**Code**

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**Classes for database operations:**

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

Using System.Data.SqlClient;

using System.Data;

using System.Configuration;

namespace ATM1 {

class UsersService{

private static UsersService userService=null;

private UsersService(){}

public static UsersService getService(){

if (userService == null) {

userService = new UsersService(); }

return userService; }

private void openConnection() {

if (conn == null)

{ conn = new SqlConnection(ConfigurationManager.ConnectionStrings["ATM"].ToString()); //conn = new SqlConnection(conStr); conn.Open(); } }

private void setCommand(string command,bool isQuery) { this.openConnection();

comm = new SqlCommand();

if (!isQuery) { tran = conn.BeginTransaction(); comm.Transaction = tran; } comm.CommandText = command; comm.CommandType = CommandType.Text; comm.Connection = conn; }

private void setParameter(string from,object to) { comm.Parameters.AddWithValue(from, to); }

private bool commitCommand() { try { int numEffected; numEffected= comm.ExecuteNonQuery(); if (numEffected >= 1) { tran.Commit(); return true; }

else { tran.Rollback();} } catch (Exception e) { Console.WriteLine(e.StackTrace); tran.Rollback(); } finally { tran.Dispose(); this.closeConnection(); } return false; } private void closeConnection() { if (conn != null) { conn.Close(); conn.Dispose(); conn = null; } } public bool verifyUser(string id,string passwd) { this.setCommand("select count(\*) from users where cardNum=@cardNum

and passWd=@passWd",true); this.setParameter("@cardNum",id); this.setParameter("@passWd",passwd); int num = (int)this.comm.ExecuteScalar(); if (1 == num) { return true; } return false; }

public bool addUser(UserBean user) { this.setCommand("insert into users values(@cardNum,@passWd,@userName,@moneySum,@cardBalance,@identifyCardNum)",false); this.setParameter("@cardNum",user.cardNum); this.setParameter("@passWd", user.passWd); this.setParameter("@userName", user.userName); this.setParameter("@moneySum", user.moneySum); this.setParameter("@cardBalance", user.cardBalance); this.setParameter("@identifyCardNum", user.identifyCardNum); return this.commitCommand(); }

public bool setPassWd(string id,string newPasswd) { this.setCommand("update users set passWd=@passWd where cardNum=@id",false); this.setParameter("@passWd", newPasswd); this.setParameter("@id",id); return this.commitCommand(); } public object getCardBalance(string id) { this.setCommand("select cardBalance from users where cardNum=@cardNum",true); this.setParameter("@cardNum",id); return comm.ExecuteScalar(); } public bool changeBalance(string id, decimal balance) { decimal ownerBalance; try { ownerBalance= (decimal)this.getCardBalance(id); } catch (Exception e) { Console.WriteLine(e.StackTrace); return false; } if ((ownerBalance+balance)<0) { return false; } this.setCommand("update users set cardBalance=@balance where cardnum=@id", false); this.setParameter("@balance",(ownerBalance + balance)); this.setParameter("@id",id); return this.commitCommand(); } public bool transferBalance(string from\_id,string to\_id,decimal transferMenoy) { decimal ownerBalance =(decimal)this.getCardBalance(from\_id); if (transferMenoy > ownerBalance && ownerBalance<100) { return false; } decimal otherBalance = (decimal)this.getCardBalance(to\_id); this.setCommand("update users set cardBalance=@fromOwonerBalance where cardNum=@from\_id; update users set cardbalance=@toOwnerBalance where cardNum=@to\_id;", false); this.setParameter("@from\_id", from\_id); this.setParameter("@to\_id", to\_id); this.setParameter("@fromOwonerBalance",(ownerBalance - transferMenoy)); this.setParameter("@toOwnerBalance", (otherBalance+transferMenoy)); return this.commitCommand(); } private SqlConnection conn; private SqlCommand comm; private SqlDataReader reader; private SqlTransaction tran; private const string conStr = "server=172.7.41.166;database=ATM;uid=sa;pwd=123"; } }

**Login interface class:**

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Windows.Forms; namespace ATM1 { public partial class LoginForm : Form { public LoginForm() {InitializeComponent();} private void Form1\_Load(object sender, EventArgs e) {userService = UsersService.getService();} private void pbOpen\_Click(object sender, EventArgs e) { this.Visible = false; OpenForm openForm = new OpenForm(this); openForm.ShowDialog(); } private void pbLogin\_click(object sender, EventArgs e) { string id=tbCreditID.Text.ToString().Trim(); string passwd=tbPasswd.Text.ToString().Trim(); if (id.Length != 10) { MessageBox.Show("请输入10位卡号"); } else if (passwd.Length != 6) { MessageBox.Show("请输入6位密码"); } else if (this.userService.verifyUser(id,passwd)&&id.Length==10&&passwd.Length==6) { this.cardID = id; mainForm = new MainForm(this.cardID); this.Visible = false; mainForm.ShowDialog(); } else { MessageBox.Show("对不起，没有该用户！"); }

} private void pbExit\_Click(object sender, EventArgs e) { this.Visible = false; endForm = new EndForm(); endForm.ShowDialog(); } private MainForm mainForm; private EndForm endForm; private UsersService userService; private string cardID; public string CardID { get { return cardID; } set { cardID = value; } } } }