CSE370- Homework 03

Submitted by:

Name: A.S.M. Zawadul Karim

Student ID: 23231072

Section: 11

Department: CSE

Table Creation:

```
MariaDB [(none)]> use Bank
Database changed
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 (0.009 sec)

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 (0.009 sec)

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 (0.008 sec)

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 (0.007 sec)

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 (0.020 sec)

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 (0.027 sec)
```

Value Insertion

```
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 (0.002 sec)
Records: 12  Duplicates: 0  Warnings: 0

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 (0.002 sec)
Records: 8  Duplicates: 0  Warnings: 0

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 (0.002 sec)
Records: 7  Duplicates: 0  Warnings: 0

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 (0.002 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 (0.003 sec)
Records: 7  Duplicates: 0  Warnings: 0

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 (0.003 sec)
Records: 8  Duplicates: 0  Warnings: 0
```

Tables:

```
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 (0.001 sec)
```

```
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)
```

```
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)
```

```
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)
```

```
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)
```

```
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)
```

Task 1:

Select c.customer_name, l.loan_number from customer c, borrower b, loan l where
-> l.branch_name='Downtown' and l.loan_number=b.loan_number and
-> b.customer_id=c.customer_id;

```
MariaDB [Bank]> Select c.customer_name, l.loan_number from customer c, borrower b, loan l where
    -> l.branch_name='Downtown' and l.loan_number=b.loan_number and
    -> b.customer_id=c.customer_id;
+---------------+-------------+
| customer_name | loan_number |
+---------------+-------------+
| Johnson       | L-14        |
| Jones         | L-17        |
| Williams      | L-17        |
+---------------+-------------+
3 rows in set (0.008 sec)
```

Task 2:

Select c1.customer_name as Customer1, c2.customer_name as Customer2, c1.customer_city
-> as City from customer c1, customer c2 where c1.customer_city=c2.customer_city and
-> c1.customer_id<c2.customer_id;

```
MariaDB [Bank]> Select c1.customer_name as Customer1, c2.customer_name as Customer2, c1.customer_city
    -> as City from customer c1, customer c2 where c1.customer_city=c2.customer_city and
    -> c1.customer_id<c2.customer_id;
+-----------+-----------+------------+
| Customer1 | Customer2 | City       |
+-----------+-----------+------------+
| Jones     | Hayes     | Harrison   |
| Smith     | Curry     | Rye        |
| Lindsay   | Adams     | Pittsfield |
| Turner    | Green     | Stamford   |
+-----------+-----------+------------+
4 rows in set (0.003 sec)
```

Task 3:

Select b.branch_name as Branch_name, sum(a.balance*0.04) as Total_Interest from branch
    -> b,account a where a.branch_name=b.branch_name group by b.branch_name;

```
MariaDB [Bank]> Select b.branch_name as Branch_name, sum(a.balance*0.04) as Total_Interest from branch
    -> b,account a where a.branch_name=b.branch_name group by b.branch_name;
+-------------+----------------+
| Branch_name | Total_Interest |
+-------------+----------------+
| Brighton    |          66.00 |
| Downtown    |          20.00 |
| Mianus      |          28.00 |
| Perryridge  |          16.00 |
| Redwood     |          28.00 |
| Round Hill  |          14.00 |
+-------------+----------------+
6 rows in set (0.006 sec)
```

Task 4:

Select a.account_number, a.balance as highest_balance, b.branch_city from account a, branch
    -> b where b.branch_name=a.branch_name and (a.balance,b.branch_city) in (Select
    -> max(a2.balance),b2.branch_city from account a2,branch b2 where
    -> b2.branch_name=a2.branch_name group by b2.branch_city);

```
MariaDB [Bank]> Select a.account_number, a.balance as highest_balance, b.branch_city from account a, branch
    -> b where b.branch_name=a.branch_name and (a.balance,b.branch_city) in (Select
    -> max(a2.balance),b2.branch_city from account a2,branch b2 where
    -> b2.branch_name=a2.branch_name group by b2.branch_city);
+----------------+-----------------+-------------+
| account_number | highest_balance | branch_city |
+----------------+-----------------+-------------+
| A-201          |             900 | Brooklyn    |
| A-215          |             700 | Horseneck   |
| A-222          |             700 | Palo Alto   |
+----------------+-----------------+-------------+
3 rows in set (0.005 sec)
```

Task 5:

```
Select l.loan_number, l.amount, c.customer_name from loan l, customer c, borrower b
    -> where l.loan_number=b.loan_number and b.customer_id=c.customer_id order by l.amount desc, l.loan_number limit 5;
```

```
MariaDB [Bank]> Select l.loan_number, l.amount, c.customer_name from loan l, customer c, borrower b
    -> where l.loan_number=b.loan_number and b.customer_id=c.customer_id order by l.amount desc, l.loan_number 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)
```

Task 6:

```
Select c.customer_name from customer c, account a, depositor d where a.branch_name='Perryridge' and d.account_number=a.account_number and d.customer_id=c.customer_id and c.customer_name
    -> in (Select c.customer_name from customer c, loan l, borrower b where l.branch_name='Perryridge' and l.loan_number=b.loan_number and b.customer_id=c.customer_id);
```

```
MariaDB [Bank]> Select c.customer_name from customer c, account a, depositor d where a.branch_name='Perryridge' and d.account_number=a.account_number and d.customer_id=c.customer_id and c.customer_name
    -> in (Select c.customer_name from customer c, loan l, borrower b where l.branch_name='Perryridge' and l.loan_number=b.loan_number and b.customer_id=c.customer_id);
+---------------+
| customer_name |
+---------------+
| Hayes         |
+---------------+
1 row in set (0.001 sec)
```

Task 7:

Select c.customer_name, sum(l.amount) as total_loan from loan l, borrower b, customer c
-> where l.loan_number=b.loan_number and b.customer_id=c.customer_id
-> group by b.customer_id having count(b.loan_number)>=2;

```
MariaDB [Bank]> Select c.customer_name, sum(l.amount) as total_loan from loan l, borrower b, customer c
    -> where l.loan_number=b.loan_number and b.customer_id=c.customer_id
    -> group by b.customer_id having count(b.loan_number)>=2;
+---------------+------------+
| customer_name | total_loan |
+---------------+------------+
| Smith         |       2900 |
+---------------+------------+
1 row in set (0.001 sec)
```