Loan Management System

Name: Samiksha Sandeep Patil

SuperSet Id: 5273555

Working with Database:

-- Create the Database

create database LoanManagementSystem; show databases;

Created tables for:

- 1. Customer
- 2. Loan (base table for both HomeLoan and CarLoan)
- 3. HomeLoan (with foreign key to Loan)
- 4. CarLoan (with foreign key to Loan)

Create Customer Table

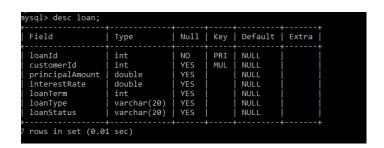
CREATE TABLE Customer (customerId INT PRIMARY KEY,

name VARCHAR(100) NOT NULL, email VARCHAR(100) UNIQUE NOT NULL, phone VARCHAR(15), address VARCHAR(255), creditScore INT);

Field	Type	Null	Key	Default	Extra
customerId	int	NO	PRI	NULL	
name	varchar(100)	NO		NULL	j i
email	varchar(100)	NO	UNI	NULL	j i
phone	varchar(15)	YES		NULL	į i
address	varchar(255)	YES		NULL	į i
creditScore	int	YES		NULL	į i

Create Loan Table

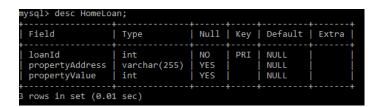
CREATE TABLE Loan (
loanId INT PRIMARY KEY,
customerId INT,
principalAmount DOUBLE,
interestRate DOUBLE,
loanTerm INT,
loanType VARCHAR(20),
loanStatus VARCHAR(20),
FOREIGN KEY (customerId) REFERENCES Customer(customerId)
);



Create HomeLoan Table

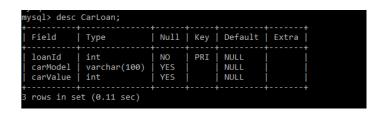
CREATE TABLE HomeLoan (loanId INT PRIMARY KEY, propertyAddress VARCHAR(255), propertyValue INT,

FOREIGN KEY (loanId) REFERENCES Loan(loanId);



Create CarLoan Table

```
CREATE TABLE CarLoan (
loanId INT PRIMARY KEY,
carModel VARCHAR(100),
carValue INT,
FOREIGN KEY (loanId) REFERENCES Loan(loanId)
);
```



Inserted data into tables as shown below;

Customer table:

INSERT INTO Customer (customerld, name, email, phone, address, creditScore) VALUES

- (1, 'Samiksha', 'samiksha@example.com', '9876543210', '123 Ram nagar, Delhi', 720),
- (2, 'Sandeep', 'sandeep@example.com', '9123456780', '456 Kolhapur, MH', 640),
- (3, 'Madhu', 'madhu@example.com', '9988776655', '789 Pine Road, TN', 680);



Loan table:

INSERT INTO Loan (loanId, customerId, principalAmount, interestRate, loanTerm, loanType, loanStatus) VALUES (101, 1, 500000, 7.5, 60, 'HomeLoan', 'Pending'), (102, 2, 300000, 8.0, 36, 'CarLoan', 'Pending'), (103, 3, 600000, 6.8, 84, 'HomeLoan', 'Pending');

HomeLoan table:

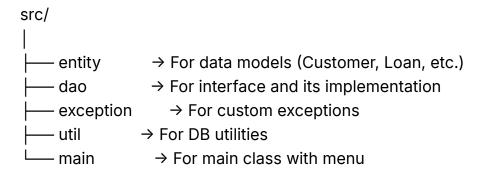
INSERT INTO HomeLoan (loanId, propertyAddress, propertyValue) VALUES (101, '12 Shivaji Nagar, Delhi', 700000), (103, '77 Anna Salai, TN', 800000);

CarLone table:

INSERT INTO CarLoan (loanld, carModel, carValue) VALUES (102, 'Hyundai Creta 2023', 350000);

Working with Java

Step 1: Create Packages



Step 2: Working in Entity Package

1. Create Customer Class:

 Customers: Stores basic customer info like name, phone, email, credit score.

2. Create Loan Class:

- Loan: Base class with details like loan ID, amount, interest rate, and type.
- Acts as a base class for all types of loans.

3. Create HomeLoan Class:

- Home: Special loan with property details (address, value).
- Extends Loan

4. Create CarLoan Class:

- Car: Special loan with car model and value.
- Extends Loan

Step 3: Working in dao Package

1. Create Interface ILoanRepository

· Declare methods like:

applyLoan(), calculateInterest(), calculateEMI(), loanStatus(), loanRepayment(), getLoanById(), getAllLoan()

2. Implement in | ILoanRepositoryImpl :

Contains all logic to interact with database using JDBC.

- Separate logic based on HomeLoan or CarLoan using instanceof.
- Exception handling using InvalidLoanException.
- Calls SQL queries to insert, retrieve, update, or validate loan data.

Step 4: Working in exception Package

1. Create InvalidLoanException Class:

- Extends Exception
- Used when a loan ID is not found
- Helps handle errors more cleanly in the app

Step 5: Working in util Package

1. Create DBPropertyUtil:

• Reads database configuration from db.properties file

2. Create DBConnUtil:

• Uses DBPropertyUtil to create and return a Connection object

Step 7: Create LoanManagement.java

- 1. Apply Loan
- 2. View All Loans
- 3. Get Loan by ID
- 4. Calculate Interest
- 5. Check Loan Status
- 6. Repay Loan
- 7. Exit

Output:

1. Apply Loan:

a. Home Loan:

```
=== Welcome to Loan Management System ===
==== MENU ====
1. Apply Loan
2. View All Loans
3. Get Loan by ID
4. Calculate Interest
5. Check Loan Status
6. Repay Loan
7. Exit
Enter your choice: 1
Enter Loan Type (H for HomeLoan, C for CarLoan):
Loan ID:
106
Customer ID:
Principal Amount:
Interest Rate:
Loan Term (months):
100
Property Address:
Property Road, Delhi
Property Value:
Loan applied successfully and is in Pending status.
```

b. CarLoan:

```
==== MENU ====
1. Apply Loan
2. View All Loans
3. Get Loan by ID
4. Calculate Interest
5. Check Loan Status
6. Repay Loan
7. Exit
Enter your choice: 1
Enter Loan Type (H for HomeLoan, C for CarLoan):
Loan ID:
107
Customer ID:
Principal Amount:
100000
Interest Rate:
Loan Term (months):
80
Car Model:
Car Value:
100000
Loan applied successfully and is in Pending status.
```

2. View All Loans

```
==== MENU ====
1. Apply Loan
2. View All Loans
3. Get Loan by ID
4. Calculate Interest
5. Check Loan Status
6. Repay Loan
7. Exit
Enter your choice: 2
Loan ID: 101, Customer: [Customer ID: 1, Name: Samiksha, Email: samiksha@example.com, Phone: 9876543210, Address: 123 Ram nagar, Delhi, Credit Score: 720], Principal: 500
Loan ID: 101, Customer: [Customer ID: 2, Name: Sandeep, Email: sandeep@example.com, Phone: 9123456780, Address: 456 Kolhapur, MH, Credit Score: 640], Principal: 300000.0,
Loan ID: 103, Customer: [Customer ID: 3, Name: Madhu, Email: maid@example.com, Phone: 998776555, Address: 739 Pine Road, TN, Credit Score: 640], Principal: 300000.0,
Loan ID: 104, Customer: [Customer ID: 4, Name: Amit, Email: maid@example.com, Phone: 9876540000, Address: 110 MG Road, Pune, Credit Score: 700], Principal: 1000000.0, Int
Loan ID: 106, Customer: [Customer ID: 4, Name: Amit, Email: maid@example.com, Phone: 9876540000, Address: 101 MG Road, Pune, Credit Score: 700], Principal: 1000000.0, Int
Loan ID: 106, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score: 800], Principal: 1000000.0, Int
Loan ID: 106, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score: 800], Principal: 1000000.0, Int
Loan ID: 107, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score: 800], Principal: 1000000.0, Int
Loan ID: 107, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score: 800], Principal: 1000000.0, Int
Loan ID: 107, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score: 800], Principal: 1000000.0, Int
```

3.Get Loan by ID

```
=== Welcome to Loan Management System ===

=== MENU ====
1. Apply Loan
2. View All Loans
3. Get Loan by ID
4. Calculate Interest
5. Check Loan Status
6. Repay Loan
7. Exit
Enter your choice: 3
Enter Loan ID:
107
Loan ID: 107, Customer: [Customer ID: 5, Name: Anuj, Email: anuj@example.com, Phone: 9876540000, Address: 18 Gandhi Road, Banglore, Credit Score:
```

4. Calculate Interest

```
=== Welcome to Loan Management System ===

1. Apply Loan
2. View All Loans
3. Get Loan by ID
4. Calculate Interest
5. Check Loan Status
6. Repay Loan
7. Exit
Enter your choice: 4
Enter Loan ID:

107
Calculated Interest for Loan ID 107: 60000.0
```

5.Check Loan Status

```
==== MENU ====

1. Apply Loan

2. View All Loans

3. Get Loan by ID

4. Calculate Interest

5. Check Loan Status

6. Repay Loan

7. Exit
Enter your choice: 5
Enter Loan ID:

107
Loan ID 107 is now Approved
```

6.Repay Loan

```
==== MENU ====

1. Apply Loan

2. View All Loans

3. Get Loan by ID

4. Calculate Interest

5. Check Loan Status

6. Repay Loan

7. Exit
Enter your choice: 6
Enter Loan ID:

107
Enter Repayment Amount:

100000
```

Repayment successful. You have paid 59 EMI(s).