MA611 – 2nd Semester MCA, 2024-2025
DATABASE SYSTEMS LAB
Assignment-5

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1. Create the following tables with the following attributes and constraints on them.

a. Bank (bk_code, bk_name, bk_address)

b. Branch (br_id, br_name, br_address, bk_code)

c. Customer (cust_ID, cust_name, phone_no, address)

d. Account (acc_no, acc_type, balance, br_id)s

e. Customer_Account (cust_ID, acc_no)

f. Loan (loan_ID, loan_type, amount, br_id)

g. Customer_Loan (cust_ID, loan_ID**)**

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

```
SQL> create table bank(
  2  bk_code varchar(20) primary key,
  3  bk_name varchar(20) not null,
  4  bk_address varchar(20) not null);

Table created.
```

```
SQL> create table branch(
  2  br_id varchar(20) primary key,
  3  br_name varchar(20) not null,
  4  br_address varchar(20) not null,
  5  bk_code varchar(20) references bank(bk_code) on delete cascade);

Table created.
```

```
SQL> create table account(
  2  acc_no numeric(20,0) primary key,
  3  acc_type varchar(20) not null,
  4  balance numeric(6,0) check(balance > 0),
  5  br_id varchar(20) references branch(br_id));

Table created.
```

```
SQL> create table customer(
  2  cust_id varchar(20) primary key,
  3  cust_name varchar(20) not null,
  4  phone_no numeric(10,0) unique,
  5  address varchar(20) not null);

Table created.
```

```
SQL> create table customer_loan(
  2  cust_id varchar(20) references customer(cust_id) on delete cascade,
  3  loan_id varchar(20) references loan(loan_id) on delete cascade,
  4  primary key(cust_id, loan_id));

Table created.
```

```
SQL> create table customer_account(
  2  cust_id varchar(20) references customer(cust_id),
  3  acc_no numeric(20,0) references account(acc_no),
  4  primary key(cust_id, acc_no));

Table created.
```

```
SQL> create table loan(
  2  loan_id varchar(20) primary key,
  3  loan_type varchar(20) not null,
  4  amount numeric(10,0) check(amount > 0),
  5  br_id varchar(20) references branch(br_id));

Table created.
```

2. Insert atleast five records in each table.

Inserted all records!

3. List the details of all customers.

```
SQL> select * from customer;

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
101                  Rahul Sharma         9876543210 Bangalore
102                  Priya Patel          8765432109 Mumbai
103                  Amit Kumar           7654321098 Delhi
104                  Sneha Gupta          6543210987 Chennai
105                  Ravi Verma           5432109876 Kolkata
106                  Neha Singh           4321098765 Hyderabad
107                  Rajesh Reddy         3210987654 Pune
108                  Ananya Joshi         2109876543 Ahmedabad
109                  Karan Malhotra       1098765432 Jaipur
110                  Divya Sharma          987654321 Lucknow
111                  Vivek Mishra         9876543211 Chandigarh
```

4. Find the cust_ID and phone number of customer ‘Ravi’.

```
SQL> select cust_id , phone_no from customer where cust_name like 'Ravi%';

CUST_ID               PHONE_NO
-------------------- ----------
105                  5432109876
```

5. Find the Address of all branches of br_01.

```
SQL> select br_address from branch where br_id = 'br_01';

BR_ADDRESS
--------------------
NITK Campus
```

6. Find the details of Customer having ID 103.

```
SQL> select * from customer where cust_id = 103;

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
103                  Amit Kumar           7654321098 Delhi
```

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

```
SQL> select * from account where balance > 10000;

    ACC_NO ACC_TYPE               BALANCE BR_ID
---------- -------------------- ---------- --------------------
     10001 Savings                   15000 br_01
     10002 Current                   25000 br_02
     10004 Current                   32000 br_04
     10006 Fixed                     50000 br_01
     10008 Current                   18000 br_03
     10010 Fixed                    100000 br_05
     10011 Savings                   12500 br_01
     10014 Fixed                     75000 br_04
     10016 Current                   27000 br_01
     10018 Fixed                    120000 br_03
     10020 Current                   22000 br_20
```

8. List the account details of branch br_02.

```
SQL> select * from account where br_id = 'br_02';

    ACC_NO ACC_TYPE               BALANCE BR_ID
---------- -------------------- ---------- ---------
     10002 Current                   25000 br_02
     10007 Savings                    9500 br_02
     10012 Current                    7500 br_02
     10017 Savings                    1500 br_02
```

9. List the loan details of branch br_01.

```
SQL> select * from loan where br_id = 'br_01';

LOAN_ID              LOAN_TYPE                AMOUNT BR_ID
-------------------- -------------------- ---------- -------------
L001                 Home                     500000 br_01
L006                 Vehicle                  400000 br_01
L011                 Personal                 120000 br_01
L016                 Education                210000 br_01
```

10. List the account details with their branch address.

```
SQL> select account.acc_no, account.acc_type , account.balance , branch.br_address from account, bran
ch where account.br_id = branch.br_id;

    ACC_NO ACC_TYPE               BALANCE BR_ADDRESS
---------- -------------------- ---------- --------------------
     10016 Current                 27000 NITK Campus
     10011 Savings                 12500 NITK Campus
     10006 Fixed                   50000 NITK Campus
     10001 Savings                 15000 NITK Campus
     10017 Savings                  1500 MG Road
     10012 Current                  7500 MG Road
     10007 Savings                  9500 MG Road
     10002 Current                 25000 MG Road
     10018 Fixed                  120000 Jayanagar
     10013 Savings                  6000 Jayanagar
     10008 Current                 18000 Jayanagar
```

11. List the customer details with their account details.

```
SQL> select customer.cust_id, customer.cust_name, customer.phone_no, customer.address, account.acc_no, account.acc_type, a
ccount.balance , account.br_id from customer, customer_account, account where customer.cust_id = customer_account.cust_id
and customer_account.acc_no = account.acc_no;

CUST_ID              CUST_NAME              PHONE_NO ADDRESS                ACC_NO ACC_TYPE               BALANCE BR_ID
-------------------- -------------------- ---------- -------------------- ---------- -------------------- ---------- -----
--------------
101                  Rahul Sharma         9876543210 Bangalore                10001 Savings                 15000 br_01
102                  Priya Patel          8765432109 Mumbai                   10002 Current                 25000 br_02
103                  Amit Kumar           7654321098 Delhi                    10003 Savings                  8000 br_03
104                  Sneha Gupta          6543210987 Chennai                  10004 Current                 32000 br_04
105                  Ravi Verma           5432109876 Kolkata                  10005 Savings                   450 br_05
106                  Neha Singh           4321098765 Hyderabad                10006 Fixed                   50000 br_01
107                  Rajesh Reddy         3210987654 Pune                     10007 Savings                  9500 br_02
108                  Ananya Joshi         2109876543 Ahmedabad                10008 Current                 18000 br_03
109                  Karan Malhotra       1098765432 Jaipur                   10009 Savings                  5000 br_04
110                  Divya Sharma          987654321 Lucknow                  10010 Fixed                  100000 br_05
111                  Vivek Mishra         9876543211 Chandigarh               10011 Savings                 12500 br_01
```

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

```
SQL> select customer.cust_id, customer.cust_name, customer.phone_no, customer.address from customer, customer_account, acc
ount where customer.cust_id = customer_account.cust_id and customer_account.acc_no = account.acc_no and account.acc_type =
 'Savings';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
101                  Rahul Sharma         9876543210 Bangalore
103                  Amit Kumar           7654321098 Delhi
105                  Ravi Verma           5432109876 Kolkata
107                  Rajesh Reddy         3210987654 Pune
109                  Karan Malhotra       1098765432 Jaipur
111                  Vivek Mishra         9876543211 Chandigarh
113                  Suresh Nair          7654321099 Kochi
115                  Sanjay Bansal        5432109877 Bhopal
117                  Deepak Menon         3210987655 Surathkal
119                  Prakash Jain         1098765433 Shimla
```

13. List the customer details having vehicle loan.

```
SQL> select customer.cust_id, customer.cust_name, customer.phone_no, customer.address from customer, customer_loan , loan
where customer.cust_id = customer_loan.cust_id and customer_loan.loan_id = loan.loan_id and loan.loan_type = 'Vehicle';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
102                  Priya Patel          8765432109 Mumbai
106                  Neha Singh           4321098765 Hyderabad
110                  Divya Sharma          987654321 Lucknow
114                  Meena Iyer           6543210988 Guwahati
118                  Anjali Khanna        2109876544 Mysore
```

14. List the branch names of all accounts.

```
SQL> select branch.br_name from branch, account where account.br_id = branch.br_id;

BR_NAME
--------------------
Surathkal
MG Road
Jayanagar
Koramangala
Electronic City
Surathkal
MG Road
Jayanagar
Koramangala
Electronic City
Surathkal
```

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

```
SQL> select cust_id, cust_name, phone_no, address from customer natural join  customer_account natural join account natura
l join branch where br_name = 'Surathkal';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
101                  Rahul Sharma         9876543210 Bangalore
106                  Neha Singh           4321098765 Hyderabad
111                  Vivek Mishra         9876543211 Chandigarh
116                  Kavita Desai         4321098766 Mangalore
```

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

```
SQL> select cust_name from customer natural join customer_loan natural join loan natural join branch whe
re br_name = 'MG Road';

CUST_NAME
--------------------
Priya Patel
Rajesh Reddy
Pooja Rao
Deepak Menon
```

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

```
SQL> select cust_name from customer natural join customer_account natural join account where balance bet
ween 1000 and 10000;

CUST_NAME
--------------------
Amit Kumar
Rajesh Reddy
Karan Malhotra
Pooja Rao
Suresh Nair
Sanjay Bansal
Deepak Menon
Prakash Jain
```

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

```
SQL> update account set balance = balance + 100 where balance > 10000;

11 rows updated.
```

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

```
SQL> update account set balance = balance - 50 where balance < 500;

1 row updated.
```

20. Give the customer details having home loan.

```
SQL> select cust_id, cust_name , phone_no , address from customer natural join customer_loan natural joi
n loan where loan.loan_type = 'Home';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
101                  Rahul Sharma         9876543210 Bangalore
105                  Ravi Verma           5432109876 Kolkata
109                  Karan Malhotra       1098765432 Jaipur
113                  Suresh Nair          7654321099 Kochi
117                  Deepak Menon         3210987655 Surathkal
120                  Shalini Agarwal       987654322 Dehradun
```

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

```
SQL> select cust_id, cust_name , phone_no , address from customer natural join customer_loan natural joi
n loan natural join branch where loan.loan_type = 'Home' and branch.br_name = 'NITK';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
120                  Shalini Agarwal       987654322 Dehradun
```

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

```
SQL> alter table customer add nominee varchar(50);

Table altered.
```

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

```
SQL> select acc_no from account order by balance;

    ACC_NO
----------
     10005
     10017
     10015
     10009
     10013
     10012
     10003
     10019
     10007
     10011
     10001
```

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

```
SQL> select count(*) from account where acc_type = 'Savings';

  COUNT(*)
----------
        10
```

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

```
SQL> select acc_type, count(acc_type) from account group by acc_type;

ACC_TYPE             COUNT(ACC_TYPE)
-------------------- ---------------
Current                            6
Savings                           10
Fixed                              4
```

26. Find the total balance in Savings account.

```
SQL> select sum(balance) from account where acc_type = 'Savings';

SUM(BALANCE)
------------
       70100
```

27. Find the average balance of Current account.

```
SQL> select avg(balance) from account where acc_type = 'Current';

AVG(BALANCE)
------------
       22000
```

28. Find the average balance for each account type.

```
SQL> select acc_type, avg(balance) from account group by acc_type;

ACC_TYPE             AVG(BALANCE)
-------------------- ------------
Current                     22000
Savings                      7010
Fixed                       86350
```

29. Find the customer details having maximum balance.

```
SQL> select cust_id, cust_name, phone_no, address from customer natural join customer_account natural jo
in account where account.balance = (select max(balance) from account);

CUST_ID              CUST_NAME             PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
118                  Anjali Khanna        2109876544 Mysore
```

30. Find the average amount for vehicle loan.

```
SQL> select avg(amount) from loan where loan_type = 'Vehicle';

AVG(AMOUNT)
-----------
     350000
```

31. Find the average balance in each branch.

```
SQL> select br_name , avg(balance) from account natural join branch group by br_name;

BR_NAME              AVG(BALANCE)
-------------------- ------------
Koramangala                 30300
Electronic City             34500
MG Road                     10900
Surathkal                   26225
Jayanagar                   38050
NITK                        22100
```