Project Report

On

ONLINE BANK MANAGEMENT SYSTEM

S. R. K. R ENGINEERING COLLEGE (A)
(Affiliated to JNTU, Kakinada) Bhimavaram-
(534 204).

(02-07-2023 TO 28-07-2023)

Guided By

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Submitted By

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CERTIFICATE

This is to certify that this is a bonafied work on "ONLINE BANK MANAGEMENT SYSTEM" for and has been submitted by **P. TARUNODAY PRASAD (22B95A6205) – CSG ,T.TEJA VENKATA SAI(21B91A05U9)– CSE,S.SOMESWAR (22B95A6206) – CSG&D. VIVEK (21B91A6210) – CSG** as a Data Structures &Algorithms using JAVA Project report, infulfilment of the requirements for the award of internship certification , during the academic year 2023-2024. The candidates worked right under my Supervision and guidance.

Trainer:

Mr. Vijay Pradeep

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ABSTRACT

- The Online Bank Management System project is an implementation of a comprehensive banking software solution using core Java programming language, incorporating data structures and algorithms with SQL. The project aims to provide efficient and secure management of customer accounts and transactions.
- Key functionalities include account registration, deposit, withdrawal, fund transfers, balance check, and account statement. The system employs sql methods such as result sets to optimize data storage and retrieval. Additionally, various functions are used for transaction validation, account balancing, and user authentication. The project leverages object-oriented principles to ensure modularity and maintainability in the codebase, facilitating future enhancements and updates. Through the integration of data structures, algorithms, and Java programming, this project offers a robust and user-friendly solution for managing banking operations effectively.
- This system is a user-interactive which is made possible by using the java swings class where JFrames are used for every transaction window.

PROBLEM STATEMENT

The traditional or "normal" bank management systems often encounter several challenges that can impact their efficiency, security, and user experience. Some of the key problems faced by such systems include:

1. Manual Data Entry and Processing
2. Long Processing Times
3. Inefficient Record Keeping
4. Scalability Issues
5. Complex Account Management
6. Dependency on Physical Documents
7. Lack of User-Friendly Interface
8. Difficulty in Remote Transactions

To address these challenges, modern banks are increasingly adopting technology-driven solutions that leverage digital platforms, online banking, mobile apps, and automated systems. These solutions offer real-time updates, enhanced security measures, streamlined transaction processing, and improved customer experiences, ultimately transforming the way banking operations are conducted.

SOLUTION

The objective of the Online Bank Management System project is to design and implement a robust software solution using core Java programming, integrated Sql and JSwings to efficiently manage banking operations. The system should provide seamless functionality for account registration, deposit, withdrawl, fund transfer, balance check, and account statement.

The project aims to address the following challenges:

1. Transaction Validation and Management
2. Concurrent User Handling
3. Account Registration
4. Error Handling

MODULES

- **FRAMES PACKAGE**
- **BANKING PACKAGE**
- **ICONS PACKAGE**

SOFTWARE REQUIREMENTS

1. NETBEANS IDE-17, JDK, JVM, JRE, MySQL connector,Xampp
2. Internet Browser: Google Chrome/Mozilla Firefox/Internet Browser

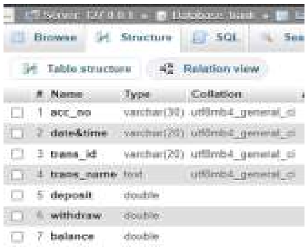
HARDWARE REQUIREMENTS

1. Processor-Intel Core I5
2. RAM-8GB

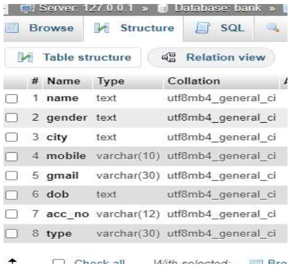
DATABASE REQUIREMENTS

In order for this application to work.You should create a database named bank and create tables named transactions,customers and accounts.

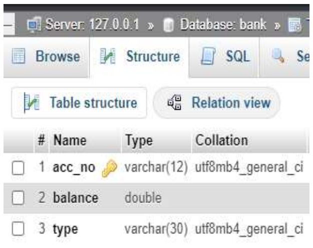
1. transactions- **acc_no, date&time, trans_id, trans_name, deposit, withdraw, balance**
2. customers- **name, gender, city, mobile, gmail, dob, acc_no, type**
3. accounts- **acc_no , balance, type**



#	Name	Type	Collation
1	acc_no	varchar(30)	utf8mb4_general_ci
2	date&time	varchar(20)	utf8mb4_general_ci
3	trans_id	varchar(20)	utf8mb4_general_ci
4	trans_name	text	utf8mb4_general_ci
5	deposit	double	
6	withdraw	double	
7	balance	double	



#	Name	Type	Collation
1	name	text	utf8mb4_general_ci
2	gender	text	utf8mb4_general_ci
3	city	text	utf8mb4_general_ci
4	mobile	varchar(10)	utf8mb4_general_ci
5	gmail	varchar(30)	utf8mb4_general_ci
6	dob	text	utf8mb4_general_ci
7	acc_no	varchar(12)	utf8mb4_general_ci
8	type	varchar(30)	utf8mb4_general_ci



#	Name	Type	Collation
1	acc_no	varchar(12)	utf8mb4_general_ci
2	balance	double	
3	type	varchar(30)	utf8mb4_general_ci

CODE

Before getting started, you have to do the following things–

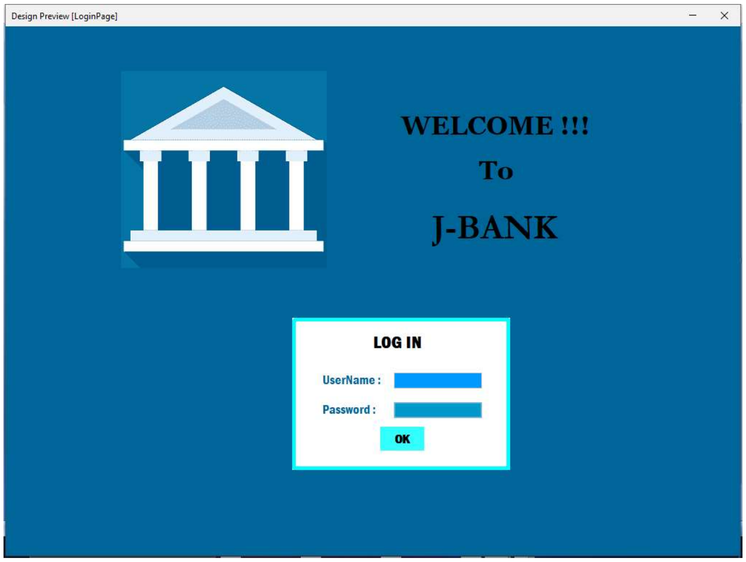
In a package named: Default package

Create 7 Classes in that package

1) LoginPage
2) Dashboard
3) ChackBalancePage
4) DepositPage
5) WithdrawlPage
6) RegistrationPage
7) BankStatement

**Class-LoginPage:

**UI:

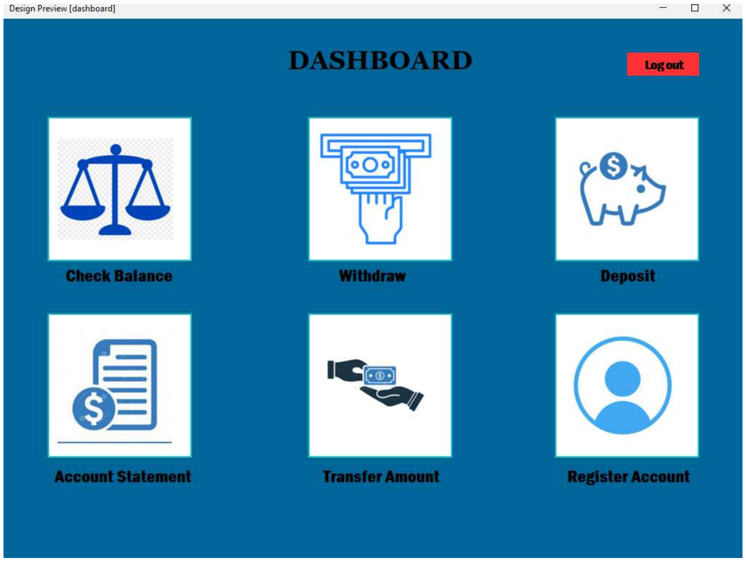


**Code:

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

public class LoginPage extends javax.swing.JFrame {

public LoginPage() {
        initComponents();
    }

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        boolean foundMatch = false;

            String us = user.getText();
            String pa = pass.getText();


                if(us.equals("admin@123")&& pa.equals("12345")){
                    foundMatch = true;
                    new dashboard().setVisible(true);
                    dispose();
                }

            if(!foundMatch){
                    JOptionPane.showMessageDialog(this, "Username or Password is
Incorrect!");
                }

    }
private javax.swing.JButton jButton1;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JPanel jPanel2;
    private javax.swing.JPasswordField pass;
    private javax.swing.JTextField user;
}
```

**Class-Dashboard:

**UI:

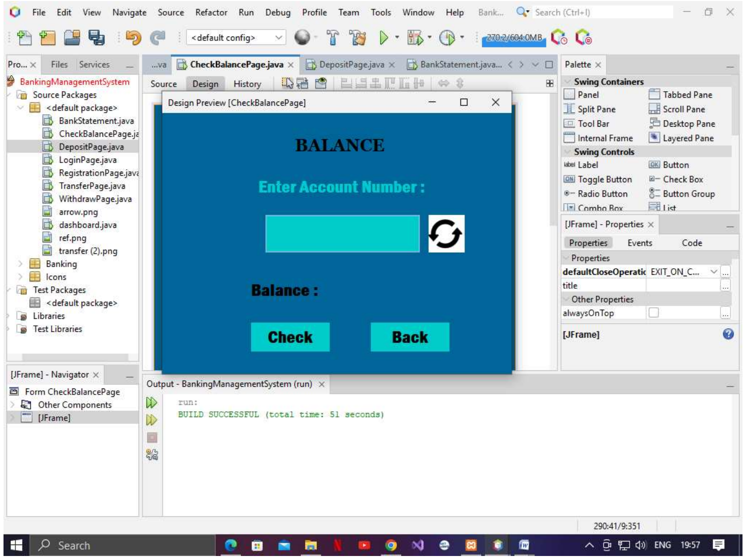


**Code:

```
public class dashboard extends javax.swing.JFrame {

    /**
     * Creates new form dashboard
     */
    public dashboard() {
        initComponents();
    }
private void balanceMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        CheckBalancePage balance = new CheckBalancePage();
        balance.setVisible(true);
        dispose();
    }

    private void withdrawMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        WithdrawPage withdraw = new WithdrawPage();
        withdraw.setVisible(true);
        dispose();
    }

    private void depositMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        DepositPage deposit = new DepositPage();
        deposit.setVisible(true);
        dispose();
    }

    private void statementMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        BankStatement statement = new BankStatement();
        statement.setVisible(true);
        dispose();
    }

    private void transferMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        TransferPage transfer = new TransferPage();
        transfer.setVisible(true);
        dispose();
    }

    private void registerNewMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        RegistrationPage register = new RegistrationPage();
        register.setVisible(true);
        dispose();
    }

    private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        LoginPage login = new LoginPage();
        login.setVisible(true);
        dispose();
    }

   private javax.swing.JButton balance;
    private javax.swing.JButton deposit;
    private javax.swing.JButton jButton1;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JButton registerNew;
    private javax.swing.JButton statement;
    private javax.swing.JButton transfer;
    private javax.swing.JButton withdraw;

}
```

**Class-CheckBalancePage:

**UI:



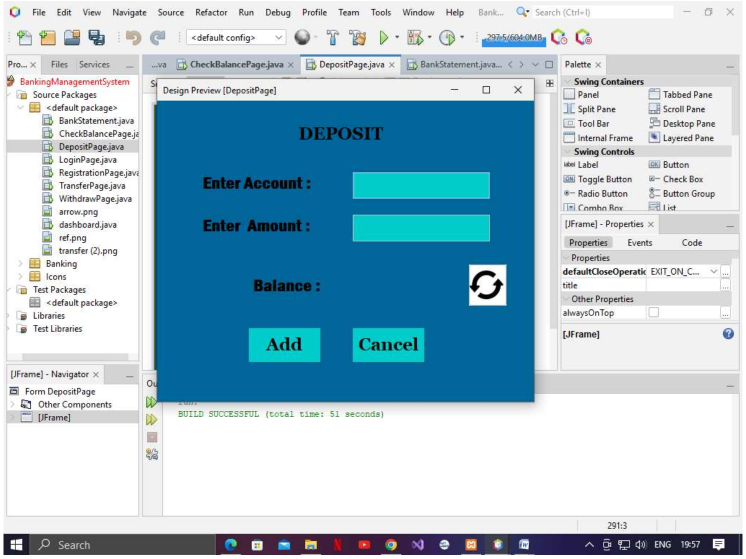
```
run:
BUILD SUCCESSFUL (total time: 51 seconds)
```

**Code:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.swing.JOptionPane;
public class CheckBalancePage extends javax.swing.JFrame {

public CheckBalancePage() {
        initComponents();
}

private void backMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
       dashboard db = new dashboard();
        db.setVisible(true);
        dispose();
    }
    private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        String acc = ac.getText();
       boolean flag=true;
      if (ac.getText().isEmpty()) {
        JOptionPane.showMessageDialog(null, "Please fill in the details.");
        return;
        }
      else if(!ac.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid account 
number.");
        return;
        }
      else if(ac.getText().matches("\\d+")){
        flag=false;
            try {
                 Class.forName("com.mysql.cj.jdbc.Driver");

                 Connection conn = 
DriverManager.getConnection("jdbc:mysql://localhost:3306/bank","root","");
                 Statement st = conn.createStatement();
                 String sql = "Select*from accounts";
                 ResultSet rs = st.executeQuery(sql);
            while(rs.next()){
                String account = rs.getString("acc_no");
                if(acc.equals(account)){
                    double balance = rs.getDouble("balance");
                    bal.setText(String.valueOf(balance));
                }


            }
             conn.close();
            }
            catch (Exception e) {
                JOptionPane.showMessageDialog(this, "Error while eshtablishing 
connection with database");

            }

      }


    }

private void refreshMouseClicked(java.awt.event.MouseEvent evt) {
        ac.setText(null);
        bal.setText(null);
}

   private javax.swing.JTextField ac;
    private javax.swing.JButton back;
    private javax.swing.JLabel bal;
    private javax.swing.JButton jButton1;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JButton refresh;
}
```

**Class-DepositPage:

**UI:



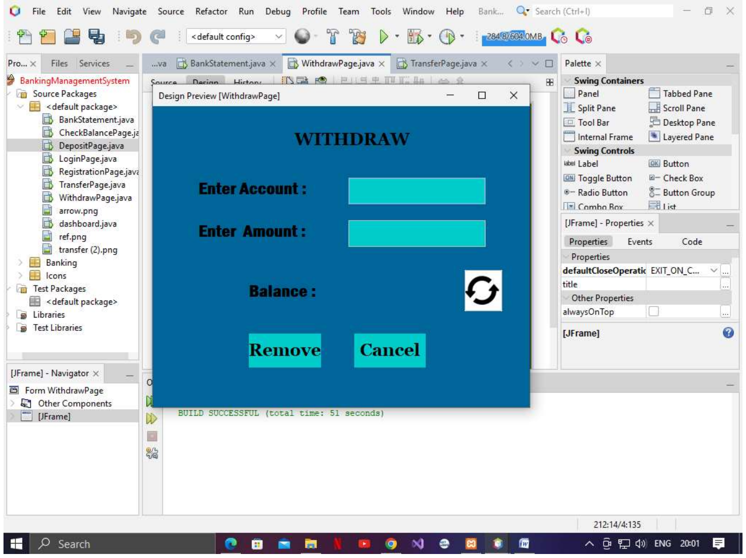
```
BUILD SUCCESSFUL (total time: 51 seconds)
```

**Code:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import java.sql.PreparedStatement;
import javax.swing.JOptionPane;
import static Banking.TransactionIdGenerator.generateTransactionID;
import java.sql.Timestamp;
public class DepositPage extends javax.swing.JFrame {

public DepositPage() {
        initComponents();
}

private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        if (acc.getText().isEmpty()||!acc.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid account
number.");
        return;
        }
        
        else if(am.getText().isEmpty()||!am.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid amount.");
        return;
        }
        else{
        try {
        String transactionId = generateTransactionID();
        Timestamp transactionDate = new Timestamp(System.currentTimeMillis());

        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection conn = 
DriverManager.getConnection("jdbc:mysql://localhost:3306/bank", "root", "");

        String accountNumber = acc.getText();
        String selectSql = "SELECT acc_no, balance FROM accounts WHERE acc_no = 
?";
        PreparedStatement selectStmt = conn.prepareStatement(selectSql);
        selectStmt.setString(1, accountNumber);
        ResultSet rs = selectStmt.executeQuery();

        if (rs.next()) {
            double balance = rs.getDouble("balance");
            double amount = Double.parseDouble(am.getText());
            double newBalance = balance + amount;

            String updateSql = "UPDATE accounts SET balance = ? WHERE acc_no = 
?";
            PreparedStatement updateStmt = conn.prepareStatement(updateSql);
            updateStmt.setDouble(1, newBalance);
            updateStmt.setString(2, accountNumber);
            updateStmt.executeUpdate();

            String insertSql = "INSERT INTO transactions (acc_no, `date&time`, 
trans_id, trans_name, deposit, withdraw, balance) VALUES (?, ?, ?, ?, ?, ?, ?)";
            PreparedStatement insertStmt = conn.prepareStatement(insertSql);
            insertStmt.setString(1, accountNumber);
            insertStmt.setTimestamp(2, transactionDate);
            insertStmt.setString(3, transactionId);
            insertStmt.setString(4, "Deposit");
            insertStmt.setDouble(5, amount);
            insertStmt.setDouble(6, 0.00);
            insertStmt.setDouble(7, newBalance);
            insertStmt.executeUpdate();

            bal.setText(String.valueOf(newBalance));
            JOptionPane.showMessageDialog(this, "Deposit Successful");
        } else {
            JOptionPane.showMessageDialog(this, "Account not found or 
invalid.");
        }
        conn.close();

    } catch (Exception e) {
        e.printStackTrace();
        JOptionPane.showMessageDialog(this, "Error while establishing connection 
with the database");
    }

        }
    }

    private void refreshMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        acc.setText(null);
        am.setText(null);
        bal.setText(null);
    }

    private void jButton2MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        dashboard db = new dashboard();
        db.setVisible(true);
        dispose();
    }

private javax.swing.JTextField acc;
    private javax.swing.JTextField am;
    private javax.swing.JLabel bal;
    private javax.swing.JButton jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JButton refresh;
}
```

**Class-WithdrawlPage:

**UI:



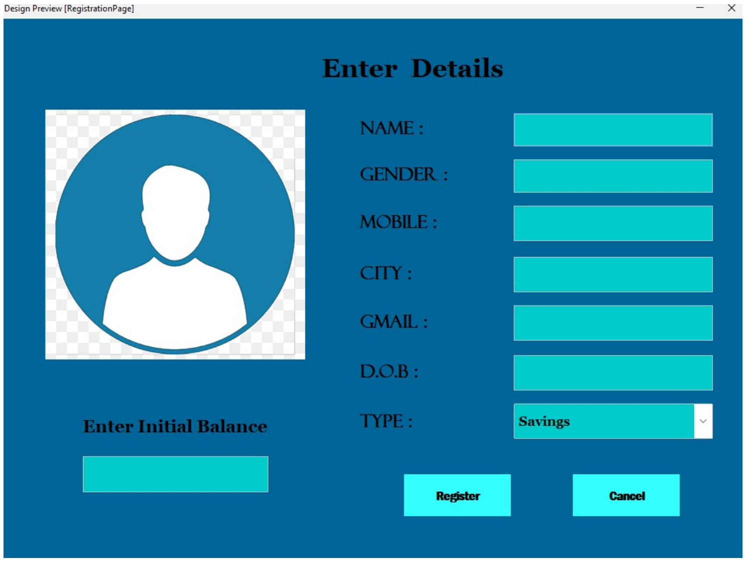
```
BUILD SUCCESSFUL (total time: 51 seconds)
```

**Code:

```
import static Banking.TransactionIdGenerator.generateTransactionID;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import java.sql.PreparedStatement;
import java.sql.Timestamp;
import javax.swing.JOptionPane;
public class WithdrawPage extends javax.swing.JFrame {
public WithdrawPage() {
        initComponents();
}

private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        if (acc.getText().isEmpty()||!acc.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid account
number.");
        return;
        }

        else if(am.getText().isEmpty()||!am.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid amount.");
        return;
        }
        else{  try {
        String transactionId = generateTransactionID();
        Timestamp transactionDate = new Timestamp(System.currentTimeMillis());

        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/bank", "root", "");

        String accountNumber = acc.getText();
        String selectSql = "SELECT acc_no, balance FROM accounts WHERE acc_no =
?";
        PreparedStatement selectStmt = conn.prepareStatement(selectSql);
        selectStmt.setString(1, accountNumber);
        ResultSet rs = selectStmt.executeQuery();

        if (rs.next()) {
            double balance = rs.getDouble("balance");
            double amount = Double.parseDouble(am.getText());
            double newBalance = balance - amount;
            if(balance<amount){
                JOptionPane.showMessageDialog(this, "Insufficient Balance!");
                return;
            }
            String updateSql = "UPDATE accounts SET balance = ? WHERE acc_no =
?";
            PreparedStatement updateStmt = conn.prepareStatement(updateSql);
            updateStmt.setDouble(1, newBalance);
            updateStmt.setString(2, accountNumber);
            updateStmt.executeUpdate();

            String insertSql = "INSERT INTO transactions (acc_no, `date&time`,
trans_id, trans_name, deposit, withdraw, balance) VALUES (?, ?, ?, ?, ?, ?, ?)";
            PreparedStatement insertStmt = conn.prepareStatement(insertSql);
            insertStmt.setString(1, accountNumber);
            insertStmt.setTimestamp(2, transactionDate);
            insertStmt.setString(3, transactionId);
            insertStmt.setString(4, "Withdraw");
            insertStmt.setDouble(5, 0.00);
            insertStmt.setDouble(6, amount);
            insertStmt.setDouble(7, newBalance);
            insertStmt.executeUpdate();

            bal.setText(String.valueOf(newBalance));
            JOptionPane.showMessageDialog(this, "Withdraw Successful");
        } else {
            JOptionPane.showMessageDialog(this, "Account not found or
invalid.");
        }
        conn.close();

    } catch (Exception e) {
        e.printStackTrace();
        JOptionPane.showMessageDialog(this, "Error while establishing connection
with the database");
    }
    }
    }
    private void refreshMouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        acc.setText(null);
        am.setText(null);
        bal.setText(null);
    }

    private void jButton2MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        dashboard db = new dashboard();
        db.setVisible(true);
        dispose();
    }

   private javax.swing.JTextField acc;
    private javax.swing.JTextField am;
    private javax.swing.JLabel bal;
    private javax.swing.JButton jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JButton refresh;
}
```

**Class-RegistrationPage:

**UI:



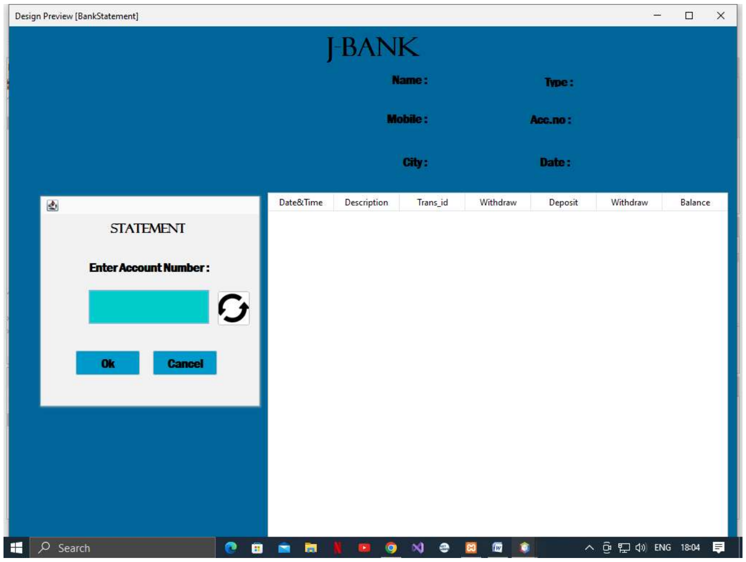
Savings

**Code:

```
import javax.swing.JOptionPane;
import Banking.UniqueIdGenerator;
import static Banking.UniqueIdGenerator.generateUniqueID;
public class RegistrationPage extends javax.swing.JFrame {
public RegistrationPage() {
        initComponents();
}

private void jButton2MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        dashboard db = new dashboard();
        db.setVisible(true);
        dispose();
    }

    private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        String uniqueID = generateUniqueID();
        String balance = bal.getText();

        if (name.getText().isEmpty() || gender.getText().isEmpty() ||
city.getText().isEmpty() ||
        mobile.getText().isEmpty() || gmail.getText().isEmpty() ||
dob.getText().isEmpty()) {
        JOptionPane.showMessageDialog(null, "Please fill in all the details.");
        return;
        }
        String genderInput = gender.getText().toLowerCase();
        if (!genderInput.equals("male") && !genderInput.equals("female")) {
        JOptionPane.showMessageDialog(null, "Please enter 'male' or 'female' for
gender.");
        return;
        }
        String gmailInput = gmail.getText().toLowerCase();
        String gmailRegex = "^[A-Za-z0-9+_.-]+@(.+)$";
        if (!gmailInput.matches(gmailRegex)) {
        JOptionPane.showMessageDialog(null, "Please enter a valid Gmail
address.");
        return;
        }

        if(!mobile.getText().matches("//d+")){
        JOptionPane.showMessageDialog(null, "Please enter a valid mobile
number.");
        return;
        }
        if(bal.getText().isEmpty()|| !bal.getText().matches("//d+")){
        JOptionPane.showMessageDialog(null, "Please enter a valid initial
account balance.");
        return;
        }
        if(name.getText().matches("//d+")){
        JOptionPane.showMessageDialog(null, "Name cannot be a number.");
        return;
        }
        try{
            Class.forName("com.mysql.cj.jdbc.Driver");
            Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/bank","root","");
            String query = "insert into customers values (?,?,?,?,?,?,?,?)";
            String query1 = "insert into accounts values (?,?,?)";
            PreparedStatement ptStmt = con.prepareStatement(query);
            PreparedStatement ptStmt1 = con.prepareStatement(query1);
            ptStmt.setString(1, name.getText());
            ptStmt.setString(2, gender.getText());
            ptStmt.setString(3, city.getText());
            ptStmt.setString(4, mobile.getText());
            ptStmt.setString(5, gmail.getText());
            ptStmt.setString(6, dob.getText());
            ptStmt.setString(7, uniqueID);
            ptStmt.setString(8, (String)type.getSelectedItem());

            ptStmt1.setString(1,uniqueID);
            ptStmt1.setString(2,balance);
            ptStmt1.setString(3,(String)type.getSelectedItem());


            ptStmt.executeUpdate();
            ptStmt1.executeUpdate();
            JOptionPane.showMessageDialog(null, "Account has been registered 
successfully. Account Number is "+uniqueID+".");
            con.close();
        }
        catch(Exception e){
            JOptionPane.showMessageDialog(this, "Error while eshtablishing 
connection with database");

        }
    }

private void refreshMouseClicked(java.awt.event.MouseEvent evt) {
        ac.setText(null);
        bal.setText(null);
}

   private javax.swing.JTextField bal;
    private javax.swing.JTextField city;
    private javax.swing.JTextField dob;
    private javax.swing.JTextField gender;
    private javax.swing.JTextField gmail;
    private javax.swing.JButton jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel10;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JLabel jLabel8;
    private javax.swing.JLabel jLabel9;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JTextField mobile;
    private javax.swing.JTextField name;
    private javax.swing.JComboBox<String> type;
}
```

**Class-BankStatement:

**UI:



**Code:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import java.sql.PreparedStatement;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;
import java.time.LocalDate;
public class BankStatement extends javax.swing.JFrame {
public BankStatement() {
        initComponents();
}

private void jButton2MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        dashboard db =new dashboard();
        db.setVisible(true);
        dispose();
    }
    private void jButton1MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        boolean foundMatch = false;
        if (acc.getText().isEmpty()) {
        JOptionPane.showMessageDialog(null, "Please enter a valid account 
number.");
        return;
        }
        else  if (!acc.getText().matches("\\d+")) {
        JOptionPane.showMessageDialog(null, "Please enter a valid account 
number.");
        return;
        }
        else{
        try {
                 Class.forName("com.mysql.cj.jdbc.Driver");
                 String ac = acc.getText();
                 Connection conn = 
DriverManager.getConnection("jdbc:mysql://localhost:3306/bank","root","");
                 Statement st = conn.createStatement();
                 String sql = "Select*from transactions";
                 ResultSet rs = st.executeQuery(sql);
            while(rs.next()){
                String account = rs.getString("acc_no");
                if(ac.equals(account)){
                foundMatch=true;
                }
            }
            if(foundMatch){
                String sql1 = "Select*from transactions where acc_no=?";
                    PreparedStatement ptStmt = conn.prepareStatement(sql1);
                    ptStmt.setString(1, acc.getText());
                    ResultSet rs1 = ptStmt.executeQuery();
                    DefaultTableModel tbModel = 
(DefaultTableModel)transactions.getModel();
                    tbModel.setRowCount(0);
                    while(rs1.next()){
                        String account_no = rs1.getString("acc_no");
                        String date = rs1.getString("date&time");
                        String trans_id = rs1.getString("trans_id");
                        String trans_name = rs1.getString("trans_name");
                        String deposit = 
String.valueOf(rs1.getDouble("deposit"));
                        String withdraw = 
String.valueOf(rs1.getDouble("withdraw"));
                        String balance = 
String.valueOf(rs1.getDouble("balance"));


                        String tbData[] = 
{account_no,date,trans_id,trans_name,deposit,withdraw,balance};
                        tbModel.addRow(tbData);

                    }
                        tbModel.fireTableDataChanged();
                     String sql2 = "Select*from customers where acc_no=?";
                     PreparedStatement ptStmt1 = conn.prepareStatement(sql2);
                     ptStmt1.setString(1, acc.getText());
                     ResultSet rs2 = ptStmt1.executeQuery();
                     LocalDate today = LocalDate.now();
                     while(rs2.next()){
                         account.setText(rs2.getString("acc_no"));
                         name.setText(rs2.getString("name"));
                         city.setText(rs2.getString("city"));
                         mobile.setText(rs2.getString("mobile"));
                         type.setText(rs2.getString("type"));
                         date.setText(String.valueOf(today));
                     }

            }
            else{
                  JOptionPane.showMessageDialog(this, "Account not found.");
                  acc.setText(null);

                    }
             conn.close();
            } catch (Exception e) {
                JOptionPane.showMessageDialog(this, "Error while eshtablishing 
connection with database");

            }
        }
    }

private void jButton3MouseClicked(java.awt.event.MouseEvent evt) {
        // TODO add your handling code here:
        acc.setText(null);

    }
   private javax.swing.JTextField acc;
    private javax.swing.JLabel account;
    private javax.swing.JLabel city;
    private javax.swing.JLabel date;
    private javax.swing.JButton jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JButton jButton3;
    private javax.swing.JInternalFrame jInternalFrame1;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel14;
    private javax.swing.JLabel jLabel15;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JLabel mobile;
    private javax.swing.JLabel name;
    private javax.swing.JTable transactions;
    private javax.swing.JLabel type;
}
```

**Class-TransactionIdGenerator:

**Code:

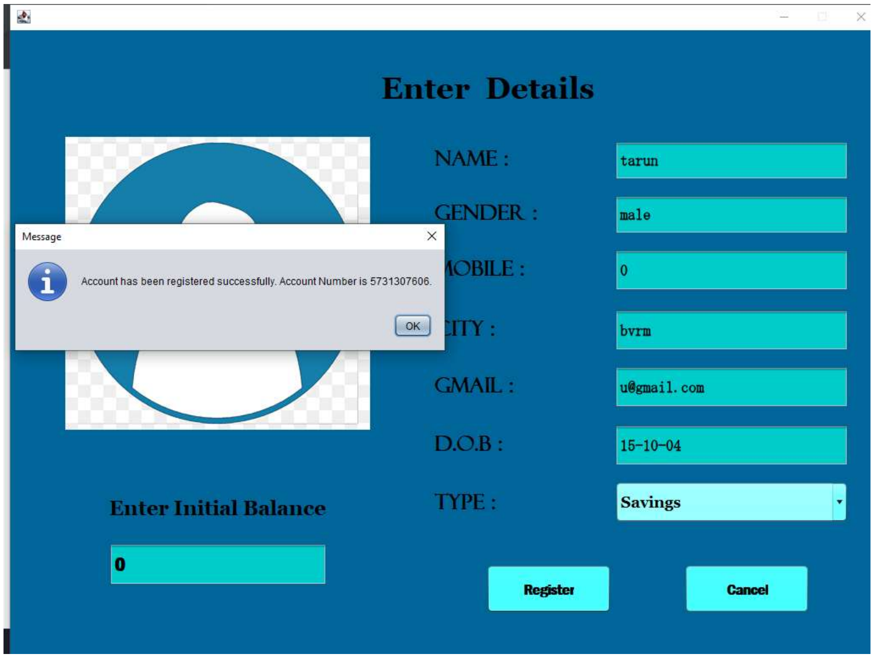
```
package Banking;

import java.util.Random;

public class TransactionIdGenerator {

    public static String generateTransactionID() {

        int randomNumber = new Random().nextInt(9000) + 1000;
        String transactionId = String.valueOf(randomNumber);
        return transactionId;
    }
}
```

**Class-UniqueIdGenerator:

**Code:

```
package Banking;
import java.util.Random;

/**
 *
 * @author Pc
 */
public class UniqueIdGenerator {



   public static String generateUniqueID() {
      Random random = new Random();//generates random number
      StringBuffer uniqueID = new StringBuffer();

      int firstDigit = random.nextInt(9) + 1;
      uniqueID.append(firstDigit);

      while (uniqueID.length() < 10) {
         int randomNumber = random.nextInt(10); // Generate a random
number between 0 and 9
         uniqueID.append(randomNumber);//Concatenate the generated
number with previous number
      }

      return uniqueID.toString();

   }

}
```

OUTPUT (Screen Shots) :



Enter Details

NAME : tarun

GENDER : male

MOBILE : 0

CITY : bvrm

GMAIL : u@gmail.com

D.O.B : 15-10-04

TYPE : Savings

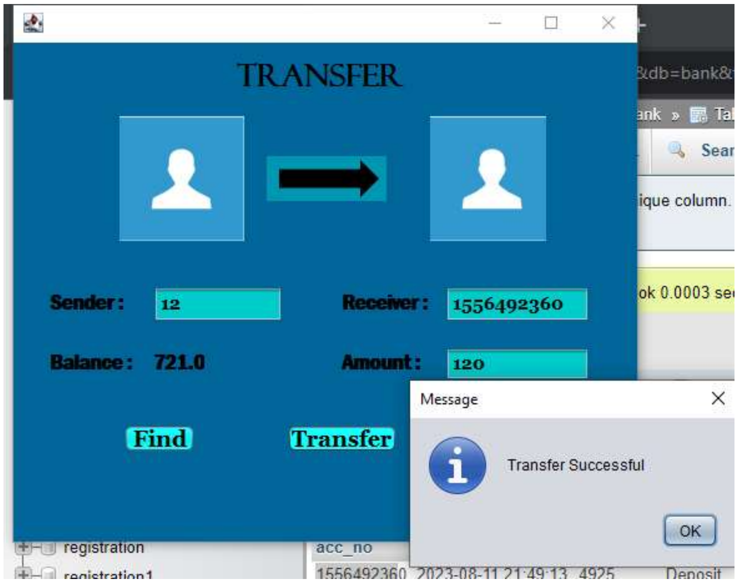
Enter Initial Balance

0

Message

Account has been registered successfully. Account Number is 5731307606.

Registering account



TRANSFER

Sender : 12

Receiver : 1556492360

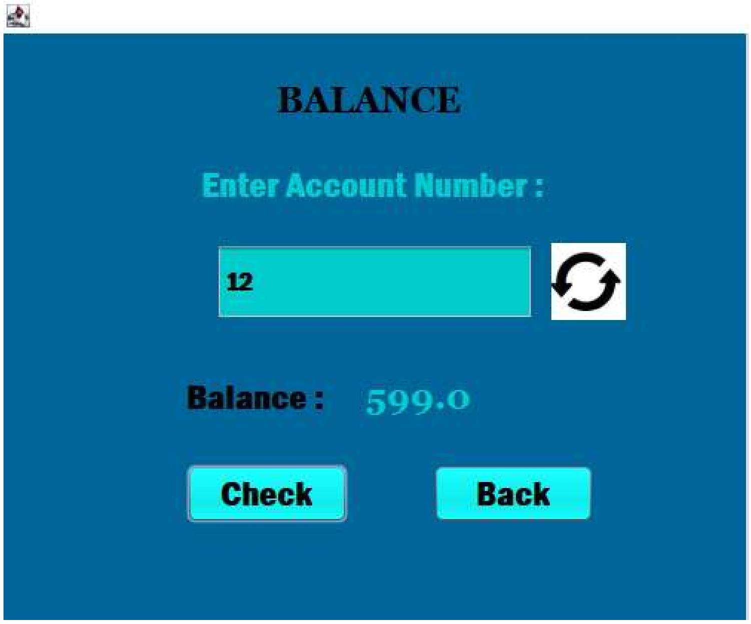
Balance : 721.0

Amount : 120

Message

Transfer Successful

Transfer of money

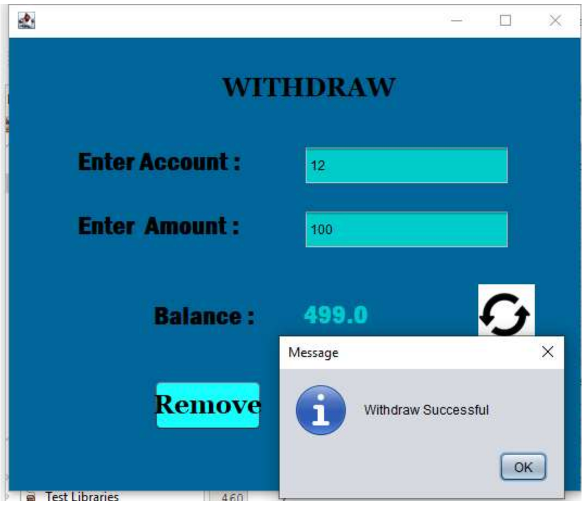


BALANCE

Enter Account Number : 12

Balance : 599.0

Checking Balance



WITHDRAW

Enter Account : 12

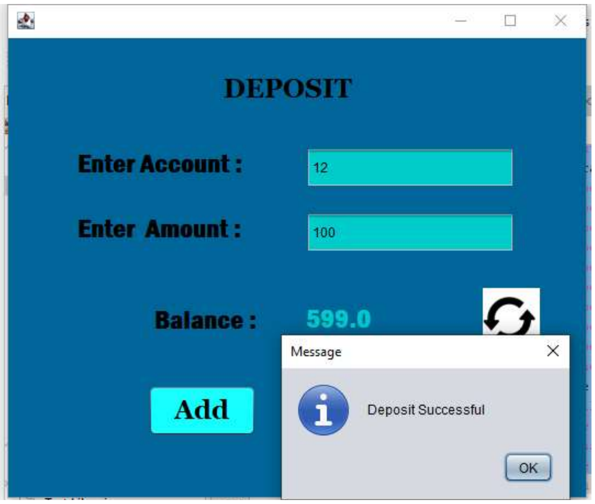
Enter Amount : 100

Balance : 499.0

Message

Withdraw Successful

Withdraw Amount



DEPOSIT

Enter Account : 12

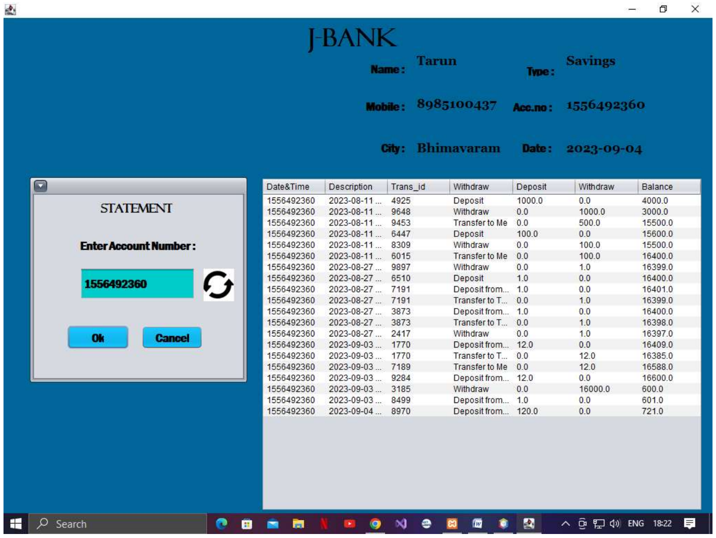
Enter Amount : 100

Balance : 599.0

Message

Deposit Successful

Deposit Amount



J-BANK

Name : Tarun

Type : Savings

Mobile : 8985100437

Acc.no : 1556492360

City : Bhimavaram

Date : 2023-09-04

STATEMENT

Enter Account Number : 1556492360

Date&Time	Description	Trans_id	Withdraw	Deposit	Withdraw	Balance
1556492360	2023-08-11 ...	4925	Deposit	1000.0	0.0	4000.0
1556492360	2023-08-11 ...	9648	Withdraw	0.0	1000.0	3000.0
1556492360	2023-08-11 ...	9453	Transfer to Me	0.0	500.0	15500.0
1556492360	2023-08-11 ...	6447	Deposit	100.0	0.0	15600.0
1556492360	2023-08-11 ...	8309	Withdraw	0.0	100.0	15500.0
1556492360	2023-08-11 ...	6015	Transfer to Me	0.0	100.0	16400.0
1556492360	2023-08-27 ...	9897	Withdraw	0.0	1.0	16399.0
1556492360	2023-08-27 ...	6510	Deposit	1.0	0.0	16400.0
1556492360	2023-08-27 ...	7191	Deposit from...	1.0	0.0	16401.0
1556492360	2023-08-27 ...	7191	Transfer to T...	0.0	1.0	16399.0
1556492360	2023-08-27 ...	3873	Deposit from...	1.0	0.0	16400.0
1556492360	2023-08-27 ...	3873	Transfer to T...	0.0	1.0	16398.0
1556492360	2023-08-27 ...	2417	Withdraw	0.0	1.0	16397.0
1556492360	2023-09-03 ...	1770	Deposit from...	12.0	0.0	16409.0
1556492360	2023-09-03 ...	1770	Transfer to T...	0.0	12.0	16385.0
1556492360	2023-09-03 ...	7189	Transfer to Me	0.0	12.0	16588.0
1556492360	2023-09-03 ...	9284	Deposit from...	12.0	0.0	16600.0
1556492360	2023-09-03 ...	3185	Withdraw	0.0	16000.0	600.0
1556492360	2023-09-03 ...	8499	Deposit from...	1.0	0.0	601.0
1556492360	2023-09-04 ...	8970	Deposit from...	120.0	0.0	721.0

Statement Page

THANK YOU….!