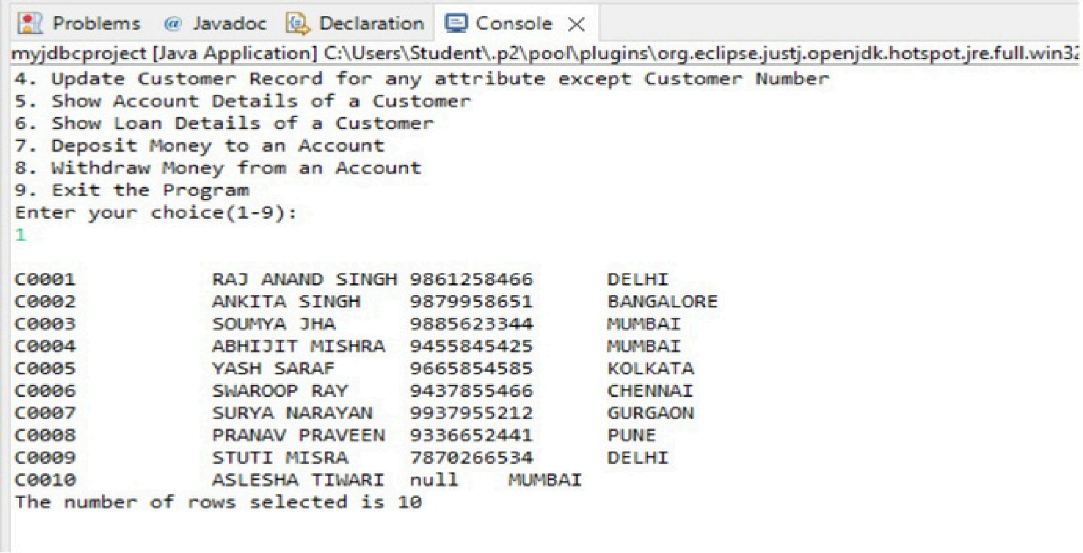
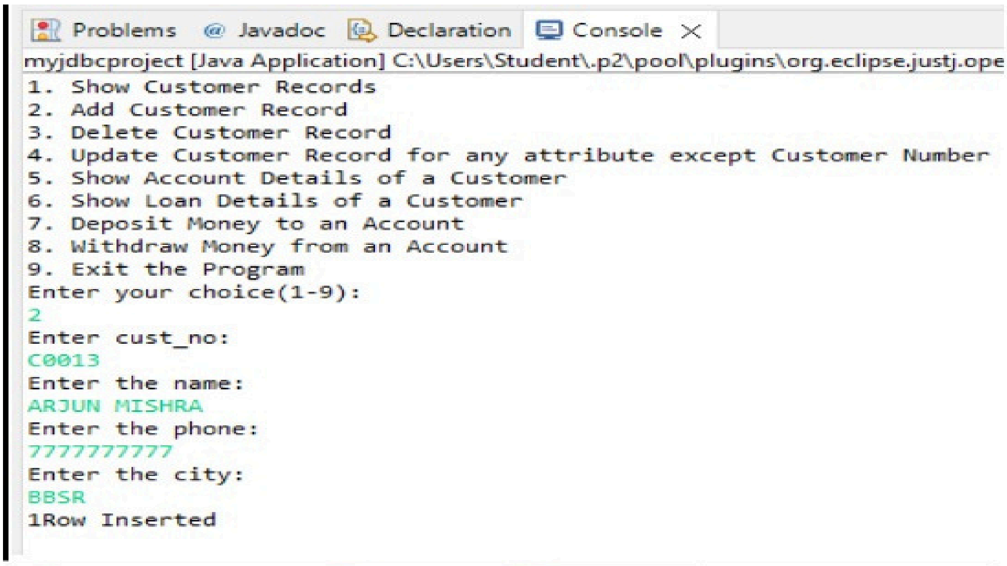
Code:

```
import java.sql.*;
import java.io.*;
public class BankingSystem {
    public static void main(String[] args) throws IOException {
        Connection con = null;
        Statement stmt = null;
        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
        try {
            Class.forName("oracle.jdbc.driver.OracleDriver");
            String conurl = "jdbc:oracle:thin:@172.17.144.110:1521:ora11g";
            con = DriverManager.getConnection(conurl, "system", "jaiganesh");
            stmt = con.createStatement();
            int choice;
            do {
                System.out.println("\n***** Banking Management System *****");
                System.out.println("1. Show Customers");
                System.out.println("2. Add Customer");
                System.out.println("3. Delete Customer");
                System.out.println("4. Update Customer");
                System.out.println("5. Show Account Details");
                System.out.println("6. Show Loan Details");
                System.out.println("7. Deposit");
                System.out.println("8. Withdraw");
                System.out.println("9. Exit");
                System.out.print("Enter your choice: ");
                choice = Integer.parseInt(br.readLine());
                switch (choice) {
                    case 1: showCustomers(stmt); break;
                    case 2: addCustomer(stmt, br); break;
                    case 3: deleteCustomer(stmt, br); break;
                    case 4: updateCustomer(stmt, br); break;
                    case 5: showAccountDetails(stmt, br); break;
                    case 6: showLoanDetails(stmt, br); break;
                    case 7: deposit(stmt, br); break;
                    case 8: withdraw(stmt, br); break;
                    case 9: System.out.println("Exiting..."); break;
                    default: System.out.println("Invalid choice!");
                }
            } while (choice != 9);
        } catch (Exception e) {
            System.out.println("Error: " + e);
        } finally {
            try {
                if (stmt != null) stmt.close();
                if (con != null) con.close();
            } catch (Exception e) {
                System.out.println("Closing error: " + e);
            }
        }
    }
    public static void showCustomers(Statement stmt) throws SQLException {
        ResultSet rs = stmt.executeQuery("SELECT * FROM Customer");
        System.out.println("\nCust_No\tName\tPhone\tCity");
        while (rs.next()) {
            System.out.printf("%s\t%s\t%s\t%s\n",
                rs.getString("cust_no"),
                rs.getString("name"),
                rs.getString("phone_no"),
                rs.getString("city"));
        }
    }
public static void addCustomer(Statement stmt, BufferedReader br) throws IOException,
SQLException {
        System.out.print("Enter Customer No: ");
        String custNo = br.readLine();
        System.out.print("Enter Name: ");
        String name = br.readLine();
        System.out.print("Enter Phone No: ");
        String phone = br.readLine();
        System.out.print("Enter City: ");
        String city = br.readLine();
        String query = String.format("INSERT INTO Customer VALUES ('%s', '%s', '%s', '%s')",
            custNo, name, phone, city);
        int res = stmt.executeUpdate(query);
        if (res > 0) {
            System.out.println("Customer added successfully!");
            showCustomers(stmt);
        }
    }
    public static void deleteCustomer(Statement stmt, BufferedReader br) throws IOException,
SQLException {
        System.out.print("Enter Customer No to delete: ");
        String custNo = br.readLine();
        String query = "DELETE FROM Customer WHERE cust_no = '" + custNo + "'";
        int res = stmt.executeUpdate(query);
        if (res > 0) {
            System.out.println("Customer deleted successfully.");
            showCustomers(stmt);
        } else {
            System.out.println("Customer not found.");
        }
    }
 public static void updateCustomer(Statement stmt, BufferedReader br) throws IOException,
SQLException {
        System.out.print("Enter Customer No to update: ");
        String custNo = br.readLine();
        System.out.println("1 - Name, 2 - Phone, 3 - City");
        int option = Integer.parseInt(br.readLine());
        String column = "", newValue = "";
        switch (option) {
            case 1: column = "name"; System.out.print("Enter new name: "); break;
            case 2: column = "phone_no"; System.out.print("Enter new phone: "); break;
            case 3: column = "city"; System.out.print("Enter new city: "); break;
            default: System.out.println("Invalid option."); return;
        }
        newValue = br.readLine();
        String query = String.format("UPDATE Customer SET %s = '%s' WHERE cust_no = '%s'",
            column, newValue, custNo);
        int res = stmt.executeUpdate(query);
        if (res > 0) {
            System.out.println("Customer updated successfully.");
            showCustomers(stmt);
        } else {
            System.out.println("Update failed.");
        }
    }
    public static void showAccountDetails(Statement stmt, BufferedReader br) throws IOException,
SQLException {
        System.out.print("Enter Customer No: ");
        String custNo = br.readLine();
        String query = "SELECT c.cust_no, c.name, a.account_no, a.type, a.balance, b.branch_code,
b.branch_name, b.branch_city " +
                       "FROM Customer c JOIN Account a ON c.cust_no = a.cust_no " +
                       "JOIN Branch b ON a.branch_code = b.branch_code " +
                       "WHERE c.cust_no = '" + custNo + "'";
        ResultSet rs = stmt.executeQuery(query);
        boolean found = false;
        while (rs.next()) {
            found = true;
            System.out.printf("Cust: %s, Name: %s, Acc No: %s, Type: %s, Balance: %.2f, Branch: %s, %s,
%s\n",
                rs.getString("cust_no"),
                rs.getString("name"),
                rs.getString("account_no"),
                rs.getString("type"),
                rs.getDouble("balance"),
                rs.getString("branch_code"),
                rs.getString("branch_name"),
                rs.getString("branch_city"));
        }
        if (!found) System.out.println("No account details found.");
    }
    public static void showLoanDetails(Statement stmt, BufferedReader br) throws IOException,
SQLException {
        System.out.print("Enter Customer No: ");
        String custNo = br.readLine();
        String query = "SELECT c.cust_no, c.name, l.loan_no, l.amount, b.branch_code, b.branch_name,
b.branch_city " +
                       "FROM Customer c JOIN Loan l ON c.cust_no = l.cust_no " +
                       "JOIN Branch b ON l.branch_code = b.branch_code " +
                       "WHERE c.cust_no = '" + custNo + "'";
        ResultSet rs = stmt.executeQuery(query);
        boolean found = false;
        while (rs.next()) {
            found = true;
            System.out.printf("Cust: %s, Name: %s, Loan No: %s, Amount: %.2f, Branch: %s, %s, %s\n",
                rs.getString("cust_no"),
                rs.getString("name"),
                rs.getString("loan_no"),
                rs.getDouble("amount"),
                rs.getString("branch_code"),
                rs.getString("branch_name"),
                rs.getString("branch_city"));
        }
        if (!found) System.out.println("Congratulations! No loans found.");
    }

    public static void deposit(Statement stmt, BufferedReader br) throws IOException, SQLException {
        System.out.print("Enter Account No: ");
        String accNo = br.readLine();
        System.out.print("Enter Amount to Deposit: ");
        double amount = Double.parseDouble(br.readLine());
        String update = "UPDATE Account SET balance = balance + " + amount + " WHERE account_no = '" + accNo + "'";
        int res = stmt.executeUpdate(update);
        if (res > 0) {
            System.out.println("Amount deposited successfully.");
            stmt.executeQuery("SELECT balance FROM Account WHERE account_no = '" + accNo + "'")
                .next();
            System.out.println("Updated balance shown via option 5:");
        } else {
            System.out.println("Account not found.");
        }
    }
    public static void withdraw(Statement stmt, BufferedReader br) throws IOException, SQLException {
        System.out.print("Enter Account No: ");
        String accNo = br.readLine();
        System.out.print("Enter Amount to Withdraw: ");
        double amount = Double.parseDouble(br.readLine());
        ResultSet rs = stmt.executeQuery("SELECT balance FROM Account WHERE account_no = '" + accNo + "'");
        if (rs.next()) {
            double balance = rs.getDouble("balance");
            if (balance >= amount) {
                String update = "UPDATE Account SET balance = balance - " + amount + " WHERE account_no = '" + accNo + "'";
                stmt.executeUpdate(update);
                System.out.println("Amount withdrawn successfully.");
            } else {
                System.out.println("Insufficient balance.");
            }
        } else {
            System.out.println("Account not found.");
        }
    }
}
```

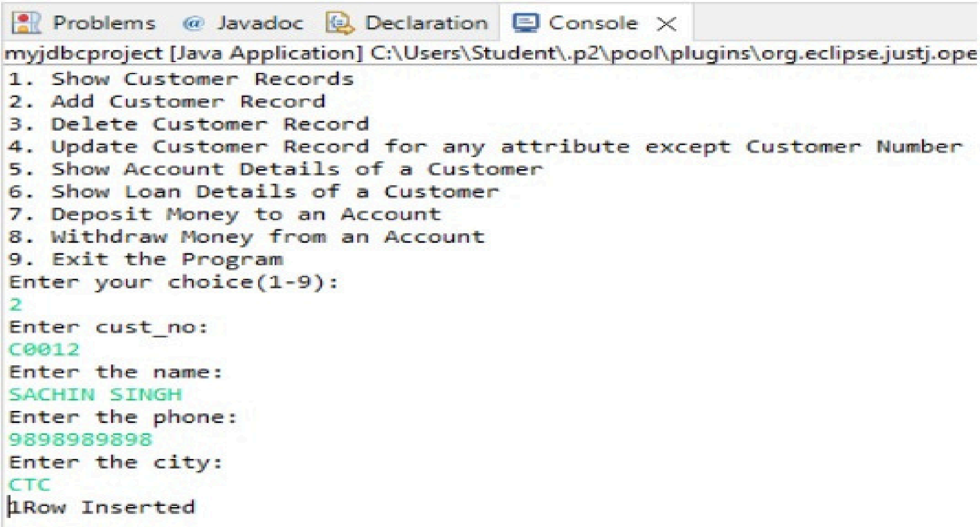
Output:



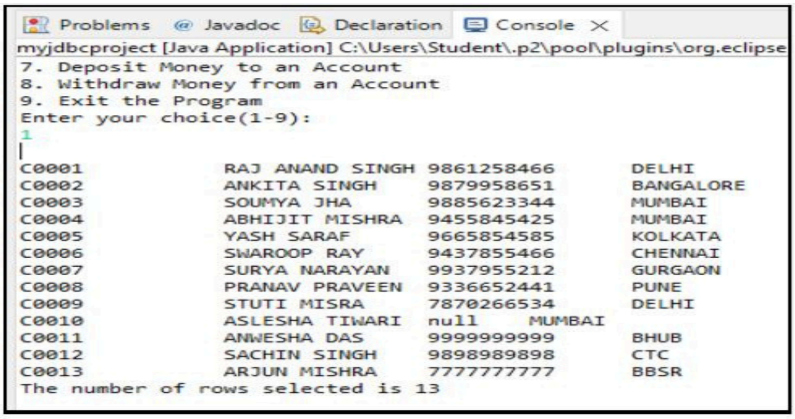
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
1

C0001           RAJ ANAND SINGH 9861258466      DELHI
C0002           ANKITA SINGH    9879958651      BANGALORE
C0003           SOUMYA JHA      9885623344      MUMBAI
C0004           ABHIJIT MISHRA  9455845425      MUMBAI
C0005           YASH SARAF      9665854585      KOLKATA
C0006           SWAROOP RAY     9437855466      CHENNAI
C0007           SURYA NARAYAN   9937955212      GURGAON
C0008           PRANAV PRAVEEN  9336652441      PUNE
C0009           STUTI MISRA     7870266534      DELHI
C0010           ASLESHA TIWARI  null    MUMBAI
The number of rows selected is 10
```



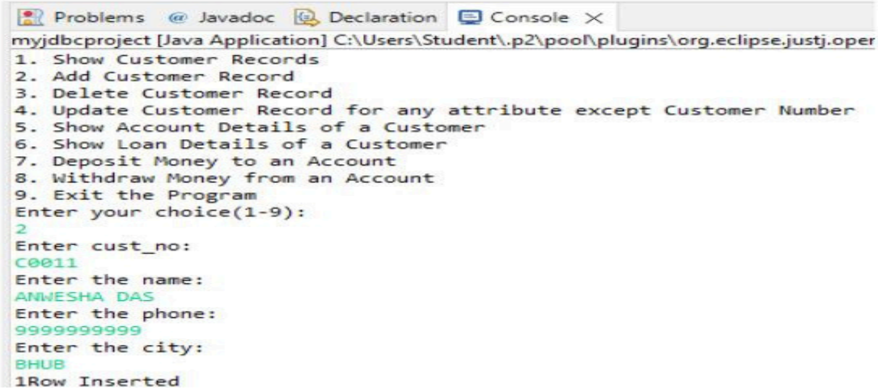
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.ope
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
2
Enter cust_no:
C0013
Enter the name:
ARJUN MISHRA
Enter the phone:
7777777777
Enter the city:
BBSR
1Row Inserted
```



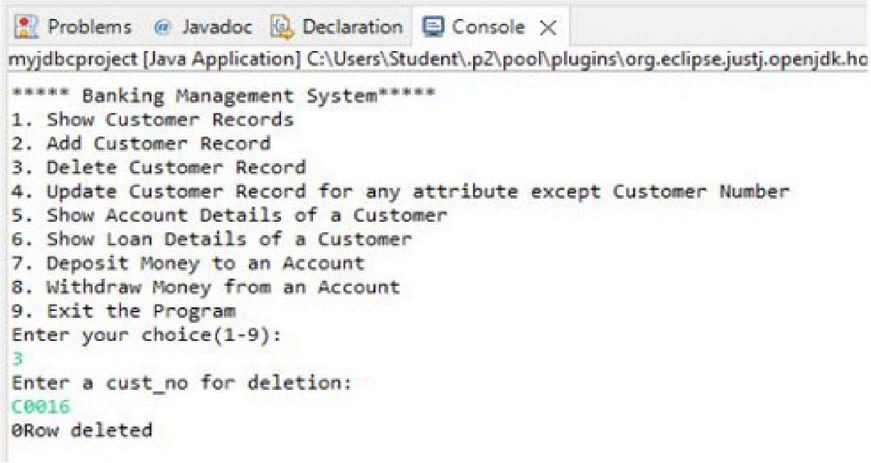
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.ope
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
2
Enter cust_no:
C0012
Enter the name:
SACHIN SINGH
Enter the phone:
9898989898
Enter the city:
CTC
1Row Inserted
```



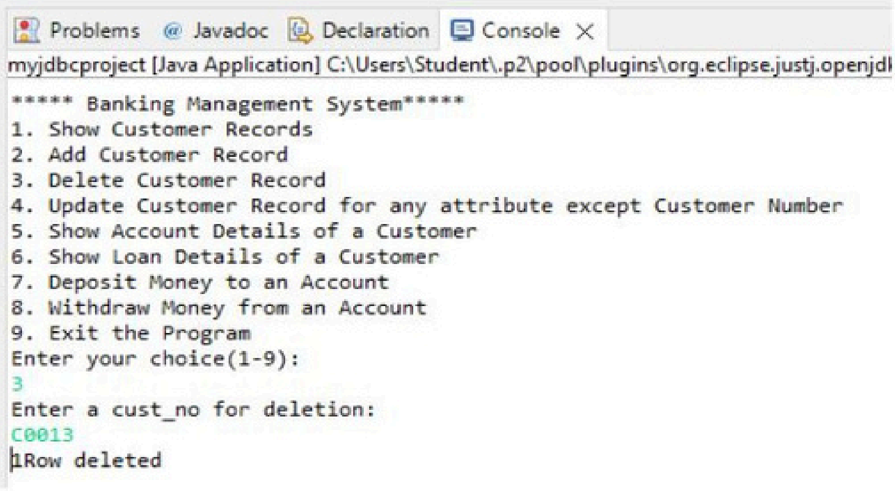
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
1

C0001           RAJ ANAND SINGH 9861258466      DELHI
C0002           ANKITA SINGH    9879958651      BANGALORE
C0003           SOUMYA JHA      9885623344      MUMBAI
C0004           ABHIJIT MISHRA  9455845425      MUMBAI
C0005           YASH SARAF      9665854585      KOLKATA
C0006           SWAROOP RAY     9437855466      CHENNAI
C0007           SURYA NARAYAN   9937955212      GURGAON
C0008           PRANAV PRAVEEN  9336652441      PUNE
C0009           STUTI MISRA     7870266534      DELHI
C0010           ASLESHA TIWARI  null    MUMBAI
C0011           ANWESHA DAS     9999999999      BHUB
C0012           SACHIN SINGH    9898989898      CTC
C0013           ARJUN MISHRA    7777777777      BBSR
The number of rows selected is 13
```



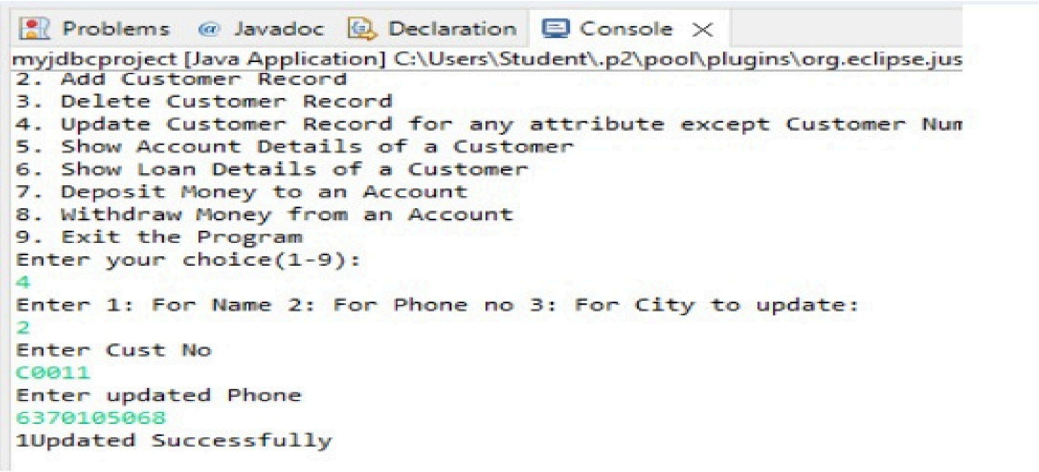
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.oper
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
2
Enter cust_no:
C0011
Enter the name:
ANWESHA DAS
Enter the phone:
9999999999
Enter the city:
BHUB
1Row Inserted
```



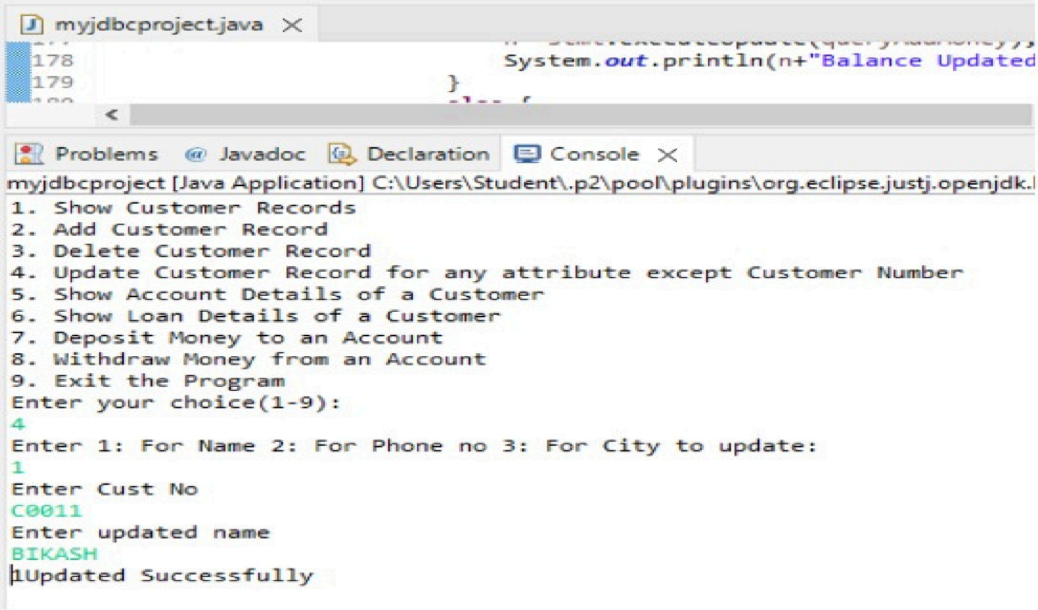
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.ho

***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
3
Enter a cust_no for deletion:
C0016
0Row deleted
```



```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdl

***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
3
Enter a cust_no for deletion:
C0013
1Row deleted
```

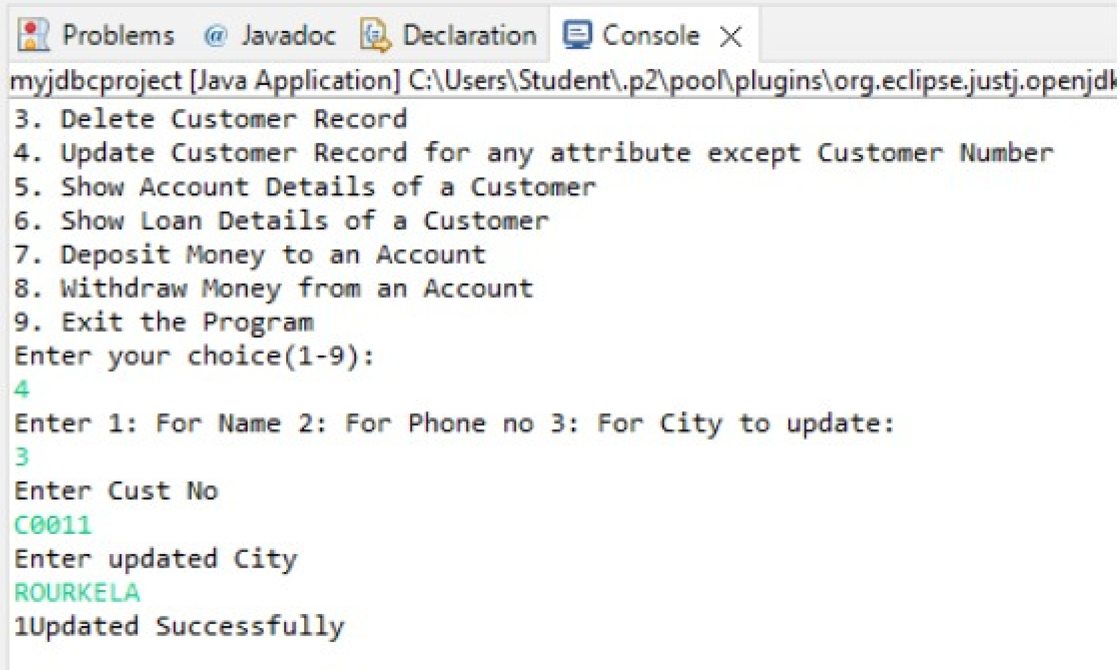


```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.jus
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Num
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
4
Enter 1: For Name 2: For Phone no 3: For City to update:
2
Enter Cust No
C0011
Enter updated Phone
6370105068
1Updated Successfully
```

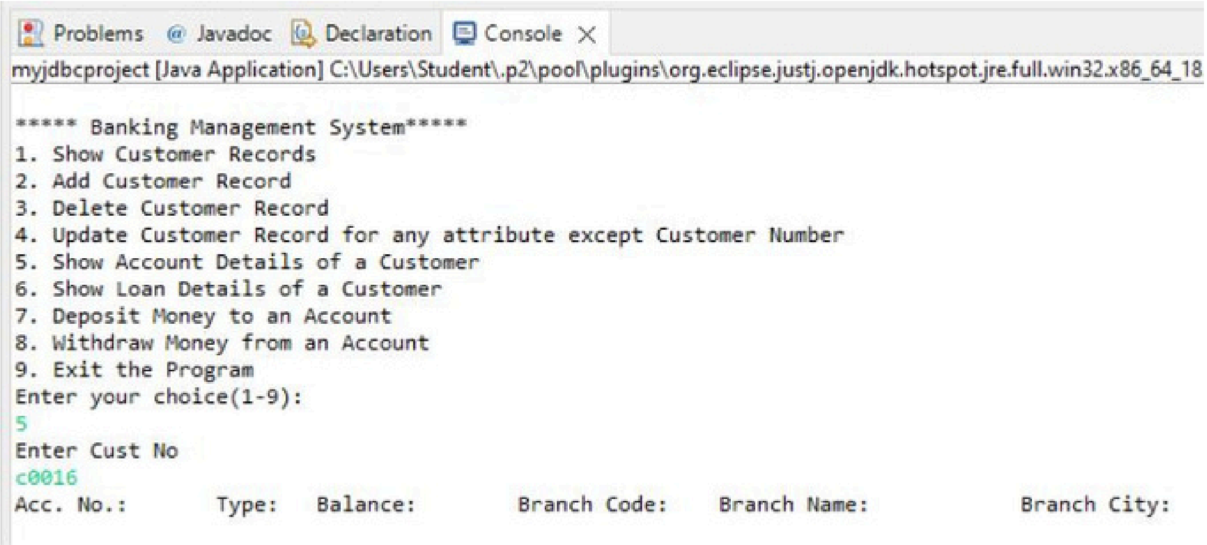


```
                    System.out.println(n+"Balance Updated
                }
```

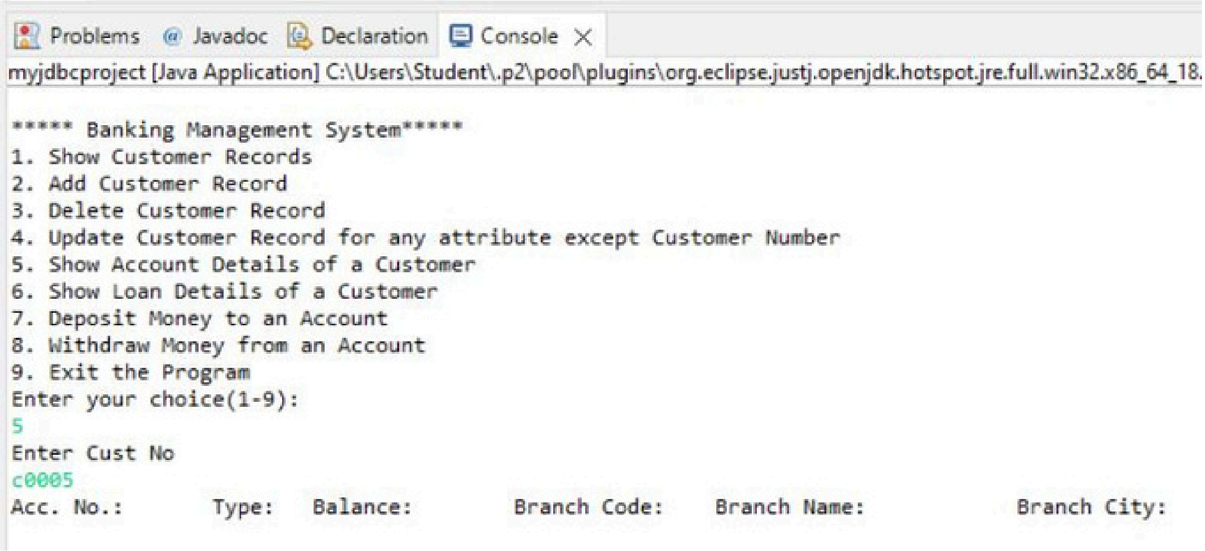
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
4
Enter 1: For Name 2: For Phone no 3: For City to update:
1
Enter Cust No
C0011
Enter updated name
BIKASH
1Updated Successfully
```



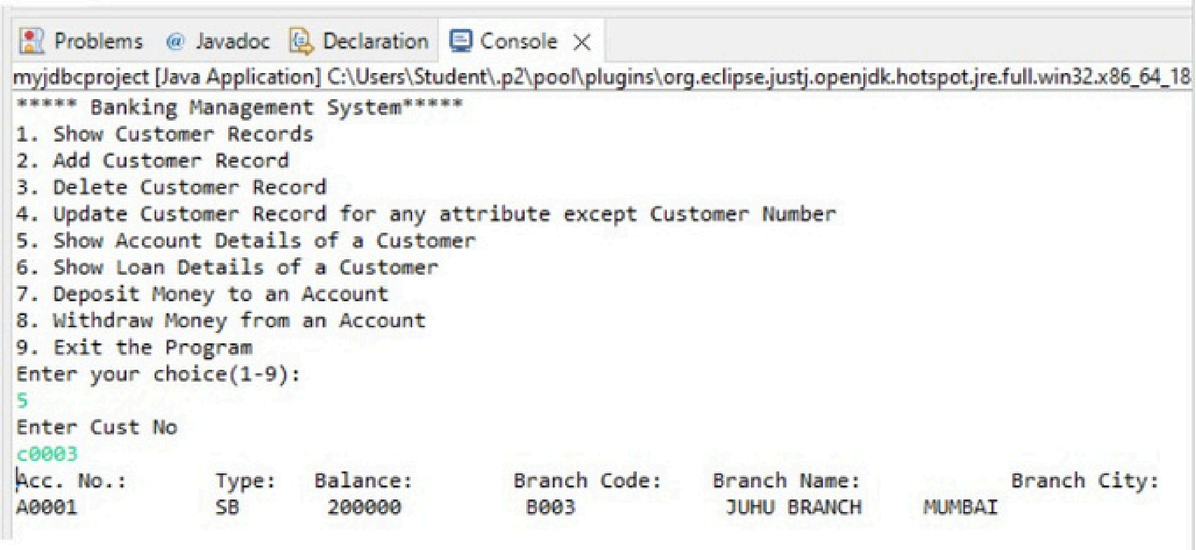
```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
4
Enter 1: For Name 2: For Phone no 3: For City to update:
3
Enter Cust No
C0011
Enter updated City
ROURKELA
1Updated Successfully
```


Problems
Javadoc
Declaration
Console
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18

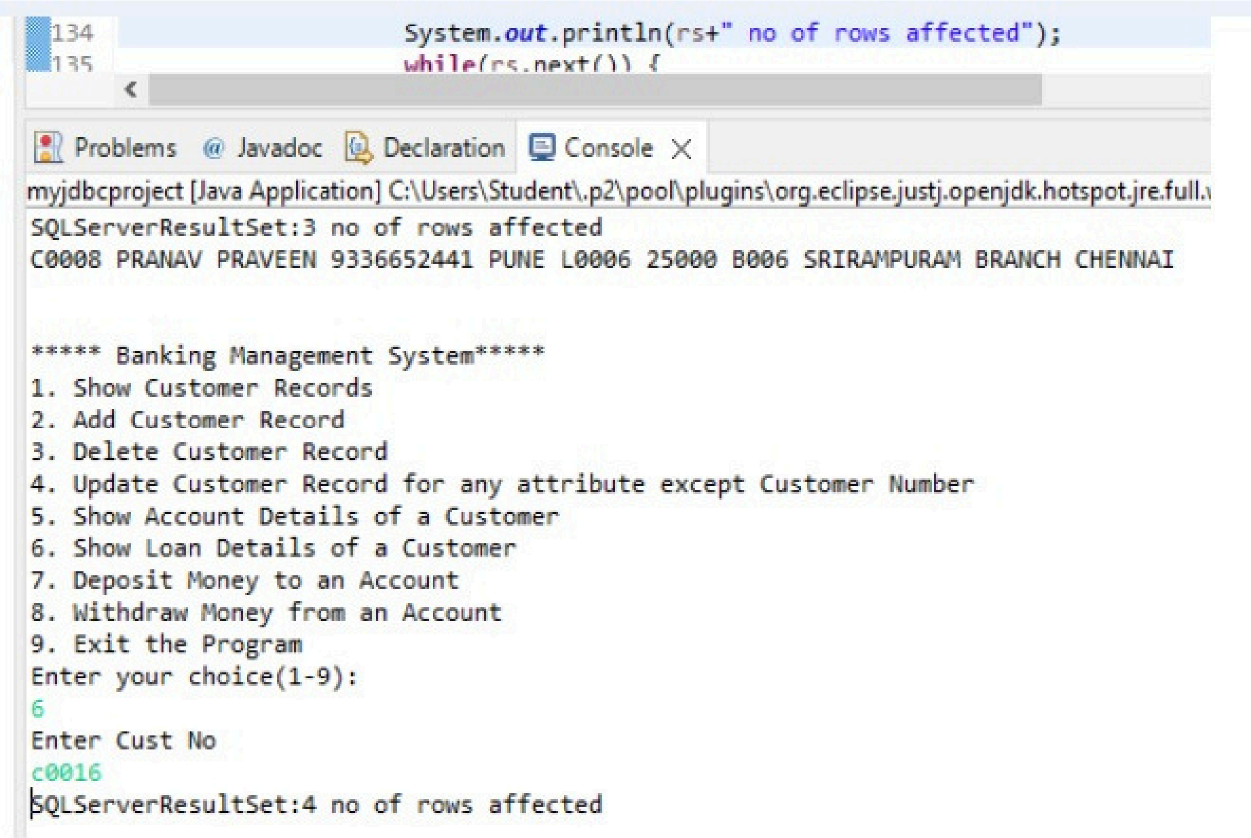
```
***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
5
Enter Cust No
c0016
Acc. No.:       Type:   Balance:        Branch Code:    Branch Name:            Branch City:
```


Problems
Javadoc
Declaration
Console
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18.

```
***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
5
Enter Cust No
c0005
Acc. No.:       Type:   Balance:        Branch Code:    Branch Name:            Branch City:
```

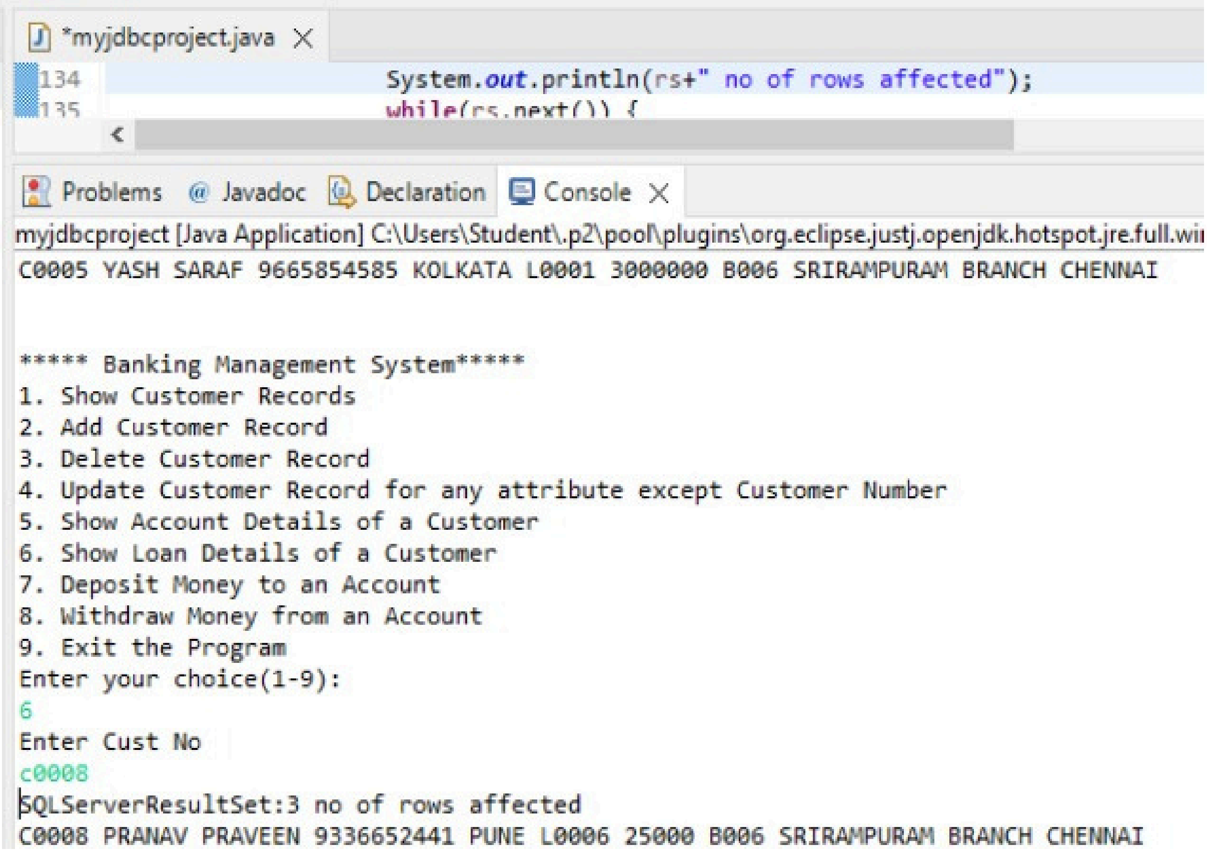

Problems
Javadoc
Declaration
Console
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18

```
***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
5
Enter Cust No
c0003
Acc. No.:       Type:   Balance:        Branch Code:    Branch Name:            Branch City:
A0001           SB       200000          B003            JUHU BRANCH    MUMBAI
```



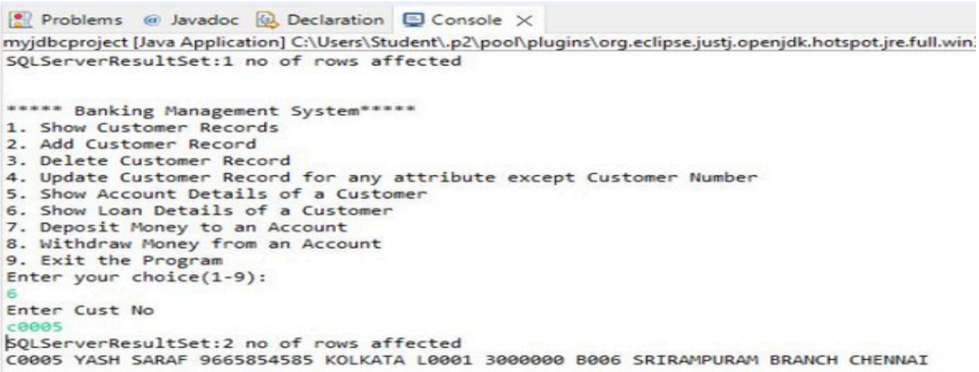
```
                    System.out.println(rs+" no of rows affected");
                    while(rs.next()) {
```

```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.
SQLServerResultSet:3 no of rows affected
C0008 PRANAV PRAVEEN 9336652441 PUNE L0006 25000 B006 SRIRAMPURAM BRANCH CHENNAI


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
6
Enter Cust No
c0016
SQLServerResultSet:4 no of rows affected
```

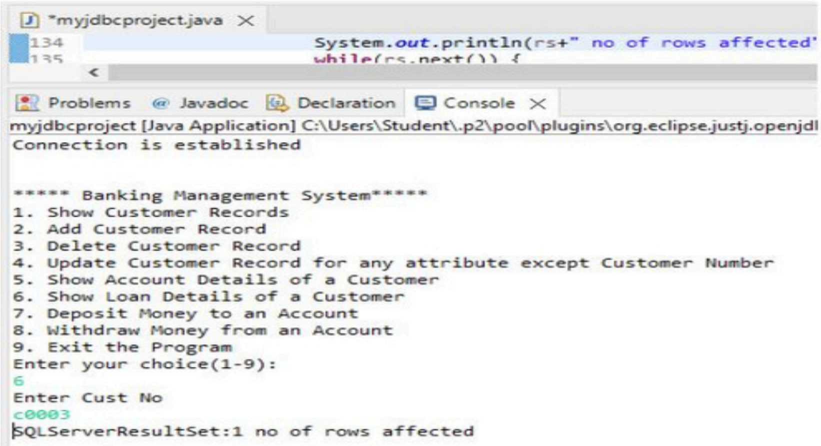


```
                    System.out.println(rs+" no of rows affected");
                    while(rs.next()) {
```

```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.wi
C0005 YASH SARAF 9665854585 KOLKATA L0001 3000000 B006 SRIRAMPURAM BRANCH CHENNAI


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
6
Enter Cust No
c0008
SQLServerResultSet:3 no of rows affected
C0008 PRANAV PRAVEEN 9336652441 PUNE L0006 25000 B006 SRIRAMPURAM BRANCH CHENNAI
```

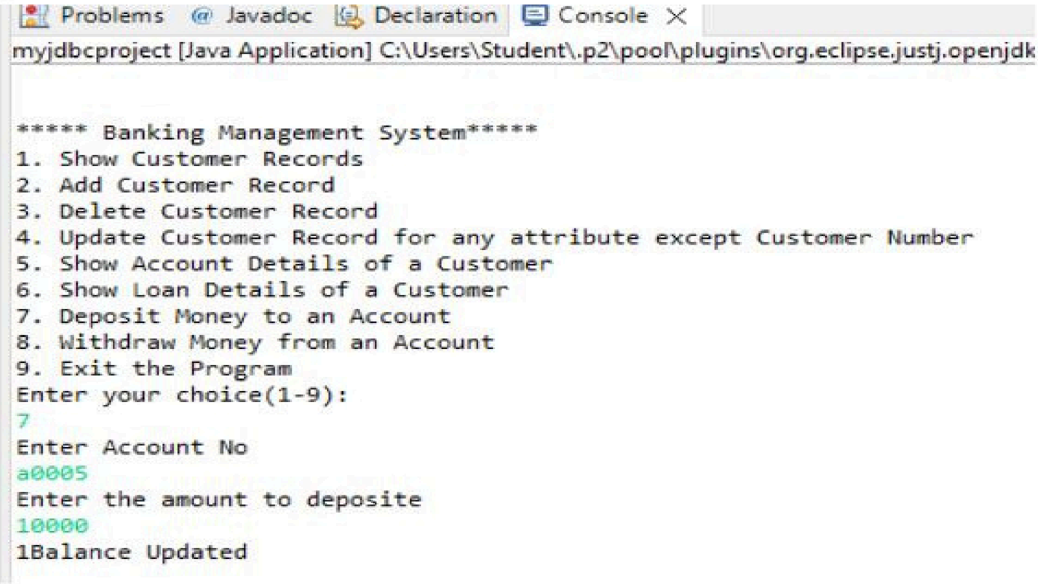


```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win
SQLServerResultSet:1 no of rows affected


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
6
Enter Cust No
c0005
SQLServerResultSet:2 no of rows affected
C0005 YASH SARAF 9665854585 KOLKATA L0001 3000000 B006 SRIRAMPURAM BRANCH CHENNAI
```

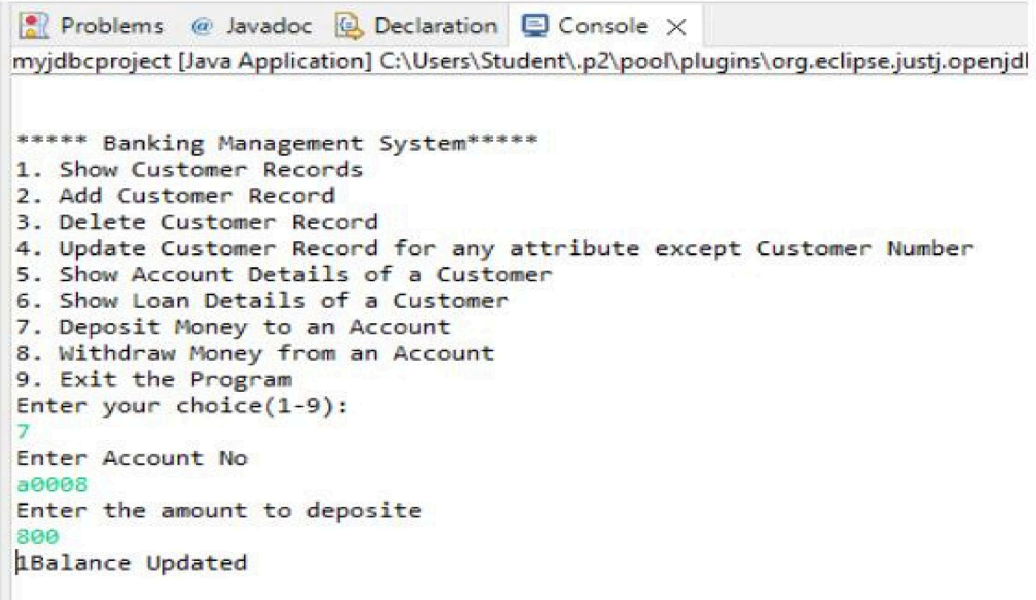


```
                        System.out.println(rs+" no of rows affected"
                        while(rs.next()) {
```

```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdl
Connection is established


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
6
Enter Cust No
c0003
SQLServerResultSet:1 no of rows affected
```



```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdk


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
7
Enter Account No
a0005
Enter the amount to deposite
10000
1Balance Updated
```



```
myjdbcproject [Java Application] C:\Users\Student\.p2\pool\plugins\org.eclipse.justj.openjdl


***** Banking Management System*****
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8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
7
Enter Account No
a0008
Enter the amount to deposite
800
1Balance Updated
```
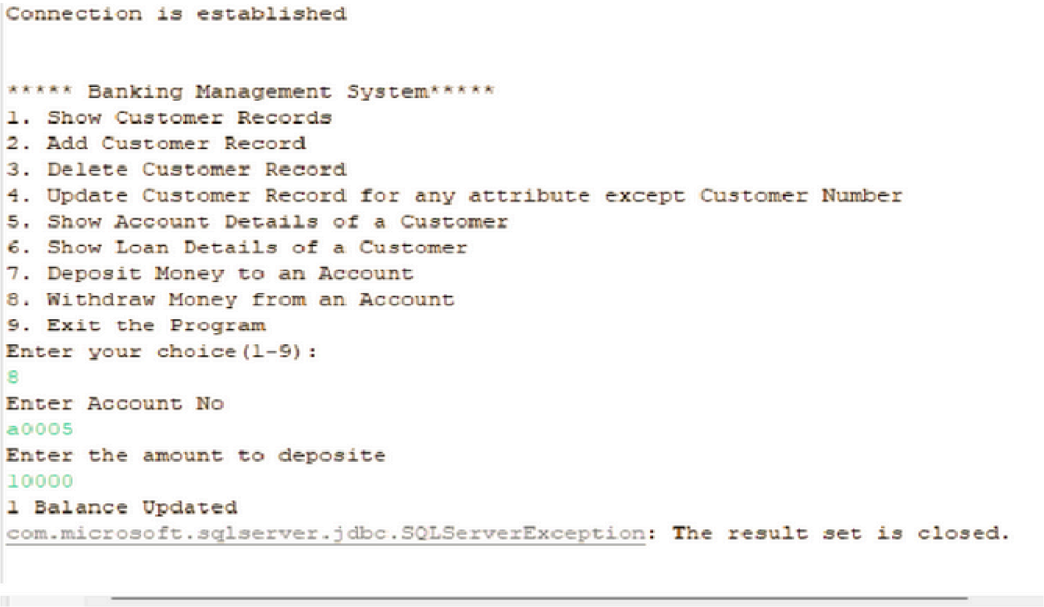
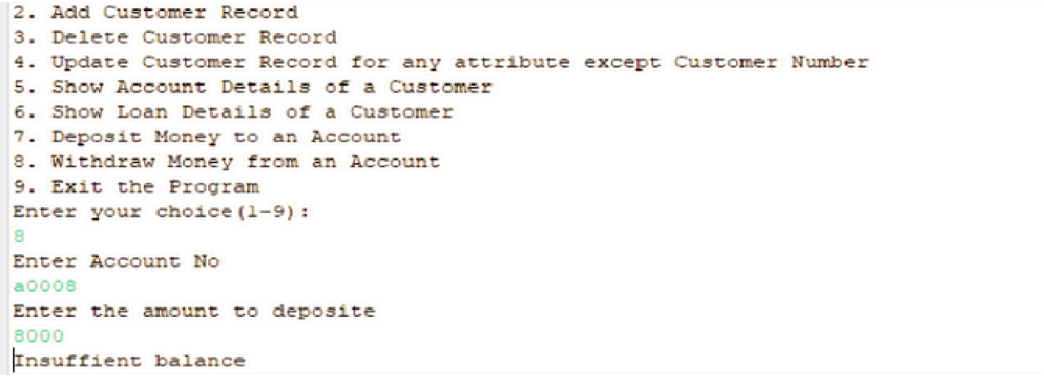
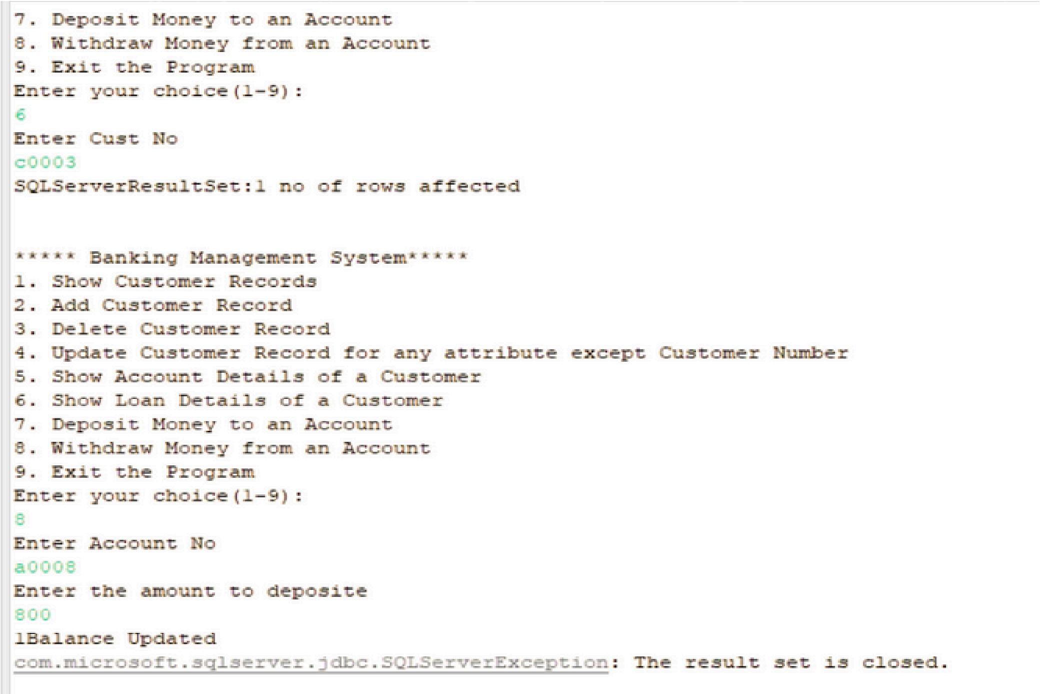



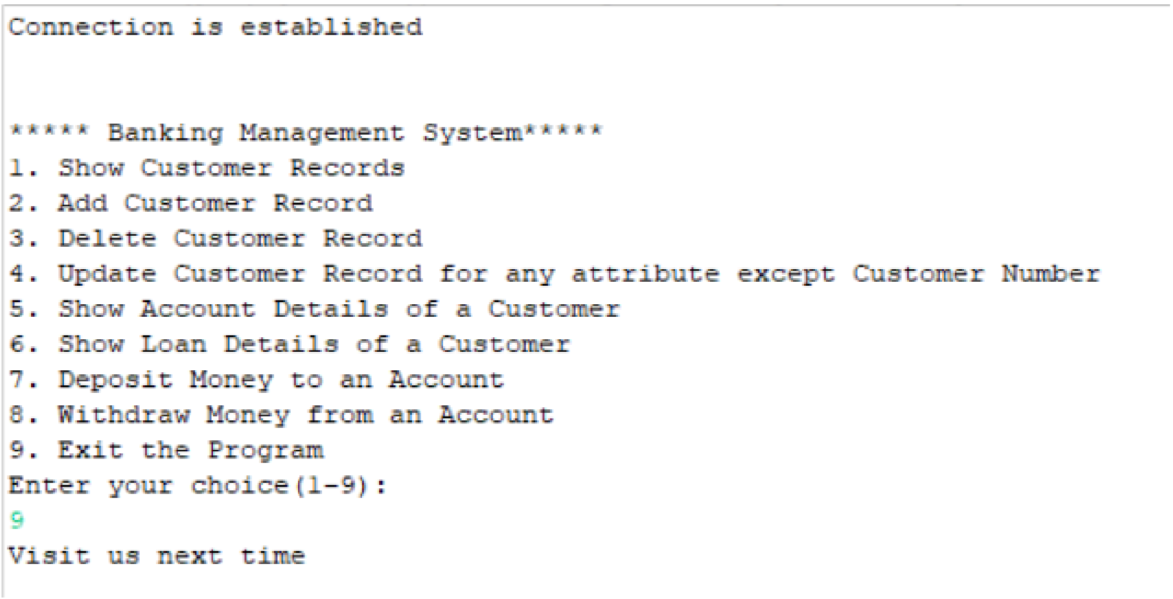
```
Connection is established


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
8
Enter Account No
a0005
Enter the amount to deposite
10000
1 Balance Updated
com.microsoft.sqlserver.jdbc.SQLServerException: The result set is closed.
```



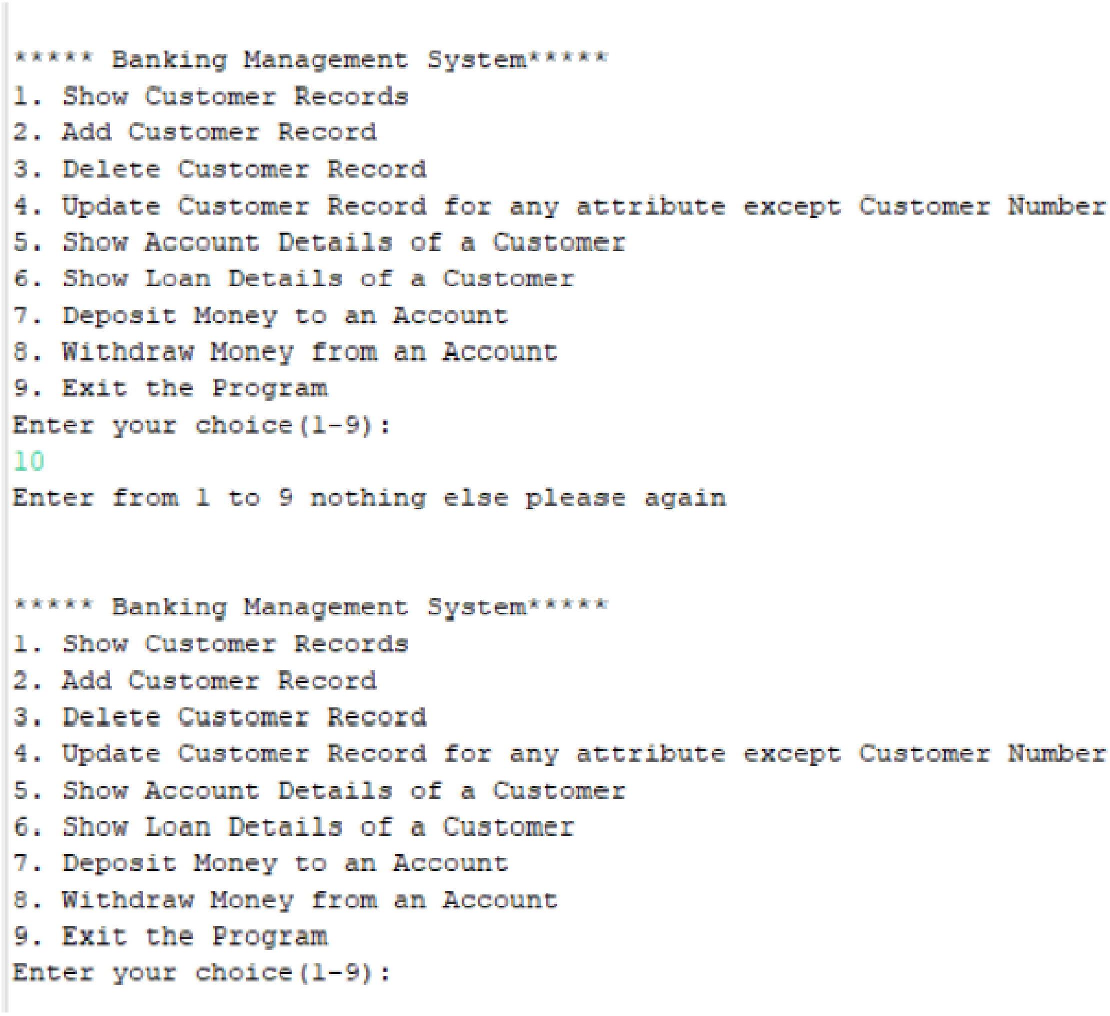
```
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
8
Enter Account No
a0008
Enter the amount to deposite
8000
Insuffient balance
```



```
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
6
Enter Cust No
c0003
SQLServerResultSet:1 no of rows affected


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
8
Enter Account No
a0008
Enter the amount to deposite
800
1Balance Updated
com.microsoft.sqlserver.jdbc.SQLServerException: The result set is closed.
```



```
Connection is established


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
9
Visit us next time
```



```
***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
10
Enter from 1 to 9 nothing else please again


***** Banking Management System*****
1. Show Customer Records
2. Add Customer Record
3. Delete Customer Record
4. Update Customer Record for any attribute except Customer Number
5. Show Account Details of a Customer
6. Show Loan Details of a Customer
7. Deposit Money to an Account
8. Withdraw Money from an Account
9. Exit the Program
Enter your choice(1-9):
```