Domain Analysis Modeling & Sequence Diagram
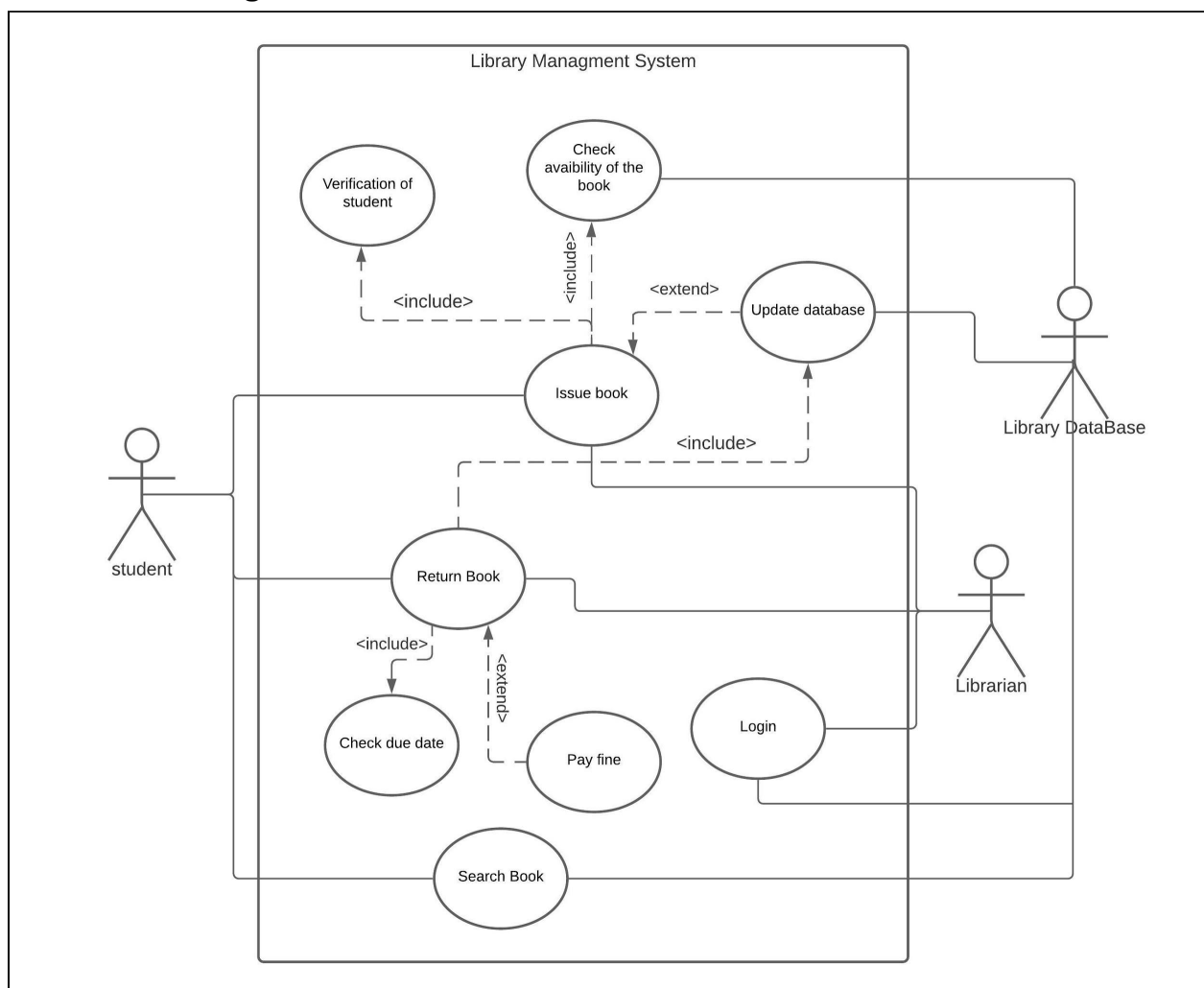
Q1:"A library maintains multiple reading materials which include books, journals, and magazines. The books are issued to the registered students of the institute, for a specified period of time. The issued books are to be returned back to the library. Delayed returns are subjected to stipulated fines. The issue-return process is administered by one of the librarians through an authenticated Library Management System."

1 Use Case Diagram:

2.Use Case Description:

Name : Issue a book
Actors: Student, Librarian, library database
Description : If the student has issued a book then he/she has to verify his/her identity and issue a book.
Pre-condition: Student has to be a registered student of the institute in order to issue a book. And a book should be available.
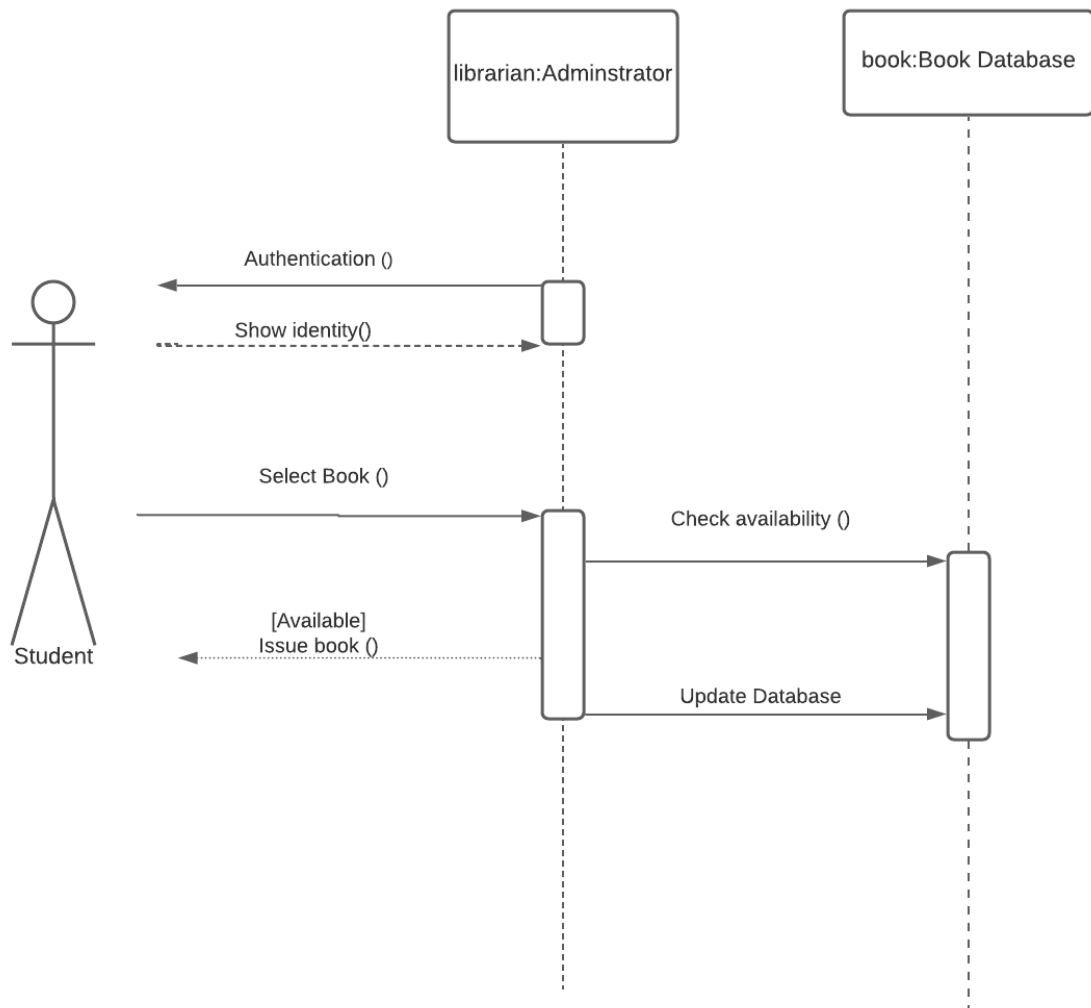**Post condition**: The student is able to issue a book after his/her verification.
Basic Flow :
i) Student wants to issue a book.
ii) He should verify his identity as a registered student.
iii) He would check for the availability of his desired book.
iv) If the book is available, he would contact the librarian to issue that book.
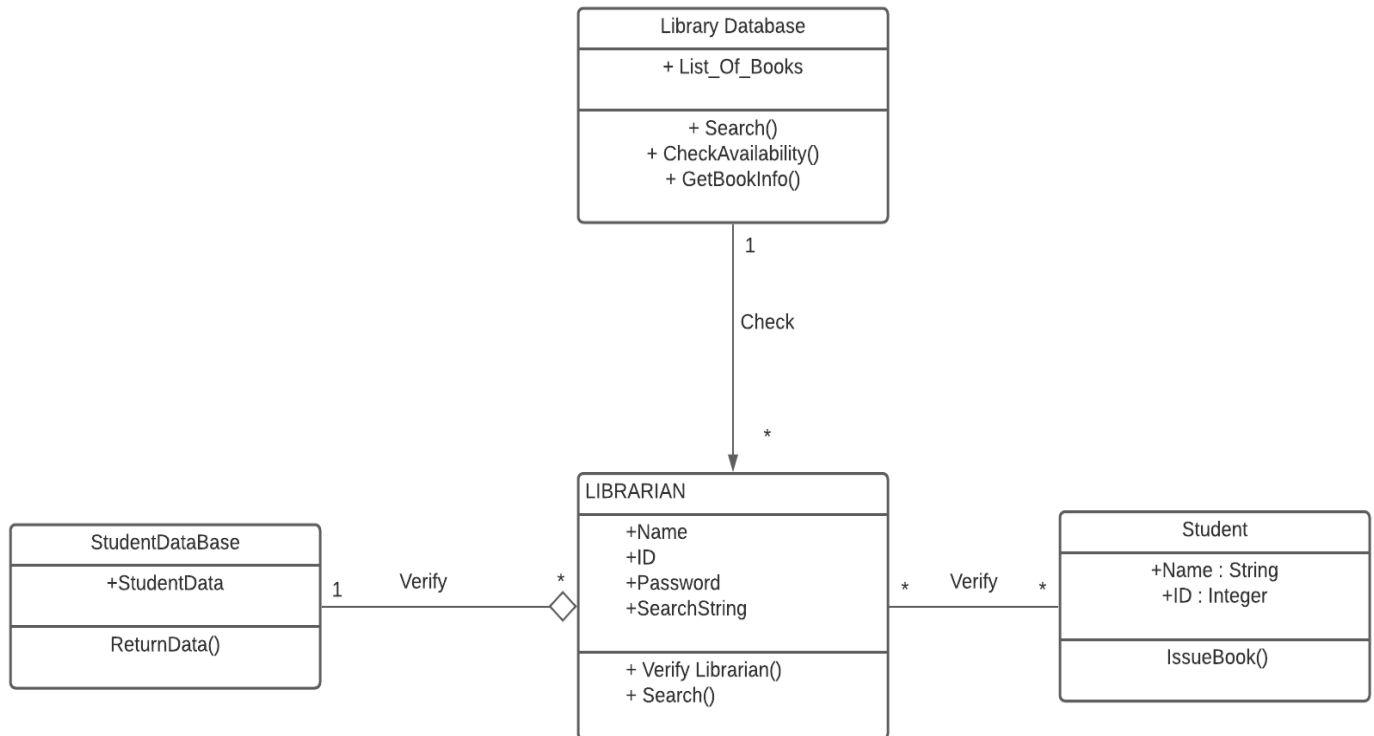**v)** The database is updated.

Alternate Flow :
i) For a genuine registered student, if his desired book is not available, he could issue another book which is similar to the book that he wanted to issue in the first place.
ii) For a genuine registered student, if his desired book is not available, the librarian could order that book so that the student could now issue that book.

3. Sequence Diagram:

librarian:Adminstrator

book:Book Database

Authentication ()

Show identity()

Select Book ()

Check availability ()

[Available]
Issue book ()

Update Database

Student

4. Object Diagram:-

Library Database

+ List_Of_Books

+ Search()
+ CheckAvailability()
+ GetBookInfo()

1

Check

*

LIBRARIAN

+Name
+ID
+Password
+SearchString

+ Verify Librarian()
+ Search()

StudentDataBase

+StudentData

ReturnData()

1   Verify   *

Student

+Name : String
+ID : Integer

IssueBook()

*   Verify   *

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