EX.NO:6
DATE :

LIBRARY MANAGEMENT SYSTEM

Aim:

To prepare necessary documents and to develop the LIBRARY MANAGEMENT SYSTEM with UML diagrams using Software Engineering Methodology.

PROGRAM ANALYSIS AND PROJECT PLANNING

Problem Statement:

This project LIBRARY MANAGEMENT SYSTEM is to develop an application to analyze the books details. Initially the user should login. After login to lend the book the user should click book lending command button. If the user wants to return the book then must choose the book returning command button. If the user wants to view the details of book lending and returning history then must click the report command button.

SOFTWARE REQUIREMENT ANALYSIS

The Modules in the Project:

1. Login.
2. Password Checking
3. Book lending
4. Book returning
5. Report

The first module is Login in which the user has to login to the system.

The next module is Password Checking, where the checking of name and password occurs if correct then only the user can lend or return the book.

The next module is Book lending. This module is useful to lend the book from library.

The next module is Book returning. This module is useful to return the book to the library.

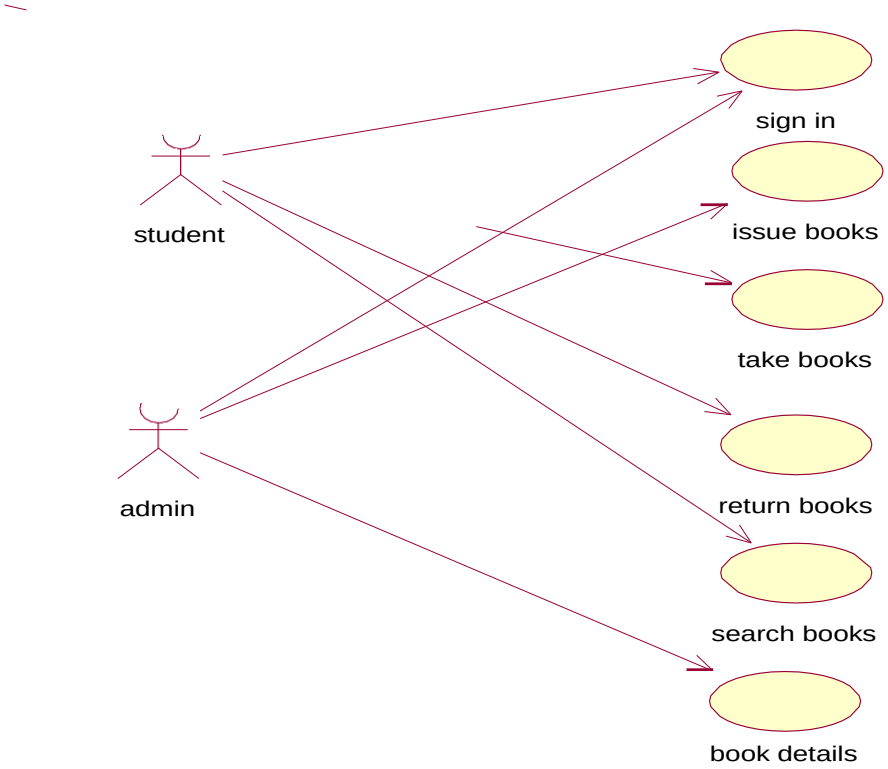
The last module is Report. This module is to view the history.

DATA MODELING

Data Dictionary:

Field Name	Description	Data Type	Field size	Default Value	Validation
ID.NO	Identification Number	Integer	10	NULL	(0-9)
Name	Name of the user	String	20	NULL	(A-Z) or (a-z)
Date	Date	Integer	10	NULL	(MM/DD/YYYY)
Author	Name of the author	String	10	NULL	(A-Z) or (a-z)
Book	Name of the book	String	10	NULL	(A-Z) or (a-z)

USE CASE DIAGRAM:



Use case Diagram:

Use case diagram is a graph of actors, set of use cases enclosed by a system boundary, communication (participation) association between the actors and the use cases and a generalization among the use cases.

Actor:

An actor represent a set of roles that user of a use case play when interacting with the use cases. Actor identified here is user.

Use case:

A use case is a description of a set of sequence of actions that a system performs to yield result of value to an actor.
The Use Cases described are,

1. Login
2. Book lending
3. Book returning
4. Report

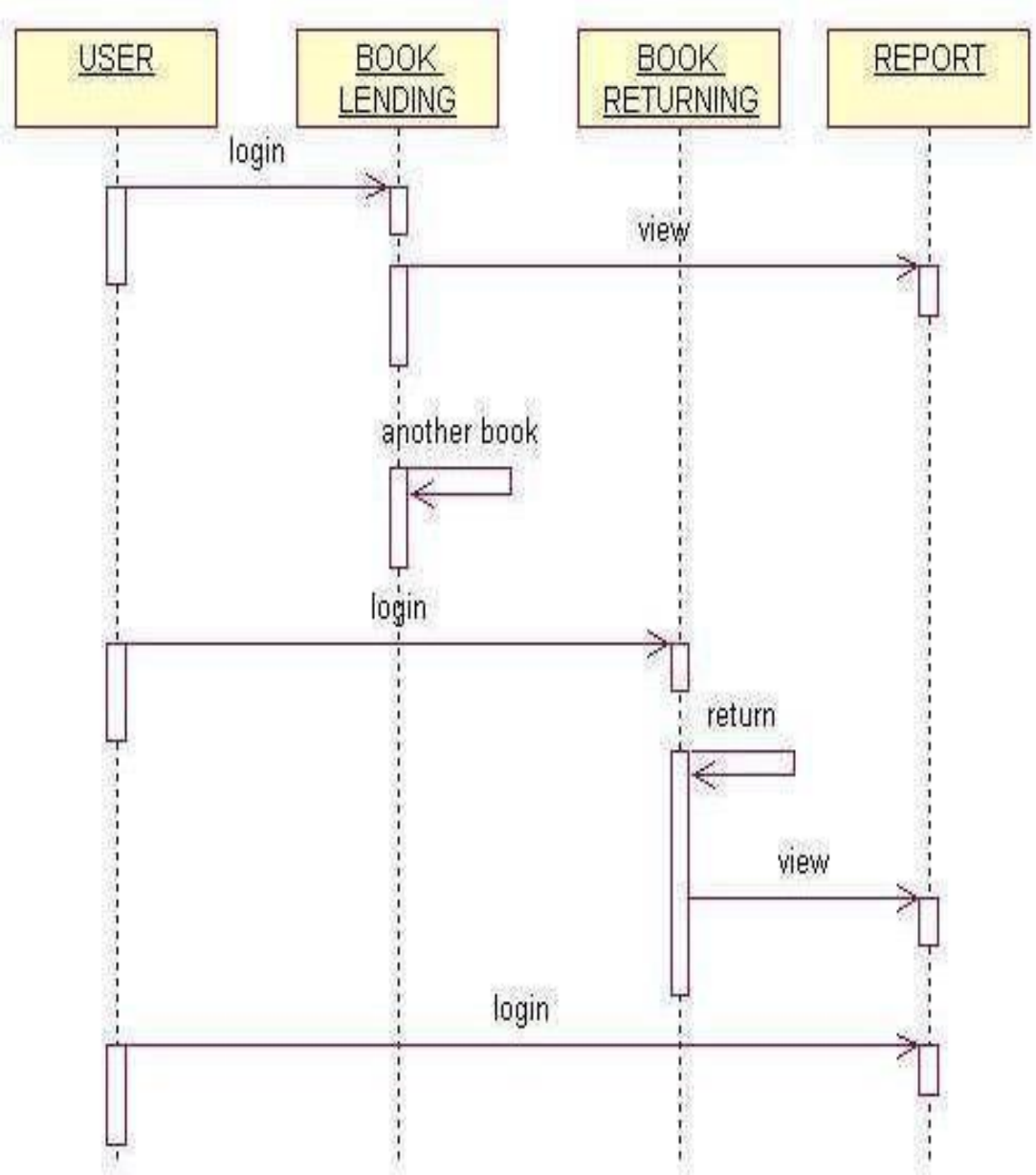
The Login use case is to describe that, the user should choose his/her category whether he/she is a administrator or staff.

SEQUENCE DIAGRAM

Sequence diagrams are easy and intuitive way of describing the behavior of a system by viewing the interaction between the system and its environment. A sequence diagram shows an interaction arranged in a time sequence.

The objects used in this sequence diagram are,

a. Login
b. Display
c. Add
d. Update
e. Controller
f. Database



BASIC FLOW:

The administrator enters their name and password, and the password gets checked by the system. After confirmation of the password the system allows them to access.

ALTERNATE FLOW:

If the password entered by the administrator is invalid then they has to reenter or quit from the process.

The actor Administrator and Staff are the persons who interacts with the system.

The object Login makes the administrator/staff to enter.

The object Database will store all the salary of the staff. This will also store the details of new records added by the administrator. It will also update the values changed by the administrator.

The object Display will display the salary of the staffs from the database.

The object Add will add the new records in the database.

The object Update will update the details in the database.

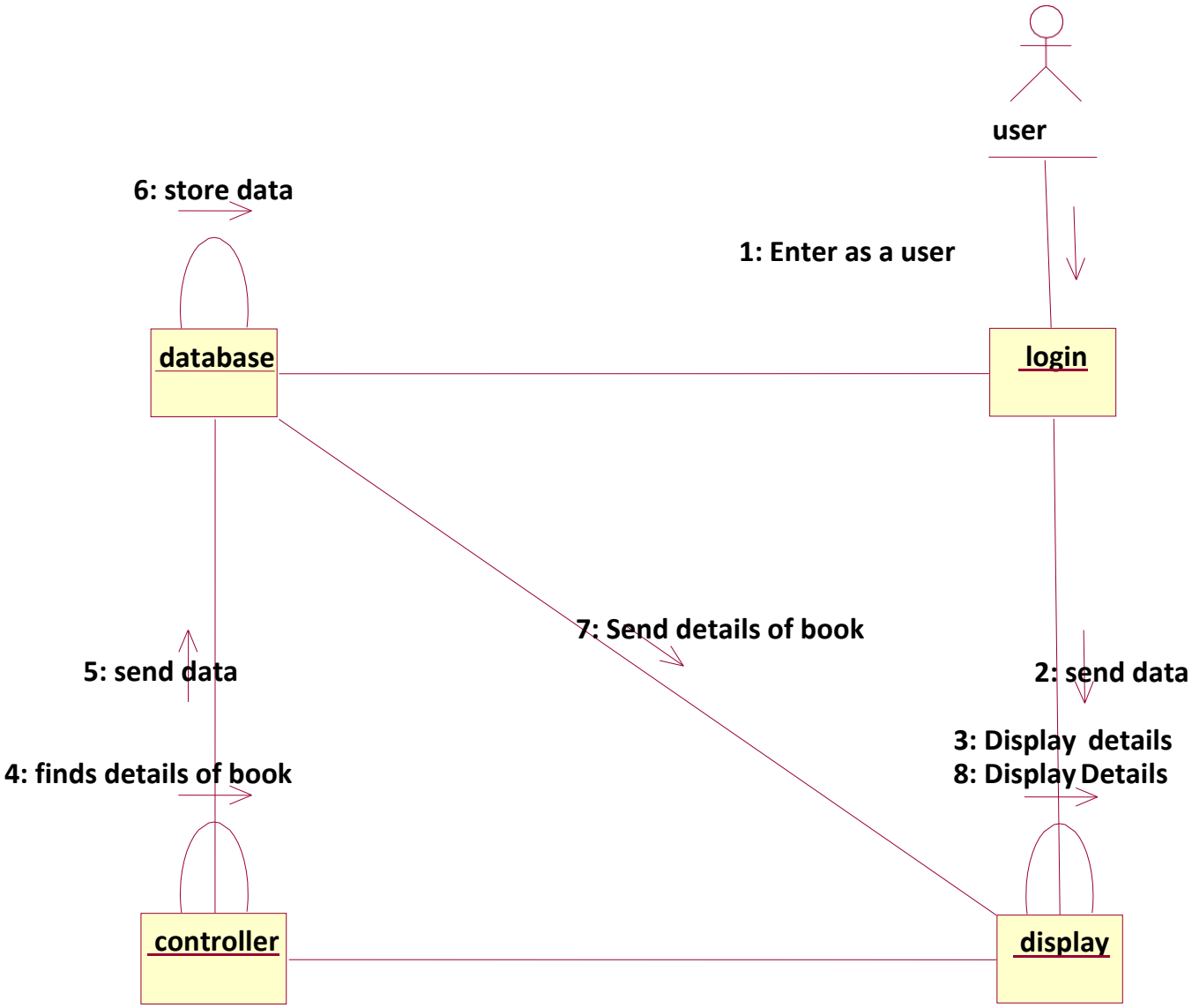
COLLOBORATION DIAGRAM:

A collaboration diagram represents a collaboration, which is a set of objects related in a particular context, and interaction, which is a set of messages exchanged among the objects within the collaboration to achieve a desired outcome.

Collaboration diagram shows exactly the same information as the sequence diagram. However, collaboration diagram shows this information in a different way and with different purpose.

In this collaboration diagram, the objects are represented as rectangle, the actors are stick figures. Whereas the sequence diagram illustrates the object and actor interaction overtime, the collaboration diagram shows the object and actor interaction without reference to time.

In our LIBRARY MANAGEMENT SYSTEM each object interacts with each other or collaborates with each other; it gets represented by the solid line drawn between them.



ACTIVITY DIAGRAM:

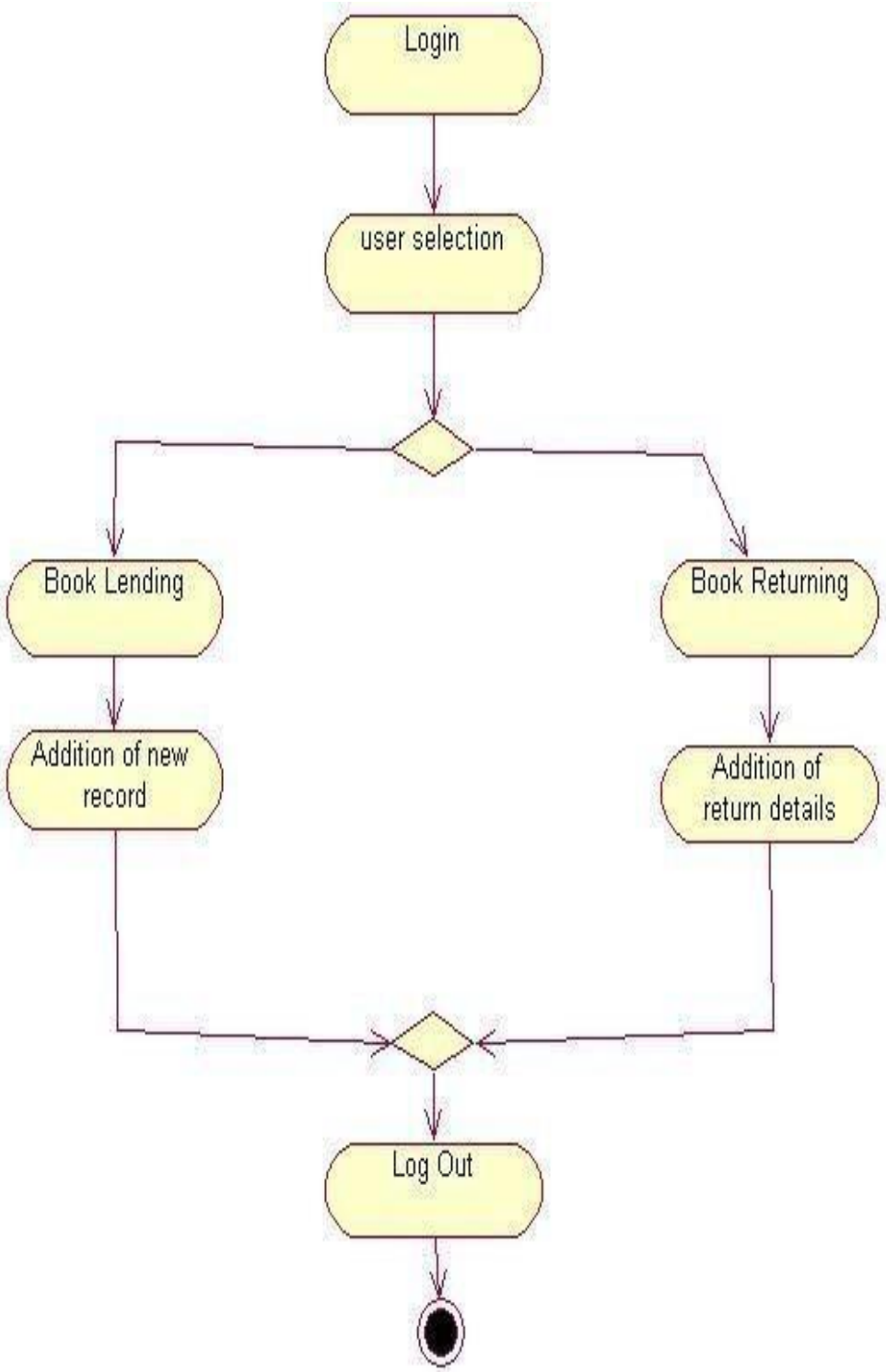
The activity diagram describes the sequencing of activities with support for both conditional and parallel behavior.

The Activity diagram is used to describe the various activities taking place in an application.

After login, the user selection activity gets performed, where the user can be an administrator or staff. If the user is a administrator, then they have to enter their name and password and only when those details are valid they can access the system.

They can calculate the current salary obtained by the staffs, they can add new records, and they can update the values of the records which gets stored in the database.

If the user is a staff then they can view their salary detail and they can calculate their current salary.

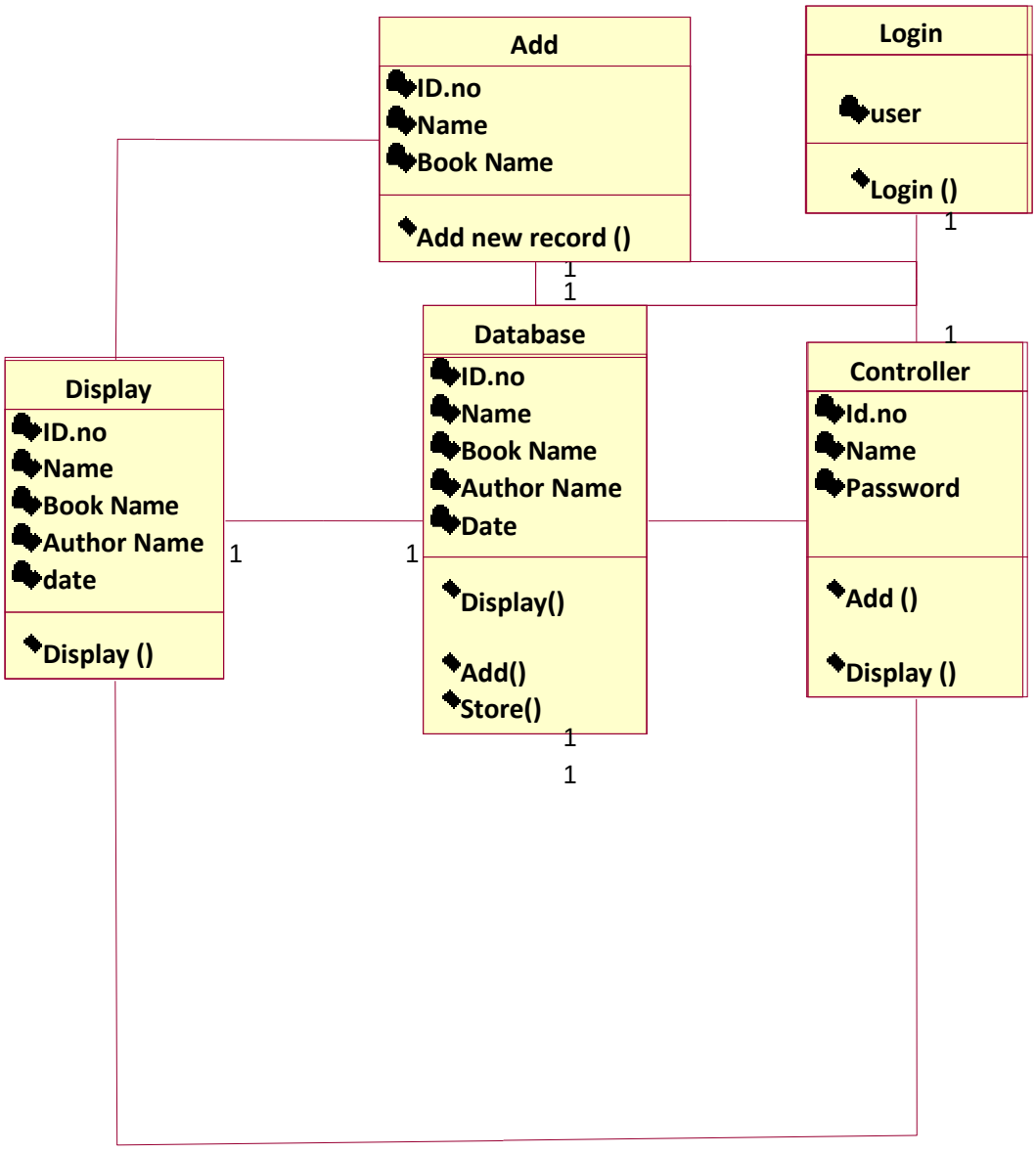


CLASS DAIGRAM:

Class diagrams show the interactions between classes in the system. Class diagram also shows the attributes and operation of a class and the constraints that apply to the way objects are connected.

Classes contain information and behavior that acts on that information.

Each class on class diagram is represented by rectangle divided into three sections.



The first section shows the class name, second section shows the attributes the class contains and last section contains the operation of the class.

In our LIBRARY MANAGEMENT SYSTEM, the classes identified are

1. Login
2. Display
3. Add
4. Controller
5. Database

Each class has its own attributes and operations.

Login class - The attributes defined is user.
The method identified is login.

Display class - The attributes are name, id, book name, author name, date.
The operation identified is Display.

Add class - The attributes are name, id, book name, author name, date.
The operation defined is adding new record.

Controller class - The attributes it has is id.no, name, and password.
The operations carried out by this class are added, display.

The Solid line between the classes shows the Association relationship between them.

SOFTWARE DEVELOPMENT

Login Form:

```
Private Sub Command1_Click()
If Text1.Text = "library" And Text2.Text = "cse" Then
  books.Show
Else
MsgBox ("Invalid input")
End If
End Sub
```

Lending Books:

```
Private Sub Command1_Click()
lendingbooks.Show
End Sub
Private Sub Form_Load()
lendingbooksado.Recordset.AddNew
End Sub
Private Sub Conbtn_Click()
lendingbooksado.Recordset.Fields("Regno") = txtreg.Text
lendingbooksado.Recordset.Fields("Name") = txtname.Text
lendingbooksado.Recordset.Fields("Book name") = txtbook.Text
lendingbooksado.Recordset.Fields("Author name") = txtauthor.Text
lendingbooksado.Recordset.Fields("Date of lending books") =
txtlendingbooks.Text
lendingbooksado.Recordset.Update
MsgBox "User lendingbooks Successful"
returnbooks.Show
End Sub
```

Return Books:

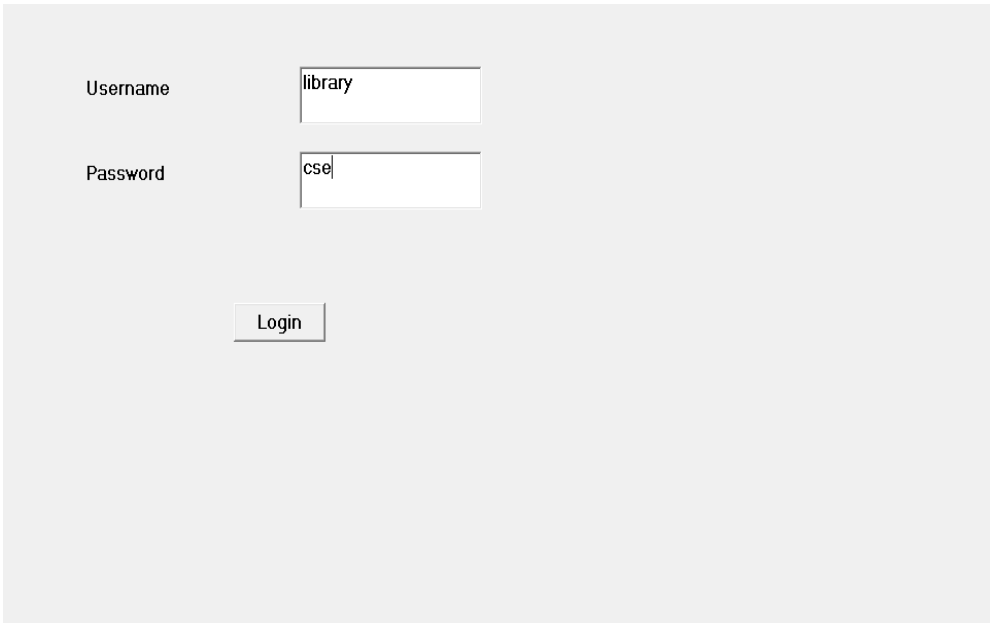
```
Private Sub Form_Load()
returnbooksado.Recordset.AddNew
End Sub
Private Sub Confbtn_Click()
returnbooksado.Recordset.Fields("Regno") = txtreg.Text
returnbooksado.Recordset.Fields("Name") = txtname.Text
returnbooksado.Recordset.Fields("Book name") = txtbook.Text
returnbooksado.Recordset.Fields("Author name") = txtauthor.Text
returnbooksado.Recordset.Fields("Date of Return Books") = txtreturnbooks.Text
returnbooksado.Recordset.Update
MsgBox "User returnbooks Successful"
End Sub
```

Exit:

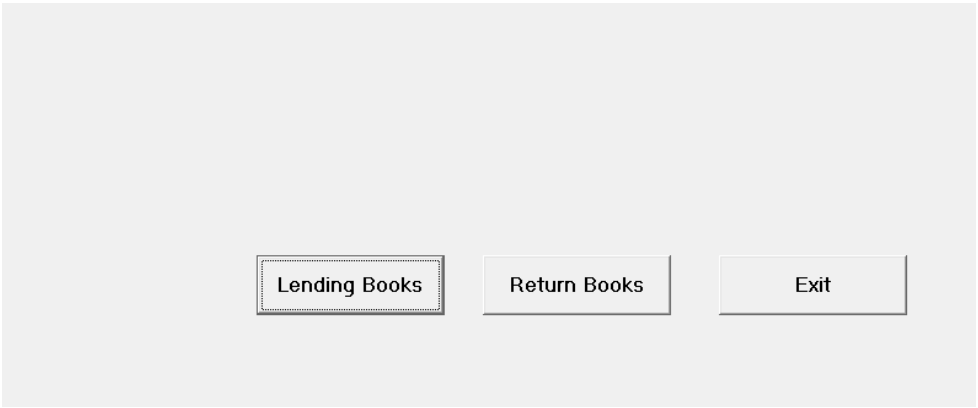
```
Private Sub exitbtn_Click()
End
End Sub
```

OUTPUT:

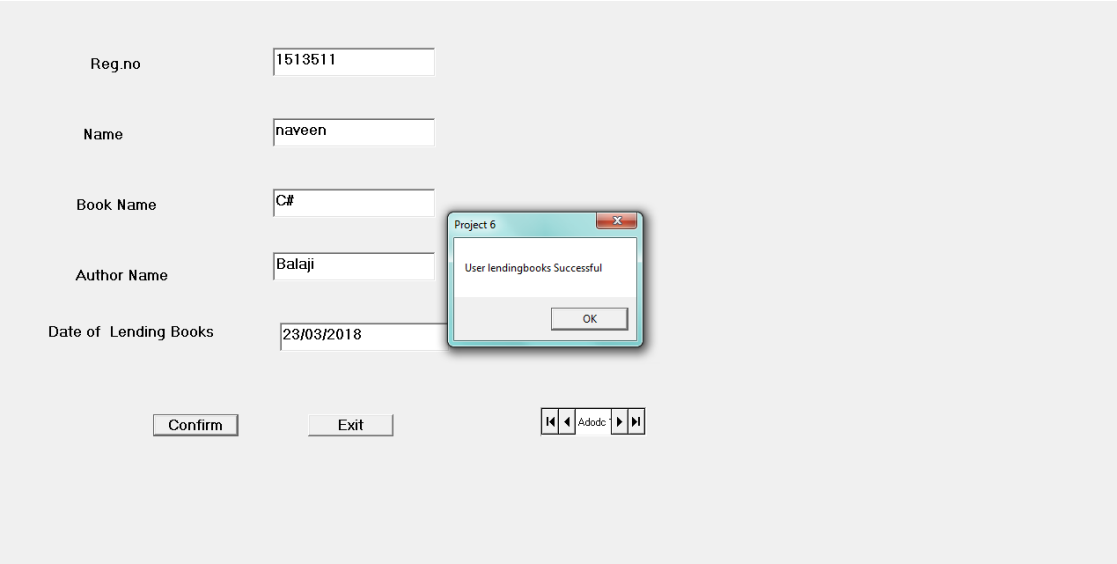
Form1:



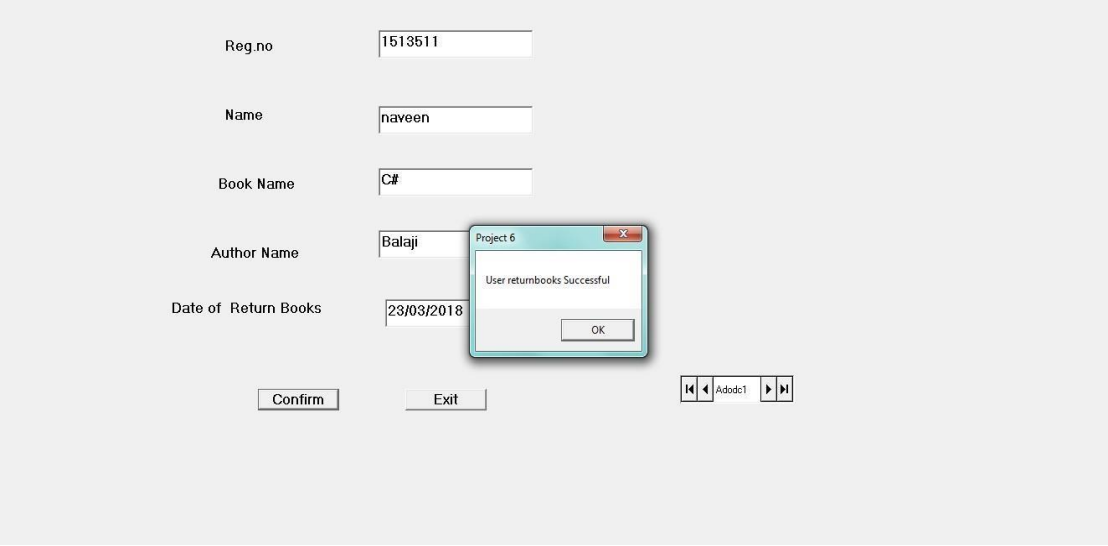
Form2:



Form3:


Reg.no
1513511
Name
naveen
Book Name
C#
Author Name
Balaji
Date of Lending Books
23/03/2018
Project 6
User lendingbooks Successful
OK
Confirm
Exit
Adodc

Form4:


Reg.no
1513511
Name
naveen
Book Name
C#
Author Name
Balaji
Date of Return Books
23/03/2018
Project 6
User returnbooks Successful
OK
Confirm
Exit
Adodc1

Database:

Lending Books:

Table1

regno	name	book name	author name	date of lenc	Click to Add
1513149	vaishnavi.D	Economics	A. Samuelson Paul	01/03/2018	
1513151	vaishnavi.R	Upgrading and Repairing PCs	Scott M. Mueller	08/02/2018	
1513154	vidhya varshini	Harrypotter	J.K.Rowling	11/03/2018	
1513511	naveen	C#	Balaji	23/03/2018	
1513512	prakash	Android	PRASANNA KUMAR DIXIT	23/02/2018	
0					

Return Books:

Table2

regno	name	book name	author name	date of return	Click to Add
1513149	vaishnavi.D	Economics	A. Samuelson Paul	01/03/2018	
1513151	vaishnavi.R	Upgrading and Repairing PCs	Scott M. Mueller	08/02/2018	
1513154	vidhya varshin	Harrypotter	J.K.Rowling	11/03/2018	
1513511	naveen	C#	Balaji	23/03/2018	
1513512	prakash	Android	PRASANNA KUMAR DIXIT	23/02/2018	
0					

RESULT:

Thus the **LIBRARY MANAGEMENT SYSTEM** is developed with all necessary documents and UML diagrams using Software Engineering methodology.