TITLE: −LIBRARY MANAGEMENT SYSTEM OF WSU

Research · February 2022

CITATIONS
0

READS
4,592

1 author:

Muluneh Shiferaw
Wolkite University
4 PUBLICATIONS **0** CITATIONS

SEE PROFILE

WOLAITA SODDO UNIVERSITY

COLLAGE OF COPUTER SCIENCE AND INFORMATION THECHNOLOGY

TITLE: - LIBRARY MANAGEMENT SYSTEM OF WSU

By: Muluneh Shiferaw

Advisor Name – Tewahsom.A

Submitted to department of computer science and IT

Wolaita sodo , Ethiopia

11/ 2021 E.C

Acknowledgment

There is a saying that gratitude is a dept we owe and it is one that must be paid. We want to give our gratitude and appreciation to the following.

- Firstly to GOD almighty the giver of knowledge, for his sustenance and guidance in our life.
- It gives the great pleasure acknowledging for the support and help of our adviser Mr. Twahesom.A and for our former advisor Mr Ashenafi k.. This project would not have been released without their critical comments and encouragement through all the project process.
- We can't find words to express our deepest gratitude to the whole IT staff member and classmate for help, understanding and support.

(Group six members)

Contents pages

Abbreviation

WSU	**Wolita soddo university.**
LMS	**Library management system.**
PHP	**Hypertext per processor**
HTML	**hyper text markup language**
WAMP	**window apache mysql PHP**
Admin	**Administrator**
SRS	**software requirement specification**

Abstract

The main objective of this project is to develop a library management system that enable to reserve, borrow and return the books automated on the web. The implementation of this project is by using PHP ,MYsql and some java script code. The system that we want to develop for WSU social net is with simple graphical user interface, so that users can use and interact with the system in a simple way and user friendly manner. This project examines how system flow and work process on the library management system. It shows and solves the process of the library system and make it automated. The former work of the library is all manual and makes tedious most of the librarian and members in it all activity and its process. So we try our best to solve the above problem as much as we can. To make satisfied all the members and librarian by the work of the process and make the system secure and fast.

CHAPTER ONE

1. INTRODUCTION

Overview:

Library is regarded as the brain of any institute; many institutes understand the importance of the library to the growth of the institute and their esteem users (students). LMS support the general requirement of the library like cataloguing, circulation.

Library project system that offers many flexible and convenient features, allowing librarians and library users to maximize their efficiency and satisfaction. Library System gives the all detailed information about books and other types of magazine. It will track on how many books available in library and books issued to the students and staff. It helps to trace back most popular books among the students. It will protect book lost in library.

Features of library management system:

- It has user-friendly application interface. so that; only basic knowledge of computers is required for operation of Library Management System.
- Library Management System is User Configurable.
- It is a web based application.
- keeps track of Staff, supplier's, binder's and student record
- The users can directly feed their comment to the administrators.
- More reliable security for sensitive and confidential information.

Why you need it:

- Improved customer service through greater access to accurate information.
- Increased productivity and job satisfaction among staff members.
- More economical and safer means of storing and keeping track of information.

- Reduces errors and eliminating the ennui of long and repetitive manual processing.
- Greater accountability and transparency in operations.
- Improved efficiency and effectiveness in administration.

2. Background

Wolaita sodo university is one of the governmental higher level educational institutions in Ethiopia. currently in wolaita soddo University have more than 4 schools,6 collages above 32 different departments found and 8 under graduate class, and have two (2) campuses these are main(gendeba) campus and referral teaching hospital (Otona)campus.

The university provides many important services for all the university communities therefore; one of the most important services is library system. It store and distribute source of information such as educational books and some entertains magazine for expensive use and extension of knowledge.

Wolaita sodo university main(Gendeba) campus have 4 different libraries which are:-

1. The natural library- provides services for all students but only has natural science books.

2. Social library – provides services for all students but only has social science books.

3. New library- this library is a new building but is not differentiate for which students but as the manager said it gives services for all students.

4. Post graduate – It provide service only for post graduate students.

5. health sciences library-This is the fifth library found in health (Otona)campus. Which provide services for all health science students.

Those all libraries provide 24 hour services every day, except holiday and other special cases. Some of the facilities in the library include references books, different news papers and magazines, research and other documentations.

3. Statement of problem

Main disadvantages of the manual system vs advantage of the digital system.

- Wastage of resource like
  I. time:-as we all know time is the most essential thing for our all day to day activities so the manual system kill our time when it compare to our digital system. Cause

the user don't need to come personally instead they can access whatever they need where ever they are there only need is internet .

II. plants:- as we all know all papers are made up of woods so it cause for the global warming and the digital system doesn't need this hard copy papers this means indirectly it is saving our world.etc…

- Equipment losing during loaning and returning books:- we analyze in our observation time there is some equipment loose such as student ID means when they take books there ID is put in the library at this moment some students take another students ID. So this system will completely solve this problem because the student doesn't need to give his ID.
- It is difficult to search the books :- we all know that it is very tedious to search all books manually by using the pocket code but in the digital system the books are properly well organized and differentiate each other and also can use searching fields by entering the books code in the provide field.
- Loss of books:-in the manual system books may lose with in a different reason like stilling the books, books may order in the wrong place etc…

4. OBJECTIVES

I. General objectives

The objective of our study is to draw out and specify the basic requirements for our system and changed manual system into automated.

II. Specific Objectives

- to specify the basic requirements.
- To reduce cost and other relational things.
- to give reliable search facility for the users
- to produce efficient books for the user
- to decrease lose of resources and other additional tasks
- To make it easy for the workers.

5. Scope

Mainly our project focus on the circulation management of the library and cataloging system. After developing our project (software) it will provide the following services.:-

- The system will have large Storage Capacity books and other relative material.
- Quick search facility for the users.
- Quick transaction of booking systems.
- Make Computerization all the activities of the system, so it makes Easy to update the books and also provide all necessary services for databases such as updating and searching information
- Users can access the library databases easily by using the graphical interfaces with simple computer knowledge.

6. Significances of the project

Library is the center of getting knowledge for users. The aim of our project is producing successful and knowledgeable students and teachers. We will solve problems that take place when they use library.

The new system gives the following benefits*:*

- it will Save resources in retrieving, storing, searching, modifying and removing data
- it will Make borrowing, returning, renewing fast and efficiently
- it will register the users information carefully
- it will and renew resources

7. Methodology and tools

METHODOLOGY: is a way of gathering information through different techniques. We will use to get data in the following mechanisms.

Data collection methods

We collected the needed data or information for the project from the library workers especially from the manager.

Practical Observation

We all are the group members are library users so practically we know it.

Document Analysis

We also used (obtained) different documents of the library, such as the manually the used.

Interview

The team used open ended questionnaires by direct contact with the library manager and the workers.

We use waterfall model: -because It is very simple to understand and use. In a waterfall model, each phase must be completed fully before the next phase can begin. At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or throw away the project.

Tools : the tools that we used are parted in two. Those are the software and hardware

Software

Tools	Activities
My Sql	to record the books, the user information and the employers.
PHP	used to create pages and user forms.
Wamp server	used as a server
Microsoft office	to the documentation
Java script	to validate forms
Varied technologies	as per the technical requirement in the feature

Hardware

Processor: Intel(r) Pentium(R) 4CPU 3.20 GHz 3.20 GHz

*Installed Memory (RAM):*1.5GB

8. Cost analysis

This cost analysis is used to show items that are chargeable. The payment is covered by the whole group members. But the printing price is covered by the department.

Item name	Quantity	Unit price	Total price
Paper	One packet	80 birr	80 birr
Pen	5	5 birr	25 birr
Print	78 pages	2	250
Cd-R	3	5 birr	15 birr
			Total price 370 birr

Table -1

9. Requirement analysis: -

- ✓ We will explain the functional, non functional requirements system.
- ✓ We will explain how work the current system.
- ✓ We will identify business rule of the current system.
- ✓ We will explain phase proposed system.
- ✓ We will identify the main hard ware and software requirement of the system.

System design: -in this phase we define the system using ER and DFD diagram.

Implementation: - Write specification and implementing the designed system by coding.

Testing: - check and validating the designed system that works its function properly or not.

GANT CHART

Schedule	Person(s) Responsible	Month-1	Month-2	Month-3	Month-4	Month-5	Month-6-8	Month8-10
Requirement analysis								
System design								
implementation								
Testing								

Table -2

10. Reporting and progress measurement

We evaluate and analyze our project correctness in each phase. If mistake occur we discuses in group and share idea from other group students and ask our instructors and advisors. And our members give comment to each other.

11. CONCLUSION

So as we mention .our project will be solve a big problem in our library system and make the campus computable with other organization.

CHAPTER TWO

2.1 INTRODUCTION TO CURRENT SYSTEM (EXISTING SYSTEM)

Currently Wolaita Sodo University library provide service for different users like students, instructors and other Member of the community but Library management system in Wolaita Sodo campus is manual system for managing the various activities and services provided. Its main features of the current system are support large amount of books and members data can maintain in manual way. The basic operations on the system are like adding new books and members, searching and updating information's, deleting books and members in traditional way (i.e. paper based). It take a lot of time to get particular books and members (i.e. searching is difficult and time consuming), no proper record of data's, replication of records occur and retrieve of particular data is very slow and time consuming.

Main disadvantages of manual system are the following:

- Wastage of resource like time, human power, equipment during issuing and returning books.
- It is not reliable and efficient service for library users.
- It is difficult to search books using pockets.
- The information transaction is very late with other class of the library like store and classification.

2.2 PLAYERS IN THE EXISTING SYSTEM

The current library system has many employees that are responsible for different tasks. As a library the tasks must be dividing for each worker in their profession and educational level. But in this system except the manager the rested employees don't have separated responsibility. The tasks are dividing in to two which are circulation and check point.

Circulation: - mainly concerned on processing books like ordering, loaning, reserving books for the students, accepting the returned books and the like.

Checkpoint :- this is focused on when the user want to get in to the library hall they must be checked by looking their ID to know if they are legal users or not and when they want to out from the hall check them if they take inappropriate material or not.

Technical office: - the main job of this office is to set code for each purchased books and make stamp on them. After this process the office will convey the books to the library .

WSU library system is not worked using those job classifications. As we mentioned above the tasks are not divide for the workers rather they do their job swapping by shift.

2.3 MAJOR FUNCTION /ACTIVITIES IN THE EXISTING SYSTEM

The WSU library system has major functions or activities each activity has their own input and output. The inputs are used as a row material for the result of the activities or output.

2.3.1. Inputs in existing system: - the whole process of the current system is done by manually. The inputs in the system are the following

-Loan and return: - Teachers ID

- Teachers pocket

- Books circulation: - both teachers and students ID

2.3.2. Process of the existing system: - this process is starts from purchasing books. First the library manger sends letter of application to book store in order to get necessary books. Then the book store asks to finance and if it get acceptance the books are purchased and convey it to the book store. When the book store accepts new books registered them manually and give to the library technical office. The technical offices accepted the new books and stamp on them and give a code number. After all those processes are ended the library accepts the books and shelved them properly.

2.3.3. Output in the existing system: - the only output in library management system is the necessary books which are asked by the teachers and the students.

2.4 BUSINESS RULES

There are two rules in library management system as follows

Rule of circulation:-

-One student can only use one book with their ID.

-the students can use the book for one hour only.

- when the students caught doing forbidden things like writing on the book, tearing pages and trying to still the books they will accept the available punishment.

N.B this rule is available for students which are used the books only in the library hole.

Rule of loan and return:-

-First the teachers must be takes a pockets from the library. Five pockets will give.

-One pocket is only for one book which means they can take up to five books.

- The maximum day to return the books is 15 days. Otherwise they will punish 0.25 cents per day.

N.B this rule is only available for teachers and assistants cause student cant loan in the current library rule.

2.5. REPORT GENERATED IN EXISTING SYSTEM

The library management system reports concerned on the following reason

- Reports on damaged books:- which is used To fix the books or replace them with similar new books
- Reports on the new arrival books:-used to give information for the users.
- Reports to know how many students are use the library within a day by making a tally.
- Report for the manger used to indentify the students fault with attaching there ID to give the appropriate punishment.

2.6. FORMS AND OTHER DOCUMENTS OF THE EXISTING THE SYSTEM

There are different forms for both circulation and loaning.

Form for circulation: - the name of the form is reserve book slip it is used to reserve the books for the students. It looks like

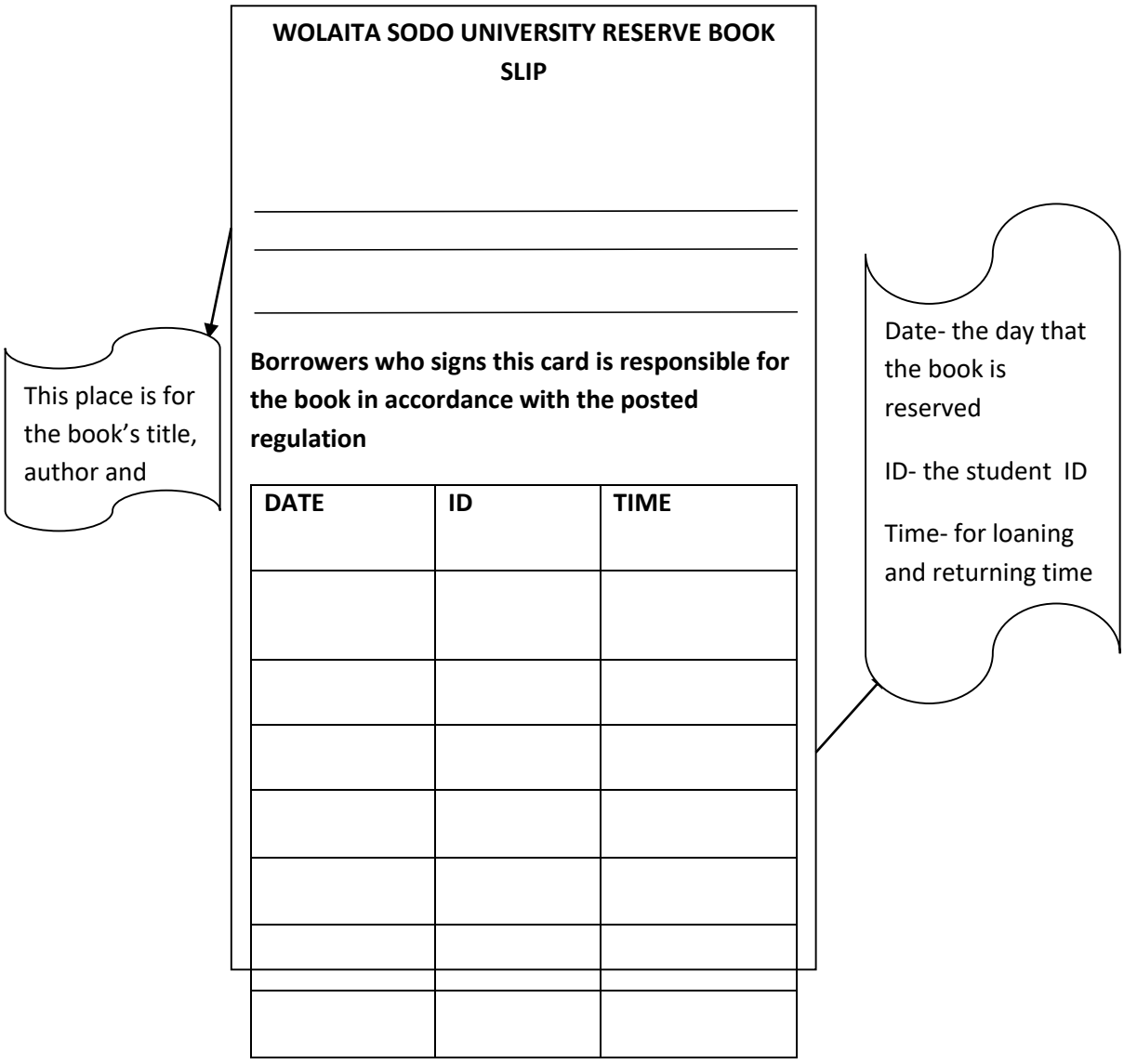

WOLAITA SODO UNIVERSITY RESERVE BOOK SLIP
Borrowers who signs this card is responsible for the book in accordance with the posted regulation
DATE
ID
TIME
This place is for the book's title, author and
Date- the day that the book is reserved
ID- the student ID
Time- for loaning and returning time

Figure 1

Form for book store borrower: - this form is for health science and law students which is available books for one semester. Example for health science students

Wolaita Sodo University Book Store Borrower For Text book Format

Name----------

Department----------

ID----------

Signature----------

S.N	Book title	Author	Code no	remark
1	Reproductive health			
2	Health economics			
3	Health ethics			
4	pharmacology			
5	Clinical laboratory			
6	Health ed			

Name: name of the student

Department: department of the student

ID: id of the student

Author: the author of the book

Code no: code no of the book

Remark:

Figu

Form for loaning: this form is used for teacher for loaning of books.

First of all the teacher must fulfill the membership card form for getting the pocket.

And the membership card look like as follow:

WSU Library membership Card Form

Name---------- ID----------

Dept/unit---------- year----------

Facility member ☐ student ☐ staff ☐

Telephone office----------

I agree to abide by the rules and regulations of wsu library I have received----------

Book pocket

Date---------- signed----------

Serial no----------

Figure 3

When the teacher fill the above form he (she) has the right to get the pocket. This pocket is used to hold the book card. The outer surface is looks like this

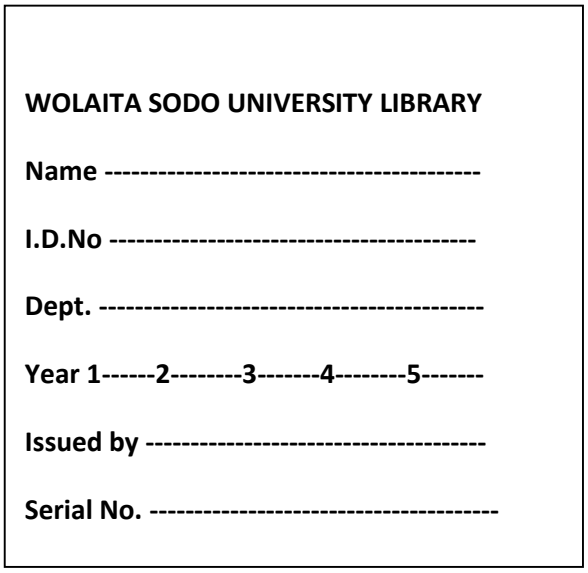


Figure 4

The book card is a card which used to put the whole information of the book which is author, accession number, cod, title and edition including the due date.

2.7 BOTTLENECKS OF THE EXISTING SYSTEM

This library management as a manual system it has many bottlenecks the first and the main bottleneck as they told us is there is no division of work between every employee and student have not pockets that means they can't loan books .but our new system will eliminate all the bottleneck.

2.7.1 Performance (response time):- as a manual system it takes time to do every single thing like searching books from a shelf, recording the user's name,

2.7.2 Input/output bottlenecks – as we try to explain above the main inputs of the existing system are the students ID and the whole information about the teachers. This is recorded method is manually it is very tedious and there is wastage of material like paper, pens …

2.7.3 Security:-as we noticed it is manual system so there is no security or guarantee too not loss or damage of the books. The only security they have is locking the library hole. But it may damage by fire or other accidents.

2.8 PROPOSED SOLUTION

2.8.1 Introduction for proposed system

Our Proposed system is an automated Library Management System. Through our software user can add members, add books, search members, search books, update information, borrow and return books in quick time. System has User friendly interface, Fast access to database, less error, More Storage Capacity, Search facility, Quick transaction.

- The system will store large volume of books and student data.
- It will include a book reservation mechanism
- Student can also search the book whereby the searching is using book title or ISBN no.
- Addition procedure:-new arrivals of the books are appended to the books database.
- Deletion procedure:-deletion of the book from the database in the case where the book has been lost or permanently damaged,
- Book return procedure:-student is required to return a book within the due date otherwise it has to pay the fine.

All the manual difficulties in managing the Library have been solved by implementing computerization.

Overview of proposed system

The project titled Library Management System is Library management software for monitoring and controlling the transactions in a library .The project "Library Management System" is developed in PHP and other programming language which mainly focuses on basic operations in a library like adding new member, new books, and updating new information, searching and deleting books and members and facility to borrow and return books.

"Library Management System" is a windows application written for 32-bit Windows operating systems, designed to help users maintain and organize library. Our software is easy to use for both beginners and advanced users. 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.

2.9 REQUIREMENTS OF THE PROPOSED SYSTEM

2.9.1 Functional requirements

Functional requirements are the intended behaviors of the system. This behavior may be expressed as services, tasks or functions that the system is required to perform.

Since we are going to develop automated library system that used by the librarian and other users, the system will be used to manage and process data according to the rule & regulations of the library. It will also provide report generation facilities to the library workers and users that used to decision making purpose. The automating system will have the following functionalities.

- The system provide loaning book, Return book, online reservation.
- Generate reports of the member's details.
- Allow a search of books.
- The system provides add new books, update and delete books from the library database, and check availability of books.
- The system provide librarian to add members, delete members from library database. Make an account for authorized Guests when the library gets message from concerned body

- The systems allow getting information about his/her status after authorization procedure.

Performance Requirements

Some Performance requirements identified is listed below:

- The database shall be able to accommodate a minimum of 5,000records of users and books.
- The software shall support use of multiple users at a time.
- The user must have basic computer knowledge.

There may be other specific performance requirements that will affect development but the basics are the above.

Process requirement

Delivery Requirements

Usually these requirements are constraints in the delivery process, our system constraint that dictates the system should be finished by minimums of 9 up to 10 month.

Implementation Requirements

These requirements comprise all the constraints with regard of the implementation process. It has two divisions:

Hardware Requirements, it involves the requirements the system should fulfill according the hardware that will be used the system should work correctly when installed on machines with a minimum of 32 bit processors.

Software Requirements, to develop the system, we use the PHP and SQL Server.

Input/output requirement

- Data entry:

This is the functionality that data is entered to the systems. The system have different interface that can be used to perform different tasks and used to manage data entry mechanisms on the library.

- Login: to identify the authorized person to use the system
- Data update: needs to update data ,register new books, delete books from the system when it is necessary
- Inquiry Member shipping: needs to make a member of the library
- Search information: needs when the user wants to search specific book.
- Request for book issue: it uses for the user to ask directly to the needed books.

- Data processing

The system on input data will provide the following data processing:

- New book registration
- Books updating(delete ,add, update with the latest version)

Storage requirement

This requirement is concerned on storing data in to the system. The stored data are like book, student information, teacher information and library staff members. And also the updating, add new inputs and deleting is controlled by the system admin.

2.9.2 Non functional requirements

Performance

The system should work properly with its storage capacity, accuracy, speed and the likes. But its performance may be affected by connection lose, electric power problem (It has less power consumption when it compare to its work.

User Interface

This user interface is user friendly for both technical and non technical. Its application will be accessed through a Browser Interface. The software would be fully compatible with all type of browser like Microsoft Internet Explorer and Mozilla Firefox. No user would be able to access any part of the application without logging in to the system.

Security Requirements

In order to make the system safe from an authorized access and modification, the system uses a log in account to differentiate among the different users of the system on the organization side. This enables the system to verify who has logged in using the correct logging account provided and display the right form associated with that user.

The technologies that the system is going to be built on gives a robust security handling and user authentication facilities. Access is controlled through proper password verification facilities which the database and the server require. The security service provided by the system will maintain the security, confidentiality and integrity of the system. Users will have their own

password and username through which they could gain access. Security is addressed using proper authentication. Generally this system introduces a proper authentication and accountability through proper authentication requirement to that aspect.

Authorization is the mechanism by which a system determines what level of access particular authenticated user should have to secure resources controlled by the system.

The proposed system provides authorization facilities and finding the authorized person to perform on it, i.e. for the actors of the system there is a password and user name to do their task according to their privilege that is given.

Backup and recovery requirement

For our project physical backup we use full backup method. full backup is exactly means it is a full copy of your entire data set .although full backup is arguable provide the best protection, most organizations only use them on a periodic basis because they are time consuming and often require a large number of tapes or disk.

For our SQL and other code we use logical backups. Logical backup save information represented as logical data base structure and also this back up done by querying the MYSQL server to obtain data base structure and content information.

CHAPTER THREE

3. System analysis

3.1 Introduction

Systems analysis is a process of collecting factual data, understand the processes involved, identifying problems and recommending feasible suggestions for improving the system functioning. This involves studying the business processes, gathering operational data, understand the information flow, finding out bottlenecks and evolving solutions for overcoming the weaknesses of the system so as to achieve the organizational goals. System Analysis also includes sub-dividing of complex process involving the entire system, identification of data store and manual processes.

The major objectives of systems analysis are to find answers for each business process: What is being done How is it being done, who is doing it, When is he doing it, Why is it being done and How can it be improved? It is more of a thinking process and involves the creative skills of the System Analyst. It attempts to give birth to a new efficient system that satisfies the current needs of the user and has scope for future growth within the organizational constraints. The result of this process is a logical system design. Systems analysis is an iterative process that continues until a preferred and acceptable solution emerges.

3.2 System requirement specification

3.2.1 Use case model

A use case diagram:- is a simplest representation of a user's interaction with the system and depicting the specifications of a use case. A use case diagram can portray the different types of users of a system and the various ways that they interact with the system. This type of diagram is typically used in conjunction with the textual use case and will often be accompanied by other types of diagrams as well. The set of all use cases specifying the complete functionality of the system and its environment.

Use case: - A use case is initiated by an actor that represents a complete flow of events. It is an abstraction of possible coherent scenarios.

- Register new books
- Login
- Return books
- Delete books
- Search book
- Reserve for book issue
- Maintain book records

Use case diagram

Use case diagram comprises of use cases and actors such that there would be various kinds of relationships among the use cases and the actors. A use case diagram shows all the actions that a particular actor needs to perform throughout the system at every and any point of time. There would be only one use case diagram per each system.

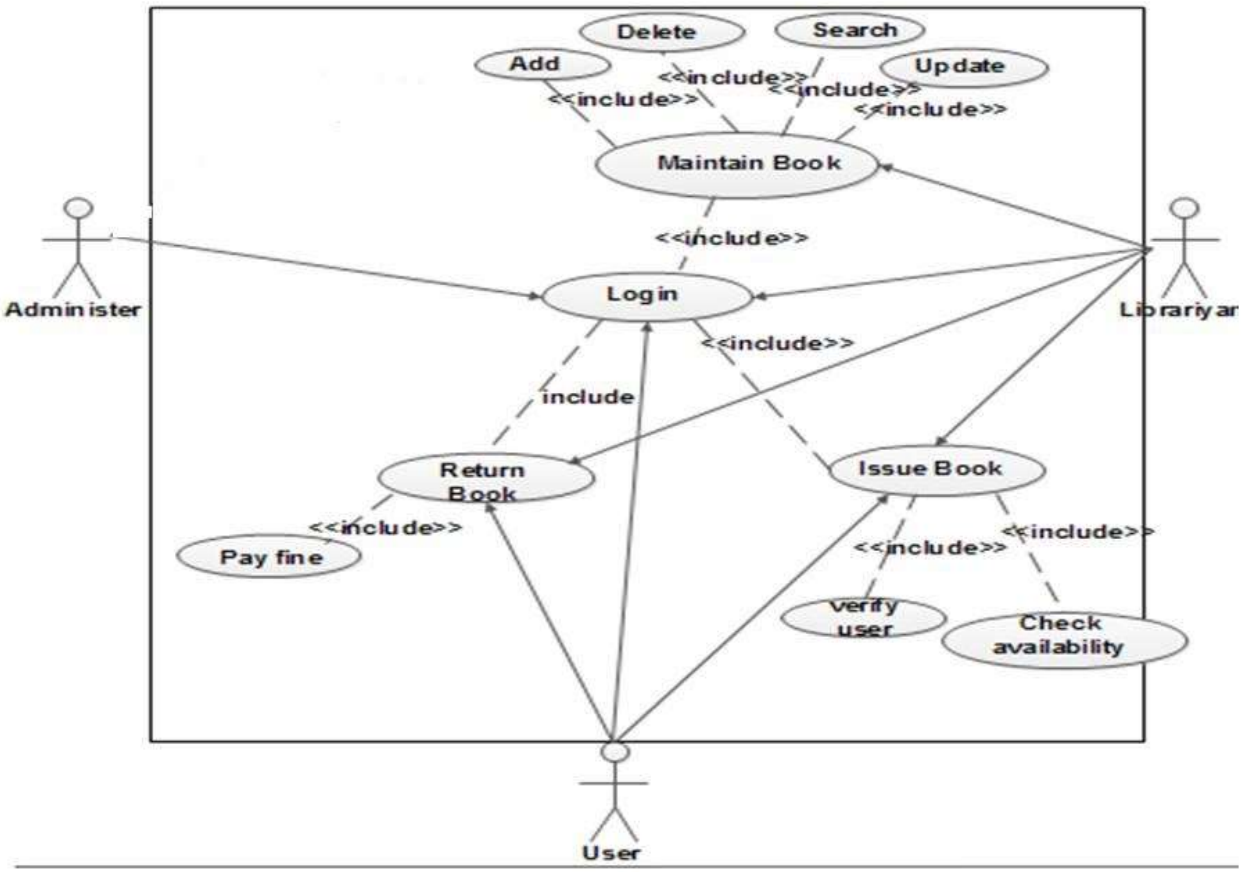

Delete
Search
Add
Update
<<include>>
<<include>>
<<include>>
<<include>>
Maintain Book
<<include>>
Administer
Login
Librariyar
<<include>>
include
Return Book
Issue Book
<<include>>
Pay fine
<<include>>
<<include>>
verify user
Check availability
User

Figure 5

3.2.2 Case documentation

Use case1

Use case name: register new book.
Participant actor: librarian.
Entry condition: the new books register at the beginning it enters in to the library.
Flow event: the circulation expert register in the prepared form and then click add button to register.

Use case 2:

Use case name: log in
Participant actor: all users, librarians and admin..
Entry condition: user enters the correct user name and password and then click log in button if he/she enter the wrong user name or password it display an error message box.
Flow event: after log in he/she get the menu interfaces and select required form.

Use case 3

Use case name: request for book loan.
Participant actor: the librarian and user
Flow event: the library membership register on the loaning form and then they take according to the library rule.

Use case 4

Use case name: return book-

Participant actor: the librarian

Entry condition: the user who loan a book return the book he/she taken and check the system due date, issue date and return date after checking and the book taken by the librarian

Flow event: the librarian after checking the required activities on the return book form return button click to delete users and returned book form.

Use case 5

Use case name: delete book

Participant actor: librarian

Entry condition: if unnecessarily books, items, and lost books delete from the database record

Flow event: delete the books by taking the ISBN no or book title and the click remove button

Entry condition: generate the reports of the library activities according to their availability

Use case 6

Use case name: Search book and users

Participant actor: librarians or users

Entry condition: users search the books by ISBN no and Book title, and also users by user id and first name of user respectively

Flow event: you see the results either present or not the book or user entered for search.

Use case7

Use case name: maintain book records

Participant actors: librarian

Entry condition: when they get new information about the books then they do operation like adding, update, remove the books and arrange them orderly.

Flow event: select the books and click the maintain button that does this operation.

Use case 8

Use case name: manage and control library system

Participant actor: library manager

Entry condition: the manager mange the whole activity of the library system

Actors:are any entity that provide insppiration for the system such entity include users and other systems.

In our system the following actors participate.

Librarian: To check the loan and return books ,and give an access to the user in the library hole and also to maintain and update the records and also to supply the needs of the user's. he/she will perform register new books, provide book records like update books, and remove books, generate report, add new members.

Users:-any person that obtain service from library. For instance students, instructors, staffs administrators. They will perform the following activities request for book loaning, return books, search books.

Library manager:-managing all the library activities.

3.2.3Sequence diagram

Sequence diagram:-This diagram, as the name suggests, contains the sequence of flow of actions that are processed through a system and the life lines of the entities, when and how are they accessed. It also contains the security features like which entity can process which entity and which one is visible, etc. There can be many number of sequence diagrams per each activity being done.

Sequence diagram of book loan

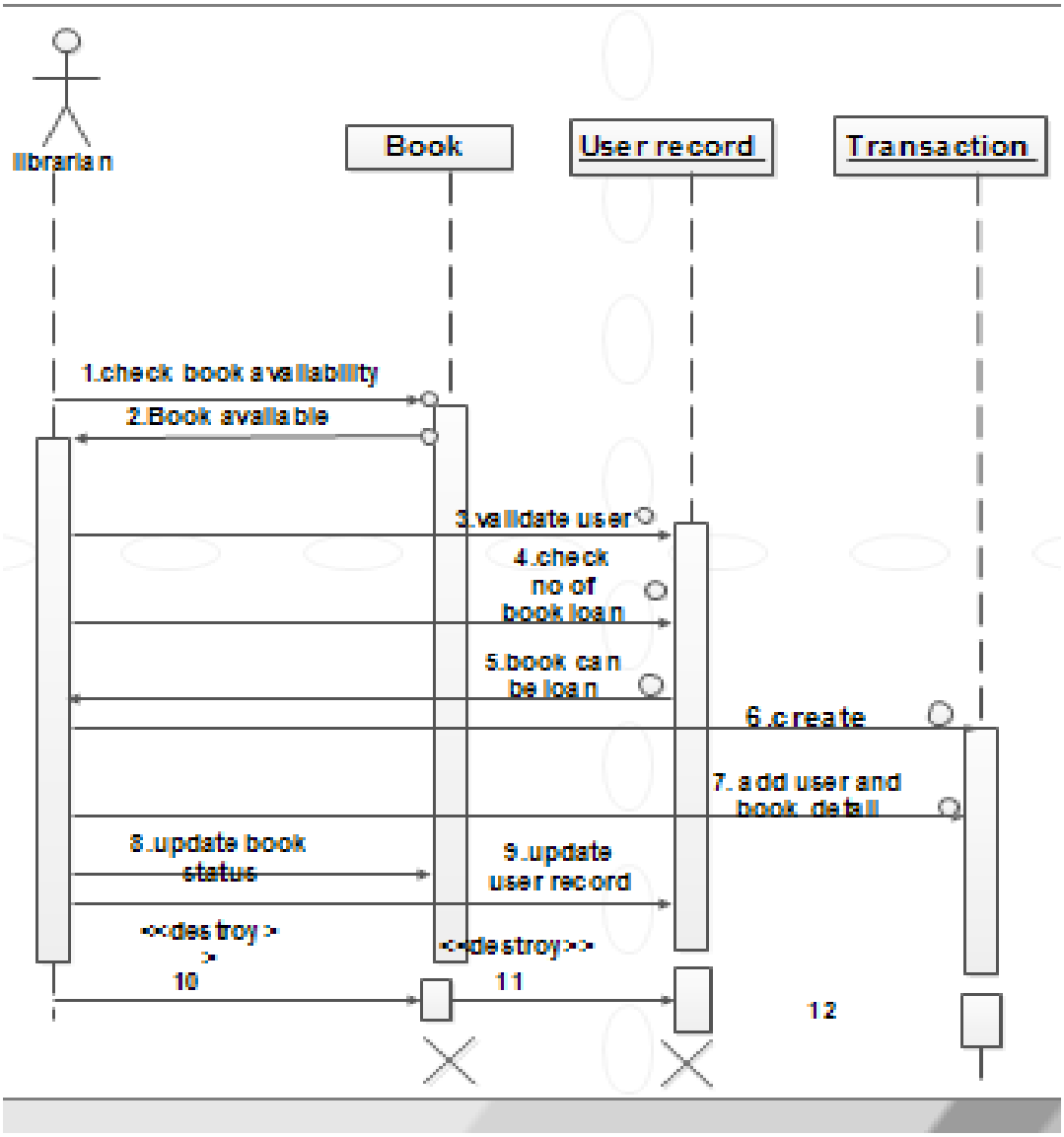


Figure 6

Sequence diagram for book returning

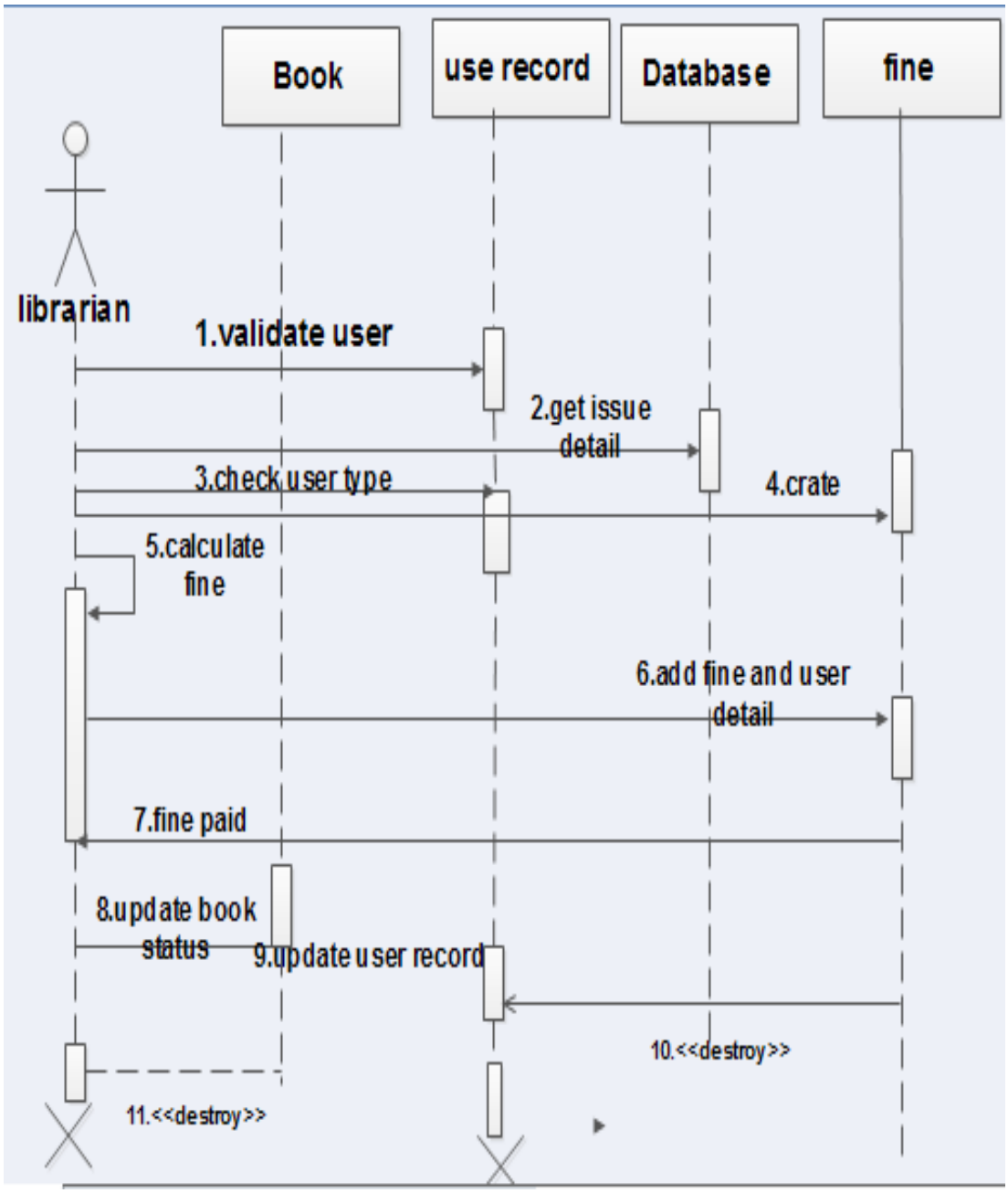

Book
use record
Database
fine
librarian
1.validate user
2.get issue detail
3.check user type
4.crate
5.calculate fine
6.add fine and user detail
7.fine paid
8.update book status
9.update user record
10.<<destroy>>
11.<<destroy>>

Figure 7

Sequence diagram of maintain book record

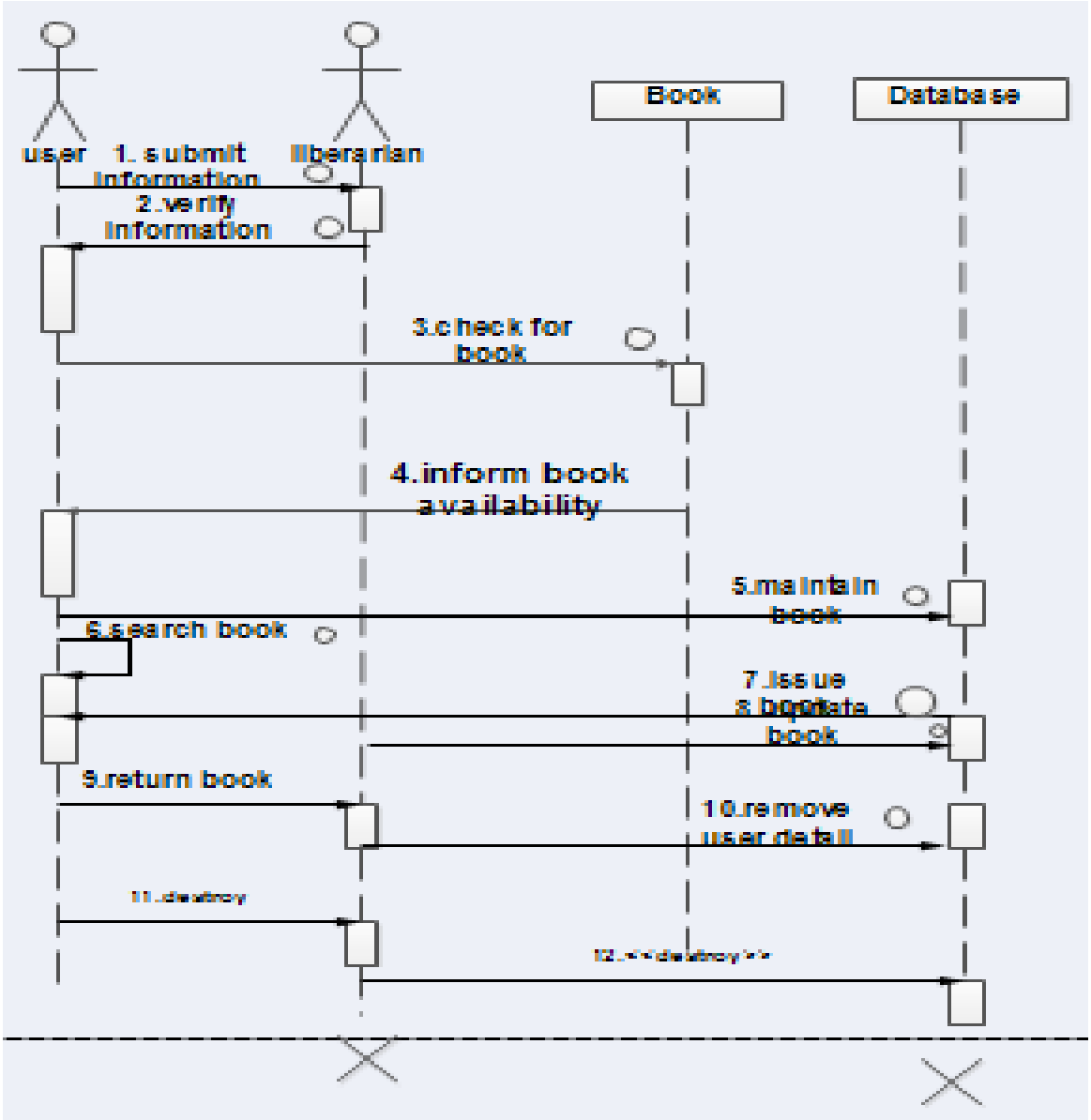


Figure 8

Squence diagram for login

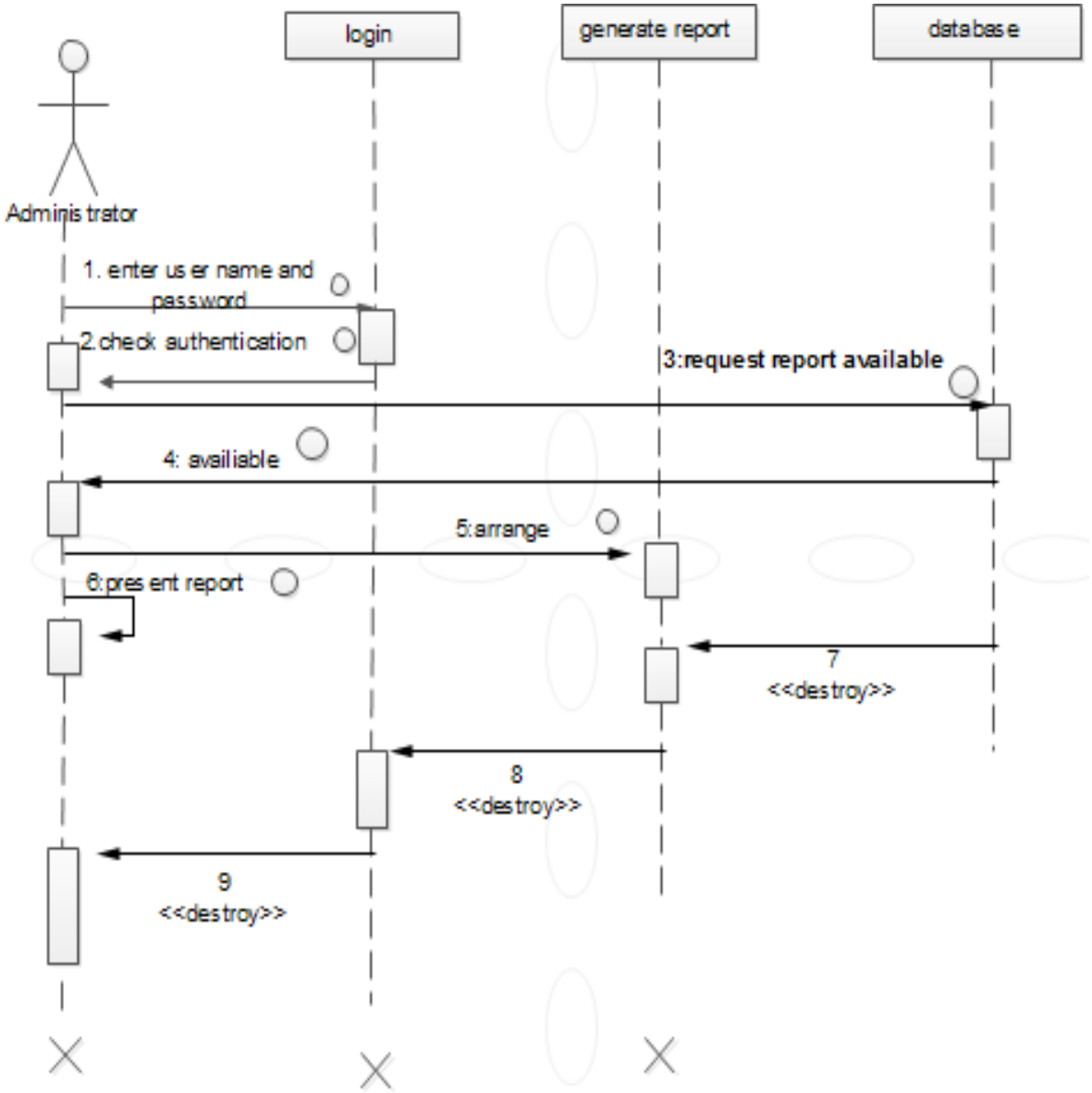


Figure 9

3.2.4 Activity diagram

This diagram denotes the structural flow of the activities in the form of flow chart with decision boxes enhanced and hence is also used for troubleshooting like raising exceptions when a particular action is done and the alternative to be done when something abnormal is done. There can be only one activity diagram for the entire system including all the activities that a system can perform.

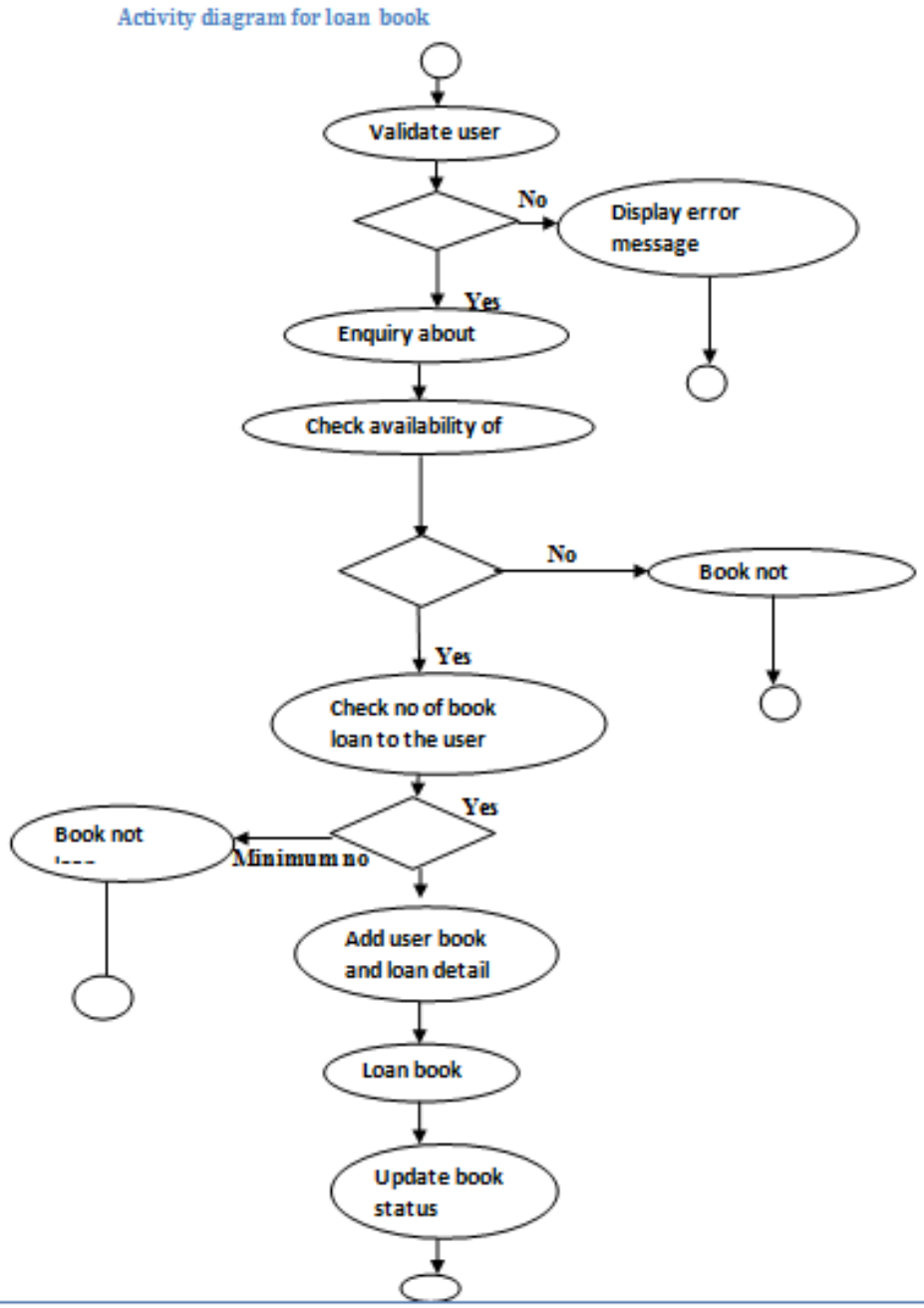


Figure 10

Activity diagram for return book

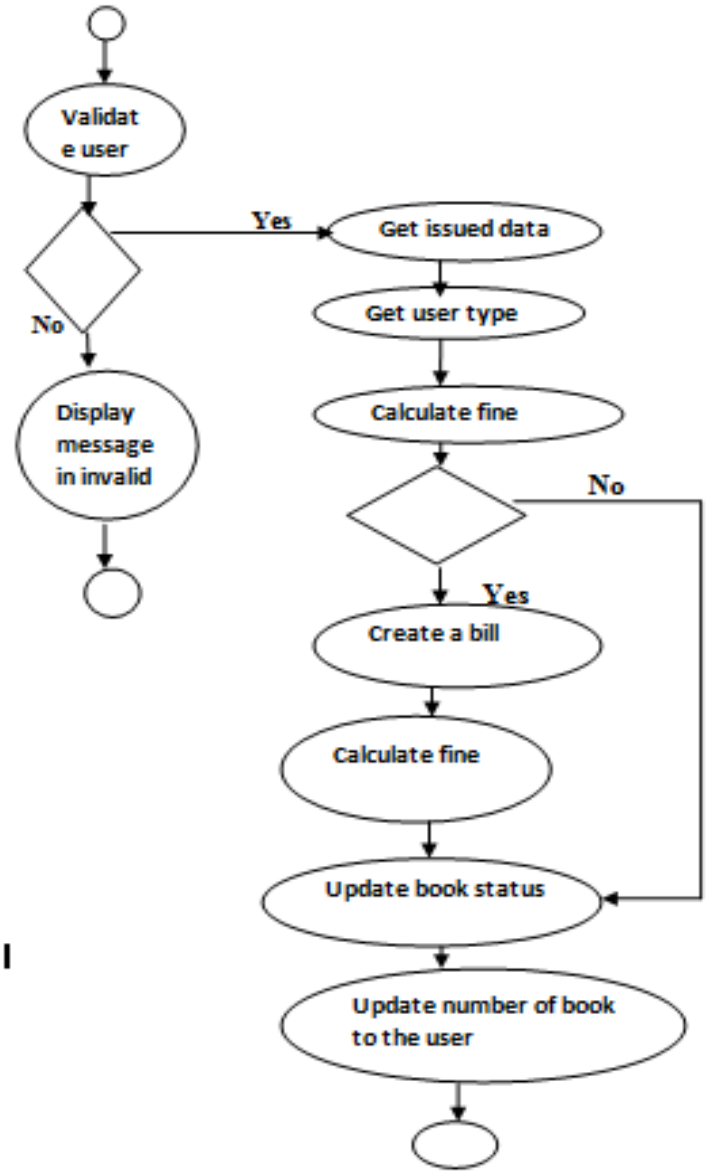


Figure 11

2.2.5 Class diagram

These diagrams show the behavioral pattern of the proposed system, i.e. how each and every class is inter-related to one another. Every relationship exists among each of the classes. There would be only one class diagram possible for a single system. Class diagrams of one sub system can be linked to the class diagrams of another sub system.

Some description about the class diagram of the system:-

Administrator:-control all the transaction those transactions are created by the librarian to reduce error in case.

Librarian:-crate the transaction of loaning and returning process, prepare the punishment form to make punish the user which delays the promising time on the loaning process. And also the librarian can use all the books as a user.

User:-can make request for loan books by fulfilling the form and also they will pay the penalty if they delay from the promising time.

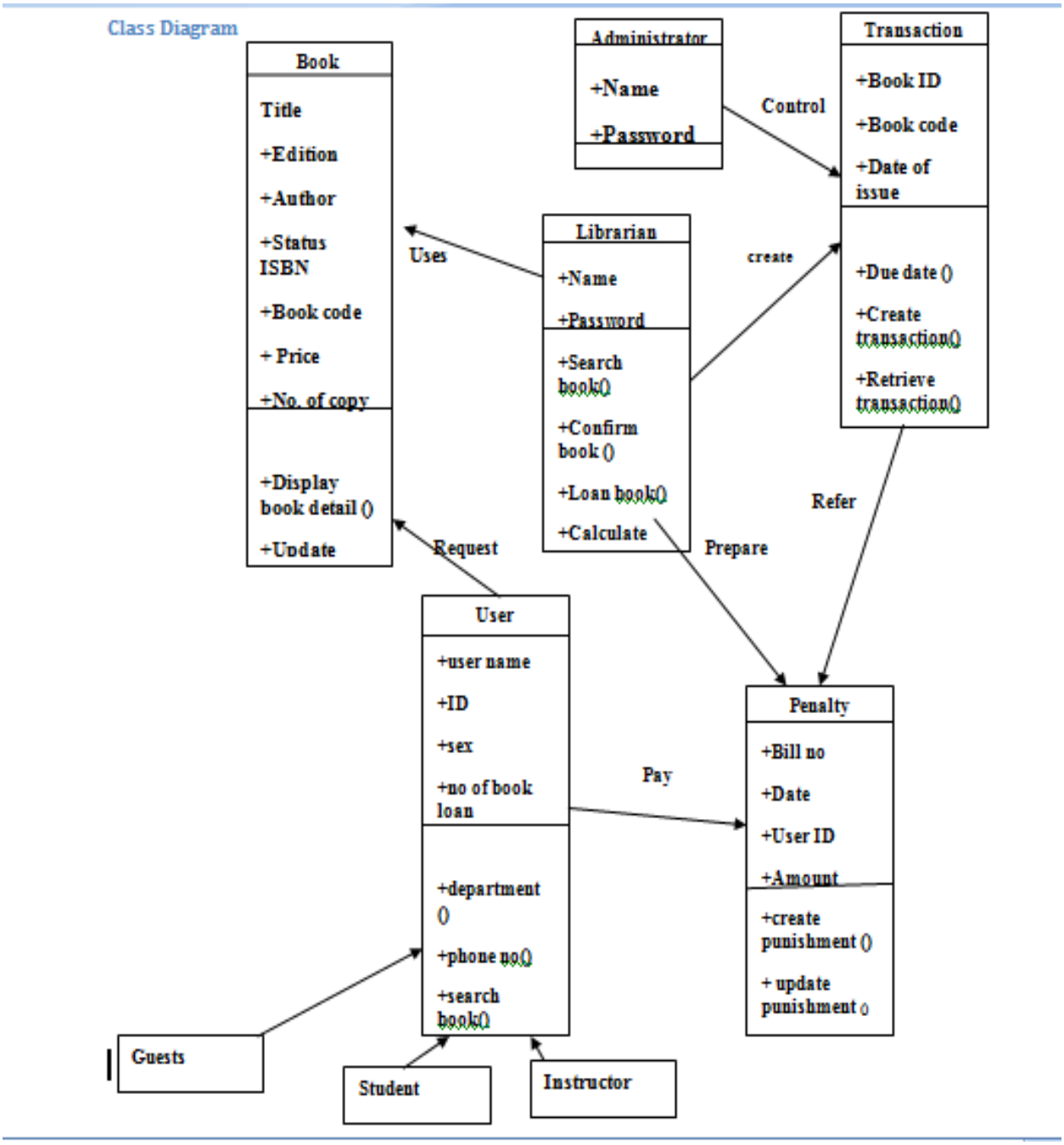

Class Diagram
Book
Title
+Edition
+Author
+Status
ISBN
+Book code
+ Price
+No. of copy
+Display book detail ()
+Update
Administrator
+Name
+Password
Control
Transaction
+Book ID
+Book code
+Date of issue
+Due date ()
+Create transaction()
+Retrieve transaction()
Librarian
+Name
+Password
+Search book()
+Confirm book ()
+Loan book()
+Calculate
Uses
create
Refer
Request
Prepare
User
+user name
+ID
+sex
+no of book loan
+department ()
+phone no()
+search book()
Pay
Penalty
+Bill no
+Date
+User ID
+Amount
+create punishment ()
+ update punishment ()
Guests
Student
Instructor

Figure 12

3.2.6 User interface prototyping

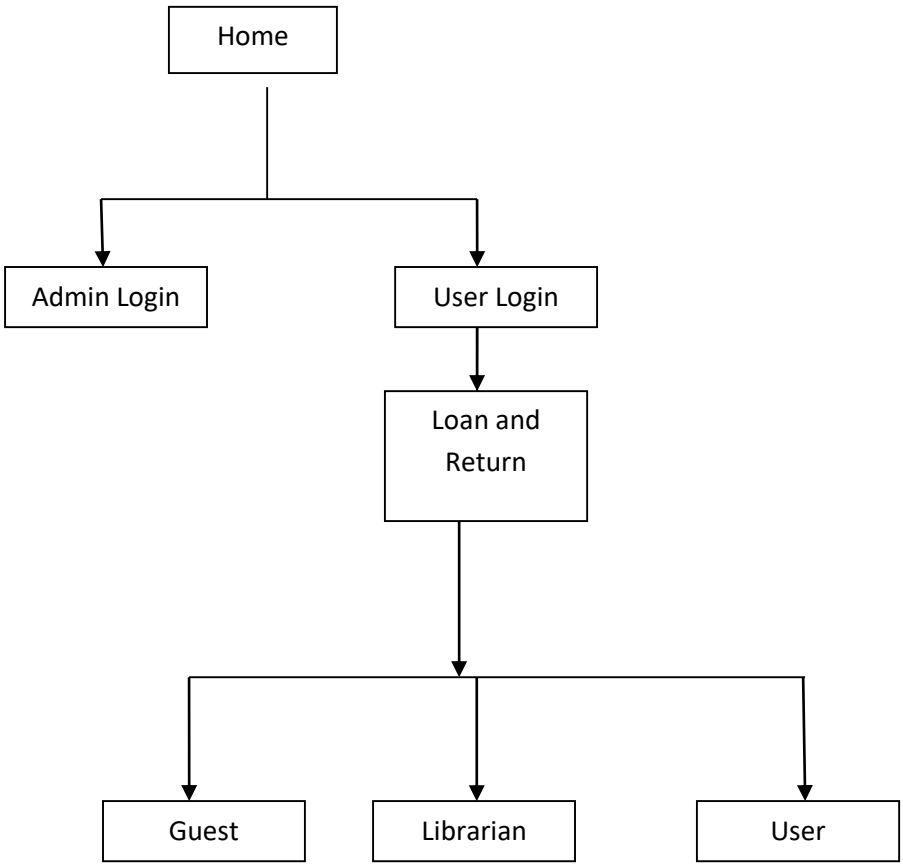


Figure 13

CHAPTER FOUR

System Design

Introduction

4.1 Purpose of design system

The purpose of design phase is to plan a solution for problem specified by the requirements. System design aims is to identify the modules that should be in the system the specification of these modules and how they interact with each other to produce the desired result. The purpose of the system is mainly to provide automation to the library.

4.2 Class Type architecture

A common architectural strategy, some might call it a pattern, is to layer the architecture of a system into several layers it has four layers that describe the whole process.

User interface Layer

This layer is the first layer and it contains the interfaces that users or clients interact with the system. In our system some user interfaces are

- User and librarian login
- Interface of book loaning
- Interface for book returning
- Librarian or admin interface to update book and user information

Process Layer

The process layer implements business logic that involves collaborating with several domain classes or even other process classes.

For example:-if the user has not an account on the database the system will block him from getting the access by displaying an error massage.

Business layer: focuses on the data aspects of the business objects plus Behaviors specific to individual objects. And implements the concept related to the business domain focusing on the data aspects of the business.

In this layer our system has n such domain classes that are concerned with data are the following.

- Book detail information
- User detail information
- Report generation
- User account

Persistence: Persistence layers encapsulate the capability to store, retrieve, and delete objects/data permanently without revealing details of the underlying storage technology in the system. For instance, Our system uses MySQL database.

System layer: System layer provide operating system specific functionality for the applications, isolating the software from the operating system by wrapping operating system specific features, increasing the portability of the application developed.

The system will be develop using dream weaver web builder and PHP programming language. And also the system will perform its task on WAMP server. On the other hand for database system MYSQL is needed to run the system.

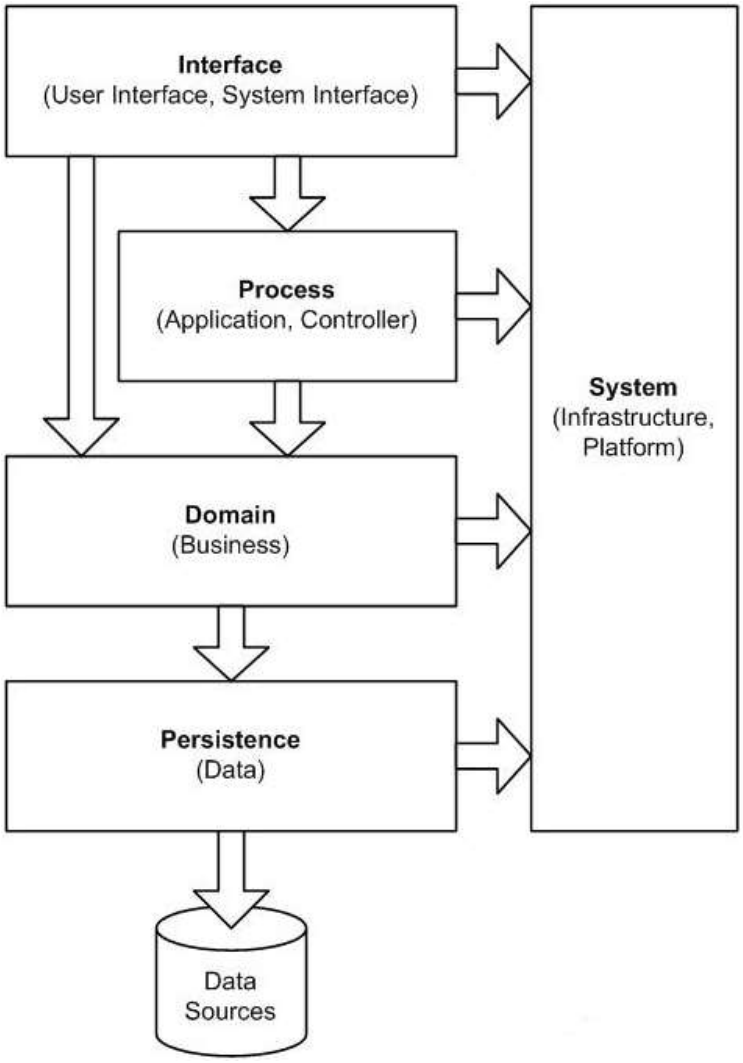

Interface
(User Interface, System Interface)
Process
(Application, Controller)
Domain
(Business)
Persistence
(Data)
Data
Sources
System
(Infrastructure,
Platform)

Figure 14

4.3 class modeling

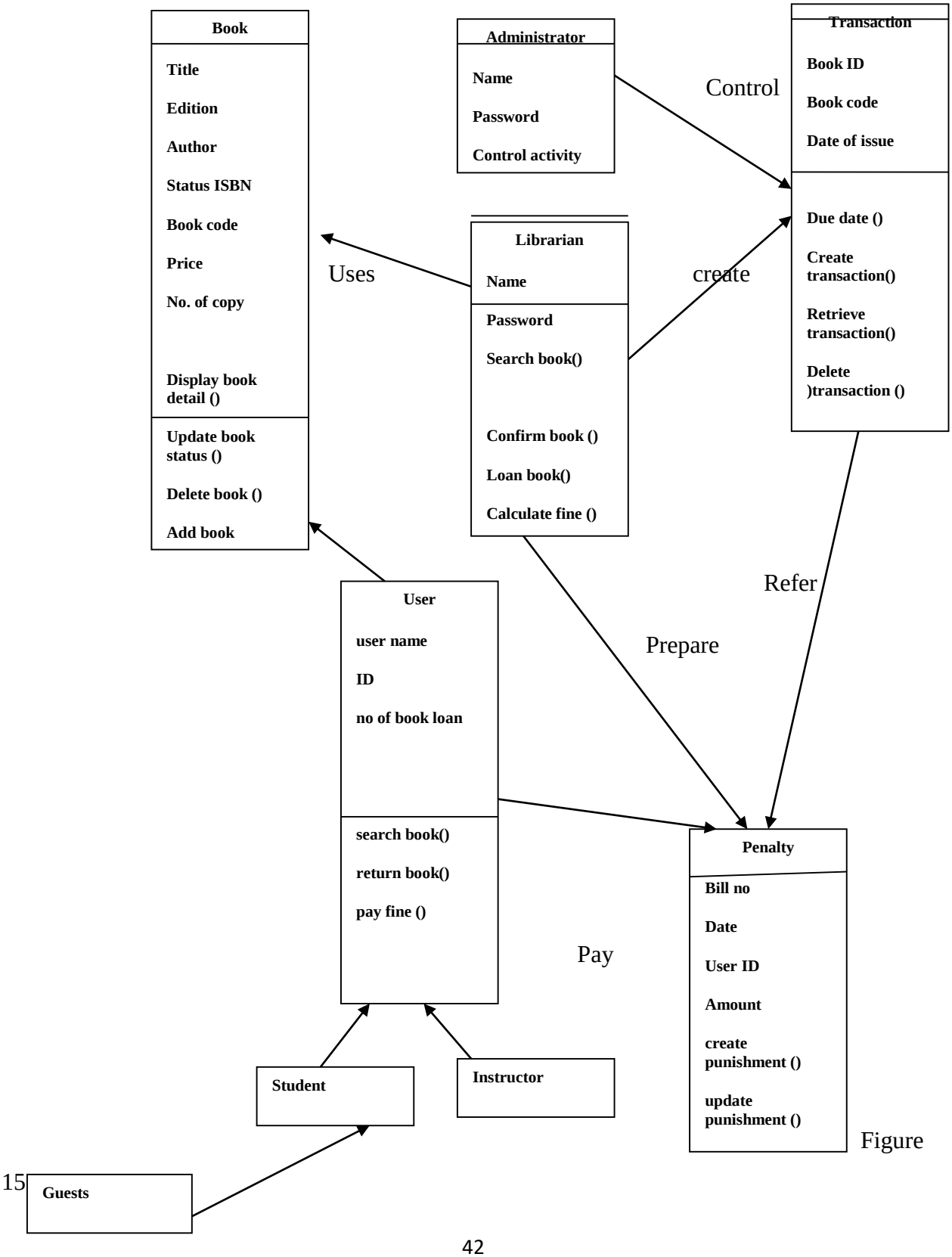


Figure 15

4.4 State chart modeling

State chart diagram for loan

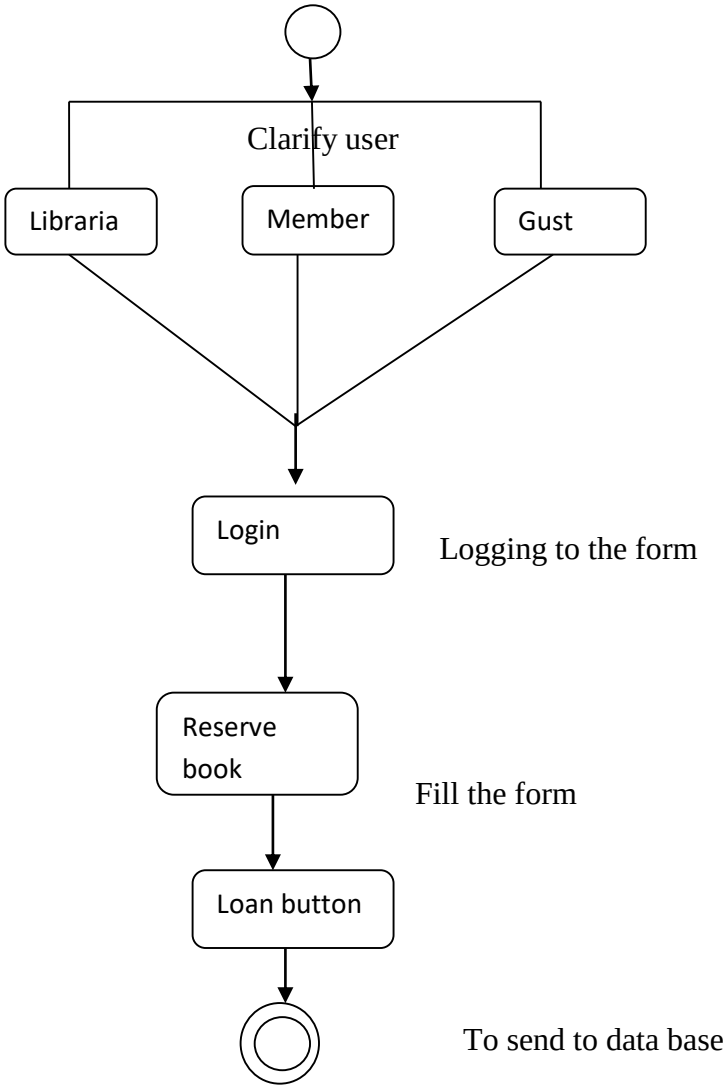


Figure 16

State chart for return

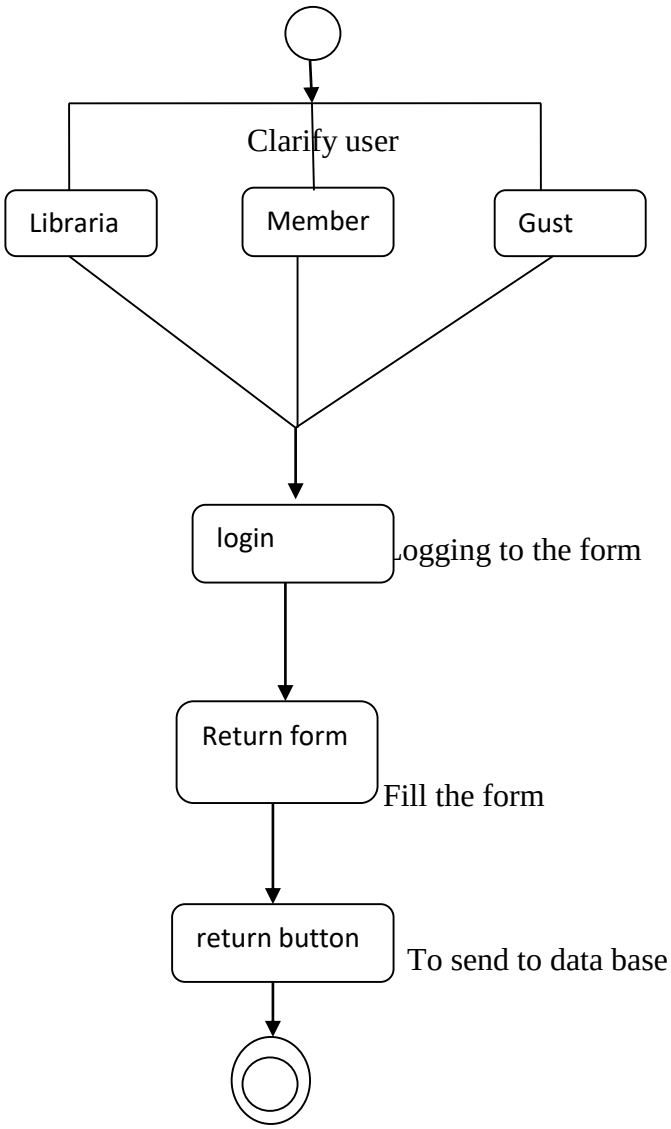


Figure 17

4.5 collaboration modeling

Collaboration model for the login

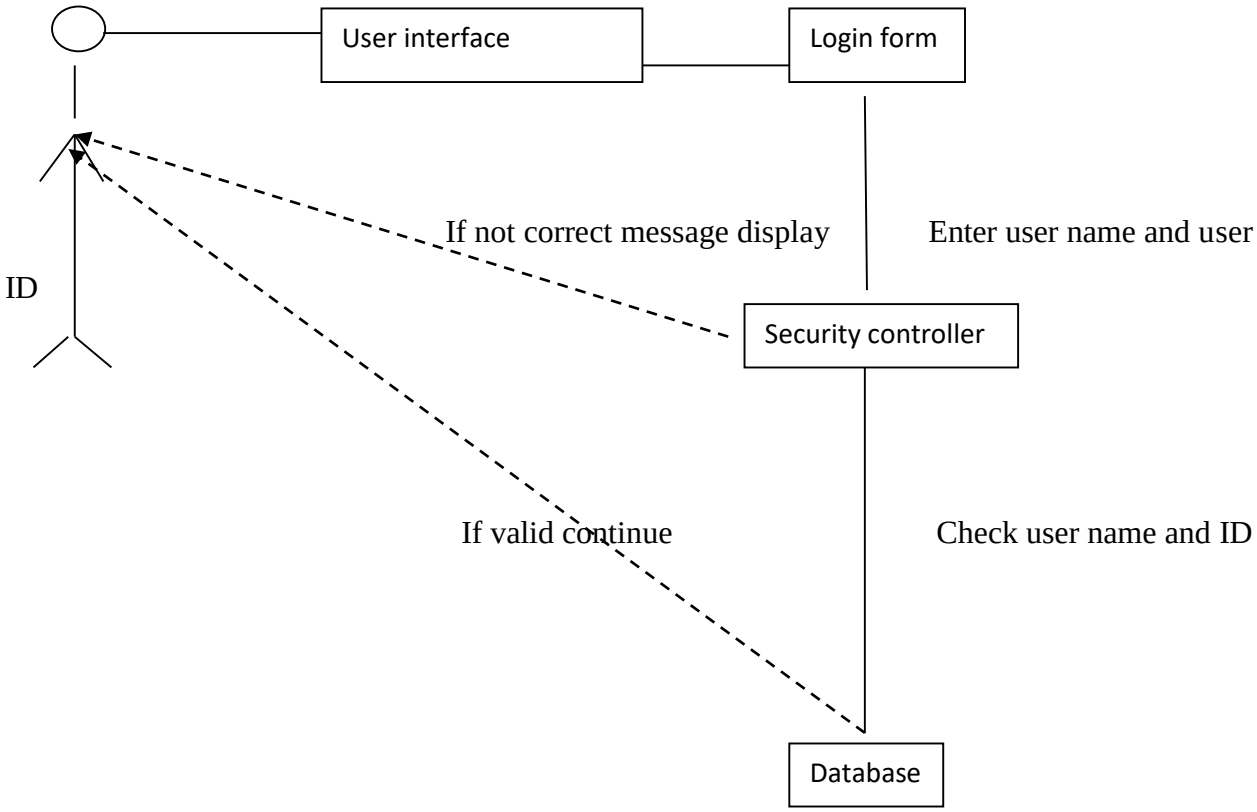


Figure 18

Collaboration model for the book loaning

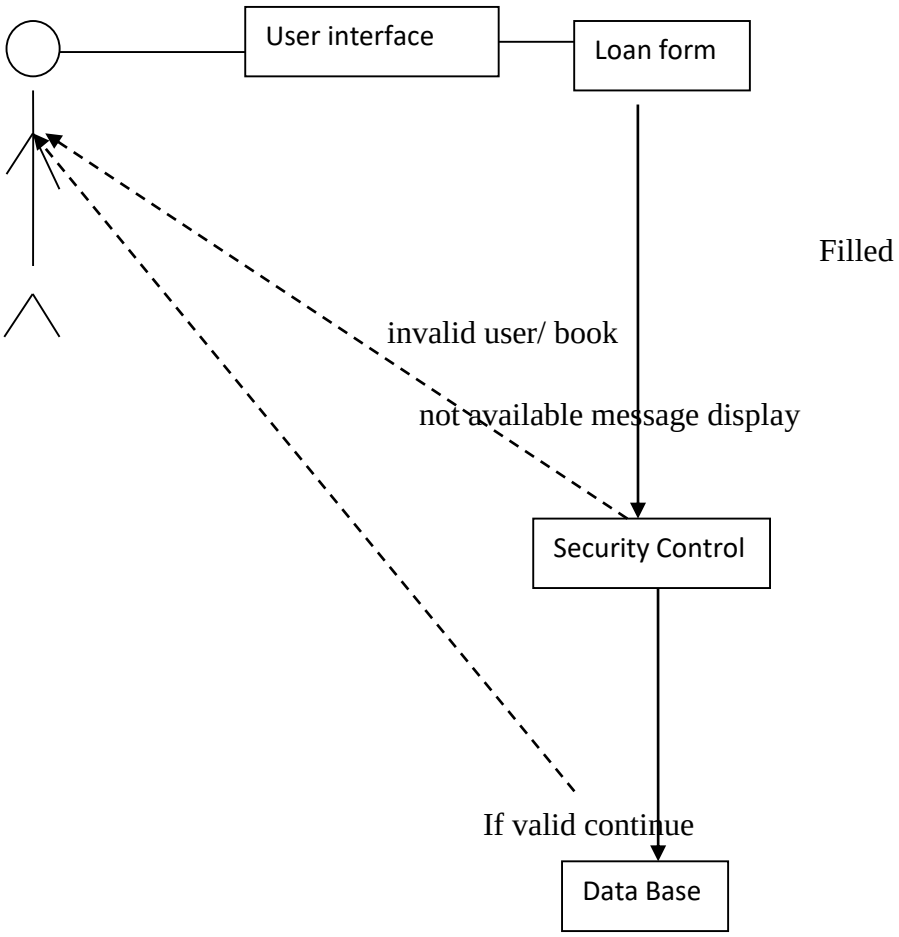


Figure 19

Collaboration model for the book returning

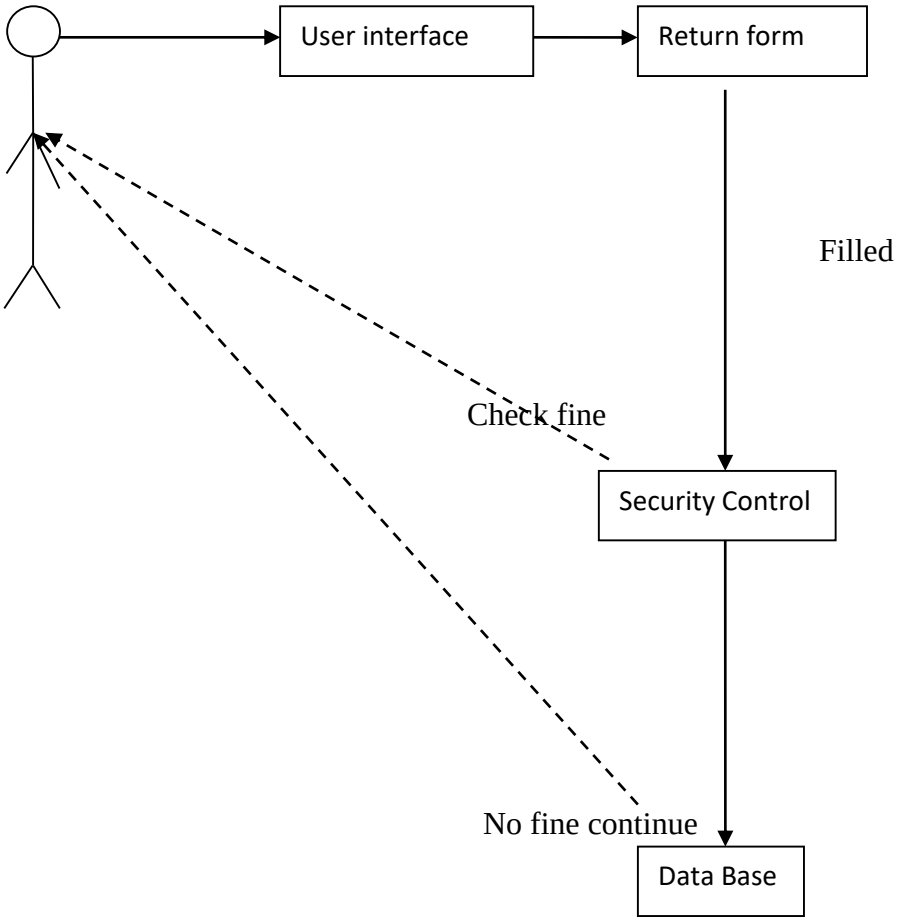


Figure 20

4.6 Component Modeling

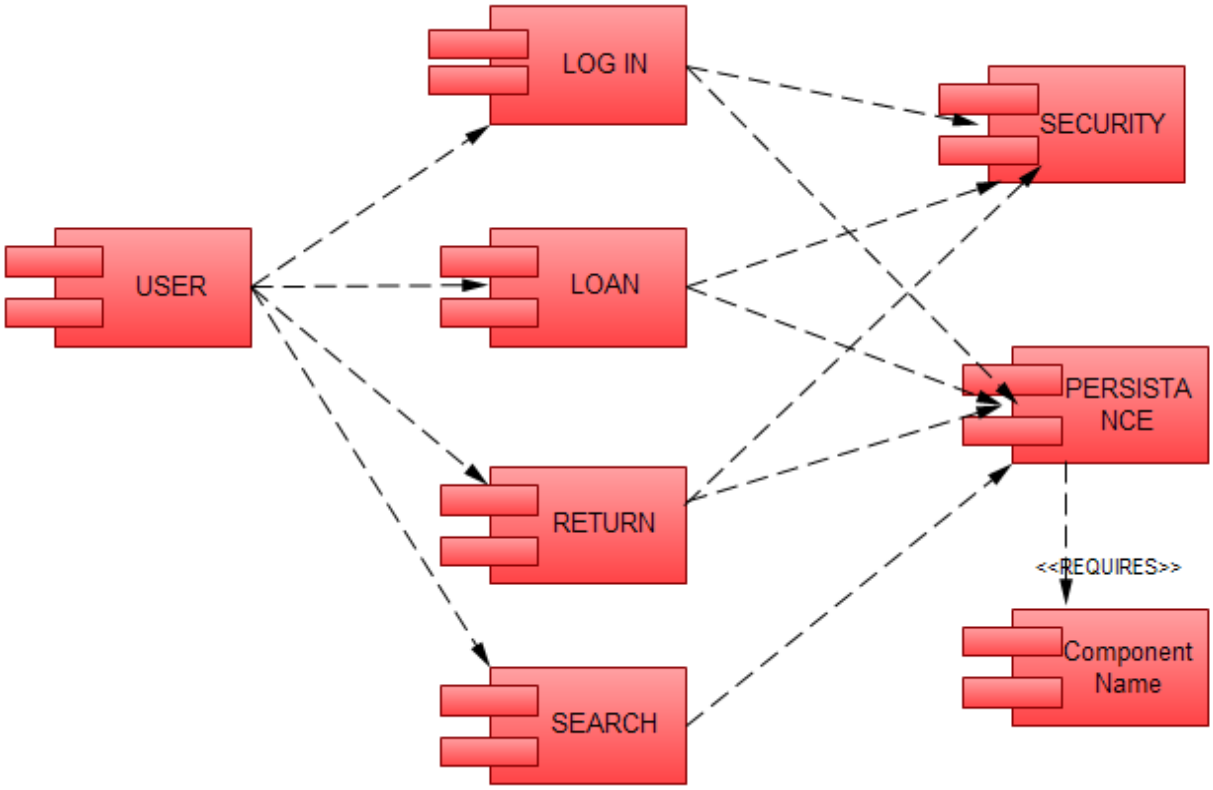


Figure 21

4.7 Deployment modeling

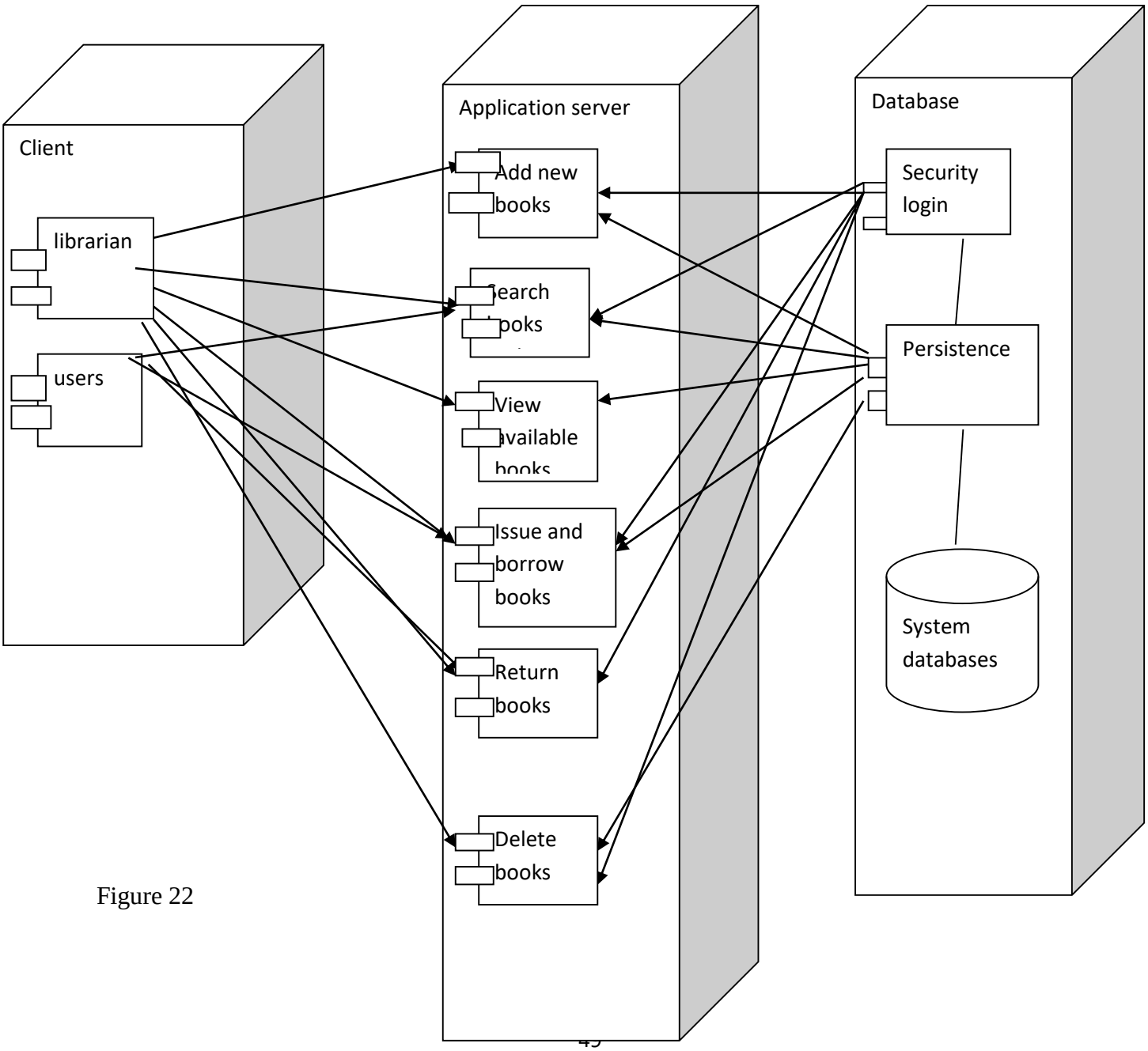


Figure 22

4.8 persistence modeling

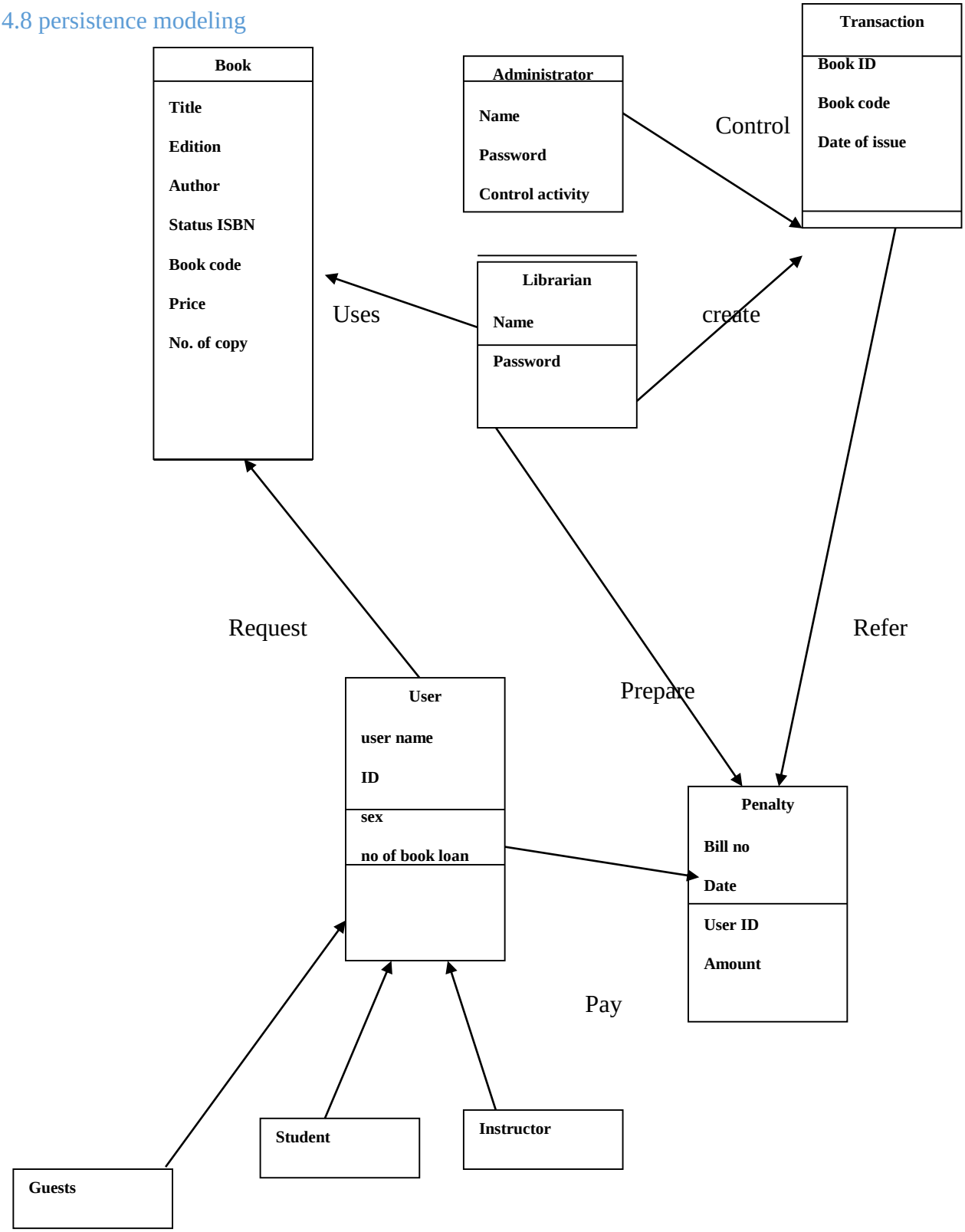
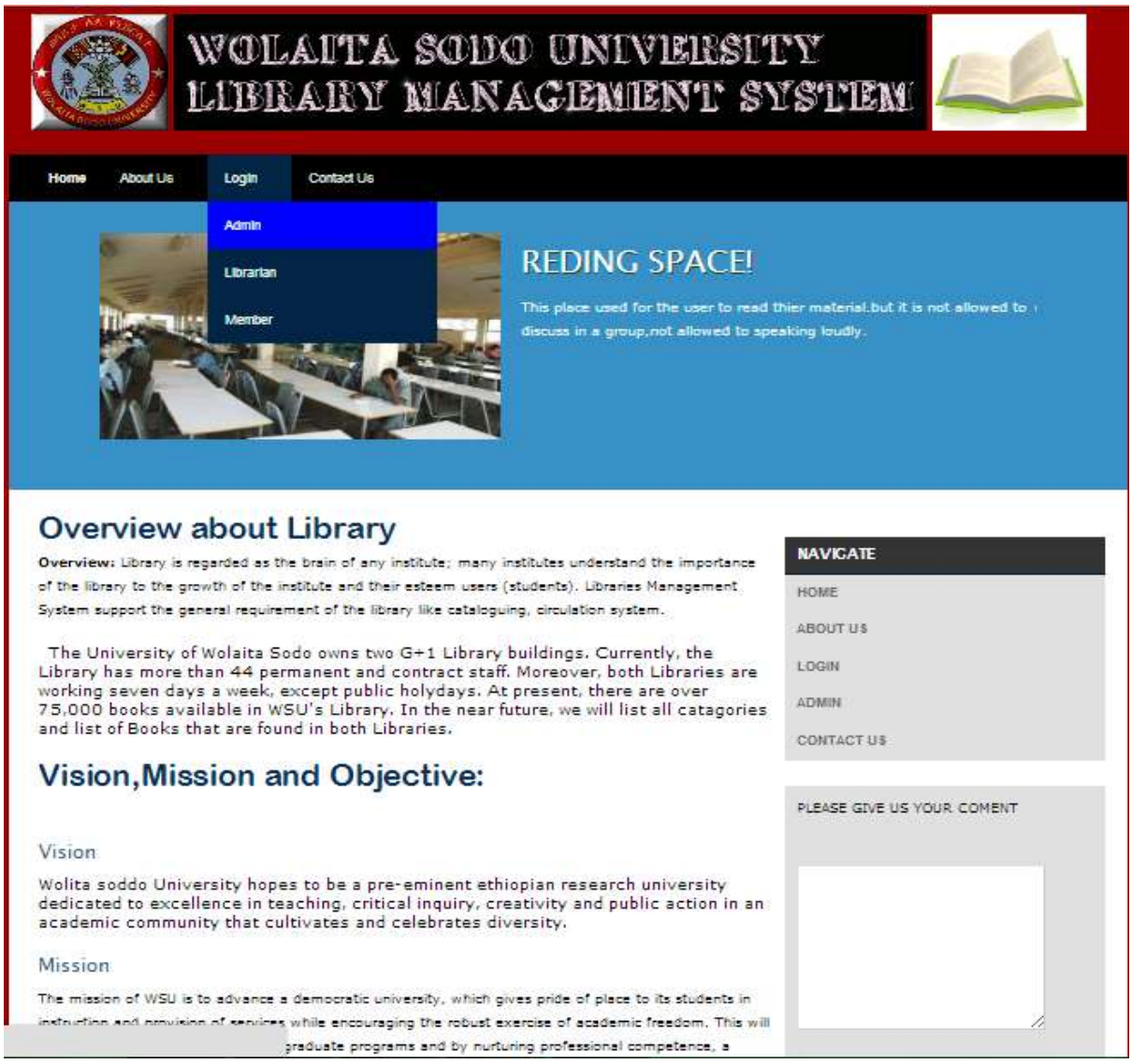


Figure 23

4.8 User Interface design

HOME PAGE



Login form for the user and librarian

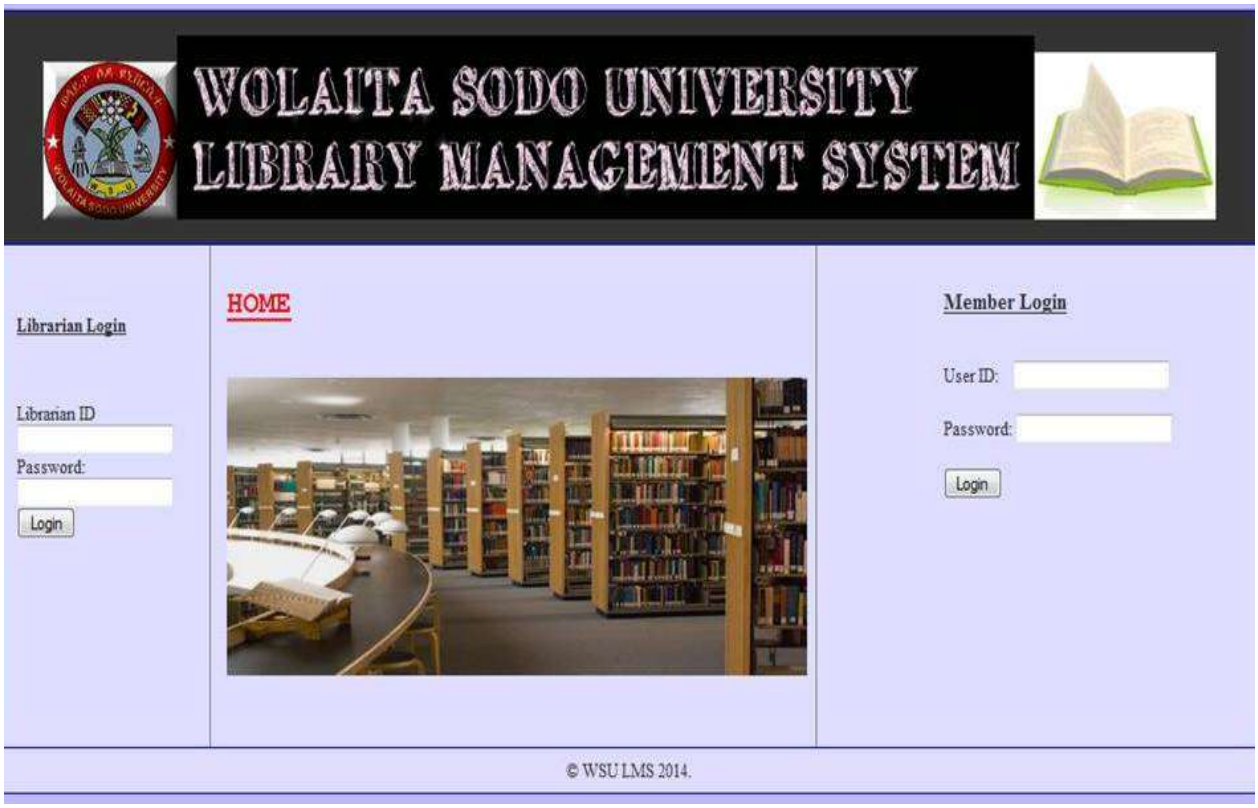


Figure 24

Reserving book form for the user

Figure 26

Updating form for the librarian

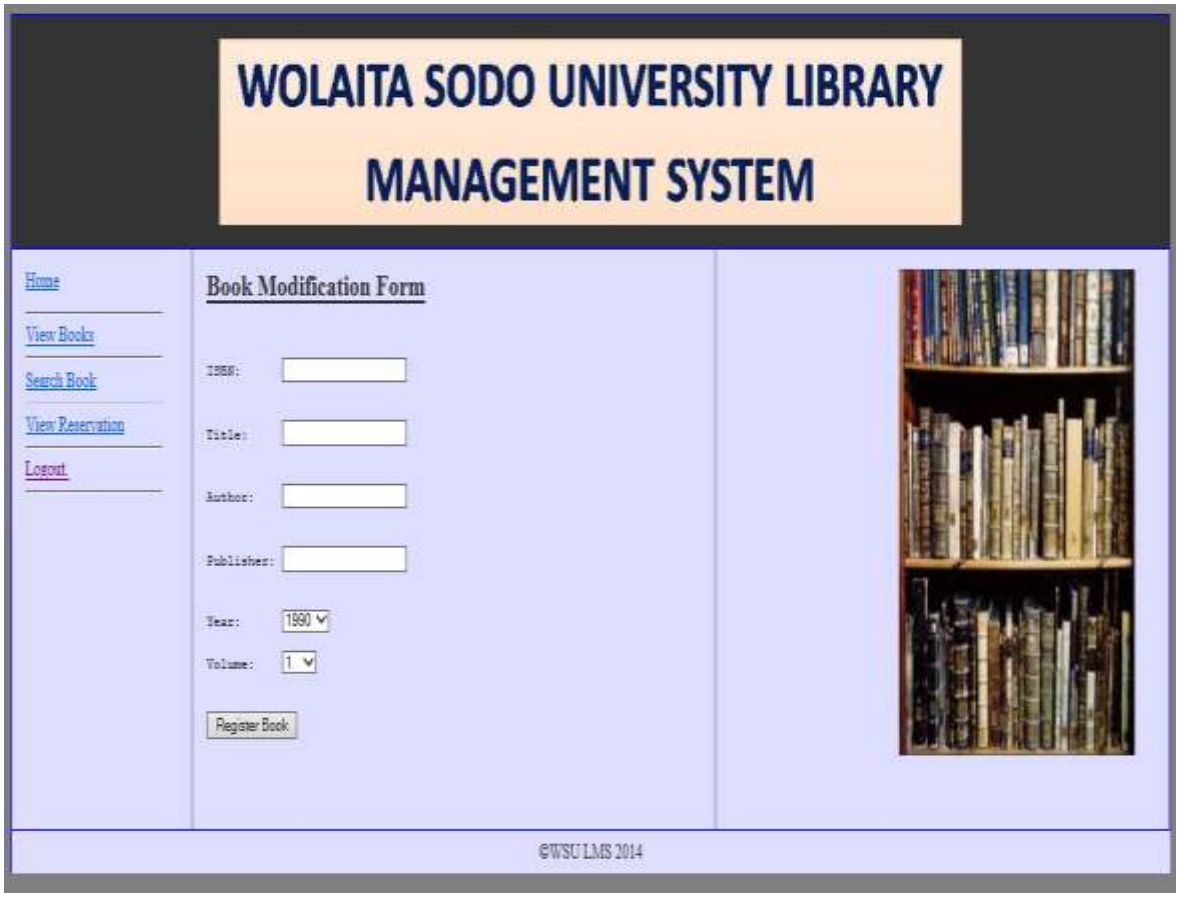


Figure 27

CHAPTER FIVE

5.1 Implementation and testing

Introduction:-

For the implementation and testing part we use a WAMP server to store the system data and work as a server for the system. And also Dream waver web builder for writing the source code and designing phase.

5.2 Test plan

Testing process starts with test plan. This plan identifies all the testing related activity that must be performed and specified the schedules, allocate the resources and specified guidelines of testing during the testing of the unit. The specified test cases are executed and the actual compared with the expected output. The final output of the testing phase is the test report and error report.

Test data

Here all tests cases that are used for the system testing are specified. The goal is to set the different functional requirement specified in the software requirement specification (SRS document.

Unit testing

Each individual model has been tested against the requirement with some test data.

Test report

The model is working properly provided the user has to enter correct information. All data entry forms have tested with specified test case and all data entry forms are working properly.

Error report

If the user is does not enter data in a specified order then the user will be promoted with error message. Error handling is done to handle the expected and unexpected errors. When the user want to login the project the username and password should be given correctly. If it is valid data the user can enter in to the project or it display error message.

5.3 Test case report

A test case a state of input data and expected results that exercises a component with the purpose of causing failures and detecting faults.

Test case for login

S No	Test	Input	Expected Output	Actual output
1	To test whether the loin is done properly or not	Invalid user and password	Display error message	Login successful

Test case for Reserve

S No	Test	Input	Expected Output	Actual output
1	To test the book is available or not	Duplicated ISBN	Display error message	successful Reserve

5.4 Source code view

HTML code for librarian and user login

```
<script type="text/javascript" language="javascript">

function disableBackButton()

{

window.history.forward()

}

disableBackButton();

window.onload=disableBackButton();

window.onpageshow=function(evt) { if(evt.persisted) disableBackButton() }

window.onunload=function() { void(0) }

</script>

<html>

<head>

<title>WSU school of CSIT.</title>
```

```
<script type="text/javascript">

function LoginLibrarian(){

 chk = document.forms["frmLibrarian"];

if(document.getElementById('UserID').value==""){
   alert("Enter Librarian User ID.");
   chk.elements["UserID"].select();
   chk.elements["UserID"].focus();
   return false;
 }

 else if(document.getElementById('Password').value==""){
   alert("Please enter your password.");
   chk.elements["Password"].select();
   chk.elements["Password"].focus();
   return false;
 }
 else
  return true;
```

```
}



</script>

<script type="text/javascript">

function LoginMember(){

 chk = document.forms["frmMember"];

if(document.getElementById('UserID').value==""){
   alert("Enter Member user ID.");
   chk.elements["UserID"].select();
   chk.elements["UserID"].focus();
   return false;
 }

 else if(document.getElementById('Password').value==""){
   alert("Please enter your password.");
   chk.elements["Password"].select();
```

```
  chk.elements["Password"].focus();
  return false;
 }
 else
  return true;
}

</script>



</script>

<!--[if IE]>
      <link rel="stylesheet" type="text/css" href="common_IE.css" />
<![endif]-->

<!--[if !IE]>#f3d33d<!-->
      <link rel="stylesheet" type="text/css" href="common.css" />
 <!--<![endif]-->

<style type="text/css">
```

```
a:link {
	color: #FF0000;
}
.style4 {font-size: 18px}
.style8 {
	color: #000000;
	font-size: xx-large;
	font-weight: bold;
}
</style>

<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1"></head>
<body bgcolor=#bfbbf">
<div id="container">
<div id="top">
  <div align="center"><img src="images/wsu.jpg" width="135" height="131"><img src="images/LL.gif" width="863" height="152"><img src="images/r.gif" width="182" height="138"></div>
</div>
<div id="leftnav"></br>
  </br>
  <p><b><u>Librarian Login</u></b></p>
```

```
  <p> </p>

  <form action="verifylibrarian.php" method="post" onSubmit="return LoginLibrarian()" id="frmLibrarian">

Librarian ID <br />

<input type=text name="UserID" id="UserID" maxlength=6>

<br />

Password: <br />

<input type=password name="Password" id="Password" maxlength=32>

<br />

<input type=submit  name="Login" id="Login" value="Login">

</form>

</p>

</div>


<div id="rightnav">

<h3><u>Member Login</u></h3>

<form action="verifymember.php" method="post" onSubmit="return LoginMember()" id="frmMember">

<br />

<label>  User ID: </label>   <input type="text" id="UserID" name="UserID" maxlength=6 /><br /><br />

<label> Password: </label>
```

```
<input type=password name="Password" id="Password" maxlength=32>

<br />

<br />

<input type="submit" id="Login" name="Register" value="Login">

</form>

</div>



<div id="content">

  <pre class="style2"><h3 align="left" class="style4"><a href="home.html"
class="style8">HOME</a></h3></pre>

  <div align="center">

  <div align="center">

    <pre> </pre>

    <div align="right">

      <pre><img src="images/loginlogo.jpg" width="583" height="245"><br>

    </pre>

    </div>

    </div>

</div>

</div>
```

```
<div id="footer" align=center>

&copy; WSU LMS 2014.

</div>

</div>

</body>

</html>
```

PHP code for login

```
<?php

  session_start();

  require("connection.php");

                $sql=mysql_query("SELECT Password FROM loglib WHERE ID = '".$_POST['UserID']."'");


                if(!$sql)

                        echo "Error trying to login... query not executed";

                else

                {
```

```
                $arr_result = mysql_fetch_array( $sql );


                if($arr_result['Password']==$_POST['Password'])
                        {
                        $_SESSION['UserID']=$_POST['UserID'];
                        echo "<script>document.location.href='libmenu.htm'</script>";
                         }
                else{
                        echo "<script type='text/javascript'> alert('UserName and/or Password Error...')</script>";
                        echo "<script>document.location.href='index.htm'</script>";

                   }
            }


        mysql_close($con);


?>
```

HTML code for reserve book.

```
<div id="content">
```

<h2><u>Book Reservation Form</u></h2>

<pre>

<form action="reservebook.php" method="post" onSubmit="return checkReserveReg()" id="frmReserveReg">

l

<label>Member ID:</label> <input type=text name="MemberID" id="MembeID" maxlength=6>

<label>ISBN:</label>   <input type=text name="ISBN" id="ISBN" maxlength=10><label>

Title   <input type="text" name="title"></label>   <label>Author   <input type="text" name="author"></label>

<label>Publisher <input type="text" name="publisher"></label>

<label>Volume   <input type="text" name="volume"></label>

<label>Date   <input type="text" name="date"></label>

<input type=submit name="Reserve Book" id="Reserve Book" value="Reserve Book">

```
</form>


</pre>


<h2><u>Delete Reservation</u></h2>

<pre>

 (All your reservations will be deleted.)

<form action="delete_reservation.php" method="post" onSubmit="return checkReserveDelete()" id="frmDeleteReserve">

<label>MemberID:</label>  <input type=text name="MemberID" id="MemberID" maxlength=6>

<br />

<input type=submit name="Delete Record" id="Delete Record" value="Delete Record">

</form>
```

PHP code for reserve book.

```
<?php

$con = mysql_connect("localhost","root","");

if (!$con)

{

die('Could not connect: ' . mysql_error());

}
```

```
mysql_select_db("wsu", $con);

$sql="INSERT INTO book (Idnumber,ISBN,Title,Author, Publisher, Date,Volume)

VALUES

('$_POST[MemberID]','$_POST[ISBN]','$_POST[title]','$_POST[author]','$_POST[publisher]','
$_POST[date]','$_POST[volume]')";

if (!mysql_query($sql,$con))

{

die('Error: ' . mysql_error());

}

echo "1 record added";

mysql_close($con)

?>
```

CHAPTER SIX

Conclusion

An effort has been made to study as partial fulfillment of WSU LMS. In doing the study the team has tried to follow HTML, PHP, Java script and MySQL methodology.

Since the success and failure of any system depends on gathering the right information through different fact-finding techniques and user involvements, the team has made the best effort to gather requirements. After a detail review and study of the existing system have been designed to reflect the new system that is suppose to solve problems.

In order to solve different problems existed the team has tried to propose a solution that at least reduce the existed problems and model the proposed system using different tools and methodologies. We believe that different tools have helped us a lot in capturing real user requirements and model the right system for the users for their day to day transactions. Thus it should have the precedence in know-how and experience in collecting, processing and utilizing information.

REFERENCES

- David powers(2003),PHP files for dummies janet valade Newyork –MCGraw-Hill publisher
- Catrin Danks and paulkindy(2001) PHP Solutions: Dynamic ,Web Design Made Easy publisher
- Grady Booch, James Rumbas, Invar Jacobson, The Unified Modeling Language.Addison-Wesley,1999
- Internet sources *www.iisjaipur.org,en.wikipedia.org/wiki/Integrated_library_system,www.studymode.com*
- OOSAD course

  Object-Oriented Systems Analysis and Design Joey F. George, Dines Bart, Joseph S. Valacich, Jeffrey A. Hoofer

  Teaching Object-Oriented Systems Analysis and Design with UML
- Different researches in the library

  Final project researches related with computer science.