

# **MEDI-CAPS UNIVERSITY INDORE**



## **LAB FILE**

### **Object Oriented Analysis and Design**

**Department of Information Technology**

**Submitted To: Mr. Ravi Khatri**

**Submitted By: Naman Jain**

**Enrollment No.: EN19IT301050**

**Year/Semester: Third Year 6<sup>th</sup>(Even)**

| <b><u>S. NO</u></b> | <b><u>EXPERIMENTS</u></b>   |
|---------------------|---|
| <b><u>1.</u></b>    | <b>Design a class diagram of your project.</b>                    |
| <b><u>2.</u></b>    | <b>Design a use case diagram of your project.</b>                 |
| <b><u>3.</u></b>    | <b>Design a data flow diagram of your project.</b>                |
| <b><u>4.</u></b>    | <b>Design a interaction diagram of your project.</b>              |
| <b><u>5.</u></b>    | <b>Design a state chart diagram of your project.</b>              |
| <b><u>6.</u></b>    | <b>Design a activity diagram of your project.</b>                 |
| <b><u>7.</u></b>    | <b>Design a component and deployment diagram of your project.</b> |

## **PROBLEM STATEMENT:**

The case study titled Library Management System is library management software for the purpose of monitoring and controlling the transactions in a library. This case study on the library management system gives us the complete information about the library and the daily transactions done in a Library. We need to maintain the record of new s and retrieve the details of books available in the library which mainly focuses on basic operations in a library like adding new member, new books, and up new information, searching books and members and facility to borrow and return books. It features a familiar and well thought-out, an attractive user interface, combined with strong searching, insertion and reporting capabilities. The report generation facility of library system helps to get a good idea of which are ths borrowed by the members, makes users possible to generate hard copy.

- The library system allows the librarian to maintain the information about
  - books
  - magazines
  - CDs
  - its users
- Furthermore, it provides the following facilities to its users
  - Search for items
  - Browse
  - Checkout items
  - Return items
  - Make reservation
  - Remove reservation, etc.
- For borrowing the item from the library, any user must get registered in the system initially
- The users can search for any item in the library by using the 'search option'
- If the user finds the item he/she is searching for in the library, he/she can checkout the item from the library
- If the study material is not available in the library at the moment, the user can make reservation for that item
- The moment the item is available, the user who first reserved for that item is notified first
- If the user checks out the item from the library, the reservation gets cancelled automatically. The reservation can also be cancelled through an explicit cancellation procedure
- The librarian is an employee of the library who interacts with the borrowers whose work is supported by the system
- The system allows the librarian to perform the following functions with a lot of ease
  - Create
  - Update
  - Delete information about titles
  - Borrowers
  - Items and reservations in the system
- The library system can run on popular web-browser platforms like Windows Explorer, Netscape Navigator, etc. It can be easily extended with new functionality

| Word         | freq | %     |
|--------------|------|-------|
| library      | 9    | 10.98 |
| books        | 4    | 4.88  |
| management   | 3    | 3.66  |
| system       | 3    | 3.66  |
| case         | 2    | 2.44  |
| study        | 2    | 2.44  |
| transactions | 2    | 2.44  |
| information  | 2    | 2.44  |
| searching    | 2    | 2.44  |
| members      | 2    | 2.44  |
| facility     | 2    | 2.44  |
| titled       | 1    | 1.22  |
| software     | 1    | 1.22  |
| purpose      | 1    | 1.22  |
| monitoring   | 1    | 1.22  |
| controlling  | 1    | 1.22  |
| gives        | 1    | 1.22  |
| complete     | 1    | 1.22  |

|             |   |      |
|-------------|---|------|
| controlling | 1 | 1.22 |
| gives       | 1 | 1.22 |
| complete    | 1 | 1.22 |
| daily       | 1 | 1.22 |
| done        | 1 | 1.22 |
| need        | 1 | 1.22 |
| maintain    | 1 | 1.22 |
| record      | 1 | 1.22 |
| retrieve    | 1 | 1.22 |
| details     | 1 | 1.22 |
| available   | 1 | 1.22 |
| mainly      | 1 | 1.22 |
| focuses     | 1 | 1.22 |
| basic       | 1 | 1.22 |
| operations  | 1 | 1.22 |
| like        | 1 | 1.22 |
| adding      | 1 | 1.22 |
| member      | 1 | 1.22 |
| borrow      | 1 | 1.22 |

|              |   |      |
|--------------|---|------|
| features     | 1 | 1.22 |
| familiar     | 1 | 1.22 |
| well         | 1 | 1.22 |
| thought      | 1 | 1.22 |
| attractive   | 1 | 1.22 |
| user         | 1 | 1.22 |
| interface    | 1 | 1.22 |
| combined     | 1 | 1.22 |
| strong       | 1 | 1.22 |
| insertion    | 1 | 1.22 |
| reporting    | 1 | 1.22 |
| capabilities | 1 | 1.22 |
| report       | 1 | 1.22 |
| generation   | 1 | 1.22 |
| helps        | 1 | 1.22 |
| good         | 1 | 1.22 |
| idea         | 1 | 1.22 |
| ths          | 1 | 1.22 |
| borrowed     | 1 | 1.22 |

|              |   |      |
|--------------|---|------|
| strong       | 1 | 1.22 |
| insertion    | 1 | 1.22 |
| reporting    | 1 | 1.22 |
| capabilities | 1 | 1.22 |
| report       | 1 | 1.22 |
| generation   | 1 | 1.22 |
| helps        | 1 | 1.22 |
| good         | 1 | 1.22 |
| idea         | 1 | 1.22 |
| ths          | 1 | 1.22 |
| borrowed     | 1 | 1.22 |
| makes        | 1 | 1.22 |
| users        | 1 | 1.22 |
| possible     | 1 | 1.22 |
| generate     | 1 | 1.22 |
| hard         | 1 | 1.22 |
| copy         | 1 | 1.22 |

## CLASS IDENTIFY IN THE SYSTEM IS-

Library  
 Librarian  
 Books  
   Magzine  
   Subject book  
   Novel  
 MEMBERS Record  
   Students  
   Faculty

Transaction class  
Bill class  
fine calculation  
    online payment  
    offline payment

## Object Modelling

### Abstraction-

1. Abstraction in book category
2. abstraction in different level.
3. Abstraction in transaction

### Encapsulation-

books-magazines  
    studies book- agriculture  
        1. civil  
        2. electronics  
        3. information technology  
        4. computer science  
        5. pharmacy

### Modularity-modules of books

1. modules of student
2. Book Information Recording
3. Users/Borrowers Login
4. Book monitoring and Updates
5. View and Check Information

### Hierarchy

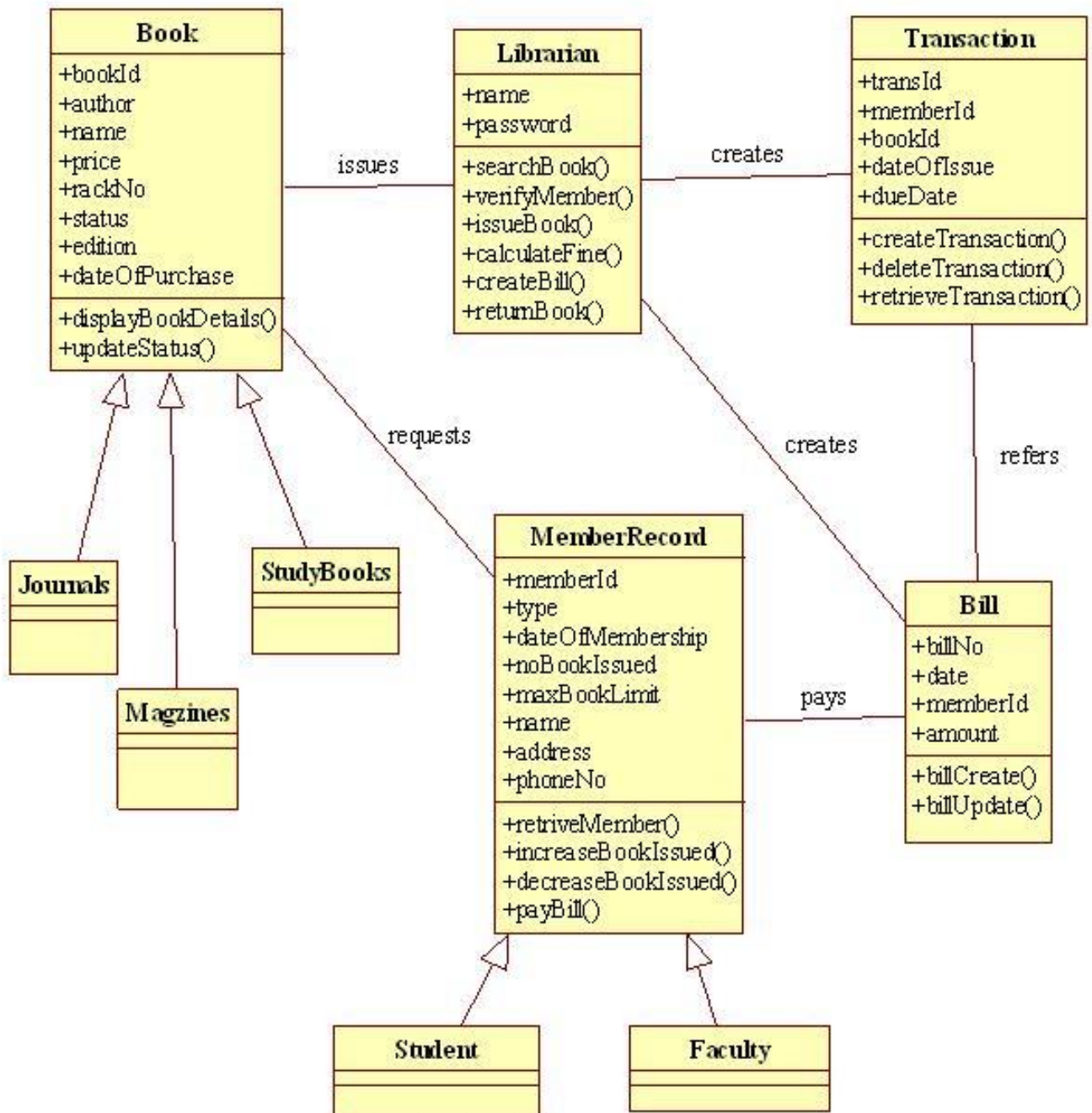
1. book category
2. transaction
3. different level.

### Typing-

1. Library
2. Book
3. MEMBERS Record
4. Transaction class

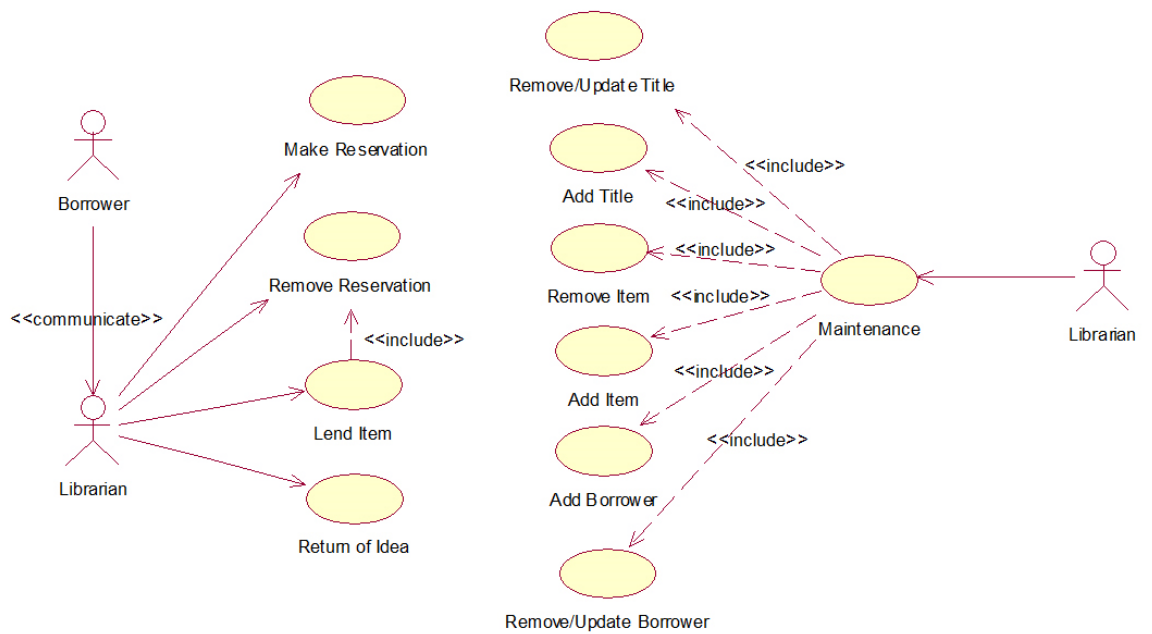
# Experiment 1

Design a class diagram of your project.



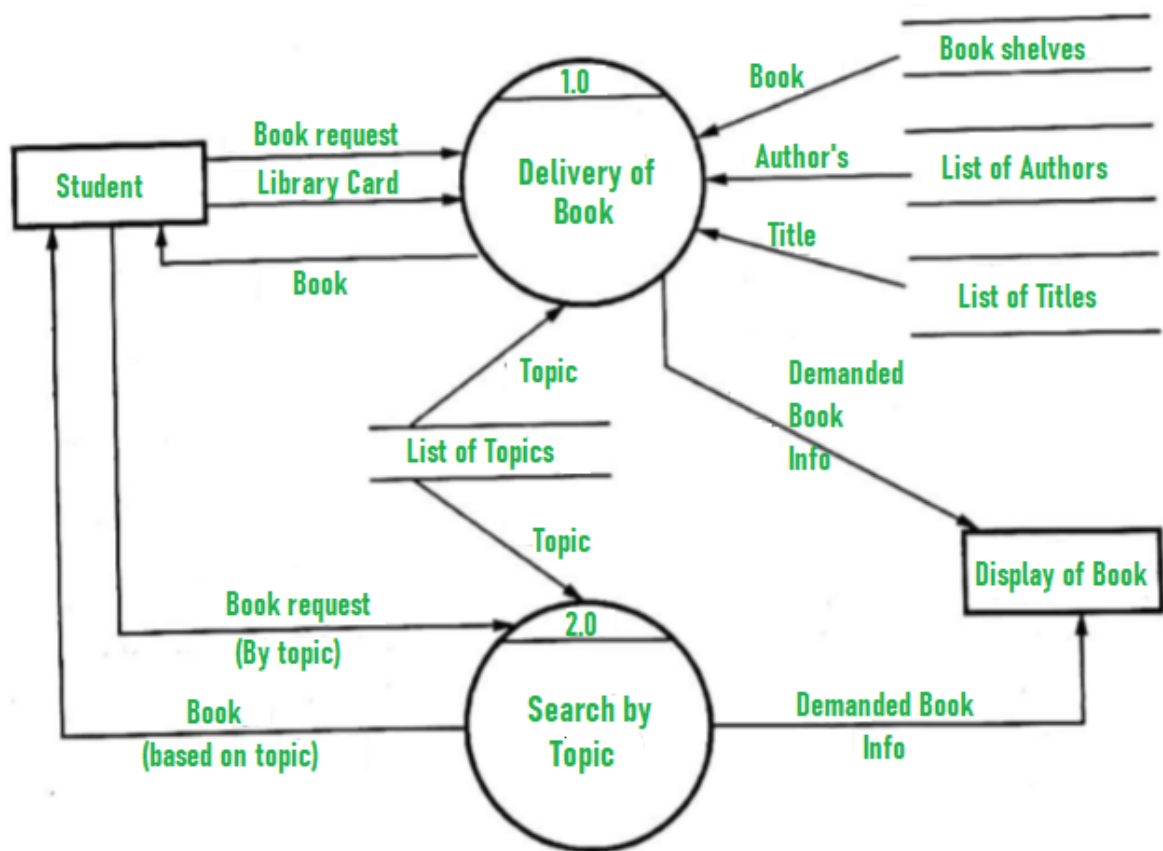
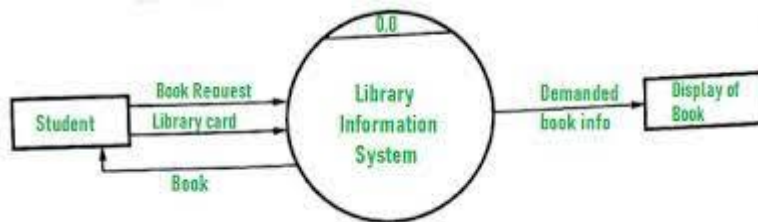
## Experiment 2

**Design a use case diagram of your project.**



## Experiment 3

**Design a data flow diagram of your project.**



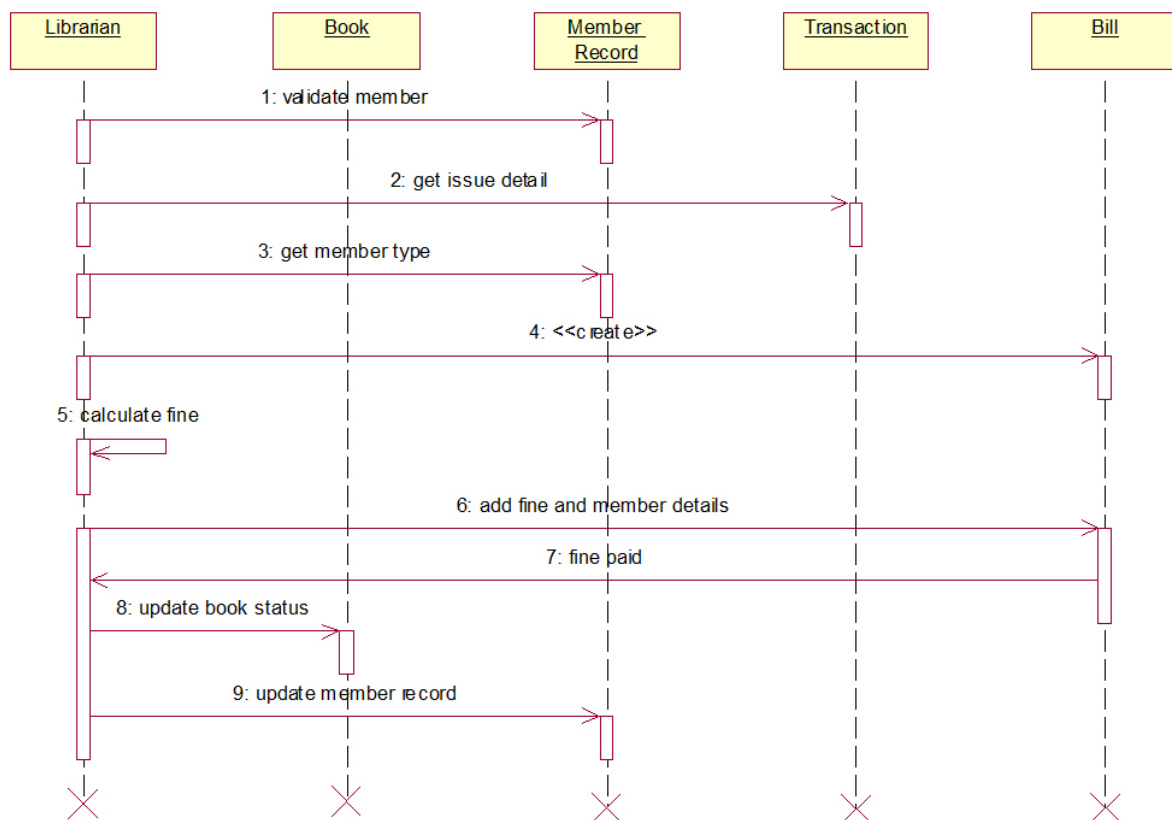
**Level 1 DFD**



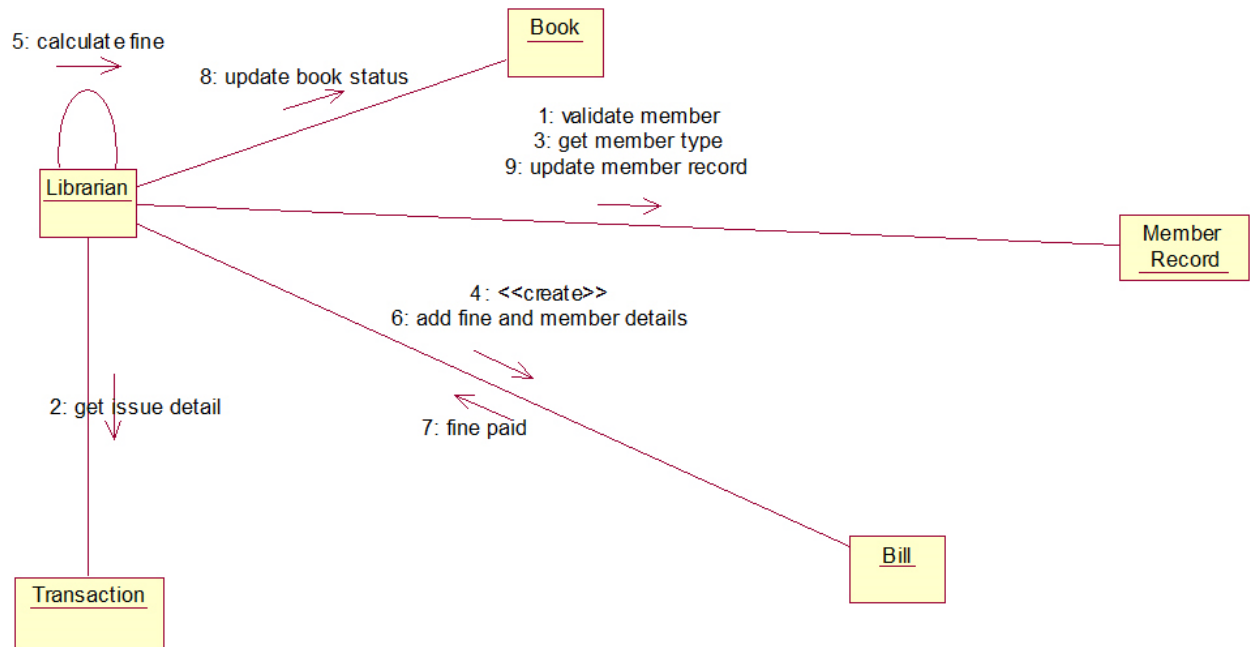
## Experiment 4

**Design an interaction diagram of your project.**

### Sequence diagram

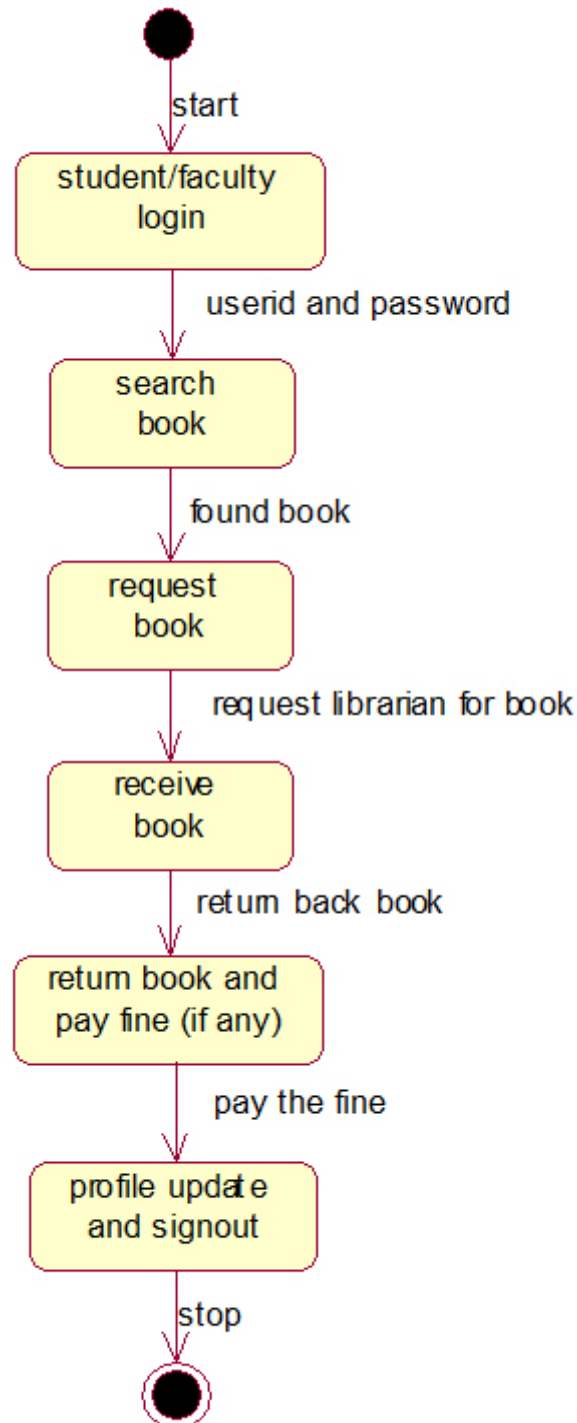


# Collaboration diagram



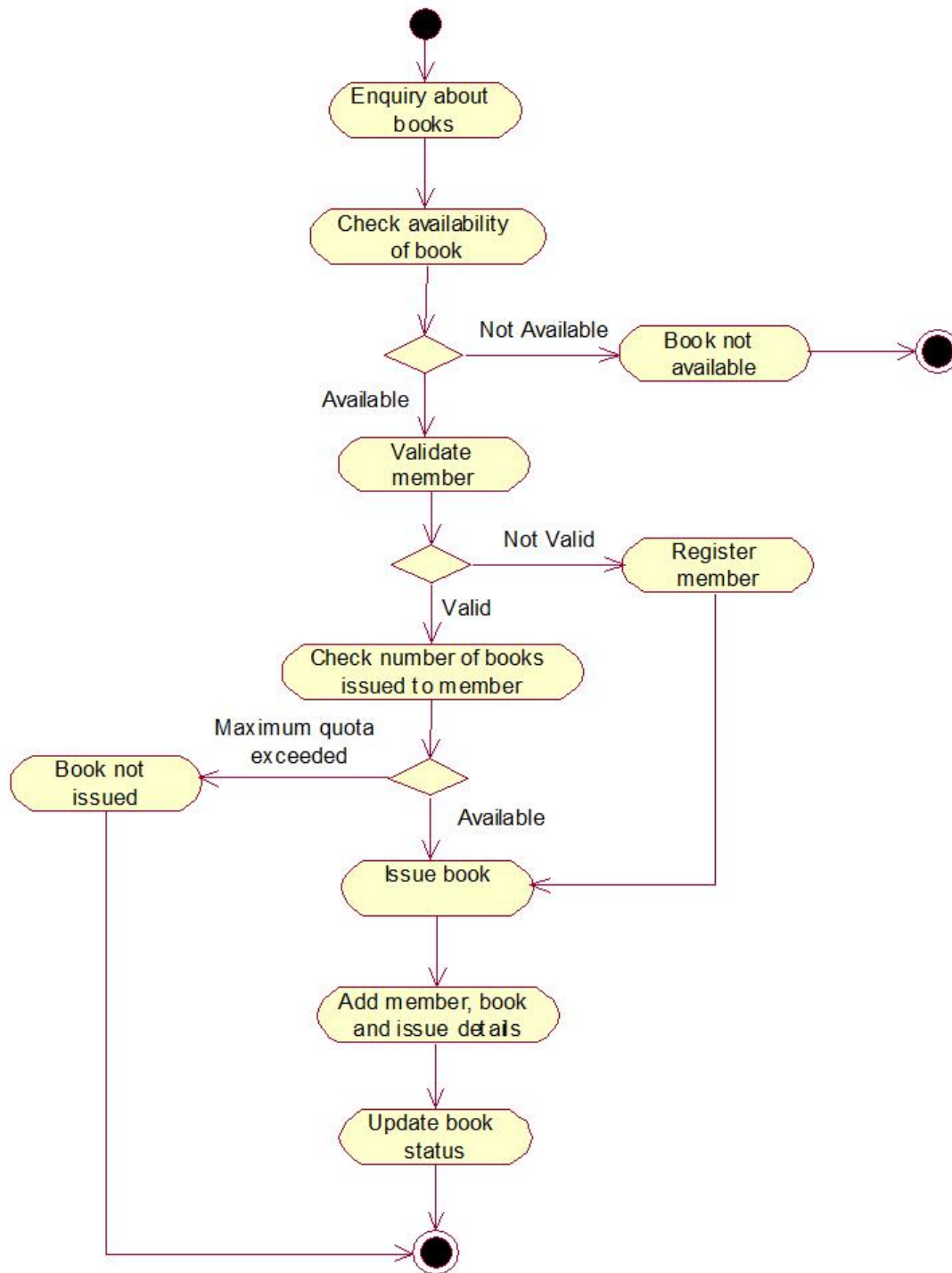
## EXPERIMENT – 5

Design a state chart diagram of your project.



## EXPERIMENT – 6

Design a activity diagram of your project.

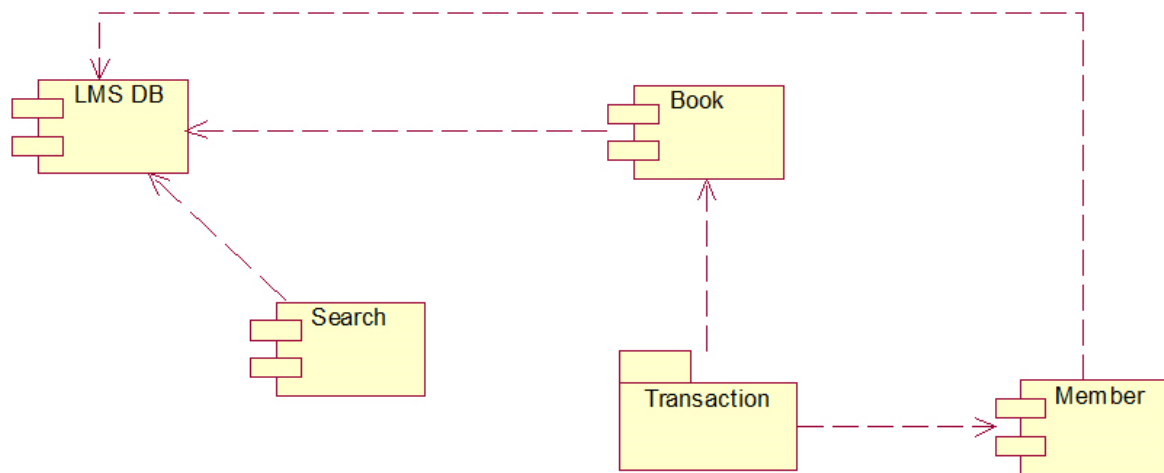


## EXPERIMENT – 7

**Design a component and deployment diagram of your project.**

### Component diagram

---



# Deployment diagram

---

