# 实验九 数据库的接口编程

一、实验目的

本实验为设计性实验。通过设计一个简单的以Oracle数据库为后台的数据库应用程序，掌握数据库的接口编程技术。

二、实验仪器设备

1．服务器 + Oracle 11g服务器

2．客户端 + Oracle 11g客户端 + Java/.NET/Dephi/PB/VB/VC++等

三、预习要求

复习Oracle数据库网络连接相关内容。

四、实验内容

以Oracle 11g数据库为后台，任选开发工具，开发一个小的应用系统。完成以下功能：

对自己创建的方案中的emp表完成插入、删除、修改和查询等操作。

五、实验步骤

1.选择开发工具eclipse

2.编写员工管理界面EMP

3.编写添加功能，删除功能，修改功能，查询功能

六、源程序清单、测试数据、结果

**1.源程序**

**EMP.java**

package oracle;

import java.awt.EventQueue;

import javax.swing.JFrame;

import javax.swing.JOptionPane;

import javax.swing.JScrollPane;

import javax.swing.JButton;

import javax.swing.JTable;

import javax.swing.table.DefaultTableModel;

import java.awt.event.MouseAdapter;

import java.awt.event.MouseEvent;

import java.sql.Connection;

import java.sql.ResultSet;

import java.sql.ResultSetMetaData;

import java.sql.SQLException;

import java.sql.Statement;

import java.util.Vector;

import javax.swing.JMenuBar;

import javax.swing.JMenu;

import javax.swing.JTextField;

import javax.swing.JLabel;

import javax.swing.JComboBox;

import javax.swing.DefaultComboBoxModel;

public class EMP

{

private JFrame frame;

private JTable table = new JTable();

ConnectToOracle CTO = new ConnectToOracle();

Connection con = CTO.GetConnection();

Statement stmt = con.createStatement();

protected DefaultTableModel defaultModel;

protected JScrollPane scrollPane;

private String sql="select \* from user\_20142862.EMP";

public static void main(String[] args)

{

EventQueue.invokeLater(new Runnable()

{

public void run()

{

try

{

EMP window = new EMP();

window.frame.setVisible(true);

}

catch(Exception e)

{

e.printStackTrace();

}

}

});

}

public EMP() throws SQLException

{

initialize();

Fresh(sql);

}

private void initialize() throws SQLException

{

frame = new JFrame();

frame.setResizable(false);

frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

frame.setBounds(350,150,560,370);

frame.getContentPane().setLayout(null);

}

private void Fresh(String sql)

{

if(defaultModel != null)

{

frame.getContentPane().remove(scrollPane);

}

String SQL = sql;

ResultSet rs = null;

try

{

rs = stmt.executeQuery(SQL);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

Vector<String> Head = new Vector<String>();

Vector<Vector<String>> Body = new Vector<Vector<String>>();

try

{

ResultSetMetaData MetaData = rs.getMetaData();

for(int i = 1;i <= MetaData.getColumnCount();i++)

{

Head.add(MetaData.getColumnName(i));

}

while(rs.next())

{

Vector<String> Line = new Vector<String>();

for(int i = 1;i <= MetaData.getColumnCount();i++)

{

Line.add(rs.getString(i));

}

Body.add(Line);

}

}

catch (SQLException e2)

{

e2.printStackTrace();

}

defaultModel = new DefaultTableModel(Body,Head);

table = new JTable(defaultModel);

table.setCellSelectionEnabled(true);

scrollPane = new JScrollPane(table);

scrollPane.setBounds(20,84,512,237);

scrollPane.setEnabled(true);

frame.getContentPane().add(scrollPane);

JMenuBar menuBar = new JMenuBar();

menuBar.setBounds(0, 0, 552, 27);

frame.getContentPane().add(menuBar);

JMenu mnNewMenu = new JMenu("\u4EBA\u5458\u64CD\u4F5C");

menuBar.add(mnNewMenu);

JButton AddBtn = new JButton("\u65B0\u589E");

mnNewMenu.add(AddBtn);

JButton btnNewButton = new JButton("\u5220\u9664");

mnNewMenu.add(btnNewButton);

JButton UpdateBtn = new JButton("\u4FEE\u6539");

mnNewMenu.add(UpdateBtn);

JTextField textField;

textField = new JTextField();

textField.setBounds(312, 42, 133, 21);

frame.getContentPane().add(textField);

textField.setColumns(10);

JLabel lblNewLabel = new JLabel("\u8BF7\u8F93\u5165\u67E5\u8BE2\u5185\u5BB9\uFF1A");

lblNewLabel.setBounds(190, 44, 114, 15);

frame.getContentPane().add(lblNewLabel);

JButton SelBtn = new JButton("\u67E5\u8BE2");

SelBtn.setBounds(463, 42, 69, 23);

frame.getContentPane().add(SelBtn);

JComboBox comboBox = new JComboBox();

comboBox.setModel(new DefaultComboBoxModel(new String[] {"EMPNO", "ENAME", "JOB", "MGR", "HIREDATE", "SAL", "COMM", "DEPTNO"}));

comboBox.setBounds(100, 42, 70, 21);

frame.getContentPane().add(comboBox);

JLabel lblNewLabel\_1 = new JLabel("\u67E5\u8BE2\u6761\u4EF6\uFF1A");

lblNewLabel\_1.setBounds(20, 44, 70, 15);

frame.getContentPane().add(lblNewLabel\_1);

SelBtn.addMouseListener(new MouseAdapter()

{

public void mouseClicked(MouseEvent e)

{

if(textField.getText().equals(""))

{

JOptionPane.showMessageDialog(frame,"请输入要查询的内容");

return;

}

else

{

String SQL = "Select \* From user\_20142862.EMP Where " + comboBox.getSelectedItem()+ " = " + textField.getText();

Fresh(SQL);

}

}

});

UpdateBtn.addMouseListener(new MouseAdapter()

{

public void mouseClicked(MouseEvent e)

{

if(table.getSelectedRow() == -1 || table == null)

{

JOptionPane.showMessageDialog(frame,"请先选择一行数据");

return;

}

else

{

String num = table.getValueAt(table.getSelectedRow(),0).toString();

try

{

new UpdateEMP(stmt,num,frame,"修改员工信息",true);

Fresh(sql);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

}

}

});

btnNewButton.addMouseListener(new MouseAdapter()

{

public void mouseClicked(MouseEvent e)

{

if(table.getSelectedRow() == -1 || table == null)

{

JOptionPane.showMessageDialog(frame, "请先选择一行数据");

return;

}

else

{

String num = table.getValueAt(table.getSelectedRow(),0).toString();

try

{

String SQL = "Delete From user\_20142862.EMP Where EMPNO = " + num;

stmt.executeUpdate(SQL);

JOptionPane.showMessageDialog(frame, "删除成功");

Fresh(sql);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

}

}

});

AddBtn.addMouseListener(new MouseAdapter()

{

public void mouseClicked(MouseEvent e)

{

new AddEMP(stmt,frame,"添加新员工",true);

Fresh(sql);

}

});

}

}

**ConnectToOracle.java**

package oracle;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.SQLException;

public class ConnectToOracle

{

private String Driver = "oracle.jdbc.driver.OracleDriver";

private String Con = "jdbc:oracle:thin:@127.0.0.1:1521:shujuku";

private String UserName = "SYSTEM";

private String Password = "meng19950628";

private Connection con = null;

public ConnectToOracle()

{

try

{

Class.forName(Driver);

con = DriverManager.getConnection(Con, UserName, Password);

}

catch (Exception e)

{

e.printStackTrace();

}

}

public Connection GetConnection() throws SQLException

{

if(con == null)

{

con = DriverManager.getConnection(Con, UserName, Password);

}

return con;

}

}

**AddEMP.java**

package oracle;

import java.awt.BorderLayout;

import java.awt.GridLayout;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

import java.sql.SQLException;

import java.sql.Statement;

import javax.swing.\*;

public class AddEMP extends JDialog implements ActionListener

{

private static final long serialVersionUID = 429875240737530874L;

JPanel top,bottom,left;

JLabel EMPNO,ENAME,JOB,MGR,HIREDATE,SAL,COMM,DEPTNO;

JTextField empno,ename,job,mgr,hiredate,sal,comm,deptno;

JButton save,cancel;

Statement stmt;

public AddEMP(Statement stmt,JFrame owner,String title,boolean modal) // 构造函数

{

super(owner,title,modal);

this.stmt = stmt;

// 创建组件

EMPNO = new JLabel("EMPNO",JLabel.CENTER);

ENAME = new JLabel("ENAME",JLabel.CENTER);

JOB = new JLabel("JOB",JLabel.CENTER);

MGR = new JLabel("MGR",JLabel.CENTER);

HIREDATE = new JLabel("HIREDATE",JLabel.CENTER);

SAL = new JLabel("SAL",JLabel.CENTER);

COMM = new JLabel("COMM",JLabel.CENTER);

DEPTNO = new JLabel("DEPTMO",JLabel.CENTER);

top = new JPanel(new GridLayout(8,1));

top.add(EMPNO);

top.add(ENAME);

top.add(JOB);

top.add(MGR);

top.add(HIREDATE);

top.add(SAL);

top.add(COMM);

top.add(DEPTNO);

empno = new JTextField(25);

ename = new JTextField(25);

job = new JTextField(25);

mgr = new JTextField(25);

hiredate = new JTextField(25);

sal = new JTextField(25);

comm = new JTextField(25);

deptno = new JTextField(25);

left = new JPanel(new GridLayout(8,1));

left.add(empno);

left.add(ename);

left.add(job);

left.add(mgr);

left.add(hiredate);

left.add(sal);

left.add(comm);

left.add(deptno);

bottom = new JPanel();

save = new JButton("保存");

cancel = new JButton("取消");

save.addActionListener(this);

cancel.addActionListener(this);

bottom.add(save);

bottom.add(cancel);

this.add(top,BorderLayout.CENTER);

this.add(left,BorderLayout.EAST);

this.add(bottom,BorderLayout.SOUTH);

// 设置窗体属性

this.setSize(400,300);

this.setLocation(400,250);

this.setVisible(true);

}

@Override

public void actionPerformed(ActionEvent e)

{

if(e.getSource() == save)

{

String SQL = "Insert Into user\_20142862.EMP Values(" + empno.getText() + ",'" + ename.getText() + "','" + job.getText() + "'," + mgr.getText()

+ ",to\_timestamp('" + hiredate.getText() + "','yyyy-mm--dd hh24:mi:ss.ff')," + sal.getText() + "," + comm.getText() + "," + deptno.getText() + ")";

try

{

stmt.executeUpdate(SQL);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

this.dispose();

}

if(e.getSource()==cancel)

{

this.dispose();

}

}

}

**UpdateEMP.java**

package oracle;

import java.awt.BorderLayout;

import java.awt.GridLayout;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import javax.swing.\*;

public class UpdateEMP extends JDialog implements ActionListener

{

private static final long serialVersionUID = 429875240737530874L;

JPanel top,bottom,left;

JLabel EMPNO,ENAME,JOB,MGR,HIREDATE,SAL,COMM,DEPTNO;

JTextField empno,ename,job,mgr,hiredate,sal,comm,deptno;

JButton save,cancel;

Statement stmt;

public UpdateEMP(Statement stmt,String num,JFrame owner,String title,boolean modal) throws SQLException // 构造函数

{

super(owner,title,modal);

this.stmt = stmt;

String SQL = "Select \* From user\_20142862.EMP Where EMPNO = " + num;

ResultSet rs = stmt.executeQuery(SQL);

rs.next();

// 创建组件

EMPNO = new JLabel("EMPNO",JLabel.CENTER);

ENAME = new JLabel("ENAME",JLabel.CENTER);

JOB = new JLabel("JOB",JLabel.CENTER);

MGR = new JLabel("MGR",JLabel.CENTER);

HIREDATE = new JLabel("HIREDATE",JLabel.CENTER);

SAL = new JLabel("SAL",JLabel.CENTER);

COMM = new JLabel("COMM",JLabel.CENTER);

DEPTNO = new JLabel("DEPTNO",JLabel.CENTER);

top = new JPanel(new GridLayout(8,1));

top.add(EMPNO);

top.add(ENAME);

top.add(JOB);

top.add(MGR);

top.add(HIREDATE);

top.add(SAL);

top.add(COMM);

top.add(DEPTNO);

empno = new JTextField(25);

empno.setText(num);

empno.setEditable(false);

ename = new JTextField(25);

ename.setText(rs.getString(2));

job = new JTextField(25);

job.setText(rs.getString(3));

mgr = new JTextField(25);

mgr.setText(rs.getString(4));

hiredate = new JTextField(25);

hiredate.setText(rs.getString(5));

sal = new JTextField(25);

sal.setText(rs.getString(6));

comm = new JTextField(25);

comm.setText(rs.getString(7));

deptno = new JTextField(25);

deptno.setText(rs.getString(8));

left = new JPanel(new GridLayout(8,1));

left.add(empno);

left.add(ename);

left.add(job);

left.add(mgr);

left.add(hiredate);

left.add(sal);

left.add(comm);

left.add(deptno);

bottom = new JPanel();

save = new JButton("保存");

cancel = new JButton("取消");

save.addActionListener(this);

cancel.addActionListener(this);

bottom.add(save);

bottom.add(cancel);

this.add(top,BorderLayout.CENTER);

this.add(left,BorderLayout.EAST);

this.add(bottom,BorderLayout.SOUTH);

// 设置窗体属性

this.setSize(400,300);

this.setLocation(400,250);

this.setVisible(true);

}

@Override

public void actionPerformed(ActionEvent e)

{

if(e.getSource() == save)

{

String SQL = "Update user\_20142862.EMP Set ENAME = '" + ename.getText() + "',JOB = '" + job.getText() + "',MGR = " + mgr.getText()

+ ",HIREDATE = to\_timestamp('" + hiredate.getText() + "','yyyy-mm--dd hh24:mi:ss.ff'),SAL = " + sal.getText() + ",COMM = " + comm.getText()

+ ",DEPTNO = " + deptno.getText() + " Where EMPNO = " + empno.getText() + "";

try

{

stmt.executeUpdate(SQL);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

this.dispose();

}

if(e.getSource()==cancel)

{

this.dispose();

}

}

}

**SearchEMP.java**

package oracle;

import java.awt.BorderLayout;

import java.awt.GridLayout;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

import java.sql.SQLException;

import java.sql.Statement;

import javax.swing.\*;

public class SearchEMP extends JDialog implements ActionListener

{

private static final long serialVersionUID = 429875240737530874L;

JPanel top,bottom,left;

JLabel EMPNO,ENAME,JOB,MGR,HIREDATE,SAL,COMM,DEPTNO;

JTextField empno,ename,job,mgr,hiredate,sal,comm,deptno;

JButton save,cancel;

Statement stmt;

public SearchEMP(Statement stmt,JFrame owner,String title,boolean modal) // 构造函数

{

super(owner,title,modal);

this.stmt = stmt;

// 创建组件

EMPNO = new JLabel("EMPNO",JLabel.CENTER);

ENAME = new JLabel("ENAME",JLabel.CENTER);

JOB = new JLabel("JOB",JLabel.CENTER);

MGR = new JLabel("MGR",JLabel.CENTER);

HIREDATE = new JLabel("HIREDATE",JLabel.CENTER);

SAL = new JLabel("SAL",JLabel.CENTER);

COMM = new JLabel("COMM",JLabel.CENTER);

DEPTNO = new JLabel("DEPTMO",JLabel.CENTER);

top = new JPanel(new GridLayout(8,1));

top.add(EMPNO);

top.add(ENAME);

top.add(JOB);

top.add(MGR);

top.add(HIREDATE);

top.add(SAL);

top.add(COMM);

top.add(DEPTNO);

empno = new JTextField(25);

ename = new JTextField(25);

job = new JTextField(25);

mgr = new JTextField(25);

hiredate = new JTextField(25);

sal = new JTextField(25);

comm = new JTextField(25);

deptno = new JTextField(25);

left = new JPanel(new GridLayout(8,1));

left.add(empno);

left.add(ename);

left.add(job);

left.add(mgr);

left.add(hiredate);

left.add(sal);

left.add(comm);

left.add(deptno);

bottom = new JPanel();

save = new JButton("保存");

cancel = new JButton("取消");

save.addActionListener(this);

cancel.addActionListener(this);

bottom.add(save);

bottom.add(cancel);

this.add(top,BorderLayout.CENTER);

this.add(left,BorderLayout.EAST);

this.add(bottom,BorderLayout.SOUTH);

// 设置窗体属性

this.setSize(400,300);

this.setLocation(400,250);

this.setVisible(true);

}

@Override

public void actionPerformed(ActionEvent e)

{

if(e.getSource() == save)

{

String SQL = "Insert Into user\_20142862.EMP Values(" + empno.getText() + ",'" + ename.getText() + "','" + job.getText() + "'," + mgr.getText()

+ ",to\_timestamp('" + hiredate.getText() + "','yyyy-mm--dd hh24:mi:ss.ff')," + sal.getText() + "," + comm.getText() + "," + deptno.getText() + ")";

try

{

stmt.executeUpdate(SQL);

}

catch (SQLException e1)

{

e1.printStackTrace();

}

this.dispose();

}

if(e.getSource()==cancel)

{

this.dispose();

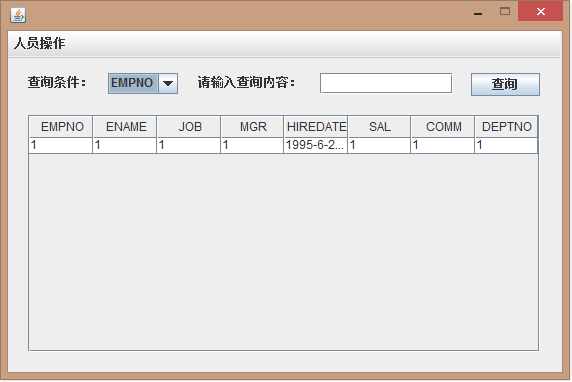
}

}

}

**2.程序结果截图**

**主页面**

****

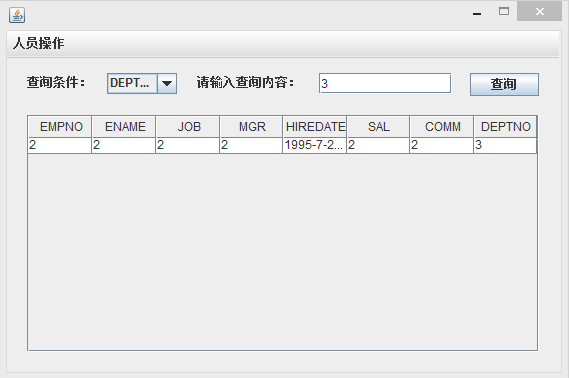
**增加页面**

****

**修改页面**

****

**查询操作**

****