Library Management System

Software Requirements Specification (SRS) Document

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1. Introduction

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.

1.1 Purpose

The main objective of this document is to illustrate the requirements of the project Library Management system. The document gives the detailed description of the both functional and non-functional requirements proposed by the client. The purpose of this project is to provide a friendly environment to maintain the details of books and library members. The main purpose of this project is to maintain easy circulation system using computers and to provide different reports.

1.2 SCOPE

- Manually updating the library system into an android based application so that the user can know the details of the books available and maximum limit on borrowing from their computer and also through their phones.

- The ILM System provides information's like details of the books, insertion of new books, deletion of lost books, limitation on issuing books, fine on keeping a book more than one month from the issued date.
- Also user can provide feedback for adding some new books to the library.

1.3 Definitions, Acronyms and abbreviations

- JAVA -> platform independence
- SQL -> Structured query Language
- DFD -> Data Flow Diagram
- CFD -> Context Flow Diagram
- ER -> Entity Relationship
- IDE -> Integrated Development Environment
- SRS -> Software Requirement Specification
- LMS -> Library Management System

1.4 References

• An Integrated Approach Software Engineering Third Edition by Pankaj Jalote.
• Java :- Balaguru swamy
• SQL :- JosephL Jorden

1.5 Overview

The implementation of Library Management starts with entering and updating master records like book details, library information. Any further transaction like book issue, book return will automatically update the current books.

2.OVERALL DESCRIPTION

2.1 Product Perspective

LMS is a replacement for the ordinary library management systems which depend on paper work for recording book and users' information. LMS will provide an advanced book search mechanism and will make it easy to borrow, insert and index a book in the library.

2.2 Product Functionality

Functionality of this system is:-

LIBRARIAN:

- A librarian can issue a book to the student
- Can view The different categories of books available in the Library
- Can view the List of books available in each category
- Can take the book returned from students
- Add books and their information of the books to the database
- Edit the information of the existing books.
- Can check the report of the issued Books.
- Can access all the accounts of the students.

USERS:

- Can view the different categories of books available in the Library
- Can view the List of books available in each category
- Can own an account in the library
- Can view the books issued to him
- Can put a request for a new book
- Can view the history of books issued to him previously
- Can search for a particular book

2.3 General Constraints

- The information of all users, books and libraries must be stored in a database that is accessible by the website.
- MS SQL Server will be used as SQL engine and database.
- The Online Library System is running 24 hours a day.
- Users may access LMS from any computer that has Internet browsing capabilities and an Internet connection.
- Users must have their correct usernames and passwords to enter into their online accounts and do actions.

2.4 Assumptions and Dependencies

The assumptions are:-

- The coding should be error free
- The system should be user-friendly so that it is easy to use for the users
- The information of all users, books and libraries must be stored in a database that is accessible by the website
- The system should have more storage capacity and provide fast access to the database
- The system should provide search facility and support quick transactions
- The Library System is running 24 hours a day

The success of this system depends on:

- Existence of an Internet service to all people in Gaza Strip.
- Are librarians and users comfortable with computers and have enough ability to work with the product?
- Website interface must be friendly and easy-to-use.
- The search mechanism should be simple and fast.

2.5 User Characteristics

We have 3 levels of users:

User module: In the user module, user will check the availability of the books.

- Issue book
- Reserve book
- Return book
- Fine details

Library module:

- Add new book
- Remove books
- Update details of book

Administration module:

The following are the sub module in the administration module:

- Register user
- Entry book details
- Book issue

3. SPECIFIC REQUIREMENTS

3.1 EXTERNAL INTERFACE REQUIREMENTS

3.1.1 User Interface

Various GUI elements like forms, images and standard buttons will be included in the User Interface.

3.1.2 Software Interface

Software will work on Windows OS. The Database used will be an open-source database like MySql. And the system will run on Java Virtual Machine.

3.1.3 Hardware Interfaces

- Android version 2.3 ginger bread(minimum, android user's)
- 2GB ram
- 1.2 GHz processor
- Intel i5
- Windows 7/8/8.1/10

3.1.4 Communication Interface

This system will require web browser, internet connection which supports HTTP and server.

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 books to be monitored

3.3 Performance Requirements

- The system shall accommodate high number of books and users without any fault.
- Responses to view information shall take no longer than 5 seconds to appear on the screen

3.4 Security Requirements

- System will use secured database.
- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints.

3.5 Safety Requirements

- System use shall not cause any harm to human users.

3.6 Availability Requirement

The system is available 100% for the user and is used 24 hrs a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

3.7 System attributes :

- **Maintainability**: The device would not need any servicing. The database is created by the end-user and is thus retained by the end-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.

3.8 Software Quality Attributes

- There may be multiple admins creating the project, all of them will have the right to create changes to the system. But the members or other users cannot do changes.
- The project should be open source.
- The user be able to easily download and install the system.

4. Non-Functional Requirements

4.1 Security

In the library management system, a large amount of data is important as a normal network operation support. The library data security is that network information resources are not lost not modified and steal in the network transmission process. User personal identification numbers (PINs) and passwords stored in the LMS should be encrypted so that only the user has access to them, i.e. library staff cannot view them. This encryption should use up-to-date best practices. The system's back-end servers shall only be accessible to authenticated management.

4.2 Reliability

The reliability of the overall project depends on the reliability of the separate components. The main pillar of reliability of the system is the backup of the database which is continuously maintained and

updated to reflect the most recent changes. Also the system will be functioning inside a container. Thus the overall stability of the system depends on the stability of container and its underlying operating system.

4.3 Availability

The system should be available at all times, meaning the user can access it using a App, only restricted by the down time of the server on which the system runs. A customer friendly system which is in access of people around the world should work 24 hours. In case of a of a hardware failure or database corruption, a replacement page will be shown. Also in case of a hardware failure or database corruption, backups of the database should be retrieved from the server and saved by the Organizer. Then the service will be restarted. It means 24 x 7 availability.

4.4 Maintainability

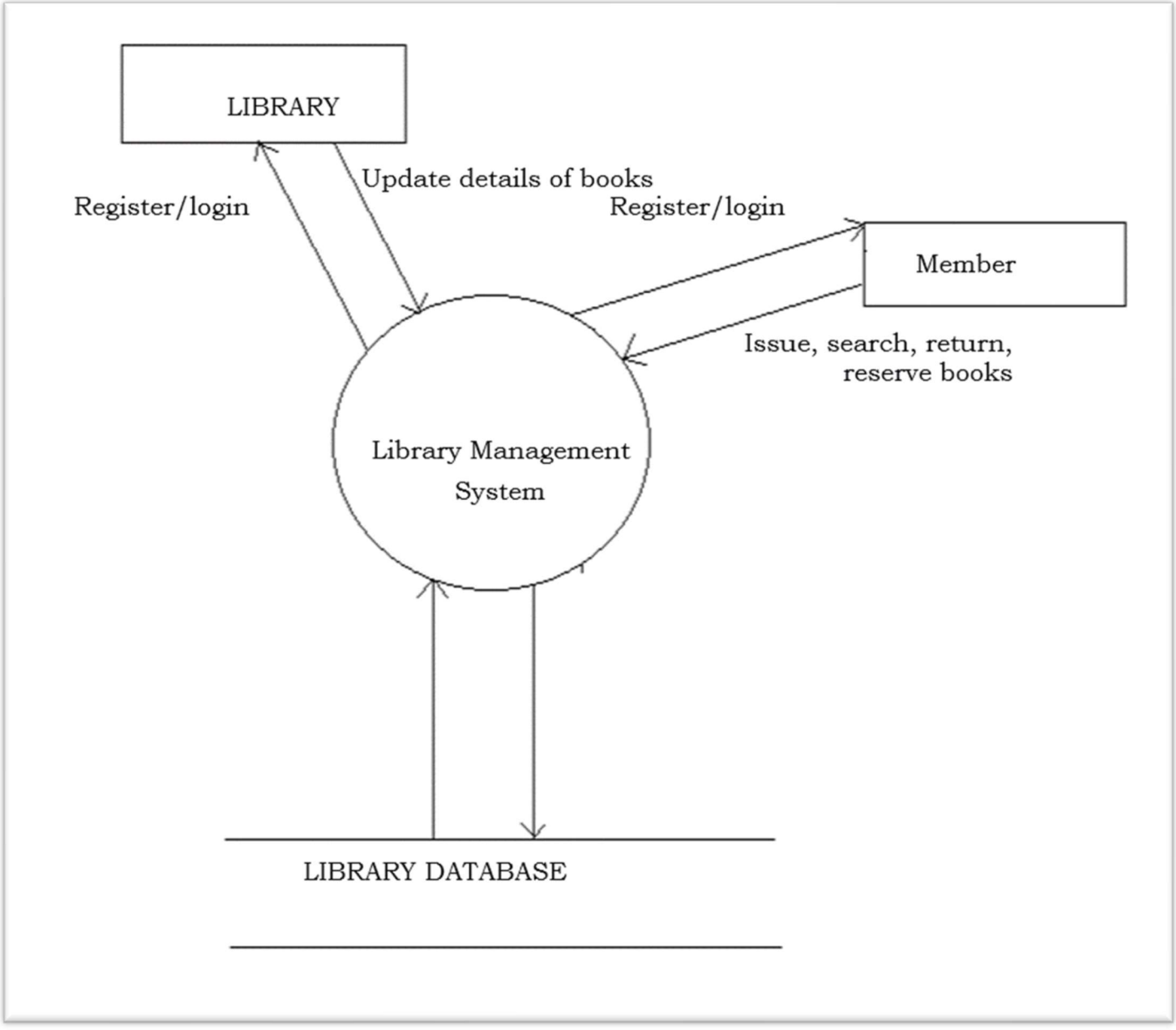
A commercial database is used for maintaining the database and the application server takes care of the site. In case of a failure, a re-initialization of the project will be done. Also the software design is being done with modularity in mind so that maintainability can be done efficiently.

4.5 Supportability

The code and supporting modules of the system will be well documented and easy to understand. Online User Documentation and Help System Requirements.

5. Diagrams

5.1 FLOW DIAGRAM



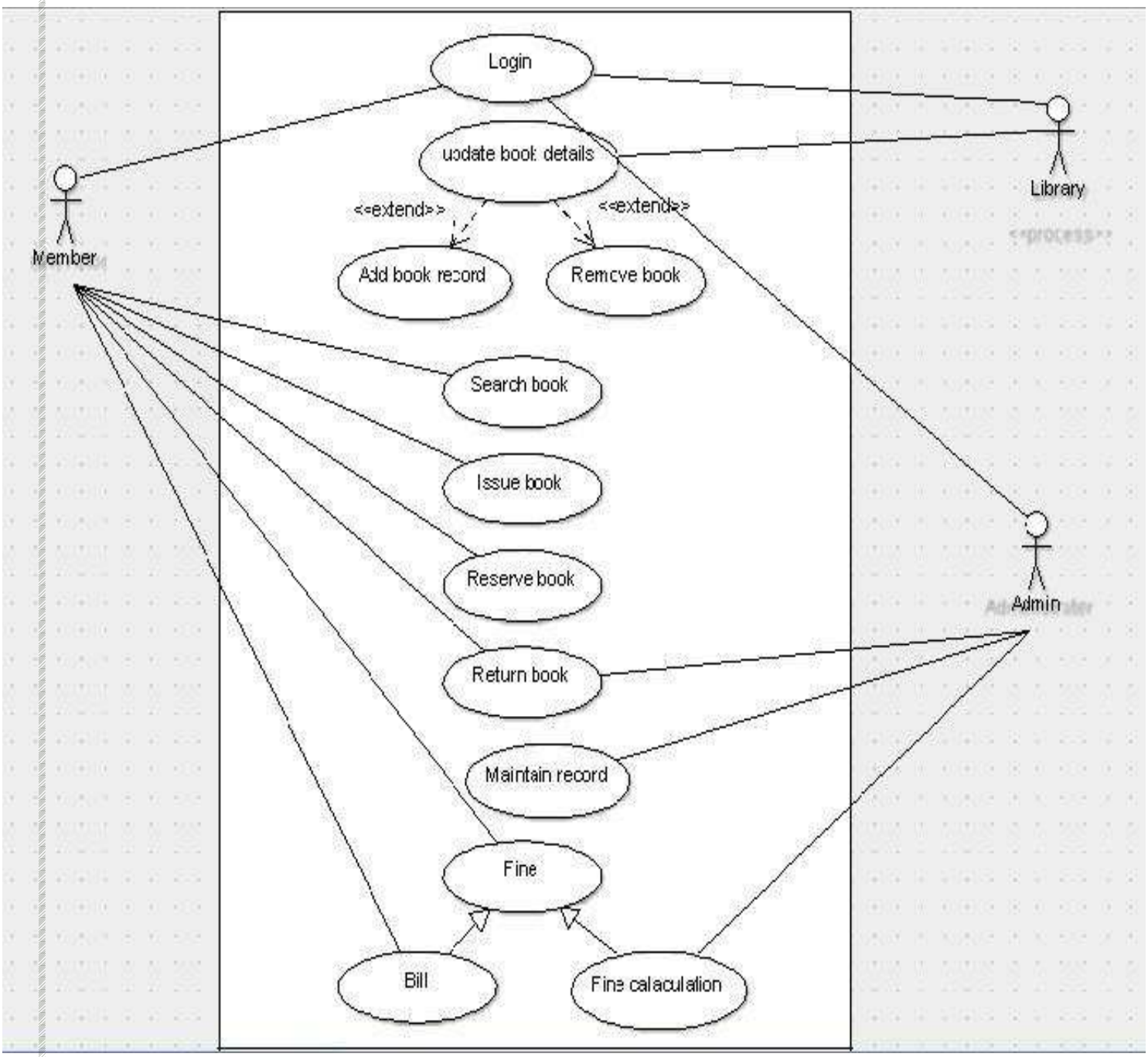
5.2 Use Case Model Description:

Use Case selection	Description
Use Case name	Add student and library record
Level	Sub-Functional level
Primary actor	Student, Library
Stakeholders and interest	Student: wants to register into the system. Library: wants to register into the system and update book details. Administrator: responsible for the management of the transaction of fine and also login and register details.
Pre-condition	Students and Library have submitted their registration form.
Post-condition	Record for a student/library has been added.
Main success scenario	1 Student/Library opens the application to access the services of the LMS 2 Student/Library sign-up to get registered online. 3 He/She provides correct information and secret password. 4 He/She got registered.

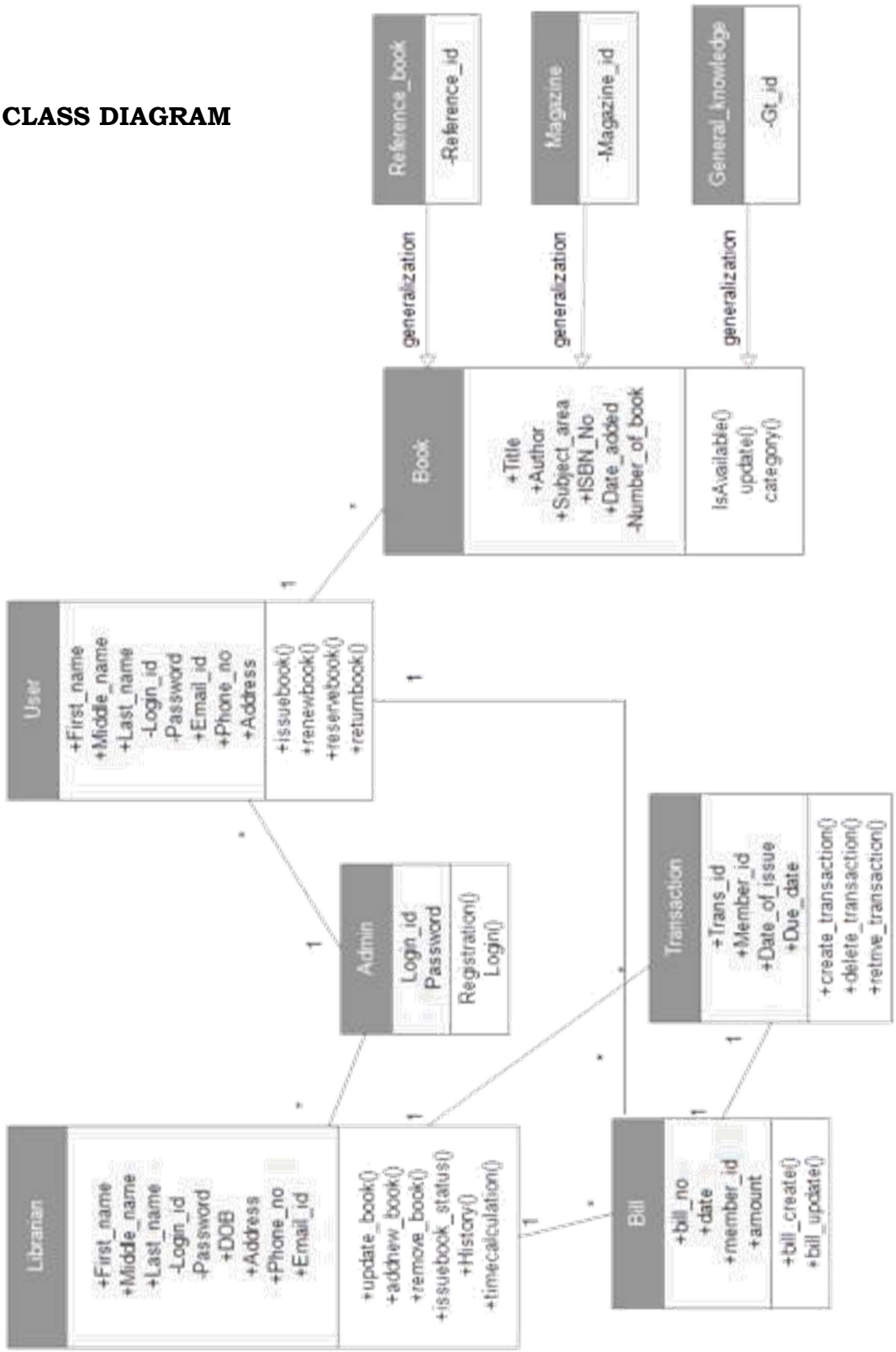
Alternative flow	Student/Library opens the application 1 in their phone 2 He/She tries to sign-up 3 He/She fails and receives an error He/She will report an error and the 4 error will be rectified as soon as possible.
Specific requirement	The response time for registration is 1 minute. The response time for login is 1 minute

Table 1: table for use case description.

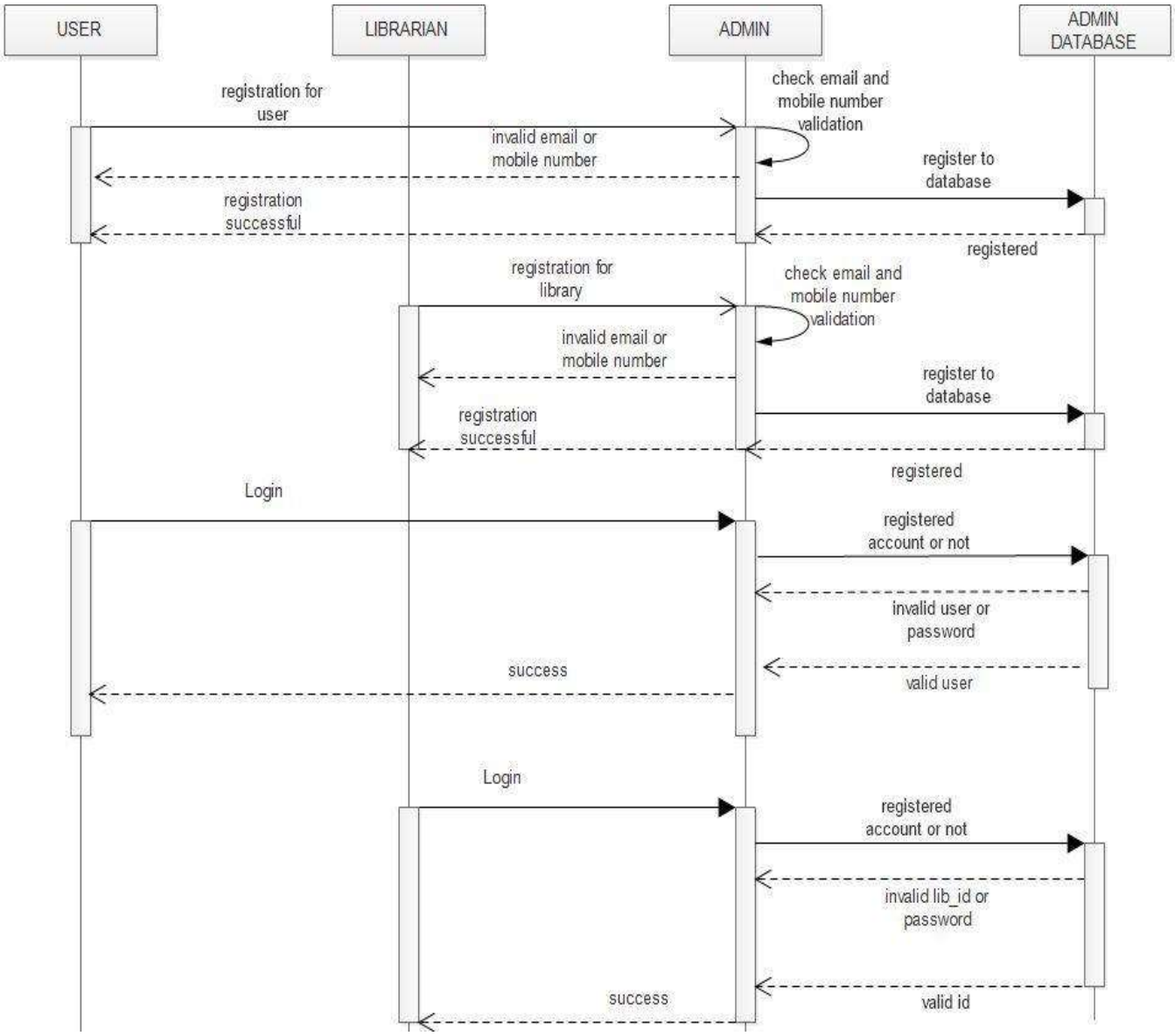
5.3 USE CASE DIAGRAM



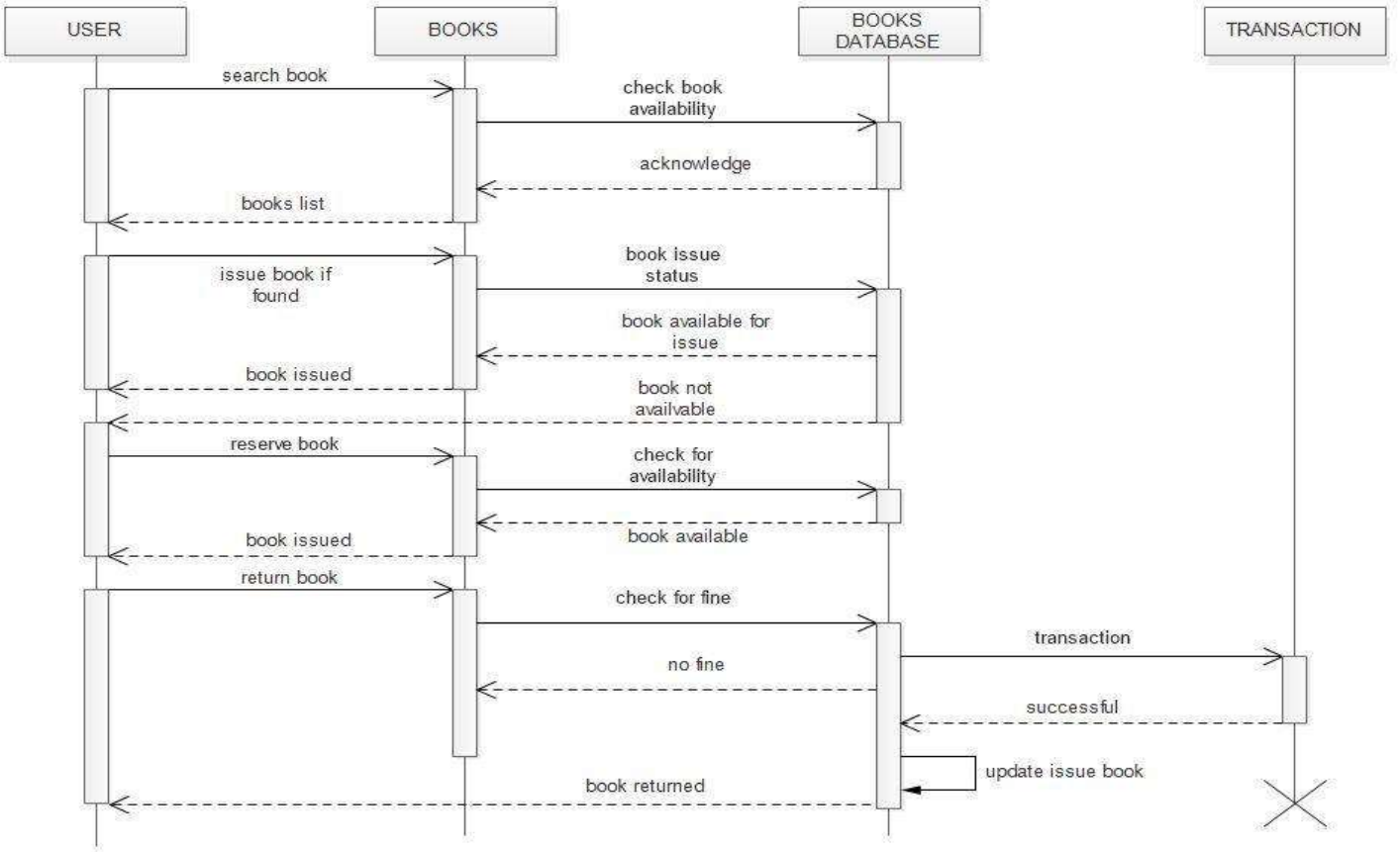
5.4 CLASS DIAGRAM



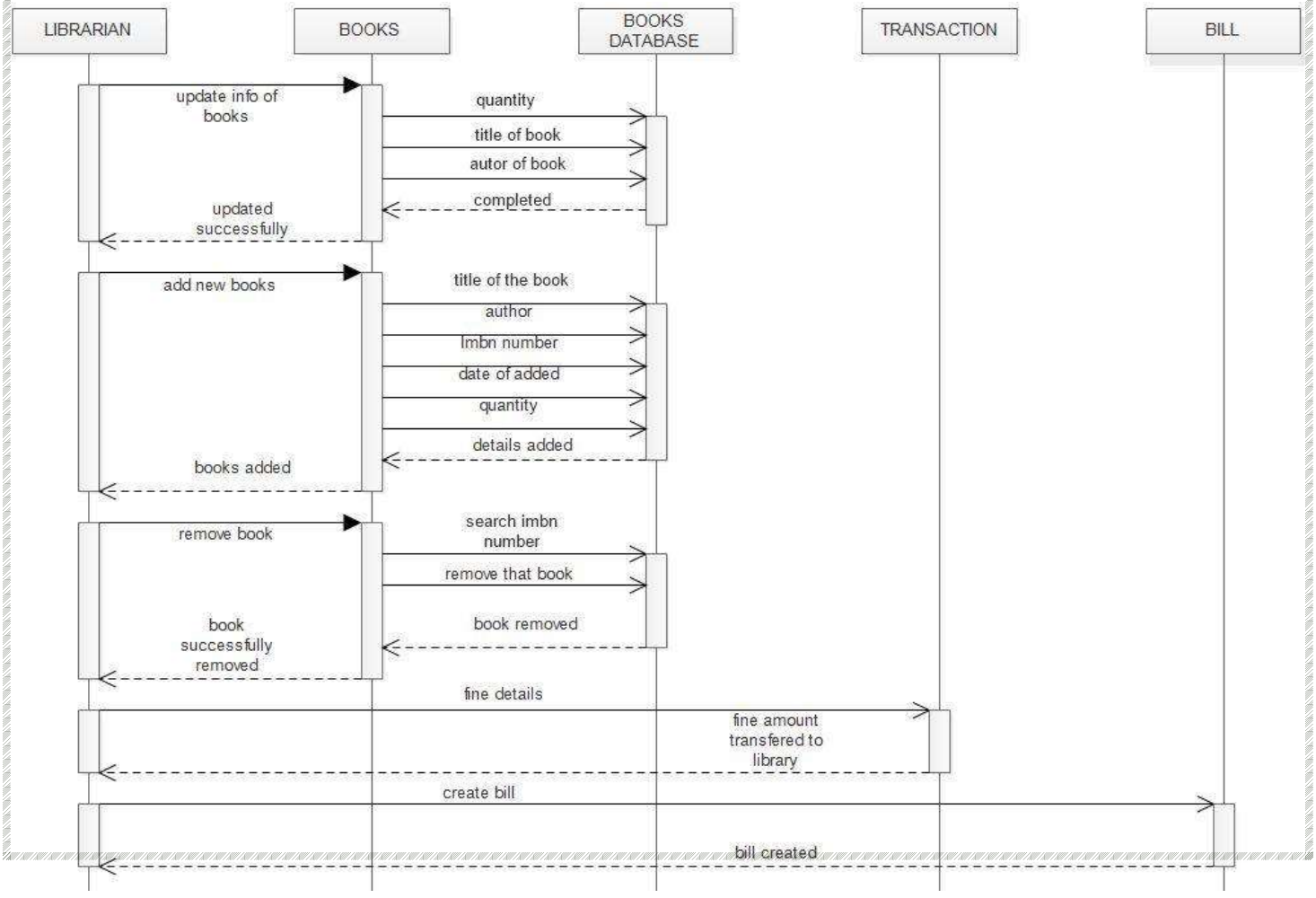
5.5 Sequential diagram

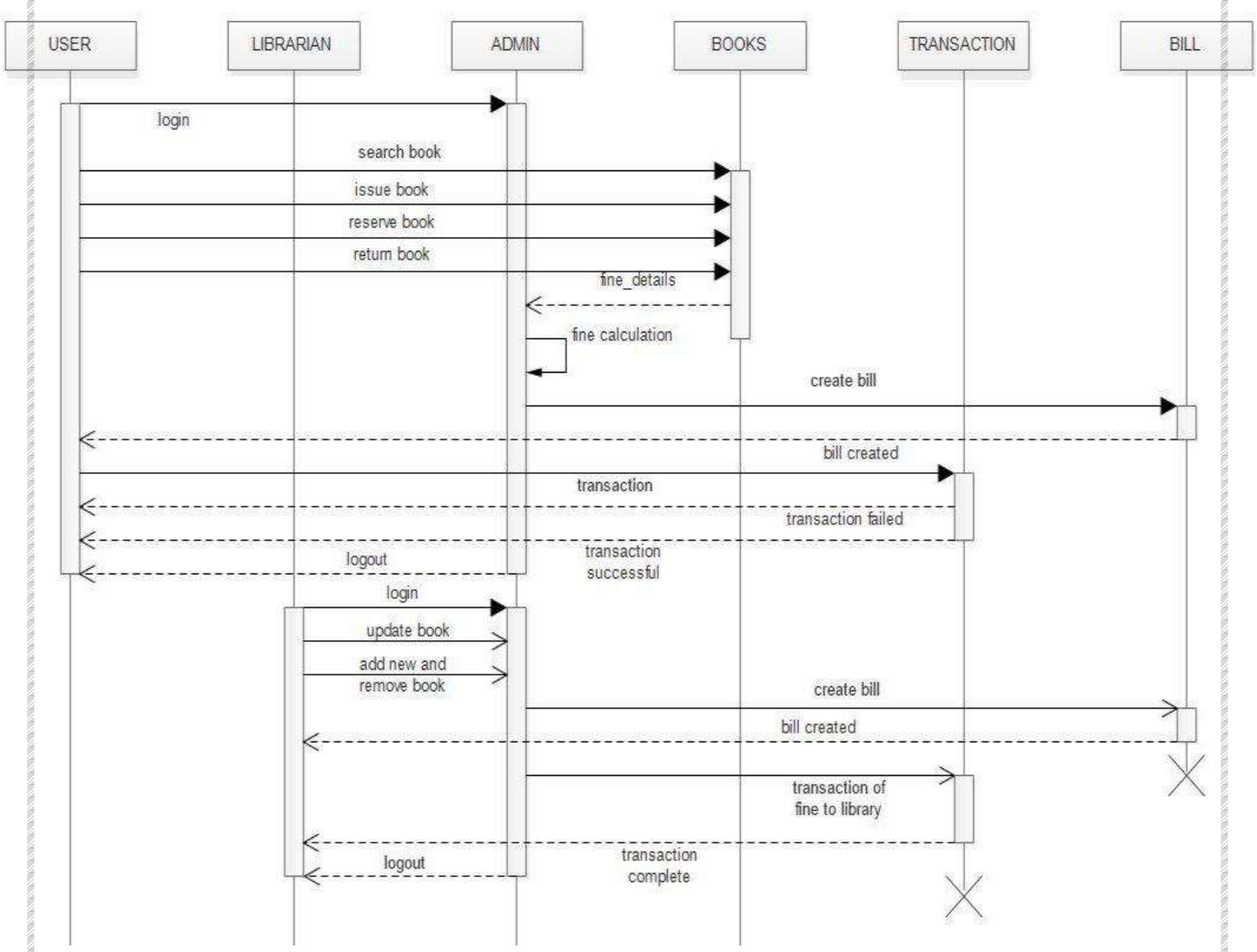


Register and login sequence diagram



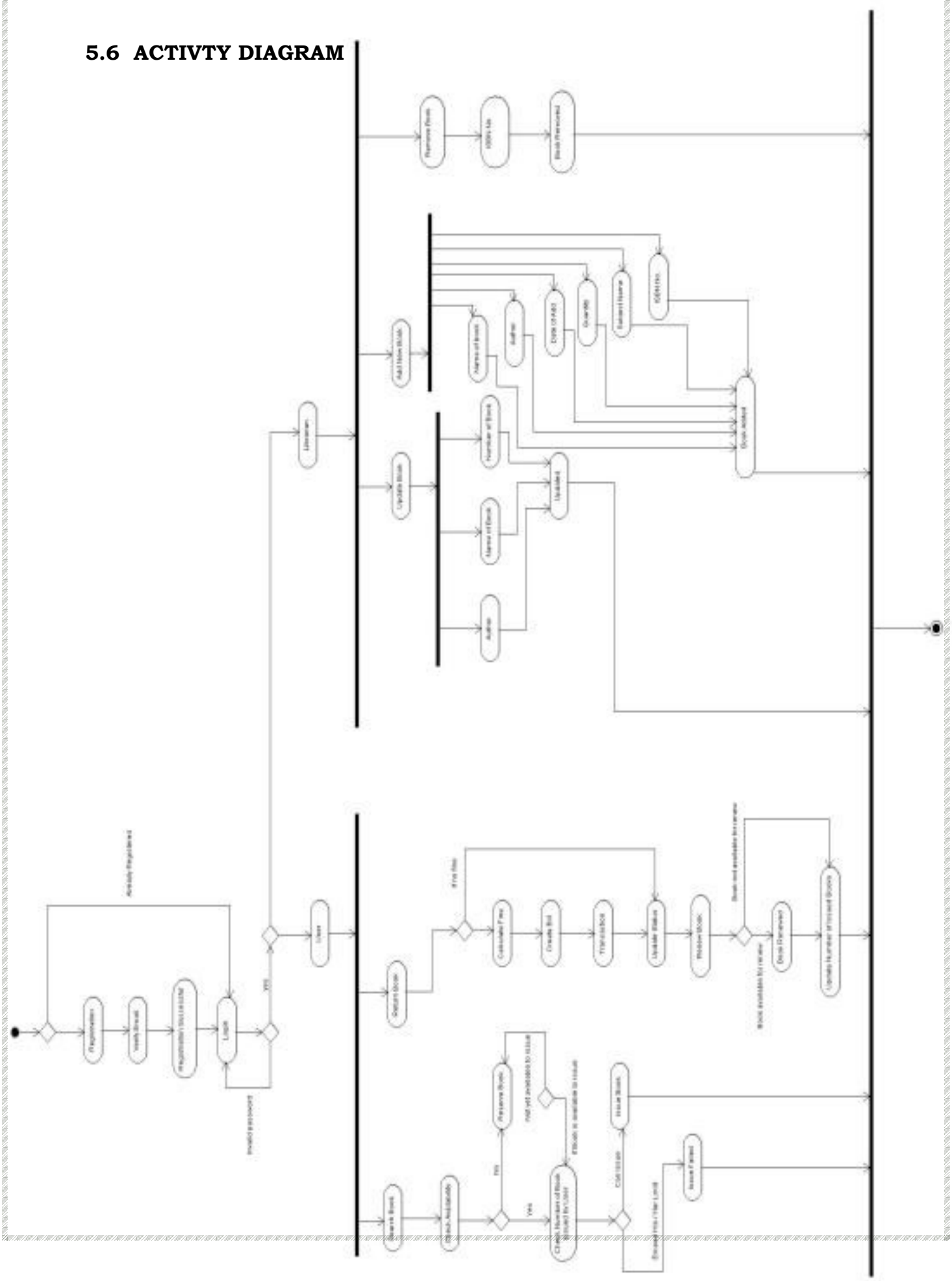
Services user could use





Full working of the system

5.6 ACTIVTY DIAGRAM



5.7 ER diagram