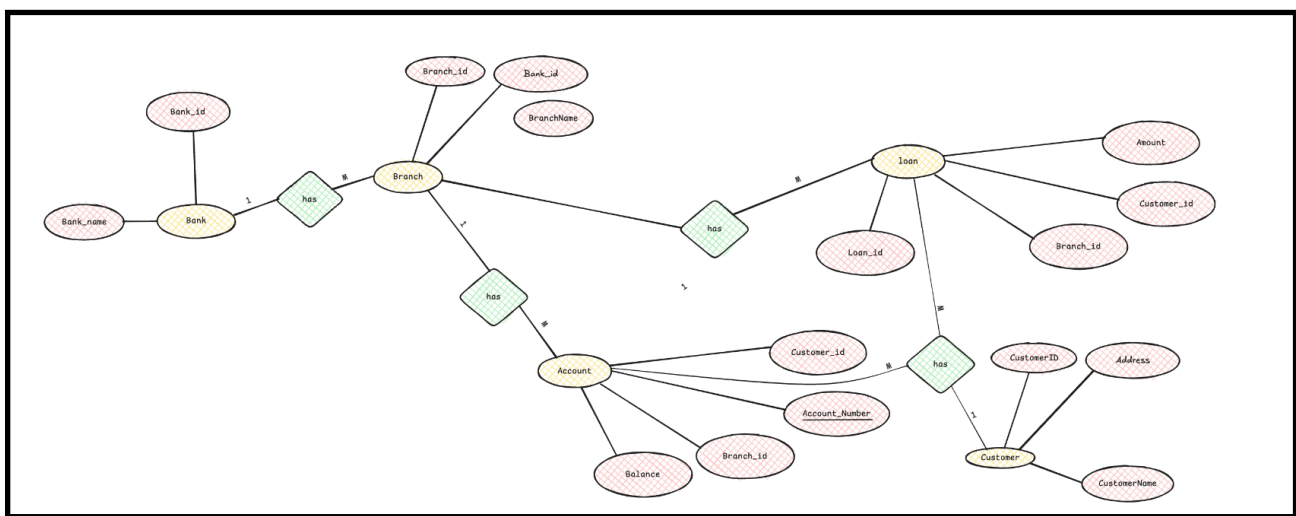


SOMNATH CHATTARAJ

IT-A3-67

DBMS LAB

ER DIAGRAM



1. Entities:

- **Bank** (BankID, BankName)
- **Branch** (BranchID, BranchName, BankID)
- **Customer** (CustomerID, CustomerName, Address)
- **Account** (AccountNo, Balance, BranchID, CustomerID)
- **Loan** (LoanID, Amount, BranchID, CustomerID)

2. Relationships:

- **Bank to Branch** (1-to-Many): One Bank can have many Branches.
- **Branch to Account** (1-to-Many): One Branch can have many Accounts.
- **Branch to Loan** (1-to-Many): One Branch can give out many Loans.
- **Customer to Account** (1-to-Many): One Customer can have many Accounts.
- **Customer to Loan** (1-to-Many): One Customer can have many Loans.

DATABASE SCHEMA

```
CREATE TABLE Bank (  
    BankID INT PRIMARY KEY,  
    BankName VARCHAR(100)  
);
```

```
CREATE TABLE Branch (  
    BranchID INT PRIMARY KEY,  
    BranchName VARCHAR(100),  
    BankID INT,  
    FOREIGN KEY (BankID) REFERENCES Bank(BankID)  
);
```

```
CREATE TABLE Customer (  
    CustomerID INT PRIMARY KEY,  
    CustomerName VARCHAR(100),  
    Address VARCHAR(255)  
);
```

```
CREATE TABLE Account (  
    AccountNo INT PRIMARY KEY,  
    Balance DECIMAL(10, 2),  
    BranchID INT,  
    CustomerID INT,  
    FOREIGN KEY (BranchID) REFERENCES Branch(BranchID),  
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)  
);
```

```
CREATE TABLE Loan (  
    LoanID INT PRIMARY KEY,  
    Amount DECIMAL(10, 2),  
    BranchID INT,  
    CustomerID INT,  
    FOREIGN KEY (BranchID) REFERENCES Branch(BranchID),  
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)  
);
```

QUERIES

```
INSERT INTO Bank VALUES (1, 'SBI'), (2, 'PNB');
INSERT INTO Branch VALUES (1, 'Salt Lake', 1), (2, 'Sealdah', 2);
INSERT INTO Customer VALUES (1, 'John Doe', '123 Street'), (2, 'Alice', '456 Avenue');
INSERT INTO Account VALUES (54321987654, 10000, 1, 1), (54321987655, 20000, 2, 2);
INSERT INTO Loan VALUES (1, 5000, 1, 1), (2, 8000, 2, 2);
```

2: Every customer must have at least one account but is restricted to at most two loans at a time.

```
CREATE OR REPLACE FUNCTION check_max_loans()
RETURNS TRIGGER AS $$
BEGIN
    IF (SELECT COUNT(*) FROM Loan WHERE Account_id = NEW.Account_id) >= 2 THEN
        RAISE EXCEPTION 'Maximum loan limit for this account has been reached';
    END IF;
    RETURN NEW;
END;
$$ LANGUAGE plpgsql;

CREATE TRIGGER trigger_max_loans
BEFORE INSERT ON Loan
FOR EACH ROW EXECUTE FUNCTION check_max_loans();
```

3: Give all the account details of a person who has accounts in SBI.

```
SELECT *
FROM Account
JOIN Branch ON Account.BranchID = Branch.BranchID
WHERE Branch.BranchName = 'SBI';
```

4: Find the account holder name who has more than 2 accounts.

```
SELECT CustomerName
FROM Customer
JOIN Account ON Customer.CustomerID = Account.CustomerID
GROUP BY Customer.CustomerID, Customer.CustomerName
HAVING COUNT(Account.AccountNo) > 2;
```

5: Rename the accounts table as account details.

```
ALTER TABLE Account RENAME TO AccountDetails;
```

6. Find the loan amount and loan taken from which bank for each account holder.

```
SELECT Customer.CustomerName, Loan.Amount, Bank.BankName
FROM Loan
JOIN Branch ON Loan.BranchID = Branch.BranchID
JOIN Bank ON Branch.BankID = Bank.BankID
JOIN Customer ON Loan.CustomerID = Customer.CustomerID;
```

7. Find the account number and account holder name who has not taken any loan.

```
SELECT Account.AccountNo, Customer.CustomerName
FROM Account
LEFT JOIN Loan ON Account.CustomerID = Loan.CustomerID
JOIN Customer ON Account.CustomerID = Customer.CustomerID
WHERE Loan.LoanID IS NULL;
```

8: Delete the account of all the persons who had accounts in PNB, Sealdah branch.

```
DELETE FROM Account
WHERE BranchID = (SELECT BranchID FROM Branch WHERE BranchName = 'Sealdah' AND BankID =
(SELECT BankID FROM Bank WHERE BankName = 'PNB'));
```

9. Update the branch to SBI, Salt Lake branch for all the persons who had a SBI account in Sealdah branch.

```
UPDATE Account
SET BranchID = (SELECT BranchID FROM Branch WHERE BranchName = 'Salt Lake' AND BankID =
(SELECT BankID FROM Bank WHERE BankName = 'SBI'))
WHERE BranchID = (SELECT BranchID FROM Branch WHERE BranchName = 'Sealdah' AND BankID =
(SELECT BankID FROM Bank WHERE BankName = 'SBI'));
```

10: Find the maximum account balance of a person with account number 54321987654 among all his accounts.

```
SELECT MAX(Balance)
FROM Account
WHERE CustomerID = (SELECT CustomerID FROM Account WHERE AccountNo = 54321987654);
```