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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:**

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)

);

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);

**Relational Table:**