THE UNIVERSITY OF LAHORE

Mubashir Hassan Pirzada-70130609

Mirza Khizar Hayyat -70132445

Datbase Systems-5D

Project : Banking System

Banking System

Entities and Attributes:

- **Customer**: CustomerID (PK), Name, Address, Phone, Email

- **Branch**: BranchID (PK), BranchName, BranchAddress, BranchPhone

- **Account**: AccountID (PK), CustomerID (FK), BranchID (FK), AccountType, Balance

- **Transactions**: TransactionID (PK), AccountID (FK), TransactionDate, Amount, TransactionType

- **Loan**: LoanID (PK), CustomerID (FK), LoanType, Amount, LoanDate, DueDate, InterestRate

Relationships:

- **Customer and Account**: One-to-Many (One customer can have multiple accounts)

- **Branch and Account**: One-to-Many (One branch can have multiple accounts)

- **Account and Transaction**: One-to-Many (One account can have multiple transactions)

- **Customer and Loan**: One-to-Many (One customer can have multiple loans)

ER Diagram:
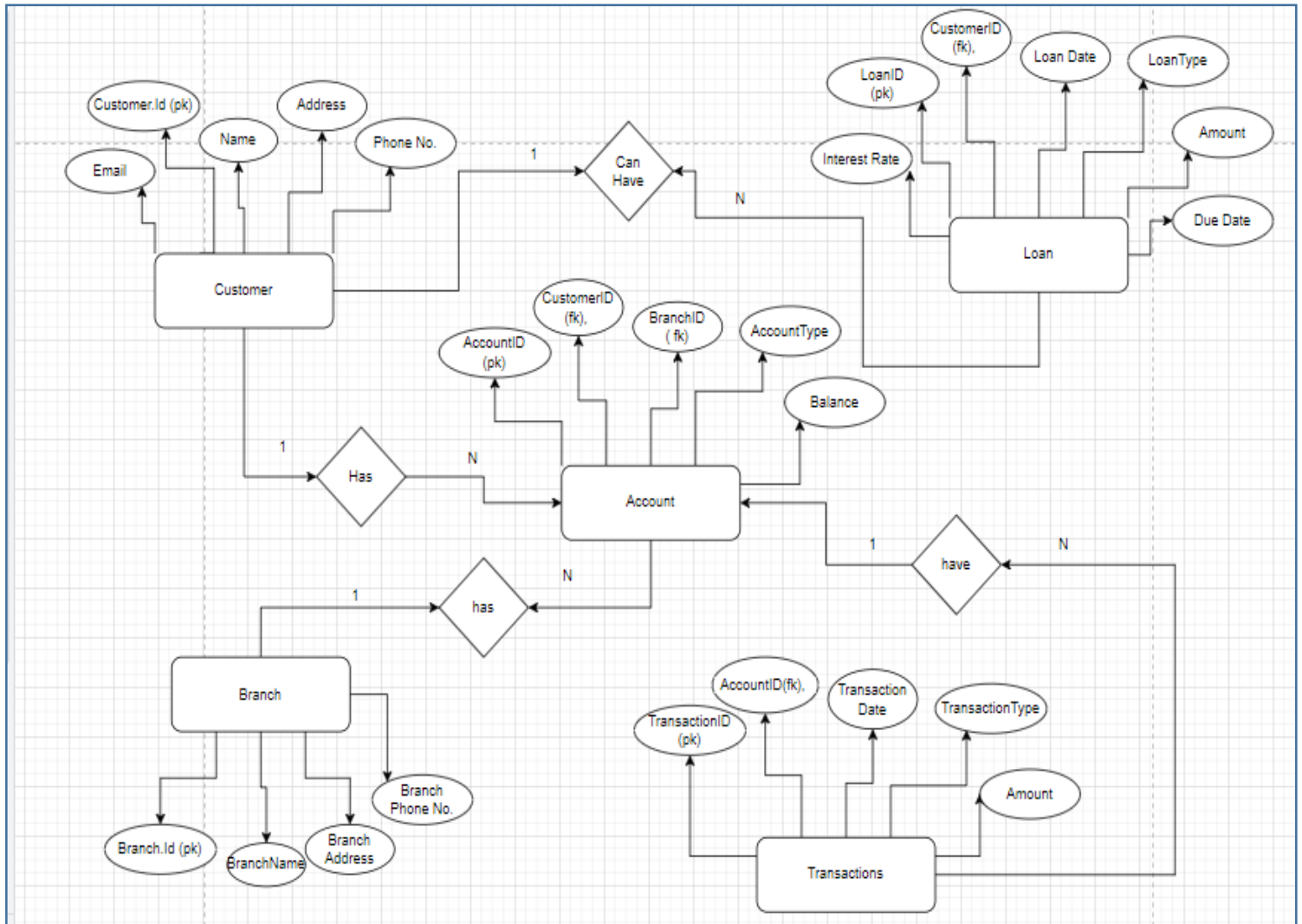
SQL Code:

```sql
create database bank;

use bank;

-- Create Customer table
CREATE TABLE Customer (
    CustomerID INT PRIMARY KEY,
    Name VARCHAR(100),
    Address VARCHAR(255),
    Phone VARCHAR(20),
    Email VARCHAR(100)
);
INSERT INTO Customer (CustomerID, Name, Address, Phone, Email) VALUES
(1, 'John Doe', '123 Main St', '555-1234', 'john.doe@example.com'),
(2, 'Jane Smith', '456 Elm St', '555-5678', 'jane.smith@example.com');

-- Create Branch table
CREATE TABLE Branch (
    BranchID INT PRIMARY KEY,
    BranchName VARCHAR(100),
    BranchAddress VARCHAR(255),
    BranchPhone VARCHAR(20)
);
INSERT INTO Branch (BranchID, BranchName, BranchAddress, BranchPhone)
VALUES
(1, 'Downtown Branch', '789 Oak St', '555-8765'),
(2, 'Uptown Branch', '321 Pine St', '555-4321');

-- Create Account table
CREATE TABLE Account (
    AccountID INT PRIMARY KEY,
    CustomerID INT,
    BranchID INT,
    AccountType VARCHAR(50),
    Balance DECIMAL(10, 2),
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),
    FOREIGN KEY (BranchID) REFERENCES Branch(BranchID)
);
```

```sql
INSERT INTO Account (AccountID, CustomerID, BranchID, AccountType,
Balance) VALUES
(1, 1, 1, 'Checking', 1500.00),
(2, 2, 2, 'Savings', 2500.00);

-- Create Transaction table
CREATE TABLE Transactions (
    TransactionID INT PRIMARY KEY,
    AccountID INT,
    TransactionDate DATE,
    Amount DECIMAL(10, 2),
    TransactionType VARCHAR(50),
    FOREIGN KEY (AccountID) REFERENCES Account(AccountID)
);
INSERT INTO Transactions (TransactionID, AccountID, TransactionDate,
Amount, TransactionType) VALUES
(1, 1, '2024-05-01', 500.00, 'Deposit'),
(2, 2, '2024-05-02', 200.00, 'Withdrawal');
-- Create Loan table
CREATE TABLE Loan (
    LoanID INT PRIMARY KEY,
    CustomerID INT,
    LoanType VARCHAR(50),
    Amount DECIMAL(10, 2),
    LoanDate DATE,
    DueDate DATE,
    InterestRate DECIMAL(5, 2),
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
);
INSERT INTO Loan (LoanID, CustomerID, LoanType, Amount, LoanDate,
DueDate, InterestRate) VALUES
(1, 1, 'Home Loan', 100000.00, '2024-01-15', '2034-01-15', 3.5),
(2, 2, 'Car Loan', 20000.00, '2024-02-20', '2029-02-20', 5.0);
```

100 %

Results | Messages

	AccountID	CustomerID	BranchID	AccountType	Balance
1	1	1	1	Checking	1500.00
2	2	2	2	Savings	2500.00

100 % ▼

Results | Messages

	BranchID	BranchName	BranchAddress	BranchPhone
1	1	Downtown Branch	789 Oak St	555-8765
2	2	Uptown Branch	321 Pine St	555-4321

100 % ▼

Results | Messages

	CustomerID	Name	Address	Phone	Email
1	1	Khizar	123 Main St	555-1234	john.doe@example.com
2	2	Jane Smith	456 Elm St	555-5678	jane.smith@example.com

100 % ▼

Results | Messages

	LoanID	CustomerID	LoanType	Amount	LoanDate	DueDate	InterestRate
1	1	1	Home Loan	100000.00	2024-01-15	2034-01-15	3.50
2	2	2	Car Loan	20000.00	2024-02-20	2029-02-20	5.00

100 % ▼

Results | Messages

	TransactionID	AccountID	TransactionDate	Amount	TransactionType
1	1	1	2024-05-01	500.00	Deposit
2	2	2	2024-05-02	200.00	Withdrawal

Relational Table:

Loan
- 🔑 LoanID
- CustomerID
- LoanType
- Amount
- LoanDate
- DueDate
- InterestRate

Branch
- 🔑 BranchID
- BranchName
- BranchAddress
- BranchPhone

Account
- 🔑 AccountID
- CustomerID
- BranchID
- AccountType
- Balance

Customer
- 🔑 CustomerID
- Name
- Address
- Phone
- Email

Transactions
- 🔑 TransactionID
- AccountID
- TransactionDate
- Amount
- TransactionType