Lesson 2
JDBC

Code for data insertion and retrieve for employee table

```java
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
class SwingJDBC extends JFrame{
   JLabel l1,l2,l3,l4,l5;
   JTextField t1,t2,t3,t4;
   JButton b1,b2;
   TextArea tx;
   SwingJDBC(){
     l1  = new JLabel("FirstName");
     l2 = new JLabel("LastName");
     l3 = new JLabel("Department");
     l4 = new JLabel("Salary");
     l5 = new JLabel("Result");
     t1 = new JTextField(20);
     t2 = new JTextField(20);
     t3 = new JTextField(20);
     t4 = new JTextField(20);
     b1 = new JButton("Login");
     b2 = new JButton("Display");
     tx = new TextArea();

     b1.addActionListener(new ActionListener(){
       @Override
       public void actionPerformed(ActionEvent e) {
         String firstname = t1.getText();
         String lastname = t2.getText();
         String department = t3.getText();
         String salary = t4.getText();
         Connection conn;
         try{
           Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
       conn=       DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root","");
//connecting with database
//       Statement st = conn.createStatement(); //to manipulate sql query
//
//                                       String insert_query = "insert into employee values
('111','"+firstname+"','"+lastname+"','"+department+"','"+salary+"')";
//
```

```java
//              int a =  st.executeUpdate(insert_query);
            PreparedStatement    pst  =  conn.prepareStatement("insert    into    employee
(firstname,lastname,department,salary) values(?,?,?,?)");
              pst.setString(1,firstname);
              pst.setString(2, lastname);
              pst.setString(3, department);
              pst.setString(4, salary);

              int a=pst.executeUpdate();
           if(a==1){
             l5.setText("Record inserted");
           }

           conn.close();
          }catch(ClassNotFoundException ce){
             System.out.println(ce);
          }catch(SQLException se){
             System.out.println(se);
          }
          //for displaying content


      }

    });
    b2.addActionListener(new ActionListener(){
       @Override
       public void actionPerformed(ActionEvent e) {
         Connection con;
         try{
           Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
        con=       DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root","");
//connecting with database
           Statement st = con.createStatement();
           String query_display = "select * from employee where eid='110'";
           ResultSet rs = st.executeQuery(query_display);
           while(rs.next()){
             String id = String.valueOf(rs.getInt("eid"));
             String firstname = rs.getString("firstname");
             String lastname = rs.getString("lastname");
             String department = rs.getString("department");
             String salary = rs.getString("salary");
             //tx.setText("Your id is "+id+" firstname is "+firstname+" lastname is "+lastname+"
department is "+department+" salary is "+salary);
```

```java
                System.out.println("Your id is "+id+" firstname is "+firstname+" lastname is
"+lastname+" department is "+department+" salary is "+salary);
            }
            con.close();
        }catch(ClassNotFoundException ce){
            System.out.println(ce);
        }catch(SQLException se){
            System.out.println(se);
        }
      }
    });

    add(l1);
    add(t1);
    add(l2);
    add(t2);
    add(l3);
    add(t3);
    add(l4);
    add(t4);
    add(l5);
    add(b1);
    add(b2);
    add(tx);
    setSize(400,400);
    setVisible(true);
    setLayout(new FlowLayout());
    setDefaultCloseOperation(3);
  }
}
public class SwingJDBCDemo {
   public static void main(String[] args) {
      SwingJDBC sj = new SwingJDBC();
   }
}
```

Code for SignUp table (Data insertion)

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

/*
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 */

class SignupDemo extends JFrame{
    JLabel l1,l2,l3,l4,l5,l6,l7;
    JTextField t1,t2,t3,t4,t5,t6;
    JButton b1;

    SignupDemo(){
        l1=new JLabel("FirstName");
        l2=new JLabel("LastName");
        l3=new JLabel("UserName");
        l4=new JLabel("Password");
        l5=new JLabel("Address");
        l6=new JLabel("PhoneNumber");
        l7=new JLabel("Result");
        t1 = new JTextField(30);
        t2 = new JTextField(30);
        t3 = new JTextField(30);
        t4 = new JTextField(30);
        t5 = new JTextField(30);
        t6 = new JTextField(30);
        b1 = new JButton("SignUp");

        add(l1);
        add(t1);
        add(l2);
        add(t2);
            add(l3);
                add(t3);
```

```java
                    add(l4);
                    add(t4);
                     add(l5);
                       add(t5);
                         add(l6);
                           add(t6);
                           add(b1);
                           add(l7);


        b1.addActionListener(new ActionListener(){
           @Override
          public void actionPerformed(ActionEvent e) {

              String fn = t1.getText();
              String ln = t2.getText();
              String un = t3.getText();
              String pass =t4.getText();
              String add = t5.getText();
              String ph = t6.getText();
              Connection conn;
              try{
                 Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
                 conn=
DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root","");
                 PreparedStatement    pst   =   conn.prepareStatement("insert    into    signup
(firstname,lastname,username,"
                        + "password,address,phone) values (?,?,?,?,?,?)");
                 pst.setString(1, fn);
                 pst.setString(2, ln);
                 pst.setString(3, un);
                 pst.setString(4, pass);
                 pst.setString(5, add);
                 pst.setString(6, ph);

                 int a = pst.executeUpdate();
                 if(a==1){
                    l7.setText(a+" row insert");
                 }
              }catch(ClassNotFoundException ce){
                 System.out.println("could not find driver "+ce);
              }catch(SQLException se){
                 System.out.println("erro on sql "+se);
              }
```

```
            }

        });
        setVisible(true);
        setSize(600,600);
        setLayout(new FlowLayout());
        setDefaultCloseOperation(3);


    }
}
public class Signup {
    public static void main(String[] args) {
        SignupDemo sd = new SignupDemo();
    }
}
```

Code for login

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

/*
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default.txt to change this license
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edit this template
 */

/**
 *
 * @author Sujesh
 */
class Login extends JFrame{
    JLabel l1, l2;
```

```java
    JTextField t1,t2;
    JButton b1;
    Login(){
        l1 = new JLabel("Username");
        l2= new JLabel("Password");
        t1 = new JTextField(30);
        t2 = new JTextField(30);
        b1 = new JButton("Submit");

        add(l1);
        add(t1);
        add(l2);
        add(t2);
        add(b1);

        b1.addActionListener(new ActionListener(){
            @Override
            public void actionPerformed(ActionEvent e) {

                String user = t1.getText();
                String pass = t2.getText();

                Connection conn;
                try{
                    Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
                    conn=
DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root",
"");
                    Statement st = conn.createStatement();
                    String retrive = "select username,password from signup where
username=user";
                    ResultSet rs = st.executeQuery(retrive);
                    while(rs.next()){
                        String retriveuser = rs.getString("username");
                        String retrivepass = rs.getString("password");
```

```java
                    System.out.println(retriveuser +" and "+retrivepass);
                }
            }catch(ClassNotFoundException ce){
                System.out.println("could not find driver "+ce);
            }catch(SQLException se){
                System.out.println("erro on sql "+se);
            }
        }


    });


    setVisible(true);
    setSize(200,200);
    setLayout(new FlowLayout());
    setDefaultCloseOperation(3);

    }
}
public class loginDemo {
    public static void main(String[] args) {
        Login l = new Login();
    }
}
```

Code of Login and Retrieving database information to JTable

Login Code

```java
import java.awt.Dimension;
import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.*;
import java.sql.*;
import java.util.ArrayList;
import javax.swing.table.DefaultTableModel;

class Login extends JFrame{
    JLabel l1, l2,l3,l4;
    JTextField t1,t2;
    JButton b1;
    JPasswordField p1;
    Login(){
        l1 = new JLabel("Username");
        l2= new JLabel("Password");
        l3 = new JLabel("Result");
        t1 = new JTextField(30);
        t2 = new JTextField(30);
        b1 = new JButton("Submit");
        l4 = new JLabel("Login",JLabel.CENTER);
        setVisible(true);
        setSize(new Dimension(500,500));
        setLayout(null);
        setDefaultCloseOperation(3);
        l4.setBounds(80, 40, 90, 20);
        add(l4);
        l1.setBounds(25, 65, 90,20);
        add(l1);
        t1.setBounds(120,65,170,20);
        add(t1);
        l2.setBounds(25, 85, 90, 20);
        add(l2);
        t2.setBounds(120,85,170,20);
```

```java
        add(t2);
        b1.setBounds(25, 110, 120,40 );
        add(b1);
        l3.setBounds(25, 180, 150, 20);
        add(l3);




        b1.addActionListener(new ActionListener(){
            @Override
            public void actionPerformed(ActionEvent e) {

                String user = t1.getText();
                String pass = t2.getText();


                Connection conn;
                try{
                    Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
                    conn=
DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root","");
                    Statement st = conn.createStatement();
                // String retrive = "select * from signup where username='"+user+"'";
                // ResultSet rs = st.executeQuery(retrive);
//                String retrivepass = "";
//                if(rs.next()){
////                  String retriveuser = rs.getString("username");
//                  retrivepass = rs.getSt`ring("password");//retriving password of a person
having username =user
////                  System.out.println(retriveuser +" and "+retrivepass);
//
//                }
//                if(pass.equals(retrivepass)){
//                    l3.setText("you are logged in");
//                }else{
//                    l3.setText("your not logged in ");
//                }

                    //checking directly
```

```java
//              String retrive_direct = "select * from signup where username='"+user+"' and
password='"+pass+"'";
//              ResultSet rs = st.executeQuery(retrive_direct);
//              if(rs.next()){
//                  l3.setText("you are logged in or id password matched");
//              }else{
//                  l3.setText("id password doesnot matched");
//              }
//retriving through prepared statement
            String query = "select * from signup where username=? and password=?";
            PreparedStatement pst = conn.prepareStatement(query);
            pst.setString(1, user);
            pst.setString(2, pass);
            ResultSet rs = pst.executeQuery();


            if(rs.next()){
                dispose();
                Display dis = new Display();

            }else{
                l3.setText("id password not matched");
            }

        }catch(ClassNotFoundException ce){
            System.out.println("could not find driver "+ce);
        }catch(SQLException se){
            System.out.println("error on sql "+se);
        }
    }


    });

    }
}
public class loginDemo {
    public static void main(String[] args) {
        Login l = new Login();
    }
```

```
        }
```

Code for populating the database information on JTable

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


class Display extends JFrame{
    JTable jtab;
    JLabel l1;
    public Display(){
        jtab = new JTable();
        l1 = new JLabel("Sign Up Data",JLabel.CENTER);
        jtab.setPreferredScrollableViewportSize(new Dimension(600,50));
        JScrollPane jp = new JScrollPane(jtab);
        DefaultTableModel df = (DefaultTableModel) jtab.getModel();
        df.addColumn("firstname");
        df.addColumn("lastname");
        df.addColumn("username");
        df.addColumn("password");
        df.addColumn("address");
        df.addColumn("contact");
        Connection con;
        try{
         con = DatabseConnectionDemo.Db_Connection(); //return connection value
         Statement st = con.createStatement();
         String retrive_query = "select * from signup";
         ResultSet rs  = st.executeQuery(retrive_query);
         while(rs.next()){
            String fn = rs.getString("firstname");
            String ln = rs.getString("lastname");
            String un = rs.getString("username");
            String pn = rs.getString("password");
            String ad = rs.getString("address");
            String ph = rs.getString("phone");
            df.addRow(new Object[]{fn,ln,un,pn,ad,ph});
         }
```

```java
            }catch(SQLException se){
                System.out.println(se);
            }
        add(l1);
        add(jp);
         setVisible(true);
        setSize(800,500);
        setLayout(new FlowLayout());
        setDefaultCloseOperation(3);
    }
}
public class JT {
    public static void main(String[] args) {
        Display dis = new Display();
    }
}
```

Database Connection code

```java
import java.sql.*;
public class DatabseConnectionDemo {

    public static Connection Db_Connection(){
    Connection conn=null;
    try{
        Class.forName("com.mysql.jdbc.Driver");//jdbc driver initialize
conn =  DriverManager.getConnection("jdbc:mysql://localhost:3306/nccsbca","root","");
    }catch(ClassNotFoundException ce){
        System.out.println(ce);
    }catch(SQLException se){
        System.out.println(se);
    }
     return conn;
    }
}
```

Scrollable and Updatable Result Set

Syntax for statement object is:

Public Statement createStatement(int ResulSetType, int ConcurrencyType or mode);

Statement st = Conn.createStatement();

To make result set Scrollable i.e. its pointer can be move back and forth

ResultSet.TYPE_SCROLL_SENSITIVE

ResultSet.TYPE_SCROLL_INSENSITIVE

Method that can be used if ResultSet is scrollable are:

Void beforeFirst(): move cursor of resultset before first row

Void afterLast(): move cursor of resultset after last row

Void first(): move cursor to the first row

Void last(): move cursor to the last row

Boolean previous(): move cursor to previous record from current position and returns true if record is found otherwise return false

Boolean next(): move cursor to next record from current position and return true if record is found otherwise return false

Boolean absolute: (int row): move cursor to specified position

Boolean relative (int row): move cursor to specified position

Updatable:

If insert, update and deletion operation can be performed from ResultSet then it is known as updatable result set. To make result set updatable, concurancytype or mode of statement should be changed:

Mode:

ResultSet.CONCUR_READONLY

ResultSet.CONCUR_UPDATABLE

Methods for Updatable ResultSet

```
Void updateRow();
Void deleteRow();
Void insertRow();
```

Code for making result set only scrollable

```java
import java.sql.*;
public class ScrollableandUpdatableDemo {
    public static void main(String[] args) {
        Connection con;
        con = JdbcConnection.DB_Connect();
        try {
            making result set scrollable
            Statement                              st                              =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_R
EAD_ONLY);//makes resultset scrollable but not updatable
            String dis_query = "Select * from signup";
            ResultSet rs = st.executeQuery(dis_query);
            if(rs.absolute(5)){
                String id = String.valueOf(rs.getInt("sn"));
                String fn = rs.getString("firstname");
                String ln = rs.getString("lastname");
                String un = rs.getString("username");
                String pn = rs.getString("password");
                String gen = rs.getString("gender");
```

```java
                String add = rs.getString("address");
                String ph = rs.getString("contact");
                System.out.println("id is "+id);
                System.out.println("first name  is "+fn);
                System.out.println("last name is "+ln);
                System.out.println("username is "+un);
                System.out.println("password is "+pn);
                System.out.println("gender is "+gen);
                System.out.println("address is "+add);
                System.out.println("phone is "+ph);

        }
    if(rs.relative(-1)){
                String id = String.valueOf(rs.getInt("sn"));
                String fn = rs.getString("firstname");
                String ln = rs.getString("lastname");
                String un = rs.getString("username");
                String pn = rs.getString("password");
                String gen = rs.getString("gender");
                String add = rs.getString("address");
                String ph = rs.getString("contact");
                System.out.println("id is "+id);
                System.out.println("first name  is "+fn);
                System.out.println("last name is "+ln);
                System.out.println("username is "+un);
                System.out.println("password is "+pn);
                System.out.println("gender is "+gen);
                System.out.println("address is "+add);
                System.out.println("phone is "+ph);
            }
    rs.afterLast();//move cursor to end of statement
            while(rs.previous()){
                String id = String.valueOf(rs.getInt("sn"));
            String fn = rs.getString("firstname");
            String ln = rs.getString("lastname");
           String un = rs.getString("username");
            String pn = rs.getString("password");
            String gen = rs.getString("gender");
            String add = rs.getString("address");
           String ph = rs.getString("contact");
```

```java
            System.out.println("id is "+id);
            System.out.println("first name  is "+fn);
            System.out.println("last name is "+ln);
             System.out.println("username is "+un);
             System.out.println("password is "+pn);
            System.out.println("gender is "+gen);
            System.out.println("address is "+add);
          System.out.println("phone is "+ph);
} catch (SQLException ex) {
        System.out.println(ex);
    }
  }
}
```

Code for making result set both scrollable and updatable

```java
import java.sql.*;
public class ScrollableandUpdatableDemo {
   public static void main(String[] args) {
      Connection con;
      con = JdbcConnection.DB_Connect();
      try {
Statement                              st                              =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_U
PDATABLE);//makes resultset scrollable and updatable
        String dis_query = "Select * from signup";
         ResultSet rs = st.executeQuery(dis_query);
      rs.absolute(1);

        rs.updateString(7, "swoyambhu");
       rs.updateString(8, "9813668545");
      rs.updateRow();
        rs.last();
```

```java
            rs.deleteRow();
                rs.absolute(9);
                rs.moveToInsertRow();
                rs.updateInt(1,9);
            System.out.println("record updated");


        } catch (SQLException ex) {
            System.out.println(ex);
        }
    }}
```

Example on RowSet

```java
import java.sql.*;
import javax.sql.rowset.*;
public class RowSetDemo {
    public static void main(String[] args) {
        try {
            RowSetFactory  rsf = RowSetProvider.newFactory();
            JdbcRowSet rowSet =rsf.createJdbcRowSet();
            Class.forName("com.mysql.jdbc.Driver");//for initializing driver
            rowSet.setUrl("jdbc:mysql://localhost:3306/basic");
            rowSet.setUsername("root");
            rowSet.setPassword("");
            rowSet.setCommand("select * from signup");
            rowSet.execute();
            rowSet.absolute(8);
            rowSet.updateString(2, "Rajan");
            rowSet.updateString(3, "Poudel");
            rowSet.updateString(4,"rajan_paudel");
            rowSet.updateRow();



            String id = String.valueOf(rowSet.getInt("sn"));
                String fn = rowSet.getString("firstname");
                String ln = rowSet.getString("lastname");
                String un = rowSet.getString("username");
                String pn = rowSet.getString("password");
                String gen = rowSet.getString("gender");
                String add = rowSet.getString("address");
```

```java
            String ph = rowSet.getString("contact");
            System.out.println("id is "+id);
            System.out.println("first name  is "+fn);
            System.out.println("last name is "+ln);
            System.out.println("username is "+un);
            System.out.println("password is "+pn);
            System.out.println("gender is "+gen);
            System.out.println("address is "+add);
            System.out.println("phone is "+ph);

//            System.out.println("------------------");
//            rowSet.relative(3);
//        String id = String.valueOf(rowSet.getInt("sn"));
//            String fn = rowSet.getString("firstname");
//            String ln = rowSet.getString("lastname");
//            String un = rowSet.getString("username");
//            String pn = rowSet.getString("password");
//            String gen = rowSet.getString("gender");
//            String add = rowSet.getString("address");
//            String ph = rowSet.getString("contact");
//            System.out.println("id is "+id);
//            System.out.println("first name  is "+fn);
//            System.out.println("last name is "+ln);
//            System.out.println("username is "+un);
//            System.out.println("password is "+pn);
//            System.out.println("gender is "+gen);
//            System.out.println("address is "+add);
//            System.out.println("phone is "+ph);
        } catch (SQLException ex) {
            System.out.println(ex);
        }catch (ClassNotFoundException ex) {
            System.out.println(ex);
        }
    }
}
```