**DBMS Lab**



Name: **Soham Das**

Section: **A1**

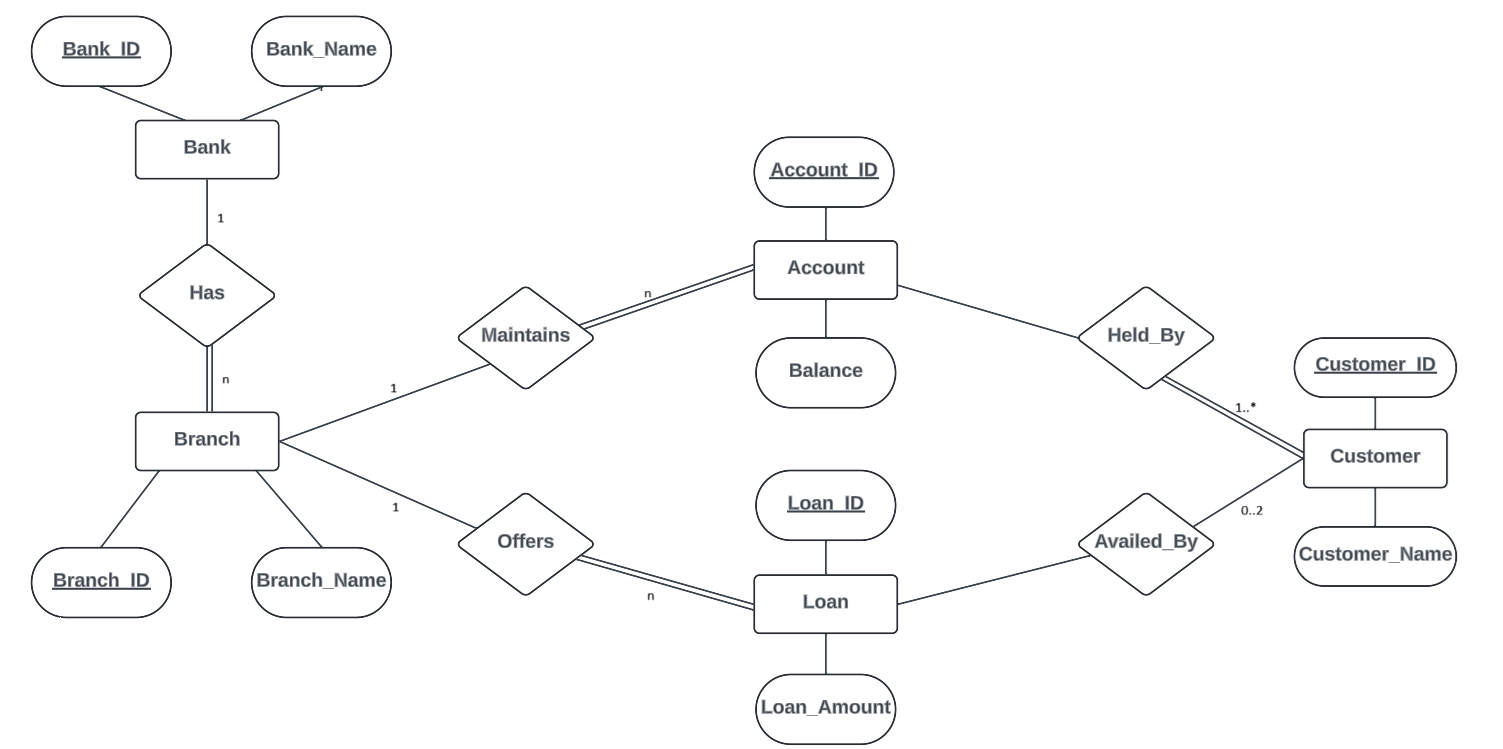
Roll No: **002311001004**

**Assignment - 3**

**IT-UG2**

**Question: 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.**

ER Diagram

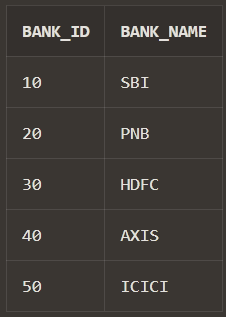


Database Schema

A diagram of a bank

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1. Insert at least five tuples in each table.

--BANK Table

CREATE TABLE Bank (

Bank\_ID NUMBER (2) PRIMARY KEY,

Bank\_Name VARCHAR2(25) NOT NULL);

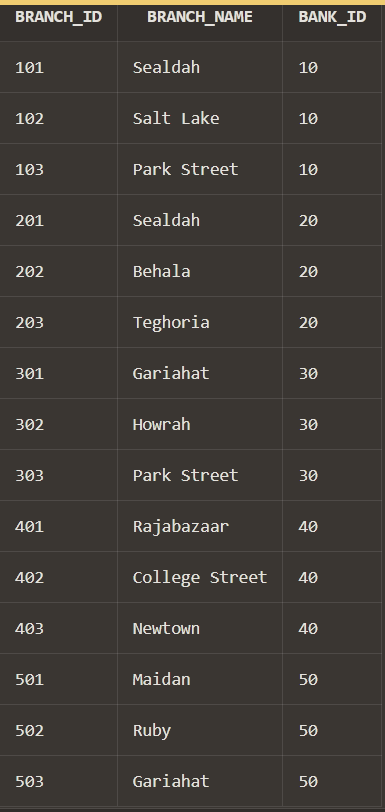
INSERT INTO Bank VALUES (10, 'SBI');

INSERT INTO Bank VALUES (20, 'PNB');

INSERT INTO Bank VALUES (30, 'HDFC');

INSERT INTO Bank VALUES (40, 'AXIS');

INSERT INTO Bank VALUES (50, 'ICICI');

--BRANCH Table

CREATE TABLE Branch (

Branch\_ID NUMBER (3) PRIMARY KEY,

Branch\_Name VARCHAR2(40) NOT NULL,

Bank\_ID NUMBER (2),

FOREIGN KEY (Bank\_ID) REFERENCES Bank(Bank\_ID));

INSERT INTO Branch VALUES (101, 'Sealdah', 10);

INSERT INTO Branch VALUES (102, 'Salt Lake', 10);

INSERT INTO Branch VALUES (103, 'Park Street', 10);

INSERT INTO Branch VALUES (201, 'Sealdah', 20);

INSERT INTO Branch VALUES (202, 'Behala', 20);

INSERT INTO Branch VALUES (203, 'Teghoria', 20);

INSERT INTO Branch VALUES (301, 'Gariahat', 30);

INSERT INTO Branch VALUES (302, 'Howrah', 30);

INSERT INTO Branch VALUES (303, 'Park Street', 30);

INSERT INTO Branch VALUES (401, 'Rajabazaar', 40);

INSERT INTO Branch VALUES (402, 'College Street', 40);

INSERT INTO Branch VALUES (403, 'Newtown', 40);

INSERT INTO Branch VALUES (501, 'Maidan', 50);

INSERT INTO Branch VALUES (502, 'Ruby', 50);

INSERT INTO Branch VALUES (503, 'Gariahat', 50);

--CUSTOMER Table

CREATE TABLE Customer (

Customer\_ID NUMBER (4) PRIMARY KEY,

Customer\_Name VARCHAR(100) NOT NULL);

INSERT INTO Customer VALUES (1001, 'Ramesh');

INSERT INTO Customer VALUES (1002, 'Suresh');

INSERT INTO Customer VALUES (1003, 'Pakeya');

INSERT INTO Customer VALUES (2001, 'Charan');

A screenshot of a computer

Description automatically generatedINSERT INTO Customer VALUES (2002, 'Ram');

INSERT INTO Customer VALUES (2003, 'Pankaj');

INSERT INTO Customer VALUES (3001, 'Soham');

INSERT INTO Customer VALUES (3002, 'Debodit');

INSERT INTO Customer VALUES (3003, 'Anuska');

INSERT INTO Customer VALUES (4001, 'Prama');

INSERT INTO Customer VALUES (4002, 'Rishika');

INSERT INTO Customer VALUES (4003, 'Sayani');

INSERT INTO Customer VALUES (5001, 'Tanish');

INSERT INTO Customer VALUES (5002, 'Aman');

INSERT INTO Customer VALUES (5003, 'Neel');

--ACCOUNT Table

CREATE TABLE Account (

Account\_ID NUMBER (11) PRIMARY KEY,

Balance DECIMAL(10, 2),

Customer\_ID NUMBER (4),

Branch\_ID NUMBER (3),

FOREIGN KEY (Branch\_ID) REFERENCES Branch(Branch\_ID) on DELETE CASCADE,

A screenshot of a computer screen

Description automatically generated FOREIGN KEY (Customer\_ID) REFERENCES Customer(Customer\_ID) on DELETE CASCADE);

Insert into ACCOUNT values (55690129329, 35486.12, 1001, 101);

Insert into ACCOUNT values (89545237546, 1234.56, 1003, 101);

Insert into ACCOUNT values (54321987654, 98765.43, 1002, 102);

Insert into ACCOUNT values (39800005552, 45678.90, 1003, 103);

Insert into ACCOUNT values (59498307311, 2345.57, 2001, 202);

Insert into ACCOUNT values (65592459895, 67890.12, 2002, 202);

Insert into ACCOUNT values (71875151611, 54321.98, 2001, 201);

Insert into ACCOUNT values (77975635172, 8765.43, 2003, 203);

Insert into ACCOUNT values (84531363466, 34567.89, 3001, 302);

Insert into ACCOUNT values (46372949259, 78901.23, 3002, 301);

Insert into ACCOUNT values (82273579151, 65432.10, 4001, 401);

Insert into ACCOUNT values (57679662463, 4321.98, 4002, 402);

Insert into ACCOUNT values (90680460457, 21098.76, 4003, 403);

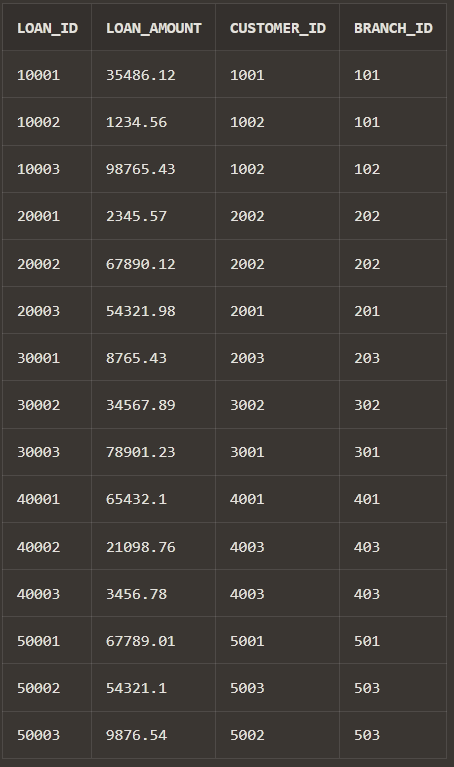
Insert into ACCOUNT values (18567978674, 3456.78, 3003, 403);

Insert into ACCOUNT values (94720840720, 67789.01, 5001, 501);

Insert into ACCOUNT values (10346725987, 54321.10, 5002, 503);

Insert into ACCOUNT values (35487204793, 9876.54, 5003, 503);

Insert into ACCOUNT values (28645816408, 123456.67, 5001, 503);

--LOAN Table

CREATE TABLE Loan (

Loan\_ID NUMBER (5) PRIMARY KEY,

Loan\_Amount DECIMAL(10, 2),

Customer\_ID NUMBER (4),

Branch\_ID NUMBER (3),

FOREIGN KEY (Branch\_ID) REFERENCES Branch(Branch\_ID) on DELETE CASCADE,

FOREIGN KEY (Customer\_ID) REFERENCES Customer(Customer\_ID) ON DELETE CASCADE);

Insert into LOAN values (10001, 35486.12, 1001, 101);

Insert into LOAN values (10002, 1234.56, 1002, 101);

Insert into LOAN values (10003, 98765.43, 1002, 102);

Insert into LOAN values (20001, 2345.57, 2002, 202);

Insert into LOAN values (20002, 67890.12, 2002, 202);

Insert into LOAN values (20003, 54321.98, 2001, 201);

Insert into LOAN values (30001, 8765.43, 2003, 203);

Insert into LOAN values (30002, 34567.89, 3002, 302);

Insert into LOAN values (30003, 78901.23, 3001, 301);

Insert into LOAN values (40001, 65432.10, 4001, 401);

Insert into LOAN values (40002, 21098.76, 4003, 403);

Insert into LOAN values (40003, 3456.78, 4003, 403);

Insert into LOAN values (50001, 67789.01, 5001, 501);

Insert into LOAN values (50002, 54321.10, 5003, 503);

Insert into LOAN values (50003, 9876.54, 5002, 503);

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

ALTER table CUSTOMER ADD Account\_ID number (11) NOT NULL

ADD CONSTRAINT FK FOREIGN KEY (ACCOUNT\_ID) REFERENCES ACCOUNT (ACCOUNT\_ID);

CREATE TRIGGER MaxLoansPerCustomer

BEFORE INSERT ON Loan

FOR EACH ROW

BEGIN

DECLARE loan\_count INT;

SELECT COUNT(\*) INTO loan\_count

FROM Loan

WHERE CustomerID = NEW.CustomerID;

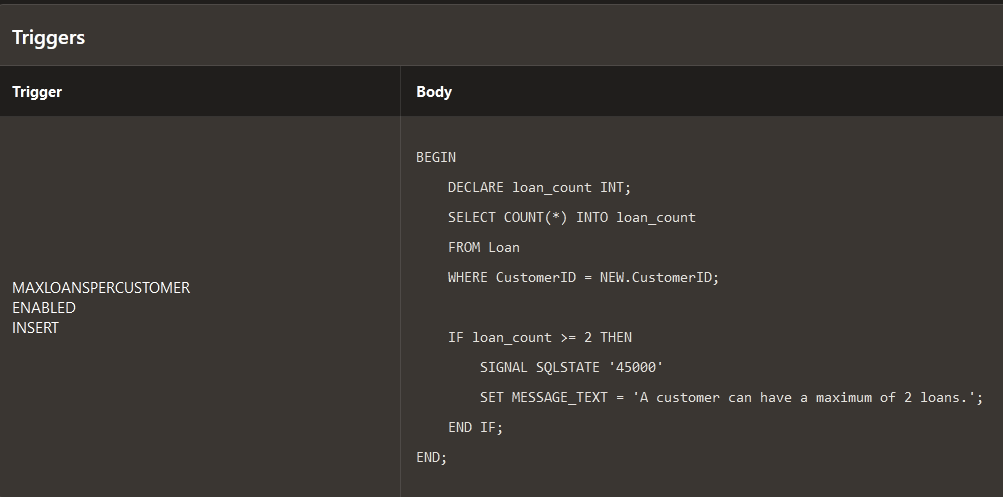
IF loan\_count >= 2 THEN

SIGNAL SQLSTATE '45000'

SET MESSAGE\_TEXT = 'A customer can have a maximum of 2 loans.';

END IF;

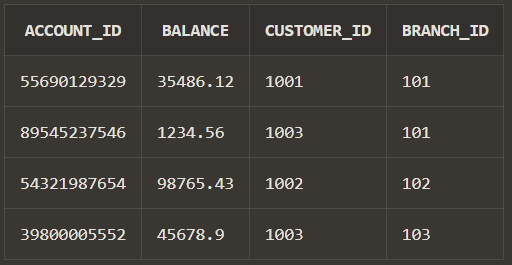
END;



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

SELECT \* FROM Account

WHERE Branch\_ID IN (SELECT Branch\_ID FROM Branch WHERE Bank\_ID = (SELECT Bank\_ID FROM Bank WHERE Bank\_Name = 'SBI'));



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

SELECT Customer\_Name FROM Customer

WHERE Customer\_ID IN (SELECT Customer\_ID FROM Account GROUP BY Customer\_ID HAVING COUNT(Account\_ID) > 2);

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1. Rename the accounts table as account details.

ALTER TABLE Account RENAME TO Account\_Details;

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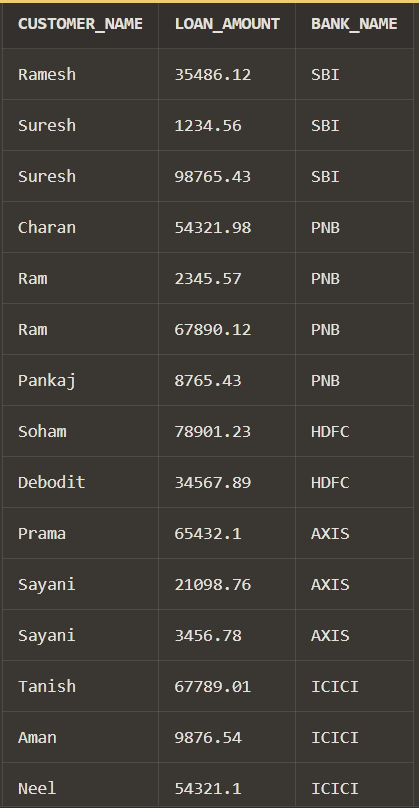
1. Find the loan amount and loan taken from which bank for each account holder.

SELECT C.Customer\_Name, L.Loan\_Amount, B.Bank\_Name FROM Loan L

JOIN Customer C ON L.Customer\_ID = C.Customer\_ID

JOIN Branch Br ON L.Branch\_ID = Br.Branch\_ID

JOIN Bank B ON Br.Bank\_ID = B.Bank\_ID;



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

SELECT A.Account\_ID, C.Customer\_Name FROM Account\_Details A

JOIN Customer C ON A.Customer\_ID = C.Customer\_ID

WHERE A.Customer\_ID NOT IN (SELECT Customer\_ID FROM Loan);

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

DELETE FROM Account\_Details WHERE Branch\_ID IN (SELECT Branch\_ID FROM Branch WHERE Bank\_ID = (SELECT Bank\_ID FROM Bank WHERE Bank\_Name = 'PNB') AND Branch\_Name = 'Sealdah');

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

UPDATE Account\_Details

SET Branch\_ID = (SELECT Branch\_ID FROM Branch WHERE Branch\_Name = 'Salt Lake' AND Bank\_ID = (SELECT Bank\_ID FROM Bank WHERE Bank\_Name = 'SBI'))

WHERE Branch\_ID = (SELECT Branch\_ID FROM Branch WHERE Branch\_Name = 'Sealdah' AND Bank\_ID = (SELECT Bank\_ID FROM Bank WHERE Bank\_Name = 'SBI'));

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

SELECT MAX(Balance) AS Max\_Balance

FROM Account\_Details WHERE

Customer\_ID = (SELECT Customer\_ID FROM Account\_Details WHERE Account\_ID = 54321987654);

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