##### LIBRARY MANAGEMENT SYSTEM

##### A MINI PROJECT REPORT

###### ***Submitted by***

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***in partial fulfillment for the award of the degree***

***of***

**BACHELOR OF TECHNOLOGY**

IN

**INFORMATION TECHNOLOGY**

**SONA COLLEGE OF TECHNOLOGY,** **SALEM-5**

**(Autonomous)**

ANNA UNIVERSITY: CHENNAI 600 025

**October 2019**

**BONAFIDE CERTIFICATE**

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**ABSTRACT**

The Library Management System is gaining more importance as the numbers of users are increasing rapidly. Hence there is a need for effective management of the library. One such effective system is our Library Management System. It is designed using Java as front end and SQL as backend. Various functions like authentication, registration, add, search, delete and issue are provided. The Library Management System stores the details like name, address, ID number, contact number of users who come to library. The details of books like book name, book number, subject to which it belongs, the total numbers of books that are present in the library are also stored. The Library Management System provides options for generating any kind of reports with respect to issue of books and fine calculation module has been additionally provided, thereby reducing the risk present in the manual management of libraries.

**ACKNOWLEDGEMENT**

First and foremost, we thank the **power of almighty** for showing us inner peace and for all blessings. Special gratitude to our parents, for showing their support and love always.

We express our sincere thanks to Chairman **Sri.C.Valliappa** andPrincipal **Dr.S.R.R.Senthil Kumar** for providing adequate facilities to complete the project.

We are immensely grateful to Head of Information Technology, **Dr.J.Akilandeswari** for the continuous encouragement to complete the project.

We express our heartfelt thanks to our project supervisor **Ms.Lydia D.Isaac** for her valuable guidance and fruitful discussions throughout the course of the project work.

We feel proud in sharing this success with all our staff members and friends who helped directly or indirectly in completing this project successfully.

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**CHAPTER 1**

**INTRODUCTION**

* 1. **ABOUT THE PROJECT**

This project deals with “Library Management System”. This project describes a system which allows a librarian to maintain the records of the books, the members who are registered in the library, the track of the books issued etc. and reduces the manual work done by the librarian.

This project uses Forms in which the librarian (admin) does all their actions. All the forms are straightforward and can be easily understood and operated on by the librarian. This system improves the efficiency of the librarian as they have to do less manual work in keeping track of all the works in the library.

The modules included in this project are:

* Administrator Login
* Adding and Removing Books in and from the Library
* Adding and Removing Members in and from the Library
* Viewing the details about the Books and Members in and of the Library
* Issuing Books
* Viewing the details and Maintaining the Due Date of Issued Books
* Automatic Fine Calculation
* Alerts and Reminders through SMS(Messaging System)

**Administrator Login:**

Only the Librarian can add and remove books and members in the library and can issue and get back the book from the member. Other users can only view information about the books available and other members registered.

**Adding and Removing Books in and from the Library:**

The librarian can add new titles in the library system with the details of the book like Author’s name, the stream the book belongs to and the number of copies kept in the library. The librarian can also remove a book from the library system.

**Adding and Removing Members in and from the Library:**

The librarian can also register a member to the library along with their name, their address, which stream they belong to along with their contact number. The librarian can also remove a member for the system. A unique ID is generated automatically for each member.

**Viewing the details about the Books and Members in and of the Library:**

Both the librarian and other members of the library can view details about the books in the library and details of the members registered in the library.

**Issuing Books:**

The librarian can issue a book to a member and keep track how many books they have borrowed. The system does not allow a user to borrow more than 3 books; they can borrow another book only if they return one.

**Viewing the details and Maintaining the Due Date of Issued Books:**

The system also keeps track of the date the member has borrowed the book and calculates when the user has to return the book(7 days from the day of borrow).

**Automatic Fine Calculation:**

The system calculates the fine amount when the member returns the book after the due date. It calculates the fine as Rs 50 for each day after the due date.

**Alerts and Reminders through SMS (Messaging System):**

The librarian can remind the member that the due for a book is in 2 days from the current day, and on the due date and also informs the member when a new book is added to the library.

* 1. **PROBLEM DESCRIPTION**

The need for new, advanced systems is because of many problems faced by the current, existing systems. Some of them include:

* Keeping track of books and member details manually
* Keeping track of Issued books
* The member may not return the book in specified time
* A member may not know of the new books added to the library

and many more problems are being faced by existing systems and in places where no computers are used.

**1.3 SCOPE FOR FUTURE DEVELOPMENT**

This current system is designed and built flexibly to satisfy the needs of the user. But new requirements would always be emergent. So this management system will be enhanced with even more features in the future. A card would be provided for the member with bar codes which would uniquely identify the member and bring up the details of only that member and that member can maintain a history of all the books they’ve borrowed along with the date. They can also use the card to extend the due date of the borrowed books.

**CHAPTER 2**

**LITERATURE SURVEY**

This chapter shows survey about various observations on existing library systems. There have been much advancement and managing modern libraries have become a very hard task.

Lathika, K.(1995). worked on the topic entitled 'UGC Assistance for provision in computer in University and College Libraries' and discussed scope for granting assistance for setting up computer facilities in higher learning Institutional libraries[1]. Author also describes the utilizations of information technology of computer and communication to network libraries in the country. Computer facilities established in college and university libraries can be utilized for automating their library systems also.

All the papers on libraries talk about the problems in the current library management systems. They also talk about the possible solutions to solve those problems.

Edwards (1998) predicted the changes in the library system and information dissemination due to use of computers, application software’s, internet, networking etc. Due to this there is a significant change in the functions of libraries. Along with technology there is a need to deploy effective staff to process and disseminate the information for the benefits of users[2].

Purnima Devi (2006) indicates qualities of qualified and educated skilled staff in the library. The staff fulfills the objectives of libraries by giving exact information in form of books to the user. Manpower is required with proper knowledge, skills in the digital environment to give pinpointed information in the digital era[3]. Day by day technology changes and manpower need to upgrade their knowledge with sufficient staff requirement.

Hamedan Branch (2009) emphases that libraries and the librarians are planning to manage the digital libraries due to transformation as well as providing traditional print based facilities to users[4]. This article highlighted the function of digital libraries and implementation of digital libraries from traditional and considered administrative and staffing perspectives in it. In the changing environment special staff with computer and programming efficiency is required as per the opinion of the author.

Naga Raja Rao (2013) indicated in his communication that present new technologies are being used in library and information science and is the main reason in changing environment of libraries, but staff needed to manage the new digital libraries is to be flexible in adapting and adopting new skills and levels of awareness[5]. Librarians have to adapt different skills to cope up with new technologies. This article displays the changing role of librarians in a higher education sector and it has adapted to a new social as well as changing educational agenda. The paper basically covers the assumption that only its role has expanded due to changed formats of publishing documents. Technology alone cannot help in bringing out the required changes but also need efficient staff to manage the change. Attitudes, practices, and policies need to change if libraries in India are to truly benefit themselves and their community of users by the application of new technologies[6]. LIS professionals have been playing a versatile role beyond their traditional job. They have to gather adequate knowledge of computer and communication technologies, networks and networking, operating systems, internet concepts, database management systems, along with adequate practical exposure to handle technological devices[7].

K. Nageswara Rao, and Babu (2001) highlighted the development in libraries from traditional to virtual which has brought drastic changes in the profession[8]. The network technology and the internet using ICT has given the librarian a new dynamic role to perform as information scientist. The features of web, multimedia, collaborative multiprotocol, hypermedia oriented architecture made absolute revolution in information handling using different tools and technologies[9]. Ultimately these avenues gave rise to digital library along with access to traditional library and staff pattern is different as compared to traditional library.

Liz Burke (2001) indicated that the virtual libraries and the digital libraries are the same but has a narrow difference in it[10]. The future libraries can transform from traditional to digital and to the electronic and virtual movement. The librarians may require special skills having knowledge of web development, networking skills, hardware, software interface and creating web pages to provide information in the changing environment to users[11].

Emmanuelle Bermès(2011) developed a digital library repository using OAIS model and indicated to accept the change and librarians and the supporting staff should have appropriate skills to develop knowledge bases to maintain the digital library more usable[12]. The digital information available in multiple formats and to arrange the huge data is the main activity of the library acquiring technical skills.

**CHAPTER 3**

**HARDWARE AND SOFTWARE REQUIREMENTS**

This chapter provides brief description about the requirements essential for our project.

**HARDWARE REQUIREMENT**

Operating system : Windows 7

Hard disk : 500 GB

RAM : 2 GB (minimum)

**SOFTWARE REQUIREMENT**

Operating System : Windows 7

Tool Used : NetBeans

Front end : Java

Back end : MySQL Server

**CHAPTER 4**

**PROJECT DESCRIPTION**

**4.1 SCOPE OF THE PROJECT:**

The scope of the project is to maintain the records of the books and the members of the library and to issue books and remind the user of the due date through SMS and calculate fine accordingly. This system greatly reduces the work of the librarian as the librarian can maintain all the records through this system. This system also calculates the fine automatically when the book is returned by the member.

**4.2. SYSTEM ARCHITECTURE AND DESIGN**

**SYSTEM DESIGN**

**DATAFLOW DIAGRAM**

**Fig 4.1: LEVEL 0 DFD**

Alert System

Fine System

Student receives

Books

Can return books

Can issue books

Can see book details

User

Can register

Notify the user

Automatic Fine Calculation

**Fig 4.2: LEVEL 1 DFD**

**TO STORE THE DETAILS OF MEMBERS:**

NAME

STREAM

ADDRESS

Contact Number

STORING THE DETAILS IN THE DATABASE

**TO STORE THE DETAILS OF BOOKS:**

BOOK NAME

BOOK NO

AUTHOR

STREAM

STORING THE DETAILS IN THE DATABASE

AVAILABILITY

STOCK

**4.2.1 Database Connectivity:**

A connection is created between the application and the MySql server (localhost server). A connection object is created and the connection using the DriverManager class is created to link our application and the database we use.

**4.2.2 Performing SQL queries on the database:**

A statement object is created and the queries are performed using this statement using the connection object. The query is executed in the database and the corresponding action is taken here.

**4.2.3 Handling the data in our application:**

The query is performed in the database. The result is returned to the application and handled by an object of ResultSet class. The data are displayed in tabular format.

**4.2.4 Fine Calculation:**

When the book is returned, the current date from system is taken and compared with the Date of Return of the book. If the current date exceeds the Date of Return, fine is calculated at the rate of Rs 50 per day.

**4.2.5 Messaging System:**

The contact number of the member is used to send a message. Dates of notifications are: i) 2 days before the due date

ii) On the due date

On opening the application, the current date of the system is taken and compared with the members whose Date of notification matches with the system date. If the dates match, the contact number of the member is taken and a message is sent to the member saying that the due date is in 2 days OR the due day is that day.

**CHAPTER 5**

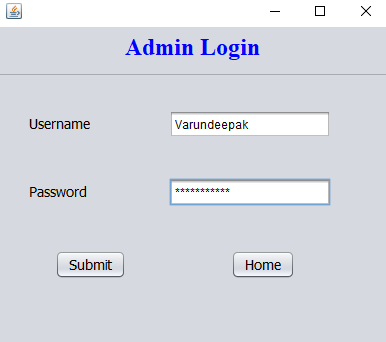
**RESULTS**

This chapter shows the interface of the application and how the data are displayed to the member or the admin.

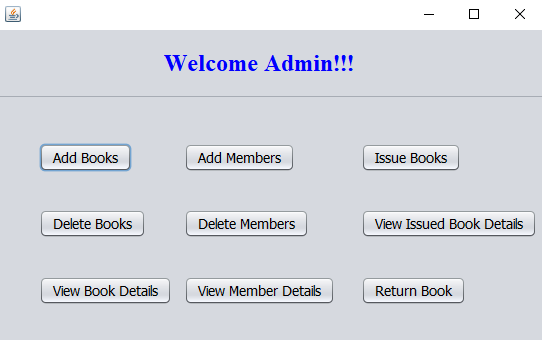
**5.1 USER INTERFACE**



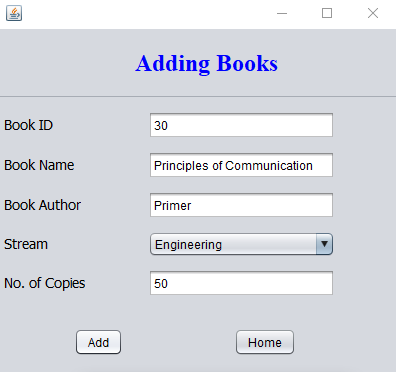
**Fig 5.1: The Main Screen**

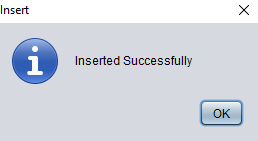


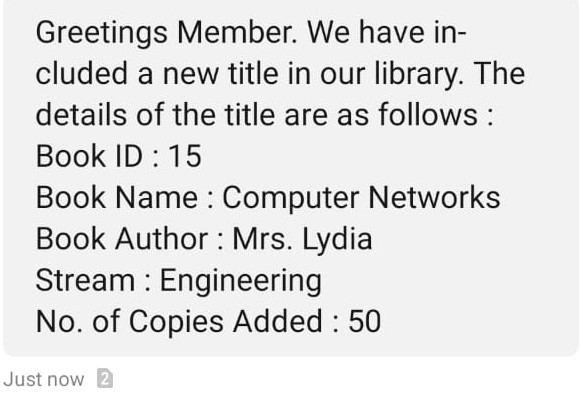
**Fig 5.2: Admin Login Screen**



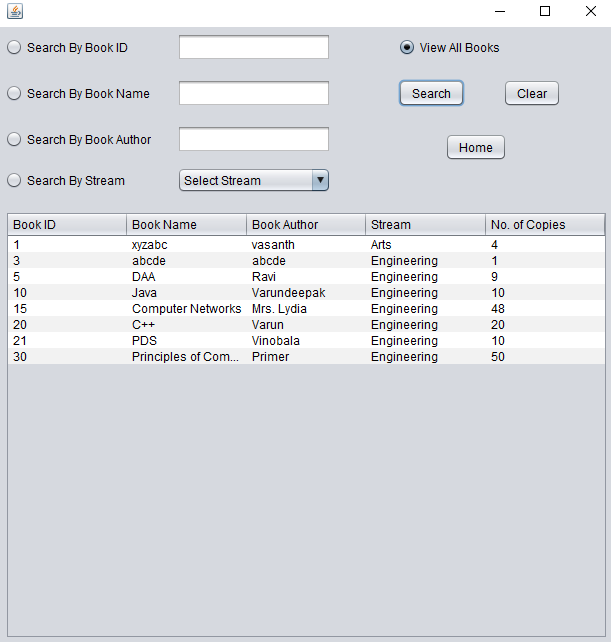
**Fig 5.3: Admin Screen after Logging in**



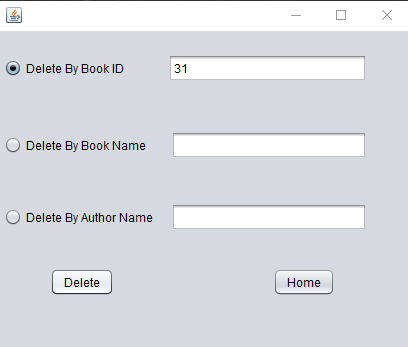


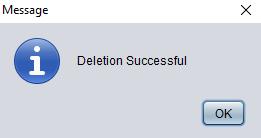


**Fig 5.4: Adding Books to the library and the message a member receives on adding the book**

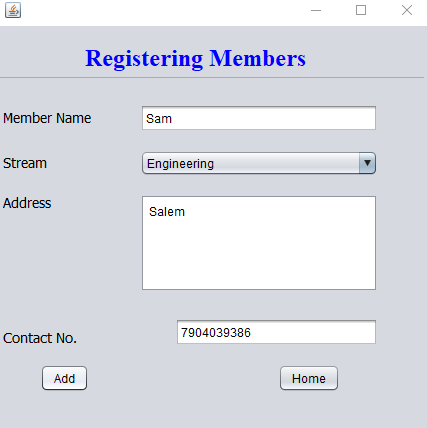


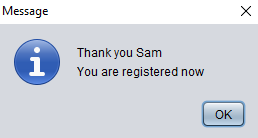
**Fig 5.5: Details of the books in the library**



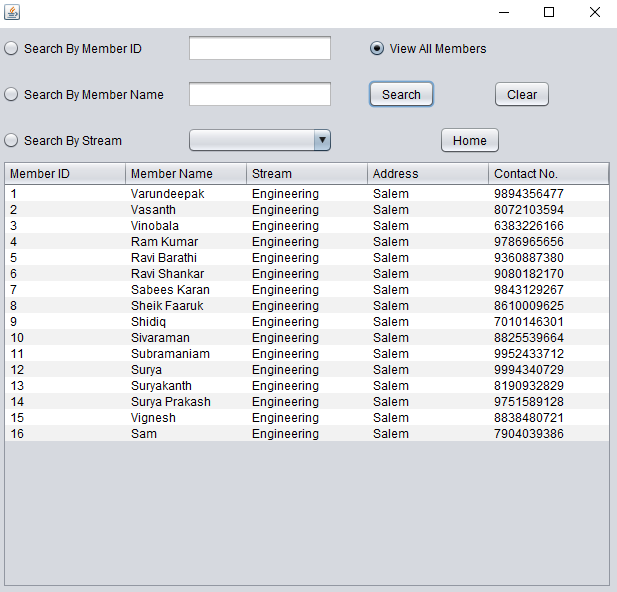


**Fig 5.6: Removing a book from the library**

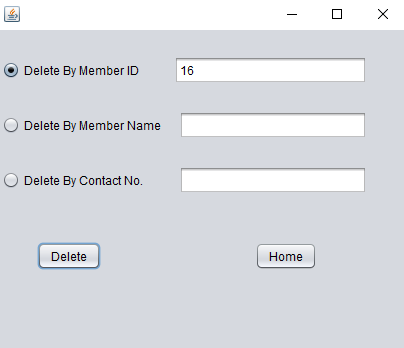


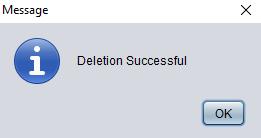


**Fig 5.7: Registering a member in the library**

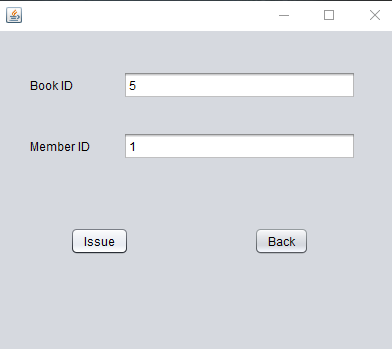


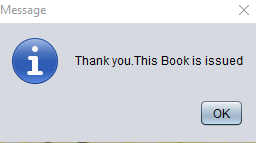
**Fig 5.8: Viewing the details of the members**



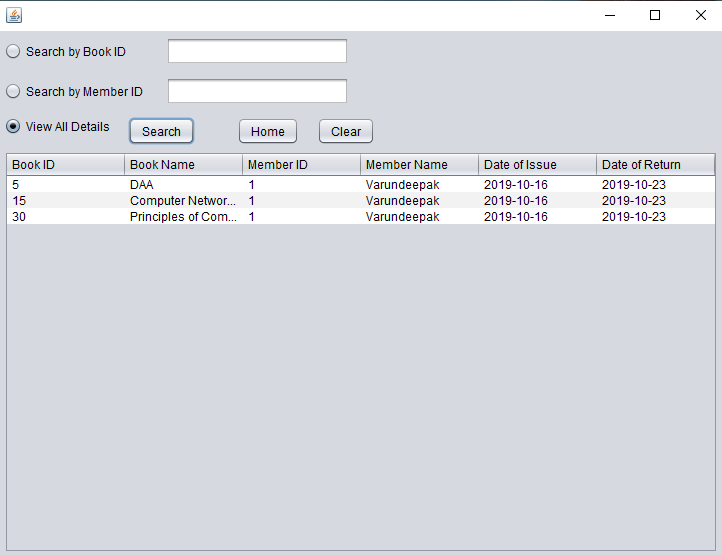


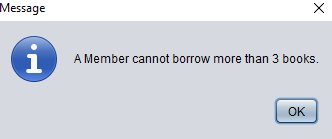
**Fig 5.9: Removing a member from the library**



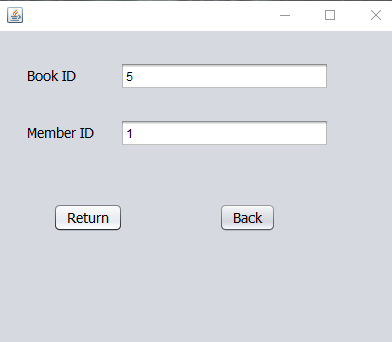


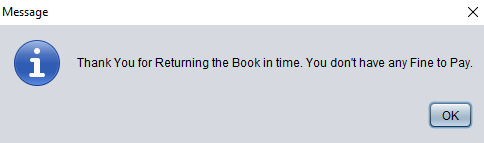
**Fig 5.10:Issuing a book to a member**



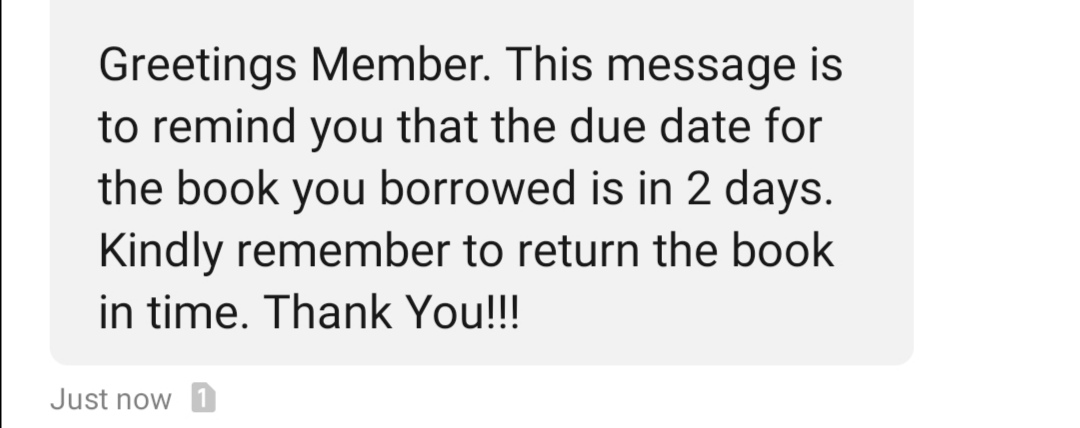


**Fig 5.11: Viewing the Issued books details and message showing that a member cannot borrow more than 3 books**





**Fig 5.12: Returning a book and a message showing that a user doesn’t have to pay any fine**



**Fig 5.13: A message showing that the due date for the book they received is in 2 days.**

**CHAPTER 6**

**CONCLUSIONS AND FUTURE ENHANCEMENTS**

**6.1 CONCLUSION**

In today’s world of technologies and advancement, manual management of libraries has become obsolete and is a very huge task to do. That’s why libraries now require modernization in management of their works. That is what this project aims for. This work helps to reduce the manual work of the libraries and to make the library more efficient and easy to use and access. Though there are many libraries which use modern, efficient ways of working, there are still many problems that are needed to be looked into.

**6.2 FUTURE ENHANCEMENT**

As new requirements and new problems are always emergent, there would be room for developments in the future. A new idea would be to provide a member with an ID card which would have details about them, along with the history of what they have done in the library. They would also get recommendations of new books based on the books they’ve already borrowed from the library. They could also pre-inform the librarian through the application if they want to borrow a certain book.

**APPENDICES**

**APPENDIX 1**

**SAMPLE SCRIPT**

**AddBook.java:**

import java.sql.\*;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.swing.JOptionPane;

public class AddBook extends javax.swing.JFrame {

Connection con;

Statement stmt;

public AddBook() throws Exception {

initComponents();

Class.forName("com.mysql.cj.jdbc.Driver");

con=DriverManager.getConnection("jdbc:mysql://localhost:3306/library?useTimezone=true&serverTimezone=UTC","root","");

stmt=con.createStatement();

}

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {

jLabel1 = new javax.swing.JLabel();

jSeparator1 = new javax.swing.JSeparator();

jLabel2 = new javax.swing.JLabel();

jLabel3 = new javax.swing.JLabel();

jLabel4 = new javax.swing.JLabel();

jTextField1 = new javax.swing.JTextField();

jTextField2 = new javax.swing.JTextField();

jTextField3 = new javax.swing.JTextField();

jLabel5 = new javax.swing.JLabel();

jComboBox1 = new javax.swing.JComboBox();

jButton1 = new javax.swing.JButton();

jButton2 = new javax.swing.JButton();

jLabel6 = new javax.swing.JLabel();

jTextField4 = new javax.swing.JTextField();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT\_ON\_CLOSE);

jLabel1.setFont(new java.awt.Font("Times New Roman", 1, 24)); // NOI18N

jLabel1.setForeground(new java.awt.Color(0, 0, 255));

jLabel1.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);

jLabel1.setText("Adding Books");

jLabel2.setFont(new java.awt.Font("Tahoma", 0, 14)); // NOI18N

jLabel2.setText("Book ID");

jLabel3.setFont(new java.awt.Font("Tahoma", 0, 14)); // NOI18N

jLabel3.setText("Book Name");

jLabel4.setFont(new java.awt.Font("Tahoma", 0, 14)); // NOI18N

jLabel4.setText("Book Author");

jLabel5.setFont(new java.awt.Font("Tahoma", 0, 14)); // NOI18N

jLabel5.setText("Stream");

jComboBox1.setModel(new javax.swing.DefaultComboBoxModel(new String[] {"Select Stream", "Engineering", "Arts", "MBA", "MCA" }));

jButton1.setText("Add");

jButton1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton1ActionPerformed(evt);

}

});

jButton2.setText("Home");

jButton2.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton2ActionPerformed(evt);

}

});

jLabel6.setFont(new java.awt.Font("Tahoma", 0, 14)); // NOI18N

jLabel6.setText("No. of Copies");

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jSeparator1)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jLabel2)

.addComponent(jLabel3)

.addComponent(jLabel4)

.addComponent(jLabel5)))

.addGroup(layout.createSequentialGroup()

.addGap(76, 76, 76)

.addComponent(jButton1)))

.addGap(25, 25, 25)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)

.addComponent(jTextField4)

.addComponent(jTextField1, javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jTextField2, javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jTextField3, javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jComboBox1, javax.swing.GroupLayout.Alignment.LEADING, 0, 187, Short.MAX\_VALUE))

.addGap(0, 61, Short.MAX\_VALUE))

.addGroup(layout.createSequentialGroup()

.addGap(86, 86, 86)

.addComponent(jButton2)

.addContainerGap(javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))))

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addGap(137, 137, 137)

.addComponent(jLabel1))

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addComponent(jLabel6)))

.addContainerGap(javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

);

layout.setVerticalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addGap(20, 20, 20)

.addComponent(jLabel1)

.addGap(18, 18, 18)

.addComponent(jSeparator1, javax.swing.GroupLayout.PREFERRED\_SIZE, 10, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel2)

.addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel3)

.addComponent(jTextField2, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel4)

.addComponent(jTextField3, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel5)

.addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel6)

.addComponent(jTextField4, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(31, 31, 31)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jButton2)

.addComponent(jButton1))

.addContainerGap(20, Short.MAX\_VALUE))

);

pack();

}// </editor-fold>

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

if(jTextField1.getText().equals(""))

JOptionPane.showMessageDialog(this,"Please Enter Book ID");

else if(jTextField2.getText().equals(""))

JOptionPane.showMessageDialog(this,"Please Enter Book Name");

else if(jTextField3.getText().equals(""))

JOptionPane.showMessageDialog(this,"Please Enter Author Name");

else if(jComboBox1.getSelectedItem().equals("Select Stream"))

JOptionPane.showMessageDialog(this,"Please Select Stream");

else if(jTextField4.getText().equals(""))

JOptionPane.showMessageDialog(this,"Please Enter No. of Copies");

else

{

try

{

String query="insert into books values("+jTextField1.getText()+",'"+jTextField2.getText()+"','"+jTextField3.getText()+"','"+jComboBox1.getSelectedItem()+"',"+jTextField4.getText()+");";

stmt.executeUpdate(query);

JOptionPane.showMessageDialog(this,"Inserted Successfully","Insert",1);

MessageforInsert a=new MessageforInsert();

a.send(Integer.parseInt(jTextField1.getText()),jTextField2.getText(),jTextField3.getText(), (String) jComboBox1.getSelectedItem(),Integer.parseInt(jTextField4.getText()));

}

catch(Exception ex)

{

JOptionPane.showMessageDialog(this,"Error in Insert","Insert",0);

}

}

}

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

AdminScreen mn = null;

try {

mn = new AdminScreen();

} catch (Exception ex) {

System.out.println(ex);

}

mn.setVisible(true);

this.setVisible(false);

}

public static void main(String args[]) {

//<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">

/\* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.

\* For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html

\*/

try {

for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {

if ("Nimbus".equals(info.getName())) {

javax.swing.UIManager.setLookAndFeel(info.getClassName());

break;

}

}

} catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(AddBook.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(AddBook.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(AddBook.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(AddBook.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

}

//</editor-fold>

java.awt.EventQueue.invokeLater(new Runnable() {

public void run() {

try {

new AddBook().setVisible(true);

} catch (Exception ex) {

System.out.println(ex);

}

}

});

}

private javax.swing.JButton jButton1;

private javax.swing.JButton jButton2;

private javax.swing.JComboBox jComboBox1;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JLabel jLabel4;

private javax.swing.JLabel jLabel5;

private javax.swing.JLabel jLabel6;

private javax.swing.JSeparator jSeparator1;

private javax.swing.JTextField jTextField1;

private javax.swing.JTextField jTextField2;

private javax.swing.JTextField jTextField3;

private javax.swing.JTextField jTextField4;

// End of variables declaration

}

**BookDetailsView.java:**

import java.sql.\*;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.swing.JOptionPane;

import javax.swing.table.DefaultTableModel;

public class BookDetailsViewAdmin extends javax.swing.JFrame {

Connection con;

Statement stmt;

String query;

ResultSet rs;

public BookDetailsViewAdmin() throws Exception {

initComponents();

buttonGroup1.add(jRadioButton1);

buttonGroup1.add(jRadioButton2);

buttonGroup1.add(jRadioButton3);

buttonGroup1.add(jRadioButton4);

buttonGroup1.add(jRadioButton5);

Class.forName("com.mysql.cj.jdbc.Driver");

con=DriverManager.getConnection("jdbc:mysql://localhost:3306/library?useTimezone=true&serverTimezone=UTC","root","");

stmt=con.createStatement();

}

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {

buttonGroup1 = new javax.swing.ButtonGroup();

jRadioButton1 = new javax.swing.JRadioButton();

jTextField1 = new javax.swing.JTextField();

jRadioButton2 = new javax.swing.JRadioButton();

jRadioButton3 = new javax.swing.JRadioButton();

jRadioButton4 = new javax.swing.JRadioButton();

jRadioButton5 = new javax.swing.JRadioButton();

jTextField2 = new javax.swing.JTextField();

jTextField3 = new javax.swing.JTextField();

jComboBox1 = new javax.swing.JComboBox();

jButton1 = new javax.swing.JButton();

jButton2 = new javax.swing.JButton();

jButton3 = new javax.swing.JButton();

jScrollPane1 = new javax.swing.JScrollPane();

jTable1 = new javax.swing.JTable();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT\_ON\_CLOSE);

jRadioButton1.setText("Search By Book ID");

jRadioButton2.setText("Search By Book Name");

jRadioButton3.setText("Search By Book Author");

jRadioButton4.setText("Search By Stream");

jRadioButton5.setText("View All Books");

jComboBox1.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "Select Stream", "Engineering", "Arts", "MBA", "MCA" }));

jButton1.setText("Search");

jButton1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton1ActionPerformed(evt);

}

});

jButton2.setText("Clear");

jButton2.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton2ActionPerformed(evt);

}

});

jButton3.setText("Home");

jButton3.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton3ActionPerformed(evt);

}

});

jTable1.setModel(new javax.swing.table.DefaultTableModel(

new Object [][] {

},

new String [] {

"Book ID", "Book Name", "Book Author", "Stream", "No. of Copies"

}

));

jScrollPane1.setViewportView(jTable1);

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT\_SIZE, 603, Short.MAX\_VALUE)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jRadioButton1)

.addComponent(jRadioButton2)

.addComponent(jRadioButton3)

.addComponent(jRadioButton4))

.addGap(26, 26, 26)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

.addComponent(jTextField1)

.addComponent(jTextField2)

.addComponent(jTextField3)

.addComponent(jComboBox1, 0, 154, Short.MAX\_VALUE))

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addGap(67, 67, 67)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jRadioButton5)

.addGroup(layout.createSequentialGroup()

.addComponent(jButton1)

.addGap(38, 38, 38)

.addComponent(jButton2))))

.addGroup(layout.createSequentialGroup()

.addGap(114, 114, 114)

.addComponent(jButton3)))

.addGap(0, 0, Short.MAX\_VALUE)))

.addContainerGap())

);

layout.setVerticalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jRadioButton1)

.addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jRadioButton5))

.addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jRadioButton2)

.addComponent(jTextField2, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jButton1)

.addComponent(jButton2))

.addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jRadioButton3)

.addComponent(jTextField3, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)))

.addGroup(layout.createSequentialGroup()

.addGap(106, 106, 106)

.addComponent(jButton3)))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jRadioButton4)

.addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(18, 18, 18)

.addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addContainerGap(javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

);

pack();

}// </editor-fold>

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {

try

{

if(jRadioButton1.isSelected())

{

if(jTextField1.getText().equals(""))

{

JOptionPane.showMessageDialog(this,"Please Enter Book ID");

}

else if(jTextField1.getText().matches("^[a-zA-Z]\*$"))

{

JOptionPane.showMessageDialog(this,"Book ID should not contain Letters.");

}

else{

query="select \* from books where bookid="+jTextField1.getText()+";";

rs=stmt.executeQuery(query);

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

while(rs.next())

{

int id=rs.getInt("bookid");

String bname=rs.getString("bookname");

String aname=rs.getString("authorname");

String stream=rs.getString("stream");

int co=rs.getInt("copies");

Object[] row = {id,bname,aname,stream,co};

model.addRow(row);

}}

}

else if(jRadioButton2.isSelected())

{

if(jTextField2.getText().equals(""))

{

JOptionPane.showMessageDialog(this,"Please Enter Book Name");

}

else{

query="select \* from books where bookname='"+jTextField2.getText()+"';";

rs=stmt.executeQuery(query);

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

while(rs.next())

{

int id=rs.getInt("bookid");

String bname=rs.getString("bookname");

String aname=rs.getString("authorname");

String stream=rs.getString("stream");

int co=rs.getInt("copies");

Object[] row = {id,bname,aname,stream,co};

model.addRow(row);

}}

}

else if(jRadioButton3.isSelected())

{

if(jTextField3.getText().equals(""))

{

JOptionPane.showMessageDialog(this,"Please Enter Author Name");

}

else{

query="select \* from books where authorname='"+jTextField3.getText()+"';";

rs=stmt.executeQuery(query);

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

while(rs.next())

{

int id=rs.getInt("bookid");

String bname=rs.getString("bookname");

String aname=rs.getString("authorname");

String stream=rs.getString("stream");

int co=rs.getInt("copies");

Object[] row = {id,bname,aname,stream,co};

model.addRow(row);

}}

}

else if(jRadioButton4.isSelected())

{

if(jComboBox1.getSelectedItem()=="Select Stream")

JOptionPane.showMessageDialog(this,"Please Select Stream");

else{

query="select \* from books where stream='"+jComboBox1.getSelectedItem()+"';";

rs=stmt.executeQuery(query);

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

while(rs.next())

{

int id=rs.getInt("bookid");

String bname=rs.getString("bookname");

String aname=rs.getString("authorname");

String stream=rs.getString("stream");

int co=rs.getInt("copies");

Object[] row = {id,bname,aname,stream,co};

model.addRow(row);

}}

}

else if(jRadioButton5.isSelected())

{

query="select \* from books;";

rs=stmt.executeQuery(query);

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

while(rs.next())

{

int id=rs.getInt("bookid");

String bname=rs.getString("bookname");

String aname=rs.getString("authorname");

String stream=rs.getString("stream");

int co=rs.getInt("copies");

Object[] row = {id,bname,aname,stream,co};

model.addRow(row);

}

}

}

catch(Exception ex)

{

System.out.println(ex);

}

}

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

DefaultTableModel model=(DefaultTableModel)jTable1.getModel();

model.setRowCount(0);

jTextField1.setText("");

jTextField2.setText("");

jTextField3.setText("");

jComboBox1.setSelectedItem("Select Stream");

}

private void jButton3ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

AdminScreen a=new AdminScreen();

a.setVisible(true);

this.setVisible(false);

}

public static void main(String args[]) {

//<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">

/\* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.

\* For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html

\*/

try {

for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {

if ("Nimbus".equals(info.getName())) {

javax.swing.UIManager.setLookAndFeel(info.getClassName());

break;

}

}

} catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(BookDetailsViewAdmin.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(BookDetailsViewAdmin.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(BookDetailsViewAdmin.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(BookDetailsViewAdmin.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

}

//</editor-fold>

/\* Create and display the form \*/

java.awt.EventQueue.invokeLater(new Runnable() {

public void run() {

try {

new BookDetailsViewAdmin().setVisible(true);

} catch (Exception ex) {

Logger.getLogger(BookDetailsViewAdmin.class.getName()).log(Level.SEVERE, null, ex);

}

}

});

}

// Variables declaration - do not modify

private javax.swing.ButtonGroup buttonGroup1;

private javax.swing.JButton jButton1;

private javax.swing.JButton jButton2;

private javax.swing.JButton jButton3;

private javax.swing.JComboBox jComboBox1;

private javax.swing.JRadioButton jRadioButton1;

private javax.swing.JRadioButton jRadioButton2;

private javax.swing.JRadioButton jRadioButton3;

private javax.swing.JRadioButton jRadioButton4;

private javax.swing.JRadioButton jRadioButton5;

private javax.swing.JScrollPane jScrollPane1;

private javax.swing.JTable jTable1;

private javax.swing.JTextField jTextField1;

private javax.swing.JTextField jTextField2;

private javax.swing.JTextField jTextField3;

// End of variables declaration

}

**NotifyUserOnDueDate.java:**

import java.io.BufferedReader;

import java.io.InputStreamReader;

import java.net.URL;

import java.net.URLConnection;

import java.net.URLEncoder;

import java.sql.\*;

public class NotifyUserOnDueDate {

public void noti2()

{

try{

Connection con;

Statement stmt;

String query;

ResultSet rs;

Class.forName("com.mysql.cj.jdbc.Driver");

con=DriverManager.getConnection("jdbc:mysql://localhost:3306/library?useTimezone=true&serverTimezone=UTC","root","");

stmt=con.createStatement();

String query2="select now()";

rs=stmt.executeQuery(query2);

rs.next();

Date xyz=rs.getDate(1);

query="select issue.memberid,member.contact from member,issue where member.memberid=issue.memberid and issue.dateofreturn2=(select current\_date());";

rs=stmt.executeQuery(query);

while(rs.next())

{ int ijk=rs.getInt("issue.memberid");

String abc=rs.getString(2);

String message = "Greetings Member. This message is to remind you that the due date for the book you borrowed is TODAY!!! Kindly remember to return the book in time. Thank You!!!";

String phone = abc;

String username = "Varundeepak";

String password = "password";

String address = "http://192.168.1.101";

String port = "8090";

URL url = new URL(

address+":"+port+"/SendSMS?username="+username+"&password="+password+

"&phone="+phone+"&message="+URLEncoder.encode(message,"UTF-8"));

URLConnection connection = url.openConnection();

BufferedReader bufferedReader = new BufferedReader(new InputStreamReader(connection.getInputStream()));

String inputLine;

while((inputLine = bufferedReader.readLine()) !=null){

System.out.println(inputLine);

}

bufferedReader.close();

String query3="update issue set dateofreturn2=null where memberid="+ijk+";";

stmt.executeUpdate(query3);

}

}

catch(Exception e)

{

System.out.println("Notification On Due Date Error"+e.getMessage());

}

}

}

**REFERENCES**

[1] Roknuzzaman M, Kanai H, Umemoto K. Integration of knowledge management process into digital library system[J]. Library Review, 2013, 58(5):372-386.

[2] Fu P, Fitzgerald M. A Comparative Analysis of the Effect of the Integrated Library System on Staffing Models in Academic Libraries[J]. Information Technology & Libraries, 2013, 32:47-58.

[3] Seena S T, Pillaiw K G S. A study of ICT skills among library professionals in the Kerala University Library System[J]. Annals of Library & Information Studies, 2014, 61(2).

[4] Taole N, Dick A L. Implementing a common library system for the Lesotho Library Consortium[J]. Electronic Library, 2013, 27(1):5-19.

[5] Chen M, Cai W, Ma L. Cloud Computing Platform for an Online Model Library System[J]. Mathematical Problems in Engineering,2013,(2013-4-17), 2013, 2013(1):532-546. [6] Hall K, Ames C M, Brice J. Open Source Library Software Development in a Small Rural Library System[J]. Code4lib Journal, 2013, 19(19):1-10.

[7] Uppal V, Chindwani G. An Empirical Study of Application of Data Mining Techniques in Library System[J]. Journal of Bacteriology, 2014, 74(11):42-46.

[8] Rao N S, Kumari N N. Revitalisation of Public Library System in India: A CSR Perspective[J]. Desidoc Journal of Library & Information Technology, 2013, 33(1):25-28.

[9] Kumar R S, Kaliyaperumal K. Applications of GSM technology for documents identification in a library system[J]. Library Philosophy & Practice, 2014(1159).

[10]Haslam M, Kwon M L, Marilyn M P, et al. The automated storage and retrieval system (ASRS) in Lied Library[J]. Library Hi Tech, 2013, 20(1):71-89.

[11]Pu Y H, Chiu P S, Chen T S, et al. The design and implementation of a Mobile Library APP system[J]. Library Hi Tech, 2015, 33(1):15-31.

[12]Iorio A D, Schaerf M. The Organization information integration in the management of a Digital Library System[C]// Digital Libraries. IEEE, 2014:461-462.