JAVA SWING BASED- FACE RECOGNITION SYSTEM - SQL CONNECTIVITY USING JDBC

A

Report

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BONAFIDE CERTIFICATE

This to Certify that this project report titled "**FACE RECOGNITION SYSTEM"** is the bonafied project work of Mr.G.Teja Swaroop Reddy bearing Roll.no:1602-18-737-113 who carried out this project under my supervision in the IV semester for the academic year 2019-2020.

Signature
external examiner

Signature
internal examiner

ABSTRACT

Automated face recognition aims to identify people in images or videos using pattern recognition techniques. Automated face recognition is widely used in applications ranging from social media to advanced authentication systems. The automatic recognition of faces captured by digital cameras in unconstrained, real-world environment is still very challenging, since it involves important variations in both acquisition conditions as well as in facial expressions. Thus, this project introduces the topic of Automated Face Recognition using sensors and how a sensor sense human face. This project also includes various domains where this system is used. Through this we can save data efficiently in a better way using RDBMS.

INTRODUCTION:

Requirement Analysis:

List of Tables:

1. Sensor
2. DeviceType
3. Domain
4. UsedFor
5. usedIn

List of attributes with their Domain types:

1.Sensor:

- Type: char(20)
- Cost: Number(10)
- Energy: char(20)
- Sensor_id: number(5)
- lifetime: number(5)

2.DeviceType:

- Device_id: number(5)
- devicecost: number(10)
- device: char(20)

3Domain:

- domain_id: number(5)
- domainType: char(20)
- purpose: char(20)

4.UsedFor:

- sensor_id: number(5)
- domain_id: number(5)

5.UsedIn:

- sensor_id: number(5)
- device_id: number(5)
- since: number(5)

THROUGH THE PROJECT:

This project helps to store data in a efficient way and it can be achieved through various sql commands and we can also store this for any future use and also we can save our data in a many different areas so we cannot lost all the data at once. The details cannot be lost so it is safer to use it .

ARCHITECTURE AND TECHNOLOGY USED:

SOFTWARE USED:

Java Eclipse, Oracle 11g Database, Java SE version 8, SQL LITE.

Java SWING:

Swing is a GUI widget toolkit for Java. It is part of Oracle's Java Foundation Classes (JFC) – an API for providing a graphical user interface (GUI) for Java programs.

Swing was developed to provide a more sophisticated set of GUI components than the earlier AWT. Swing provides a look and feel that emulates the look and feel of several platforms, and also supports a pluggable look and feel that allows applications to have a look and feel unrelated to the underlying platform. It has more powerful and flexible components than AWT. In addition to familiar components such as buttons, check boxes and labels, Swing provides several advanced components such as tabbed panel, scroll panes, trees, tables, and lists.

SQL:

Structure Query Language(SQL) is a database query language used for storing and managing data in Relational DBMS. SQL was the first commercial language introduced for E.F Codd's **Relational** model of database. Today almost all RDBMS (MySql, Oracle, Infomix, Sybase, MS Access) use **SQL** as the standard database query language. SQL is used to perform all types of data operations in RDBMS.

Java-SQL Connectivity using JDBC:

Java Database Connectivity (**JDBC**) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is a Java-based data access technology used for Java database connectivity. It is part of the Java Standard Edition platform, from Oracle Corporation. It provides methods to query and update data in a database and is oriented towards relational databases.

The connection to the database can be performed using Java programming (JDBC API) as:

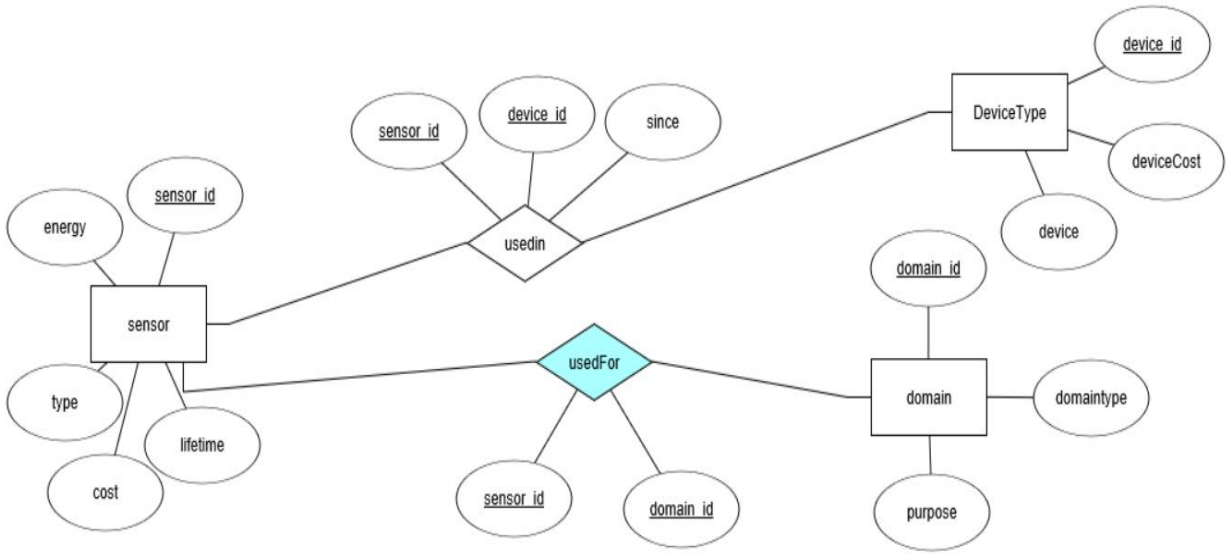
```
private void connToDb(){
              try {
             Class.forName("oracle.jdbc.driver.OracleDriver");
             connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1522:xe","swaroop","vasavi
");
             statement = connection.createStatement();
```

```
        } catch (SQLException connectException) {
          System.out.println(connectException.getMessage());
          System.out.println(connectException.getSQLState());
          System.out.println(connectException.getErrorCode());
          System.exit(1);
        }
        catch (Exception e)
       {
            System.err.println("Unable to find and load driver");
            System.exit(1);
       }
   }
```

Thus, the connection from Java to Oracle database is performed and therefore, can be used for updating tables in the database directly.

DESIGN:

ER DIAGRAM:



DATA DESIGN:

DDL COMMANDS:

```
SQL> create table usedin(
  2  sensor_id number(5),
  3  device_id number(5),
  4  since number(5));
Table created.

SQL> create table devicetype(
  2  devicecost number(10),
  3  device_id number(5),
  4  device char(20));
Table created.

SQL> create table usedfor(
  2  sensor_id number(5),
  3  domain_id number(5));
Table created.

SQL> create table domain(
  2  domain_id number(5),
  3  domaintype char(20),
  4  purpose char(20));
Table created.

SQL> create table sensor(
  2  sensor_id number(5),
  3  cost number(10),
  4  lifetime number(10),
  5  energy char(20),
  6  type char(10));
Table created.

SQL> desc sensor;
 Name                      Null?    Type
 ----------------------------------------- -------- ----------------------------
```

```
SENSOR_ID                 NOT NULL NUMBER(5)
COST                      NUMBER(10)
LIFETIME                  NUMBER(10)
ENERGY                    CHAR(20)
TYPE                      CHAR(10)

SQL> desc devicetype;
 Name                     Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEVICECOST                        NUMBER(10)
 DEVICE_ID                 NOT NULL NUMBER(5)
 DEVICE                    CHAR(20)

SQL> desc domain;
 Name                     Null?    Type
 ----------------------------------------- -------- ----------------------------
 DOMAIN_ID                 NOT NULL NUMBER(5)
 DOMAINTYPE                CHAR(30)
 PURPOSE                   CHAR(30)

SQL> desc usedin;
 Name                     Null?    Type
 ----------------------------------------- -------- ----------------------------
 SENSOR_ID                 NOT NULL NUMBER(5)
 DEVICE_ID                 NOT NULL NUMBER(5)
 SINCE                     NUMBER(5)

SQL> desc usedfor;
 Name                     Null?    Type
 ----------------------------------------- -------- ----------------------------
 SENSOR_ID                 NOT NULL NUMBER(5)
 DOMAIN_ID                 NOT NULL NUMBER(5)
```

DML OPERATIONS:

```
SQL> select * from domain;

 DOMAIN_ID DOMAINTYPE                    PURPOSE
---------- ------------------------------ ------------------------------
       100 education                      attendence
       200 banking                        security
       300 social media                   privacy
       400 police station                 information
       500 aadhar card                    identification


SQL> select * from usedin;

 SENSOR_ID  DEVICE_ID     SINCE
---------- ---------- ----------
         1        101       2016
         2        102       2010
         3        103       2016
         4        104       2014
         5        105       2012

SQL> select * from devicetype;

DEVICE_ID  DEVICECOST DEVICE
---------- ---------- --------------------
       101      20000 mobile
       102      10000 camera
       103      50000 laptop
       104       5000 doors
```

```
     105     20000 locker

SQL> select * from sensor;

 SENSOR_ID      COST   LIFETIME ENERGY           TYPE
---------- ---------- ---------- -------------------- ----------
      1     10000        5 3D              solar
      2     10000       10 3D               solar
      3      5000       10 2D              electrical
      4      5000       20 3D              electrical
      5      5000       30 3D              electrical

SQL> select * from usedfor;

 SENSOR_ID  DOMAIN_ID
---------- ----------
      1      100
      2      200
      3      300
      4      400
      5      500
```

IMPLEMENTATION:

SENSOR:

SENSOR INSERT:

```
package sensor;

import javax.swing.*;

import devicetype.devicetypedelete;
import devicetype.devicetypeinsert;
import devicetype.devicetypeview;
import domain.domaindelete;
import domain.domaininsert;
import domain.domainview;
import usedfor.usedfordelete;
import usedfor.usedforinsert;
import usedfor.usedforview;
import usedin.usedindelete;
import usedin.usedininsert;
import usedin.usedinview;

import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;
public class sensorinsert extends JFrame {
                    private JPanel panel;
                    private JLabel label5;
                    private JTextField t1;
                    private JLabel label1;
                    private JTextField t2;
                    private JLabel label2;
                    private JTextField t3;
                    private JTextField t4;
                    private JLabel label3;
                    private JLabel label4;
                    private JTextField t5;
                    private JButton insert;
            private JMenuItem insert1;
            private JMenuItem delete1;
            private JMenuItem view1;
            private JMenuItem insert2;
            private JMenuItem delete2;
```

```
private JMenuItem view2;
private JMenuItem insert3;
private JMenuItem delete3;
private JMenuItem view3;
private JMenuItem insert4;
private JMenuItem delete4;
private JMenuItem view4;
private JMenuItem insert5;
private JMenuItem delete5;
private JMenuItem view5;



private JFrame frame;
private JMenuBar menubar;
private JMenu sensor;

private JMenu devicetype;
private JMenu domain;

private JMenu usedin;
private JMenu usedfor;
        public sensorinsert()
        {
        panel=new JPanel(new FlowLayout());
        label2=new JLabel("type");
        label1=new JLabel("energy");
        label3=new JLabel("lifetime");
        label4=new JLabel("cost");
        label5=new JLabel("sensor_id");
        insert=new JButton("insert");
        t1=new JTextField(20);
        t2=new JTextField(20);
        t3=new JTextField(20);
        t4=new JTextField(20);
        t5=new JTextField(20);

          sensor=new JMenu("sensor");

                  devicetype=new JMenu("devicetype");
              domain =new JMenu("domain");

              usedin =new JMenu("usedin");
              usedfor =new JMenu("usedfor");
               insert1=new JMenuItem("insert");
                         delete1=new JMenuItem("delete");
                         view1=new JMenuItem("view");
                         insert2=new JMenuItem("insert");
                         delete2=new JMenuItem("delete");
                         view2=new JMenuItem("view");
                        insert3=new JMenuItem("insert");
                         delete3=new JMenuItem("delete");
                         view3=new JMenuItem("view");
                        insert4=new JMenuItem("insert");
                         delete4=new JMenuItem("delete");
                         view4=new JMenuItem("view");
                        insert5=new JMenuItem("insert");
                         delete5=new JMenuItem("delete");
                         view5=new JMenuItem("view");


              frame=new JFrame("Menu");
              menubar=new JMenuBar();
           this.add(panel);

        this.setVisible(true);
        this.setDefaultCloseOperation(3);
        this.setSize(1000,300);

         this.setJMenuBar(menubar);


        panel.add(label1);
        panel.add(t1);
```

```
        panel.add(label2);
        panel.add(t2);
        panel.add(label3);
        panel.add(t3);
        panel.add(label4);
        panel.add(t4);
        panel.add(label5);
        panel.add(t5);
        panel.add(insert);




        menubar.add(sensor);

        sensor.add(insert1);
        sensor.add(delete1);
        sensor.add(view1);

        menubar.add(devicetype);
        devicetype.add(insert3);
    devicetype.add(delete3);
     devicetype.add(view3);
     menubar.add(domain);
        domain.add(insert4);
     domain.add(delete4);
      domain.add(view4);

       menubar.add(usedin);
        usedin.add(insert2);
       usedin.add(delete2);
        usedin.add(view2);
        menubar.add(usedfor);
        usedfor.add(insert5);
        usedfor.add(delete5);
         usedfor.add(view5);

        insert1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {
                                        new sensorinsert();
                                        dispose();

                                }
     }
     );
     view1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new sensorview();
                                       dispose();
                                }
                        }


    );
      delete1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new sensordelete();
                                       dispose();
                                }
                        }
```

```
);
 insert3.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new devicetypeinsert();
                                   dispose();
                            }
                     }


);
 delete3.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new devicetypedelete();
                                   dispose();
                            }
                     }


);
 view3.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new devicetypeview();
                                   dispose();
                            }
                     }
 );
 insert4.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new domaininsert();
                                   dispose();
                            }
                     }


);
 delete4.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new domaindelete();
                                   dispose();
                            }
                     }


);
 view4.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {


                                   new domainview();
                                   dispose();
                            }
                     }
```

```
    );
    insert4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new usedininsert();
                                        dispose();
                                }
                        }


);
 delete4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new usedindelete();
                                        dispose();
                                }
                        }


);
 view4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {


                                        new usedinview();
                                        dispose();
                                }
                        }
 );
 insert5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                                new usedforinsert();
                                dispose();
                        }
                }


);
 delete5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                                new usedfordelete();
                                dispose();
                        }
                }


);
 view5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {


                                new usedforview();
                                dispose();
                        }
```

```
            }
            );

            insert.addActionListener(new ActionListener() {

                                    @Override
                                    public void actionPerformed(ActionEvent e) {
                                            // TODO Auto-generated method stub
                                            if(t1.getText().compareTo("")==0 ||
t2.getText().compareTo("")==0 || t3.getText().compareTo("")==0 || t4.getText().compareTo("")==0 ||
t5.getText().compareTo("")==0)
                                            {
                                                    JOptionPane.showMessageDialog(null, "Enter All
Fields");
                                            }
                                            else
                                            {
                                                    try{


        Class.forName("oracle.jdbc.driver.OracleDriver");

                                                            Connection con=DriverManager.getConnection(

        "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                                                            Statement stmt=con.createStatement();

                                                            int x=stmt.executeUpdate("insert into sensor
values("+t5.getText()+","+t4.getText()+","+t3.getText()+",'"+t1.getText()+"','"+t2.getText()+"')");
                                                            System.out.println("Insert rows="+x);
                                                            con.commit();
                                                            t1.setText("");
                                                            t2.setText("");
                                                            t3.setText("");
                                                            t4.setText("");
                                                            t5.setText("");
                                                            con.close();
                                                            }catch(Exception ex){
System.out.println(ex);}
                                            }
                                    }
                            });
         }
         public static void main(String args[])
         {
          new sensorinsert();

         }

}
```

SENSOR DELETE:

```
package sensor;

import javax.swing.*;

import devicetype.devicetypedelete;
import devicetype.devicetypeinsert;
import devicetype.devicetypeview;
import domain.domaindelete;
import domain.domaininsert;
import domain.domainview;
import usedfor.usedfordelete;
import usedfor.usedforinsert;
import usedfor.usedforview;
import usedin.usedindelete;
import usedin.usedininsert;
import usedin.usedinview;
```

```
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Statement;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;

public class sensordelete extends JFrame {
                private JPanel panel;
                private JLabel label5;
                private JTextField t1;
                private JLabel label1;
                private JTextField t2;
                private JLabel label2;
                private JTextField t3;
                private JTextField t4;
                private JLabel label3;
                private JLabel label4;
                private JTextField t5;
                private JButton insert;
          private JMenuItem insert1;
          private JMenuItem delete1;
          private JMenuItem view1;
          private JMenuItem insert2;
          private JMenuItem delete2;
          private JMenuItem view2;
          private JMenuItem insert3;
          private JMenuItem delete3;
          private JMenuItem view3;
          private JMenuItem insert4;
          private JMenuItem delete4;
          private JMenuItem view4;
          private JMenuItem insert5;
          private JMenuItem delete5;
          private JMenuItem view5;
          private JTextArea txtSelect;
          private JLabel lblselect;
          private JTextField txtSelectPrimary;
          private JButton btnview;

          private JFrame frame;
          private JMenuBar menubar;
          private JMenu sensor;

          private JMenu devicetype;
          private JMenu domain;

          private JMenu usedin;
          private JMenu usedfor;
                  public sensordelete()
                  {
                  panel=new JPanel(new FlowLayout());
                  label2=new JLabel("type");
                  label1=new JLabel("energy");
                  label3=new JLabel("lifetime");
                  label4=new JLabel("cost");
                  label5=new JLabel("sensor_id");
                  insert=new JButton("delete");
                  t1=new JTextField(20);
                  t2=new JTextField(20);
                  t3=new JTextField(20);
                  t4=new JTextField(20);
                  t5=new JTextField(20);
                  txtSelect=new JTextArea(10,20);
                  lblselect=new JLabel("Select ");
                  txtSelectPrimary=new JTextField(20);
                  btnview=new JButton("View");


                    sensor=new JMenu("sensor");

                            devicetype=new JMenu("devicetype");
```

```
                domain =new JMenu("domain");

                usedin =new JMenu("usedin");
                usedfor =new JMenu("usedfor");
                 insert1=new JMenuItem("insert");
                           delete1=new JMenuItem("delete");
                           view1=new JMenuItem("view");
                           insert2=new JMenuItem("insert");
                           delete2=new JMenuItem("delete");
                           view2=new JMenuItem("view");
                          insert3=new JMenuItem("insert");
                           delete3=new JMenuItem("delete");
                           view3=new JMenuItem("view");
                          insert4=new JMenuItem("insert");
                           delete4=new JMenuItem("delete");
                           view4=new JMenuItem("view");
                          insert5=new JMenuItem("insert");
                           delete5=new JMenuItem("delete");
                           view5=new JMenuItem("view");


                frame=new JFrame("Menu");
                menubar=new JMenuBar();
            this.add(panel);

          this.setVisible(true);
          this.setDefaultCloseOperation(3);
          this.setSize(1000,300);

           this.setJMenuBar(menubar);

          panel.add(txtSelect);
panel.add(txtSelectPrimary);
panel.add(lblselect);
panel.add(btnview);
          panel.add(label1);
          panel.add(t1);
          panel.add(label2);
          panel.add(t2);
          panel.add(label3);
          panel.add(t3);
          panel.add(label4);
          panel.add(t4);
          panel.add(label5);
          panel.add(t5);
          panel.add(insert);




          menubar.add(sensor);

          sensor.add(insert1);
          sensor.add(delete1);
          sensor.add(view1);

          menubar.add(devicetype);
          devicetype.add(insert3);
      devicetype.add(delete3);
       devicetype.add(view3);
       menubar.add(domain);
          domain.add(insert4);
       domain.add(delete4);
        domain.add(view4);

         menubar.add(usedin);
          usedin.add(insert4);
         usedin.add(delete4);
          usedin.add(view4);
          menubar.add(usedfor);
          usedfor.add(insert5);
          usedfor.add(delete5);
```

```
        usedfor.add(view5);

       insert1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {
                                        new sensorinsert();
                                        dispose();

                                }
    }
    );
    view1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new sensorview();
                                       dispose();
                                }
                        }



  );
    delete1.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new sensordelete();
                                       dispose();
                                }
                        }


    );

    insert3.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new devicetypeinsert();
                                       dispose();
                                }
                        }


    );
    delete3.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new devicetypedelete();
                                       dispose();
                                }
                        }


    );
    view3.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new devicetypeview();
                                       dispose();
                                }
                        }
```

```
        );
        insert4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new domaininsert();
                                        dispose();
                                }
                        }


      );
        delete4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new domaindelete();
                                        dispose();
                                }
                        }


      );
        view4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {


                                        new domainview();
                                        dispose();
                                }
                        }
        );

       insert2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new usedininsert();
                                        dispose();
                                }
                        }


    );
        delete2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                        new usedindelete();
                                        dispose();
                                }
                        }


    );
        view2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {


                                        new usedinview();
                                        dispose();
                                }
```

```
                        }
         );
         insert5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                               new usedforinsert();
                               dispose();
                        }
                }



        );
         delete5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                               new usedfordelete();
                               dispose();
                        }
                }



        );
         view5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {


                               new usedforview();
                               dispose();
                        }
         }
         );


         try{

                Class.forName("oracle.jdbc.driver.OracleDriver");

                Connection con=DriverManager.getConnection(
                "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                Statement stmt=con.createStatement();

                ResultSet rs=((java.sql.Statement) stmt).executeQuery("select * from sensor");
                while(rs.next())
                       txtSelect.append(rs.getInt(1)+"\n");


                con.close();

                }catch(Exception e){ System.out.println(e);}
         btnview.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {
                                // TODO Auto-generated method stub
                                if(txtSelectPrimary.getText().compareTo("")==0)
                                {
                                        JOptionPane.showMessageDialog(null, "Enter sensor
id");
                                }
                                else
                                {
                                        try{


        Class.forName("oracle.jdbc.driver.OracleDriver");
```

```
                                                Connection con=DriverManager.getConnection(
        "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                                                Statement stmt= con.createStatement();

                                                ResultSet rs=((java.sql.Statement)
stmt).executeQuery("select * from sensor where sensor_id="+txtSelectPrimary.getText()+"");
                                                while(rs.next())
                                                {
                                                        t2.setText(rs.getString(5)+"");
                                                        t1.setText(rs.getString(4)+"");
                                                        t3.setText(rs.getInt(3)+"");
                                                        t4.setText(rs.getInt(2)+"");
                                                        t5.setText(rs.getInt(1)+"");
                                                }


                                                con.close();

                                                }catch(Exception ex){
System.out.println(ex);}
                                        }
                                }
                        });
           JTextField delete =null;
                insert.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {
                                        // TODO Auto-generated method stub
                                        if(txtSelectPrimary.getText().compareTo("")==0)
                                        {
                                                JOptionPane.showMessageDialog(null, "Select
sensor_id");
                                        }
                                        else
                                        {
                                                try
                                                {
                                                Class.forName("oracle.jdbc.driver.OracleDriver");

                                                Connection con=DriverManager.getConnection(

        "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                                                Statement stmt= con.createStatement();

                                                int x=((java.sql.Statement)
stmt).executeUpdate("delete from sensor where  sensor_id="+txtSelectPrimary.getText()+"");
                                                System.out.println("Total Updated Rows "+x);
                                                con.commit();

                                                txtSelect.setText("");
                                                txtSelectPrimary.setText("");
                                                t1.setText("");
                                                t2.setText("");
                                                t3.setText("");
                                                t4.setText("");
                                                t5.setText("");
                        ResultSet rs=((java.sql.Statement) stmt).executeQuery("select * from
sensor");
                        while(rs.next())
                                txtSelect.append(rs.getInt(1)+"\n");
                                                con.close();

                                                }catch(Exception ex){ System.out.println(ex);}
                                        }
                                }
                        });
        }
        public static void main(String args[])
        {
```

```
            new sensordelete();

        }

}
```

SENSOR VIEW:

```
package sensor;

import javax.swing.*;

import devicetype.devicetypedelete;
import devicetype.devicetypeinsert;
import devicetype.devicetypeview;
import domain.domaindelete;
import domain.domaininsert;
import domain.domainview;

import usedfor.usedfordelete;
import usedfor.usedforinsert;
import usedfor.usedforview;
import usedin.usedindelete;
import usedin.usedininsert;
import usedin.usedinview;

import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
public class sensorview extends JFrame {
                    private JPanel panel;
                    private JLabel label5;
                    private JTextField t1;
                    private JLabel label1;
                    private JTextField t2;
                    private JLabel label2;
                    private JTextField t3;
                    private JTextField t4;
                    private JLabel label3;
                    private JLabel label4;
                    private JTextField t5;
                    private JButton view;
            private JMenuItem insert1;
            private JMenuItem delete1;
            private JMenuItem view1;
            private JMenuItem insert2;
            private JMenuItem delete2;
            private JMenuItem view2;
            private JMenuItem insert3;
            private JMenuItem delete3;
            private JMenuItem view3;
            private JMenuItem insert4;
            private JMenuItem delete4;
            private JMenuItem view4;
            private JMenuItem insert5;
            private JMenuItem delete5;
            private JMenuItem view5;

            private JTextArea txtSelect;
            private JLabel lblselect;
            private JTextField txtSelectPrimary;
            private JButton btnview;

            private JFrame frame;
            private JMenuBar menubar;
            private JMenu sensor;

            private JMenu devicetype;
```

```
private JMenu domain;

private JMenu usedin;
private JMenu usedfor;
        public sensorview()
        {
        panel=new JPanel(new FlowLayout());
        label2=new JLabel("type");
        label1=new JLabel("energy");
        label3=new JLabel("lifetime");
        label4=new JLabel("cost");
        label5=new JLabel("sensor_id");
        view=new JButton("update");
        t1=new JTextField(20);
        t2=new JTextField(20);
        t3=new JTextField(20);
        t4=new JTextField(20);
        t5=new JTextField(20);
        txtSelect=new JTextArea(10,20);
        lblselect=new JLabel("Select ");
        txtSelectPrimary=new JTextField(20);
        btnview=new JButton("View");
          sensor=new JMenu("sensor");

                  devicetype=new JMenu("devicetype");
              domain =new JMenu("domain");

              usedin =new JMenu("usedin");
              usedfor =new JMenu("usedfor");
               insert1=new JMenuItem("insert");
                         delete1=new JMenuItem("delete");
                         view1=new JMenuItem("view");
                         insert2=new JMenuItem("insert");
                         delete2=new JMenuItem("delete");
                         view2=new JMenuItem("view");
                        insert3=new JMenuItem("insert");
                         delete3=new JMenuItem("delete");
                         view3=new JMenuItem("view");
                        insert4=new JMenuItem("insert");
                         delete4=new JMenuItem("delete");
                         view4=new JMenuItem("view");
                        insert5=new JMenuItem("insert");
                         delete5=new JMenuItem("delete");
                         view5=new JMenuItem("view");


              frame=new JFrame("Menu");
              menubar=new JMenuBar();
           this.add(panel);

        this.setVisible(true);
        this.setDefaultCloseOperation(3);
        this.setSize(1000,300);

         this.setJMenuBar(menubar);
        panel.add(txtSelect);
panel.add(txtSelectPrimary);
panel.add(lblselect);
panel.add(btnview);

        panel.add(label1);
        panel.add(t1);
        panel.add(label2);
        panel.add(t2);
        panel.add(label3);
        panel.add(t3);
        panel.add(label4);
        panel.add(t4);
        panel.add(label5);
        panel.add(t5);
        panel.add(view);
```

```
    menubar.add(sensor);

    sensor.add(insert1);
    sensor.add(delete1);
    sensor.add(view1);

    menubar.add(devicetype);
    devicetype.add(insert3);
devicetype.add(delete3);
 devicetype.add(view3);
 menubar.add(domain);
    domain.add(insert4);
 domain.add(delete4);
  domain.add(view4);

   menubar.add(usedin);
    usedin.add(insert2);
   usedin.add(delete2);
    usedin.add(view2);
    menubar.add(usedfor);
    usedfor.add(insert5);
    usedfor.add(delete5);
     usedfor.add(view5);

    insert1.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {
                                    new sensorinsert();
                                    dispose();

                            }
 }
 );
 view1.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new sensorview();
                                   dispose();
                            }
                    }


);
  delete1.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new sensordelete();
                                   dispose();
                            }
                    }


 );

  insert3.addActionListener(new ActionListener() {

                            @Override
                            public void actionPerformed(ActionEvent e) {

                                   new devicetypeinsert();
                                   dispose();
                            }
                    }
```

```
 );
  delete3.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new devicetypedelete();
                                       dispose();
                                }
                        }



 );
  view3.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new devicetypeview();
                                       dispose();
                                }
                        }
  );
  insert4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new domaininsert();
                                       dispose();
                                }
                        }



);
  delete4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new domaindelete();
                                       dispose();
                                }
                        }



);
  view4.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {


                                       new domainview();
                                       dispose();
                                }
                        }
  );

insert2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new usedininsert();
                                       dispose();
                                }
                        }
```

```
);
 delete2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {

                                       new usedindelete();
                                       dispose();
                                }
                        }


);
 view2.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {


                                       new usedinview();
                                       dispose();
                                }
                        }
 );
 insert5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                               new usedforinsert();
                               dispose();
                        }
                }


);
 delete5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {

                               new usedfordelete();
                               dispose();
                        }
                }


);
 view5.addActionListener(new ActionListener() {

                        @Override
                        public void actionPerformed(ActionEvent e) {


                               new usedforview();
                               dispose();
                        }
 }
 );




 try{

        Class.forName("oracle.jdbc.driver.OracleDriver");
```

```
                Connection con=DriverManager.getConnection(
                "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                Statement stmt=con.createStatement();

                ResultSet rs=stmt.executeQuery("select sensor_id from sensor");
                while(rs.next())
                        txtSelect.append(rs.getString(1)+"\n");


                con.close();

                }catch(Exception e){ System.out.println(e);}
            btnview.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {
                                        // TODO Auto-generated method stub
                                        if(txtSelectPrimary.getText().compareTo("")==0)
                                        {
                                                JOptionPane.showMessageDialog(null, "Enter sensor_id
To View");
                                        }
                                        else
                                        {
                                                try{


        Class.forName("oracle.jdbc.driver.OracleDriver");

                                                        Connection con=DriverManager.getConnection(

        "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                                                        Statement stmt=con.createStatement();

                                                        ResultSet rs=stmt.executeQuery("select * from
sensor where sensor_id='"+txtSelectPrimary.getText()+"'");
                                                        while(rs.next())
                                                        {
                                                                t1.setText(rs.getString(4));
                                                                t3.setText(rs.getString(3));
                                                                t4.setText(rs.getString(2));
                                                                t2.setText(rs.getString(5));
                                                                t5.setText(rs.getString(1));
                                                        }


                                                        con.close();

                                                        }catch(Exception ex){
System.out.println(ex);}
                                        }
                                }
                        });
            view.addActionListener(new ActionListener() {

                                @Override
                                public void actionPerformed(ActionEvent e) {
                                        // TODO Auto-generated method stub
                                        String energy=t1.getText();
                                        String type=t2.getText();
                                        String lifetime=t3.getText();
                                        String cost=t4.getText();

                                        String sensor_id=t5.getText();
                                        if(energy.compareTo("")==0 || sensor_id.compareTo("")==0 ||
type.compareTo("")==0 ||  cost.compareTo("")==0 || lifetime.compareTo("")==0 )
                                        {
                                                JOptionPane.showMessageDialog(null, "Enter all
fields");
                                        }
                                        else
                                        {
```

```
                                                try{

        Class.forName("oracle.jdbc.driver.OracleDriver");

                                                    Connection con=DriverManager.getConnection(

        "jdbc:oracle:thin:@localhost:1521:xe","swaroop","vasavi");

                                                    Statement stmt=con.createStatement();

                                                    int x=stmt.executeUpdate("update sensor set
energy='"+energy+"',lifetime="+lifetime+",sensor_id="+sensor_id+" ,type='"+type+"',cost="+cost+" where
sensor_id="+txtSelectPrimary.getText()+"");
                                                    con.commit();
                                                    System.out.println("Updated rows="+x);
                                                    t1.setText("");
                                                    t2.setText("");
                                                    t3.setText("");
                                                    t4.setText("");
                                                    t5.setText("");

                                                    txtSelectPrimary.setText("");
                                                    txtSelect.setText("");

                                    ResultSet rs=stmt.executeQuery("select sensor_id from sensor");
                                    while(rs.next())
                                            txtSelect.append(rs.getString(1)+"\n");
                                                    con.close();

                                                    }catch(Exception ex){
System.out.println(ex);}
                                                }
                                            }
                                        });
        }
        public static void main(String args[])
        {
            new sensorview();

        }

    }
```

GITHUB LINK:

https://github.com/tejaswaroop4u/Automated-face-recognition-system-DBMS

FOLDER STRUCTURE:

This project contains a folder named src in which it has 5 different folders for different purposes each folder has 3 codes such as to make insert, delete, update. By this we can navigate easily to reach code and we can make many changes as we can want easily.

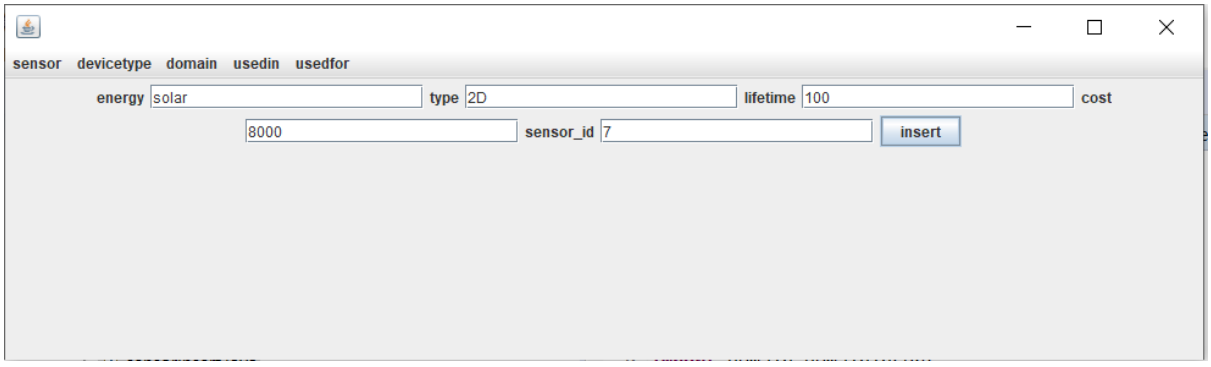
.settings	15-04-2020 14:53	File folder	
bin	28-04-2020 16:25	File folder	
src	27-04-2020 20:30	File folder	
.classpath	28-04-2020 16:25	CLASSPATH File	1 KB
.project	15-04-2020 14:53	PROJECT File	1 KB

devicetype	15-04-2020 17:41	File folder
domain	15-04-2020 15:08	File folder
sensor	15-04-2020 17:38	File folder
usedfor	15-04-2020 15:11	File folder
usedin	15-04-2020 15:10	File folder

Testing:

Insert sensor:

```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         9        222          2 elec                 3D
```

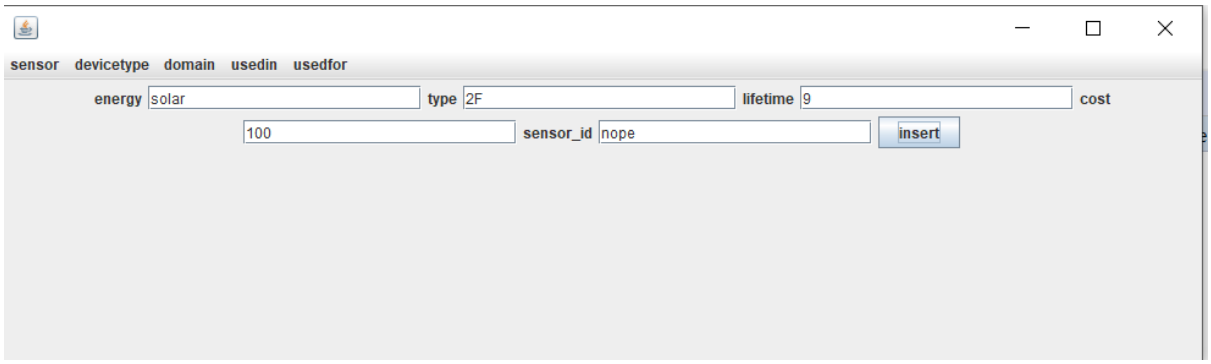


Result after insertion:

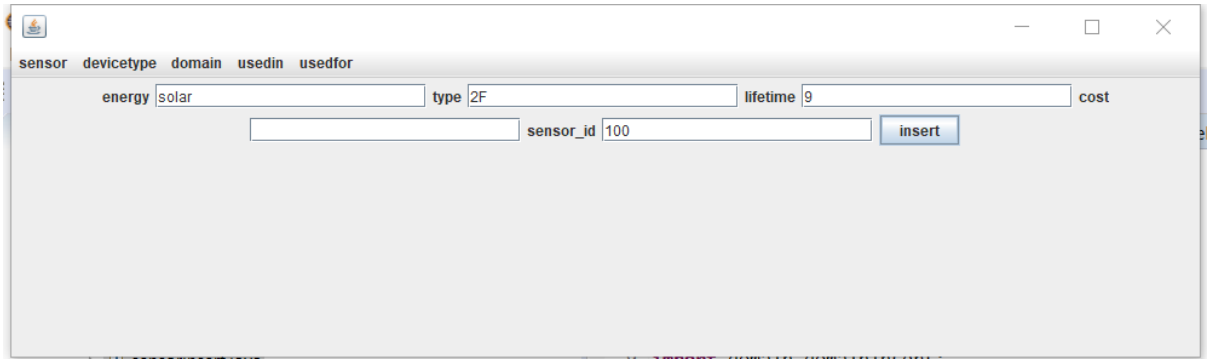
```
Problems  Javadoc  Declaration  Console
sensorinsert [Java Application] C:\Program Files\Java\jdk1.8.0_201\bin\javaw.exe (30-Apr-2020, 11:36:51 am)
Insert rows=1
```

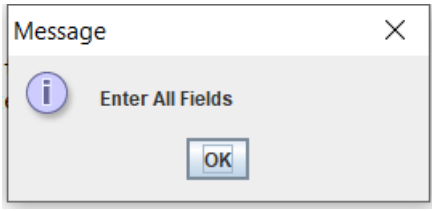
```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         9        222          2 elec                 3D

SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        222          2 elec                 3D

6 rows selected.
```

Exceptions in insert:

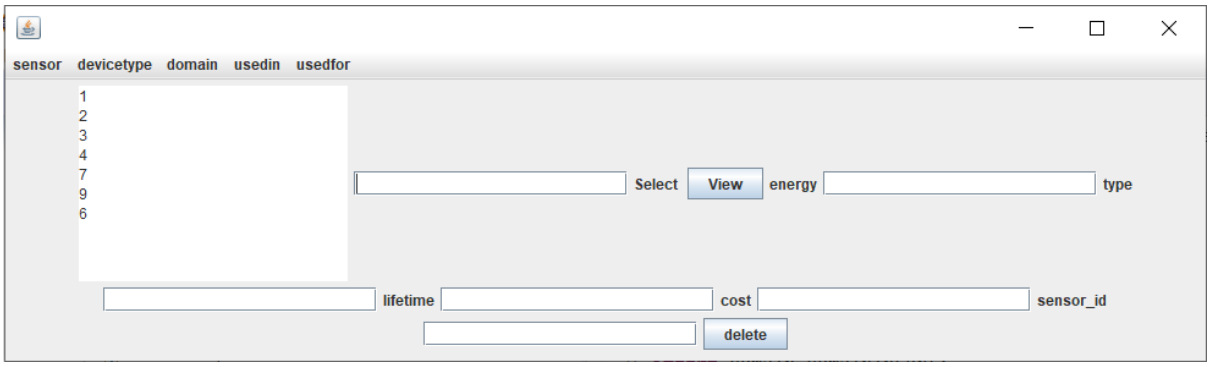



```
Problems  Javadoc  Declaration  Console
sensorinsert [Java Application] C:\Program Files\Java\jdk1.8.0_201\bin\javaw.exe (30-Apr-2020, 11:42:28 am)
Insert rows=1
java.sql.SQLSyntaxErrorException: ORA-00984: column not allowed here
```

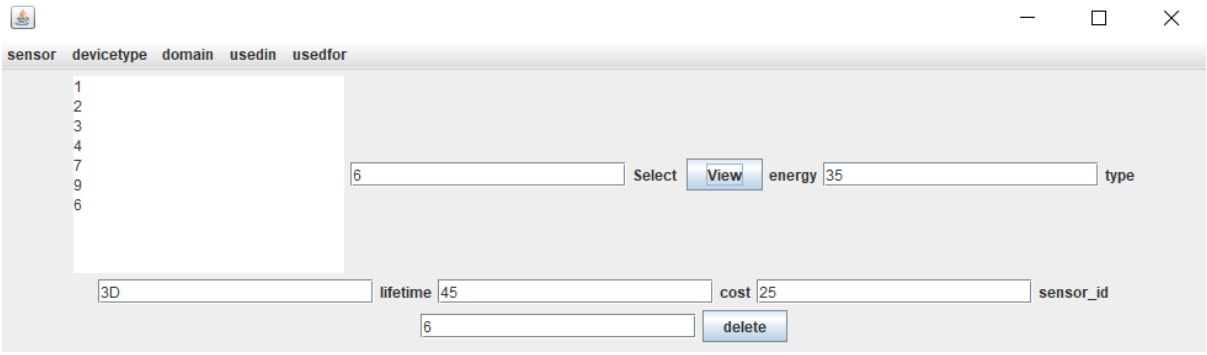




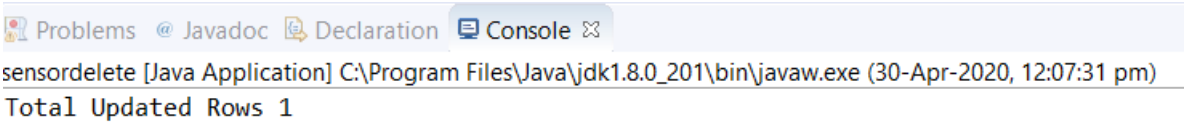
Delete sensor:




```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        222          2 elec                 3D
         6         25         45 35                   3D

7 rows selected.
```

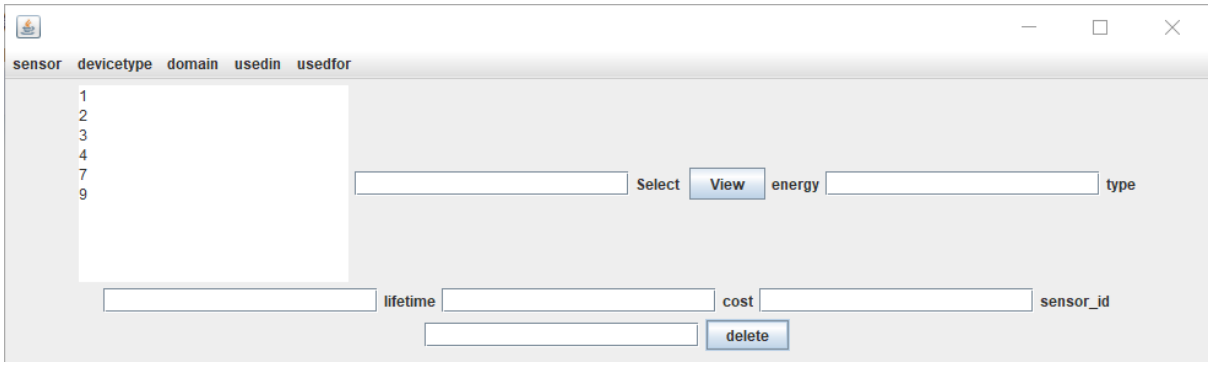


Result after deletion:



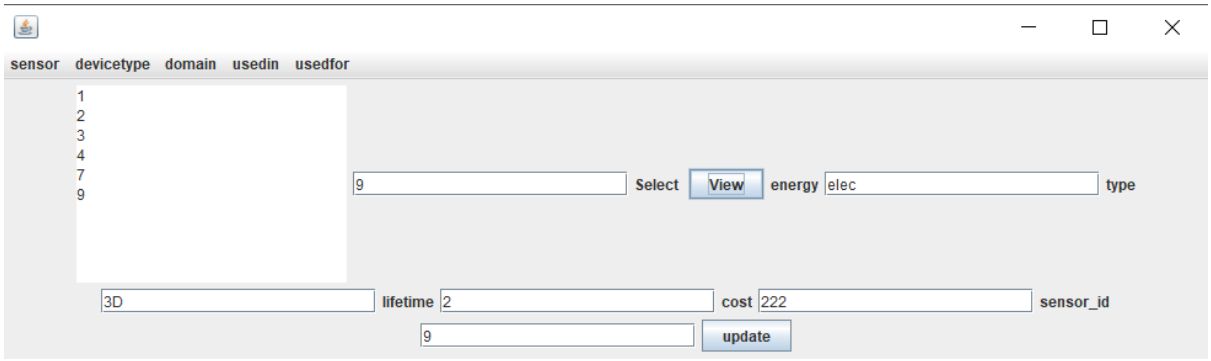

```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        222          2 elec                 3D
         6         25         45 35                   3D

7 rows selected.

SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        222          2 elec                 3D

6 rows selected.
```

Exceptions during deletion:

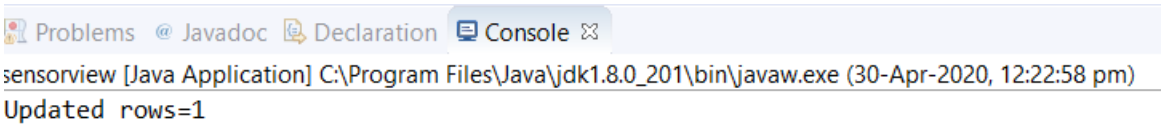


Update sensor:

```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        222          2 elec                 3D

6 rows selected.
```



Result after updating table sensor:




```
SQL> select * from sensor;

 SENSOR_ID       COST   LIFETIME ENERGY               TYPE
---------- ---------- ---------- -------------------- ----------
         1      10000          5 3D                   solar
         2      10000         10 3D                   solar
         3       5000         10 2D                   electrical
         4       5000         20 3D                   electrical
         7       8000        100 solar                2D
         9        150         19 solar                2D

6 rows selected.
```

DISCUSSIONS and FUTURE WORK:

After this mini project “FACE RECOGNITION SYSTEM” ,I gained interest towards technology. This project helped me to understand a lot about sensor and how a sensor detects a human face. I also came to know about different purposes where sensors are used.

REFERENCES:

- https://docs.oracle.com/javase/7/docs/api/
- https://www.javatpoint.com/dbms-tutorial
- https://en.wikipedia.org/wiki/Computer_security
- DATA MANAGEMENT SYSTEMS BY: Raghu Ramakrishna.