

Question - 3 → Reference Table

1st Table :→ branch (branch-name, branch-city, assets)

2nd Table :→ Customer (ID, Customer-name, Customer-Street, Customer-city)

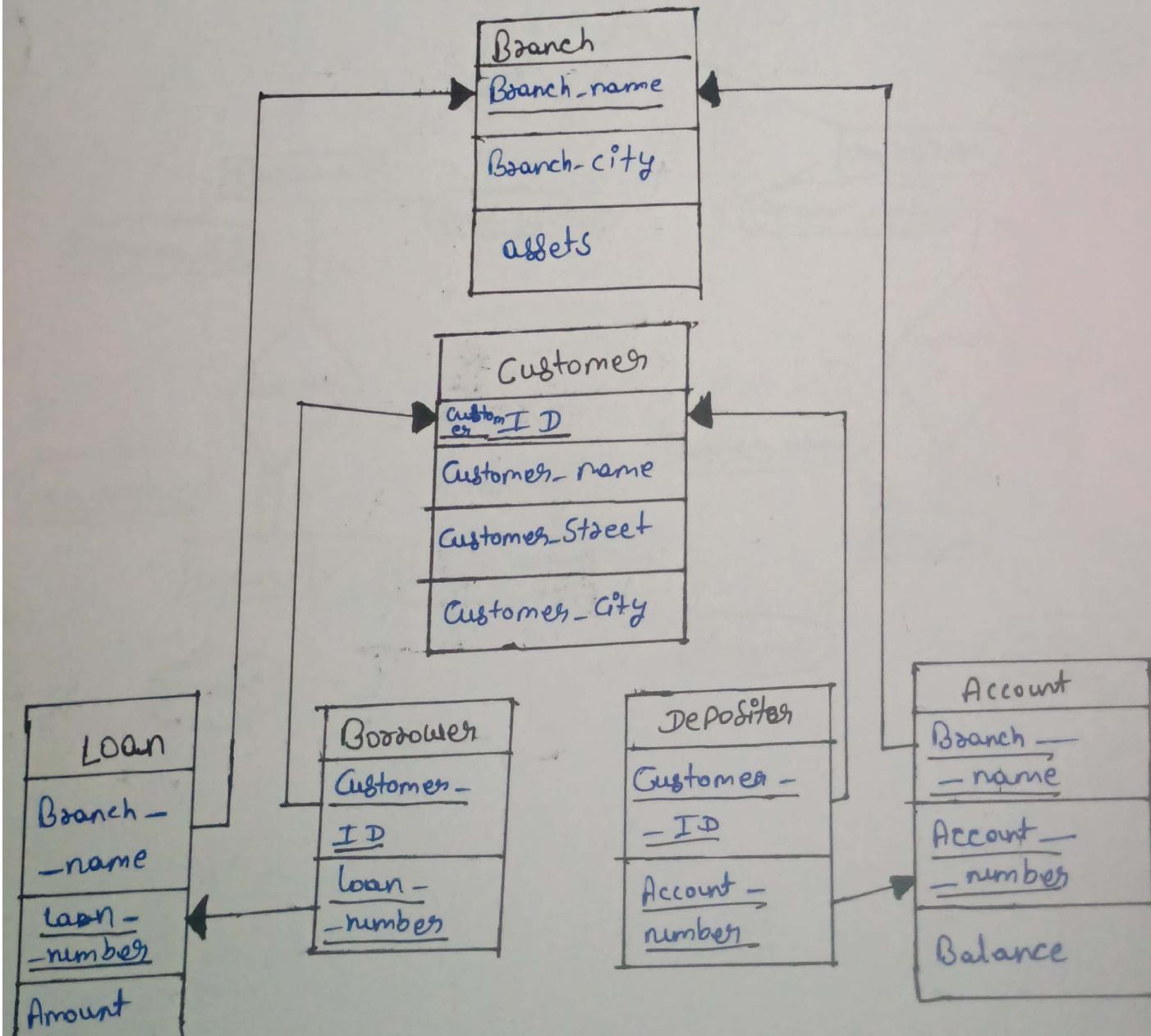
3rd Table :→ loan (loan-number, branch-name, amount)

4th Table :→ borrower (ID, loan-number)

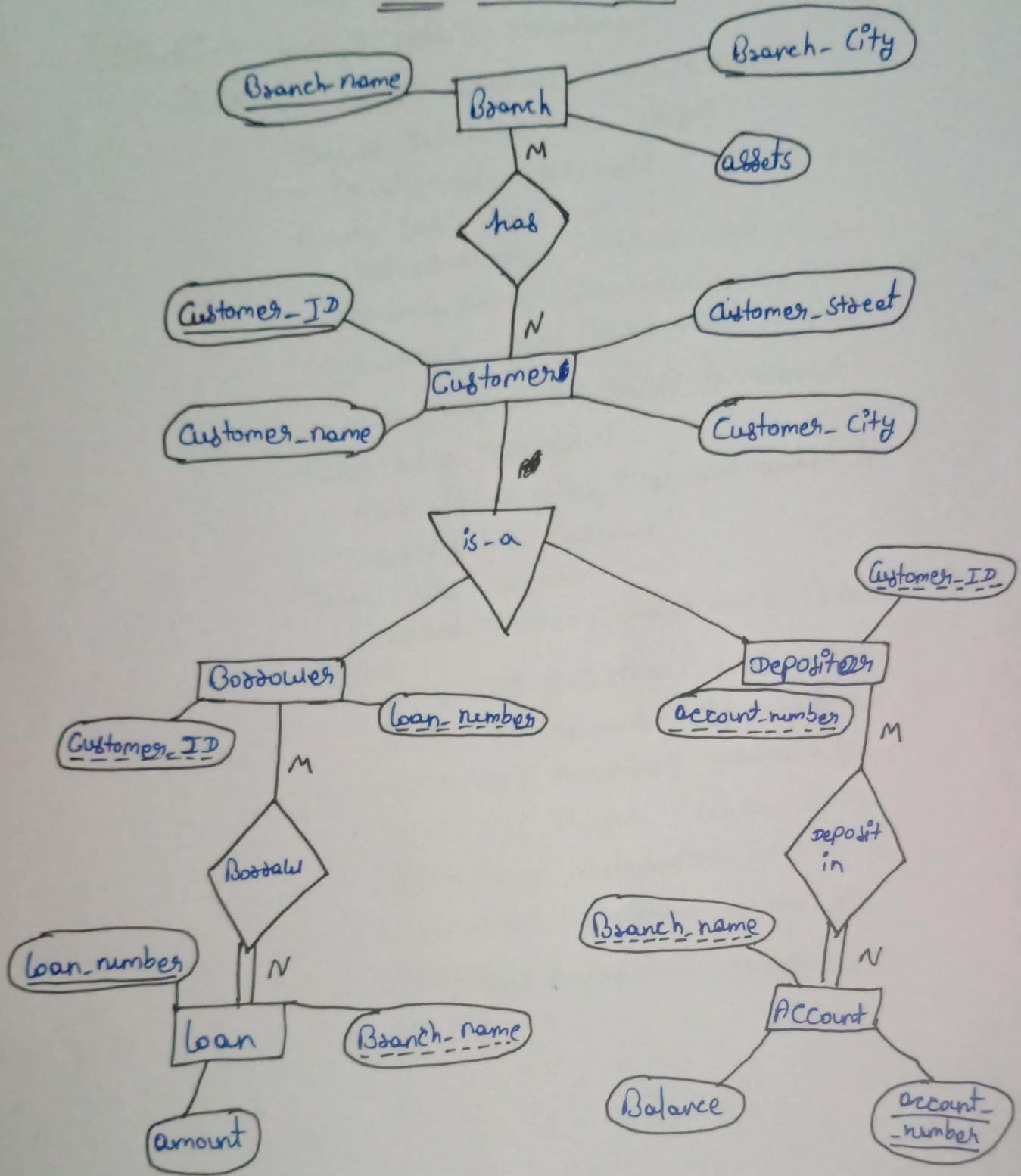
5th Table :→ account (account-number, branch-name, balance)

6th Table :→ depositor (ID, account-number)

Q.3 → RELATIONAL DIAGRAM



ER-DIA GRAM



Answer - 3 → DB-Table Structure

Table 1st → Account Details Structure

Code :-

```
-- Create database 'mca-assign3'  
Create Database 'mca-assign3';  
-- Create table 'account'  
Create table 'account' (  
    account-number int(25) NOT NULL,  
    branch-name varchar(200) DEFAULT NULL,  
    balance float(10,2) NOT NULL  
);  
-- Adding key & constraints to account  
ALTER table 'account'  
ADD Primary key ('account-number');  
-- Inserting into 'account'  
Insert Into 'account'  
    ('account-number', 'branch-name', 'balance')  
Values  
    (1234, 'SBI Rajasthan', 100000.00),  
    (2164, 'SBI Haryana', 300000.19),  
    (4272, 'SBI Haryana', 400000.31),  
    (4321, 'SBI Punjab', 200000.50),  
    (6254, 'SBI Maharashtra', 500000.19),  
    (7264, 'SBI Rajasthan', 600000.31),  
    (7265, 'SBI Rajasthan', 80000.50);
```

table 2nd → Borrower Details Structure

Code :-

```
-- Create table 'borrowers'  
Create Table 'borrowers' (  
    customer-ID int (10) NOT NULL,  
    loan-number int (25) NOT NULL  
);  
-- Adding key & constraints to borrowers  
Alter table 'borrowers'  
ADD Primary key ('customer-id', 'loan-number');  
-- Inserting Data into - borrowers  
Insert Into 'borrowers'  
    ('customer-id', 'loan-number')  
Values  
    (12345, 202402),  
    (34259, 202404),  
    (43629, 202403),  
    (54321, 202401);
```

table 3rd → Branch details Structure.

Code :-

```
-- Create table 'branch'  
Create Table 'branch' (  
    'branch-name' Varchar (150) NOT NULL,  
    'branch-city' Varchar (150) Default Null,  
    'assets' Varchar (150) NOT NULL  
);  
-- Adding key to branch  
Alter table 'branch' ADD Primary key ('branch-name');  
-- Inserting Data into 'branch'  
Insert Into 'branch' ('branch-name', 'branch-city', 'assets')  
Values ('SBI Gujarat', 'Surat', '4000000'),  
       ('SBI Hertson', 'Harrison', '5000000'),  
       ('SBI Haryana', 'Delhi', '3000000'),  
       ('SBI Maharashtra', 'mumbai', '5000000'),  
       ('SBI Punjab', 'chandigarh', '2000000'),  
       ('SBI Rajasthan', 'udaipur', '1000000');
```

Table 4th :- Customer Details Structure

Code :- -- Create table 'Customer'
 Create table 'Customer' (
 'Customer_id' int (10) NOT NULL,
 'Customer_name' Varchar(150) Default Null,
 'Customer_street' Varchar(150) Default Null,
 'Customer_City' Varchar(150) Default Null);
 -- Adding key to 'Customer'
 Alter table 'Customer' ADD Primary Key ('Customer_id');
 -- Inserting data into 'Customer'
 Insert Into 'Customer'
 ('Customer_id', 'Customer_Name', 'Customer_street', 'Customer_City')
 Values
 (12345, 'Rahul', 'St.no.2', 'Udaipur'),
 (34259, 'Rohit', 'St.no.41', 'Mumbai'),
 (36537, 'Harish', 'St.no.6', 'Haridwar'),
 (42629, 'Rohan', 'St.no.5', 'Chandigarh'),
 (54321, 'Nehan', 'St.no.2', 'Udaipur'),
 (67452, 'Sohan', 'St.no.3', 'Delhi');

Table 5th :- Deposited Details Structure

Code :- -- Create table 'depositors'
 Create table 'depositors' (
 'Customer_id' int (10) NOT NULL,
 'account_number' int (25) NOT NULL);
 -- Adding key to 'depositors'
 Alter table 'depositors' ADD Primary Key ('Customer_id',
 'account_number');
 -- Inserting data into 'depositors'
 Insert Into 'depositors' ('Customer_id', 'account_number')
 Values (12345, 1234),
 (34259, 6254),
 (34259, 7265),
 (36537, 4272),
 (42629, 4321),
 (54321, 7264),
 (67452, 2164);

Table 6th -> Loan Details Structure

Code :->

-- Create table 'loan'

Create table 'loan' (

'loan-number' int(25) NOT NULL,

'branch-name' varchar(150) Default null,

'amount' float(10,2) Default null);

-- Adding key to 'loan'

ALTER table 'loan'

ADD Primary Key ('loan-number');

-- Inserting Data into 'loan'

Insert Into 'loan'

('loan-number', 'branch-name', 'amount')

Values

(202401, 'SBI Rajasthan', 10005.00),

(202402, 'SBI Rajasthan', 20520.50),

(202403, 'SBI ~~Rajasthan~~^{Punjab}', 30525.25),

(202404, 'SBI Maharashtra', 30352.60);

Key Constraints For 'mca-assign3' DB

-- Constraints for table 'account'

Alter table 'account'

ADD Constraint 'account_ibfk_1' Foreign key ('branch-name')

References 'branch' ('branch-name');

-- Constraints for table 'borrower'

Alter table 'borrower'

ADD Constraint 'borrower_ibfk_1' Foreign key ('loan-number')

References 'loan' ('loan-number'),

ADD Constraint 'borrower_ibfk_2' Foreign key ('customer_id')

References 'customer' ('customer_id');

-- Constraints for table 'depositors'

Alter table 'depositors'

ADD Constraint 'depositors_ibfk_1' Foreign key ('account-number')

References 'account' ('account-number'),

ADD Constraint 'depositors_ibfk_2' Foreign key ('customer_id')

References 'customer' ('customer_id');

-- Constraints for table 'loan'

Alter table 'loan'

ADD Constraint 'loan_ibfk_1' Foreign key ('branch-name')

References 'branch' ('branch-name');

Data Structure in Table in DB After Creation

branch-name	branch-city	assets
SBI Gujarat	Surat	4000000
SBI Maharashtra	Mumbai	5000000
SBI Haryana	Delhi	3000000
SBI Punjab	Chandigarh	2000000
SBI Rajasthan	Udaipur	1000000

Table 3.1 :- Branch

Customer_id	Customer_name	Customer_street	Customer_city
12345	Rahul	St.no.2	Udaipur
34259	Rohit	St.no.4	Mumbai
36537	Harish	St.no.6	Mumbai
42629	Rohan	St.no.5	Chandigarh
54321	Mohan	St.no.1	Udaipur
67452	Sohan	St.no.3	Delhi

Table 3.2 :- Customer

Loan_number	branch-name	amount
202401	SBI Rajasthan	10005.00
202402	SBI Rajasthan	20520.50
202403	SBI Punjab	30525.25
202404	SBI Maharashtra	50352.60

Table 3.3 :- Loan

Customer_id	loan-number
12345	202402
34259	202404
42629	202403
54321	202401

Table 3.4 :- Borrower

account-number	branch-name	balance
1234	SBI Rajasthan	100000.00
2164	SBI Haryana	300000.19
4272	SBI Harrison	400000.31
4321	SBI Punjab	200000.50
6254	SBI Maharashtra	500000.19
7264	SBI Rajasthan	600000.31
7265	SBI Rajasthan	800000.50

Table 3.5 :- Account

Customer_id	account-number
12345	1234
34259	6254
34259	7265
36537	4272
42629	4321
54321	7264
67452	2164

Table 3.6 :- Depositor

Q.3.1 :- Find the ID of each customer of the bank who has an account but not a loan?

Sol:->

Query :- 1

Select depositors.Customer_id From depositor
Left Join borrower
ON depositor.Customer_id = borrower.Customer_id
Where borrower.Customer_id IS NULL;

Query :- 2

Select Customer_id
From depositor
Where Customer_id NOT IN (
Select Customer_id
From borrower
);

Output:->

Customer_id
<u>36537</u>
<u>67452</u>

Q.3.2 \Rightarrow Find the ID of each Customer who lives on the same Street and in the same City as customer 12345?

Soln: \Rightarrow

Query: \Rightarrow

Select customer_id

From Customer

Where Customer_Street = (

Select Customer_Street

From Customer

Where Customer_id = '12345')

AND Customer_City = (

Select Customer_City

From Customer

Where Customer_id = '12345')

AND Customer_id != '12345';

Output: \Rightarrow

Customer_id
54321

Q. 3.3 :- Find the name of each branch that has at least one customer who has an account in the bank and who lives in "Harrison"?

Sol:->

Query:->

```
Select account.branch-name  
From (  
    depositor  
Left Join customer  
    ON depositor.customer-id = customer.customer-id)  
Left Join account  
    ON depositor.account-number = account.account-number)  
Where customer-city = 'Harrison';
```

Output:->

branch-name
SBI Harrison

Q.3.4:- Find the maximum loan-giving branch with its customer names who have taken loan and deposited in that branch?

Sol. :->

Query:->

With Max Loan Branch AS (

Select branch-name,

Count (loan-number) AS loans_Count

From loan

Group By branch-name

Order By Count (loan-number) DESC

LIMIT 1

)

Select

C.Customer_id AS 'Customer ID'

C.Customer_Name AS 'Customer Name'

L.branch-name AS 'Branch Name'

From borrowers b

Join loan L ON b.loan_numbers = l.loan-number

Join Customer C ON b.customer_id = c.customer_id

Where l.branch_name = (

Select branch-name

From Max LoanBranch

)

Order By C.Customer_id;

Output:->

Customer ID	Customer Name	Branch Name
12345	Rahul	SBI Rajasthan
54321	Mahan	SBI Rajasthan

Q.3.5 :- Find the name of that customer who is both depositor and borrower?

Sol. :-

Query :-

```
Select Distinct Customer_id AS 'CustomerID',  
Customer_name AS 'Customer Name'  
From depositor  
Join borrower  
Using (Customer_id)  
Join customer  
Using (Customer_id);
```

Output :-

Customer ID	Customer Name
12345	Rahul
34239	Rohit
43629	Rohan
54321	Mohan