

# **End Term Project Report**

## **On**

### **Introduction to Databases (CSE 3151)**

**Submitted by**

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
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## 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:@//localhost:1521/XEPDB1";
            con = DriverManager.getConnection(conurl, "system", "12345");
            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;
                }
            } while (choice != 9);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

```

        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.");
            ResultSet rs = stmt.executeQuery("SELECT balance FROM Account WHERE
account_no = '" + accNo + "'");
            if (rs.next()) {
                System.out.println("New Balance: " + rs.getDouble("balance"));
            }
        } 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:

1.

```
Disha@LAPTOP-1BC5LQK: ~$ cd d:\Academics\ITER\6th\Sem\ID\IDProject ; /usr/bin/env C:\Program
argfile BankingSystem

***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 1

Cust_No Name      Phone      City
C0001  Amit Sharma  9876543210  Delhi
C0002  Sneha Patel  9123456780  Mumbai
C0003  Rahul Mehta  9001234567  Bangalore
C0004  Priya Reddy  8899001122  Hyderabad
C0005  Karan Malhotra 9811122233  Chennai
```

2.

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 2
Enter Customer No: C0011
Enter Name: ANWESHA DAS
Enter Phone No: 9999999999
Enter City: BHUB
Customer added successfully!

Cust_No Name      Phone      City
C0001  Amit Sharma  9876543210  Delhi
C0002  Sneha Patel  9123456780  Mumbai
C0003  Rahul Mehta  9001234567  Bangalore
C0004  Priya Reddy  8899001122  Hyderabad
C0005  Karan Malhotra 9811122233  Chennai
C0011  ANWESHA DAS  9999999999  BHUB
```



\*\*\*\* Banking Management System \*\*\*\*

1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit

Enter your choice: 2

Enter Customer No: C0012

Enter Name: SACHIN SINGH

Enter Phone No: 9898989898

Enter City: CTC

Customer added successfully!

Cust_No	Name	Phone	City
C0001	Amit Sharma	9876543210	Delhi
C0002	Sneha Patel	9123456780	Mumbai
C0003	Rahul Mehta	9001234567	Bangalore
C0004	Priya Reddy	8899001122	Hyderabad
C0005	Karan Malhotra	9811122233	Chennai
C0011	ANWESHA DAS	9999999999	BHUB
C0012	SACHIN SINGH	9898989898	CTC

\*\*\*\* Banking Management System \*\*\*\*

1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit

Enter your choice: 2

Enter Customer No: C0013

Enter Name: ARJUN MISHRA

Enter Phone No: 7777777777

Enter City: BBSR

Customer added successfully!

Cust_No	Name	Phone	City
C0001	Amit Sharma	9876543210	Delhi
C0002	Sneha Patel	9123456780	Mumbai
C0003	Rahul Mehta	9001234567	Bangalore
C0004	Priya Reddy	8899001122	Hyderabad
C0005	Karan Malhotra	9811122233	Chennai
C0011	ANWESHA DAS	9999999999	BHUB
C0012	SACHIN SINGH	9898989898	CTC
C0013	ARJUN MISHRA	7777777777	BBSR

3.

\*\*\*\* Banking Management System \*\*\*\*

1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit

Enter your choice: 3

Enter Customer No to delete: C0013

Customer deleted successfully.

Cust_No	Name	Phone	City
C0001	Amit Sharma	9876543210	Delhi
C0002	Sneha Patel	9123456780	Mumbai
C0003	Rahul Mehta	9001234567	Bangalore
C0004	Priya Reddy	8899001122	Hyderabad
C0005	Karan Malhotra	9811122233	Chennai
C0011	ANWESHA DAS	9999999999	BHUB
C0012	SACHIN SINGH	9898989898	CTC

\*\*\*\* Banking Management System \*\*\*\*

1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit

Enter your choice: 3

Enter Customer No to delete: C0016

Customer not found.

4.

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 4
Enter Customer No to update: C0001
1 - Name, 2 - Phone, 3 - City
2
Enter new phone: 6666666666
Customer updated successfully.
```

5.

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 5
Enter Customer No: C0003
Cust: C0003, Name: Rahul Mehta, Acc No: A1003, Type: Saving, Balance: 8000.75, Branch: B003, Indiranagar, Bangalore
```

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 5
Enter Customer No: C0005
No account details found.
```

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 5
Enter Customer No: C0016
No account details found.
```

6.

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 7
Enter Account No: A1004
Enter Amount to Deposit: 800
Amount deposited successfully.
New Balance: 15800.0
```

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 7
Enter Account No: A1003
Enter Amount to Deposit: 10000
Amount deposited successfully.
New Balance: 18000.75
```

7.

```
***** Banking Management System *****
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 8
Enter Account No: A1004
Enter Amount to Withdraw: 800
Amount withdrawn successfully.
```

8.

```
Enter your choice: 8
Enter Account No: A1003
Enter Account No: A1003
Enter Amount to Withdraw: 10000
Amount withdrawn successfully.
```

9.

```
1. Show Customers
2. Add Customer
3. Delete Customer
4. Update Customer
4. Update Customer
5. Show Account Details
6. Show Loan Details
7. Deposit
8. Withdraw
9. Exit
Enter your choice: 9
Exiting...
```