Java 数据库编程(JDBC)

1、MySQL数据库

```
create databse mydb;
use mydb;
CREATE TABLE customers ()
    custmerID char(8) primary key,
    name char(40)  default null,
    phone char(40) default null
);
INSERT INTO customers VALUES ('ADDIFK01','Frank Addinsell',
'(718) 555-3911');
```

2、JDBC编程基本步骤

Java Application -----------MySQL(Database, DBMS)

最重要的是连接到数据库

1)数据库访问驱动程序

mysql-connector-java-xxx.jar

2)加载驱动程序

```
String driver="com.mysql.jdbc.Driver";
Class.forName(driver);
```

3)创建连接对象Connection

```
String url = "jdbc:mysql://localhost:3036/mydb";
String user = "root";
String pwd="123456";
Connection conn  = DriverManager.getConnection(url,user,pwd
);
```

4)创建命令对象Statement

```
Statement cmd = conn.createStatement();
String sql = "SELECT * FROM customers";
//执行SQL(select)语句，返回结果集ResultSet
//cursor 游标
ResultSet rs = cmd.executeQuery(sql);
```

5)执行select 语句， 读取ResultSet内容

```
rs.next(); //将游标移动到下一行
while(rs.next()) {
    String cid = rs.getString(1); //当前行的第一列内容
    String cname = rs.getString(2);
    String cphone = rs.getString(3);
    System.out.println(cid + "  " + cname + "  " + cphone);
}
```

6)关闭连接对象

```
conn.close();
```

3、执行update, delete, insert等语句，写数据库，不需要返回结果集

```
String sql = "insert into customers values('1001', 'zhou',
'021-1111)";
int x = cmd.executeUpdate(sql); //返回影响的行数
eg:
```

```
import java.sql.*;
public class CustomerDao {
    private static String driver = "com.mysql.jdbc.Driver";
    private static String url = "jdbc:mysql://localhost:330
6/mydb", user = "root", pwd = "4846";
    private static Connection conn=null;
    static{
        try{
          Class.forName(driver);
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    private static void createConnection() {
        try{
         conn = DriverManager.getConnection(url, user, pwd)
;
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    private static void closeConnection() {
        try{
         conn = DriverManager.getConnection(url, user, pwd)
;
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    public static int addCustomer(String cid,String cname,S
tring cphone) throws Exception{
        int r=0;
        createConnection();
        Statement cmd = conn.createStatement();
        String sql="insert into customers values('"+cid+"',
'"+cname+"','"+cphone+"')";
        r=cmd.executeUpdate(sql);//·µ»ØÓ°ÏìÐÐÊý
        closeConnection();
        return r;
    }
    public static int deleteCustomerByCid(String cid) throw
s Exception{
        int r=0;
        createConnection();
        Statement cmd = conn.createStatement();
        String sql="delete from customers where customerid='"+cid+"'";
        r=cmd.executeUpdate(sql);//·µ»ØÓ°ÏìÐÐÊý
        closeConnection();
        return r;
    }
    public static void queryAllCustomers() throws Exception {
        createConnection();
        Statement cmd = conn.createStatement();
        String sql="select * from customers";
        ResultSet rs=cmd.executeQuery(sql);
        while(rs.next()){
            System.out.printf("%-20s%-20s%-20s\n", rs.getString(1),rs.getString(2),rs.getString(3));
        }
        closeConnection();
    }
}
```

4、数据库分层设计

1)数据库访问工具

```
import java.sql.*;
public class SQLHelper {
    private static String driver = "com.mysql.jdbc.Driver";
    private static String url = "jdbc:mysql://localhost:3306/mydb", user = "root", pwd = "4846";
    private static Connection conn=null;
    static{
        try{
          Class.forName(driver);
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    private static void createConnection() {
        try{
         conn = DriverManager.getConnection(url, user, pwd)
;
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    public static void closeConnection() {
        try{
         conn = DriverManager.getConnection(url, user, pwd)
;
        }catch(Exception ex){
            ex.printStackTrace();
        }
    }
    public static int executeUpdate(String sql){
        int r=0;
        try{
            createConnection();
            Statement cmd = conn.createStatement();
            r=cmd.executeUpdate(sql);//·µ»ØÓ°ÏìÐÐÊý
            closeConnection();
        }catch(Exception ex){
            ex.printStackTrace();
        }
        return r;
    }
    public static ResultSet executeQuery(String sql){
        ResultSet rs=null;
        try{
            createConnection();
            Statement cmd = conn.createStatement();
            rs=cmd.executeQuery(sql);//·µ»ØÓ°ÏìÐÐÊý
        }catch(Exception ex){
            ex.printStackTrace();
        }
        return rs;
    }
}
```

2)编写实体类(映射数据库中的表)

```
public class Customer {
    private String cid, cname, cphone;
    public Customer(){
    }
    public Customer(String cid, String cname, String cphone
) {
        this.cid = cid;
        this.cname = cname;
        this.cphone = cphone;
    }

    public String getCid() {
        return cid;
    }

    public void setCid(String cid) {
        this.cid = cid;
    }

    public String getCname() {
        return cname;
    }

    public void setCname(String cname) {
        this.cname = cname;
    }

    public String getCphone() {
        return cphone;
    }

    public void setCphone(String cphone) {
        this.cphone = cphone;
    }
   }
```

3)实体操作类(CustomerDao)

```
import java.util.*;
   import java.sql.ResultSet;

   public class CustomerDao {
    public static int addCustomer(String cid,String cname,String cphone) throws Exception{
        int r=0;
        String sql="insert into customers values('"+cid+"','"+cname+"','"+cphone+"')";
        r=SQLHelper.executeUpdate(sql);
        return r;
    }
    public static int deleteCustomerByCid(String cid){
        int r=0;
        String sql="delete from customers where customerid='"+cid+"'";
        r=SQLHelper.executeUpdate(sql);
        return r;
    }
    public static ArrayList<Customer> queryCustomers(){
        ArrayList<Customer> list=new ArrayList<Customer>();
        String sql="select * from customers";
        ResultSet rs=SQLHelper.executeQuery(sql);
        try{
          while(rs.next()){
               String cid= rs.getString(1);//µ±Ç°ÐÐµÄµÚÒ»ÁÐÄÚÈÝ

               String cname=rs.getString(2);
               String cphone=rs.getString(3);
               Customer cus=new Customer(cid,cname,cphone);
               list.add(cus);
          }
          SQLHelper.closeConnection();
        }
        catch(Exception ex){

        }
        return list;
    }
    }
```

4)View界面层

```
 import java.util.*;
   public class DBDemo {

    public static void main(String[] args) throws Exception
 {
        ArrayList<Customer> list=CustomerDao.queryCustomers
();
        for(Customer cus:list){
            System.out.println(cus.getCid());
        }
    }
   }
```