1. Create all the tables by defining primary key, foreign key and other appropriate constraints.

CREATE TABLE Bank (

bk\_code VARCHAR(10) PRIMARY KEY,

bk\_name VARCHAR(10) NOT NULL,

bk\_address VARCHAR(20) NOT NULL

);

CREATE TABLE Branch (

br\_id VARCHAR(10) PRIMARY KEY,

br\_name VARCHAR(10) NOT NULL,

br\_address VARCHAR(20) NOT NULL,

bk\_code VARCHAR(10),

FOREIGN KEY (bk\_code) REFERENCES Bank(bk\_code) ON DELETE CASCADE

);

CREATE TABLE Customer (

cust\_ID INT PRIMARY KEY,

cust\_name VARCHAR(10) NOT NULL,

phone\_no VARCHAR(10) UNIQUE NOT NULL,

address VARCHAR(20) NOT NULL

);

CREATE TABLE Account (

acc\_no INT PRIMARY KEY,

acc\_type VARCHAR(10) NOT NULL,

balance DECIMAL(10,2) CHECK (balance >= 0),

br\_id VARCHAR(10),

FOREIGN KEY (br\_id) REFERENCES Branch(br\_id) ON DELETE CASCADE

);

CREATE TABLE Customer\_Account (

cust\_ID INT,

acc\_no INT,

PRIMARY KEY (cust\_ID, acc\_no),

FOREIGN KEY (cust\_ID) REFERENCES Customer(cust\_ID) ON DELETE CASCADE,

FOREIGN KEY (acc\_no) REFERENCES Account(acc\_no) ON DELETE CASCADE

);

CREATE TABLE Loan (

loan\_ID INT PRIMARY KEY,

loan\_type VARCHAR(20) NOT NULL,

amount DECIMAL(10,2) CHECK (amount > 0),

br\_id VARCHAR(10),

FOREIGN KEY (br\_id) REFERENCES Branch(br\_id) ON DELETE CASCADE

);

CREATE TABLE Customer\_Loan (

cust\_ID INT,

loan\_ID INT,

PRIMARY KEY (cust\_ID, loan\_ID),

FOREIGN KEY (cust\_ID) REFERENCES Customer(cust\_ID) ON DELETE CASCADE,

FOREIGN KEY (loan\_ID) REFERENCES Loan(loan\_ID) ON DELETE CASCADE

);

2. Insert atleast five records in each table.

INSERT INTO Bank VALUES ('B001', 'State Bank', 'MG Road, Bangalore');

INSERT INTO Bank VALUES ('B002', 'ICICI Bank', 'Koramangala, Bangalore');

INSERT INTO Branch VALUES ('BR01', 'MG Road Branch', 'MG Road, Bangalore', 'B001');

INSERT INTO Branch VALUES ('BR02', 'NITK Branch', 'Surathkal, Karnataka', 'B002');

INSERT INTO Customer VALUES (101, 'Amit', '9876543210', 'Bangalore');

INSERT INTO Customer VALUES (102, 'Ravi', '9823456789', 'Mangalore');

INSERT INTO Customer VALUES (103, 'Priya', '7890123456', 'Udupi');

INSERT INTO Customer VALUES (104, 'John', '9876501234', 'Surathkal');

INSERT INTO Customer VALUES (105, 'Anita', '9087654321', 'Bangalore');

INSERT INTO Account VALUES (201, 'Savings', 15000.00, 'BR01');

INSERT INTO Account VALUES (202, 'Current', 5000.00, 'BR02');

INSERT INTO Account VALUES (203, 'Savings', 2000.00, 'BR02');

INSERT INTO Account VALUES (204, 'Savings', 12000.00, 'BR01');

INSERT INTO Account VALUES (205, 'Current', 10000.00, 'BR01');

INSERT INTO Customer\_Account VALUES (101, 201);

INSERT INTO Customer\_Account VALUES (102, 202);

INSERT INTO Customer\_Account VALUES (103, 203);

INSERT INTO Customer\_Account VALUES (104, 204);

INSERT INTO Customer\_Account VALUES (105, 205);

INSERT INTO Loan VALUES (301, 'Home Loan', 500000.00, 'BR01');

INSERT INTO Loan VALUES (302, 'Car Loan', 300000.00, 'BR02');

INSERT INTO Loan VALUES (303, 'Vehicle Loan', 200000.00, 'BR01');

INSERT INTO Loan VALUES (304, 'Education Loan', 100000.00, 'BR02');

INSERT INTO Loan VALUES (305, 'Home Loan', 600000.00, 'BR02');

INSERT INTO Customer\_Loan VALUES (101, 301);

INSERT INTO Customer\_Loan VALUES (102, 302);

INSERT INTO Customer\_Loan VALUES (103, 303);

INSERT INTO Customer\_Loan VALUES (104, 304);

INSERT INTO Customer\_Loan VALUES (105, 305);

3. List the details of all customers.

SELECT \* FROM Customer;

4. Find the cust\_ID and phone number of customer ‘Ravi’

SELECT cust\_ID, phone\_no FROM Customer WHERE cust\_name = 'Ravi';

5. Find the Address of all branches of br\_01.

SELECT br\_address FROM Branch WHERE br\_id = 'BR01';

6. Find the details of Customer having ID 103.

SELECT \* FROM Customer WHERE cust\_ID = 103;

7. List the account details having balance more than 10000.

SELECT \* FROM Account WHERE balance > 10000;

8. List the account details of branch br\_02.

SELECT \* FROM Account WHERE br\_id = 'BR02';

9. List the loan details of branch br\_01.

SELECT \* FROM Loan WHERE br\_id = 'BR01';

10. List the account details with their branch address.

SELECT A.acc\_no, A.acc\_type, A.balance, B.br\_address

FROM Account A

JOIN Branch B ON A.br\_id = B.br\_id;

11. List the customer details with their account details.

SELECT C.cust\_ID, C.cust\_name, C.phone\_no, C.address, A.acc\_no, A.acc\_type, A.balance

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no;

12. List the customer details having account type ‘savings’.

SELECT C.cust\_ID, C.cust\_name, C.phone\_no, C.address, A.acc\_no, A.acc\_type, A.balance

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

WHERE A.acc\_type = 'Savings';

13. List the customer details having vehicle loan.

SELECT C.cust\_ID, C.cust\_name, C.phone\_no, C.address

FROM Customer C

JOIN Customer\_Loan CL ON C.cust\_ID = CL.cust\_ID

JOIN Loan L ON CL.loan\_ID = L.loan\_ID

WHERE L.loan\_type = 'Vehicle Loan';

14. List the branch names of all accounts.

SELECT DISTINCT B.br\_name

FROM Branch B

JOIN Account A ON B.br\_id = A.br\_id;

15. List the customer details going to ‘Surathkal’ branch.

SELECT DISTINCT C.\*

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

JOIN Branch B ON A.br\_id = B.br\_id

WHERE B.br\_address LIKE '%Surathkal%';

16. List the customers having loan account in ‘MG Road’ branch.

SELECT DISTINCT C.\*

FROM Customer C

JOIN Customer\_Loan CL ON C.cust\_ID = CL.cust\_ID

JOIN Loan L ON CL.loan\_ID = L.loan\_ID

JOIN Branch B ON L.br\_id = B.br\_id

WHERE B.br\_address LIKE '%MG Road%';

17. Find the customers having balance between 1000 to 10000.

SELECT DISTINCT C.\*

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

WHERE A.balance BETWEEN 1000 AND 10000;

18. Give a bonus of rupees 100 to customers having more than 10000 balance.

UPDATE Account

SET balance = balance + 100

WHERE balance > 10000;

19. Deduct 50 rupees from customers having less than 500 rupees in balance.

UPDATE Account

SET balance = balance - 50

WHERE balance < 500;

20. Give the customer details having home loan.

SELECT C.\*

FROM Customer C

JOIN Customer\_Loan CL ON C.cust\_ID = CL.cust\_ID

JOIN Loan L ON CL.loan\_ID = L.loan\_ID

WHERE L.loan\_type = 'Home Loan';

21. Give the customer details having home loan in ‘NITK’ branch.

SELECT C.\*

FROM Customer C

JOIN Customer\_Loan CL ON C.cust\_ID = CL.cust\_ID

JOIN Loan L ON CL.loan\_ID = L.loan\_ID

JOIN Branch B ON L.br\_id = B.br\_id

WHERE L.loan\_type = 'Home Loan' AND B.br\_name = 'NITK Branch';

22. Add a column NOMINEE to the customer table with data type varchar (50).

ALTER TABLE Customer ADD NOMINEE VARCHAR(50);

23. List all the account numbers in ascending order of their balance.

SELECT acc\_no, balance

FROM Account

ORDER BY balance ASC;

24. Count the number of customers having account type savings.

SELECT COUNT(DISTINCT C.cust\_ID) AS savings\_customers

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

WHERE A.acc\_type = 'Savings';

25. Count the number of customers for each account type.

SELECT A.acc\_type, COUNT(DISTINCT C.cust\_ID) AS num\_customers

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

GROUP BY A.acc\_type;

26. Find the total balance in Savings account.

SELECT SUM(balance) AS total\_savings\_balance

FROM Account

WHERE acc\_type = 'Savings';

27. Find the average balance of Current account.

SELECT AVG(balance) AS avg\_current\_balance

FROM Account

WHERE acc\_type = 'Current';

28. Find the average balance for each account type.

SELECT acc\_type, AVG(balance) AS avg\_balance

FROM Account

GROUP BY acc\_type;

29. Find the customer details having maximum balance.

SELECT C.\*

FROM Customer C

JOIN Customer\_Account CA ON C.cust\_ID = CA.cust\_ID

JOIN Account A ON CA.acc\_no = A.acc\_no

WHERE A.balance = (SELECT MAX(balance) FROM Account);

30. Find the average amount for vehicle loan.

SELECT AVG(amount) AS avg\_vehicle\_loan

FROM Loan

WHERE loan\_type = 'Vehicle Loan';

31. Find the average balance in each branch.

SELECT B.br\_name, AVG(A.balance) AS avg\_branch\_balance

FROM Branch B

JOIN Account A ON B.br\_id = A.br\_id

GROUP BY B.br\_name;

DROP TABLE Customer\_Loan;

DROP TABLE Loan;

DROP TABLE Customer\_Account;

DROP TABLE Account;

DROP TABLE Customer;

DROP TABLE Branch;

DROP TABLE Bank;

CREATE TABLE Bank (

bk\_code VARCHAR2(10) PRIMARY KEY,

bk\_name VARCHAR2(50) NOT NULL,

bk\_address VARCHAR2(50) NOT NULL

);

CREATE TABLE Branch (

br\_id VARCHAR2(10) PRIMARY KEY,

br\_name VARCHAR2(50) NOT NULL,

br\_address VARCHAR2(50) NOT NULL,

bk\_code VARCHAR2(10),

CONSTRAINT fk\_bank FOREIGN KEY (bk\_code) REFERENCES Bank(bk\_code) ON DELETE CASCADE

);

CREATE TABLE Customer (

cust\_ID INT PRIMARY KEY,

cust\_name VARCHAR2(50) NOT NULL,

phone\_no VARCHAR2(15) UNIQUE NOT NULL,

address VARCHAR2(50) NOT NULL

);

CREATE TABLE Account (

acc\_no INT PRIMARY KEY,

acc\_type VARCHAR2(20) NOT NULL,

balance NUMBER(10,2) CHECK (balance >= 0),

br\_id VARCHAR2(10),

CONSTRAINT fk\_branch FOREIGN KEY (br\_id) REFERENCES Branch(br\_id) ON DELETE CASCADE

);

CREATE TABLE Customer\_Account (

cust\_ID INT,

acc\_no INT,

PRIMARY KEY (cust\_ID, acc\_no),

CONSTRAINT fk\_customer FOREIGN KEY (cust\_ID) REFERENCES Customer(cust\_ID) ON DELETE CASCADE,

CONSTRAINT fk\_account FOREIGN KEY (acc\_no) REFERENCES Account(acc\_no) ON DELETE CASCADE

);

CREATE TABLE Loan (

loan\_ID INT PRIMARY KEY,

loan\_type VARCHAR2(50) NOT NULL,

amount NUMBER(10,2) CHECK (amount > 0),

br\_id VARCHAR2(10),

CONSTRAINT fk\_loan\_branch FOREIGN KEY (br\_id) REFERENCES Branch(br\_id) ON DELETE CASCADE

);

CREATE TABLE Customer\_Loan (

cust\_ID INT,

loan\_ID INT,

PRIMARY KEY (cust\_ID, loan\_ID),

CONSTRAINT fk\_customer\_loan FOREIGN KEY (cust\_ID) REFERENCES Customer(cust\_ID) ON DELETE CASCADE,

CONSTRAINT fk\_loan FOREIGN KEY (loan\_ID) REFERENCES Loan(loan\_ID) ON DELETE CASCADE

);

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