1.Write the problem statement, its purpose, scope and literature review. The problem statement is intended for a broad audience and should be written in non-technical terms. Choose any one project given below.

Library management system

Library management system is software that manage all the functions of a library. Its librarian to maintain database of new books, borrowed books, members along with their due date.
The Library Management System is a web-based online system for assisting both the students/teachers and librarian/staff in borrowing and supervising the books. The system would provide fundamental set of features for adding and/or updating members, adding and/or updating books, getting the list of books, finding out the list of books currently checked out, reserving and borrowing books. Its development includes the formation and maintenance of back-end database with MySQL and front-end application development aspects with PHP.

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This system automates all your library's activities. This project maintains, organize, and handle books, member systematically. A library management system is used to maintain library records. It tracks the records of the number of books in the library, how many books are issued, or how many books have been returned or renewed or late fine charges.

The Library Management System is a web-based online system for assisting both the students/teachers and librarian/staff in borrowing and supervising the books. The system would provide fundamental set of features for adding and/or updating members, adding and/or updating books, getting the list of books, finding out the list of books currently checked out, reserving and borrowing books. Its development includes the formation and maintenance of back-end database with MySQL and front-end application development aspects with PHP.

The scope of this project is:

- To assist the staff in capturing the effort spent on their respective working areas.
- To utilize resources in an efficient manner by increasing their productivity through automation.
- To system generates types of information that can be used for various purposes

Software Requirements Specification

For

Library Management System

Prepared by Kencho Wangdi

Marwadi University

Academic Year:2022

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1. Introduction

1.1 Purpose

The principle objective of this project is to represent the necessities of the needs Library Management framework. The project gives the point by point portrayal of the both useful and non-practical necessities 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 principle reason for this task is to keep up with simple utilization of framework utilizing PCs and to give different CRUD activities. This project depicts the equipment and programming connection point prerequisites utilizing ER outlines and UML diagrams.

1.2 Document Conventions

- Entire document should be justified.
- Convention for Main title
  - Font face: Times New Roman
  - Font style: Bold
  - Font Size: 14
- Convention for Sub title
  - Font face: Times New Roman
  - Font style: Bold
  - Font Size: 12
- Convention for body
  - Font face: Times New Roman
  - Font Size: 12

1.3 Scope of Development Project

1.4

Library Management System is fundamentally refreshing the manual library framework into a web-based application so the clients can know the detail of their records, accessibility of books and maximum limit for borrowing.

The undertaking is explicitly intended for the utilization of administrators and library clients. The item will function as a total UI for library the executives cycle and library utilization from conventional clients. Library Management System can be utilized by any current or new library to deal with its books and book acquiring, addition and observing. It is particularly valuable for any instructive organization where alterations in the substance should be possible effectively as according to requirements. The project can be easily implemented under various situations. We can add new featuresas and when we require, making reusability possible as there is flexibility in all the modules.

The language used for developing the project is Java as it is quite advantageous than other languages in terms of performance, tools available, cross platform compatibility, libraries, cost (freely available), and development process.

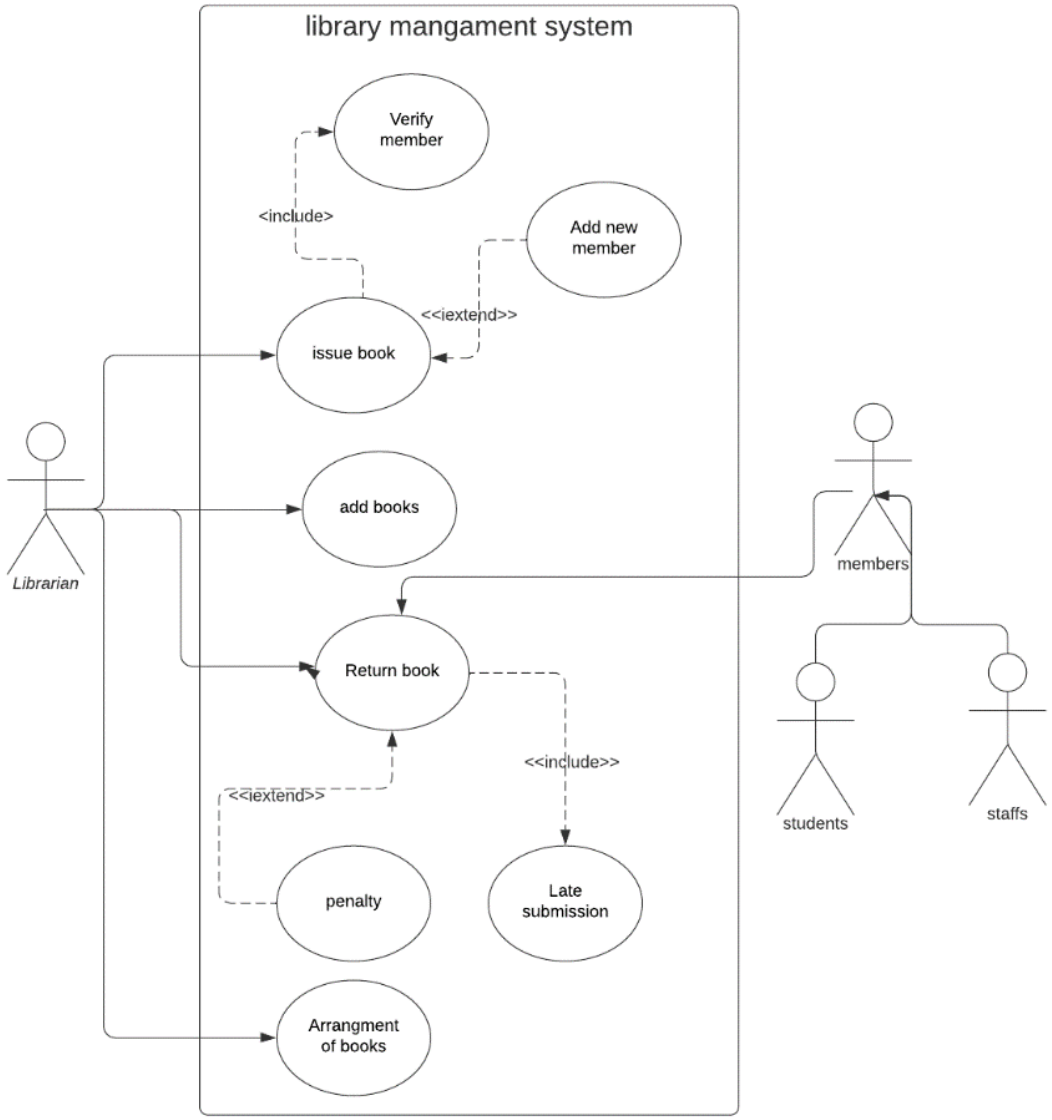
1.5 References

- Books
  1. Software Engineering: A Practitioner's Approach Fifth Edition By Roger S. Pressman
- Websites
  - https://www.geeksforgeeks.org/e-library-management-system/
  - https://www.startertutorials.com/uml/uml-diagrams-library-management-system.html

2. Overall Descriptions

2.1 Product Perspective

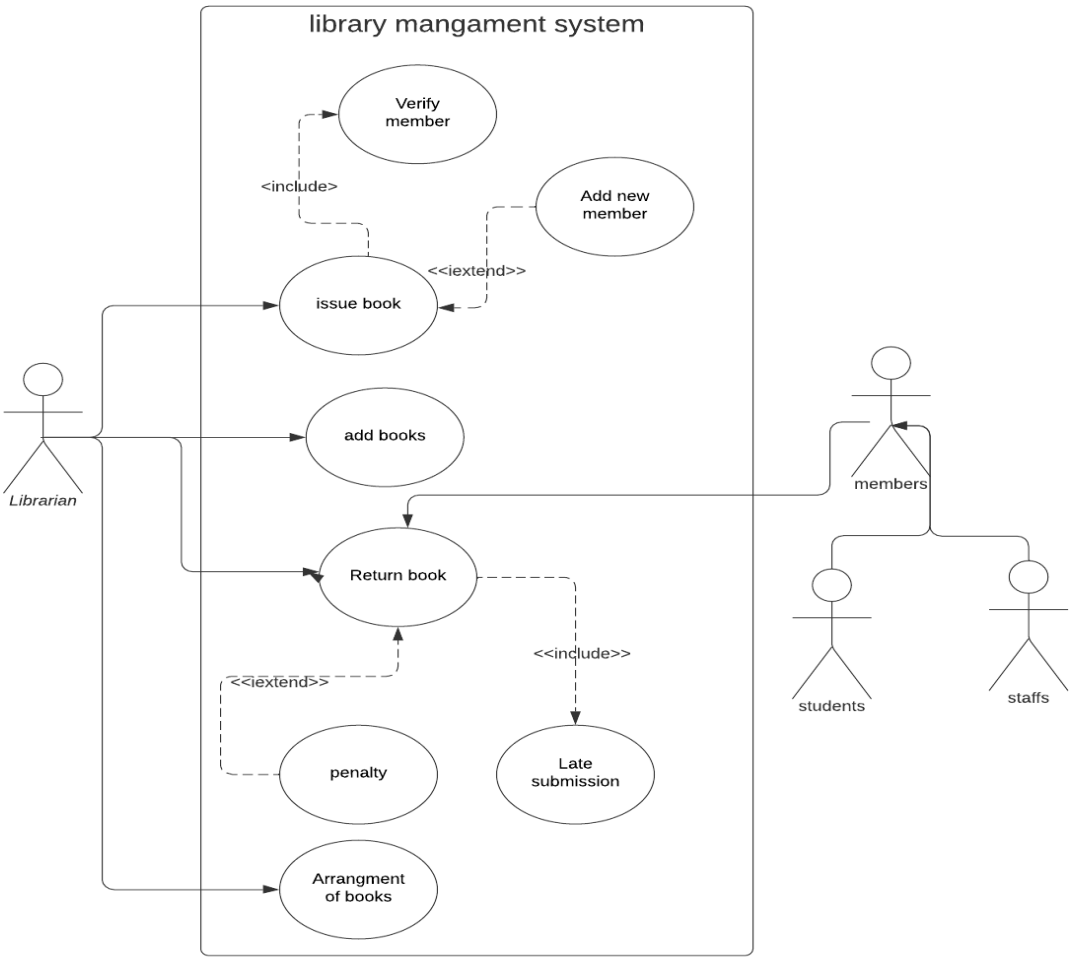
Use Case Diagram of Library Management System



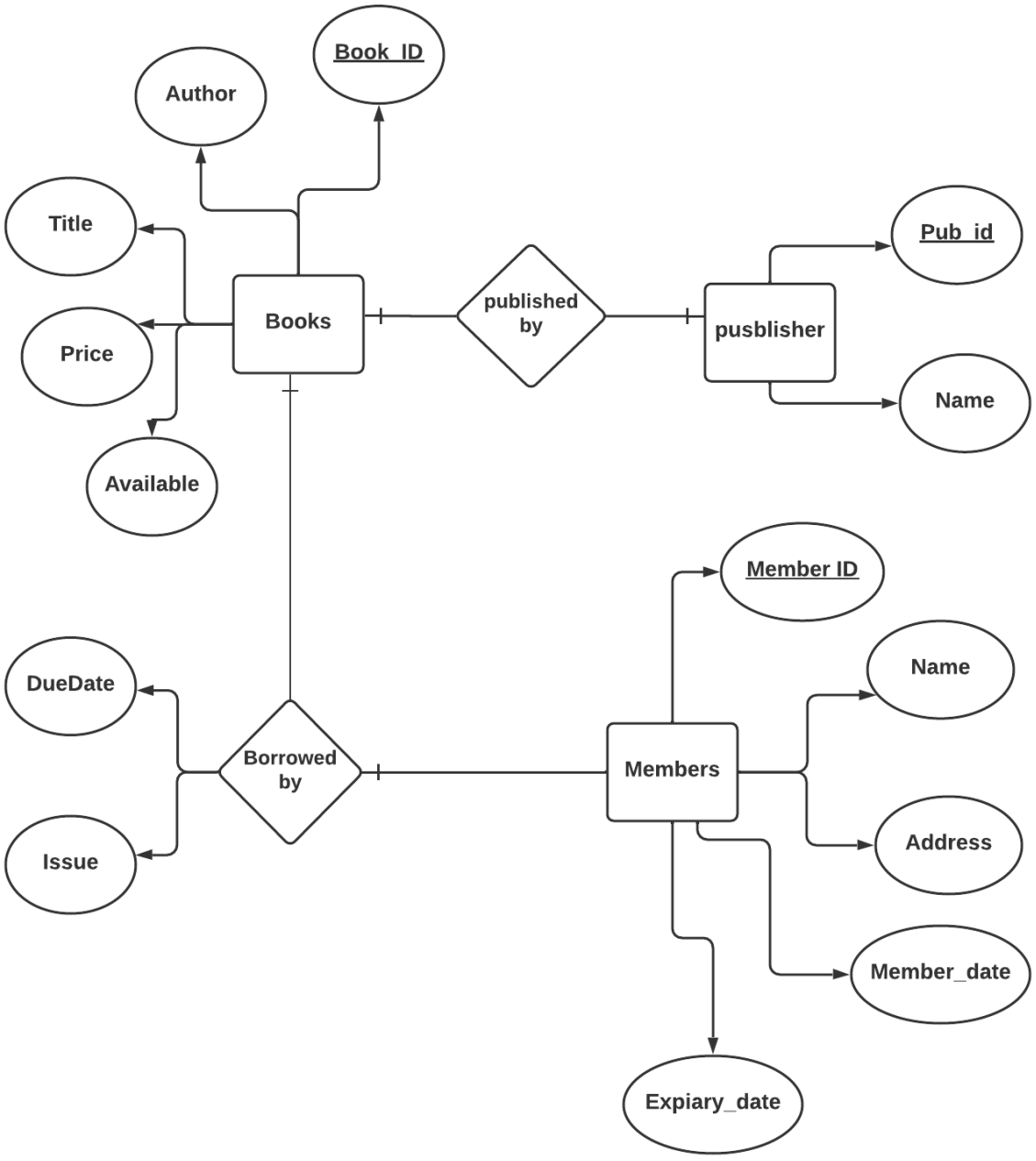
This is a broad level diagram of the project showing a basic overview. The users can be either staff or student. This System will provide a search functionality to facilitate the search of resources. This search will be based on various categories book name or the ISBN. Further the library staff personnel can add/update the resources and the resource users from the system. The clients of the framework can request

issue/restore/return of books for which they would need to follow specific standards.

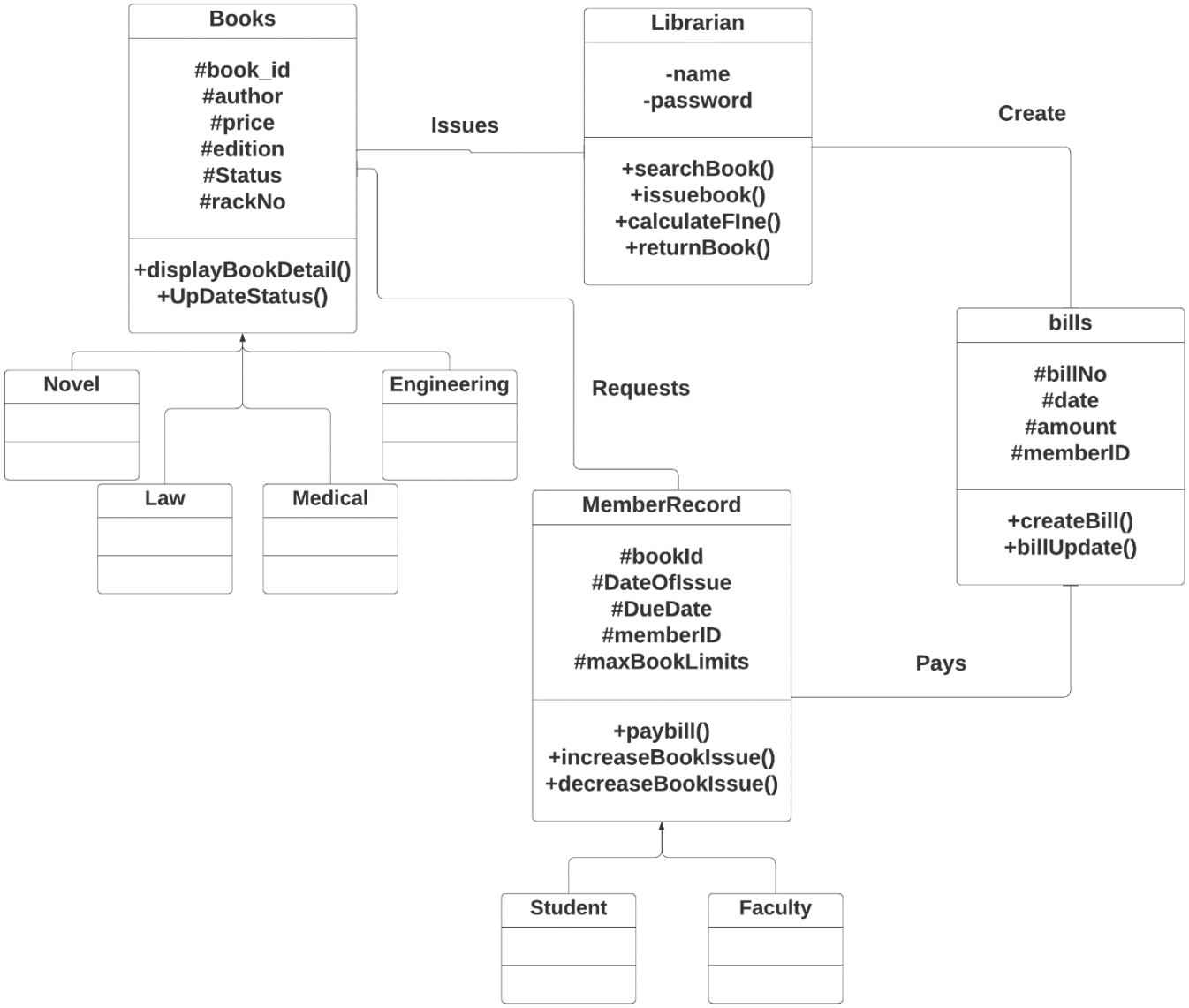
3. To perform the user's view analysis for the suggested system - Draw the use case diagram.



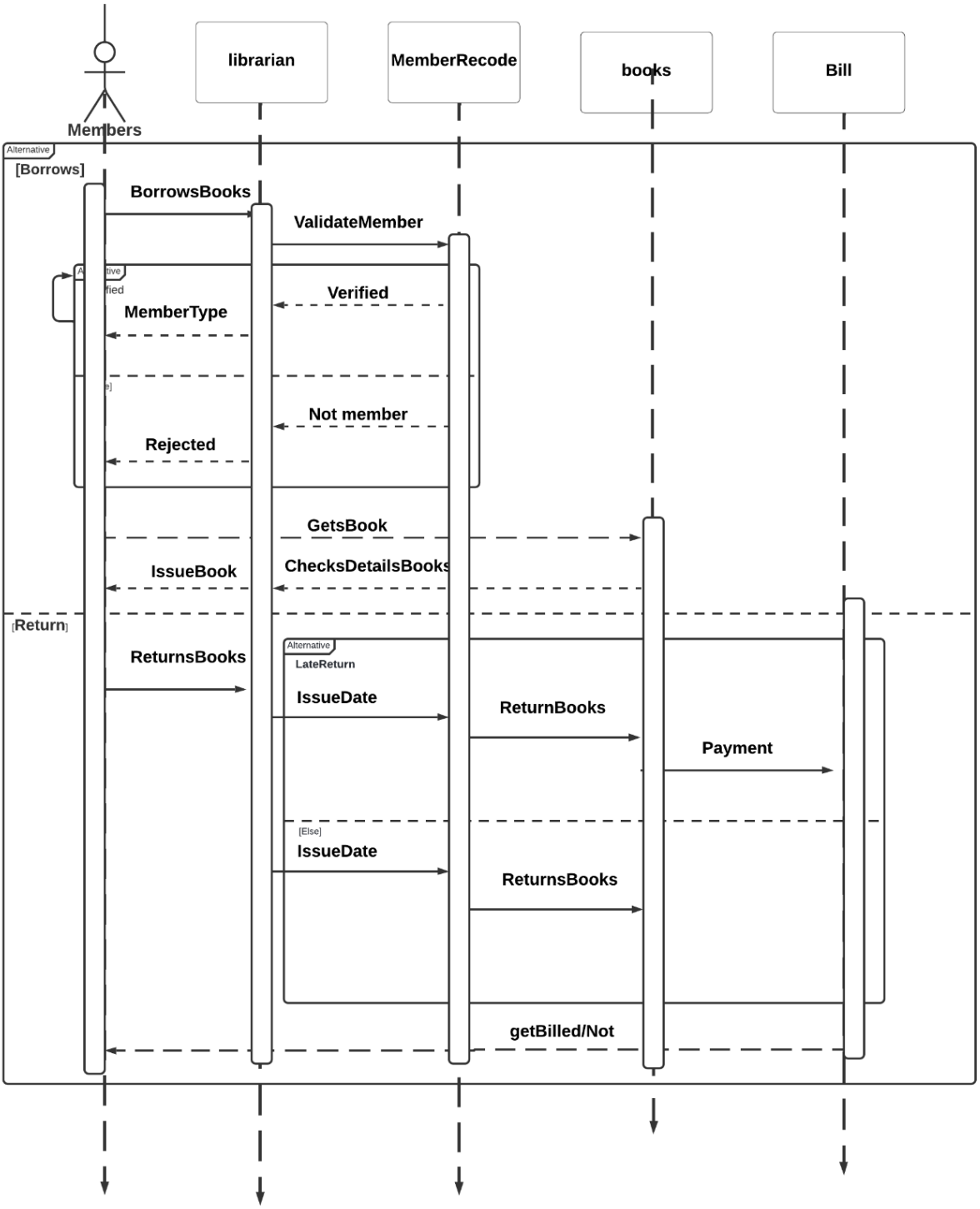
4. Design function-oriented diagram for the selected system - Draw the E-R Diagrams.



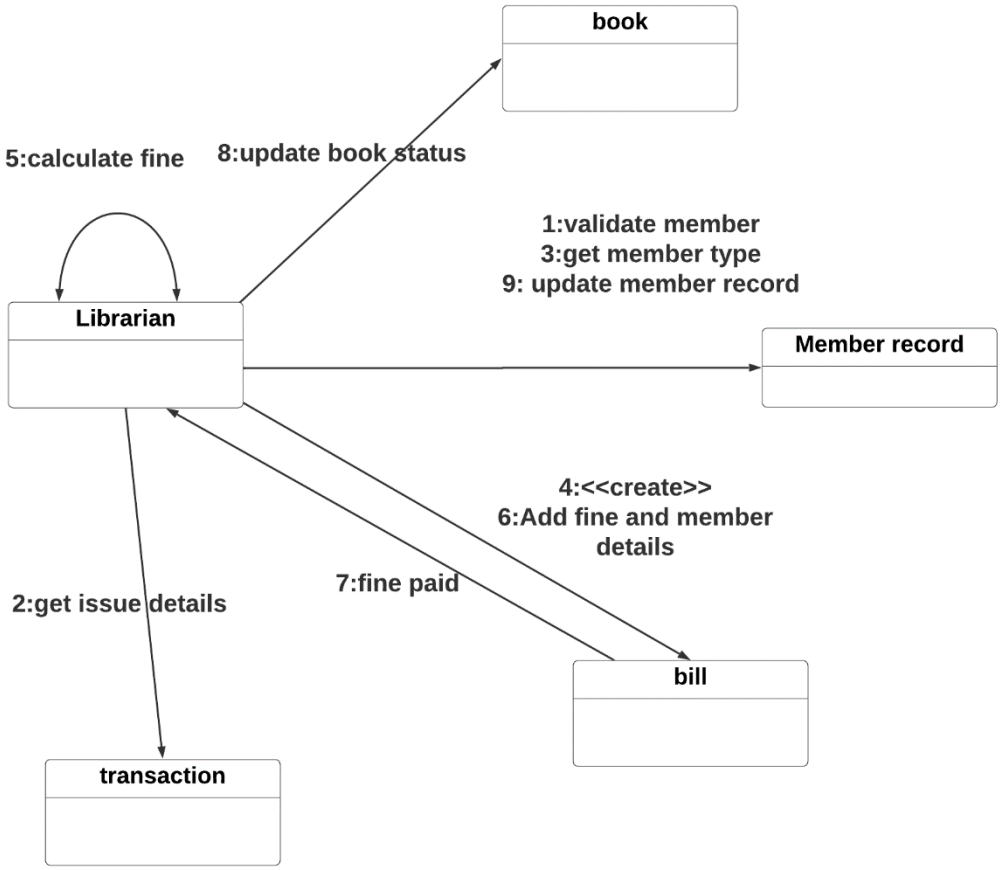
5.Design structural view diagram for the selected system.
i) class Diagram
ii) Object Diagram



6.Design the behavioral view diagram for the selected system - Interaction Diagrams
i) Sequence Diagrams

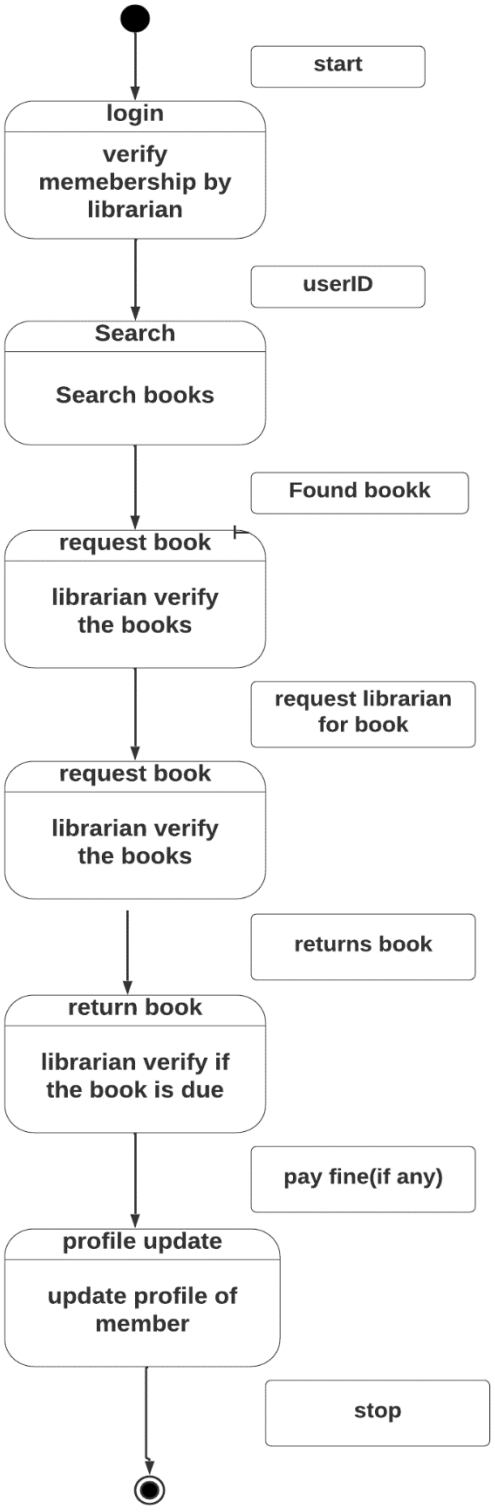


ii)Collaboration Diagram'

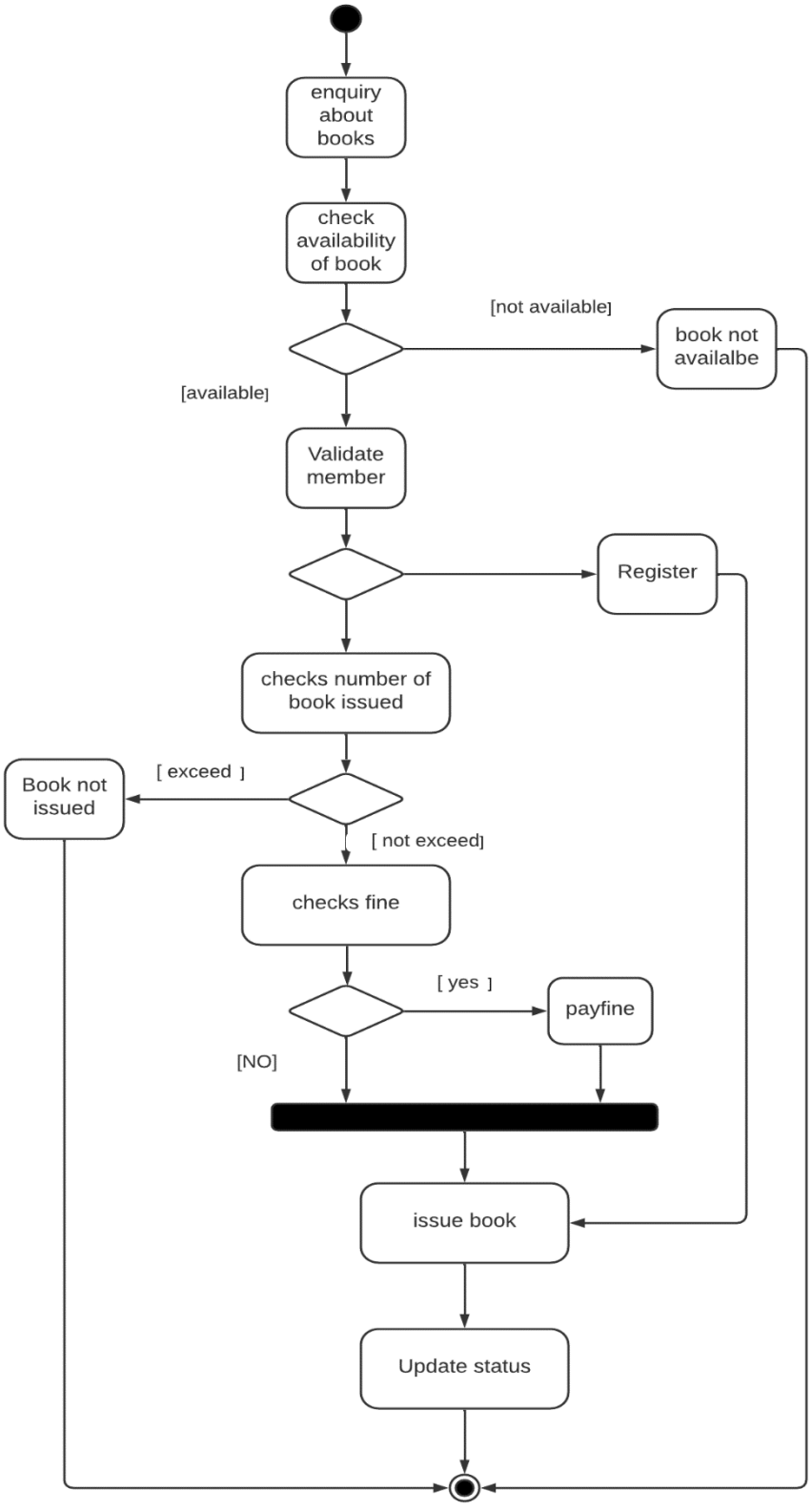


7. Design the behavioral view diagram for the selected system.

i) State–Chart Diagrams

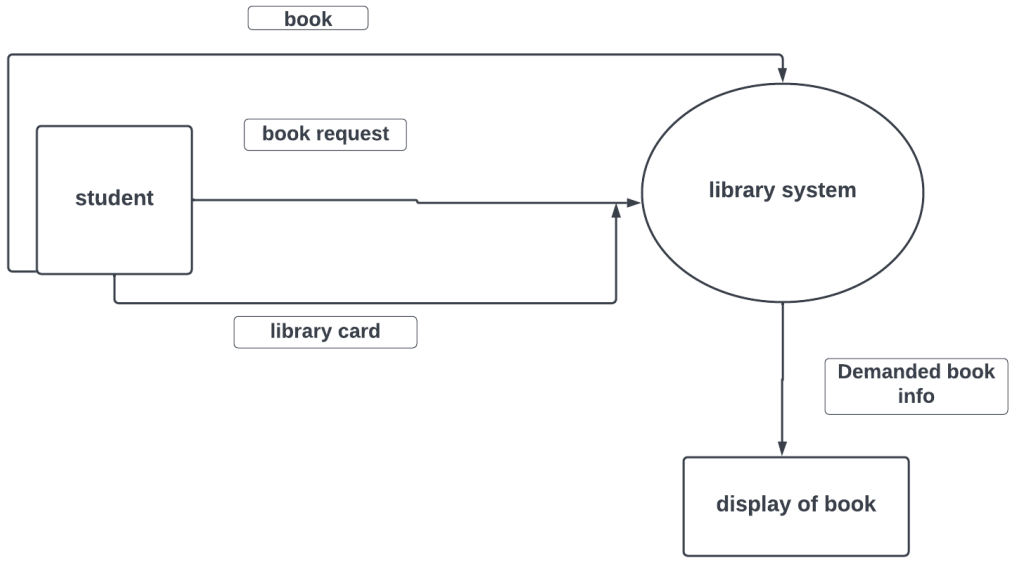


ii) Activity Diagrams

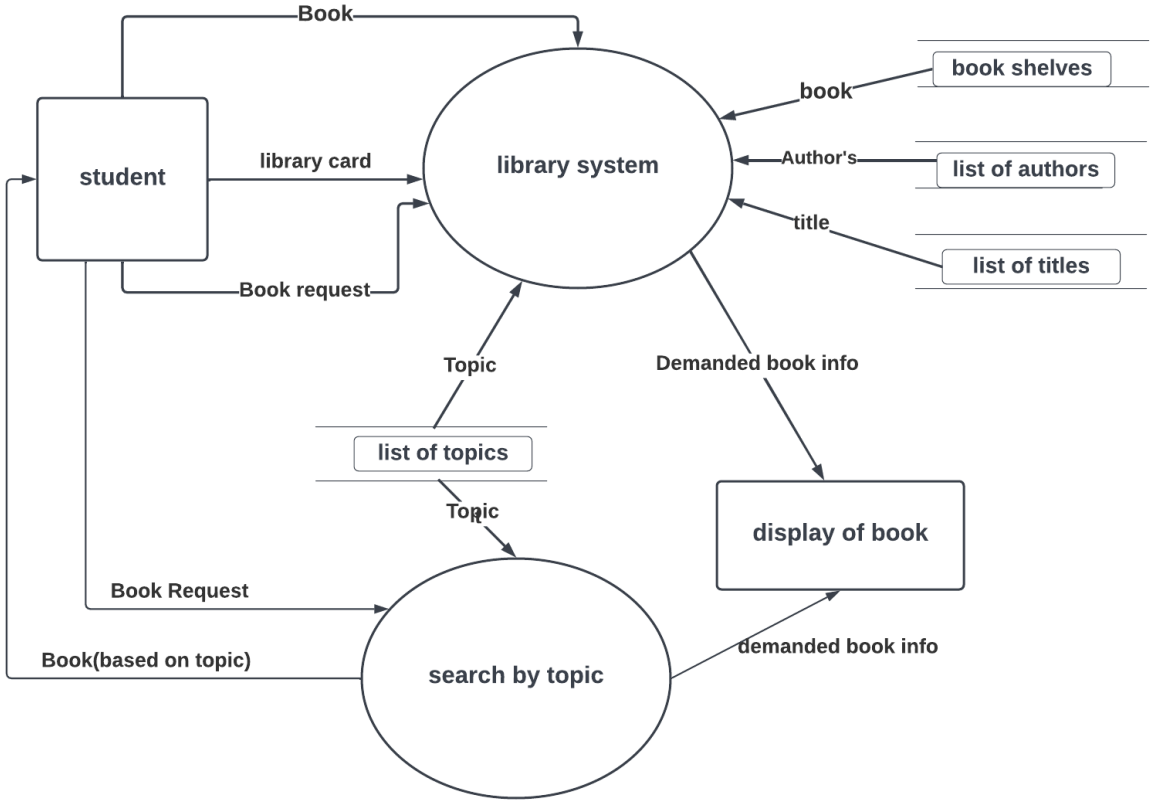


8.Develop Structured design for the DFD model for the selected system.

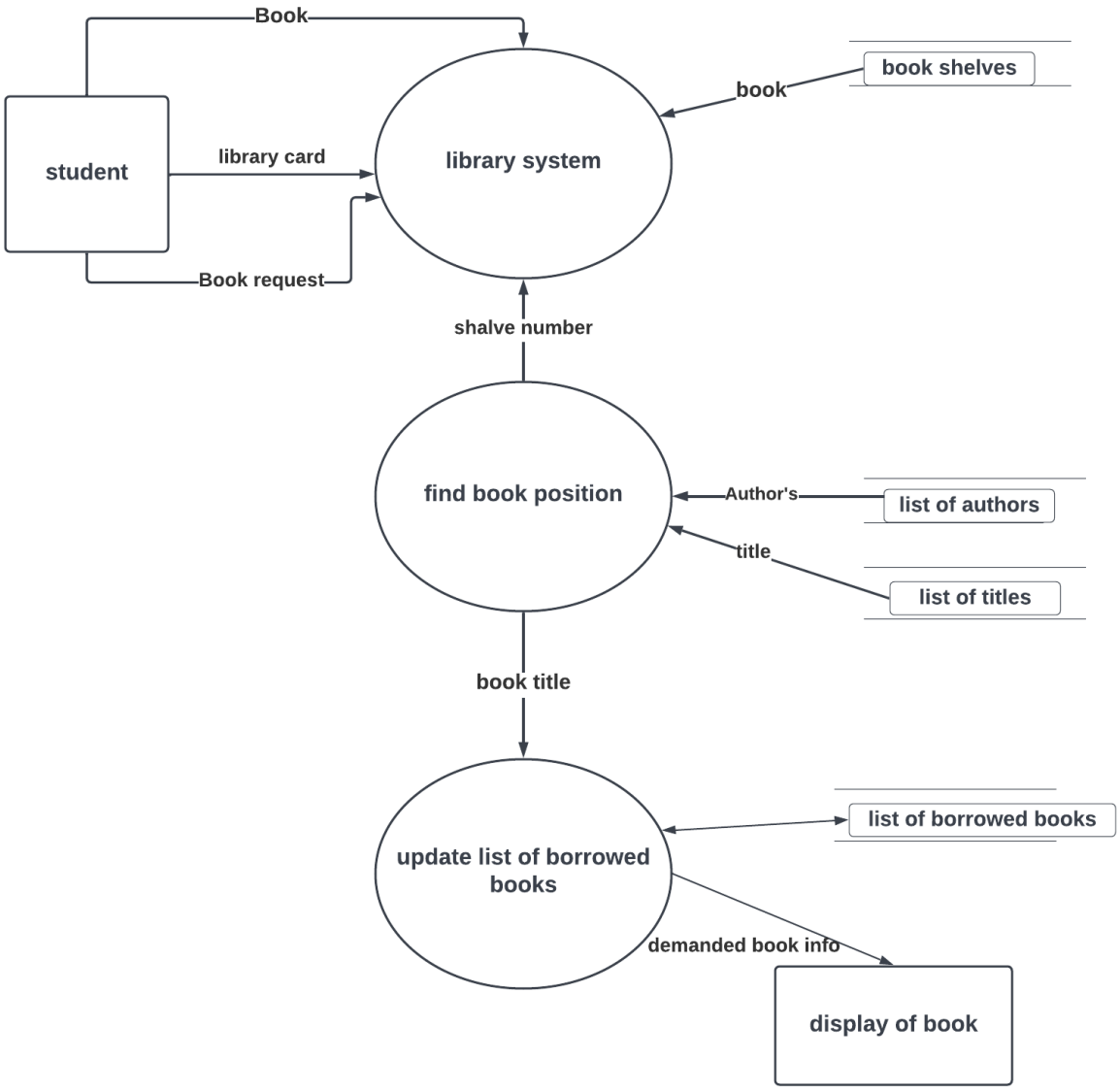
Level 0 DFD:



Level 1 DFD:



Level 2 DFD:


Book
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library card
Book request
library system
book
book shelves
shalve number
find book position
Author's
list of authors
title
list of titles
book title
update list of borrowed books
list of borrowed books
demanded book info
display of book

9. Implementation Planning and details for Selected system.
i) Implementation Environment (Single vs Multiuser, GUI vs non-GUI)
ii) Program/Modules Specification
iii) Security Features
iv) Sample Coding and Screen shots

GUI

The software provides good graphical interface for the user and the administrator can operate onthe system, performing the required task such as create, update, viewing the details of the book.

- It allows user to view quick reports like Book Issued/Returned in between particular time.
- It provides stock verification and search facility based on different criteria.
- The user interface must be customizable by the administrator
- All the modules provided with the software must fit into this graphical user interface andaccomplish to the standard defined
- The design should be simple and all the different interfaces should follow a standard template
- The user interface should be able to interact with the user management module and a partof the interface must be dedicated to the login/logout module

Login Interface:-
In case the user is not yet registered, he can enter the details and register to create his account. Once his account is created he can 'Login' which asks the user to type his username and password. If the user entered either his username or password incorrectly then an error message appears.

Search:-
The member or librarian can enter the type of book he is looking for andthe title he is interestedin,then he can search for the required book by entering the book name.

Categories View:-
Categories view shows the categories of books available and provides ability to the librarian toadd/edit or delete category from the list.

Librarian's Control Panel:-
This control panel will allow librarian to add/remove users; add, edit, or remove a resource. Andmanage lending options.

System Features

The users of the system should be provided the surety that their account is secure. This ispossible by providing:-

- User authentication and validation of members using their unique member ID
- Proper monitoring by the administrator which includes updating account status, showinga popup if the member attempts to issue number of books that exceed the limit provided by the library policy, assigning fine to members who skip the date of return
- Proper accountability which includes not allowing a member to see other member's account. Only administrator will see and manage all member accounts

10. Do Testing (choose appropriate testing strategy or techniques suitable to your system)
i) Testing Plan
ii) Testing Methods
iii) Test Cases (Purpose, required output, Expected Result)

BOOK ENTRY FORM:

SL.No	Test Case	Excepted Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database
2.	On the Click of DELETE Button	This deletes the details of book by using Accession no.
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.
4.	On the Click of SEARCH Button	Displays the Details of book for entered Accession no. Otherwise gives proper Error message.
5.	On the Click of CLEAR Button	Clears all fields

BOOK ISSUE FORM:

SL.No	Test Case	Excepted Result
1	On the click of ADD button	At first user have to fill all fields with proper data ,if the accession number book is already issued then it will giving proper msg.
2.	On the Click of DELETE Button	This deletes the details of book by using Register no.
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.
4.	On the Click of SEARCH Button	Displays the Details of issued book..Otherwise gives proper Error message.
5.	On the Click of CLEAR Button	Clears all fields
6.	On the Click of EXIT button	Exit the current book details form
7.	On the Click of NEXT button	Display the next form

6.	On the Click of EXIT button	Exit the current book details form
7.	On the Click of NEXT button	Display the next form

USER ACCOUNT FORM:

SL.No	Test Case	Excepted Result
1	On the click of ADD button	At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database
2.	On the Click of DELETE Button	This deletes the details of student by using Register no.
3.	On the Click of UPDATE Button	Modified records are Updated in database by clicking UPDATE button.
4.	On the Click of SEARCH Button	Displays the Details of book for entered Register no. Otherwise gives proper Error message.
5.	On the Click of CLEAR Button	Clears all fields
6.	On the Click of EXIT button	Exit the current book details form
7.	On the Click of NEXT button	Display the next form

11.Specify the Limitation, Future Enhancement and Conclusion for selected system.

Limitations:
Limitations of this study in this library management system is Multiple user cannot create their own account and use this technology services as it all provided by librarian.

Future Scope:
A research of this kind is envisaged across different lines of education such as Engineering, Medical, Hotel management and even schools.
2. Technology and information is continuously growing. So, a research on technology services in this field is proposed on a periodic basis to arrive at new needs and challenges.
3. Manufacturers can consolidate their market shares at a national and international level by doing market surveys for a continuous competition mapping and user needs and requirements.

Conclusion:
The impact of Information Technology (IT) is widely seen across the globe and in different types of libraries. IT has become an important part of all aspects of the library management spanning all its functions right from: library operations and administration, information resources, to research-based services etc. IT has virtually unlimited potential for variety of useful applications in libraries offering large and variety of knowledge services

12. Introduction to GIT and account creation on GIT.

Git is a popular version control system. It was created by Linus Torvalds in 2005, and has been maintained by Junio Hamano since then.

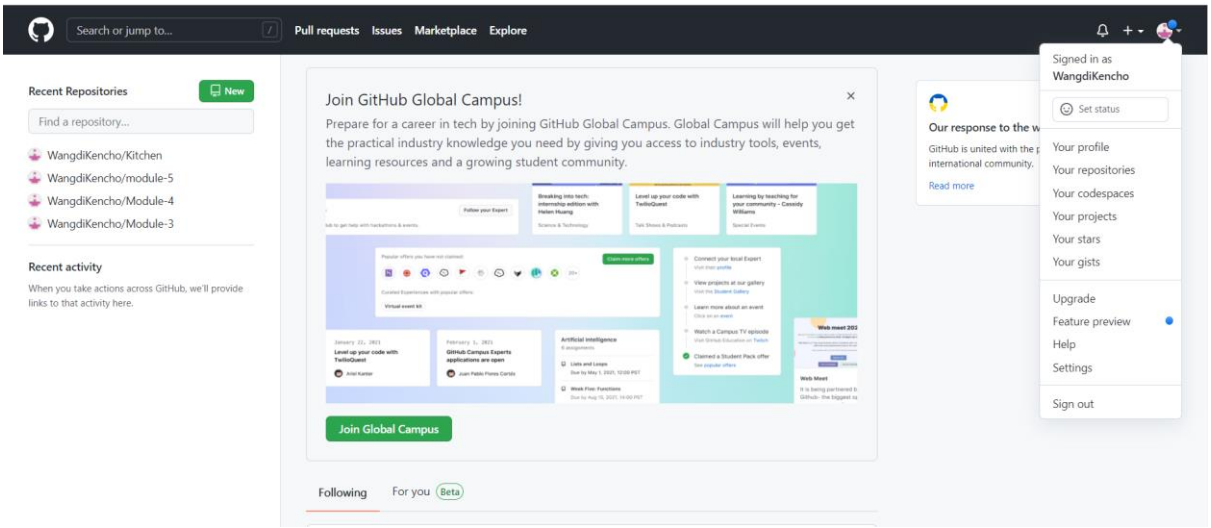
It is used for:

- Tracking code changes
- Tracking who made changes
- Coding collaboration

What does Git do?

- Manage projects with Repositories
- Clone a project to work on a local copy
- Control and track changes with Staging and Committing
- Branch and Merge to allow for work on different parts and versions of a project
- Pull the latest version of the project to a local copy
- Push local updates to the main project

Link : https://github.com/WangdiKencho/Software-engineering-lab-manual-.git



13.Introduction to Team Foundation server tool.

Team Foundation Server (often abbreviated to TFS) is a Microsoft product that provides tools and technologies designed to help teams collaborate and orchestrate their efforts to finish projects or create a product.

It enables DevOps capabilities covering the entire application lifecycle. The main elements include source code management, requirements management, project management, reporting, testing, and release management capabilities. TFS is tailored to Visual Studio and Eclipse, but is also used as a back-end in other integrated development environments. Let's take a closer look at this powerful product.

The main function of Team Foundation is to make it easier for teams to work together towards the completion of a product or project. The central theme when working in TFS is the team project.

Each project is stored on the Team Foundation Server, and this provides a central location for the team to access and coordinate their work. To help facilitate this collaboration, each team project shares a project portal that is a Windows SharePoint website. This allows the team to collective store and share documents, control document versions, and use collaborative features like lists and calendars.