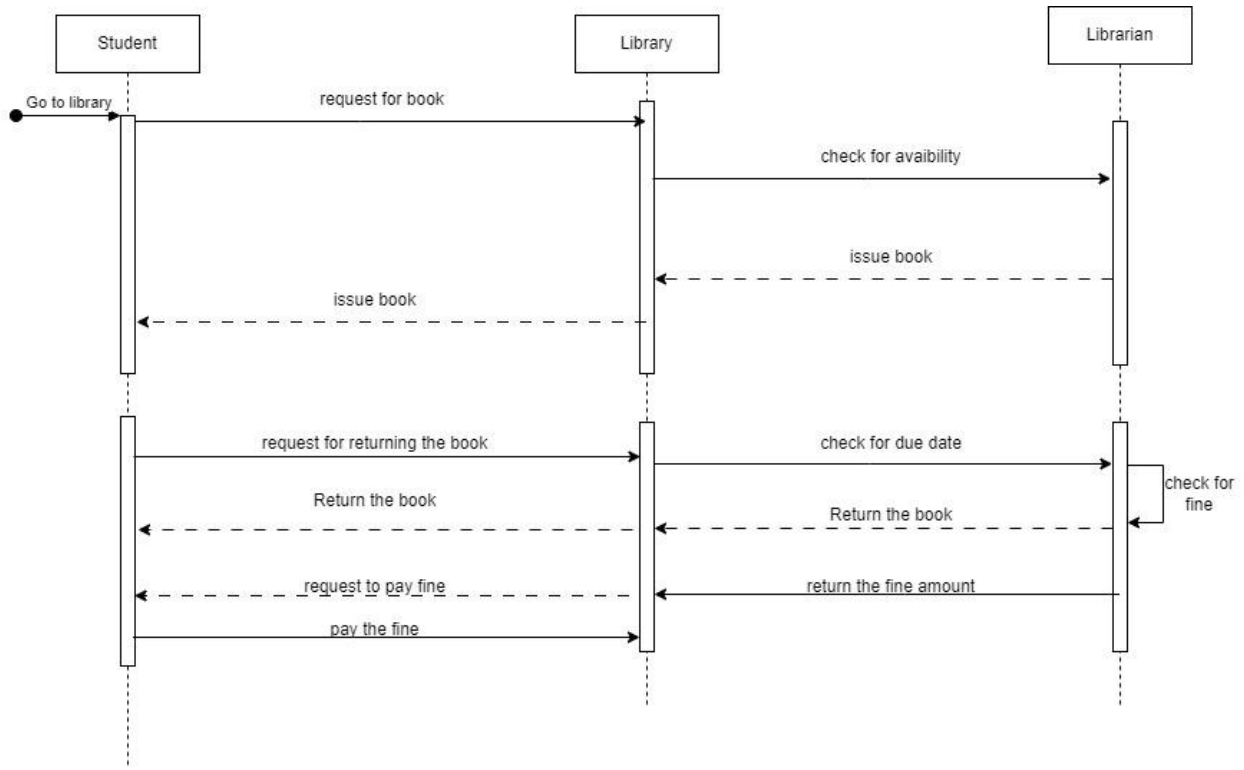
Alternative Flows:

- If the requested book is not available in the library, the librarian notifies the student and suggests alternative options or informs them when the book is expected to be back in stock.

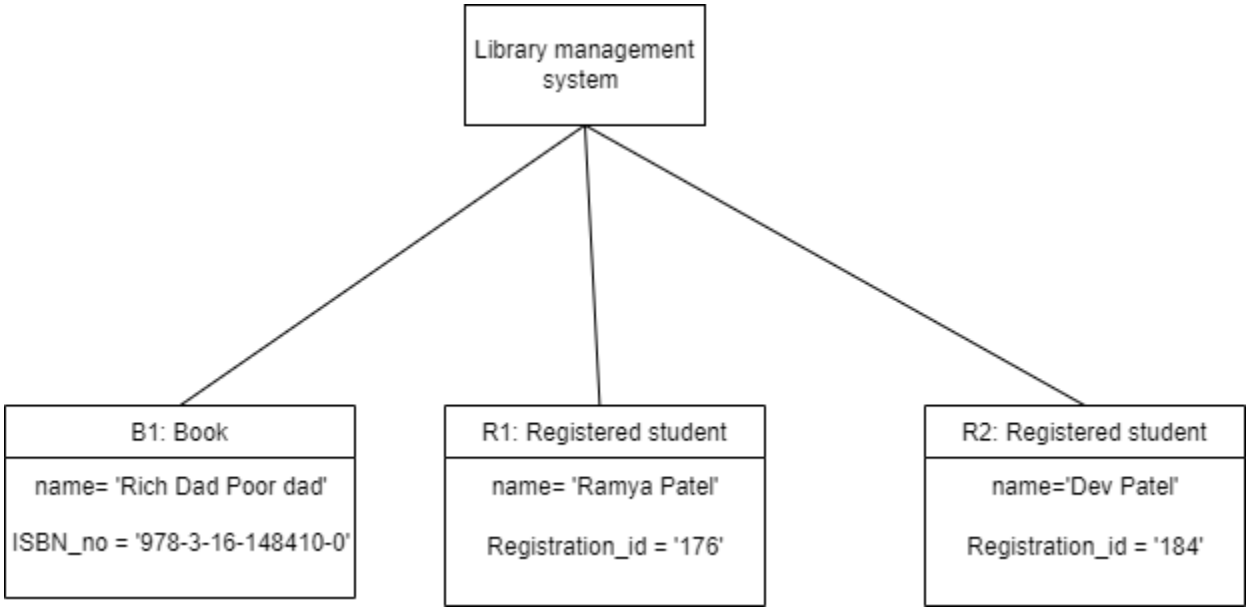
USE CASE DIAGRAM



SEQUENCE DIAGRAM



CLASS DIAGRAM



QUESTION 2

1)Notify of Exam (Instructor-> Students):
- Operation: notifyExam(date, material)
- Arguments:
- date: The date of the exam.
- material: The material to be covered in the exam

2)Prepare Exam (Instructor):
Operation: prepareExam()
Arguments: None

3)Copy Exams (Instructor):
Operation: copyExams(copies)
Arguments: copies: The number of exam paper copies to be produced.

4)Conducts Exams (Instructor-> Students):
Operation: ConductExam(location, time)
Arguments: location: The designated location for handing out the exam papers.
time: The designated time for handing out the exam papers

5) Write Answers (Students):
Operation: writeAnswers(answers)
Arguments: answers: The answers written by the students.

6)Hand In Papers (Students-> Instructor):
Operation: handInPapers()
Arguments: None

7) Give Marks(Teaching Assistants):
Operation: recordMarks(marks)
Arguments: marks: The marks assigned to each exam paper

8)Record Marks (Instructor-> Teaching Assistants):
Operation: recordMarks(marks)
Arguments: marks: The marks record for each student

9) Return Papers (Instructor-> Students):
Operation: returnPapers(papers)
Arguments: papers: The marked exam papers to be returned to the students

SEQUENCE DIAGRAM