DBMS LAB

ASSIGNMENT – 4

NAME : Tanish Majumdar

ROLL NO. : 002311001077

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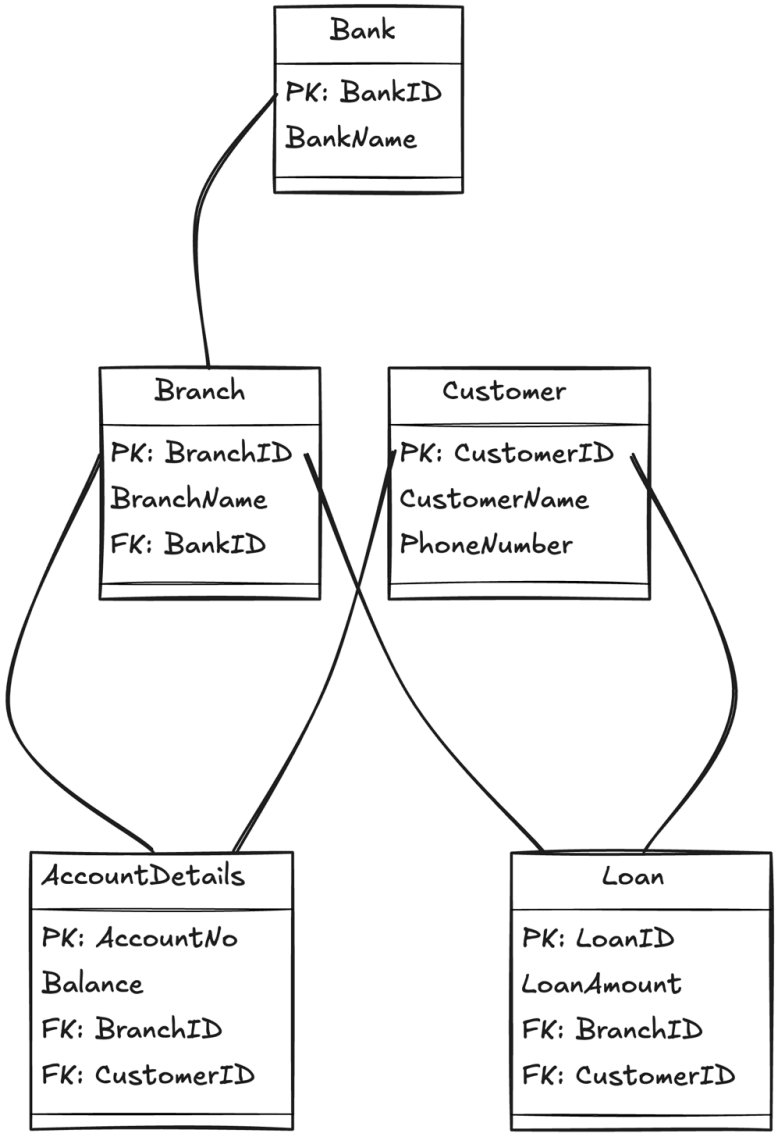
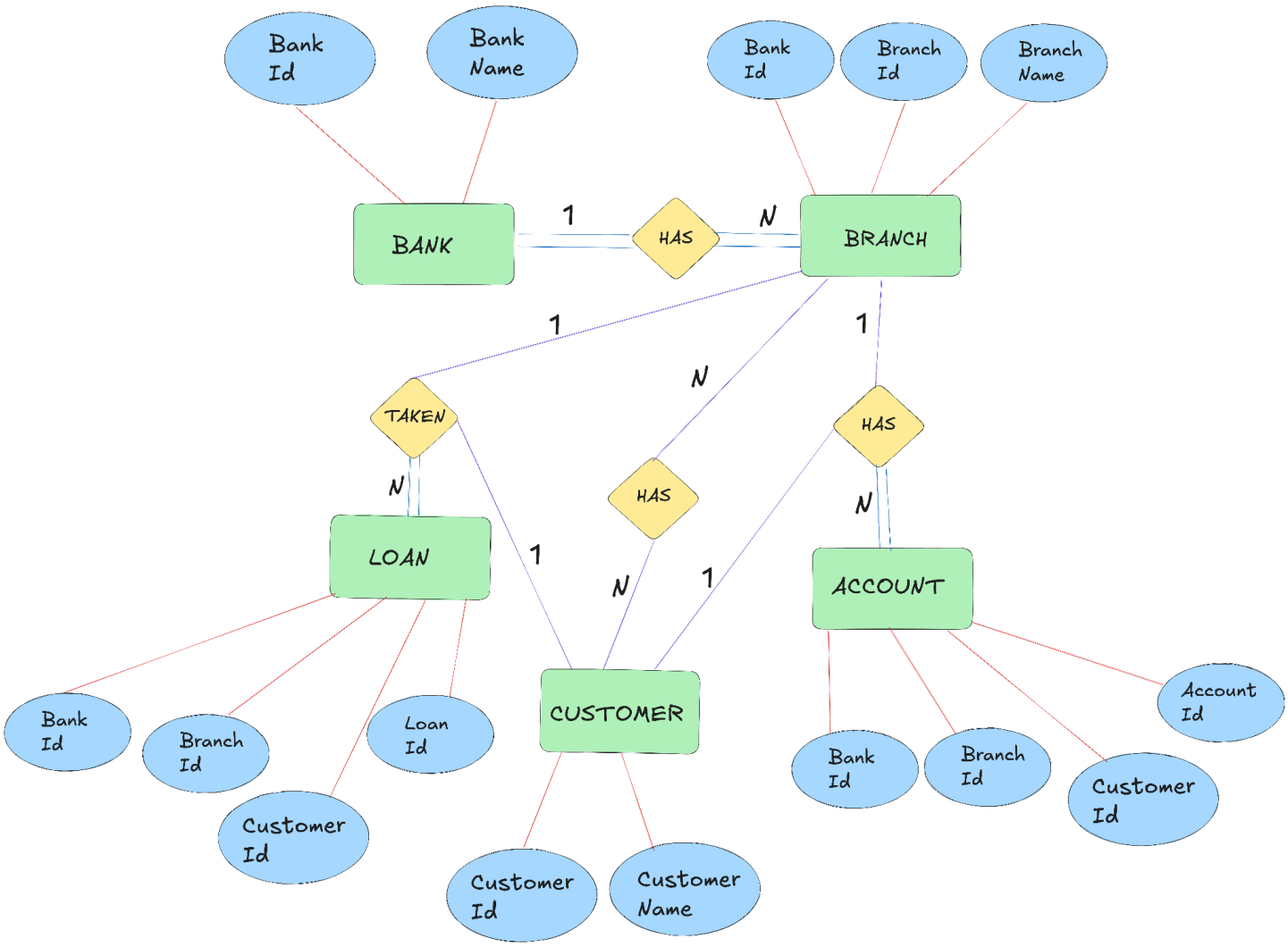
Consider a BANK database. Each bank can have multiple branches, and each branch can have multiple accounts and loans. Assumptions also can be made. Design an ER diagram and database schema for the system. Specify the primary key, foreign key and other constraints for all required tables. Draw the ER diagram in MS Word.

Database Schema



ER DIAGRAM


Bank Id
Bank Name
Bank Id
Branch Id
Branch Name
BANK
1
HAS
N
BRANCH
1
N
1
TAKEN
HAS
HAS
N
N
LOAN
1
N
1
ACCOUNT
Bank Id
Branch Id
Loan Id
Customer Id
CUSTOMER
Bank Id
Branch Id
Customer Id
Account Id
Customer Id
Customer Name

Question and Answers

Q1.) Insert at least five tuples in each table.

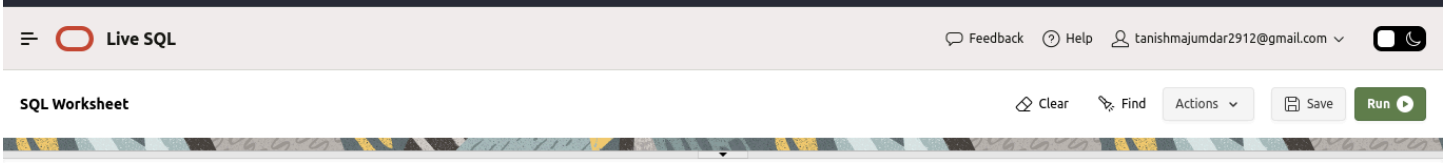
Q2.) Every customer must have at least one account but is restricted to at most two loans at a time.

```
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),
    PhoneNumber VARCHAR(15)
);
CREATE TABLE AccountDetails (
    AccountNo INT PRIMARY KEY,
    Balance INT,
    BranchID INT,
    CustomerID INT,
    FOREIGN KEY (BranchID) REFERENCES Branch(BranchID),
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
);
CREATE TABLE Loan (
    LoanID INT PRIMARY KEY,
    LoanAmount INT,
    CustomerID INT,
    BranchID INT,
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),
    FOREIGN KEY (BranchID) REFERENCES Branch(BranchID)
);
```

```sql
INSERT INTO Bank VALUES (1, 'SBI');
INSERT INTO Bank VALUES (2, 'PNB');
INSERT INTO Bank VALUES (3, 'HDFC');
INSERT INTO Bank VALUES (4, 'ICICI');
INSERT INTO Bank VALUES (5, 'Axis');

INSERT INTO Branch VALUES (1, 'Salt Lake', 1);
INSERT INTO Branch VALUES (2, 'Sealdah', 2);
INSERT INTO Branch VALUES (3, 'Park Street', 3);
INSERT INTO Branch VALUES (4, 'Connaught Place', 4);
INSERT INTO Branch VALUES (5, 'MG Road', 5);
INSERT INTO Branch VALUES (6, 'Sealdah', 1);

INSERT INTO Customer VALUES (101, 'Taylor Swift', '9876543210');
INSERT INTO Customer VALUES (102, 'Lana Del Rey', '9876543211');
INSERT INTO Customer VALUES (103, 'Tate McRae', '9876543212');
INSERT INTO Customer VALUES (104, 'Charlie XCX', '9876543213');
INSERT INTO Customer VALUES (105, 'Dua Lipa', '9876543214');
INSERT INTO Customer VALUES (106, 'Ariana Grande', '9876543215');


INSERT INTO AccountDetails VALUES (54321987654, 10000, 1, 101);
INSERT INTO AccountDetails VALUES (54321987655, 20000, 2, 102);
INSERT INTO AccountDetails VALUES (54321987656, 15000, 3, 103);
INSERT INTO AccountDetails VALUES (54321987657, 12000, 4, 104);
INSERT INTO AccountDetails VALUES (54321987658, 18000, 5, 105);
INSERT INTO AccountDetails VALUES (54321987659, 22000, 1, 101);
INSERT INTO AccountDetails VALUES (54321987660, 25000, 1, 101);
INSERT INTO AccountDetails VALUES (54321987661, 30000, 1, 106);
INSERT INTO AccountDetails VALUES (54321987662, 30000, 6, 102);

INSERT INTO Loan VALUES (1, 5000, 101, 1);
INSERT INTO Loan VALUES (2, 8000, 102, 2);
INSERT INTO Loan VALUES (3, 6000, 103, 3);
INSERT INTO Loan VALUES (4, 7000, 104, 4);
INSERT INTO Loan VALUES (5, 9000, 105, 5);
```

Q3.) Give all the account details of a person who has accounts in SBI.

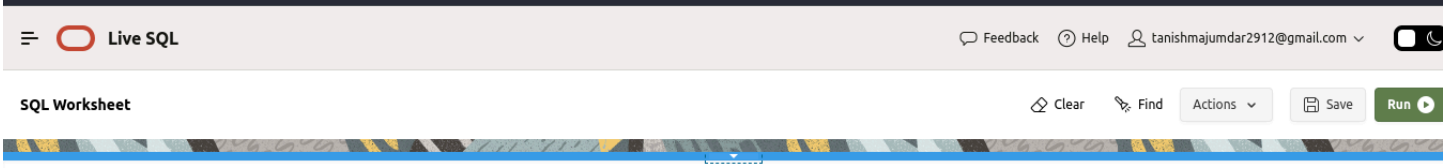
```
SELECT *
FROM AccountDetails A, Branch B, Bank K
WHERE A.BranchID = B.BranchID
AND B.BankID = K.BankID
AND K.BankName = 'SBI';
```



ACCOUNTNO	BALANCE	BRANCHID	CUSTOMERID	BRANCHID	BRANCHNAME	BANKID	BANKID	BANKNAME
54321987654	10000	1	101	1	Salt Lake	1	1	SBI
54321987659	22000	1	101	1	Salt Lake	1	1	SBI
54321987660	25000	1	101	1	Salt Lake	1	1	SBI
54321987661	30000	1	106	1	Salt Lake	1	1	SBI
54321987662	30000	6	102	6	Sealdah	1	1	SBI

Q4.) Find the account holder name who has more than 2 accounts.

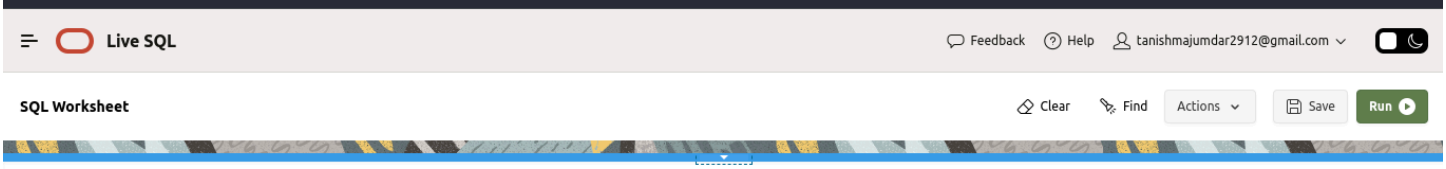
```
SELECT CustomerName
FROM Customer
WHERE CustomerID IN (
    SELECT CustomerID
    FROM AccountDetails
    GROUP BY CustomerID
    HAVING COUNT(AccountNo) > 2
);
```



CUSTOMERNAME
Taylor Swift

Q5.) Rename the accounts table as account details.

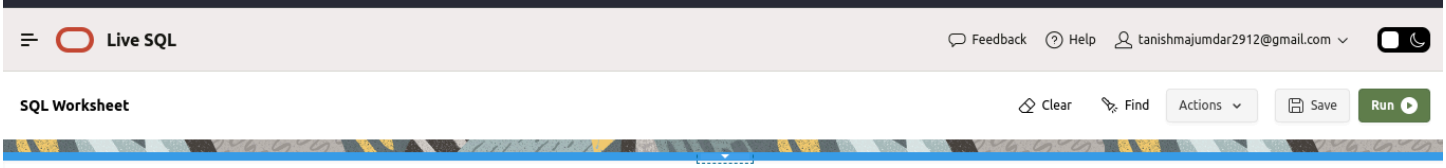
```
ALTER TABLE Accounts
RENAME TO AccountDetails;
```




```
Table altered.
```

Q6.) Find the loan amount and loan taken from which bank for each account holder.

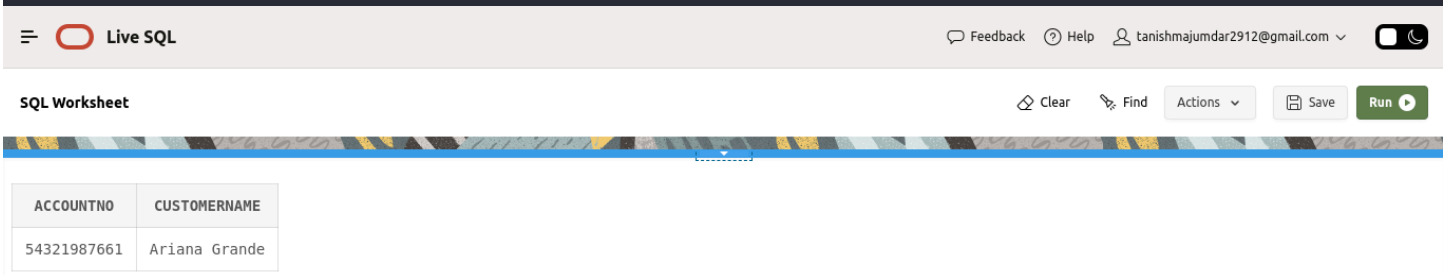
```
SELECT C.CustomerName, L.LoanAmount, K.BankName
FROM Loan L, Branch B, Bank K, Customer C
WHERE L.BranchID = B.BranchID
  AND B.BankID = K.BankID
  AND L.CustomerID = C.CustomerID;
```



CUSTOMERNAME	LOANAMOUNT	BANKNAME
Taylor Swift	5000	SBI
Lana Del Rey	8000	PNB
Tate McRae	6000	HDFC
Charlie XCX	7000	ICICI
Dua Lipa	9000	Axis

Q7.) Find the account no. and account holder name who has not taken any loan.

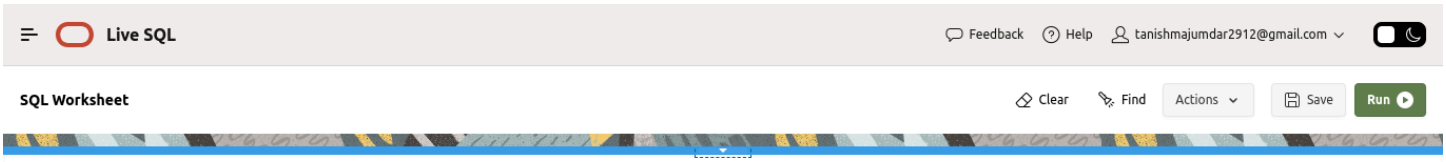
```sql
SELECT A.AccountNo, C.CustomerName
FROM AccountDetails A, Customer C
WHERE A.CustomerID = C.CustomerID
  AND C.CustomerID NOT IN (
    SELECT CustomerID FROM Loan
    );
```



ACCOUNTNO	CUSTOMERNAME
54321987661	Ariana Grande

Q8.) Delete the account of all the persons who had accounts in PNB, Sealdah branch.

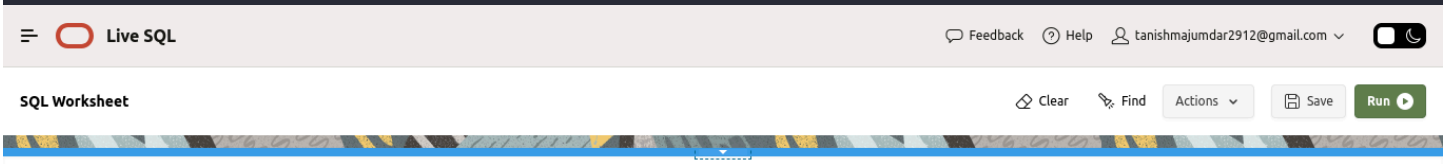
```sql
DELETE FROM AccountDetails
WHERE BranchID IN (
    SELECT BranchID
    FROM Branch
    WHERE BranchName = 'Sealdah' AND
    BankID = (
    SELECT BankID
    FROM Bank
    WHERE BankName = 'PNB')
);
```




```
1 row(s) deleted.
```

Q9.) Update the branch to SBI, Salt Lake branch for all the persons who had a SBI account in Sealdah branch.

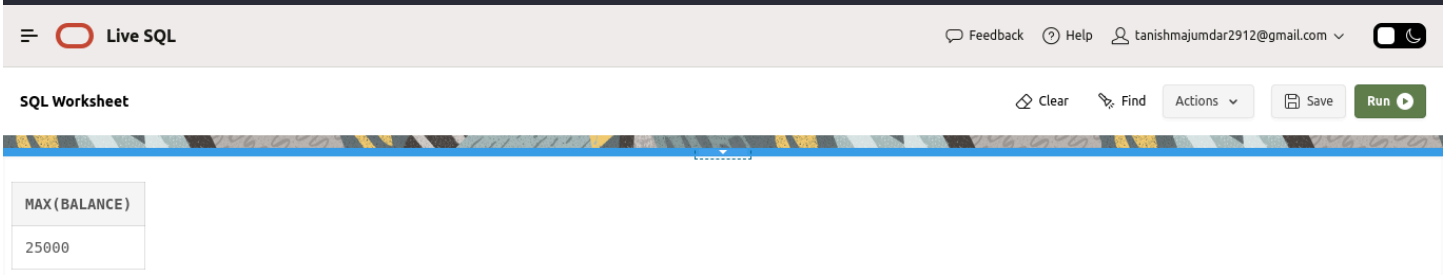
```sql
UPDATE AccountDetails
SET BranchID = (
    SELECT BranchID
    FROM Branch
    WHERE BranchName = 'Salt Lake' AND
    BankID = (
    SELECT BankID
    FROM Bank
    WHERE BankName = 'SBI')
)
WHERE BranchID = (
    SELECT BranchID
    FROM Branch
    WHERE BranchName = 'Sealdah' AND
    BankID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




```
1 row(s) updated.
```

Q10.) Find the maximum account balance of a person with account no 54321987654 among all of his accounts.

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



MAX(BALANCE)
25000