

Department of Computer Science and Engineering

Course Code: CSE 370	Credits: 3.0
Course Name: Database Systems	

Lab Homework 4

```
MariaDB [blank]> 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 (0.011 sec)

MariaDB [blank]> 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 (0.015 sec)

MariaDB [blank]> 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 [blank]> create table loan (
  -> loan_number varchar(10) not null,
  -> branch_name varchar(15),
  -> amount int,
  -> primary key (loan_number));
Query OK, 0 rows affected (0.013 sec)

MariaDB [blank]> 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 (0.015 sec)

MariaDB [blank]> 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 (0.014 sec)

MariaDB [blank]> 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', 'Massau', '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 (0.003 sec)
Records: 12 Duplicates: 0 Warnings: 0

MariaDB [blank]> insert into branch values ('Downtown', 'Brooklyn',9000000), ('Redwood', 'Palo Alto',2100000), ('Perryridge', 'Horseneck',1700000), ('Mianus', 'Horseneck',4000000), ('Round Hill', 'Horseneck',8000000), ('Powal', 'Bennington',3000000), ('North Town', 'Rye',3700000), ('Brighton', 'Brooklyn',7100000);
Query OK, 8 rows affected (0.002 sec)
Records: 8 Duplicates: 0 Warnings: 0

MariaDB [blank]> 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
```

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MariaDB [blank]> 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 [blank]> select * from branch;
+-----+-----+-----+
| branch_name | branch_city | assets |
+-----+-----+-----+
| Brighton    | Brooklyn    | 7100000 |
| Downtown    | Brooklyn    | 9000000 |
| Mianus      | Horseneck   | 4000000 |
| North Town  | Rye         | 3700000 |
| Perryridge  | Horseneck   | 1700000 |
| Pownal      | Bennington  | 3000000 |
| Redwood     | Palo Alto   | 2100000 |
| Round Hill  | Horseneck   | 8000000 |
+-----+-----+-----+
8 rows in set (0.000 sec)

MariaDB [blank]> 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 [blank]> 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 [blank]> 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 [blank]> 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 inner join borrower b on
c.customer_id = b.customer_id) inner join loan l on b.loan_number = l.loan_number) where
l.branch_name = 'Downtown';
```

Task 2:

```
select c1.customer_name as Customer1, c2.customer_name as Customer2, c1.customer_city
from customer c1 inner join customer c2 on c1.customer_city = c2.customer_city where
c1.customer_id != c2.customer_id;
```

Task 3:

```
select branch_name, SUM(balance * 0.04) AS Total_Interest from account group by branch_name;
```

```
MariaDB [blank]> select c.customer_name, l.loan_number from ((customer c inner join borrower b on
-> c.customer_id = b.customer_id) inner join loan l on b.loan_number = l.loan_number) where
-> l.branch_name = 'Downtown';
+-----+-----+
| customer_name | loan_number |
+-----+-----+
| Johnson      | L-14       |
| Jones        | L-17       |
| Williams     | L-17       |
+-----+-----+
3 rows in set (0.003 sec)
```

```
MariaDB [blank]> select c1.customer_name as Customer1, c2.customer_name as Customer2, c1.customer_city
-> from customer c1 inner join customer c2 on c1.customer_city = c2.customer_city where
-> c1.customer_id != c2.customer_id;
+-----+-----+-----+
| Customer1 | Customer2 | customer_city |
+-----+-----+-----+
| Hayes     | Jones     | Harrison      |
| Curry     | Smith     | Rye           |
| Jones     | Hayes     | Harrison      |
| Smith     | Curry     | Rye           |
| Adams     | Lindsay   | Pittsfield    |
| Green     | Turner    | Stamford      |
| Lindsay   | Adams     | Pittsfield    |
| Turner    | Green     | Stamford      |
+-----+-----+-----+
8 rows in set (0.004 sec)
```

```
MariaDB [blank]> select branch_name, SUM(balance * 0.04) AS Total_Interest from account group by 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         |
+-----+-----+
```

Task 4:

```
select b.branch_city, a.Account_Number from branch b , account a, (select b.branch_city,
max(a.balance) as Highest_Balance from branch b inner join account a on b.branch_name =
a.branch_name group by b.branch_city) c where b.branch_name = a.branch_name and
b.branch_city = c.branch_city and a.balance = c.Highest_Balance;
```

```
MariaDB [blank]> select b.branch_city, a.Account_Number from branch b , account a, (select b.branch_city,
-> max(a.balance) as Highest_Balance from branch b inner join account a on b.branch_name =
-> a.branch_name group by b.branch_city) c where b.branch_name = a.branch_name and
-> b.branch_city = c.branch_city and a.balance = c.Highest_Balance;
```

branch_city	Account_Number
Brooklyn	A-201
Horseneck	A-215
Palo Alto	A-222

Task 5:

```
select c.customer_name, l.loan_number, l.amount
from ((customer c inner join borrower b on c.customer_id=b.customer_id)
inner join loan l on b.loan_number=l.loan_number)
order by l.amount desc, l.loan_number asc limit 5;
```

```
MariaDB [blank]> select c.customer_name, l.loan_number, l.amount
-> from ((customer c
-> inner join borrower b on c.customer_id=b.customer_id)
-> inner join loan l on b.loan_number=l.loan_number)
-> order by l.amount desc, l.loan_number asc
-> limit 5;
```

customer_name	loan_number	amount
Smith	L-23	2000
Johnson	L-14	1500
Hayes	L-15	1500
Adams	L-16	1300
Jones	L-17	1000

5 rows in set (0.001 sec)

Task 6:

SELECT c.customer_name FROM customer c, depositor d, borrower b, loan l where
c.customer_id=d.customer_id and c.customer_id=b.customer_id and
b.loan_number=l.loan_number and l.branch_name="Perryridge";

```
MariaDB [blank]> SELECT c.customer_name FROM customer c, depositor d, borrower b, loan l where  
-> c.customer_id=d.customer_id and c.customer_id=b.customer_id and  
-> b.loan_number=l.loan_number and l.branch_name="Perryridge";  
+-----+  
| 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 inner join borrower b on l.loan_number = b.loan_number)
inner join customer c on b.customer_id = c.customer_id group by c.customer_id having count(*)
>=2;

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