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

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**)**

```
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 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 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_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.
```

```
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.
```

1. Create all the tables by defining primary key, foreign key and other appropriate constraints.\
2. Insert atleast five records in each table.
3. List the details of all customers.

```
SQL> select * from customer
  2  where rownum<=10;

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

10 rows selected.
```

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

```
SQL> select CUST_ID, PHONE_no
  2  from customer
  3  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
  2  from branch
  3  where br_id='br_01';

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

6. Find the details of Customer having ID 103.

```
SQL> select * from
  2  customer
  3  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
  2  account
  3  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

11 rows selected.
```

8. List the account details of branch br_02.

```
SQL> select*
  2  from account
  3  where br_id='br_01';

    ACC_NO ACC_TYPE               BALANCE BR_ID
---------- -------------------- ---------- --------------------
     10001 Savings                   15000 br_01
     10006 Fixed                     50000 br_01
     10011 Savings                   12500 br_01
     10016 Current                   27000 br_01
```

9. List the loan details of branch br_01.

```
SQL> select*
  2  from loan
  3  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 acc_no,acc_type,balance,account.br_id,branch.br_address
  2  from account
  3  join branch on account.br_id=branch.br_id
  4  where rownum<=10;

    ACC_NO ACC_TYPE                BALANCE BR_ID                BR_ADDRESS
---------- -------------------- ---------- -------------------- --------------------
     10016 Current                   27000 br_01                NITK Campus
     10011 Savings                   12500 br_01                NITK Campus
     10006 Fixed                     50000 br_01                NITK Campus
     10001 Savings                   15000 br_01                NITK Campus
     10017 Savings                    1500 br_02                MG Road
     10012 Current                    7500 br_02                MG Road
     10007 Savings                    9500 br_02                MG Road
     10002 Current                   25000 br_02                MG Road
     10018 Fixed                    120000 br_03                Jayanagar
     10013 Savings                    6000 br_03                Jayanagar

10 rows selected.
```

11. List the customer details with their account details.

```
SQL> select c.*,a.*
  2  from customer c
  3  join customer_account ca on c.CUST_ID=ca.CUST_ID
  4  join account a on ca.acc_no=a.acc_no
  5  where rownum<=10;

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

10 rows selected.
```

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

```
SQL> select c.*
  2  from customer c
  3  join customer_account ca on c.CUST_ID=ca.CUST_ID
  4  join account a on ca.acc_no=a.acc_no
  5  where a.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

10 rows selected.
```

13. List the customer details having vehicle loan.

```
SQL> select c.*
  2  from customer c
  3  join customer_loan cl on c.cust_id=cl.cust_id
  4  join loan l on cl.loan_id=l.loan_id
  5  where l.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 br_name,acc_no
  2  from branch
  3  join account on branch.br_id=account.br_id
  4  where rownum<=10;

BR_NAME                 ACC_NO
-------------------- ----------
Surathkal                10001
MG Road                  10002
Jayanagar                10003
Koramangala              10004
Electronic City          10005
Surathkal                10006
MG Road                  10007
Jayanagar                10008
Koramangala              10009
Electronic City          10010

10 rows selected.
```

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

```
SQL> select cust_id,cust_name,phone_no,address
  2  from customer
  3  natural join customer_account
  4  natural join account
  5  natural join branch
  6  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_id,cust_name,phone_no,address
  2  from customer
  3  natural join customer_loan
  4  natural join loan
  5  natural join branch
  6  where br_name='MG Road';

CUST_ID              CUST_NAME              PHONE_NO ADDRESS
-------------------- -------------------- ---------- --------------------
102                  Priya Patel          8765432109 Mumbai
107                  Rajesh Reddy         3210987654 Pune
112                  Pooja Rao            8765432110 Indore
117                  Deepak Menon         3210987655 Surathkal
```

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

```
SQL> select customer.cust_name, account.balance
  2  from customer
  3  natural join customer_account
  4  natural join account
  5  where account.balance between 1000 and 10000;

CUST_NAME              BALANCE
-------------------- ----------
Amit Kumar                 8000
Rajesh Reddy               9500
Karan Malhotra             5000
Pooja Rao                  7500
Suresh Nair                6000
Sanjay Bansal              3000
Deepak Menon               1500
Prakash Jain               9000

8 rows selected.
```

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

```
SQL> update account
  2  set balance=balance+100
  3  where balance>10000
  4  ;

12 rows updated.
```

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

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

1 row updated.

SQL> select * from account
  2  where balance<450;

    ACC_NO ACC_TYPE               BALANCE BR_ID
---------- -------------------- ---------- --------------------
     10005 Savings                     400 br_05
```

20. Give the customer details having home loan.

```
SQL> select cust_id,cust_name,phone_no,address
  2  from customer
  3  natural join customer_loan
  4  natural join loan
  5  where 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

6 rows selected.
```

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

```
SQL> select cust_id,cust_name,address,phone_no
  2  from customer
  3  natural join customer_loan
  4  natural join loan
  5  natural join branch
  6  where loan_type='Home' and br_name='NITK';

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

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

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

Table altered.
```

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

```
SQL> select acc_no
  2  from account
  3  order by balance desc;

    ACC_NO
----------
     10018
     10010
     10014
     10006
     10004
     10016
     10002
     10020
     10008
     10001
     10011
```

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

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

```
SQL> select acc_type,count(cust_id) as total_customer
  2  from customer
  3  natural join customer_account
  4  natural join account
  5  group by acc_type;

ACC_TYPE             TOTAL_CUSTOMER
-------------------- --------------
Current                           6
Savings                          10
Fixed                             4

           10
```

26. Find the total balance in Savings account.

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

TOTAL_BALANCE
-------------
        71300
```

27. Find the average balance of Current account.

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

AVG_BALANCE
-----------
      22000
```

28. Find the average balance for each account type.

```
SQL> select acc_type,avg(balance) as avg_balance
  2  from account
  3  group by acc_type;

ACC_TYPE             AVG_BALANCE
-------------------- -----------
Current                    22000
Savings                     7130
Fixed                      86350
```

29. Find the customer details having maximum balance.

```
SQL> select cust_id,cust_name,phone_no,address
  2  from customer
  3  natural join customer_account
  4  natural join account
  5  where 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) as avg_amount
  2  from loan
  3  where loan_type='Vehicle';

AVG_AMOUNT
----------
    350000
```

31. Find average balance in each branch.

```
BR_NAME              AVERAGE_BALANCE
-------------------- ---------------
Koramangala                    30600
Electronic City                34500
MG Road                        10900
Surathkal                      26225
Jayanagar                      38050
NITK                           22100

6 rows selected.
```