CENTARL RAILWAY SCHOOL & JR COLLEGE

A Project Report on

LIBRARY MANAGEMENT SYSTEM

For

INFORMATICS PRACTICES

SUBMITTED BY

Aayush Kanholikar

Under the Guidance of:

Mrs. Juliet Shetty

ACKNOWLEDGEMENT

In the accomplishment of this project successfully many people have bestowed upon me their blessing and the heart pledged support this time I am utilizing to thank all the people who have been concerned with project.

Primarily I would thank god for being able to complete this project with success. Then I would like to thank my principal Sir, **Jacob Thomas** and Informatics Practices teacher **Mrs. Juliet Shetty** whose valuable guidance has been the ones helped me patch this project and make it foolproof success his suggestion and his instruction have served as the major contributor towards completion of the project.

Then I would like to thank my parents and classmates who have helped me with their valuable suggestion and guidance has been helpful in various phases of the completion of the project.

Last but not the least I would like to thank all the members of Informatics Practices Department.

*****THANK YOU FOR PROVIDING ME A GREAT OPPORTUNITY*****

DECLARATION

I, **Aayush Kanholikar**, student of XIIth Science, hereby declare that this project work presented in this report submitted to **CENTRAL RAILWAY SECONDRARY SCHOOL AND JR. COLLEGE, KALYAN** is genuine work done by me under the guidance of respected Madam, **JULIET SHETTY** the Informatics Practices teacher.

Aayush Kanholikar
XIIth

ABSTRACT

We have developed this project **LIBRARY MANAGEMENT SYSTEM** using **IDE-NETBEANS** for front-end and **MYSQL** for back-end. This project is a small application which provides user to issue and return multiple Books.

The main features of library management system are:

- ✓ Username and password for every registered Users.
- ✓ User can add student in their library management system.
- ✓ Added Students can Issue and Return Books.
- ✓ Records are saved for Issue and Return Books.
- ✓ User can keep the record of the dates of its books when issued and returned by students.
- ✓ User can keep Records of those Students who have not Returned the book till the last date.

The whole compilation of various forms is done in efficient and attractive format.

Objective: ~

This project is to manage the library by this System. By this System the entire Library is consistence without any manual error. It keeps the record of all the Students. In Case if a Student is supposed to disturb there their system It keeps the record that which Student is remained to return the book. He / She will be caught by this consistency. And no Student will be able to do Fake with the library liabilities.

CONTENT

System Implementation

1. Hardware used: ~

- HP~pc

Manufacture	:	HP Infosystems Limited
Model	:	HP Laptop
Categories	:	Laptop Computer
Processor	:	AMD Ryzen 3 2200u with Radeon VEGA Mobile Gfx 2.50GHz
Installed Memory	:	4.00 GB
System type	:	64~bit Operating System.

- Printer

- USB Storage Device

2. Software used: -

- Windows 10

- Microsoft Word

- Java

- Netbeans
  (front-end)

- MySql
  (back-end)

NetBeans IDE 8.2

What is Netbeans?

Netbeans is a software development platform written in Java. The Netbeans Platform allows applications to be developed from a set of modular software components called modules.

Applications based on the NetBeans Platform, including the NetBeans integrated development environment (IDE), can be extended by third party developers.

NetBeans is cross-platform and runs on Microsoft Windows, Mac OS, Linus, Solaris and other platforms supporting a compatible JVM.

The editor supports many languages from Java C/C++, XML and HTML, to PHP, Groovy, JavaScript and JSP. Because the editor is extensible, you can plug in support for many other languages.

A new version was released 8.2 on 4th April 2019. NetBeans IDE is official IDE for Java 8. With its editors, code analysers, and converters, you can quickly and smoothly upgrade your applications to use new Java 12 language constructs, such as lambdas, functional operations, and method references.

What is MySql?

MySQL (officially pronounced as "My-S-Q-L") is an open source relational database, management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structural Query Language.

The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, owned by Oracle Corporation. For proprietary use, several paid editors are available, and offer additional functionality.

MySQL is also used in many high-profile, large-scale websites, including Google, Facebook, Flickr, and YouTube.

Database Structure

User Details

MySQL 5.7 Command Line Client

```
mysql> desc users;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| Name     | varchar(30) | YES  |     | NULL    |       |
| Email    | varchar(50) | YES  |     | NULL    |       |
| Address  | varchar(60) | YES  |     | NULL    |       |
| Contact  | varchar(13) | YES  |     | NULL    |       |
| Password | varchar(20) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
5 rows in set (0.08 sec)

mysql> select * from users;
+------------------+----------------------+-----------+------------+----------+
| Name             | Email                | Address   | Contact    | Password |
+------------------+----------------------+-----------+------------+----------+
| Yash Jadhav      | yash2002@gmail.com   | Kalyan    | 9875154844 | 1234     |
| Sahil Lohakare   | yogeshsahil@gmail.com| Titwala   | 8645648546 | 1234     |
| Shubham Shinde   | ShindeBaapu@gmail.com| Kalyan    | 9568154855 | 1234     |
| Aayush Kanholikar| akanolikar@gmail.com | Ambernath | 9359847175 | 1234     |
+------------------+----------------------+-----------+------------+----------+
4 rows in set (0.00 sec)

mysql>
```

Books Details

MySQL 5.7 Command Line Client

```
mysql> desc books;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| Book_ID   | int(11)     | YES  |     | NULL    |       |
| BookName  | varchar(25) | YES  |     | NULL    |       |
| Publisher | varchar(30) | YES  |     | NULL    |       |
| Edition   | varchar(5)  | YES  |     | NULL    |       |
| Author    | varchar(30) | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> select * from books;
+---------+-------------+--------------------+---------+--------------+
| Book_ID | BookName    | Publisher          | Edition | Author       |
+---------+-------------+--------------------+---------+--------------+
|       1 | Physics     | Patshala Publisher | 1st     | HC verma     |
|       2 | Chemistry   | Laxmi              | 2nd     | S.N. Chhawal |
|       3 | English     | NCERT              | 1st     | Akash Sharma |
|       4 | Mathematics | NCERT              | 1st     | RD Sharma    |
|       5 | ip          | Ncert              | 2nd     | Arorra       |
+---------+-------------+--------------------+---------+--------------+
5 rows in set (0.00 sec)

mysql>
```

Students Details

MySQL 5.7 Command Line Client

```
mysql> desc student;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Student_ID | int(11)     | NO   | PRI | NULL    |       |
| Name       | varchar(30) | YES  |     | NULL    |       |
| Course     | varchar(10) | YES  |     | NULL    |       |
| Year       | varchar(10) | YES  |     | NULL    |       |
| Semester   | varchar(10) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
5 rows in set (0.02 sec)

mysql> select * from student;
+------------+------------------+--------+------+----------+
| Student_ID | Name             | Course | Year | Semester |
+------------+------------------+--------+------+----------+
|         66 | Sahil            | BSSE   | 1st  | 1st      |
|        405 | Yash Jadhav      | BSC    | 4th  | 1st      |
|        508 | Aryan Thakur     | BSC    | 1st  | 3rd      |
|        612 | Aayush bhai      | BSCS   | 1st  | 2nd      |
|        617 | Aayush Kanholikar | BSC   | 1st  | 1st      |
|        884 | Shubham Shinde   | MCS    | 2nd  | 1st      |
|        955 | Sahil            | BSC    | 2nd  | 1st      |
+------------+------------------+--------+------+----------+
7 rows in set (0.10 sec)

mysql>
```

Issue Book Details

MySQL 5.7 Command Line Client

```
mysql> desc issue;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Book_ID    | int(11)     | YES  |     | NULL    |       |
| BookName   | varchar(40) | YES  |     | NULL    |       |
| Student_Id | varchar(45) | YES  |     | NULL    |       |
| Name       | varchar(40) | YES  |     | NULL    |       |
| Course     | varchar(40) | YES  |     | NULL    |       |
| IssueDate  | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql> select * from issue;
Empty set (0.00 sec)

mysql>
```

Return Books Details

MySQL 5.7 Command Line Client

```
mysql> desc return_book;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Book_ID    | int(11)     | YES  |     | NULL    |       |
| BookName   | varchar(30) | YES  |     | NULL    |       |
| Student_Id | varchar(45) | YES  |     | NULL    |       |
| Name       | varchar(30) | YES  |     | NULL    |       |
| IssueDate  | varchar(15) | YES  |     | NULL    |       |
| ReturnDate | varchar(15) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
6 rows in set (0.10 sec)

mysql> select * from return_book;
+---------+-------------+------------+-------------+------------+------------+
| Book_ID | BookName    | Student_Id | Name        | IssueDate  | ReturnDate |
+---------+-------------+------------+-------------+------------+------------+
|       4 | Yash Jadhav | 405        | mathematics | 09-11-2019 | 09-11-2019 |
|       1 | Sahil       | 66         | physics     | 09-11-2019 | 09-11-2019 |
|       4 | Sahil       | 66         | mathematics | 11-11-2019 | 11-11-2019 |
|       5 | Sahil       | 955        | ip          | 13-11-2019 | 13-11-2019 |
|       5 | Sahil       | 955        | ip          | 13-11-2019 | 13-11-2019 |
+---------+-------------+------------+-------------+------------+------------+
5 rows in set (0.00 sec)

mysql>
```

★ *IMPORTANT FILES*

```
import java.sql.Connection;
import java.sql.DriverManager;
imp ort javax.swing.JOptionPane;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import net.proteanit.sql.DbUtils;
import java.sql.SQLException;
import java.sql.Statement;
import java.text.SimpleDateFormat;
import java.util.Date;
```

SNAPSHOTS & CODINGS

WELCOME PAGE: ~

- ## LOGIN BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
        Login lg=new Login();
        lg.setVisible(true);
        this.setVisible(false);
    }
```

- ## EXIT BUTTON: ~

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
     System.exit(0);
}
```

LOGIN: ~

- ## LOGIN BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    try{ String sql = "select * from users where name= ? AND password= ? ";
    pst= conn.prepareStatement(sql);
    pst.setString(1, name.getText());
    pst.setString(2, password.getText());
    rs = pst.executeQuery();
    if(rs.next()){ Home mn=new Home();
    mn.setVisible(true);
    this.setVisible(false);
    }
    else{
    JOptionPane.showMessageDialog(null,"Incorrect name Or Password ! ");
    }  }
    catch(Exception e ){
    JOptionPane.showMessageDialog(null, e);  }  }
```

- **BACK BUTTON: ~**

```
private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {
    setVisible(false);
      mainpage1 mn=new mainpage1();
    mn.setVisible(true);
    this.setVisible(false);
 }
```

- **REGISTER BUTTON: ~**

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
    setVisible(false);
    Register ob = new Register();
    ob.setVisible(true);
 }
```

REGISTER: ~

- ## REGISTER BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    try{ String sql = "insert into users (name, email, address, contact, password) values (?, ?, ?, ?, ?)";
        pst=conn.prepareStatement(sql);
        pst.setString(1, jTextField1.getText());
        pst.setString(2, jTextField2.getText());
        pst.setString(3, jTextField3.getText());
        pst.setString(4, jTextField4.getText());
        pst.setString(5, jTextField5.getText());
        pst.execute();
        JOptionPane.showMessageDialog(null, "Record Inserted");
        setVisible(false);
        Login ob = new Login();
```

```
            ob.setVisible(true); }
        catch(Exception e){
        JOptionPane.showMessageDialog(null, e);
            }
    }
```

- **GO BACK BUTTON: ~**

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
        setVisible(false);
        Login ob =  new Login();
        ob.setVisible(true);
    }
```

HOME PAGE(After Login): ~

- ## ADD NEW BOOK BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
        setVisible(false);
        AddBook ob = new AddBook();
        ob.setVisible(true);
    }
```

- ## STATISTICS BUTTON: ~

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
        setVisible(false);
        Statistics ob = new Statistics();
        ob.setVisible(true);
    }
```

- **NEW STUDENT BUTTON: ~**

```
private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {
        Student ob = new Student();
        ob.setVisible(true);
    }
```

- **ISSUE BOOK BUTTON: ~**

```
 private void jButton4ActionPerformed(java.awt.event.ActionEvent evt) {
        setVisible(false);
        Issue ob = new Issue();
        ob.setVisible(true);
    }
```

- **RETURN BOOK BUTTON: ~**

```
 private void jButton5ActionPerformed(java.awt.event.ActionEvent evt) {
       setVisible(false);
        ReturnBook2 ob = new ReturnBook2();
        ob.setVisible(true);
    }
```

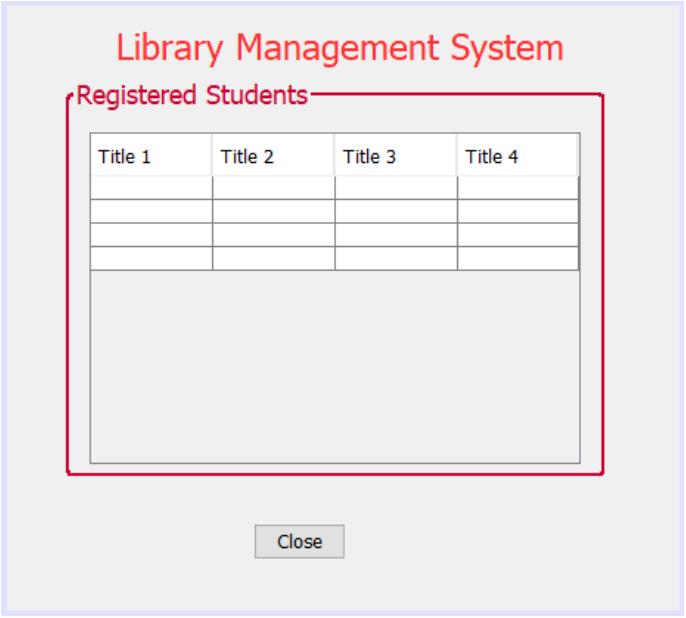
- **LOGOUT BUTTON: ~**

```
 private void jMenuItem2ActionPerformed(java.awt.event.ActionEvent evt) {
        Login mn=new Login();
        mn.setVisible(true);
        this.setVisible(false); }
```

- **EXIT BUTTON: ~**

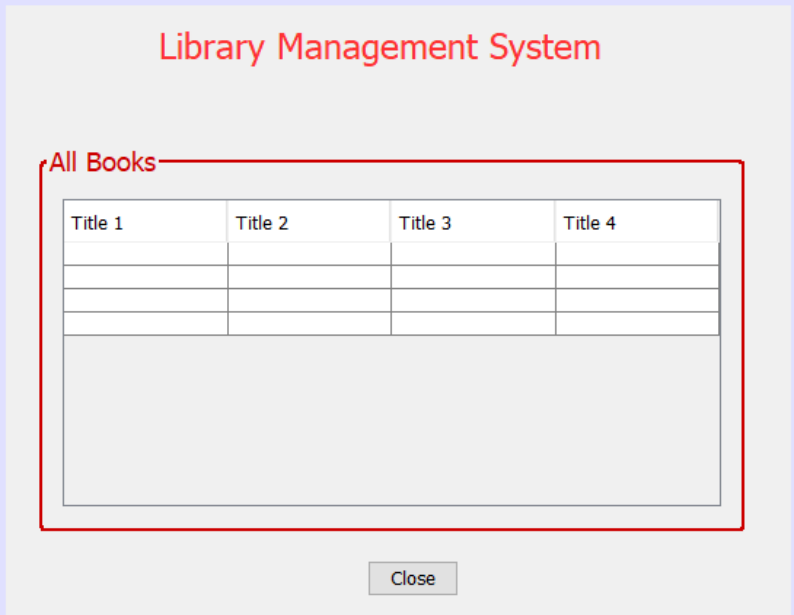
```
private void jMenuItem1ActionPerformed(java.awt.event.ActionEvent evt) {
        System.exit(0);  }
```

- **REGISTERED STUDENTS BUTTON: ~**



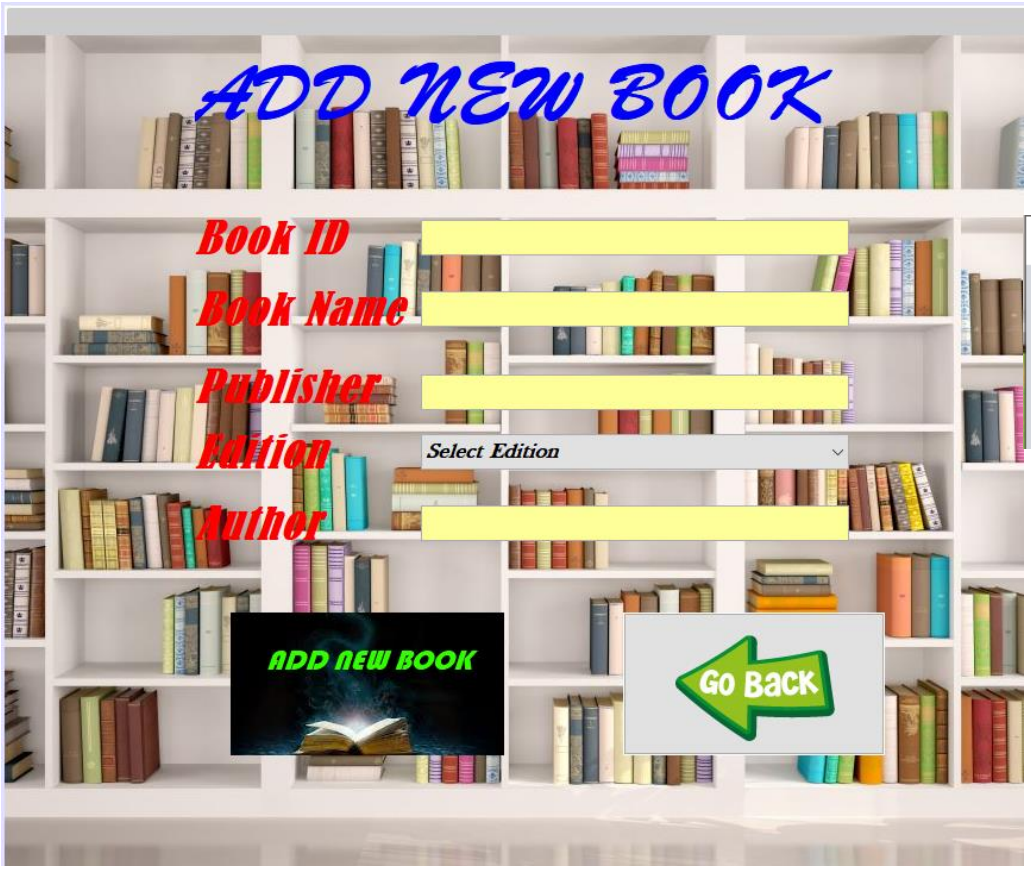

```
private void jMenuItem3ActionPerformed(java.awt.event.ActionEvent evt) {
        RegisteredStudents ob = new RegisteredStudents();
        ob.setVisible(true);
    }
```

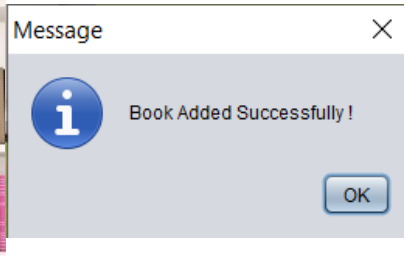
- ## ALL BOOK BUTTON: ~




```
private void jMenuItem4ActionPerformed(java.awt.event.ActionEvent evt) {
        AllBooks ob =  new AllBooks();
        ob.setVisible(true);
    }
```

ADD NEW BOOK: ~





- ADD NEW BOOK BUTTON: ~

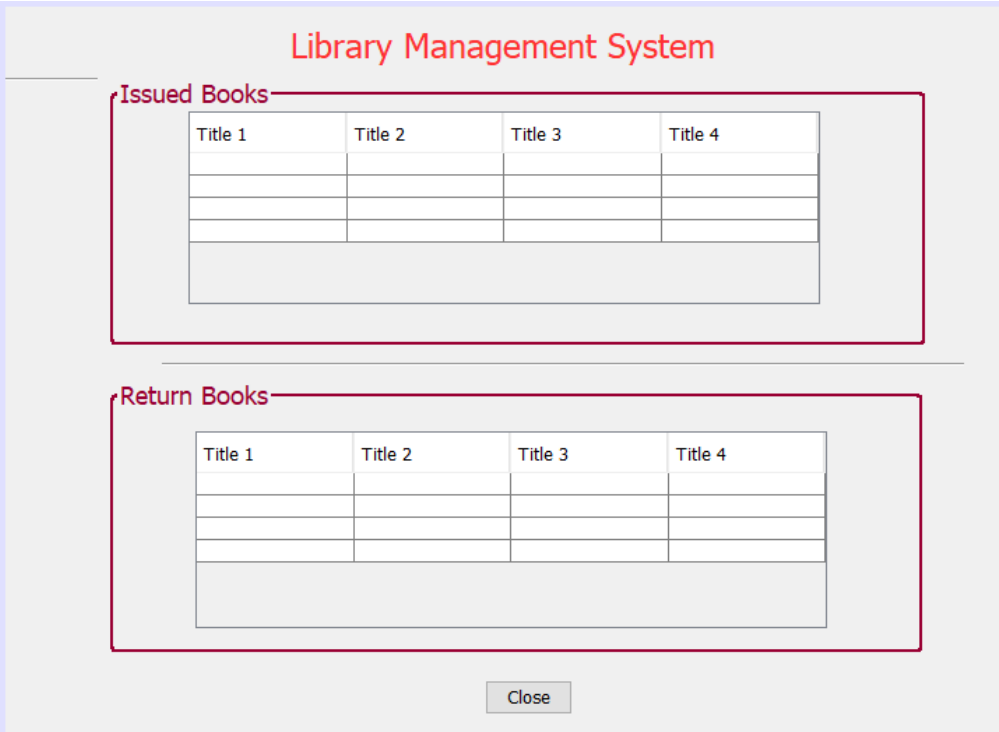
```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    String sql = "insert into books (book_ID,bookname, publisher, edition, author) values (?, ?, ?, ?, ?)";
     try{
    pst = conn.prepareStatement(sql);
    pst.setString(1, jTextField1.getText());
    pst.setString(2, jTextField2.getText());
    pst.setString(3, jTextField3.getText());
    pst.setString(4, (String) jComboBox2.getSelectedItem());
    pst.setString(5, jTextField5.getText());
    pst.execute();
    JOptionPane.showMessageDialog(null, "Book Added Successfully !");
    }
```

```
    catch(Exception e){
    JOptionPane.showMessageDialog(null, e);
    }
}
```

- **GO BACK BUTTON: ~**

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
    Home mn=new Home();
    mn.setVisible(true);
    this.setVisible(false);
}
```

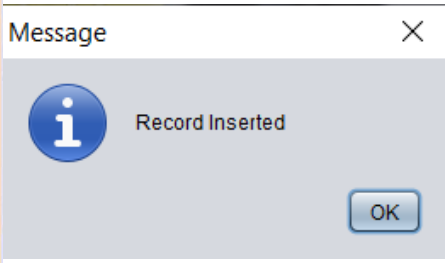
STATISTICS: ~



- ## CLOSE BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    setVisible(false);
     Home mn=new Home();
    mn.setVisible(true);
    this.setVisible(false);
}
```

ADD STUDENT: ~



- ## REGISTER NOW BUTTON: ~

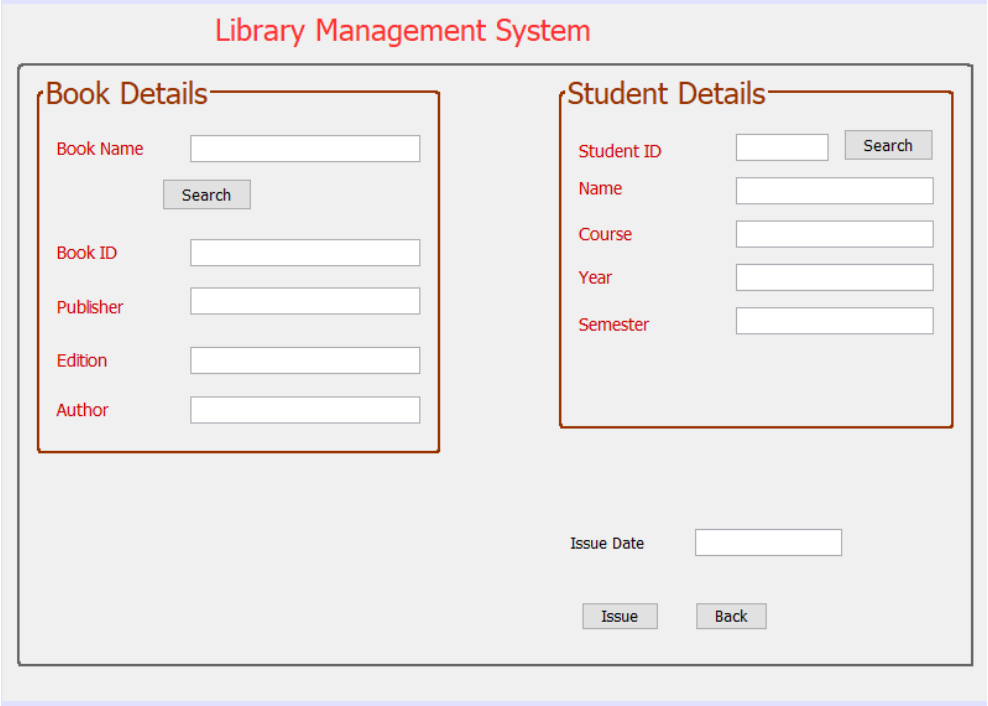
```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
        try{
    String sql = "insert into student (student_ID, name, course, year, semester) values (?, ?, ?, ?, ?)";
        pst=conn.prepareStatement(sql);
        pst.setString(1, jTextField1.getText());
        pst.setString(2, jTextField2.getText());
        pst.setString(3, (String) jComboBox1.getSelectedItem());
        pst.setString(4, (String) jComboBox2.getSelectedItem());
        pst.setString(5, (String) jComboBox3.getSelectedItem());
        pst.execute();
        JOptionPane.showMessageDialog(null, "Record Inserted");
        setVisible(false);
    }
```

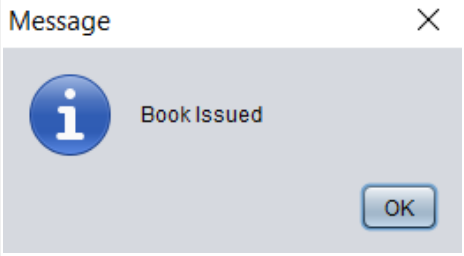
```
        catch(Exception e){
    JOptionPane.showMessageDialog(null, e);
        }
}
```

- GO BACK BUTTON: ~

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
    Home mn=new Home();
    mn.setVisible(true);
    this.setVisible(false);
}
```

ISSUE BOOK : ~





SEARCH(By Book Name)

BUTTON: ~

```
private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {
        String sql = "select * from books where bookName=? ";
 try{ pst = conn.prepareStatement(sql);
pst.setString(1, jTextField1.getText());
rs = pst.executeQuery();
if(rs.next())
{
String add2 = rs.getString("Book_ID");
jTextField2.setText(add2);
String add3 = rs.getString("publisher");
jTextField3.setText(add3);
String add4 = rs.getString("edition");
jTextField4.setText(add4);
String add5 = rs.getString("author");
jTextField5.setText(add5);
```

```
jTextField11.setText(format.format(date));
rs.close();
pst.close();
}
else{
  JOptionPane.showMessageDialog(null,"No Book Found ! ", "Error",
JOptionPane.ERROR_MESSAGE); } }
 catch( SQLException | HeadlessException e){
JOptionPane.showMessageDialog(null, e);
}
}
```

SEARCH(By Student ID) BUTTON: -

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
 String sql;
 sql = "select * from student where student_ID=?";
 try{ pst = conn.prepareStatement(sql);
pst.setString(1, jTextField6.getText());
rs = pst.executeQuery();
if(rs.next())
{
String add2 = rs.getString("name");
jTextField7.setText(add2);
String add3 = rs.getString("course");
jTextField8.setText(add3);
String add4 = rs.getString("year");
jTextField9.setText(add4);
String add5 = rs.getString("semester");
jTextField10.setText(add5);
 jTextField11.setText(format.format(date));
```

```
rs.close();
pst.close();
}
else{    JOptionPane.showMessageDialog(null,"No Record Found ! ", "Error",
JOptionPane.ERROR_MESSAGE); } }
        catch(SQLException | HeadlessException e){
JOptionPane.showMessageDialog(null, e);  }   }
```

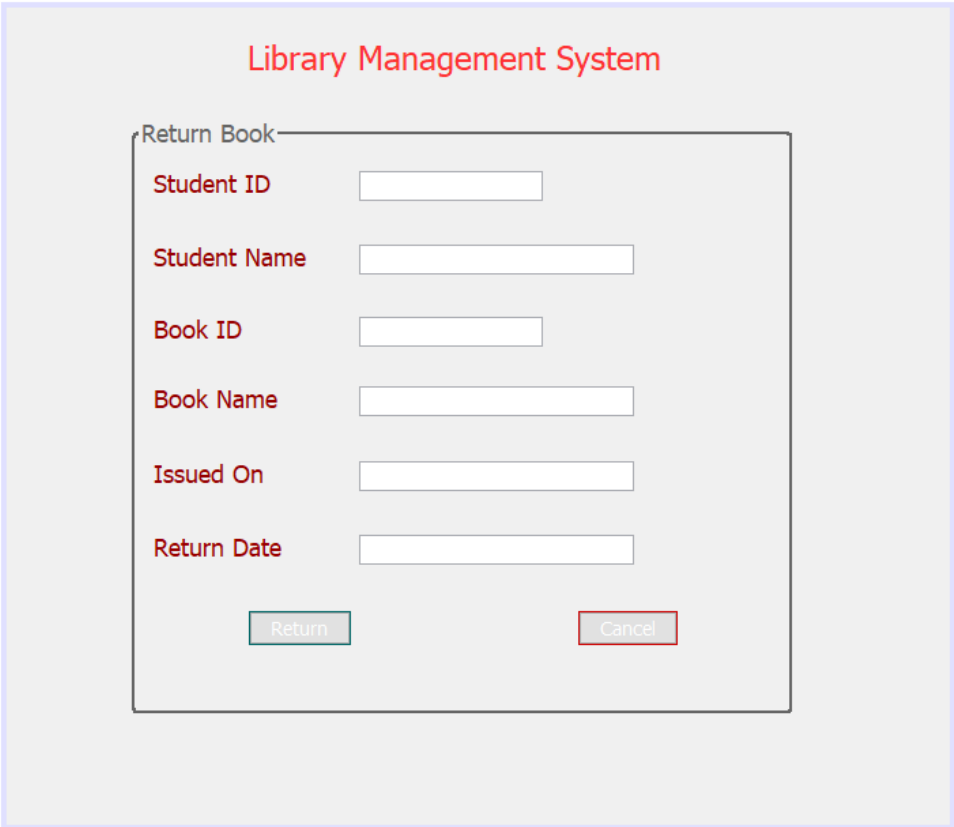
ISSUE BUTTON: ~

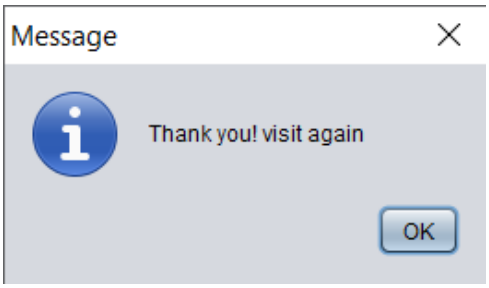
```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
String sql = "insert into issue (book_id, bookName, Student_Id, Name, Course,
IssueDate) values (?, ?, ?, ?, ?, ?)";
 try{  pst = conn.prepareStatement(sql);
pst.setString(1, jTextField2.getText());  pst.setString(2, jTextField1.getText());
pst.setString(3, jTextField6.getText()); pst.setString(4, jTextField7.getText());
pst.setString(5, jTextField8.getText()); pst.setString(6, jTextField11.getText());
  pst.execute();
JOptionPane.showMessageDialog(null, "Book Issued");
setVisible(false);
Home ob = new Home();
ob.setVisible(true);      }
   catch(SQLException | HeadlessException e){
JOptionPane.showMessageDialog(null, e);
}
}
```

BACK BUTTON: ~

```
private void jButton4ActionPerformed(java.awt.event.ActionEvent evt) {
 setVisible(false);
 Home ob = new Home();
 ob.setVisible(true);   }
```

RETURN BOOK : ~





- ## RETURN BUTTON: ~

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    try
    {   connect();
       query="select * from issue where Student_Id='"+t1.getText()+"';";
       rs=stmt.executeQuery(query);
       if(rs.next())
       {
          query="insert into return_book values('"+t3.getText()+"','";

query+=t2.getText()+"','"+t1.getText()+"','"+t4.getText()+"','"+t5.getText()+"','"+t6.getText()+"');";
          stmt.executeUpdate(query);
          query="delete from issue where Student_Id='"+t1.getText()+"';";
          stmt.executeUpdate(query);
           stmt.executeUpdate(query);
```

```
            disconnect();
            JOptionPane.showMessageDialog(this,"Thank you! visit again");
            t4.setText("");
                    t1.setText(""); t2.setText("");t3.setText("");t5.setText("");
        Home mn=new Home();
        mn.setVisible(true);
        this.setVisible(false);    }
          else
          {
            JOptionPane.showMessageDialog(this,"No book is issued on this id
currently");}  }
        catch(SQLException e)
        {
          JOptionPane.showMessageDialog(this,e); } }
```

- CANCEL BUTTON: ~

```
private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
        Home mn=new Home();
        mn.setVisible(true);
        this.setVisible(false);
    }
```

- TEXT FIELD1 KEY REALEASED(After Entering StudentID) BUTTON: ~

```
private void t1KeyReleased(java.awt.event.KeyEvent evt) {
      try
       {   connect();
          query="select * from issue where Student_Id='"+t1.getText()+"';";
          rs=stmt.executeQuery(query);
          int i=0;    while(rs.next())
```

```
        {   i++;
        t2.setText(rs.getString("Name"));    t3.setText(rs.getString("book_Id"));
        t4.setText(rs.getString("bookName"));    t5.setText(rs.getString("IssueDate"));
}
        disconnect();
        if(i==0)
        { t2.setText(""); t3.setText(""); t4.setText(""); t5.setText("");    }        }
      catch(Exception e)
      {           System.out.println(e);}
      t6.setText(format.format(date));
   }
```

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1. Search engines used:
   - http://www.google.com
   - http://www.YouTube.com

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