BRAC UNIVERSITY

Assignment-03

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Course code: CSE370

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Assignment

Create database(Bank):

```
MariaDB [(none)]> create database Bank;
Query OK, 1 row affected (0.011 sec)

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| 21301423_ramisa    |
| area_120           |
| bank               |
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| test               |
+--------------------+
8 rows in set (0.014 sec)

MariaDB [(none)]> use bank;
Database changed
```

Create tables:

Table1(Customer):

```
MariaDB [bank]> create table customer (
    -> customer_id varchar(10) not null,
    -> customer_name varchar(20) not null,
    -> customer_street varchar(30),
    -> customer_city varchar(30),
    -> primary key (customer_id));
Query OK, 0 rows affected (0.016 sec)

MariaDB [bank]> insert into customer values
    -> ('C-101','Jones', 'Main', 'Harrison'),
    -> ('C-201','Smith', 'North', 'Rye'),
    -> ('C-211','Hayes', 'Main', 'Harrison'),
    -> ('C-212','Curry', 'North', 'Rye'),
    -> ('C-215','Lindsay', 'Park', 'Pittsfield'),
    -> ('C-220','Turner', 'Putnam', 'Stamford'),
    -> ('C-222','Williams', 'Nassau', 'Princeton'),
    -> ('C-225','Adams', 'Spring', 'Pittsfield'),
    -> ('C-226','Johnson', 'Alma', 'Palo Alto'),
    -> ('C-233','Glenn', 'Sand Hill', 'Woodside'),
    -> ('C-234','Brooks', 'Senator', 'Brooklyn'),
    -> ('C-255','Green', 'Walnut', 'Stamford');
Query OK, 12 rows affected (0.014 sec)
Records: 12  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from customer;
+-------------+---------------+-----------------+---------------+
| customer_id | customer_name | customer_street | customer_city |
+-------------+---------------+-----------------+---------------+
| C-101       | Jones         | Main            | Harrison      |
| C-201       | Smith         | North           | Rye           |
| C-211       | Hayes         | Main            | Harrison      |
| C-212       | Curry         | North           | Rye           |
| C-215       | Lindsay       | Park            | Pittsfield    |
| C-220       | Turner        | Putnam          | Stamford      |
| C-222       | Williams      | Nassau          | Princeton     |
| C-225       | Adams         | Spring          | Pittsfield    |
| C-226       | Johnson       | Alma            | Palo Alto     |
| C-233       | Glenn         | Sand Hill       | Woodside      |
| C-234       | Brooks        | Senator         | Brooklyn      |
| C-255       | Green         | Walnut          | Stamford      |
+-------------+---------------+-----------------+---------------+
12 rows in set (0.002 sec)
```

Table2(Branch):

```
MariaDB [bank]> create table branch (
    -> branch_name varchar(15),
    -> branch_city varchar(30),
    -> assets int,
    -> primary key (branch_name),
    -> check (assets >= 0));
Query OK, 0 rows affected (0.020 sec)

MariaDB [bank]> insert into branch values
    -> ('Downtown', 'Brooklyn',9000000),
    -> ('Redwood', 'Palo Alto',2100000),
    -> ('Perryridge', 'Horseneck',1700000),
    -> ('Mianus', 'Horseneck',400000),
    -> ('Round Hill', 'Horseneck',8000000),
    -> ('Pownal', 'Bennington',300000),
    -> ('North Town', 'Rye',3700000),
    -> ('Brighton', 'Brooklyn',7100000);
Query OK, 8 rows affected (0.004 sec)
Records: 8  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from branch;
+-------------+-------------+---------+
| branch_name | branch_city | assets  |
+-------------+-------------+---------+
| Brighton    | Brooklyn    | 7100000 |
| Downtown    | Brooklyn    | 9000000 |
| Mianus      | Horseneck   |  400000 |
| North Town  | Rye         | 3700000 |
| Perryridge  | Horseneck   | 1700000 |
| Pownal      | Bennington  |  300000 |
| Redwood     | Palo Alto   | 2100000 |
| Round Hill  | Horseneck   | 8000000 |
+-------------+-------------+---------+
8 rows in set (0.000 sec)
```

Table3(Account):

```
MariaDB [bank]> create table account (
    -> branch_name varchar(15),
    -> account_number varchar(10) not null,
    -> balance int,
    -> primary key (account_number),
    -> check (balance >= 0));
Query OK, 0 rows affected (0.012 sec)

MariaDB [bank]> insert into account values
    -> ('Downtown','A-101',500),
    -> ('Mianus','A-215',700) ,
    -> ('Perryridge','A-102',400),
    -> ('Round Hill','A-305',350),
    -> ('Brighton','A-201',900),
    -> ('Redwood','A-222',700),
    -> ('Brighton','A-217',750);
Query OK, 7 rows affected (0.012 sec)
Records: 7  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from account;
+-------------+----------------+---------+
| branch_name | account_number | balance |
+-------------+----------------+---------+
| Downtown    | A-101          |     500 |
| Perryridge  | A-102          |     400 |
| Brighton    | A-201          |     900 |
| Mianus      | A-215          |     700 |
| Brighton    | A-217          |     750 |
| Redwood     | A-222          |     700 |
| Round Hill  | A-305          |     350 |
+-------------+----------------+---------+
7 rows in set (0.000 sec)
```

Table4(Loan):

```
MariaDB [bank]> create table loan (
    -> loan_number varchar(10) not null,
    -> branch_name varchar(15),
    -> amount int,
    -> primary key (loan_number));
Query OK, 0 rows affected (0.044 sec)

MariaDB [bank]> insert into loan values
    -> ('L-17', 'Downtown', 1000),
    -> ('L-23', 'Redwood', 2000),
    -> ('L-15', 'Perryridge', 1500),
    -> ('L-14', 'Downtown', 1500),
    -> ('L-93', 'Mianus', 500),
    -> ('L-11', 'Round Hill', 900),
    -> ('L-16', 'Perryridge', 1300);
Query OK, 7 rows affected (0.103 sec)
Records: 7  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from loan;
+-------------+-------------+--------+
| loan_number | branch_name | amount |
+-------------+-------------+--------+
| L-11        | Round Hill  |    900 |
| L-14        | Downtown    |   1500 |
| L-15        | Perryridge  |   1500 |
| L-16        | Perryridge  |   1300 |
| L-17        | Downtown    |   1000 |
| L-23        | Redwood     |   2000 |
| L-93        | Mianus      |    500 |
+-------------+-------------+--------+
7 rows in set (0.000 sec)
```

Table5(Depositor):

```
MariaDB [bank]> create table depositor (
    -> customer_id varchar(10) not null,
    -> account_number varchar(10) not null,
    -> primary key (customer_id,account_number),
    -> foreign key (customer_id) references customer(customer_id),
    -> foreign key (account_number) references account(account_number));
Query OK, 0 rows affected (0.115 sec)

MariaDB [bank]> insert into depositor values
    -> ('C-226', 'A-101'),
    -> ('C-201', 'A-215'),
    -> ('C-211', 'A-102'),
    -> ('C-220', 'A-305'),
    -> ('C-226', 'A-201'),
    -> ('C-101', 'A-217'),
    -> ('C-215', 'A-222');
Query OK, 7 rows affected (0.028 sec)
Records: 7  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from depositor;
+-------------+----------------+
| customer_id | account_number |
+-------------+----------------+
| C-101       | A-217          |
| C-201       | A-215          |
| C-211       | A-102          |
| C-215       | A-222          |
| C-220       | A-305          |
| C-226       | A-101          |
| C-226       | A-201          |
+-------------+----------------+
7 rows in set (0.000 sec)
```

Table6(Borrower):

```
MariaDB [bank]> create table borrower (
    -> customer_id varchar(10) not null,
    -> loan_number varchar(10) not null,
    -> primary key (customer_id, loan_number),
    -> foreign key (customer_id) references customer(customer_id),
    -> foreign key (loan_number) references loan(loan_number));
Query OK, 0 rows affected (0.015 sec)

MariaDB [bank]> insert into borrower values
    -> ('C-101', 'L-17'),
    -> ('C-201', 'L-23'),
    -> ('C-211', 'L-15'),
    -> ('C-226', 'L-14'),
    -> ('C-212', 'L-93'),
    -> ('C-201', 'L-11'),
    -> ('C-222', 'L-17'),
    -> ('C-225', 'L-16');
Query OK, 8 rows affected (0.004 sec)
Records: 8  Duplicates: 0  Warnings: 0

MariaDB [bank]> select * from borrower;
+-------------+-------------+
| customer_id | loan_number |
+-------------+-------------+
| C-101       | L-17        |
| C-201       | L-11        |
| C-201       | L-23        |
| C-211       | L-15        |
| C-212       | L-93        |
| C-222       | L-17        |
| C-225       | L-16        |
| C-226       | L-14        |
+-------------+-------------+
8 rows in set (0.000 sec)
```

Task1: Find the name and loan number of all customers having a loan at the Downtown branch.

➢ **Command:**select customer.customer_name,loan.loan_number from customer inner join borrower on borrower.customer_id=customer.customer_id inner join loan on loan.loan_number=borrower.loan_number where loan.branch_name='Downtown';

```
MariaDB [bank]> select customer.customer_name,loan.loan_number from customer inner join borrower on
    -> borrower.customer_id=customer.customer_id inner join loan on
    -> loan.loan_number=borrower.loan_number where loan.branch_name='Downtown';
+---------------+-------------+
| customer_name | loan_number |
+---------------+-------------+
| Johnson       | L-14        |
| Jones         | L-17        |
| Williams      | L-17        |
+---------------+-------------+
3 rows in set (0.016 sec)
```

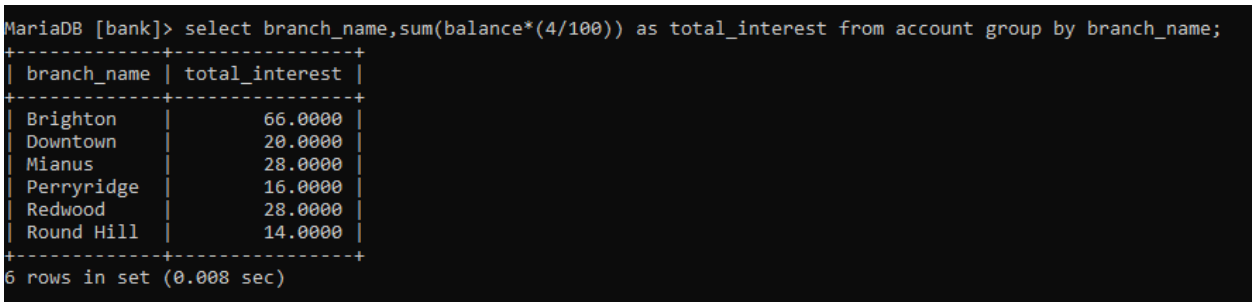
Task2: Find all the possible pairs of customers who are from the same city. show in the format Customer1, Customer2, City.

➢ **Command:**select b1.customer_name as Customer1,b2.customer_name as Customer2,b1.customer_city as City from customer b1 join customer b2 on b1.customer_city=b2.customer_city and b1.customer_id<b2.customer_id order by City,Customer1,Customer2;

```
MariaDB [bank]> select b1.customer_name as Customer1,b2.customer_name as Customer2,b1.customer_city as City from customer b1 join customer b2 on b1.customer_city=b2.cus
tomer_city and b1.customer_id<b2.customer_id order by City,Customer1,Customer2;
+-----------+-----------+------------+
| Customer1 | Customer2 | City       |
+-----------+-----------+------------+
| Jones     | Hayes     | Harrison   |
| Lindsay   | Adams     | Pittsfield |
| Smith     | Curry     | Rye        |
| Turner    | Green     | Stamford   |
+-----------+-----------+------------+
4 rows in set (0.001 sec)
```

Task3: If the bank gives out 4% interest to all accounts, show the total interest across each branch. Print Branch_name, Total_Interest.

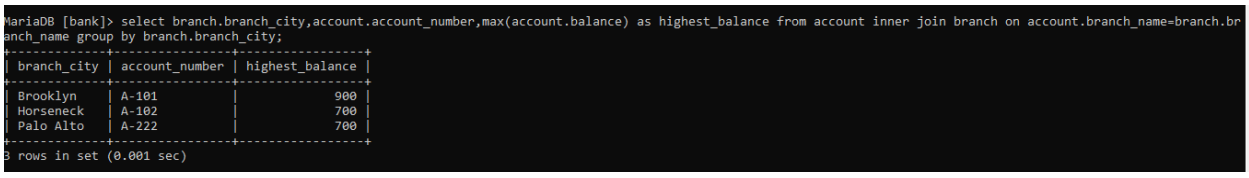
➢ **Command:** select branch_name,sum(balance*(4/100)) as total_interest from account group by branch_name;



```
MariaDB [bank]> select branch_name,sum(balance*(4/100)) as total_interest from account group by branch_name;
+-------------+----------------+
| branch_name | total_interest |
+-------------+----------------+
| Brighton    |        66.0000 |
| Downtown    |        20.0000 |
| Mianus      |        28.0000 |
| Perryridge  |        16.0000 |
| Redwood     |        28.0000 |
| Round Hill  |        14.0000 |
+-------------+----------------+
6 rows in set (0.008 sec)
```

Task4: Find account numbers with the highest balances for each city in the database.

➢ **Command:** select branch.branch_city,account.account_number,max(account.balance) as highest_balance from account inner join branch on account.branch_name=branch.branch_name group by branch.branch_city;



```
MariaDB [bank]> select branch.branch_city,account.account_number,max(account.balance) as highest_balance from account inner join branch on account.branch_name=branch.br
anch_name group by branch.branch_city;
+-------------+----------------+-----------------+
| branch_city | account_number | highest_balance |
+-------------+----------------+-----------------+
| Brooklyn    | A-101          |             900 |
| Horseneck   | A-102          |             700 |
| Palo Alto   | A-222          |             700 |
+-------------+----------------+-----------------+
3 rows in set (0.001 sec)
```

Task5: Show the loan number, loan amount, and name of customers who have the top 5 highest loan amounts. The data should be sorted by increasing amounts, then decreasing loan numbers in case of the same loan amount.

➢ **Command:** Select loan.loan_number, loan.amount, customer.customer_name from customer inner join borrower on customer.customer_id=borrower.customer_id inner join loan on loan.loan_number=borrower.loan_number order by loan.amount desc limit 5;

```
MariaDB [bank]> Select loan.loan_number, loan.amount, customer.customer_name from customer inner join borrower on customer.customer_id=borrower.customer_id inner join l
oan on loan.loan_number=borrower.loan_number order by loan.amount desc limit 5;
+-------------+--------+---------------+
| loan_number | amount | customer_name |
+-------------+--------+---------------+
| L-23        |   2000 | Smith         |
| L-14        |   1500 | Johnson       |
| L-15        |   1500 | Hayes         |
| L-16        |   1300 | Adams         |
| L-17        |   1000 | Jones         |
+-------------+--------+---------------+
5 rows in set (0.001 sec)
```

Task6: Find the names of customers with an account and also a loan at the Perryridge branch.

➢ **Command:**Select customer.customer_name from customer inner join depositor on customer.customer_id=depositor.customer_id inner join borrower on customer.customer_id=borrower.customer_id inner join account on account.account_number=depositor.account_number inner join loan on loan.loan_number=borrower.loan_number where account.branch_name='Perryridge' and loan.branch_name='Perryridge';

```
MariaDB [bank]> Select customer.customer_name from customer inner join depositor on customer.customer_id=depositor.customer_id inner join borrower on customer.customer_
id=borrower.customer_id inner join account on account.account_number=depositor.account_number inner join loan on loan.loan_number=borrower.loan_number where account.bra
nch_name='Perryridge' and loan.branch_name='Perryridge';
+---------------+
| customer_name |
+---------------+
| Hayes         |
+---------------+
1 row in set (0.001 sec)
```

Task7: Find the total loan amount of all customers having at least 2 loans from the bank. Show in format customer name, total_loan.

➢ **Command:**Select customer.customer_name,sum(loan.amount) as total_loan from customer inner join borrower on customer.customer_id=borrower.customer_id inner join loan on borrower.loan_number=loan.loan_number group by customer.customer_id having count(customer.customer_id)>=2;