Database Programming

Download JDBC Driver JAR Files:

Download jar files of related database.

Complete CRUD Operation using MySQL Database

```
import javax.swing.*;
import javax.swing.table.*;
import java.sql.*;

public class Example {
	Connection conn;
	Statement st;
	ResultSet rs;
	String sql="";
	DefaultTableModel tmodel;

	//creating connection
	public void getConnection(){
		try {
			Class.forName("com.mysql.jdbc.Driver");
			String dburl="jdbc:mysql://localhost:3306/sixth";
			conn=DriverManager.getConnection(dburl,"root","");

			//creating a table
				sql="CREATE TABLE IF NOT EXISTS student(sid
			   INT, name VARCHAR(30), address VARCHAR(30))";
			st=conn.createStatement();
			st.execute(sql);
			//System.out.println("Table Created!");

		}catch(Exception ex) {
			System.out.println(ex.toString());
		}
	}

	Example(){
		getConnection();
		//creating UI
		JFrame jframe=new JFrame("My Frame");
```

```
jframe.setSize(600, 250);
jframe.setLocationRelativeTo(null);
jframe.setLayout(null);
jframe.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

JLabel lbl1=new JLabel("Student
Id:"); lbl1.setBounds(20, 12, 100,
10); jframe.add(lbl1);

JTextField txt1=new JTextField();
txt1.setBounds(120, 10, 150, 20);
jframe.add(txt1);

JLabel lbl2=new JLabel("Student Name:");
lbl2.setBounds(20, 55, 100, 10);
jframe.add(lbl2);

JTextField txt2=new JTextField();
txt2.setBounds(120, 50, 150, 20);
jframe.add(txt2);

JLabel lbl3=new JLabel("Student Address:
"); lbl3.setBounds(20,85,120,30);
jframe.add(lbl3);

JTextField txt3=new JTextField();
txt3.setBounds(120, 90, 150, 20);
jframe.add(txt3);

JButton insert=new JButton("Insert");
insert.setBounds(10, 140, 80, 20);
jframe.add(insert);

JButton update=new JButton("Update");
update.setBounds(100, 140, 80, 20);
jframe.add(update);

JButton delete=new JButton("Delete");
delete.setBounds(200, 140, 80, 20);
jframe.add(delete);

JButton view=new JButton("View");
view.setBounds(300, 140, 80, 20);
jframe.add(view);

//creating empty JTable
String cols[]= {"Sid","Name","Address"};
tmodel=new DefaultTableModel(cols,0);
JTable jt=new JTable(tmodel); JScrollPane
sp=new JScrollPane(jt); sp.setBounds(300,
10, 250, 100);
```

```
jframe.add(sp);
//later we can add new row as follows
//tmodel.addRow(new Object[] {1,"Ram","Btm"});

insert.addActionListener(e->{
      int id=Integer.parseInt(txt1.getText().toString());
      String name=txt2.getText().toString();
      String
      address=txt3.getText().toString(); try {
            sql="INSERT INTO student (sid,name,address)
             VALUES('"+id+"','"+name+"','"+address+"')";
            st.execute(sql);
            JOptionPane.showMessageDialog(null, "Data
                Inserted Successfully");
      }
      catch(Exception ex) {
            System.out.println(ex.toString());
      }
});

update.addActionListener(e->{
      int id=Integer.parseInt(txt1.getText().toString());
      String name=txt2.getText().toString();
      String
      address=txt3.getText().toString(); try {
            sql="UPDATE student SET name='"+name+"',
             address='"+address+"' WHERE sid='"+id+"'";
            st.execute(sql);
            JOptionPane.showMessageDialog(null, "Data
                Updated Successfully");
      }catch(Exception ex) {
            System.out.println(ex.toString());
      }
});

delete.addActionListener(e->{
      int id=Integer.parseInt(txt1.getText().toString());
      try {
            sql="DELETE FROM student WHERE sid='"+id+"'";
            st.execute(sql);
            JOptionPane.showMessageDialog(null, "Data
               Deleted Successfully");
      }catch(Exception ex) {
            System.out.println(ex.toString());
      }
});

view.addActionListener(e->{
      try {
            sql="SELECT * FROM student";
            rs=st.executeQuery(sql);
```

```
                        //clearing JTable
                        tmodel.setRowCount(0);
                        while(rs.next()) {
                              //plotting data in JTable
                              tmodel.addRow(new Object[] {
                                          rs.getInt(1),
                                          rs.getString(2),
                                          rs.getString(3)
                                          });
                        }
                  }catch(Exception ex) {
                        System.out.println(ex.toString());
                  }
            });


            jframe.setVisible(true);

      }

      public static void main(String[] args) {
            new Example();
      }
}
```

Example Using MVC

StudentView.java

```
import javax.swing.*;
import javax.swing.table.*;
public class StudentView {
      public JLabel lbl1,lbl2,lbl3; public
      JTextField txt1,txt2; public JButton
      btn1,btn2; //required for creating a
      empty list DefaultTableModel tmodel;


      public StudentView() {
        JFrame jf=new JFrame("Student Form");
        jf.setSize(400, 300);
        jf.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        jf.setLayout(null);
        jf.setLocationRelativeTo(null);

        lbl1=new JLabel("Enter Sid:");
        lbl1.setSize(100, 30);
        lbl1.setLocation(20, 20);
        jf.add(lbl1);
```

```
        txt1=new JTextField();
        txt1.setSize(120, 30);
        txt1.setLocation(100, 20);
        jf.add(txt1);

        lbl2=new JLabel("Enter Name:");
        lbl2.setSize(100, 30);
        lbl2.setLocation(20, 60);
        jf.add(lbl2);

        txt2=new JTextField();
        txt2.setSize(120, 30);
        txt2.setLocation(100, 60);
        jf.add(txt2);

        btn1=new JButton("Save");
        btn1.setSize(100, 20);
        btn1.setLocation(50, 110);
        jf.add(btn1);

        btn2=new JButton("Display");
        btn2.setSize(100, 20);
        btn2.setLocation(160, 110);
        jf.add(btn2);

        //creating empty table with default table
        model String cols[]= {"Sid","Name"};
        tmodel=new DefaultTableModel(cols,0); //0 rows
        JTable jt=new JTable(tmodel);
        JScrollPane jp=new JScrollPane(jt);
        jp.setLocation(50, 150);
        jp.setSize(200, 100);
        jf.add(jp);

        jf.setVisible(true);
      }
}
```

StudentModel.java

```
import java.sql.*;
public class StudentModel {
    private int sid;
    private String name;
    private Connection conn;
    private ResultSet rs;
    private Statement st;
    private String sql="";
```

```
 public void setId(int sid) {
    this.sid=sid;
 }

 public int getId() {
    return sid;
 }

 public void setName(String name) {
    this.name=name;
 }

 public String getName() {
    return name;
 }

//creating connection
   public void getConnection(){
         try {
               Class.forName("com.mysql.jdbc.Driver");
               String dburl="jdbc:mysql://localhost:3306/sixth";
               conn=DriverManager.getConnection(dburl,"root","");

               //creating a table
               String sql="CREATE TABLE IF NOT EXISTS
                     student(sid INT, name VARCHAR(30))";
               st=conn.createStatement();
               st.execute(sql);
               //System.out.println("Table Created!");
         }catch(Exception ex) {
               System.out.println(ex.toString());
         }
   }

   public void in_up_del() {
         try {
               st=conn.createStatement();
               sql="INSERT INTO student(sid,name) VALUES
                     ('"+sid+"','"+name+"')";
               st.execute(sql);
         }catch(Exception ex) {
               System.out.println(ex.toString());
         }
   }

   public ResultSet get_all_data() {
         try {
               st=conn.createStatement();
               sql="SELECT * FROM student";
```

```
                rs=st.executeQuery(sql);
            }catch(Exception ex) {
                System.out.println(ex.toString());
            }
            return rs;
      }
}
```

StudentController.java

```
import javax.swing.*;
import java.sql.*;
public class StudentController {
   StudentView v;
   StudentModel m;

   public void initController() {
         //initializing view
         v=new StudentView();
         m=new StudentModel();
         m.getConnection();
         //registering events
         v.btn1.addActionListener(e->saveClicked());
         v.btn2.addActionListener(e->displayClicked());
   }

   public void saveClicked() {
         int sid=Integer.parseInt(v.txt1.getText());
         String name=v.txt2.getText();
         m.setId(sid);
         m.setName(name);m.in_up_del();
         JOptionPane.showMessageDialog(null, "Saved Successfully!");
   }

   public void displayClicked() {
         //clearing all rows
         v.tmodel.setRowCount(0);
         ResultSet rs=m.get_all_data();
         try {
              while(rs.next()) {
                   Object[] obj= {rs.getInt(1),rs.getString(2)};
                   v.tmodel.addRow(obj);;
              }
         }catch(Exception ex) {}
   }
}
```

Example.java

```
public class Example {
     public static void main(String[] args) {
          StudentController cont=new
          StudentController(); cont.initController();
     }
}
```