SUKKUR INSTITUTE OF BUSINESS ADMINISTRATION UNIVERSITY

Department of computer science

Programming Fundamentals (BSCS –II)

Spring 2024

Assignment – (13)

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Section E"

1- Create a program to connect with MySQL database. You need to create a database and using that database, create a student table with (id, name, phone, semester, cgpa) attributes. You need to create a GUI application where you need to add CRUD (Create, Read, Update & Delete) operations. All operations should be done with created student in database.

Solution:

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.*;

 class StudentDatabaseApp extends JFrame {

   private JTextField idField, nameField, phoneField, semesterField, cgpaField;
   private JButton addButton, viewButton, updateButton, deleteButton;
   private JTextArea outputArea;

   public StudentDatabaseApp() {
      setTitle("Student Database App");
      setSize(500, 400);

      setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);


      idField = new JTextField(10);
      nameField = new JTextField(20);
      phoneField = new JTextField(15);
      semesterField = new JTextField(5);
      cgpaField = new JTextField(5);

      addButton = new JButton("ADD");
      viewButton = new JButton("VIEW");
      updateButton = new JButton("UPDATE");
      deleteButton = new JButton("DELETE");

      addButton.setBackground(new Color(7, 239, 104));
      viewButton.setBackground(new Color(13, 150, 241));
      updateButton.setBackground(new Color(237, 192, 9));
      deleteButton.setBackground(new Color(239, 32, 11));

      outputArea = new JTextArea(10, 40);
      outputArea.setEditable(false);
```

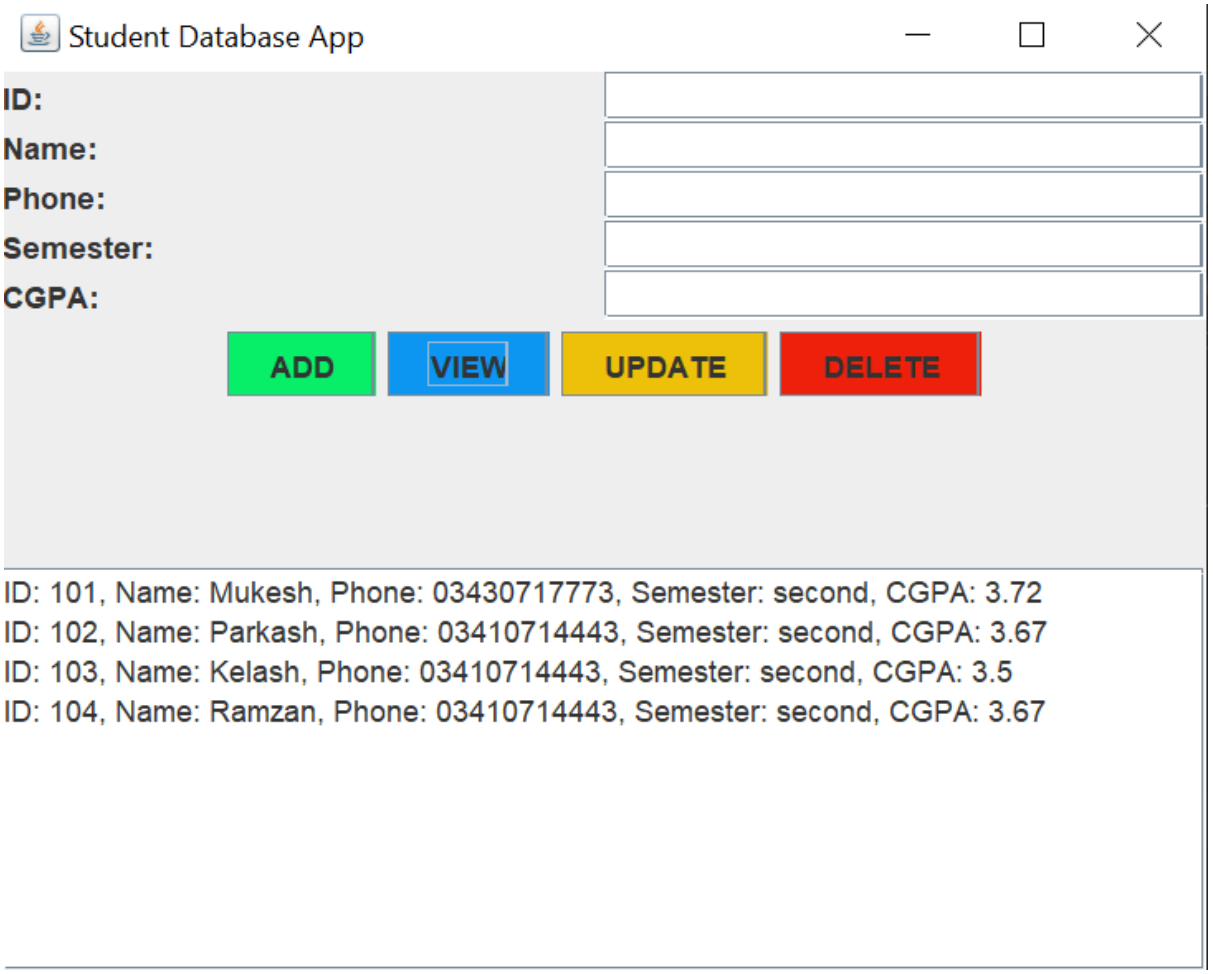
```
JPanel inputPanel = new JPanel(new GridLayout(5, 2));
inputPanel.add(new JLabel("ID:"));
inputPanel.add(idField);
idField.setForeground(Color.BLUE);
inputPanel.add(new JLabel("Name:"));
inputPanel.add(nameField);
nameField.setForeground(Color.BLUE);
inputPanel.add(new JLabel("Phone:"));
inputPanel.add(phoneField);
phoneField.setForeground(Color.BLUE);
inputPanel.add(new JLabel("Semester:"));
inputPanel.add(semesterField);
semesterField.setForeground(Color.BLUE);
inputPanel.add(new JLabel("CGPA:"));
inputPanel.add(cgpaField);
cgpaField.setForeground(Color.BLUE);



JPanel buttonPanel = new JPanel();
buttonPanel.add(addButton);
buttonPanel.add(viewButton);
buttonPanel.add(updateButton);
buttonPanel.add(deleteButton);



JScrollPane scrollPane = new JScrollPane(outputArea);


JPanel mainPanel = new JPanel(new BorderLayout());
mainPanel.add(inputPanel, BorderLayout.NORTH);
mainPanel.add(buttonPanel, BorderLayout.CENTER);
mainPanel.add(scrollPane, BorderLayout.SOUTH);


add(mainPanel);


addButton.addActionListener(new AddButtonListener());
viewButton.addActionListener(new ViewButtonListener());
updateButton.addActionListener(new UpdateButtonListener());
```

```
        deleteButton.addActionListener(new DeleteButtonListener());
    }

    private class AddButtonListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            try {
                String url = "jdbc:mysql://localhost:3306/School";
                Connection con = DriverManager.getConnection(url, "root", "Mukesh*12");

                String query = "INSERT INTO student (id, name, phone, semester, cgpa) VALUES (?,
?, ?, ?, ?)";
                PreparedStatement stmt = con.prepareStatement(query);
                stmt.setString(1, idField.getText());
                stmt.setString(2, nameField.getText());
                stmt.setString(3, phoneField.getText());
                stmt.setString(4, semesterField.getText());
                stmt.setString(5, cgpaField.getText());
                stmt.executeUpdate();

                outputArea.setText("Student added successfully.");

                con.close();
            } catch (SQLException ex) {
                outputArea.setText("Error: " + ex.getMessage());
            }
        }
    }

    private class ViewButtonListener implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e) {
            try {
                String url = "jdbc:mysql://localhost:3306/School";
                Connection con = DriverManager.getConnection(url, "root", "Mukesh*12");

                String query = "SELECT * FROM student";
                Statement stmt = con.createStatement();
                ResultSet rs = stmt.executeQuery(query);

                StringBuilder result = new StringBuilder();
                while (rs.next()) {
                    result.append("ID: ").append(rs.getString("id")).append(", ")
                            .append("Name: ").append(rs.getString("name")).append(", ")
```

```
                .append("Phone: ").append(rs.getString("phone")).append(", ")
                .append("Semester: ").append(rs.getString("semester")).append(", ")
                .append("CGPA: ").append(rs.getString("cgpa")).append("\n");
            }

            outputArea.setText(result.toString());

            con.close();
        } catch (SQLException ex) {
            outputArea.setText("Error: " + ex.getMessage());
        }
    }
}

private class UpdateButtonListener implements ActionListener {
    @Override
    public void actionPerformed(ActionEvent e) {
        try {
            String url = "jdbc:mysql://localhost:3306/School";
            Connection con = DriverManager.getConnection(url, "root", "Mukesh*12");

            String query = "UPDATE student SET name=?, phone=?, semester=?, cgpa=? WHERE
id=?";
            PreparedStatement stmt = con.prepareStatement(query);
            stmt.setString(1, nameField.getText());
            stmt.setString(2, phoneField.getText());
            stmt.setString(3, semesterField.getText());
            stmt.setString(4, cgpaField.getText());
            stmt.setString(5, idField.getText());
            stmt.executeUpdate();

            outputArea.setText("Student updated successfully.");

            con.close();
        } catch (SQLException ex) {
            outputArea.setText("Error: " + ex.getMessage());
        }
    }
}

private class DeleteButtonListener implements ActionListener {
    @Override
    public void actionPerformed(ActionEvent e) {
        try {
```

```
            String url = "jdbc:mysql://localhost:3306/School";
            Connection con = DriverManager.getConnection(url, "root", "Mukesh*12");

            String query = "DELETE FROM student WHERE id=?";
            PreparedStatement stmt = con.prepareStatement(query);
            stmt.setString(1, idField.getText());
            stmt.executeUpdate();

            outputArea.setText("Student deleted successfully.");

            con.close();
        } catch (SQLException ex) {
            outputArea.setText("Error: " + ex.getMessage());
        }
    }
}

public static void main(String[] args) {
    SwingUtilities.invokeLater(() -> {
        new StudentDatabaseApp().setVisible(true);
    });
}
}
```

output:



On CMD:

```
mysql> select * from student;
+------+---------+-------------+----------+------+
| id   | name    | phone       | semester | CGPA |
+------+---------+-------------+----------+------+
|  101 | Mukesh  | 03430717773 | second   | 3.72 |
|  102 | Parkash | 03410714443 | second   | 3.67 |
|  103 | Kelash  | 03410714443 | second   |  3.5 |
|  104 | Ramzan  | 03410714443 | second   | 3.67 |
+------+---------+-------------+----------+------+
4 rows in set (0.00 sec)
```