EX NO: DATE:	LIBRARY MANAGEMENT SYSTEM

AIM

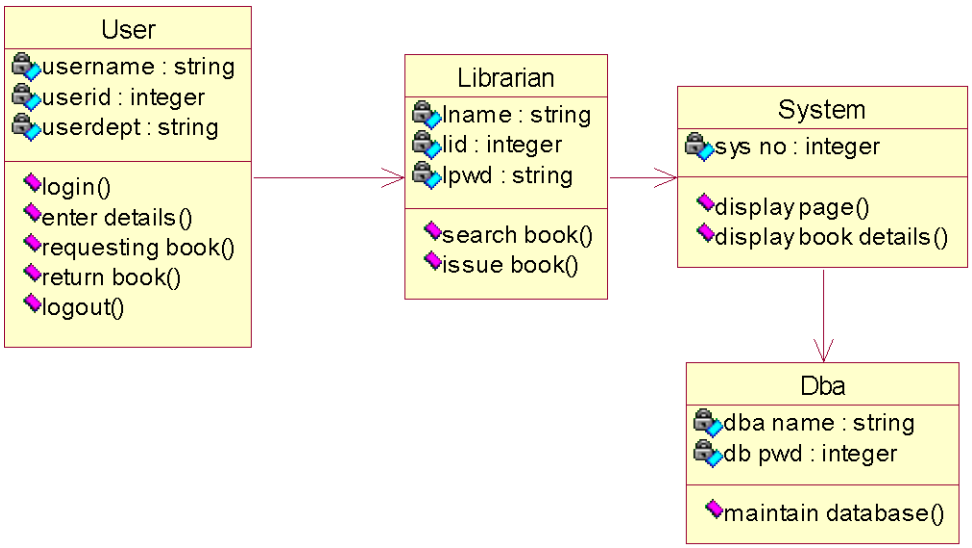
To design an object oriented model for Library Management System using Rational Rose software and to implement it using Java.

PROBLEM STATEMENT

The library management system is a software system that issues books and magazines to registered students only. The student has to login after getting registered to the system. The borrower of the book can perform various functions such as searching for desired book, get the issued book and return the book.

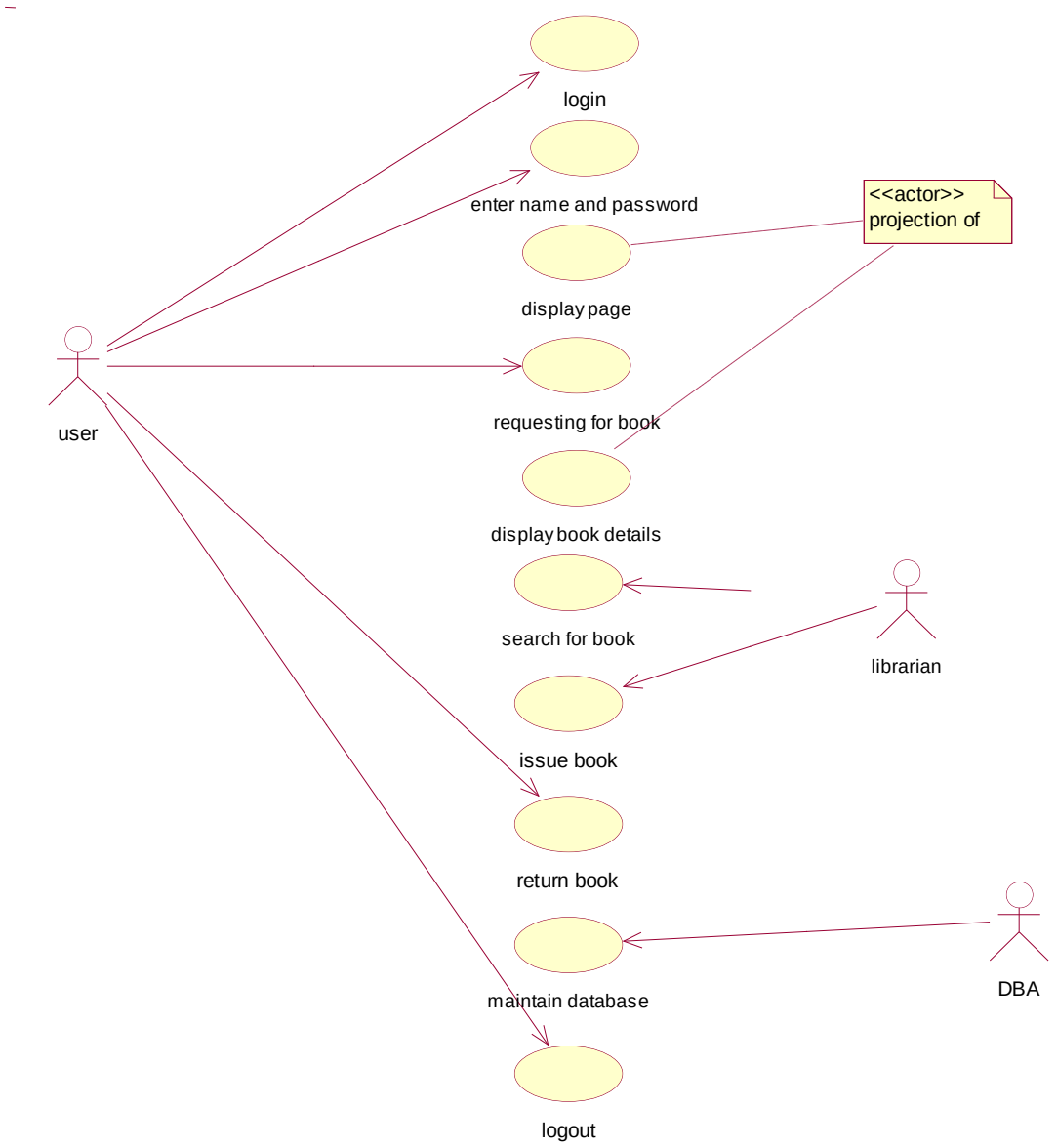
CLASS DIAGRAM

A class diagram in the unified modeling language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations and the relationships among objects. The library management system makes use of the following classes user, librarian, system and DBA.



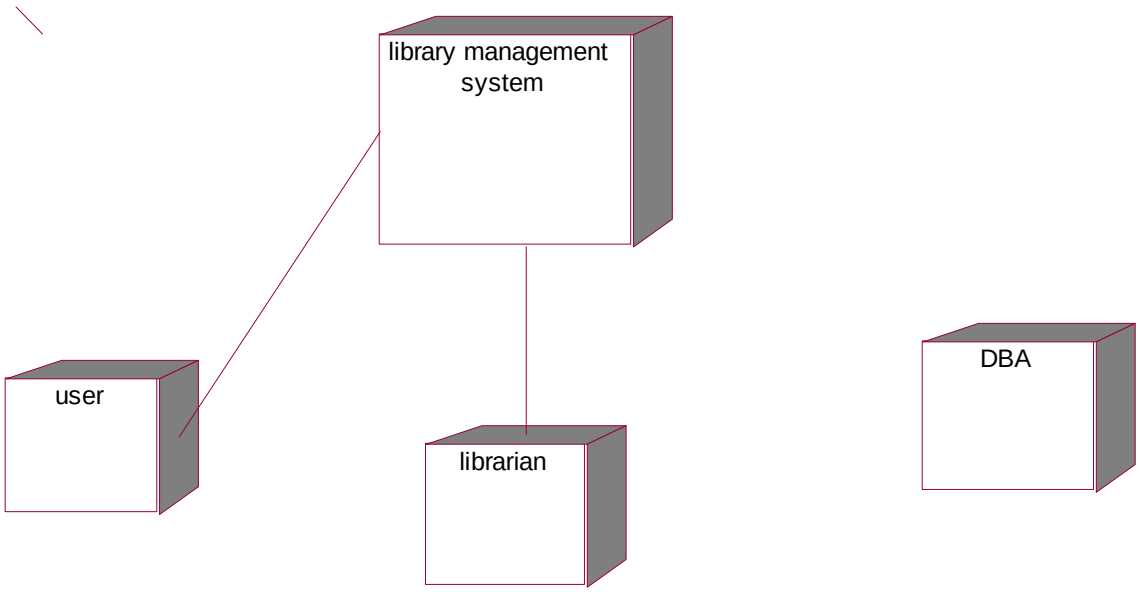
USE CASE DIAGRAM

Use case is a list of actions or events. Steps typically defining the interactions between a role and a system to achieve a goal. The use case diagram consists of various functionality performed by actors like user, librarian, system and DBA.



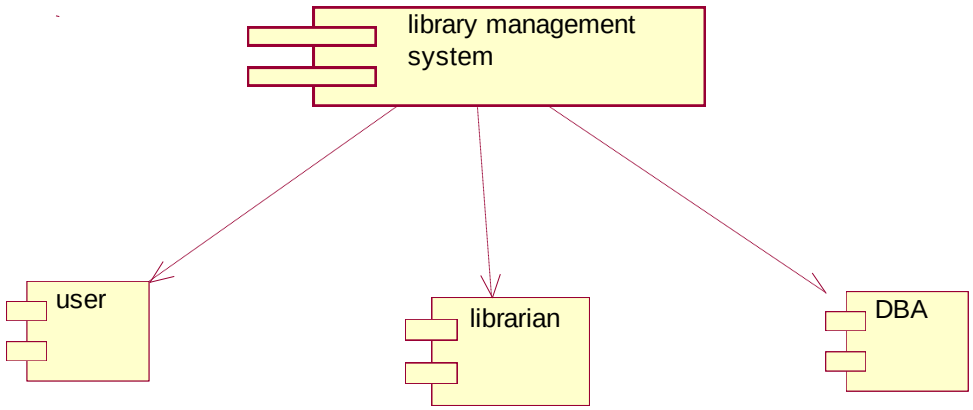
DEPLOYMENT DIAGRAM

Deployment diagram is a structure diagram which shows architecture of the system as deployment of software artifacts to deployment target. It is the graph of nodes connected by communication association. It is represented by three dimensional box. The device node is library management system and execution environment nodes are user, librarian, system and DBA.



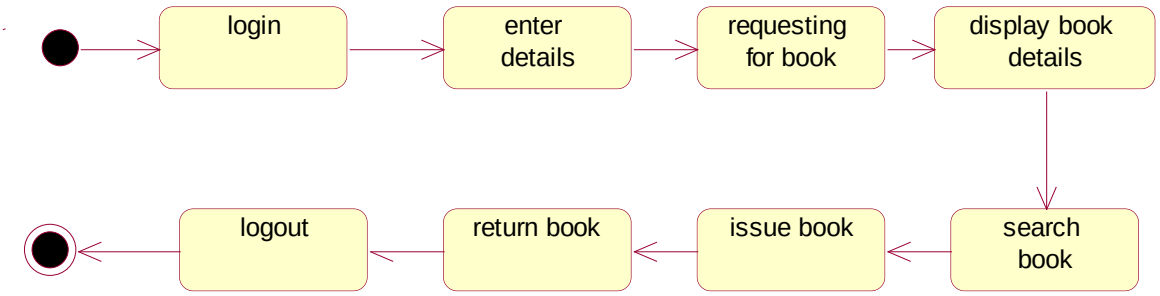
COMPONENT DIAGRAM

Component diagram shows the dependencies and interactions between software components. Component diagram carries the most important living actors of the system i.e, user, librarian and DBA.



STATECHART DIAGRAM

State chart diagram is also called as state machine diagram. The state chart diagram contains the states in the rectangular boxes and the states are indicated by the dot enclosed. The state chart diagram describes the behavior of the system. The state chart diagram involves eight stages such as login, enter details, requesting for book, display book details, search book, issue book, return book and logout.



OUTPUT

```
//Source file: C:/Users/User/Desktop/ab/Dba.java
public class Dba
{
   private string dbaName;
   private integer dbPwd;
      public Dba()
   {
   }
   /**
   @roseuid 59D07EC80314
   */
   public void maintainDatabase()
   {
   }
}
//Source file: C:/Users/User/Desktop/ab/Librarian.java
public class Librarian
{
   private string lname;
   private integer lid;
   private string lpwd;
   public Librarian theLibrarian;
   public System theSystem;
      public Librarian()
```

```
    {
    }
     /**
    @roseuid 59D07E650105
    */
    public void searchBook()
    {
    }

/**
    @roseuid 59D07E6A029B
    */
    public void issueBook()
    {
    }
}
//Source file: C:/Users/User/Desktop/ab/System.java
public class System
{
    private integer sysNo;
    public Dba theDba;
       public System()
    {
    }
```

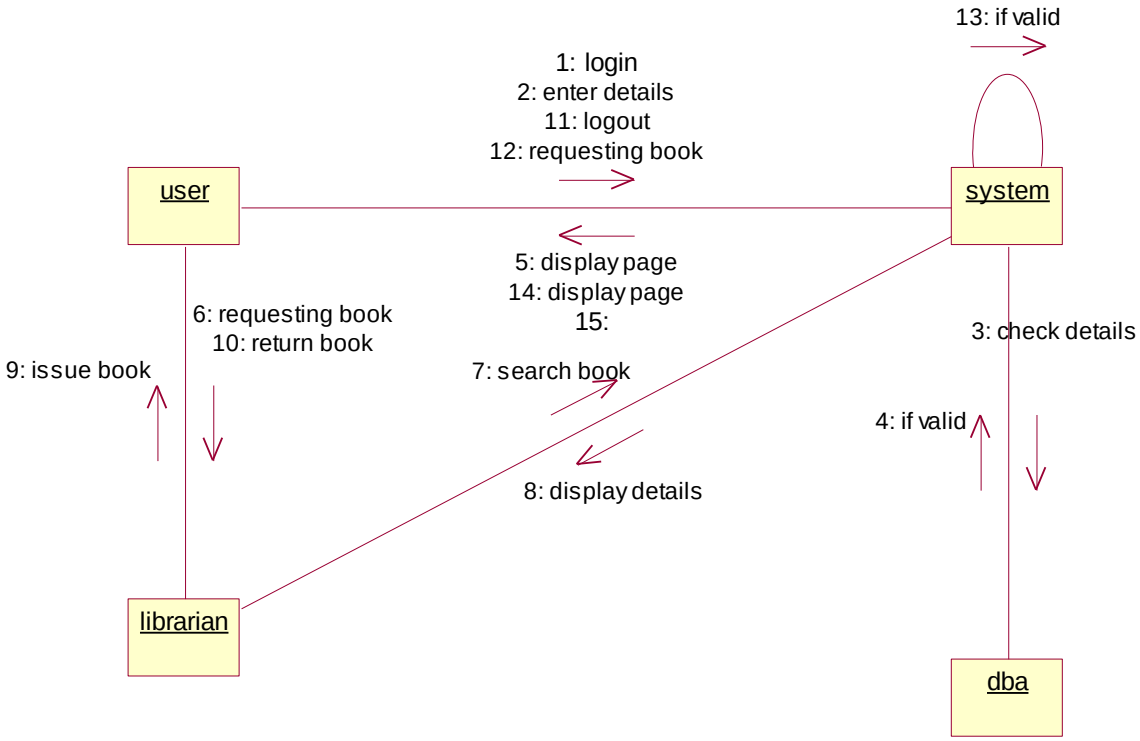
```
   /**
   @roseuid 59D07E8B0328
   */
   public void displayPage()
   {
   }
   /**
   @roseuid 59D07E90034C
   */
   public void displayBookDetails()
   {
   }
}
//Source file: C:/Users/User/Desktop/ab/User.java
public class User
{
   private string username;
   private integer userid;
   private string userdept;
   public System theSystem;
   public Librarian theLibrarian;
      public User()
   {
   }
```

```
/**
@roseuid 59D07E0401D5
*/
public void login()
{
}

/**
@roseuid 59D07E0A016F
*/
public void enterDetails()
{
}

/**
@roseuid 59D07E240232
*/
public void requestingBook()
{
}
 /**
@roseuid 59D07E2B0185
*/
public void returnBook()
{
```

```
    }
     /**
    @roseuid 59D07E310090
    */
    public void logout()
    {
    }
}
```

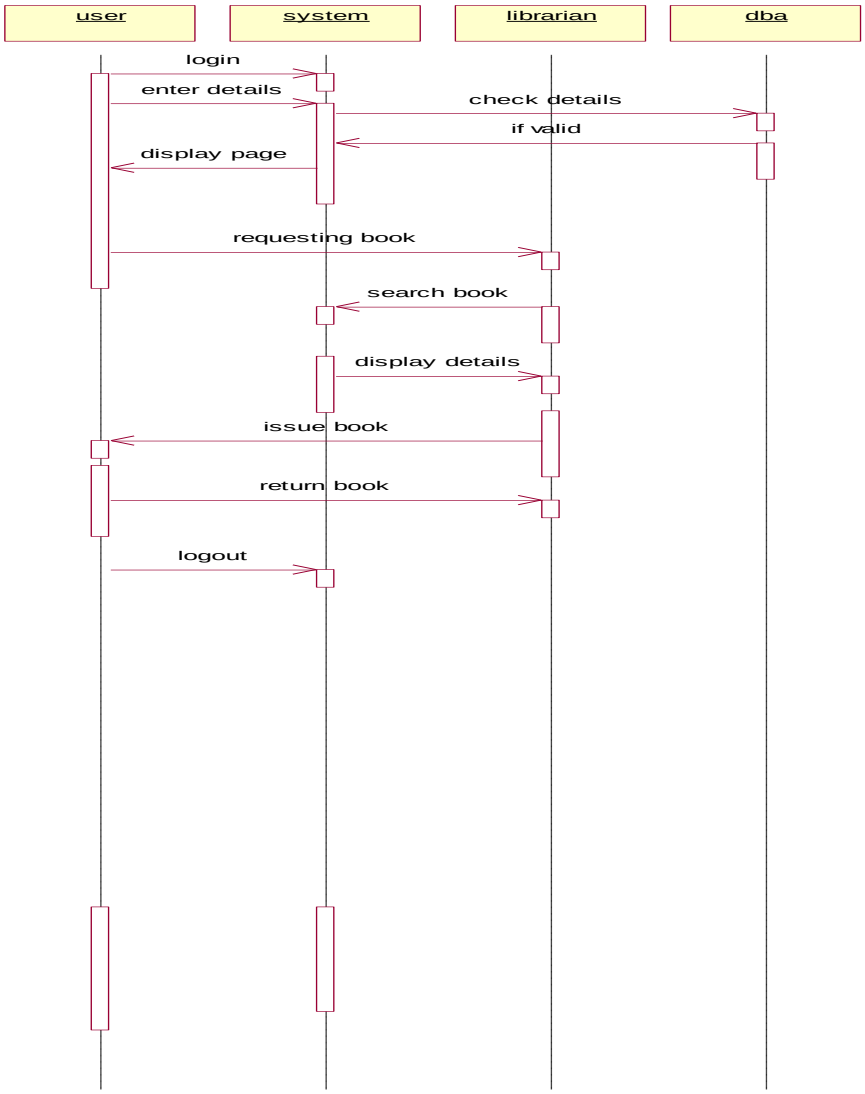
COLLABORATION DIAGRAM

Like sequence diagram collaboration diagrams are also called as interaction diagram. Collaboration diagram convey the same informations as sequence diagram but focus on the object roles instead of the times that messages are sent. Here the actions between various classes are represented by number format for the case of identification.



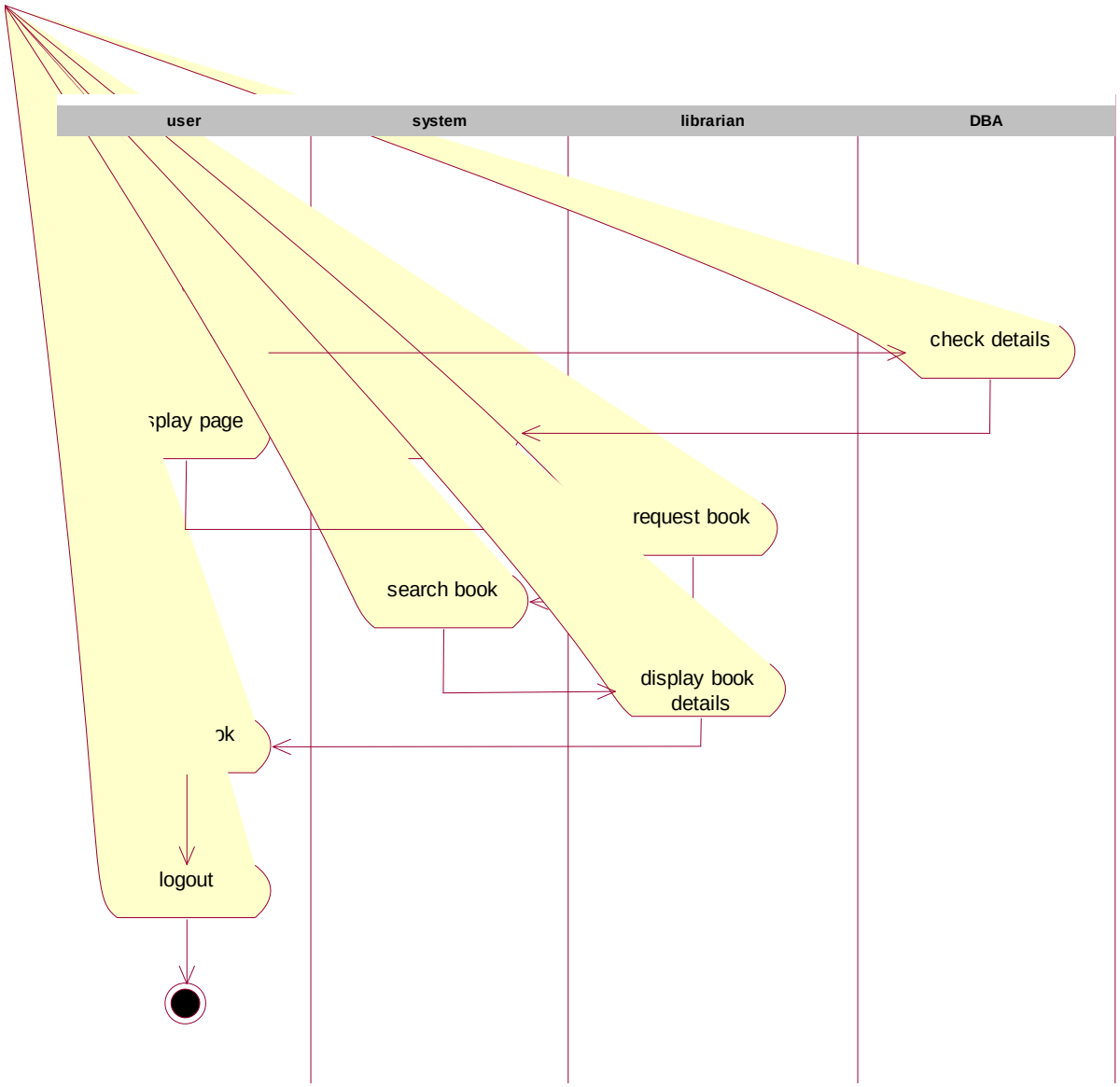
SEQUENCE DIAGRAM

A sequence diagram represent the sequence and interactions of a given use case or scenario. Sequence diagram capture most of the information about the system. It is also represent in order by which they occur and have the object in the system send message to one another. Here the sequence starts with interaction between user and the system followed by database. Once the book have been selected the next half of sequence starts between librarian and user followed by database.



ACTIVITY DIAGRAM

Activity diagram are graphical representation of workflows of stepwise activities and actions with support for choice, iteration and concurrency. Here in the activity diagram the user login to the system and perform some main activity which is the main key element to the system.



RESULT

Thus the various UML diagrams for library management system was drawn and the code was generated successfully.