```
import javax.swing.*;
import java.awt.*;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;

public class App extends JFrame {

    private JTextField rollNoTextField, nameTextField, deptTextField, yearTextField;
    private JTextArea outputTextArea;
    private Connection connection;

    public App() {
        try {
            // Establish database connection
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/student", "root",
"Sancse@2003");
        } catch (SQLException e) {
            e.printStackTrace();
            JOptionPane.showMessageDialog(this, "Failed to connect to the
database.");
            System.exit(1);
        }

        setTitle("Student Information System");
        setSize(400, 400);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        JPanel panel = new JPanel(new GridLayout(8, 2));
        add(panel);
        placeComponents(panel);

        setVisible(true);
    }

    private void placeComponents(JPanel panel) {
        JLabel rollNoLabel = new JLabel("Roll No:");
        rollNoTextField = new JTextField();
        panel.add(rollNoLabel);
        panel.add(rollNoTextField);

        JLabel nameLabel = new JLabel("Name:");
        nameTextField = new JTextField();
        panel.add(nameLabel);
        panel.add(nameTextField);

        JLabel deptLabel = new JLabel("Dept:");
        deptTextField = new JTextField();
        panel.add(deptLabel);
        panel.add(deptTextField);

        JLabel yearLabel = new JLabel("Year:");
        yearTextField = new JTextField();
        panel.add(yearLabel);
        panel.add(yearTextField);

        JButton insertButton = new JButton("Insert");
        JButton deleteButton = new JButton("Delete");
        JButton updateButton = new JButton("Update");
        JButton viewButton = new JButton("View");

        panel.add(insertButton);
        panel.add(deleteButton);
        panel.add(updateButton);
        panel.add(viewButton);

        outputTextArea = new JTextArea();
        outputTextArea.setEditable(false);
        JScrollPane scrollPane = new JScrollPane(outputTextArea);
        panel.add(scrollPane);

        insertButton.addActionListener(e -> insertStudent());
        deleteButton.addActionListener(e -> deleteStudent());
        updateButton.addActionListener(e -> updateStudent());
        viewButton.addActionListener(e -> viewStudents());
    }

    private void insertStudent() {
        try {
            String query = "INSERT INTO students (rollno, name, dept, year) VALUES
(?, ?, ?, ?)";
            try (PreparedStatement preparedStatement =
connection.prepareStatement(query)) {
                preparedStatement.setString(1, rollNoTextField.getText());
                preparedStatement.setString(2, nameTextField.getText());
                preparedStatement.setString(3, deptTextField.getText());
                preparedStatement.setString(4, yearTextField.getText());

                int rowsInserted = preparedStatement.executeUpdate();
                if (rowsInserted > 0) {
                    JOptionPane.showMessageDialog(this, "Student information
inserted successfully!");
                    clearFields();
                } else {
                    JOptionPane.showMessageDialog(this, "Failed to insert student
information.");
                }
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }

    private void deleteStudent() {
        try {
            String query = "DELETE FROM students WHERE rollno = ?";
            try (PreparedStatement preparedStatement =
connection.prepareStatement(query)) {
                preparedStatement.setString(1, rollNoTextField.getText());

                int rowsDeleted = preparedStatement.executeUpdate();
                if (rowsDeleted > 0) {
                    JOptionPane.showMessageDialog(this, "Student information deleted
successfully!");
                    clearFields();
                } else {
                    JOptionPane.showMessageDialog(this, "No student found with the
given Roll No.");
                }
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }

    private void updateStudent() {
        try {
            String query = "UPDATE students SET name = ?, dept = ?, year = ? WHERE
rollno = ?";
            try (PreparedStatement preparedStatement =
connection.prepareStatement(query)) {
                preparedStatement.setString(1, nameTextField.getText());
                preparedStatement.setString(2, deptTextField.getText());
                preparedStatement.setString(3, yearTextField.getText());
                preparedStatement.setString(4, rollNoTextField.getText());

                int rowsUpdated = preparedStatement.executeUpdate();
                if (rowsUpdated > 0) {
                    JOptionPane.showMessageDialog(this, "Student information updated
successfully!");
                    clearFields();
                } else {
                    JOptionPane.showMessageDialog(this, "No student found with the
given Roll No.");
                }
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }

    private void viewStudents() {
        outputTextArea.setText("");
        try {
            String query = "SELECT * FROM students";
            try (PreparedStatement preparedStatement =
connection.prepareStatement(query)) {
                try (ResultSet resultSet = preparedStatement.executeQuery()) {
                    while (resultSet.next()) {
                        String rollNo = resultSet.getString("rollno");
                        String name = resultSet.getString("name");
                        String dept = resultSet.getString("dept");
                        String year = resultSet.getString("year");

                        outputTextArea.append("Roll No: " + rollNo + "\n");
                        outputTextArea.append("Name: " + name + "\n");
                        outputTextArea.append("Dept: " + dept + "\n");
                        outputTextArea.append("Year: " + year + "\n");
                        outputTextArea.append("------------------------\n");
                    }
                }
            }
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }

    private void clearFields() {
        rollNoTextField.setText("");
        nameTextField.setText("");
        deptTextField.setText("");
        yearTextField.setText("");
    }

    public static void main(String[] args) {
       new App();
    }
}
/*create database student;
use student;
CREATE TABLE students (
    id INT AUTO_INCREMENT PRIMARY KEY,
    rollno VARCHAR(20) NOT NULL,
    name VARCHAR(50) NOT NULL,
    dept VARCHAR(50) NOT NULL,
    year VARCHAR(10) NOT NULL
);
```

```
insert into students values(1,1,"siva","cse",3);
insert into students values(2,2,"sivaranjani","cse",3);
select * from students;*/
```

```
mysql> create database student;
Query OK, 1 row affected (4.37 sec)

mysql> CREATE TABLE students (
    ->     id INT AUTO_INCREMENT PRIMARY KEY,
    ->     rollno VARCHAR(20) NOT NULL,
    ->     name VARCHAR(50) NOT NULL,
    ->     dept VARCHAR(50) NOT NULL,
    ->     year VARCHAR(10) NOT NULL
    -> );
Query OK, 0 rows affected (3.02 sec)
```

insert

```
mysql> select*from students;
+----+--------+------+-----+------+
| id | rollno | name | dept | year |
+----+--------+------+-----+------+
|  1 | 1      | san  | cse  | 3    |
+----+--------+------+-----+------+
1 row in set (0.19 sec)
```

DELETE
GIVE ROLL 1

```
mysql> selected*from students;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near
'selected*from students' at line 1
mysql> insert into students values(1,1,"siva","cse",3);
Query OK, 1 row affected (1.15 sec)
```

UPDATE

```
mysql> insert into students values(1,1,"siva","cse",3);
Query OK, 1 row affected (1.15 sec)

mysql> insert into students values(2,2,"sivaranjani","cse",3);
Query OK, 1 row affected (0.07 sec)
```

rollno 1 update san

```
mysql> select*from students;
+----+--------+-------------+-----+------+
| id | rollno | name        | dept | year |
+----+--------+-------------+------+------+
|  1 | 1      | san         |      |      |
|  2 | 2      | sivaranjani | cse  | 3    |
+----+--------+-------------+------+------+
2 rows in set (0.08 sec)
```

view

```
Roll No: 1
Name: san
Dept: 
Year: 
------------------------
Roll No: 2
Name: sivaranjani
Dept: cse
Year: 3
------------------------
```