**LIBRARY MANAGEMENT SYSTEM**

**A Project Report for Industrial Internship**

**Submitted BY**

**GOPENDRANATH SASMAL**

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

**B.Tech**

**Electronics and Communication Engineering**

**of**

**FUTURE INSTITUTE OF TECHNOLOGY**



**Ardent Computech Pvt. Ltd.**





**CERTIFICATE FROM SUPERVISOR**

This is to certify that **“GOPENDRANATH SASMAL,** **203420100310010 OF 2020-21**” have successfully completed the project titled "Library Management System” under my supervision during the period from “1st July, 2022” to “30th August, 2022” which is in partial fulfilment of requirements for the award of the **B.Tech** degree and submitted to the Department of **“Electronics and Communication Engineering”** of **“Future Institute of Technology”**.



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the Supervisor

**Date: 30/08/2022**

**Name of the Project : Library Management System**

**Supervisor: Anindya Mukherjee**



**ACKNOWLEDGEMENT**

The achievement that is associated with the successful completion of any task would be incomplete without mentioning the names of those people whose endless cooperation made it possible. Their constant guidance and encouragement made all our efforts successful.

We take this opportunity to express our deep gratitude towards our project mentor, *Anindya Mukherjee* for giving such valuable suggestions, guidance and encouragement during the development of this project work.

Last but not the least we are grateful to all the faculty members of Ardent Computech Pvt. Ltd. for their support.

**TABLE OF CONTENTS**

**1 INTRODUCTION**

1.1 Project Title

1.2 Purpose

1.3 System Scope

**2** **FUNCTIONAL REQUIREMENTS**

2.1 Application Overview

2.2 Application Scope/ High Level Requirements

2.3 Assumptions

**3** **SYSTEM REQUIREMENTS**

3.1 System Interface

3.2 User Interface

3.3 Communication Interface

**4 Use Case**

**5 ER Diagram**

**6 Database Design**

**7 Data Flow Diagram**

**8 Screen Design**

**9 Testing**

**10 Future Scope**

**11 Conclusion**

**12 References**

**1 INTRODUCTION**

**1.1 Project Title**

*Library management System*

**1.2 Purpose**

Libraries are faced with two simultaneous problems: their inability to buy enough new materials, and their inability to keep enough old materials. Electronics can, in principle, be an answer to both.

Library Management system is used for the following purposes:

* To be able for automation of library.
* To reduce the workload of staffs.
* To get faster retrieval of information about the desired book.
* To provide facility to reduce paper work and provide data security.

**1.3 System Scope**

Library Management system is a web application that automates the functions of a library in an organization.

Scope of this document is to satisfy the requirements, clearly identifying the information needed by the user, the source of the information and outputs expected from the system.

**2 FUNCTIONAL REQUIREMENTS**

This section provides a high-level overview of Library Management system.

**2.1 Application Overview**

Library Management system is a desktop application that is intended for automating a library in an organization. The end user of this system is an employee of the organization who wants to refer a book.

The user can view the available books, issue any book and return any issued book to/from the library.The administrator can also view all book details, user details.

**2.2 Application Scope/ High Level Requirements**

Library management system has functions as described below.

1. **Register**

This module allows the user to register.

1. **Login**

Only registered user avails the facilities of this application. User needs to authenticate with the system providing username and password.

1. **Book Information**

Once logged into the account, the user can view the available books on selecting the option.

The following book details displayed:

* + Book name
  + Book Id
  + Author
  + publisher
  + Call number
  + Available (yes/no)

The user can select the book if the status of the book is available. Every book

in the system should be identified by a unique book id.

1. **Issue Book**

By entering the book id , user id and duedate , user can issue a book.

1. **Return Book**

By entering the book id and user id, user can return a book.

1. **Logout**

User can exit the application on clicking the button.

1. **Assumptions** 
   * Assume that the users of the system have already registered with the system.

**3 SYSTEM REQUIREMENTS**

**3.1 System Interface**

The software is to be developed in J2EE environment using JSP and JDBC.

**3.2 User Interface**

The client interacts with the system through a HTML/ JSP pages.

* 1. **Communication Interface**

The communication between the front-end and the back-end is through JDBC.

* 1. **Hardware Requirement Specification**

Pentium IV

3GB RAM

* 1. **Software Requirement Specification**

Windows 7

JDK 1.6.0 or above

MySQL

Netbeans IDE

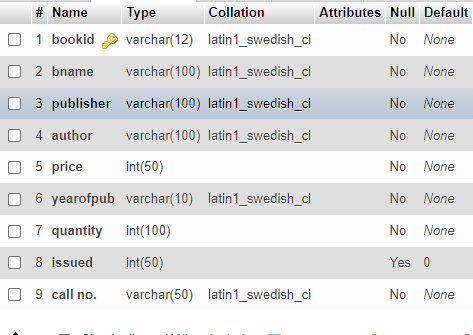
### Use Case Diagram

**ADMININISTRATOR**

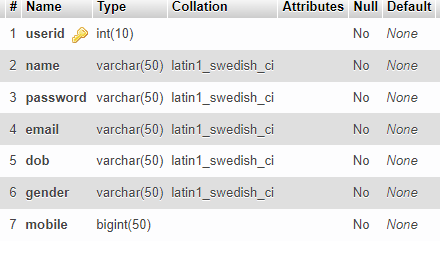
**USER**

**DATABASE Table:**

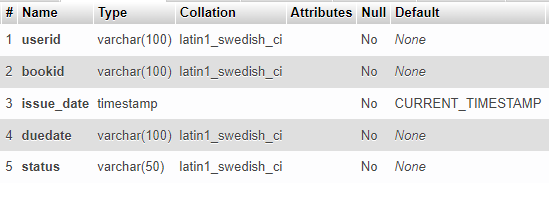
**book details table**



**user details table**

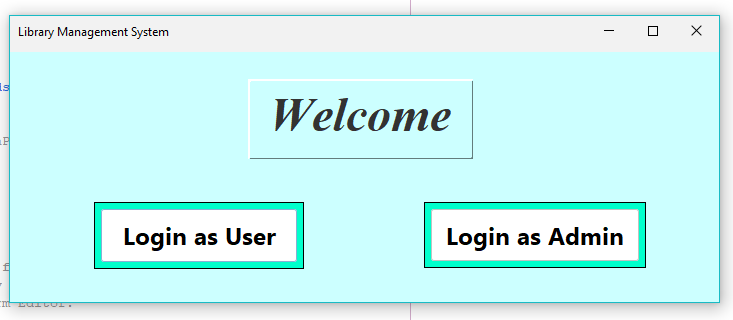


**ISSUE RECORDS table**

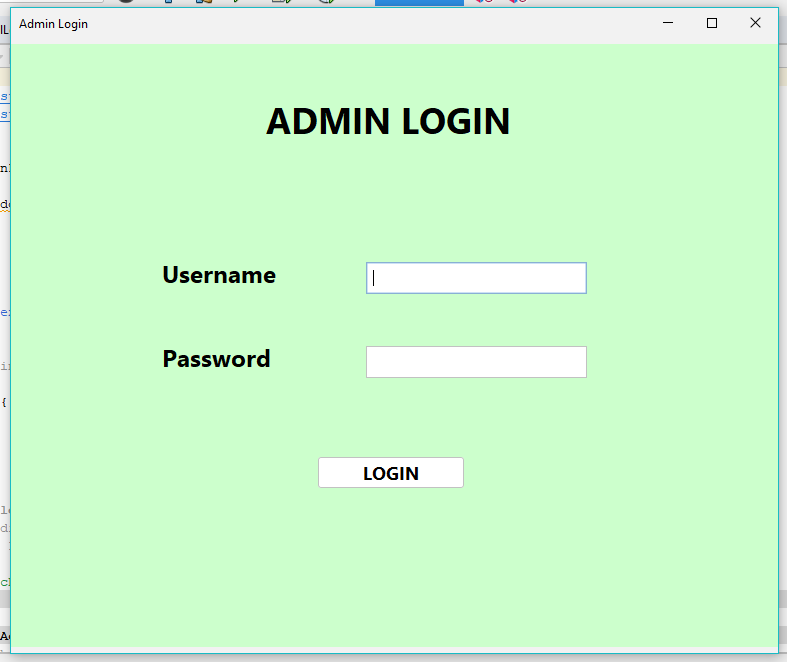


**Screen Design**

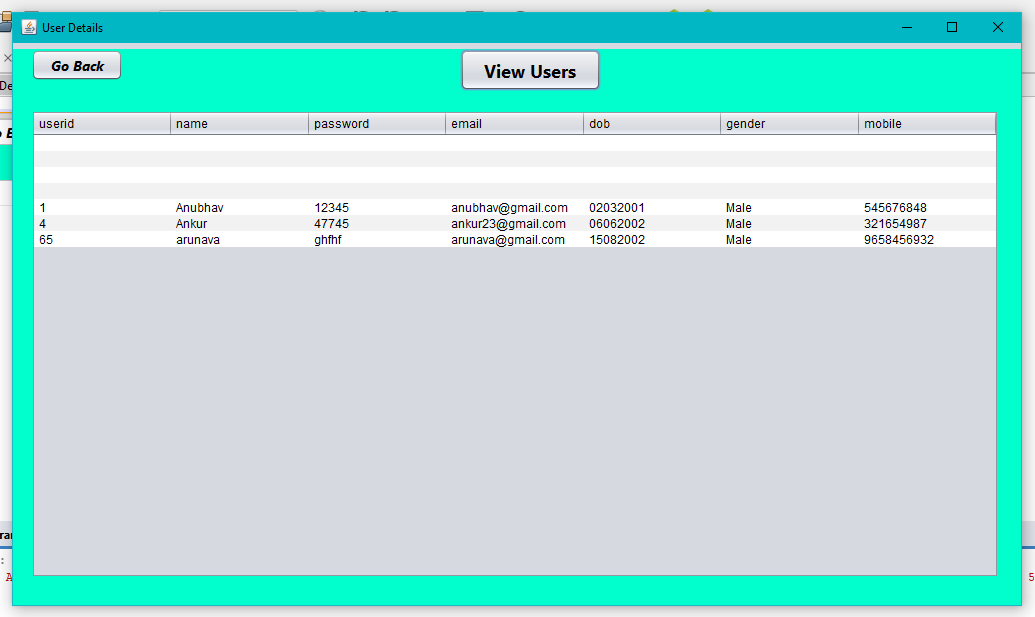
**Login Homepage**



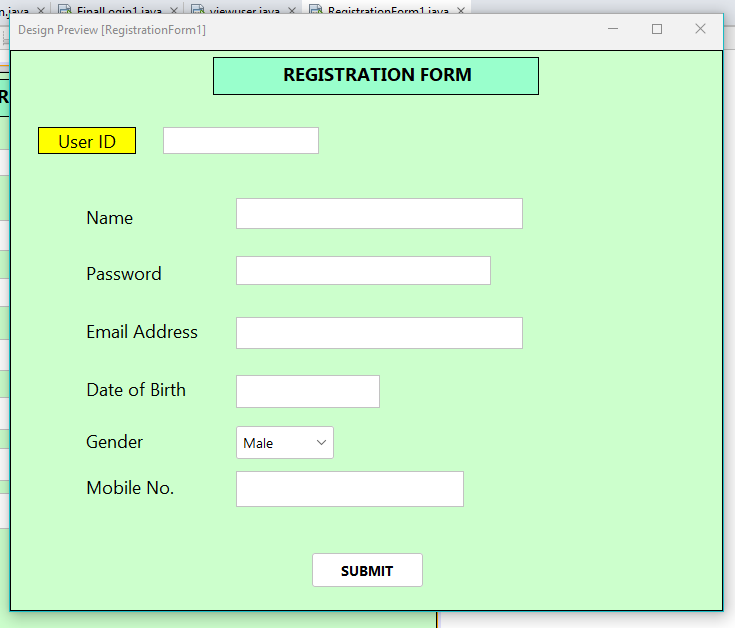
**Login for Admin:** *Admin can login to the app by entering correct username and password.*



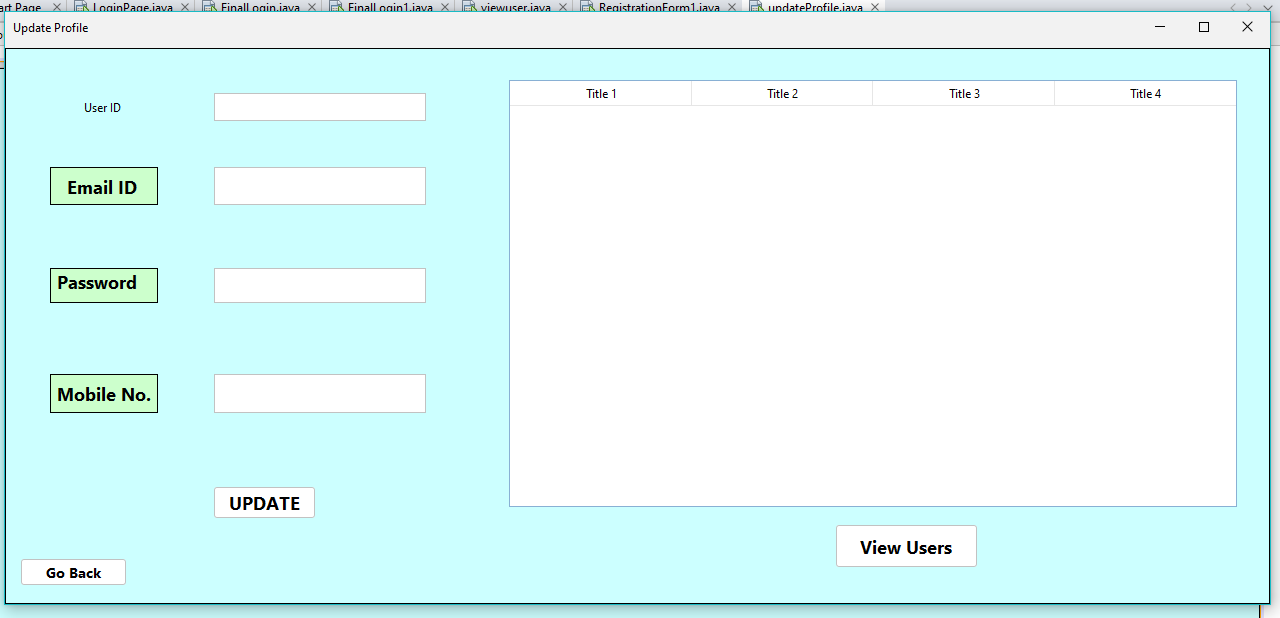
**View Users:** *Admin can view all the registered users*



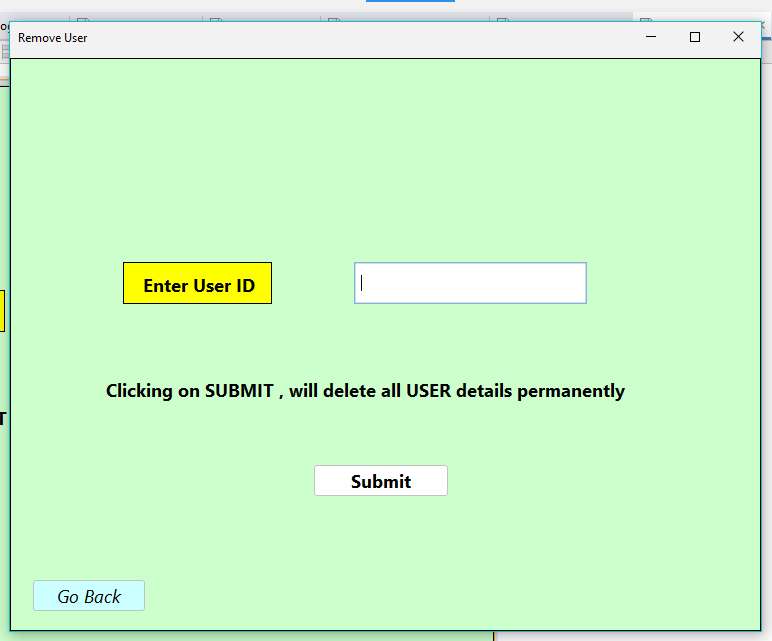
**Add User***: Admin can add a user*



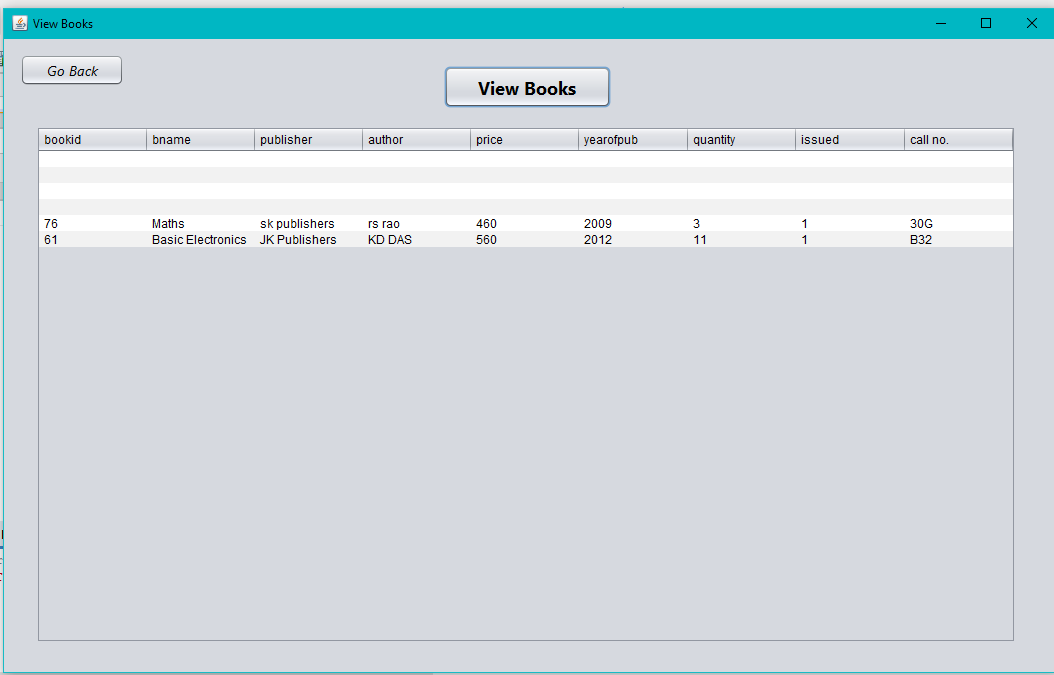
**Update User:** *Admin can select and update any user*



**Remove User:** *Admin can remove any user*



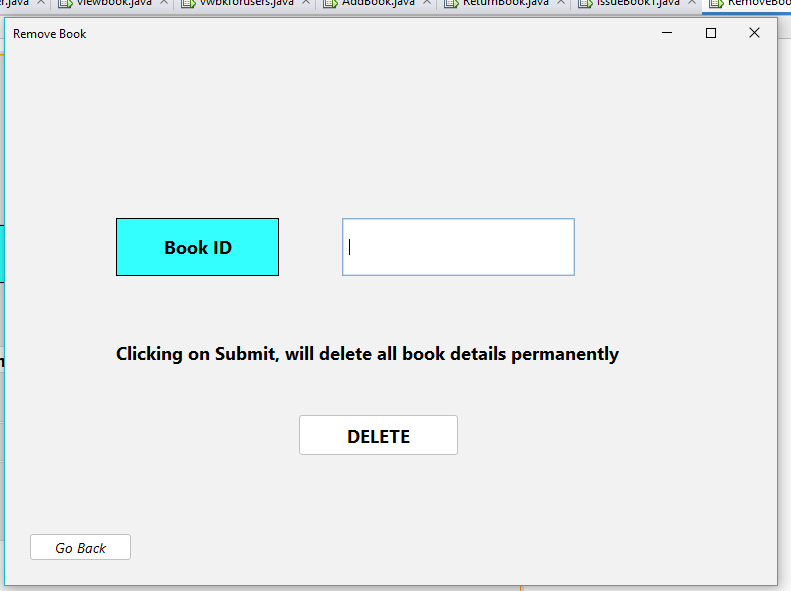
**View Available Books:** *Admin can view all books*



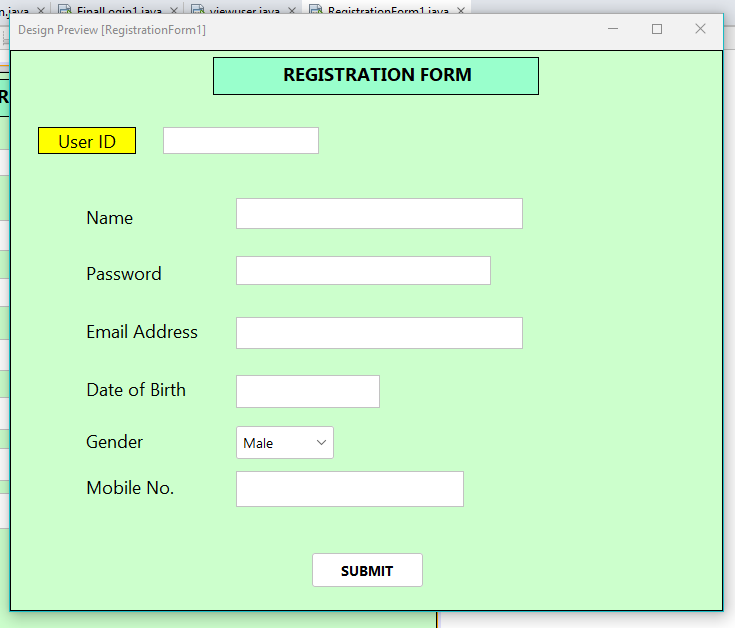
**Add Book:** *Admin can add books to the library by filling up this form.*



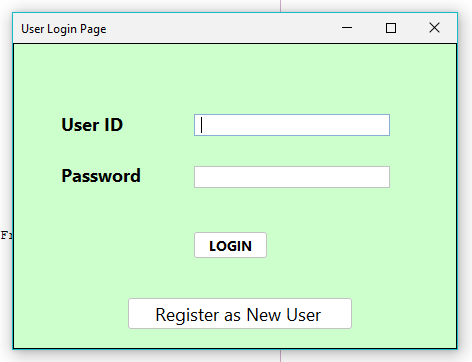
**Remove Book:**  *Admin can remove any book from the library.*



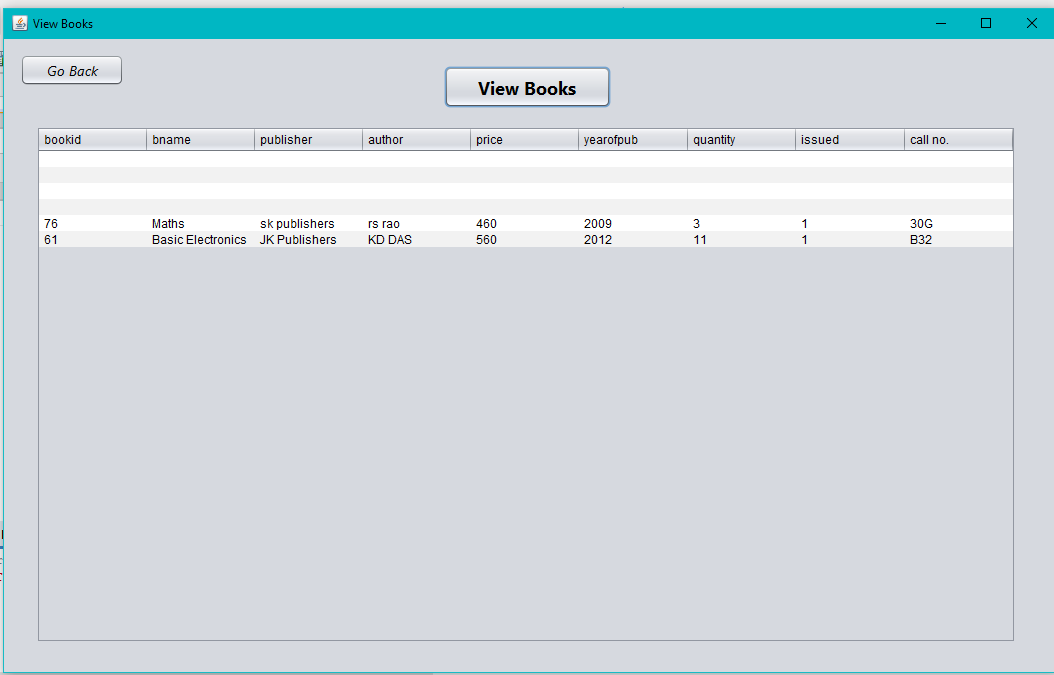
**Register as New User:** *New users can register themselves to the system.*



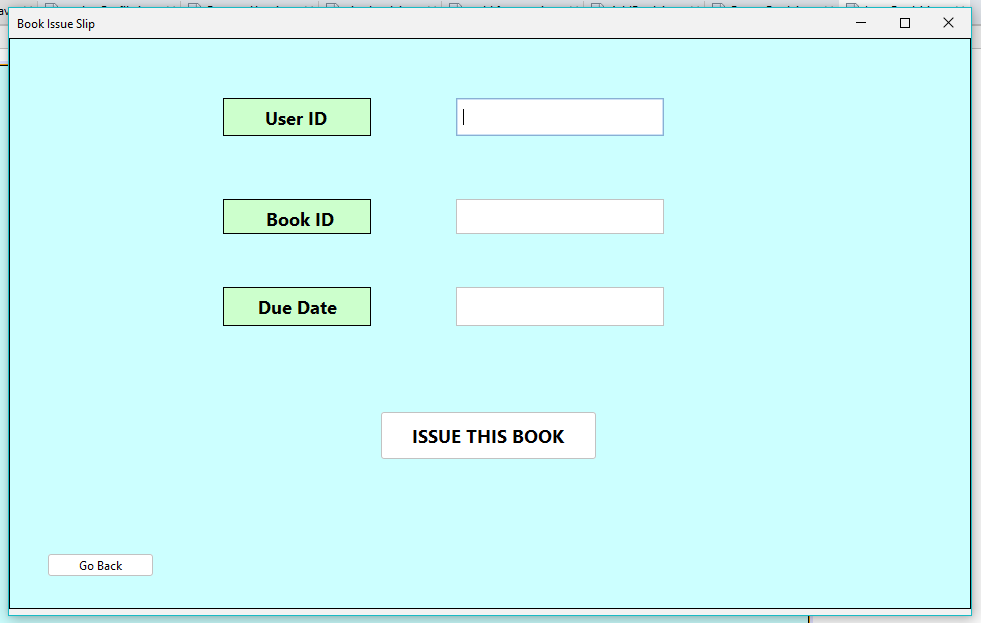
**Login for User:** *User can login to the app by entering correct username and password.*



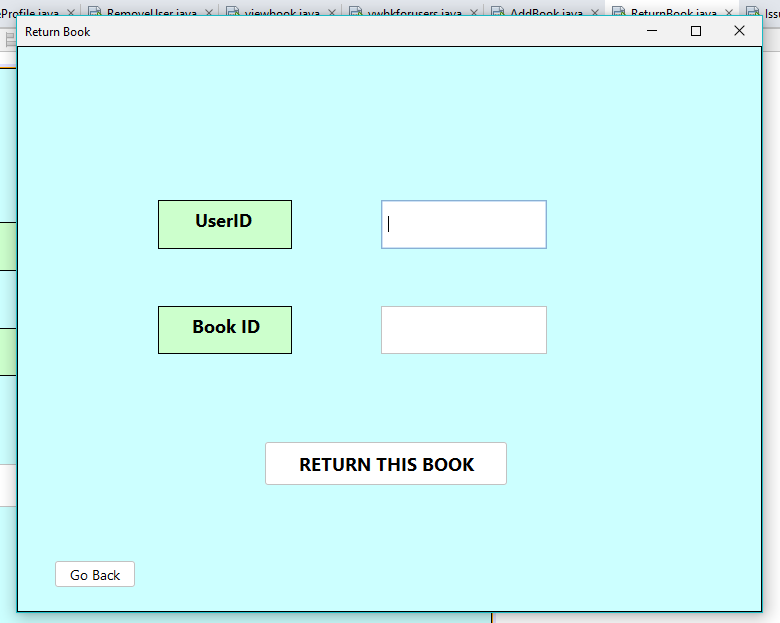
**View Available Books:** *User can view all available books*



**Issue Book*:*** *Users can issue book by entering the bookid, userid and duedate.*



**Return Book:** *Users can return book by entering the bookid*



**/\***

**\* Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license**

**\* Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template**

**\*/**

**package my\_package;**

**import java.sql.PreparedStatement;**

**import java.sql.Connection;**

**import java.sql.DriverManager;**

**import javax.swing.JOptionPane;**

**/\*\***

**\***

**\* @author anubhav\_pc**

**\*/**

**public class AddBook extends javax.swing.JFrame {**

**Connection con = null;**

**PreparedStatement pst = null;**

**/\*\***

**\* Creates new form AddBook**

**\*/**

**public AddBook() {**

**initComponents();**

**// validateBook();**

**}**

**public boolean validateBook() {**

**String bid = bkid.getText();**

**String name = bkname.getText();**

**String pub = publisher.getText();**

**String aut = author.getText();**

**String pr = price.getText();**

**String yr = yrofpub.getText();**

**String qu = quan.getText();**

**String cl = callno.getText();**

**if(bid.equals("")) {**

**JOptionPane.showMessageDialog(this, "please enter book id","Error",JOptionPane.ERROR\_MESSAGE);**

**return false;**

**}**

**public static void main(String args[]) {**

**/\* Set the Nimbus look and feel \*/**

**//<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.Lev**

**el.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>**

**/\* Create and display the form \*/**

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

**public void run() {**

**new AddBook().setVisible(true);**

**}**

**});**

**}**

**// Variables declaration - do not modify**

**private javax.swing.JTextField author;**

**private javax.swing.JTextField bkid;**

**private javax.swing.JTextField bkname;**

**private javax.swing.JTextField callno;**

**private javax.swing.JButton jButton2;**

**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.JLabel jLabel7;**

**private javax.swing.JLabel jLabel8;**

**private javax.swing.JPanel jPanel1;**

**private javax.swing.JPanel jPanel2;**

**private javax.swing.JPanel jPanel3;**

**private javax.swing.JPanel jPanel4;**

**private javax.swing.JPanel jPanel5;**

**private javax.swing.JPanel jPanel6;**

**private javax.swing.JPanel jPanel7;**

**private javax.swing.JPanel jPanel8;**

**private javax.swing.JPanel jPanel9;**

**private javax.swing.JTextField price;**

**private javax.swing.JTextField publisher;**

**private javax.swing.JTextField quan;**

**private javax.swing.JButton submit;**

**private javax.swing.JTextField yrofpub;**

**// End of variables declaration**

**}**

Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this template

\*/

package my\_package;

/\*\*

\*

\* @author anubhav\_pc

\*/

public class AdminLogin extends javax.swing.JFrame {

/\*\*

\* Creates new form AdminLogin

\*/

public AdminLogin() {

initComponents();

}

/\*\*

\* This method is called from within the constructor to initialize the form.

\* WARNING: Do NOT modify this code. The content of this method is always

\* regenerated by the Form Editor.

\*/

@SuppressWarnings("unchecked")

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

private void initComponents() {

jPanel1 = new javax.swing.JPanel();

jPanel2 = new javax.swing.JPanel();

jLabel1 = new javax.swing.JLabel();

jPanel3 = new javax.swing.JPanel();

jButton1 = new javax.swing.JButton();

jPanel4 = new javax.swing.JPanel();

jButton2 = new javax.swing.JButton();

jPanel5 = new javax.swing.JPanel();

jButton3 = new javax.swing.JButton();

jPanel6 = new javax.swing.JPanel();

jButton4 = new javax.swing.JButton();

jPanel7 = new javax.swing.JPanel();

jButton5 = new javax.swing.JButton();

jPanel8 = new javax.swing.JPanel();

jButton6 = new javax.swing.JButton();

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

jPanel1.setBackground(new java.awt.Color(152, 236, 209));

jPanel1.setBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)));

jPanel2.setBackground(new java.awt.Color(51, 255, 255));

jPanel2.setBorder(new javax.swing.border.MatteBorder(null));

jLabel1.setFont(new java.awt.Font("Lucida Fax", 1, 48)); // NOI18N

jLabel1.setText("Admin Section");

javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);

jPanel2.setLayout(jPanel2Layout);

jPanel2Layout.setHorizontalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel2Layout.createSequentialGroup()

.addContainerGap(24, Short.MAX\_VALUE)

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 390, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(20, 20, 20))

);

jPanel2Layout.setVerticalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel2Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 44, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addContainerGap(11, Short.MAX\_VALUE))

);

jPanel3.setBackground(new java.awt.Color(204, 255, 102));

jPanel3.setBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)));

jButton1.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton1.setText("View Users Details");

javax.swing.GroupLayout jPanel3Layout = new javax.swing.GroupLayout(jPanel3);

jPanel3.setLayout(jPanel3Layout);

jPanel3Layout.setHorizontalGroup(

jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel3Layout.createSequentialGroup()

.addGap(15, 15, 15)

.addComponent(jButton1, javax.swing.GroupLayout.PREFERRED\_SIZE, 242, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

);

jPanel3Layout.setVerticalGroup(

jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel3Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton1)

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

);

jPanel4.setBackground(new java.awt.Color(204, 255, 102));

jPanel4.setBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)));

jButton2.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton2.setText("Add User");

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

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

jButton2ActionPerformed(evt);

}

});

javax.swing.GroupLayout jPanel4Layout = new javax.swing.GroupLayout(jPanel4);

jPanel4.setLayout(jPanel4Layout);

jPanel4Layout.setHorizontalGroup(

jPanel4Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel4Layout.createSequentialGroup()

.addGap(15, 15, 15)

.addComponent(jButton2, javax.swing.GroupLayout.PREFERRED\_SIZE, 242, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addContainerGap(17, Short.MAX\_VALUE))

);

jPanel4Layout.setVerticalGroup(

jPanel4Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel4Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton2)

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

);

jPanel5.setBackground(new java.awt.Color(204, 255, 102));

jPanel5.setBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)));

jButton3.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton3.setText("Remove User");

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

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

jButton3ActionPerformed(evt);

}

});

javax.swing.GroupLayout jPanel5Layout = new javax.swing.GroupLayout(jPanel5);

jPanel5.setLayout(jPanel5Layout);

jPanel5Layout.setHorizontalGroup(

jPanel5Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel5Layout.createSequentialGroup()

.addGap(16, 16, 16)

.addComponent(jButton3, javax.swing.GroupLayout.PREFERRED\_SIZE, 240, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

);

jPanel5Layout.setVerticalGroup(

jPanel5Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel5Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton3)

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

);

jPanel6.setBackground(new java.awt.Color(255, 204, 51));

jButton4.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton4.setText("View Books Details");

javax.swing.GroupLayout jPanel6Layout = new javax.swing.GroupLayout(jPanel6);

jPanel6.setLayout(jPanel6Layout);

jPanel6Layout.setHorizontalGroup(

jPanel6Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel6Layout.createSequentialGroup()

.addGap(15, 15, 15)

.addComponent(jButton4)

.addContainerGap(15, Short.MAX\_VALUE))

);

jPanel6Layout.setVerticalGroup(

jPanel6Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel6Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton4)

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

);

jPanel7.setBackground(new java.awt.Color(255, 204, 51));

jButton5.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton5.setText("Add Book");

jButton5.addActionListener(new java.awt.event.ActionListener() {

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

jButton5ActionPerformed(evt);

}

});

javax.swing.GroupLayout jPanel7Layout = new javax.swing.GroupLayout(jPanel7);

jPanel7.setLayout(jPanel7Layout);

jPanel7Layout.setHorizontalGroup(

jPanel7Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel7Layout.createSequentialGroup()

.addGap(17, 17, 17)

.addComponent(jButton5, javax.swing.GroupLayout.PREFERRED\_SIZE, 241, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

);

jPanel7Layout.setVerticalGroup(

jPanel7Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel7Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton5)

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

);

jPanel8.setBackground(new java.awt.Color(255, 204, 51));

jButton6.setFont(new java.awt.Font("Segoe UI", 1, 24)); // NOI18N

jButton6.setText("Remove Book");

jButton6.addActionListener(new java.awt.event.ActionListener() {

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

jButton6ActionPerformed(evt);

}

});

javax.swing.GroupLayout jPanel8Layout = new javax.swing.GroupLayout(jPanel8);

jPanel8.setLayout(jPanel8Layout);

jPanel8Layout.setHorizontalGroup(

jPanel8Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel8Layout.createSequentialGroup()

.addGap(19, 19, 19)

.addComponent(jButton6, javax.swing.GroupLayout.PREFERRED\_SIZE, 238, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

);

jPanel8Layout.setVerticalGroup(

jPanel8Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel8Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jButton6)

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

);

javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addGap(45, 45, 45)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)

.addComponent(jPanel5, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)

.addComponent(jPanel4, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jPanel3, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)))

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

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addContainerGap(98, Short.MAX\_VALUE)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(96, 96, 96))

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)

.addComponent(jPanel6, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jPanel7, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jPanel8, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

.addGap(43, 43, 43))))

);

jPanel1Layout.setVerticalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addGap(21, 21, 21)

.addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(37, 37, 37)

.addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

.addComponent(jPanel4, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

.addComponent(jPanel5, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(24, 24, 24)

.addComponent(jPanel6, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

.addComponent(jPanel7, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

.addComponent(jPanel8, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addContainerGap(27, Short.MAX\_VALUE))

);

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

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

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

.addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

);

layout.setVerticalGroup(

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

.addGroup(layout.createSequentialGroup()

.addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

);

pack();

}// </editor-fold>

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

// TODO add your handling code here:

RemoveUser rmv = new RemoveUser();

rmv.show();

dispose();

}

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

// TODO add your handling code here:

RegistrationForm addusr = new RegistrationForm();

addusr.show();

dispose();

}

private void jButton6ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

RemoveBook rmvbk = new RemoveBook();

rmvbk.show();

dispose();

}

**blic class FinalLogin extends javax.swing.JFrame {**

**Connection con = null;**

**PreparedStatement pst = null;**

**//Statement st = null;**

**ResultSet rs=null;**

**/\*\***

**\* Creates new form FinalLogin**

**\*/**

**public FinalLogin() {**

**initComponents();**

**validateLogin();**

**Login();**

**}**

**public boolean validateLogin() {**

**String id = userid.getText();**

**String pwd = password.getText();**

**if(id.equals (""))**

**{**

**JOptionPane.showMessageDialog(this,"please enter userid","Login Error",JOptionPane.ERROR\_MESSAGE);**

**}**

**if(pwd.equals (""))**

**{**

**JOptionPane.showMessageDialog(this,"please enter password","Login Error",JOptionPane.ERROR\_MESSAGE);**

**}**

**return true;**

**}**

**//check login credentials**

**public void Login() {**

**String id = userid.getText();**

**String pwd = password.getText();**

**try{**

**String query = "select \* from users where userid = ? and password = ?";**

**con = DriverManager.getConnection("jdbc:mysql://localhost/libraryproject", "root", "");**

**pst = con.prepareStatement(query);**

**pst.setString(1,userid.getText());**

**pst.setString(2,password.getText());**

**rs = pst.executeQuery();**

**if (rs.next()) {**

**JOptionPane.showMessageDialog(this,"Login Successful");**

**UserLogin usrl = new UserLogin();**

**usrl.setVisible(true);**

**this.dispose();**

**}**

**else{**

**JOptionPane.showMessageDialog(this,"Incorrect Login Details");**

**}**

**}catch(Exception e){**

**JOptionPane.showMessageDialog(null,e);**

**}**

**}**

**/\* public void login() {**

**String name =username.getText();**

**String password =pwd.getText();**

**/\*\***

**\* This method is called from within the constructor to initialize the form.**

**\* WARNING: Do NOT modify this code. The content of this method is always**

**\* regenerated by the Form Editor.**

**\*/**

**@SuppressWarnings("unchecked")**

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

**private void initComponents() {**

**jPanel1 = new javax.swing.JPanel();**

**jLabel1 = new javax.swing.JLabel();**

**jLabel2 = new javax.swing.JLabel();**

**jScrollPane1 = new javax.swing.JScrollPane();**

**userid = new javax.swing.JTextPane();**

**jButton2 = new javax.swing.JButton();**

**loginbutton = new javax.swing.JButton();**

**password = new javax.swing.JPasswordField();**

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

**setTitle("User Login Page");**

**jPanel1.setBackground(new java.awt.Color(204, 255, 204));**

**jPanel1.setBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)));**

**jLabel1.setFont(new java.awt.Font("Segoe UI", 1, 18)); // NOI18N**

**jLabel1.setText("User ID");**

**jLabel2.setFont(new java.awt.Font("Segoe UI", 1, 18)); // NOI18N**

**jLabel2.setText("Password");**

**jScrollPane1.setViewportView(userid);**

**jButton2.setFont(new java.awt.Font("Segoe UI", 0, 18)); // NOI18N**

**jButton2.setText("Register as New User ");**

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

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

**jButton2ActionPerformed(evt);**

**}**

**});**

**loginbutton.setFont(new java.awt.Font("Segoe UI", 1, 14)); // NOI18N**

**loginbutton.setText("LOGIN");**

**loginbutton.addActionListener(new java.awt.event.ActionListener() {**

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

**loginbuttonActionPerformed(evt);**

**}**

**});**

**javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);**

**jPanel1.setLayout(jPanel1Layout);**

**jPanel1Layout.setHorizontalGroup(**

**jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addGroup(jPanel1Layout.createSequentialGroup()**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addGroup(jPanel1Layout.createSequentialGroup()**

**.addGap(114, 114, 114)**

**.addComponent(jButton2, javax.swing.GroupLayout.PREFERRED\_SIZE, 224, javax.swing.GroupLayout.PREFERRED\_SIZE))**

**.addGroup(jPanel1Layout.createSequentialGroup()**

**.addGap(47, 47, 47)**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addComponent(jLabel1)**

**.addComponent(jLabel2))**

**.addGap(53, 53, 53)**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addComponent(loginbutton)**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)**

**.addComponent(jScrollPane1)**

**.addComponent(password, javax.swing.GroupLayout.DEFAULT\_SIZE, 196, Short.MAX\_VALUE)))))**

**.addContainerGap(66, Short.MAX\_VALUE))**

**);**

**jPanel1Layout.setVerticalGroup(**

**jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addGroup(jPanel1Layout.createSequentialGroup()**

**.addContainerGap(67, Short.MAX\_VALUE)**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()**

**.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)**

**.addComponent(jScrollPane1, javax.swing.GroupLayout.Alignment.TRAILING,**

**javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)**

**.addComponent(jLabel1, javax.swing.GroupLayout.Alignment.TRAILING))**

**.addGap(52, 52, 52))**

**.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)**

**.addComponent(jLabel2)**

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

**.addGap(44, 44, 44)**

**.addComponent(loginbutton)**

**.addGap(40, 40, 40)**

**.addComponent(jButton2)**

**.addGap(19, 19, 19))**

**);**

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

**getContentPane().setLayout(layout);**

**layout.setHorizontalGroup(**

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

**.addGroup(layout.createSequentialGroup()**

**.addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)**

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

**);**

**layout.setVerticalGroup(**

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

**.addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)**

**);**

**pack();**

**}// </editor-fold>**

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

**// TODO add your handling code here:**

**RegistrationForm rgf = new RegistrationForm();**

**rgf.show();**

**dispose();**

**}**

**private void loginbuttonActionPerformed(java.awt.event.ActionEvent evt) {**

**// TODO add your handling code here:**

**if(validateLogin()) {**

**Login();**

**}**

**}**

**/\*\***

**\* @param args the command line arguments**

**\*/**

**public static void main(String args[]) {**

**/\* Set the Nimbus look and feel \*/**

**//<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(FinalLogin.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);**

**} catch (InstantiationException ex) {**

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

**} catch (IllegalAccessException ex) {**

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

**} catch (javax.swing.UnsupportedLookAndFeelException ex) {**

**java.util.logging.Logger.getLogger(FinalLogin.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() {**

**new FinalLogin().setVisible(true);**

**}**

**});**

**}**

**// Variables declaration - do not modify**

**private javax.swing.JButton jButton2;**

**private javax.swing.JLabel jLabel1;**

**private javax.swing.JLabel jLabel2;**

**private javax.swing.JPanel jPanel1;**

**private javax.swing.JScrollPane jScrollPane1;**

**private javax.swing.JButton loginbutton;**

**private javax.swing.JPasswordField password;**

**private javax.swing.JTextPane userid;**

**// End of variables declaration**

**}**

**try {**

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

**con = DriverManager.getConnection("jdbc:mysql://localhost/libraryproject", "root", "");**

**Statement st = con.createStatement();**

**String query = "select \* from users";**

**ResultSet rs = st.executeQuery(query);**

**ResultSetMetaData rsmd = rs.getMetaData();**

**DefaultTableModel model = (DefaultTableModel) tabl1.getModel();**

**int cols = rsmd.getColumnCount();**

**String[] colName = new String [cols];**

**for(int i=0;i<cols;i++)**

### Unit testing:

Unit testing refers to tests that verify the functionality of a specific section of code, usually at the function level. In an object-oriented environment, this is usually at the class level, and the minimal unit tests include the constructors and destructors.

These types of tests are usually written by developers as they work on code (white-box style), to ensure that the specific function is working as expected. One function might have multiple tests, to catch corner cases or other branches in the code. building blocks the software uses work independently of each other.

Unit testing alone cannot verify the functionality of a piece of software, but rather is used to assure that the Unit testing is also called *component testing*.

**USER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Modules /Functionalities to be tested | Input | Output | Test Condition | Result |
| Login | Enter User-id and Password | Logging into Home page of User | An error message should be displayed if the any of the fields are incorrect or empty: “id and password not matched” | Pass |
| Search for the books available | Click on View Available Books button | Move to Books available page | While clicking on the view books button it shows all the books in tabular form. | Pass |
| Issue Books | Click on Issue book button | Move to Issue book page | While clicking on this button the selected book will be issued to the user and record will be added to issuedetails table. | Pass |
| Return Books | Click on Return book button | Move to the return book page | While clicking on this button the selected book will be returned to library . | Pass |

**ADMINISTRATOR:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Modules /Functionalities to be Tested | Input | Output | Test Condition | Result |
| Register a member | Enter all the details of a new member and click on REGISTER button | A new user is registered and becomes the agent to use this site | After registering a member, the new agent can use this site by logging into his/her profile onwards | Pass |
| Add Books | Enter all the details of a new book and click on SAVE button | A new book is added | After adding a new book, the details would be shown on the books available list | Pass |
| View and update user | After updating all the information click on the UPDATE button | User profile is updated | After updating all the information and clicking on this button,user profile would be updated | Pass |
| View Users and View Books | Click on view books/users button | All user/books details are listed in table form | -All user/books details are listed in table form | Pass |
| Remove book/user | Enter the book id/ user id and click on submit button | If id found and all dues clear, user/book is removed | If id found and all dues clear, user/book is removed | Pass |

**Future Scope**

This application can be easily implemented under various situations. We can add new features as and when we require. Reusability is possible as and when require in this application. There is flexibility in all the modules.

**Software Scope**

**Extensibility**: This software is extendable in ways that its original developers may not expect. The following principle enhances extensibility like hide data structure, avoid traversing multiple links or methods, avoid case statements on object type and distinguish public and private operations.

**Reusability**: Reusability is possible as and when require in this application. We can update it next version. Reusable software reduces design, coding and testing cost by amortizing effort over several designs. Reducing the amount of code also simplifies understanding, which increases the likelihood that the code is correct. We follow up both types of reusability: Sharing of newly written code within a project and reuse of previously written code on new projects.

**Understandability**: A method is understandable if someone other than the creator of the method can understand the code (as well as the creator after a time lapse). We use the method, which small and coherent helps to accomplish this.

**Cost-effectiveness**: Its cost is under the budget and make within given time period. It is desirable to aim for a system with a minimum cost subject to the condition that it must satisfy the entire requirement.

**Conclusion:**

The “LIBRARY MANAGEMENT SYSTEM” process made computerized to reduce human errors and to increase the efficiency. The main focus of this project is to lessen human efforts. The maintenance of the records is made efficient, as all the records are stored in the ACCESS database, through which data can be retrieved easily. The navigation control is provided in all the forms to navigate through the large amount of records. If the numbers of records are very large then user has to just type in the search string and user gets the results immediately. The editing is also made simpler. The user has to just type in the required field and press the update button to update the desired field.

The Books and Users are given a particular unique id no so that they can be accessed correctly and without errors. Our main aim of the project is to get the correct information about a particular user and books available in the library and let the user issue, return any book through the system. The problems, which existed in the earlier system, have been removed to a large extent. And it is expected that this project will go a long way in satisfying user requirements. The computerization of the Library Management will not only improves the efficiency but will also reduce human stress thereby indirectly improving human recourses.

**References:**

* The Unified Software Development Process
  + Grady Booch, James Rumbaugh, Ivar Jacobson
  + Pearson Education
* UML 1.5 Specification
  + http://www.omg.org