MA611 - 2nd Semester MCA , 2024 - 25
DBMS LAB
Assignment – 5

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

```
CREATE TABLE bank (
    BK_CODE NUMBER(10) PRIMARY KEY,
    BK_NAME VARCHAR(100),
    BK_ADDRESS VARCHAR(100)
  5  );

Table created.
```

```
CREATE TABLE branch (
    BR_ID VARCHAR(5) PRIMARY KEY,
    BR_NAME VARCHAR(50),
    BR_ADDRESS VARCHAR(100),
    BK_CODE NUMBER(10),
    foreign key(BK_CODE) REFERENCES bank on delete cascade
  7  );

Table created.
```

```
CREATE TABLE customer (
    CUST_ID NUMBER(10) PRIMARY KEY,
    CUST_NAME VARCHAR(50),
    PHONE_NO VARCHAR(10),
    ADDRESS VARCHAR(100)
  6  );

Table created.
```

```
CREATE TABLE account (
    ACC_NO NUMBER(11) PRIMARY KEY,
    ACC_TYPE VARCHAR(20),
    BALANCE NUMBER(10,2),
    BR_ID VARCHAR(5),
    foreign key(BR_ID) REFERENCES branch on delete cascade
  7  );

Table created.
```

```
CREATE TABLE customer_account (
    CUST_ID NUMBER(10),
    ACC_NO NUMBER(11),
    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
  7  );

Table created.
```

```
CREATE TABLE loan (
    LOAN_ID NUMBER(11) PRIMARY KEY,
    LOAN_TYPE VARCHAR(20),
    AMOUNT NUMBER(10,2),
    BR_ID VARCHAR(5),
    foreign key(BR_ID) REFERENCES branch(BR_ID) on delete cascade
  7  );

Table created.
```

```
CREATE TABLE customer_loan (
    CUST_ID NUMBER(10),
    LOAN_ID NUMBER(11),
    PRIMARY KEY (CUST_ID, LOAN_ID),
    foreign key(CUST_ID) REFERENCES customer on delete cascade,
    foreign key(LOAN_ID) REFERENCES loan on delete cascade
  7  );

Table created.
```

2. Insert atleast five records in each table.

```
insert all
into bank values (1001, 'SBI', 'Delhi')
into bank values (1002, 'HDFC', 'Karnatka')
into bank values (1003, 'ICICI', 'Delhi')
into bank values (1004, 'PNB', 'Delhi')
into bank values (1005, 'Canara', 'Delhi')
  7  SELECT 1 FROM DUAL;

5 rows created.

Commit complete.
```

```
insert all
into branch values ('br_01', 'Palam', 'Palam, Delhi', 1001)
into branch values ('br_02', 'Dwarka', 'Dwarka, Delhi', 1001)
into branch values ('br_03', 'NITK', 'Surathkal, Karnatka', 1002)
into branch values ('br_04', 'Surathkal', 'Surathkal, Karnatka', 1002)
into branch values ('br_05', 'MG Road', 'Bengaluru, Karnatka', 1002)
  7  SELECT 1 FROM DUAL;

5 rows created.

Commit complete.
```

```
insert all
into customer values (101, 'Ravi', '9876543210', 'RZF-1')
into customer values (102, 'Akash', '9876543211', 'RZF-2')
into customer values (103, 'Abhishek', '9876543212', 'RZF-3')
into customer values (104, 'Harsh', '9876543213', 'RZF-4')
into customer values (105, 'Kartik', '9876543214', 'RZF-5')
into customer values (106, 'Manish', '9876543215', 'RZF-6')
into customer values (107, 'Parth', '9876543216', 'RZF-6')
into customer values (108, 'Shivam', '9876543217', 'RZF-6')
 10  SELECT 1 FROM DUAL;

8 rows created.

Commit complete.
```

```
insert all
into account values (123101, 'Current', 10000, 'br_01')
into account values (123102, 'Current', 6000, 'br_02')
into account values (123103, 'Savings', 5000, 'br_01')
into account values (123104, 'Current', 400, 'br_02')
into account values (123105, 'Current', 12000, 'br_01')
into account values (123106, 'Savings', 7000, 'br_03')
into account values (123107, 'Current', 8000, 'br_04')
into account values (123108, 'Savings', 300, 'br_05')
 10  SELECT 1 FROM DUAL;

8 rows created.

Commit complete.
```

```
insert all
into customer_account values (101, 123101)
into customer_account values (102, 123102)
into customer_account values (103, 123103)
into customer_account values (104, 123104)
into customer_account values (105, 123105)
into customer_account values (106, 123106)
into customer_account values (107, 123107)
into customer_account values (108, 123108)
 10  SELECT 1 FROM DUAL;

8 rows created.

Commit complete.
```

```
insert all
into loan values (980101, 'Home', 500000, 'br_01')
into loan values (980102, 'Home', 300000, 'br_01')
into loan values (980103, 'Education', 120000, 'br_02')
into loan values (980104, 'Vehicle', 80000, 'br_02')
into loan values (980105, 'Vehicle', 200000, 'br_03')
  7  SELECT 1 FROM DUAL;

5 rows created.

Commit complete.
```

```
insert all
into customer_loan values (101, 980101)
into customer_loan values (103, 980102)
into customer_loan values (102, 980103)
into customer_loan values (104, 980104)
into customer_loan values (106, 980105)
  7  SELECT 1 FROM DUAL;

5 rows created.

Commit complete.
```

3. List the details of all customers.

```
SQL> select * from customer;

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ----------
       101 Ravi                 9876543210 RZF-1
       102 Akash                9876543211 RZF-2
       103 Abhishek             9876543212 RZF-3
       104 Harsh                9876543213 RZF-4
       105 Kartik               9876543214 RZF-5
       106 Manish               9876543215 RZF-6
       107 Parth                9876543216 RZF-6
       108 Shivam               9876543217 RZF-6

8 rows selected.
```

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

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

   CUST_ID CUST_NAME            PHONE_NO
---------- -------------------- ----------
       101 Ravi                 9876543210
```

5. Find the Address of all branches of br_01.

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

BR_ID BR_NAME              BR_ADDRESS                      BK_CODE
----- -------------------- ------------------------------ ----------
br_01 Palam                Palam, Delhi                      1001
```

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 Abhishek             9876543212 RZF-3
```

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

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

    ACC_NO ACC_TYPE                BALANCE BR_ID
---------- -------------------- ---------- -----
    123105 Current                   12000 br_01
```

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
---------- -------------------- ---------- -----
    123102 Current                    6000 br_02
    123104 Current                     400 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
---------- -------------------- ---------- -----
    980101 Home                     500000 br_01
    980102 Home                     300000 br_01
```

10. List the account details with their branch address.

```
SQL> select acc_no, acc_type, balance, a.br_id, br_address from account a , branch b
  2  where b.br_id = a.br_id;

    ACC_NO ACC_TYPE              BALANCE BR_ID BR_ADDRESS
---------- -------------------- ---------- ----- ------------------------------
    123101 Current                  10000 br_01 Palam, Delhi
    123102 Current                   6000 br_02 Dwarka, Delhi
    123103 Savings                   5000 br_01 Palam, Delhi
    123104 Current                    400 br_02 Dwarka, Delhi
    123105 Current                  12000 br_01 Palam, Delhi
    123106 Savings                   7000 br_03 Surathkal, Karnatka
    123107 Current                   8000 br_04 Surathkal, Karnatka
    123108 Savings                    300 br_05 Bengaluru, Karnatka

8 rows selected.
```

11. List the customer details with their account details.

```
SQL> select c.cust_id, cust_name, phone_no, address, a.acc_no, acc_type, balance, br_id
  2  from customer c join customer_account ca on c.cust_id = ca.cust_id
  3  join account a on a.acc_no = ca.acc_no;

   CUST_ID CUST_NAME           PHONE_NO   ADDRESS                        ACC_NO ACC_TYPE              BALANCE BR_ID
---------- ------------------- ---------- ------------------------------ ---------- ------------------- ---------- -----
       101 Ravi                9876543210 RZF-1                          123101 Current                 10000 br_01
       102 Akash               9876543211 RZF-2                          123102 Current                  6000 br_02
       103 Abhishek            9876543212 RZF-3                          123103 Savings                  5000 br_01
       104 Harsh               9876543213 RZF-4                          123104 Current                   400 br_02
       105 Kartik              9876543214 RZF-5                          123105 Current                 12000 br_01
       106 Manish              9876543215 RZF-6                          123106 Savings                  7000 br_03
       107 Parth               9876543216 RZF-6                          123107 Current                  8000 br_04
       108 Shivam              9876543217 RZF-6                          123108 Savings                   300 br_05
```

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

```
select c.cust_id, cust_name, phone_no, address, a.acc_no, acc_type, balance, br_id
from customer c join customer_account ca on c.cust_id = ca.cust_id
  3  join account a on a.acc_no = ca.acc_no where acc_type = 'Savings';

   CUST_ID CUST_NAME           PHONE_NO   ADDRESS                        ACC_NO ACC_TYPE              BALANCE BR_ID
---------- ------------------- ---------- ------------------------------ ---------- ------------------- ---------- -----
       103 Abhishek            9876543212 RZF-3                          123103 Savings                  5000 br_01
       106 Manish              9876543215 RZF-6                          123106 Savings                  7000 br_03
       108 Shivam              9876543217 RZF-6                          123108 Savings                   300 br_05
```

13. List the customer details having vehicle loan.

```
select c.cust_id, cust_name, phone_no address, loan_type
from customer c join customer_loan cl on c.cust_id = cl.cust_id
  3  join loan l on l.loan_id = cl.loan_id where loan_type = 'Vehicle';

   CUST_ID CUST_NAME           ADDRESS    LOAN_TYPE
---------- ------------------- ---------- --------------------
       104 Harsh               9876543213 Vehicle
       106 Manish              9876543215 Vehicle
```

14. List the branch names of all accounts.

```
select distinct branch.br_name
from branch
  3  join account on branch.br_id = account.br_id;

BR_NAME
--------------------
Palam
Dwarka
MG Road
Surathkal
NITK
```

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

```
select customer.*
from customer
join customer_account on customer.cust_ID = customer_account.cust_ID
join account on customer_account.acc_no = account.acc_no
join branch on account.br_id = branch.br_id
  6  where branch.br_name = 'Surathkal';

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ------------------------------
       107 Parth                9876543216 RZF-6
```

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

```
select customer.*
from customer
join customer_loan on customer.cust_ID = customer_loan.cust_ID
join loan on customer_loan.loan_ID = loan.loan_ID
join branch on loan.br_id = branch.br_id
  6  where branch.br_name = 'NITK';

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ------------------------------
       106 Manish               9876543215 RZF-6
```

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

```
select customer.*
from customer
join customer_account on customer.cust_ID = customer_account.cust_ID
join account on customer_account.acc_no = account.acc_no
  5  where account.balance between 1000 and 10000;

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ------------------------------
       101 Ravi                 9876543210 RZF-1
       102 Akash                9876543211 RZF-2
       103 Abhishek             9876543212 RZF-3
       106 Manish               9876543215 RZF-6
       107 Parth                9876543216 RZF-6
```

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

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

1 row updated.
```

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

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

2 rows updated.
```

20. Give the customer details having home loan.

```
select customer.*
from customer
join customer_loan on customer.cust_ID = customer_loan.cust_ID
join loan on customer_loan.loan_ID = loan.loan_ID
  5  where loan.loan_type = 'Home';

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ----------------------
       101 Ravi                 9876543210 RZF-1
       103 Abhishek             9876543212 RZF-3
```

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

```
select customer.*
from customer
join customer_loan on customer.cust_ID = customer_loan.cust_ID
join loan on customer_loan.loan_ID = loan.loan_ID
join branch on loan.br_id = branch.br_id
  6  where loan.loan_type = 'Home' and branch.br_name = 'Palam';

   CUST_ID CUST_NAME            PHONE_NO   ADDRESS
---------- -------------------- ---------- ----------------------
       101 Ravi                 9876543210 RZF-1
       103 Abhishek             9876543212 RZF-3
```

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

```
SQL> alter table customer
  2  add nominee varchar(20);

Table altered.
```

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

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

    ACC_NO    BALANCE
---------- ----------
    123108        300
    123104        400
    123103       5000
    123102       6000
    123106       7000
    123107       8000
    123101      10000
    123105      12000

8 rows selected.
```

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

```
SQL> SELECT COUNT(DISTINCT Customer.cust_ID) AS Savings_Account_Customers
  2  FROM Customer
  3  JOIN Customer_Account ON Customer.cust_ID = Customer_Account.cust_ID
  4  JOIN Account ON Customer_Account.acc_no = Account.acc_no
  5  WHERE Account.acc_type = 'Savings';

SAVINGS_ACCOUNT_CUSTOMERS
-------------------------
                        3
```

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

```
SQL> SELECT Account.acc_type, COUNT(DISTINCT Customer.cust_ID) AS Customers_Count
  2  FROM Customer
  3  JOIN Customer_Account ON Customer.cust_ID = Customer_Account.cust_ID
  4  JOIN Account ON Customer_Account.acc_no = Account.acc_no
  5  GROUP BY Account.acc_type;

ACC_TYPE             CUSTOMERS_COUNT
-------------------- ---------------
Current                            5
Savings                            3
```

26. Find the total balance in Savings account.

```
SQL> SELECT SUM(balance) AS Total_Savings_Balance
  2  FROM Account
  3  WHERE acc_type = 'Savings';

TOTAL_SAVINGS_BALANCE
---------------------
                12250
```

27. Find the average balance of Current account.

```
SQL> SELECT AVG(balance) AS Average_Current_Balance
  2  FROM Account
  3  WHERE acc_type = 'Current';

AVERAGE_CURRENT_BALANCE
-----------------------
                   7270
```

28. Find the average balance for each account type.

```
SQL> SELECT acc_type, AVG(balance) AS Average_Balance
  2  FROM Account
  3  GROUP BY acc_type;

ACC_TYPE             AVERAGE_BALANCE
-------------------- ---------------
Current                         7270
Savings                   4083.33333
```

29. Find the customer details having maximum balance.

```
SQL> SELECT Customer.*
  2  FROM Customer
  3  JOIN Customer_Account ON Customer.cust_ID = Customer_Account.cust_ID
  4  JOIN Account ON Customer_Account.acc_no = Account.acc_no
  5  WHERE Account.balance=(SELECT MAX(balance) From Account);

   CUST_ID CUST_NAME                    PHONE_NO   ADDRESS                        NOMINEE
---------- ---------------------------- ---------- ------------------------------ --------------------
       105 Kartik                       9876543214 RZF-5
```

30. Find the average amount for vehicle loan.

```
SQL> SELECT AVG(amount) AS Average_Vehicle_Loan
  2  FROM Loan
  3  WHERE loan_type = 'Vehicle';

AVERAGE_VEHICLE_LOAN
--------------------
              140000
```

31. Find the average balance in each branch.

```
SQL> SELECT Branch.br_name, AVG(Account.balance) AS Average_Balance
  2  FROM Branch
  3  JOIN Account ON Branch.br_id = Account.br_id
  4  GROUP BY Branch.br_name;

BR_NAME                                            AVERAGE_BALANCE
-------------------------------------------------- ---------------
Palam                                                         9000
Dwarka                                                        3175
MG Road                                                        250
Surathkal                                                     8000
NITK                                                          7000
```