o. Design a ***JFrame Form*** to create a GUI related to Student having fields as Roll no, Name, Level, Divisionand Major with different buttons as Save, Delete, Edit and Display where Records are shown in JTable.

import java.awt.\*;

import java.awt.event.\*;

import java.sql.\*;

import javax.swing.\*;

import javax.swing.table.\*;

/\*

 \* 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

 \*/

public class StudentsGuiDesignCrud extends javax.swing.JFrame {

    public StudentsGuiDesignCrud() {

        setTitle("Students Entry Form");

        initComponents();

        DisplayTable();

    }

    /\*\*

     \* 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">//GEN-BEGIN:initComponents

    private void initComponents() {

        jPanel1 = new javax.swing.JPanel();

        jLabel1 = new javax.swing.JLabel();

        jPanel2 = new javax.swing.JPanel();

        jLabel2 = new javax.swing.JLabel();

        rolltxt = new javax.swing.JTextField();

        nametxt = new javax.swing.JTextField();

        jLabel3 = new javax.swing.JLabel();

        jLabel4 = new javax.swing.JLabel();

        leveltxt = new javax.swing.JTextField();

        jLabel5 = new javax.swing.JLabel();

        divisiontxt = new javax.swing.JTextField();

        jLabel6 = new javax.swing.JLabel();

        majortxt = new javax.swing.JTextField();

        jPanel3 = new javax.swing.JPanel();

        insertbtn = new javax.swing.JButton();

        updatebtn = new javax.swing.JButton();

        deletebtn = new javax.swing.JButton();

        displaybtn = new javax.swing.JButton();

        jScrollPane1 = new javax.swing.JScrollPane();

        tableDisplay = new javax.swing.JTable();

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

        jPanel1.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));

        jLabel1.setText("Students Entry Form");

        jPanel1.add(jLabel1);

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

        jPanel2.setLayout(new org.netbeans.lib.awtextra.AbsoluteLayout());

        jLabel2.setText("Roll No");

        jPanel2.add(jLabel2, new org.netbeans.lib.awtextra.AbsoluteConstraints(24, 16, 63, -1));

        jPanel2.add(rolltxt, new org.netbeans.lib.awtextra.AbsoluteConstraints(93, 13, 350, -1));

        jPanel2.add(nametxt, new org.netbeans.lib.awtextra.AbsoluteConstraints(93, 48, 350, -1));

        jLabel3.setText("Name");

        jPanel2.add(jLabel3, new org.netbeans.lib.awtextra.AbsoluteConstraints(24, 51, 63, -1));

        jLabel4.setText("Level");

        jPanel2.add(jLabel4, new org.netbeans.lib.awtextra.AbsoluteConstraints(24, 86, 63, -1));

        jPanel2.add(leveltxt, new org.netbeans.lib.awtextra.AbsoluteConstraints(93, 83, 350, -1));

        jLabel5.setText("Division");

        jPanel2.add(jLabel5, new org.netbeans.lib.awtextra.AbsoluteConstraints(24, 121, 63, -1));

        jPanel2.add(divisiontxt, new org.netbeans.lib.awtextra.AbsoluteConstraints(93, 118, 350, -1));

        jLabel6.setText("Major");

        jPanel2.add(jLabel6, new org.netbeans.lib.awtextra.AbsoluteConstraints(24, 156, 63, -1));

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

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

                majortxtActionPerformed(evt);

            }

        });

        jPanel2.add(majortxt, new org.netbeans.lib.awtextra.AbsoluteConstraints(93, 153, 350, -1));

        jPanel3.setBorder(javax.swing.BorderFactory.createEtchedBorder());

        jPanel3.setLayout(new java.awt.GridLayout(1, 0));

        insertbtn.setText("Insert");

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

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

                insertbtnActionPerformed(evt);

            }

        });

        jPanel3.add(insertbtn);

        updatebtn.setText("Update");

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

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

                updatebtnActionPerformed(evt);

            }

        });

        jPanel3.add(updatebtn);

        deletebtn.setText("Delete");

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

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

                deletebtnActionPerformed(evt);

            }

        });

        jPanel3.add(deletebtn);

        displaybtn.setText("Display");

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

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

                displaybtnActionPerformed(evt);

            }

        });

        jPanel3.add(displaybtn);

        tableDisplay.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));

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

            new Object [][] {

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null},

                {null, null, null, null, null}

            },

            new String [] {

                "Roll No", "Name", "Level", "Division", "Major"

            }

        ) {

            Class[] types = new Class [] {

                java.lang.Integer.class, java.lang.String.class, java.lang.String.class, java.lang.String.class, java.lang.String.class

            };

            public Class getColumnClass(int columnIndex) {

                return types [columnIndex];

            }

        });

        tableDisplay.setCursor(new java.awt.Cursor(java.awt.Cursor.HAND\_CURSOR));

        jScrollPane1.setViewportView(tableDisplay);

        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)

            .addGroup(layout.createSequentialGroup()

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

                    .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT\_SIZE, 463, Short.MAX\_VALUE)

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

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

                .addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT\_SIZE, 398, 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)

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

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

                    .addGroup(layout.createSequentialGroup()

                        .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED\_SIZE, 187, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

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

                    .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED\_SIZE, 0, Short.MAX\_VALUE))

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

        );

        pack();

    }// </editor-fold>//GEN-END:initComponents

    private void majortxtActionPerformed(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_majortxtActionPerformed

        // TODO add your handling code here:

    }//GEN-LAST:event\_majortxtActionPerformed

    private void deletebtnActionPerformed(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_deletebtnActionPerformed

        String rolldelete = JOptionPane.showInputDialog("Enter Roll number for delete:");

        try {

            String URL = "jdbc:mysql://localhost:3306/college";

            String username = "root";

            String password = "";

            Connection conn = DriverManager.getConnection(URL, username, password);

            String deleteQuery = "DELETE FROM student WHERE id= (?)";

            PreparedStatement pstmt = conn.prepareStatement(deleteQuery);

            pstmt.setInt(1, Integer.parseInt(rolldelete));

            Component frame = null;

            int rowAffected = pstmt.executeUpdate();

            if (rowAffected > 0) {

                JOptionPane.showMessageDialog(frame, "Record Delete Successfully ");

            } else {

                JOptionPane.showMessageDialog(frame, "Error while Deleting record... ");

            }

            DisplayTable();

        } catch (NumberFormatException | SQLException e) {

            System.out.println(e.getMessage());

        }

    }//GEN-LAST:event\_deletebtnActionPerformed

    private void updatebtnActionPerformed(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_updatebtnActionPerformed

        try {

            String URL = "jdbc:mysql://localhost:3306/college";

            String username = "root";

            String password = "";

            Connection conn = DriverManager.getConnection(URL, username, password);

            String updateQuery = "UPDATE student SET name = ?, level = ?, division = ?, major = ? WHERE id = ?";

            PreparedStatement pstmt = conn.prepareStatement(updateQuery);

            // Insert first record

            pstmt.setInt(5, Integer.parseInt(rolltxt.getText()));

            pstmt.setString(1, nametxt.getText());

            pstmt.setString(2, leveltxt.getText());

            pstmt.setString(3, divisiontxt.getText());

            pstmt.setString(4, majortxt.getText());

            int rowAffected = pstmt.executeUpdate();

            Component frame = null;

            if (rowAffected > 0) {

                JOptionPane.showMessageDialog(frame, "Record Update Successfully ");

            } else {

                JOptionPane.showMessageDialog(frame, "Error while Update record... ");

            }

            DisplayTable();

        } catch (HeadlessException | NumberFormatException | SQLException e) {

            System.out.println(e.getMessage());

        }

    }//GEN-LAST:event\_updatebtnActionPerformed

    private void insertbtnActionPerformed(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_insertbtnActionPerformed

        // TODO add your handling code here:

        try {

            String URL = "jdbc:mysql://localhost:3306/college";

            String username = "root";

            String password = "";

            Connection conn = DriverManager.getConnection(URL, username, password);

            String insertQuery = "INSERT INTO student VALUES (?, ?, ?, ?, ?)";

            PreparedStatement pstmt = conn.prepareStatement(insertQuery);

            // Insert first record

            pstmt.setInt(1, Integer.parseInt(rolltxt.getText()));

            pstmt.setString(2, nametxt.getText());

            pstmt.setString(3, leveltxt.getText());

            pstmt.setString(4, divisiontxt.getText());

            pstmt.setString(5, majortxt.getText());

            int rowAffected = pstmt.executeUpdate();

            Component frame = null;

            if (rowAffected > 0) {

                JOptionPane.showMessageDialog(frame, "Record Insert Successfully ");

            } else {

                JOptionPane.showMessageDialog(frame, "Error while inserting record... ");

            }

            DisplayTable();

        } catch (HeadlessException | NumberFormatException | SQLException e) {

            System.out.println(e.getMessage());

        }

    }//GEN-LAST:event\_insertbtnActionPerformed

    public void InsertFunction() {

    }

    private void displaybtnActionPerformed(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_displaybtnActionPerformed

        DisplayTable();

    }//GEN-LAST:event\_displaybtnActionPerformed

    //    function to display data in tables and thsi functio is called in display button , after inser , update,delete

    public void DisplayTable() {

        try {

            String URL = "jdbc:mysql://localhost:3306/college";

            String username = "root";

            String password = "";

            Connection conn = DriverManager.getConnection(URL, username, password);

            String displayQuery = "SELECT \* FROM student";

            PreparedStatement pstmt = conn.prepareStatement(displayQuery);

            ResultSet rs = pstmt.executeQuery();

            DefaultTableModel tblModel = (DefaultTableModel) tableDisplay.getModel();

            tblModel.setRowCount(0); // Clear the existing rows

            while (rs.next()) {

                int roll = rs.getInt(1);

                String name = rs.getString(2);

                String level = rs.getString(3);

                String div = rs.getString(4);

                String major = rs.getString(5);

                Object[] tblData = {roll, name, level, div, major};

                tblModel.addRow(tblData);

            }

            rs.close();

            pstmt.close();

            conn.close();

        } catch (SQLException e) {

            System.out.println(e.getMessage());

        }

    }

    /\*\*

     \* @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(StudentsGuiDesignCrud.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

        } catch (InstantiationException ex) {

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

        } catch (IllegalAccessException ex) {

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

        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

            java.util.logging.Logger.getLogger(StudentsGuiDesignCrud.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 StudentsGuiDesignCrud().setVisible(true);

            }

        });

    }

    // Variables declaration - do not modify//GEN-BEGIN:variables

    private javax.swing.JButton deletebtn;

    private javax.swing.JButton displaybtn;

    private javax.swing.JTextField divisiontxt;

    private javax.swing.JButton insertbtn;

    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.JPanel jPanel1;

    private javax.swing.JPanel jPanel2;

    private javax.swing.JPanel jPanel3;

    private javax.swing.JScrollPane jScrollPane1;

    private javax.swing.JTextField leveltxt;

    private javax.swing.JTextField majortxt;

    private javax.swing.JTextField nametxt;

    private javax.swing.JTextField rolltxt;

    private javax.swing.JTable tableDisplay;

    private javax.swing.JButton updatebtn;

    // End of variables declaration//GEN-END:variables

}

