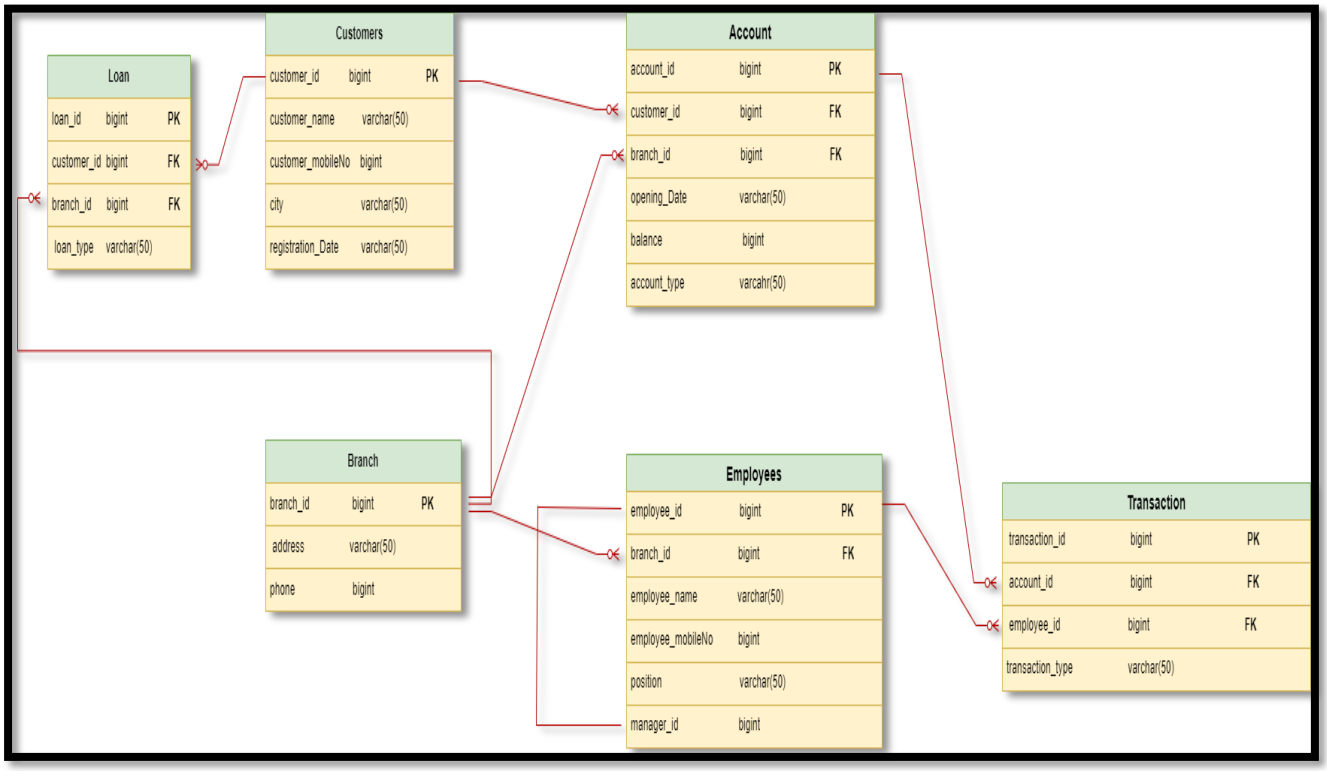
BANK OF MUMBAI

INTODUCTION

Bank Of Mumbai project showcasing the structure and relationship between various tables. The tables include customers, branch, loan, account, employees and transaction each with their respective attributes and primary, foreign keys. The context also includes subqueries and joins to demonstrate how data can be retrieved from the tables using SQL queries.

ER DIAGRAM


Loan
loan_id bigint PK
customer_id bigint FK
branch_id bigint FK
loan_type varchar(50)
Customers
customer_id bigint PK
customer_name varchar(50)
customer_mobileNo bigint
city varchar(50)
registration_Date varchar(50)
Account
account_id bigint PK
customer_id bigint FK
branch_id bigint FK
opening_Date varchar(50)
balance bigint
account_type varcahr(50)
Branch
branch_id bigint PK
address varchar(50)
phone bigint
Employees
employee_id bigint PK
branch_id bigint FK
employee_name varchar(50)
employee_mobileNo bigint
position varchar(50)
manager_id bigint
Transaction
transaction_id bigint PK
account_id bigint FK
employee_id bigint FK
transaction_type varchar(50)

STRUCTURE OF TABLES

1.CUSTOMERS

Customer table contains customer ID as primary key, customer name , customer mobile number , city and registration Date.

```
mysql> desc customers;
+-------------------+-------------+------+-----+---------+-------+
| Field             | Type        | Null | Key | Default | Extra |
+-------------------+-------------+------+-----+---------+-------+
| customer_id       | bigint      | NO   | PRI | NULL    |       |
| customer_name     | varchar(50) | YES  |     | NULL    |       |
| customer_mobileNo | bigint      | YES  |     | NULL    |       |
| city              | varchar(50) | YES  |     | NULL    |       |
| registration_Date | varchar(50) | YES  |     | NULL    |       |
+-------------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

2.BRANCH

Branch table contains branch ID as primary key, branch address and branch phone number.

```
mysql> create table Branch(branch_id bigint primary key , address varchar(50) , phone bigint );
Query OK, 0 rows affected (0.03 sec)

mysql> desc branch;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| branch_id | bigint      | NO   | PRI | NULL    |       |
| address   | varchar(50) | YES  |     | NULL    |       |
| phone     | bigint      | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

3.LOAN

Loan table contains loan ID as primary key,customer ID as foreign key , branch ID as foreign key and loan type.

```
mysql> create table Loan(loan_id int primary key , customer_id bigint , branch_id bigint , loan_type varchar(50) , constraint ccn foreign key fcn (customer_id) references c
ustomers (customer_id) , constraint bcn foreign key bfn (branch_id) references branch (branch_id));
Query OK, 0 rows affected (0.03 sec)

mysql> desc loan;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| loan_id     | int         | NO   | PRI | NULL    |       |
| customer_id | bigint      | YES  | MUL | NULL    |       |
| branch_id   | bigint      | YES  | MUL | NULL    |       |
| loan_type   | varchar(50) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

4.ACCOUNT

Account table contains account ID as primary key , customer ID as foreign key , branch ID as foreign key , account opening date , account balance and account type.

```
mysql> create table account (account_id bigint primary key , customer_id bigint , branch_id bigint , opening_Date varchar(50) , balance bigint CHECK(balance > 1000) , accou
nt_type varchar(50) , constraint cn foreign key fn (customer_id) references customers (customer_id) , constraint bn foreign key bf (branch_id) references branch (branch_id)
);
Query OK, 0 rows affected (0.05 sec)

mysql> desc account;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| account_id   | bigint      | NO   | PRI | NULL    |       |
| customer_id  | bigint      | YES  | MUL | NULL    |       |
| branch_id    | bigint      | YES  | MUL | NULL    |       |
| opening_Date | varchar(50) | YES  |     | NULL    |       |
| balance      | bigint      | YES  |     | NULL    |       |
| account_type | varchar(50) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

5.EMPLOYEES

Employees table contains employee ID as primary key , branch ID as foreign key , employee name , employee mobile number , employee position and manager ID .

```
mysql> create table employees (employee_id bigint primary key , branch_id bigint , employee_name varchar(50) , employee_mobileNo bigint , position varchar(50) , manager_id
bigint , constraint bbn foreign key bbf (branch_id) references branch(branch_id));
Query OK, 0 rows affected (0.02 sec)

mysql> desc employees;
+-----------------+-------------+------+-----+---------+-------+
| Field           | Type        | Null | Key | Default | Extra |
+-----------------+-------------+------+-----+---------+-------+
| employee_id     | bigint      | NO   | PRI | NULL    |       |
| branch_id       | bigint      | YES  | MUL | NULL    |       |
| employee_name   | varchar(50) | YES  |     | NULL    |       |
| employee_mobileNo | bigint    | YES  |     | NULL    |       |
| position        | varchar(50) | YES  |     | NULL    |       |
| manager_id      | bigint      | YES  |     | NULL    |       |
+-----------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

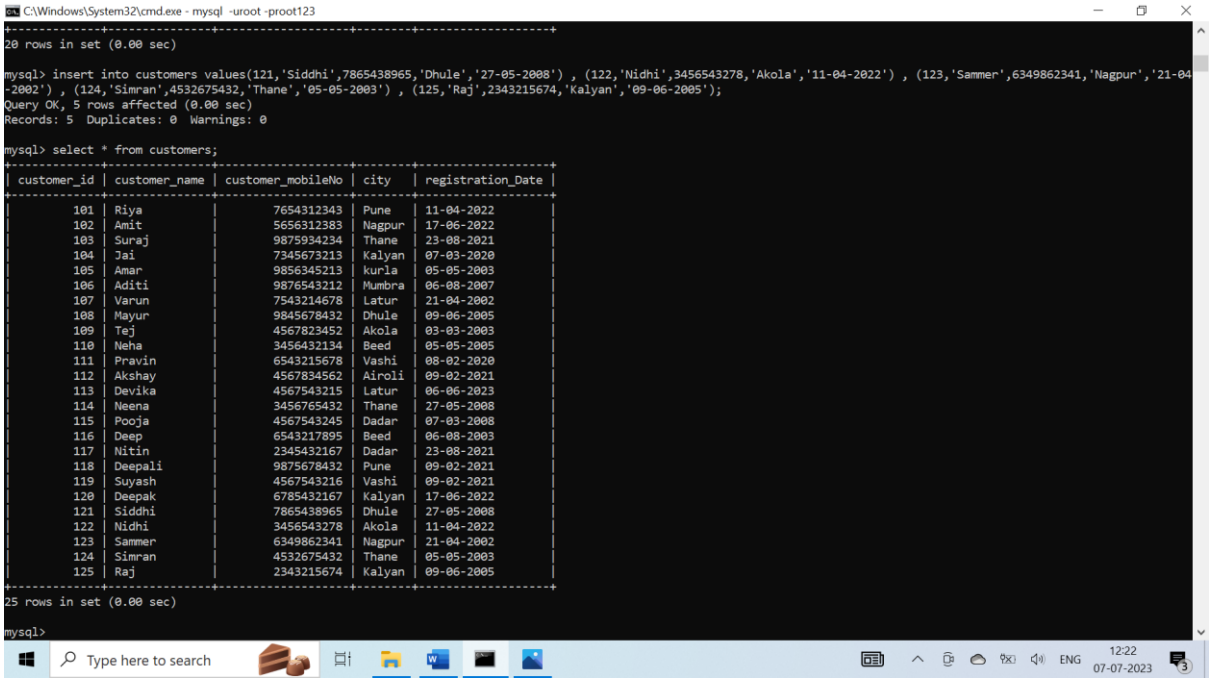
6.TRANSACTION

Transaction table contains transaction ID as primary key , account ID as foreign key , employee ID as foreign key and transaction type.

```
mysql> desc transaction;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| transaction_id   | bigint      | NO   | PRI | NULL    |       |
| account_id       | bigint      | YES  | MUL | NULL    |       |
| employee_id      | bigint      | YES  | MUL | NULL    |       |
| transaction_type | varchar(50) | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

CONTENTS OF TABLES

1.CUSTOMER



2.BRANCH

```
mysql> select * from branch;
+-----------+-------------+--------+
| branch_id | address     | phone  |
+-----------+-------------+--------+
|        11 | Andheri     | 111111 |
|        12 | Sion        | 121212 |
|        21 | Colaba      | 212121 |
|        22 | Bandra      | 222222 |
|        31 | Fort        | 313131 |
|        33 | Dadar       | 333333 |
|        41 | Kala Ghoda  | 414141 |
|        44 | Malad       | 444444 |
|        51 | Byculla     | 515151 |
|        55 | Powai       | 555555 |
|        66 | Mulund      | 666666 |
|        77 | Lower Parel | 777777 |
|        88 | Worli       | 888888 |
|        99 | Lalbaug     | 999999 |
+-----------+-------------+--------+
14 rows in set (0.00 sec)
```

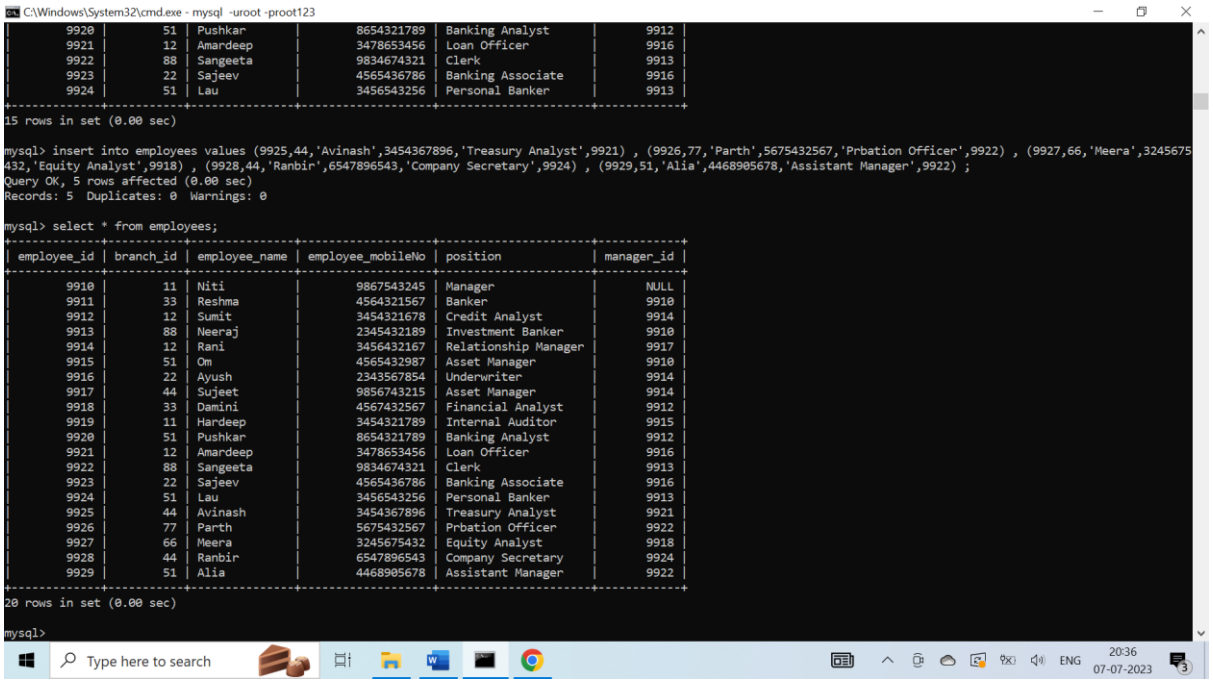
3.LOAN

```
mysql> select * from loan;
+---------+-------------+-----------+-----------+
| loan_id | customer_id | branch_id | loan_type |
+---------+-------------+-----------+-----------+
|    1111 |         105 |        33 | Home      |
|    1112 |         106 |        55 | Gold      |
|    1113 |         106 |        55 | Education |
|    1114 |         110 |        41 | Vehicle   |
|    1115 |         120 |        21 | Business  |
|    1116 |         115 |        21 | Gold      |
|    1117 |         115 |        21 | Vehicle   |
|    1118 |         102 |        11 | Gold      |
|    1119 |         123 |        66 | Home      |
|    1120 |         118 |        77 | Personal  |
|    1121 |         113 |        31 | Business  |
|    1122 |         124 |        41 | Home      |
|    1123 |         108 |        22 | Vehicle   |
|    1124 |         108 |        22 | Education |
|    1125 |         125 |        44 | Gold      |
|    1126 |         112 |        88 | Home      |
|    1127 |         112 |        88 | Personal  |
|    1128 |         107 |        99 | Vehicle   |
|    1129 |         107 |        99 | Gold      |
|    1130 |         122 |        12 | Gold      |
|    1131 |         122 |        12 | Education |
|    1132 |         104 |        51 | Home      |
|    1133 |         104 |        51 | Vehicle   |
|    1134 |         119 |        77 | Personal  |
|    1135 |         118 |        77 | Home      |
+---------+-------------+-----------+-----------+
25 rows in set (0.00 sec)
```

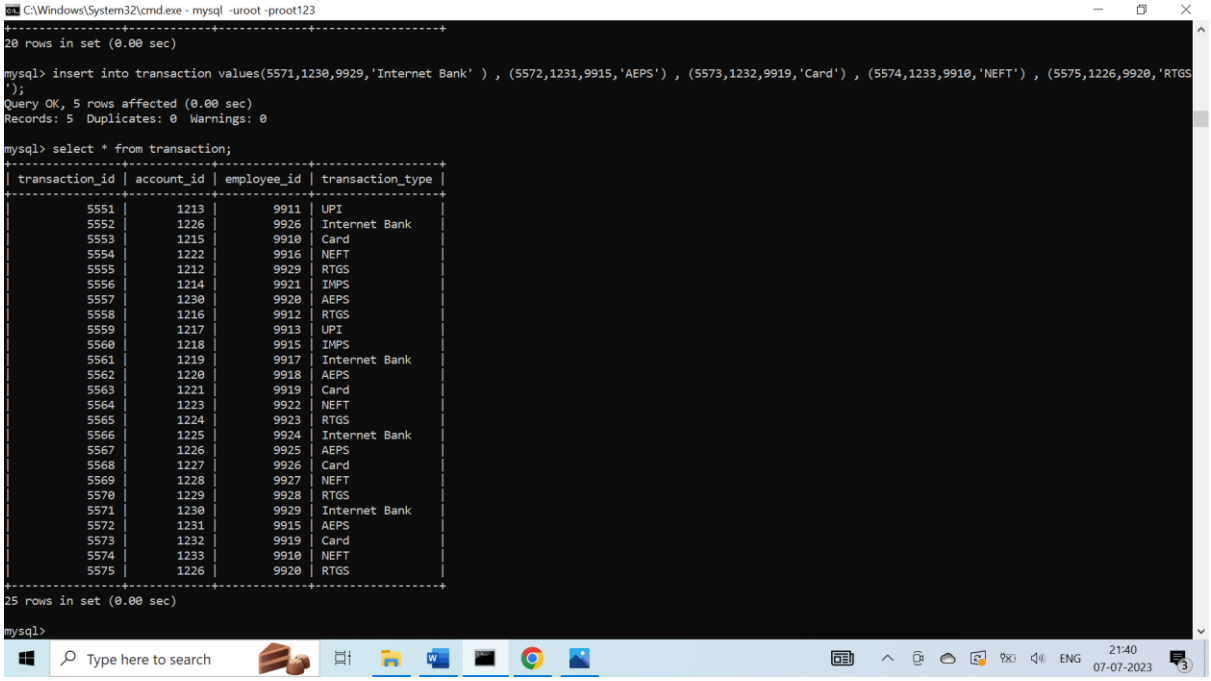
4.ACCOUNT

```
mysql> select * from account;
+------------+-------------+-----------+--------------+---------+--------------+
| account_id | customer_id | branch_id | opening_Date | balance | account_type |
+------------+-------------+-----------+--------------+---------+--------------+
|       1212 |         121 |        41 | 07-08-2020   |    2000 | Saving       |
|       1213 |         117 |        77 | 23-12-2021   |    6000 | Current      |
|       1214 |         109 |        12 | 14-09-2022   |    8000 | Current      |
|       1215 |         114 |        77 | 09-02-2023   |    5000 | Current      |
|       1216 |         101 |        41 | 23-04-2023   |    9000 | Current      |
|       1217 |         111 |        12 | 26-07-2023   |    4000 | Current      |
|       1218 |         116 |        44 | 09-02-2022   |    9000 | Current      |
|       1219 |         103 |        22 | 15-07-2021   |    7600 | Current      |
|       1220 |         106 |        31 | 29-06-2023   |    4400 | Saving       |
|       1221 |         125 |        22 | 17-02-2019   |    7700 | Saving       |
|       1222 |         105 |        31 | 24-11-2017   |    3300 | Saving       |
|       1223 |         124 |        22 | 06-02-2015   |    5500 | Saving       |
|       1224 |         119 |        51 | 16-01-2023   |    6600 | Saving       |
|       1225 |         102 |        55 | 28-08-2018   |    2200 | Current      |
|       1226 |         123 |        44 | 02-02-2020   |    3300 | Saving       |
|       1227 |         122 |        51 | 14-07-2019   |    6060 | Saving       |
|       1228 |         108 |        55 | 23-12-2020   |    7070 | Saving       |
|       1229 |         120 |        11 | 16-06-2021   |    4400 | Saving       |
|       1230 |         104 |        88 | 07-07-2023   |    7700 | Saving       |
|       1231 |         118 |        99 | 29-04-2023   |    3000 | Saving       |
|       1232 |         115 |        66 | 08-03-2021   |    6000 | Saving       |
|       1233 |         113 |        21 | 24-02-2020   |    8800 | Current      |
|       1234 |         112 |        33 | 04-04-2022   |    6200 | Saving       |
|       1235 |         110 |        33 | 14-07-2017   |    8870 | Saving       |
|       1236 |         107 |        99 | 07-07-2021   |    7720 | Saving       |
+------------+-------------+-----------+--------------+---------+--------------+
25 rows in set (0.00 sec)
```

5.EMPLOYEES


C:\Windows\System32\cmd.exe - mysql -uroot -proot123
9920 | 51 | Pushkar | 8654321789 | Banking Analyst | 9912 |
9921 | 12 | Amardeep | 3478653456 | Loan Officer | 9916 |
9922 | 88 | Sangeeta | 9834674321 | Clerk | 9913 |
9923 | 22 | Sajeev | 4565436786 | Banking Associate | 9916 |
9924 | 51 | Lau | 3456543256 | Personal Banker | 9913 |
15 rows in set (0.00 sec)
mysql> insert into employees values (9925,44,'Avinash',3454367896,'Treasury Analyst',9921) , (9926,77,'Parth',5675432567,'Prbation Officer',9922) , (9927,66,'Meera',3245675432,'Equity Analyst',9918) , (9928,44,'Ranbir',6547896543,'Company Secretary',9924) , (9929,51,'Alia',4468905678,'Assistant Manager',9922) ;
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0
mysql> select * from employees;
employee_id | branch_id | employee_name | employee_mobileNo | position | manager_id
9910 | 11 | Niti | 9867543245 | Manager | NULL
9911 | 33 | Reshma | 4564321567 | Banker | 9910
9912 | 12 | Sumit | 3454321678 | Credit Analyst | 9914
9913 | 88 | Neeraj | 2345432189 | Investment Banker | 9910
9914 | 12 | Rani | 3456432167 | Relationship Manager | 9917
9915 | 51 | Om | 4565432987 | Asset Manager | 9910
9916 | 22 | Ayush | 2343567854 | Underwriter | 9914
9917 | 44 | Sujeet | 9856743215 | Asset Manager | 9914
9918 | 33 | Damini | 4567432567 | Financial Analyst | 9912
9919 | 11 | Hardeep | 3454321789 | Internal Auditor | 9915
9920 | 51 | Pushkar | 8654321789 | Banking Analyst | 9912
9921 | 12 | Amardeep | 3478653456 | Loan Officer | 9916
9922 | 88 | Sangeeta | 9834674321 | Clerk | 9913
9923 | 22 | Sajeev | 4565436786 | Banking Associate | 9916
9924 | 51 | Lau | 3456543256 | Personal Banker | 9913
9925 | 44 | Avinash | 3454367896 | Treasury Analyst | 9921
9926 | 77 | Parth | 5675432567 | Prbation Officer | 9922
9927 | 66 | Meera | 3245675432 | Equity Analyst | 9918
9928 | 44 | Ranbir | 6547896543 | Company Secretary | 9924
9929 | 51 | Alia | 4468905678 | Assistant Manager | 9922
20 rows in set (0.00 sec)
mysql>
Type here to search
ENG
20:36
07-07-2023

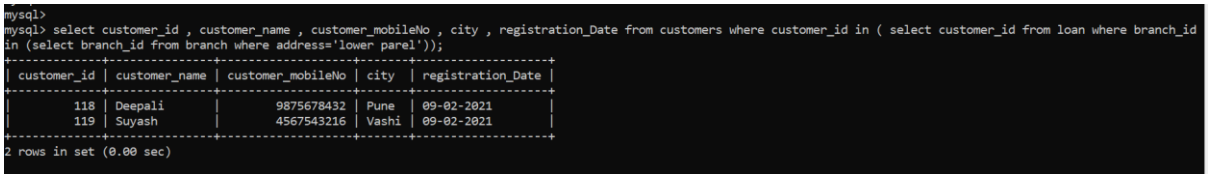
6.TRANSACTION



SUBQUERY

1.show all details of customers who are taking loan whose branch address is lower parel.

mysql> select customer_id , customer_name , customer_mobileNo , city , registration_Date from customers where customer_id in (select customer_id from loan where branch_id in (select branch_id from branch where address='lower parel'));



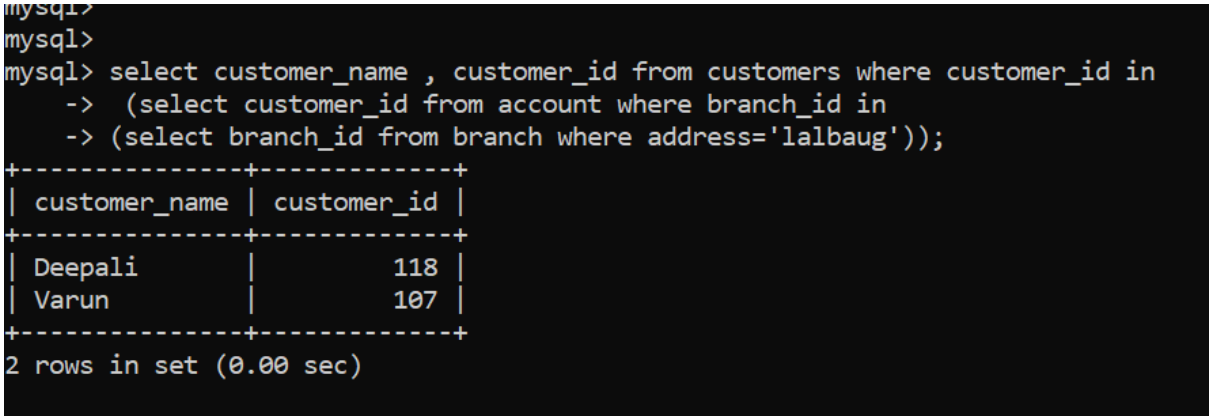
```
mysql>
mysql> select customer_id , customer_name , customer_mobileNo , city , registration_Date from customers where customer_id in ( select customer_id from loan where branch_id
in (select branch_id from branch where address='lower parel'));
+-------------+---------------+------------------+-------+------------------+
| customer_id | customer_name | customer_mobileNo | city  | registration_Date |
+-------------+---------------+------------------+-------+------------------+
|         118 | Deepali       |       9875678432 | Pune  | 09-02-2021       |
|         119 | Suyash        |       4567543216 | Vashi | 09-02-2021       |
+-------------+---------------+------------------+-------+------------------+
2 rows in set (0.00 sec)
```

2.Show all details of customers who have accounts in lalbaug branch.

mysql> select customer_name , customer_id from customers where customer_id in

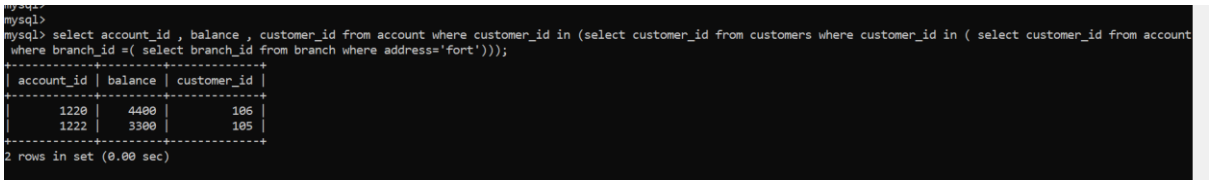
(select customer_id from account where branch_id in

(select branch_id from branch where address='lalbaug'));



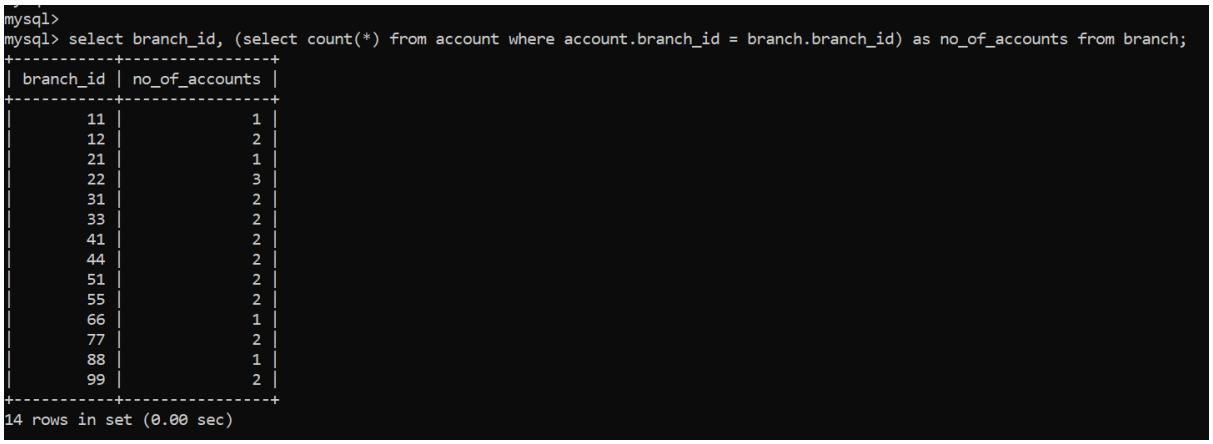
3.Show details of account id , balance , customer id who open account in fort branch.

mysql> select account_id , balance , customer_id from account where customer_id in (select customer_id from customers where customer_id in (select customer_id from account where branch_id =(select branch_id from branch where address='fort')));



4. calculate the number of accounts for each branch.

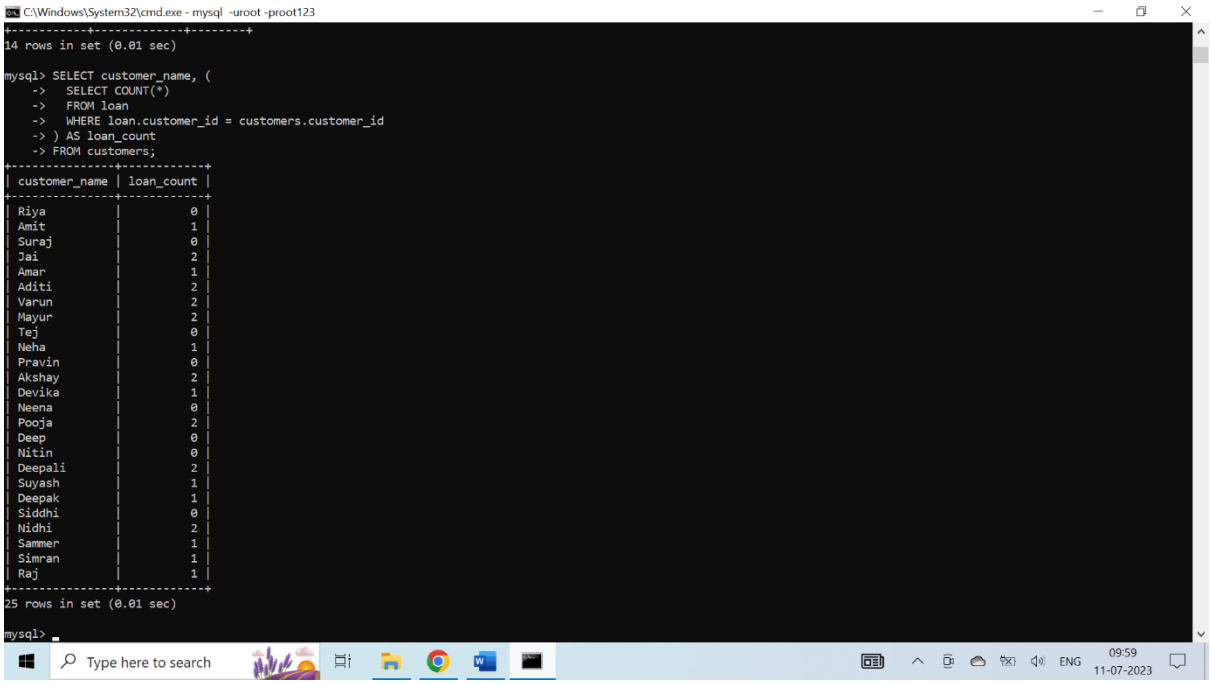
mysql> select branch_id, (select count(*) from account where account.branch_id = branch.branch_id) as no_of_accounts from branch;



```
mysql>
mysql> select branch_id, (select count(*) from account where account.branch_id = branch.branch_id) as no_of_accounts from branch;
+-----------+---------------+
| branch_id | no_of_accounts |
+-----------+---------------+
|        11 |             1 |
|        12 |             2 |
|        21 |             1 |
|        22 |             3 |
|        31 |             2 |
|        33 |             2 |
|        41 |             2 |
|        44 |             2 |
|        51 |             2 |
|        55 |             2 |
|        66 |             1 |
|        77 |             2 |
|        88 |             1 |
|        99 |             2 |
+-----------+---------------+
14 rows in set (0.00 sec)
```

5.Display name of customers who have taken count of loan.

mysql> SELECT customer_name, (SELECT COUNT(*) FROM loan WHERE loan.customer_id = customers.customer_id) AS loan_count FROM customers;



JOINS

1.Display name of employees along with their manager name.

mysql> SELECT e1.employee_name AS employee_name, e2.employee_name AS manager_name FROM employees e1

JOIN employees e2 ON e1.manager_id = e2.employee_id;

```
mysql> SELECT e1.employee_name AS employee_name, e2.employee_name AS manager_name
    -> FROM employees e1
    -> JOIN employees e2 ON e1.manager_id = e2.employee_id;
+---------------+--------------+
| employee_name | manager_name |
+---------------+--------------+
| Reshma        | Niti         |
| Sumit         | Rani         |
| Neeraj        | Niti         |
| Rani          | Sujeet       |
| Om            | Niti         |
| Ayush         | Rani         |
| Sujeet        | Rani         |
| Damini        | Sumit        |
| Hardeep       | Om           |
| Pushkar       | Sumit        |
| Amardeep      | Ayush        |
| Sangeeta      | Neeraj       |
| Sajeev        | Ayush        |
| Lau           | Neeraj       |
| Avinash       | Amardeep     |
| Parth         | Sangeeta     |
| Meera         | Damini       |
| Ranbir        | Lau          |
| Alia          | Sangeeta     |
+---------------+--------------+
19 rows in set (0.03 sec)
```

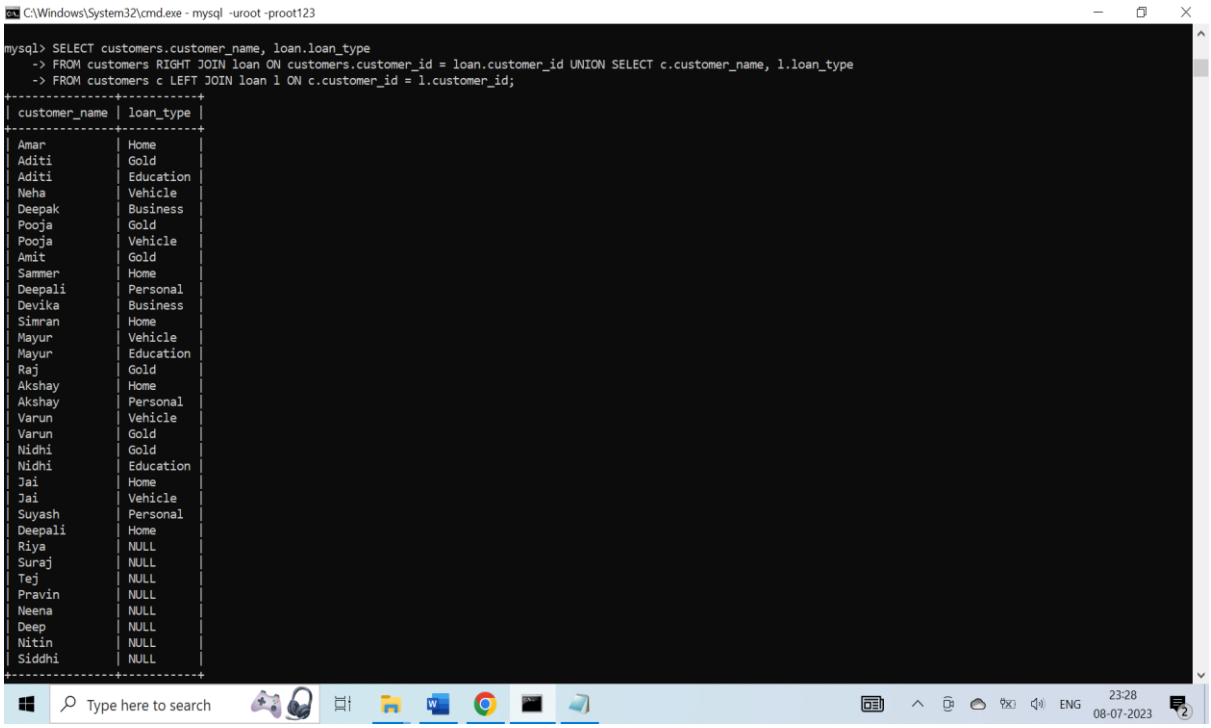
2.Display customer name along with their balance and branch address.

mysql> SELECT customers.customer_name, account.balance, branch.address FROM account INNER JOIN customers ON account.customer_id = customers.customer_id INNER JOIN branch ON account.branch_id = branch.branch_id;

```
mysql>
mysql> SELECT customers.customer_name, account.balance, branch.address
    -> FROM account
    -> INNER JOIN customers ON account.customer_id = customers.customer_id
    -> INNER JOIN branch ON account.branch_id = branch.branch_id;
+---------------+---------+-------------+
| customer_name | balance | address     |
+---------------+---------+-------------+
| Deepak        |    4400 | Andheri     |
| Tej           |    8000 | Sion        |
| Pravin        |    4000 | Sion        |
| Devika        |    8800 | Colaba      |
| Suraj         |    7600 | Bandra      |
| Raj           |    7700 | Bandra      |
| Simran        |    5500 | Bandra      |
| Aditi         |    4400 | Fort        |
| Amar          |    3300 | Fort        |
| Akshay        |    6200 | Dadar       |
| Neha          |    8870 | Dadar       |
| Siddhi        |    2000 | Kala Ghoda  |
| Riya          |    9000 | Kala Ghoda  |
| Deep          |    9000 | Malad       |
| Sammer        |    3300 | Malad       |
| Suyash        |    6600 | Byculla     |
| Nidhi         |    6060 | Byculla     |
| Amit          |    2200 | Powai       |
| Mayur         |    7070 | Powai       |
| Pooja         |    6000 | Mulund      |
| Nitin         |    6000 | Lower Parel |
| Neena         |    5000 | Lower Parel |
| Jai           |    7700 | Worli       |
| Deepali       |    3000 | Lalbaug     |
| Varun         |    7720 | Lalbaug     |
+---------------+---------+-------------+
25 rows in set (0.00 sec)
```

3.Display name of customer who have taken which type of loan.

```
SELECT customers.customer_name, loan.loan_type
FROM customers RIGHT JOIN loan ON customers.customer_id = loan.customer_id UNION SELECT c.customer_name, l.loan_type
FROM customers c LEFT JOIN loan l ON c.customer_id = l.customer_id;
```



4. Which customers are included in the result set when performing a right join between the customers and loan tables on the customer_id column?

SELECT customers.customer_name, loan.loan_type FROM customers RIGHT JOIN loan ON customers.customer_id = loan.customer_id;