System Requirements Specification

for

LIBRARY MANAGEMENT SYSEM

Prepared by

2203A51815	M. Rohith
2203A51651	T. Chakridhar
2203A51826	D. Hemanth
2203A51828	N.Manvitha Patel

B.Tech. CSE, Section – E,
LAB. Batch – 1
Campus, ABC University

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Revision History

Name	Date	Reason For Changes	Version

1 Introduction

1.1 Purpose

With the increase in the number of readers, better management of libraries system is required. The Library management system focuses on improving the management of libraries in a city or town. “What If you can check whether a book is available in the library through your phone?” or “what if instead of having different library cards for different libraries you can just have one ?” or “you can reserve a book or issue a book from your phone sitting at your home!”. The Integrated Library Management system provides you the ease of issuing,renewing, or reserving a book from an library within your town through your phone.The Integrated Library Management system is developed on the android platform which basically focuses on issuing, renewing and reserving a book.

1.2 Scope

Library Management System is a software project that aims to automate the manual library system by creating an internet-based web application. The system is designed for librarians and library users, offering features such as account details, book availability, borrowing limits, and more. It is suitable for any existing or new library to manage books and borrowing, making it particularly useful for educational institutions. The project can be customized with new features as needed, ensuring flexibility and reusability. The project is developed using HTML, Bootstrap, PHP, and MySQL for the backend, which are compatible in terms of performance, tools, cross-platform compatibility, libraries, cost, and development process.

1.3 Definitions, Acronyms, and Abbreviations

- DFD – Data Flow Diagram
- CFD - Context Flow Diagram
- ER – Entity Relationship
- IDE – Integrated Development Environment
- SRS - Software Requirement Specification

1.4 References

- Software Requirements (Microsoft) Second Edition By Karl E. Wiegers
- Software Engineering: A Practitioner’s Approach Fifth Edition By Roger S. Pressman
- Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices (ACM Press) by Michael Jackson

1.5 Overview

The introduction of Library Management begins with master documents such as book descriptions, library information, entering and updating. The latest books will be changed automatically by some more transactions such as books issue, book return.

2 Overall Description

2.1 Product Perspective

The planned Library Management Scheme would take care of the specifics of the latest book at any moment. The book dilemma, book return, would immediately update the new book information. So that the user will have the latest book details updated.

2.2 Product Functions

- The key goal of this initiative is to minimize the work done manually.
- Book Problem, Refunds, and Fine Calculation/ Management can be handled by this program. Generating separate
- Record-keeping Records according to end-user criteria

2.3 User Characteristics

We have 2 levels of users

- User Module: The user can verify the availability of the books in the user module.
    - Book return
- Administration module: The sub-modules in the administration module are as follows.
    - Register user
    - Entry book details
    - Book issue

2.4 General Constraints

To have updated & accurate values, any change about the library book must be registered.

2.5 Assumptions and Dependencies

All the details entered will be reliable and up to date. This software package is built with the assistance of the sun micro frame using java as the front end. The back end of Microsoft which is supported by windows 7.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

The program offers a decent graphical interface for the user that can be run on the device by an administrator, performing the necessary tasks such as designing, reviewing, displaying the book information.

- Allows users to access quick reports in between real hours, such as Book issues/returned book, etc..
- Based on various requirements, stock verification, and search service.

3.1.2 Hardware Interfaces

- Android version 2.3 ginger bread(minimum, android user's)
- 16GB ram
- 2.2 GHz processor
- Intel i5/i7
- Windows 7/8/8.1/10/11

3.1.3 Software Interfaces

- A server running Windows Server/Linux OS
- A multi-threading capable backend language like Java
- Front-end frameworks like Angular/React/Vue for the client
- Relational DBMS like MySQL, PostgreSQL, etc..
- Containers and orchestration services like Kubernetes (for a large setting like a national library).

3.1.4 Communication Interfaces

- Windows

3.2 Functional Requirements

- Book-entry: we can store the information of the books in this module.
- Register student: we will keep the new student's information in this module.
- Book issue: This module is used to keep track of the specifics of book issues.
- Book Return: This module allows the return of book to be monitored.

3.2.1 Functionality:

3.2.1.1 For Users:

We will have following features for a User:

1. New User Registration:

• This feature allows new users (students, teachers, etc.) to sign up for the system by providing the necessary details.

2. Student Login:

- This feature Provides authenticated access for registered users to use the system.

3. Search Book:

- This feature allow users to search for books based on criteria such as book ID, book name, or author name, enhancing the ease of locating desired materials.

4. Issue Book:

- This feature allow users in borrowing books from the library by recording the transaction and updating the availability status.

5. Return Book:

- This feature allows users to return books either before the due date or after the specified time with a late fine, ensuring proper management of borrowed materials.

3.2.2 For Admin:

1. Record Library Activities:

- This feature allows librarians to enter various records into the system, such as book issuances, returns, and non-availability of books.

2. Manage Books:

- This feature allow librarians to keep track of the library's books by adding new books or removing them.

3. Manage Student:

- This feature allow librarians to keep track of number of students and their details.

4. View Issued Books:

- This feature allows librarians to view all Issued books with their status.

5. Defaulter List:

- This feature allows librarians to show the details of the student who did not return the books before the deadline.

6. Issue Book:

- This feature allow users in borrowing books from the library by recording the transaction and updating the availability status.

3.3 Performance Requirements

The computer's capability depends on the software's efficiency. Provided the database size is big enough, the program will take any amount of inputs. This would be dependent on the memory space available.

3.4 Design constraints

Whenever a library member wants to take a book, the book issued by the library authority can check all the book information as well as the student details and store it in the library database. Each member will have an identification card that will be used for the library book issue, fine payment, etc.. A great deal of human interference can be avoided in the event of book retrieval.

3.4.1 Attributes

- **Maintainability:** The Device would not need any servicing. The database is created by the end-user and is thus retained by the user.
- **Portability:** The device is built to be stable, so it can not be portable.

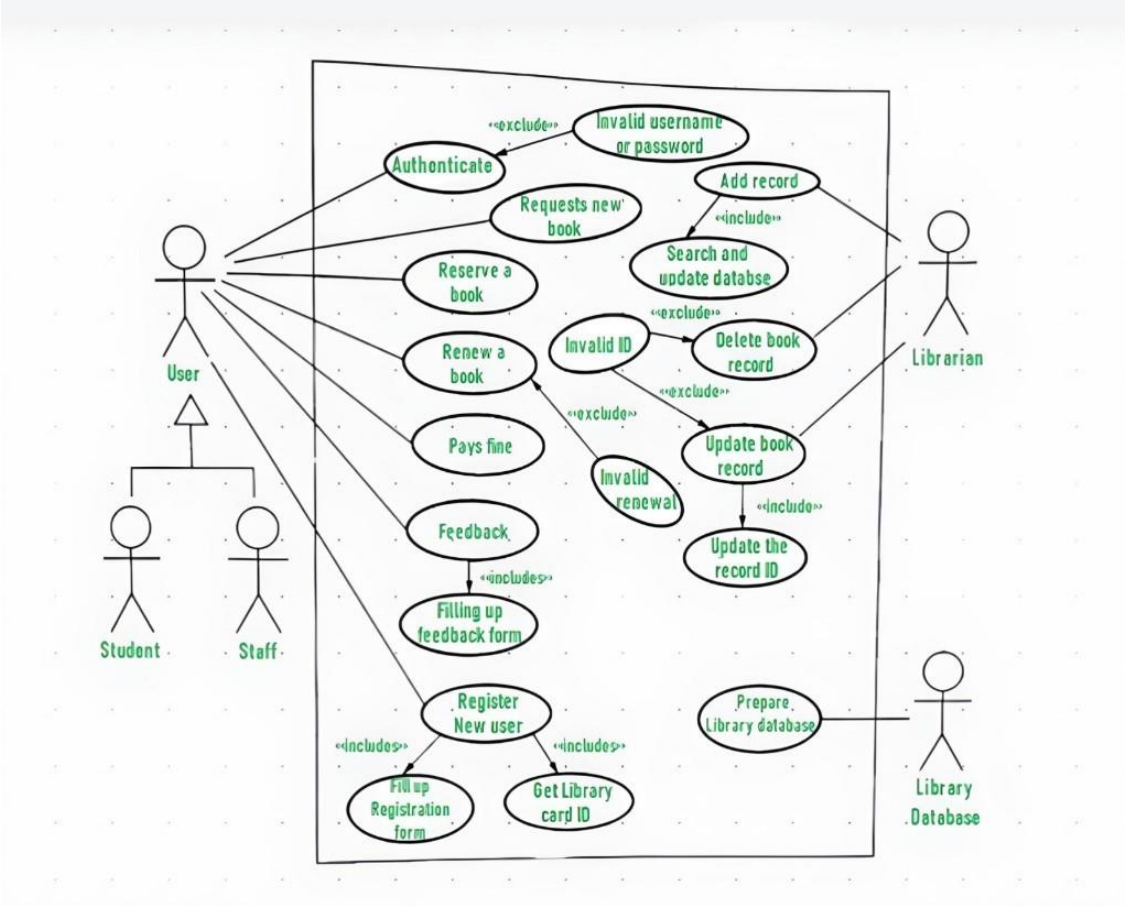
- **Availability :** This system will only be usable until it operates on the system it is built on.
- **Scalability :** Applicable.

3.5 Other Requirements

There are no other requirements.

4.Diagram's :

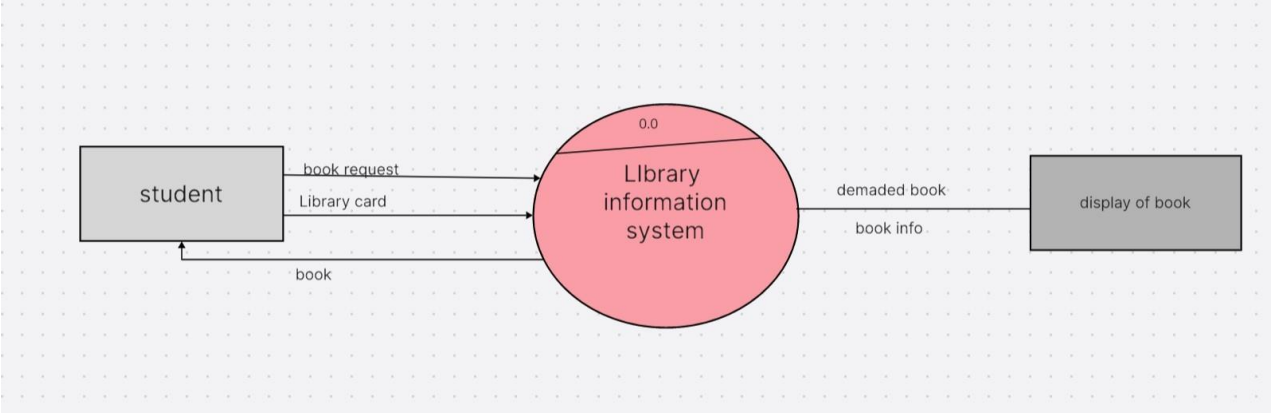
4.1 Use case Diagram:



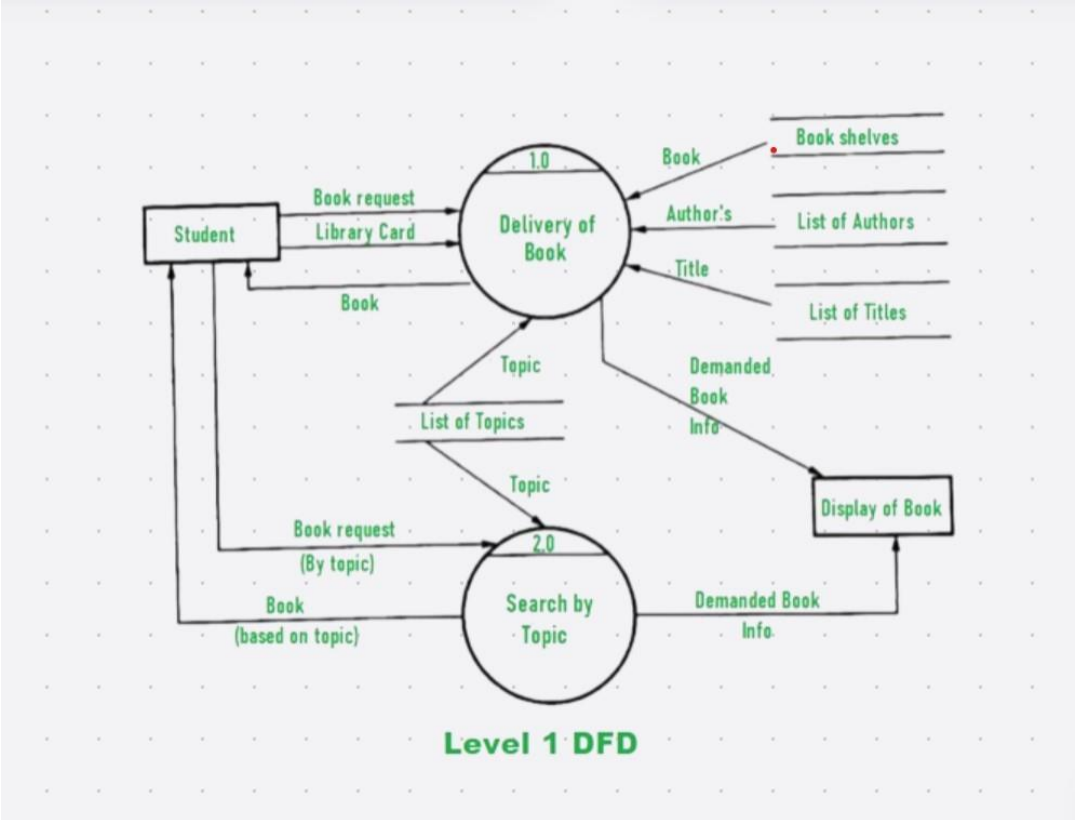
This is a broad level diagram of the project showing a basic overview. The users can be either staff or student. This System will provide a search functionality to facilitate the search of resources. This search will be based on various categories. Further the library staff personal can add/update the resources and the resource users from the system. The users of the system can request issue/renew/return of books for which they would have to follow certain criteria.

4.2 Data Flow Diagram:

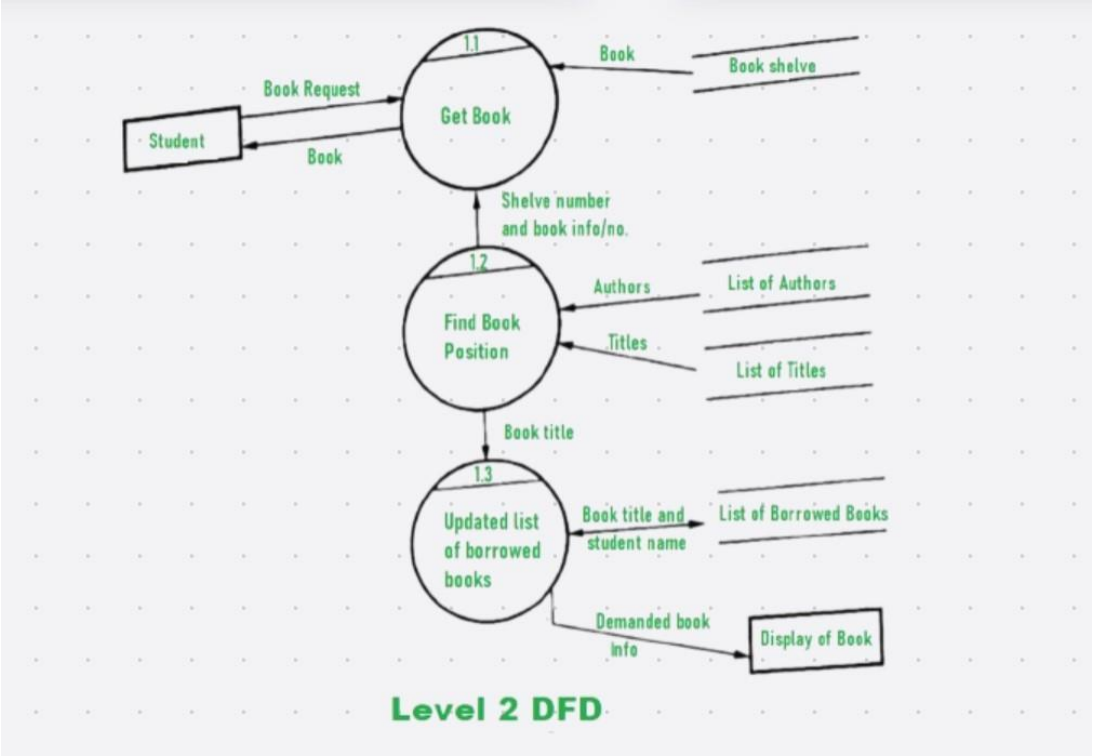
Level 0:



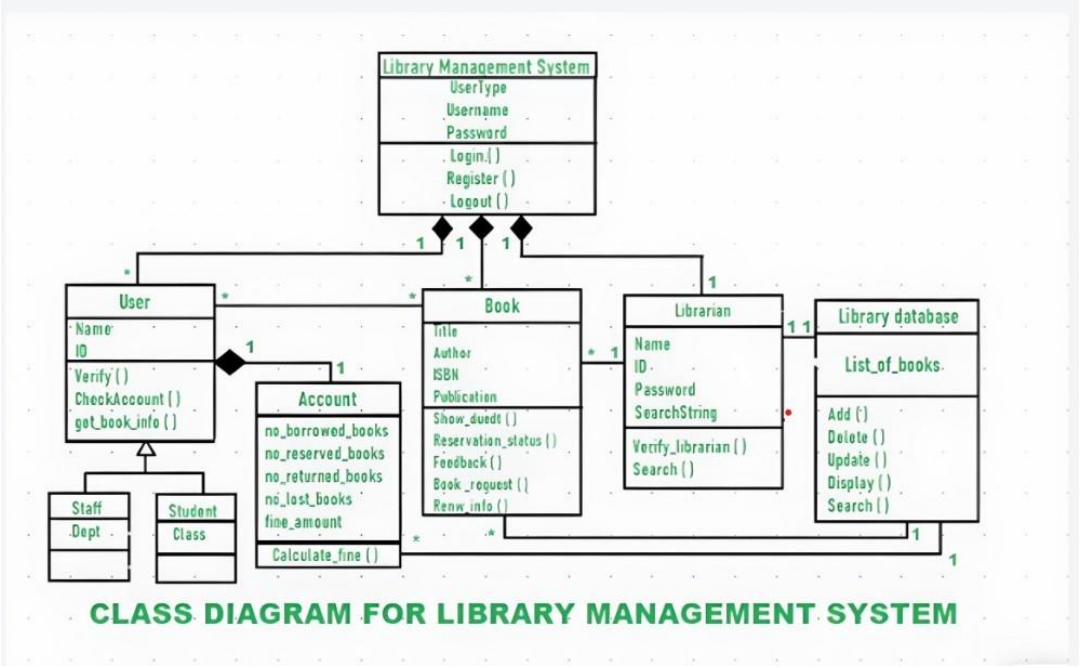
Level 1:



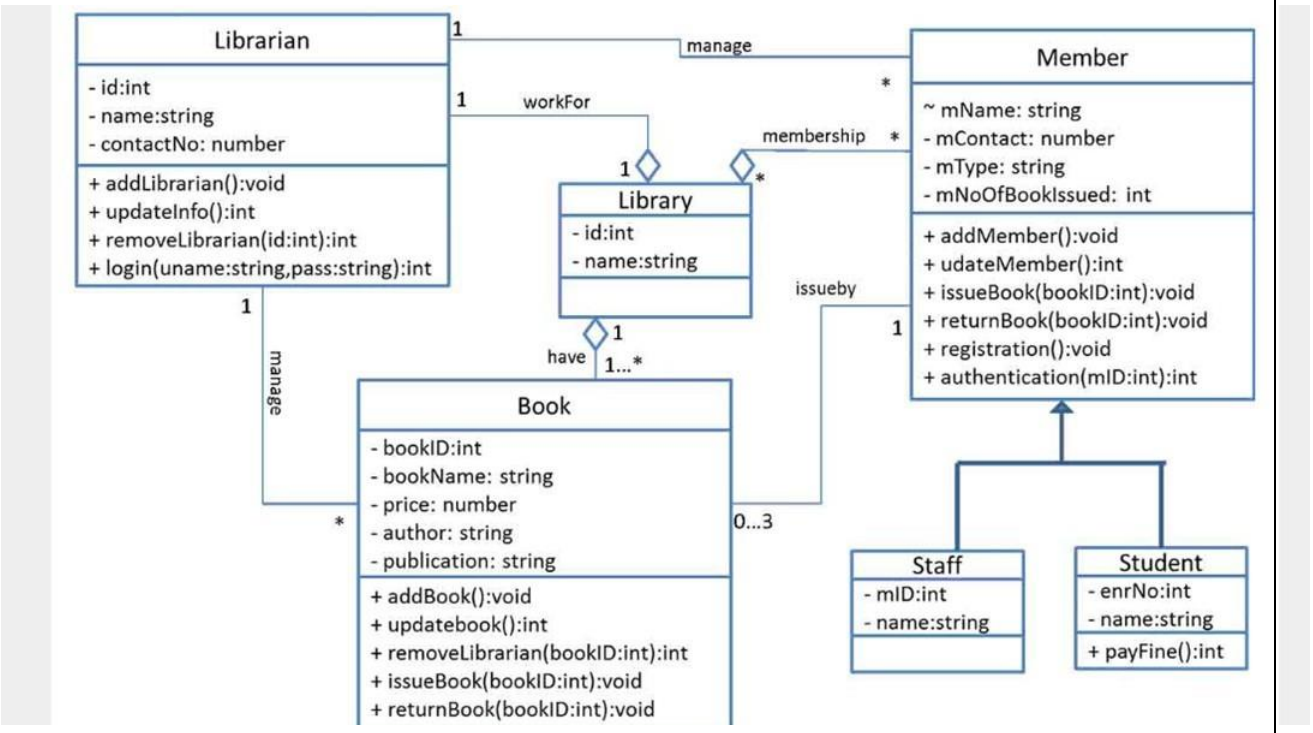
Level 2:



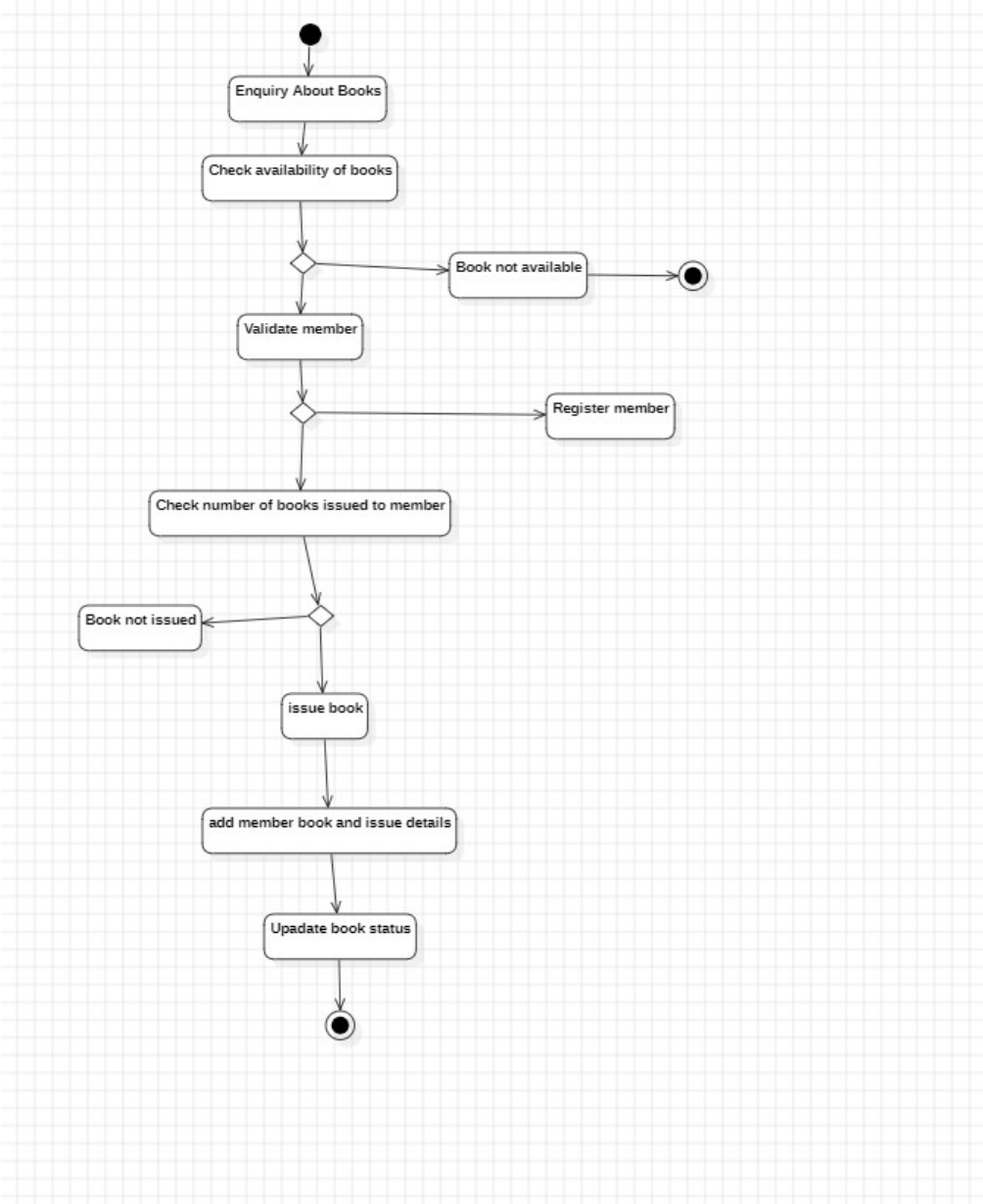
4.3Class Diagram :-



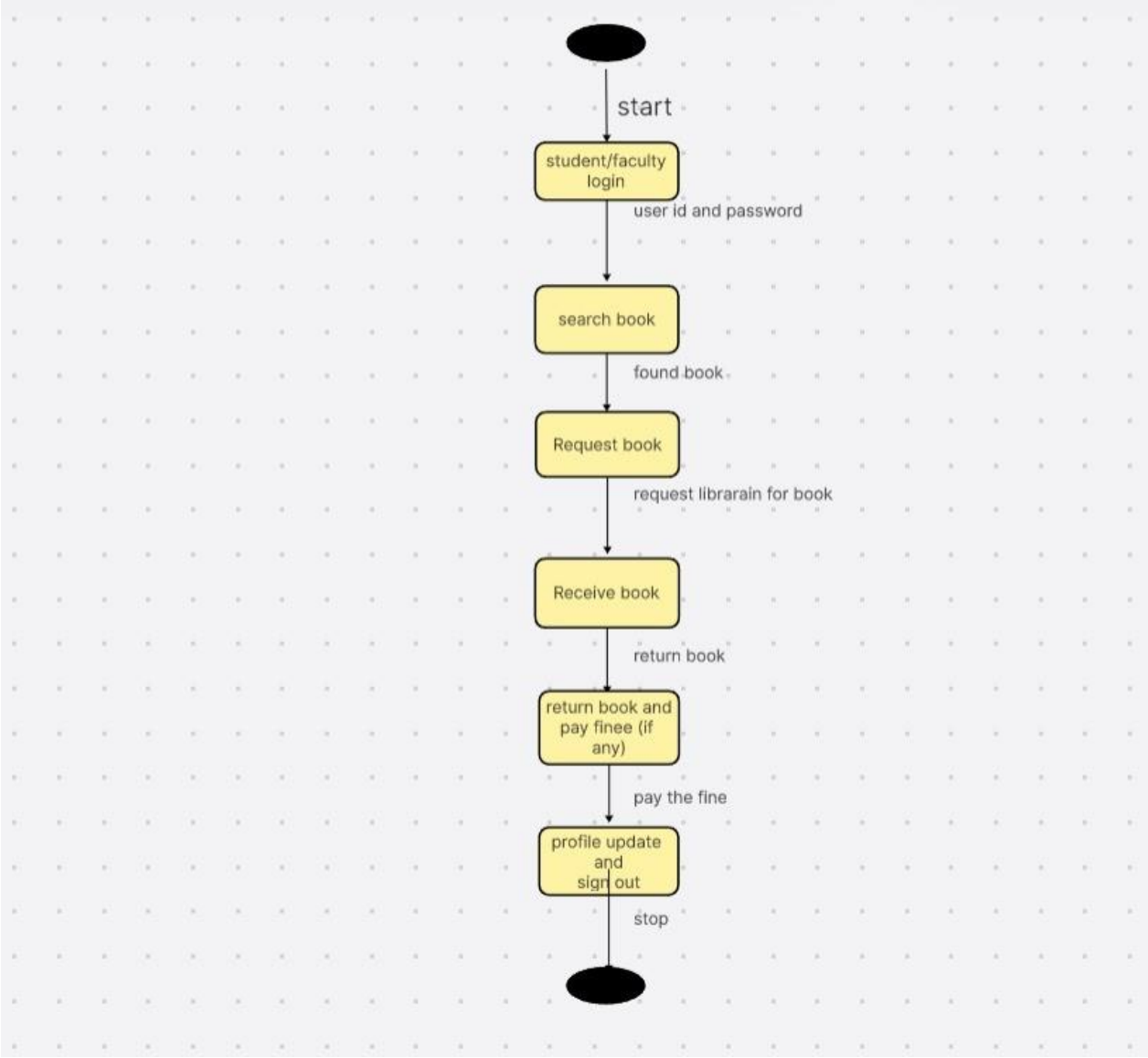
4.4Object Diagram:



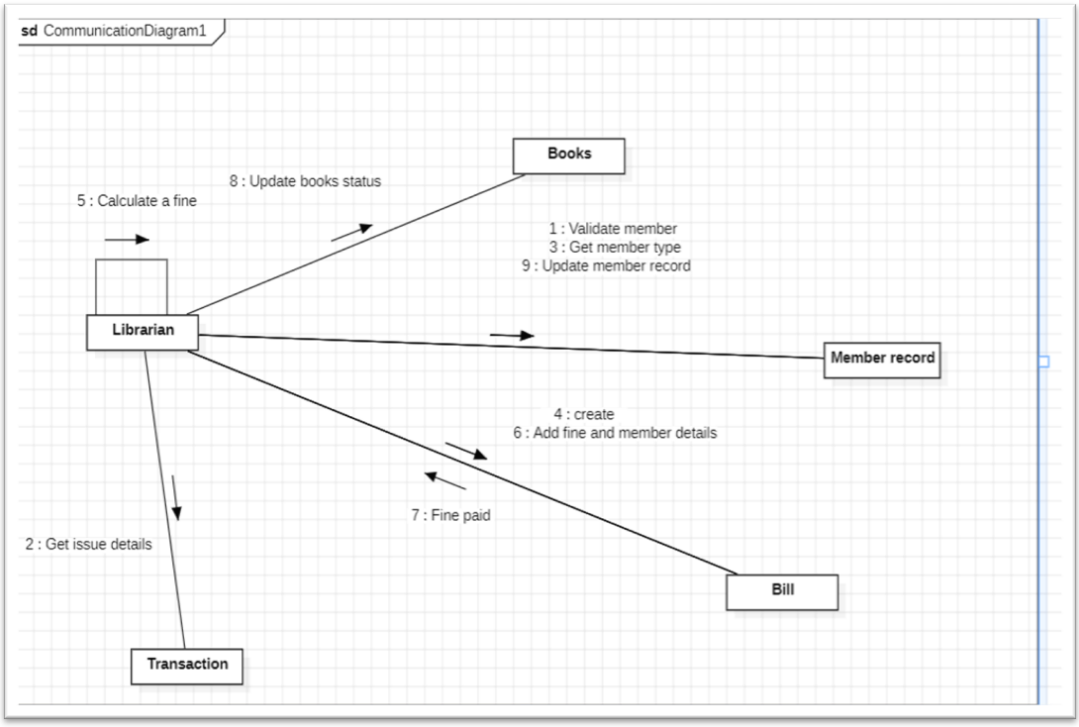
4.5Activity Diagram :



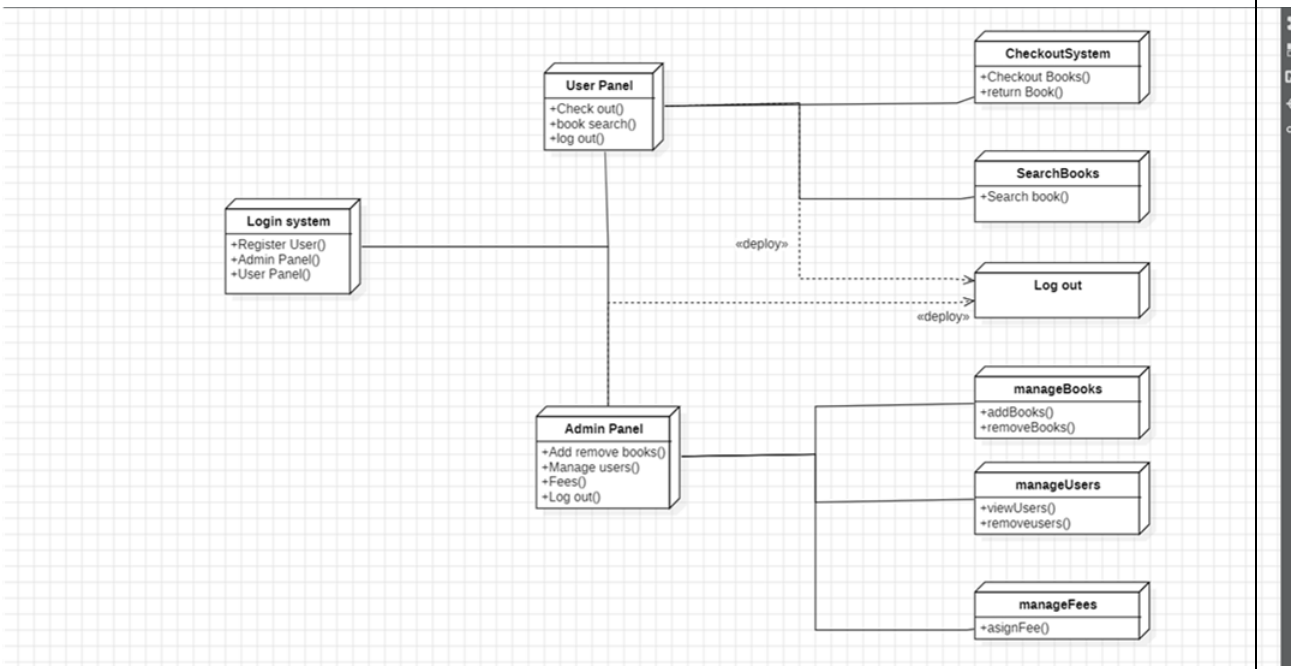
4.6 State Diagram:



4.7 Collaboration Diagram:



4.8 Deployment Diagram:



4.9 Component Diagram: