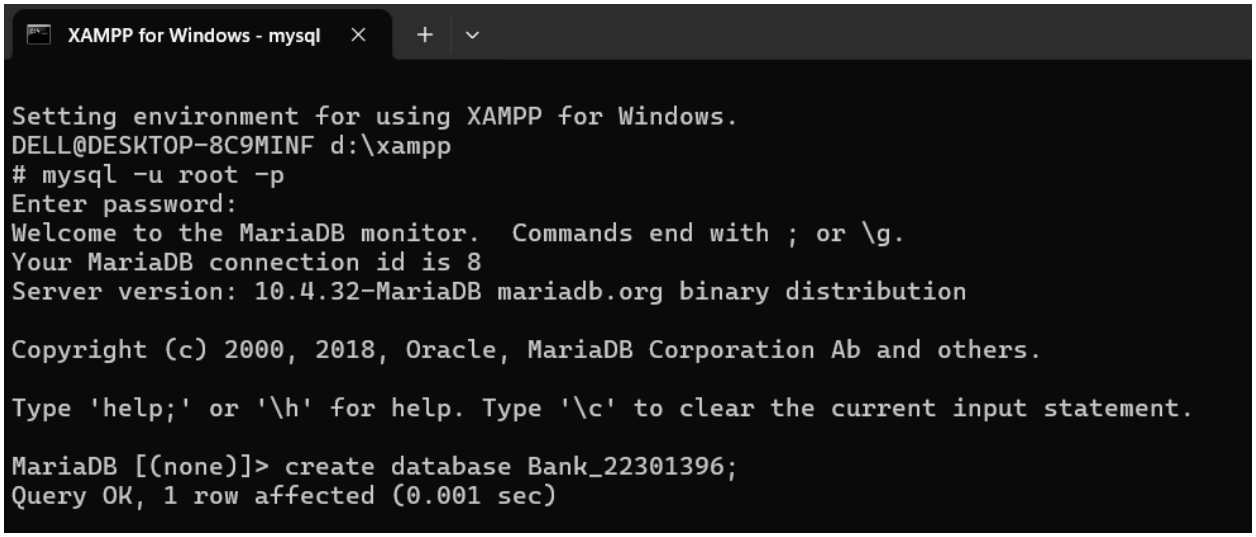
Lab Assignment-03




```
MariaDB [Bank_22301396]> 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_22301396]> 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_22301396]> 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 (0.001 sec)
```

```
MariaDB [Bank_22301396]> 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 (0.001 sec)
```

```
MariaDB [Bank_22301396]> 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 (0.001 sec)
```

```
MariaDB [Bank_22301396]> 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 (0.001 sec)
```

Task1:

```
SELECT c.customer_name, b.loan_number
  -> FROM customer c
  -> JOIN borrower b ON c.customer_id = b.customer_id
  -> JOIN loan l ON b.loan_number = l.loan_number
  -> WHERE l.branch_name = 'Downtown';
```

```
MariaDB [Bank_22301396]> SELECT c.customer_name, b.loan_number
    -> FROM customer c
    -> JOIN borrower b ON c.customer_id = b.customer_id
    -> 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 (0.001 sec)
```

Task2: (##Mirror table join)

```
SELECT DISTINCT c1.customer_name AS Customer1, c2.customer_name AS Customer2,
c1.customer_city AS City    #DISTINCT na dileo hobe
   -> FROM customer c1
   -> JOIN customer c2 ON c1.customer_city = c2.customer_city AND c1.customer_id <
c2.customer_id;    #Id er condition e < /> dite hobe. <> (not equal to) dile hobe na karon
                   Ekekta city duibar kore ashbe. John er jonno and hayes er jonno duibar check
                   Hobe. so customer1, customer2 er name duitao exchange hoye double ashbe
                   Same city er jonno.
```

###mirror table er shatheo join possible.

```
MariaDB [Bank_22301396]> SELECT DISTINCT c1.customer_name AS Customer1, c2.c
ustomer_name AS Customer2, c1.customer_city AS City
    -> FROM customer c1
    -> JOIN customer c2 ON c1.customer_city = c2.customer_city AND c1.custom
er_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)
```

Task3: ##Grouping

```
SELECT branch_name, SUM(balance * 0.04) AS Total_Interest
   -> FROM account
   -> GROUP BY branch_name;
```

By using join-

```
SELECT b.branch_name, SUM(a.balance * 0.04) AS Total_Interest
-> FROM account a
-> JOIN branch b ON a.branch_name = b.branch_name
-> GROUP BY b.branch_name;
```

##branch table er branch_name diye group koray problem hoy nai karon: ekhane account jader ase tader shobar branch_name ei branch table e included. aaro extra branch_name ase kotogula jegular account nai so account jehetu nai interest calculate korar shomoy branch_name na peye oi extra gulo baad hoye jabe. So branch table er branch_name diye group korate kono problem nai. Ulta Shubidha hocche ekhane kono repeated branch_name nai so task 2 er moto same branch duibar check hoye duibar output e chole ashar moto kono jhamela nai.

```
MariaDB [Bank_22301396]> SELECT branch_name, SUM(balance * 0.04) AS Total_In
terest
    -> 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 |
+-------------+----------------+
6 rows in set (0.001 sec)
```

Task4: **##Grouping and comparison within groups (mirror table needed: join same jinish dui bar kore likhte hoy)**

Wrong:

```
SELECT a.account_number, MAX(a.balance), c.customer_city
    -> FROM customer c
    -> JOIN depositor d ON c.customer_id = d.customer_id
    -> JOIN account a ON d.account_number = a.account_number
    -> GROUP BY c.customer_city, a.account_number;
```

###(Group by diye simply hobe na karon group korte hobe city er basis e but select e account number show korte bolse mane duita jagay same same jinish thakte hoy jeta ekhane possible na. Tai ekhane where c1.customer_city = c2.customer_city eivabe milate hobe city gulo. Aar evabe check korte mirror er concept chole ashe. So mirror table use kore korte hobe ekhane.)

This is showing empty set (correct tar shathe compare kore dekhbo kothay problem)

```
Select a.account_number, a.balance, c.customer_city
From account a
Join depositor d on a.account_number = d.account_number
Join customer c on d.customer_id = c.customer_id
Where (a.balance, c.customer_id) in
(
```

```
select max(a2.balance), c2.customer_city
From account a2
Join depositor d2 on a2.account_number = d2.account_number
Join customer c2 on d2.customer_id = c2.customer_id
Group by c2.customer_city
);
```
###(group by use hobe na).

Correct:

```
SELECT c.customer_city, a.account_number, a.balance
   -> FROM account a
   -> JOIN depositor d ON a.account_number = d.account_number
   -> JOIN customer c ON d.customer_id = c.customer_id
   -> WHERE a.balance = (
   ->         SELECT MAX(a2.balance)
   ->         FROM account a2
   ->         JOIN depositor d2 ON a2.account_number = d2.account_number
   ->         JOIN customer c2 ON d2.customer_id = c2.customer_id
   ->         WHERE c2.customer_city = c.customer_city
   ->     )
   -> ORDER BY
   ->     c.customer_city;
```
###(order by part ta na dileo hoy. Eta just output ta kon serial e show hobe sheta)

This output is correct:

```
MariaDB [bank_22301396]> SELECT
    ->     c.customer_city,
    ->     a.account_number,
    ->     a.balance
    -> FROM
    ->     account a
    -> JOIN
    ->     depositor d ON a.account_number = d.account_number
    -> JOIN
    ->     customer c ON d.customer_id = c.customer_id
    -> WHERE
    ->     a.balance = (
    ->         SELECT MAX(a2.balance)
    ->         FROM account a2
    ->         JOIN depositor d2 ON a2.account_number = d2.account_number
    ->         JOIN customer c2 ON d2.customer_id = c2.customer_id
    ->         WHERE c2.customer_city = c.customer_city
    ->     )
    -> ORDER BY
    ->     c.customer_city;
+---------------+----------------+---------+
| customer_city | account_number | balance |
+---------------+----------------+---------+
| Harrison      | A-217          |     750 |
| Palo Alto     | A-201          |     900 |
| Pittsfield    | A-222          |     700 |
| Rye           | A-215          |     700 |
| Stamford      | A-305          |     350 |
+---------------+----------------+---------+
```

This output is wrong:
Xampp er code, output bhul. Proti ta city er max balance just thakbe. Proti ta city ekbar thakbe data hishebe and she city er balance o ektai thakbe max ta.

```
MariaDB [Bank_22301396]> SELECT a.account_number, MAX(a.balance), c.customer
_city
    -> FROM customer c
    -> JOIN depositor d ON c.customer_id = d.customer_id
    -> JOIN account a ON d.account_number = a.account_number
    -> GROUP BY c.customer_city, a.account_number;
+----------------+----------------+---------------+
| account_number | MAX(a.balance) | customer_city |
+----------------+----------------+---------------+
| A-102          |            400 | Harrison      |
| A-217          |            750 | Harrison      |
| A-101          |            500 | Palo Alto     |
| A-201          |            900 | Palo Alto     |
| A-222          |            700 | Pittsfield    |
| A-215          |            700 | Rye           |
| A-305          |            350 | Stamford      |
+----------------+----------------+---------------+
7 rows in set (0.001 sec)
```

Task5: **###limit concept. Join bar bar korte hoy na karon grouping er kichu nai so mirror table is not needed. Join er part ekbar e likhte hobe but inner query, outer query thakbe.**

###**subquery lagbe**. Karon amar ekhane duita kaj. First e top 5 ta highest loan ber korte hobe jar jonno **desc must.NOT ASC**. karon desc hocche boro theke choto er dike aar limit always table er upper to bottom er dike kaj kore. Desc use korar karone highest amount ta shobar upore thakbe then nicher dike joto jabo choto value er dike jabe. Aar limit 5 mane shobar upor theke 5 ta value nibo. So eivabe top 5 amount peye jabo. Asc use korle lowest 5 ta amount ashto.
Then finally outer query te eta ke abar sort korte hobe. Output table e amount asc and loan_number desc(jodi amount same hoye jay) wise show korte bolse tai.
Top_loans: Inner query purota top_loans variable e save thakbe. Chaile onno naam o dite parbo but kichu ekta naam diye eta ke save korte hobe.

outer query te select l.loan_number….**shamne l., c. egulo hobe na**. Just column name ta thakbe. Shamne l c egulo diye table er reference bujhay. But outer query te **from er por kichu nai kono join o nai jekhane table name thakbe**. Same vabe inner query shesh howar por jokhon abar last line e outer query te gese tokhon o l.,c. Egulo dibo na.

BUT **inner query te shob dite hobe karon oikhane join er kaj hoise- from er por table er name ache, join o use house jekhane baki table name ache**.

Ekhane arekta kaj hoise- amount ta ke loan_amount naam e output e show korte bolse. Ekhetre must **outer query te output e je naam e show korte bolbe oi naam ta likhte hobe** select er por column name ta. Aar inner query te sheta AS diye define kore dite hobe. Ei system e na likhle error dibe.

(Subquery inside from)

```
SELECT loan_number, loan_amount, customer_name
 -> FROM

 -> (SELECT l.loan_number, l.amount AS loan_amount, c.customer_name
 -> FROM loan l
 -> JOIN borrower b ON l.loan_number = b.loan_number
 -> JOIN customer c ON b.customer_id = c.customer_id ORDER BY  l.amount desc,
l.loan_number ASC  LIMIT 5)

AS top_loans ORDER BY loan_amount ASC, loan_number DESC;
```

—----------

OR(subquery inside where kintu ekhaneo from er bhitorei likhse actually)-----Run diye check korbo thikache naki.

—----------

```
SELECT l.loan_number, l.amount AS loan_amount, c.customer_name
FROM loan l
JOIN borrower b ON l.loan_number = b.loan_number
JOIN customer c ON b.customer_id = c.customer_id
WHERE (l.loan_number, l.amount) IN (
    SELECT loan_number, amount
    FROM (
        SELECT l.loan_number, l.amount
        FROM loan l
        ORDER BY l.amount DESC, l.loan_number ASC
```

```
    LIMIT 5
  ) AS top_loans
)
ORDER BY l.amount ASC, l.loan_number DESC;
```

```
MariaDB [Bank_22301396]>  SELECT loan_number, loan_amount, customer_name
    -> FROM
    -> (SELECT l.loan_number, l.amount AS loan_amount, c.customer_name
    -> FROM loan l join  borrower b ON l.loan_number = b.loan_number
    -> JOIN customer c ON b.customer_id = c.customer_id ORDER BY  l.amount d
esc,
    -> l.loan_number ASC  LIMIT 5)
    -> AS top_loans ORDER BY loan_amount ASC, loan_number DESC;
+-------------+-------------+---------------+
| loan_number | loan_amount | customer_name |
+-------------+-------------+---------------+
| L-17        |        1000 | Jones         |
| L-16        |        1300 | Adams         |
| L-15        |        1500 | Hayes         |
| L-14        |        1500 | Johnson       |
| L-23        |        2000 | Smith         |
+-------------+-------------+---------------+
5 rows in set (0.001 sec)
```

Task6:

```
SELECT DISTINCT c.customer_name
   -> FROM customer c
   -> JOIN depositor d ON c.customer_id = d.customer_id
   -> JOIN account a ON d.account_number = a.account_number
   -> JOIN borrower b ON c.customer_id = b.customer_id
   -> JOIN loan l ON b.loan_number = l.loan_number
   -> WHERE a.branch_name = 'Perryridge' AND l.branch_name = 'Perryridge';
```

```
MariaDB [Bank_22301396]> SELECT DISTINCT c.customer_name
    -> FROM customer c
    -> JOIN depositor d ON c.customer_id = d.customer_id
    -> JOIN account a ON d.account_number = a.account_number
    -> JOIN borrower b ON c.customer_id = b.customer_id
    -> JOIN loan l ON b.loan_number = l.loan_number
    -> WHERE a.branch_name = 'Perryridge' AND l.branch_name = 'Perryridge';
+---------------+
| customer_name |
+---------------+
| Hayes         |
+---------------+
1 row in set (0.001 sec)
```

Task7:

```
SELECT c.customer_name, SUM(l.amount) AS total_loan
    -> FROM customer c
    -> JOIN borrower b ON c.customer_id = b.customer_id
    -> JOIN loan l ON b.loan_number = l.loan_number
    -> GROUP BY c.customer_id, c.customer_name
    -> HAVING COUNT(b.loan_number) >= 2;
```

###ekhane **b**.loan_number must. NOT **l**.loan_number.

Customer id select e nei. Select e name ache. Group name er basis e kora hoise
But shathe id tao include kora hoise group e. Error dey ni.

```
MariaDB [Bank_22301396]> SELECT c.customer_name, SUM(l.amount) AS total_loan

    -> FROM customer c
    -> JOIN borrower b ON c.customer_id = b.customer_id
    -> JOIN loan l ON b.loan_number = l.loan_number
    -> GROUP BY c.customer_id, c.customer_name
    -> HAVING COUNT(b.loan_number) >= 2;
+---------------+------------+
| customer_name | total_loan |
+---------------+------------+
| Smith         |       2900 |
+---------------+------------+
1 row in set (0.003 sec)
```

ClassWork_Lab03

```
Database changed
MariaDB [bank_22301396]> select c.customer_id, c.customer_name, c.customer_city
    -> from customer c
    -> left join depositor d on c.customer_id = d.customer_id;
+-------------+---------------+---------------+
| customer_id | customer_name | customer_city |
+-------------+---------------+---------------+
| C-101       | Jones         | Harrison      |
| C-201       | Smith         | Rye           |
| C-211       | Hayes         | Harrison      |
| C-212       | Curry         | Rye           |
| C-215       | Lindsay       | Pittsfield    |
| C-220       | Turner        | Stamford      |
| C-222       | Williams      | Princeton     |
| C-225       | Adams         | Pittsfield    |
| C-226       | Johnson       | Palo Alto     |
| C-226       | Johnson       | Palo Alto     |
| C-233       | Glenn         | Woodside      |
| C-234       | Brooks        | Brooklyn      |
| C-255       | Green         | Stamford      |
+-------------+---------------+---------------+
13 rows in set (0.002 sec)
```

```
MariaDB [bank_22301396]> select c.customer_id, c.customer_name, c.customer_city, d.account_number
    -> from depositor d
    ->  right join customer c on c.customer_id = d.customer_id;
+-------------+---------------+---------------+----------------+
| customer_id | customer_name | customer_city | account_number |
+-------------+---------------+---------------+----------------+
| C-101       | Jones         | Harrison      | A-217          |
| C-201       | Smith         | Rye           | A-215          |
| C-211       | Hayes         | Harrison      | A-102          |
| C-212       | Curry         | Rye           | NULL           |
| C-215       | Lindsay       | Pittsfield    | A-222          |
| C-220       | Turner        | Stamford      | A-305          |
| C-222       | Williams      | Princeton     | NULL           |
| C-225       | Adams         | Pittsfield    | NULL           |
| C-226       | Johnson       | Palo Alto     | A-101          |
| C-226       | Johnson       | Palo Alto     | A-201          |
| C-233       | Glenn         | Woodside      | NULL           |
| C-234       | Brooks        | Brooklyn      | NULL           |
| C-255       | Green         | Stamford      | NULL           |
+-------------+---------------+---------------+----------------+
13 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]>  select c.customer_id, c.customer_name, c.customer_city, d.account_number
    -> from depositor d
    -> left join customer c on c.customer_id = d.customer_id;
+-------------+---------------+---------------+----------------+
| customer_id | customer_name | customer_city | account_number |
+-------------+---------------+---------------+----------------+
| C-101       | Jones         | Harrison      | A-217          |
| C-201       | Smith         | Rye           | A-215          |
| C-211       | Hayes         | Harrison      | A-102          |
| C-215       | Lindsay       | Pittsfield    | A-222          |
| C-220       | Turner        | Stamford      | A-305          |
| C-226       | Johnson       | Palo Alto     | A-101          |
| C-226       | Johnson       | Palo Alto     | A-201          |
+-------------+---------------+---------------+----------------+
7 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select c.customer_id, c.customer_name, c.customer_city, d.account_number
    -> from customer c
    ->  right join depositor d on c.customer_id = d.customer_id;
+-------------+---------------+---------------+----------------+
| customer_id | customer_name | customer_city | account_number |
+-------------+---------------+---------------+----------------+
| C-101       | Jones         | Harrison      | A-217          |
| C-201       | Smith         | Rye           | A-215          |
| C-211       | Hayes         | Harrison      | A-102          |
| C-215       | Lindsay       | Pittsfield    | A-222          |
| C-220       | Turner        | Stamford      | A-305          |
| C-226       | Johnson       | Palo Alto     | A-101          |
| C-226       | Johnson       | Palo Alto     | A-201          |
+-------------+---------------+---------------+----------------+
7 rows in set (0.002 sec)
```

```
MariaDB [bank_22301396]> select c.customer_id, c.customer_name, c.customer_city, d.account_number
    ->  from depositor d
    -> inner join customer c on c.customer_id = d.customer_id;
+-------------+---------------+---------------+----------------+
| customer_id | customer_name | customer_city | account_number |
+-------------+---------------+---------------+----------------+
| C-101       | Jones         | Harrison      | A-217          |
| C-201       | Smith         | Rye           | A-215          |
| C-211       | Hayes         | Harrison      | A-102          |
| C-215       | Lindsay       | Pittsfield    | A-222          |
| C-220       | Turner        | Stamford      | A-305          |
| C-226       | Johnson       | Palo Alto     | A-101          |
| C-226       | Johnson       | Palo Alto     | A-201          |
+-------------+---------------+---------------+----------------+
7 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select c.customer_id, c.customer_name, c.customer_city, d.account_number
    -> from customer c
    -> inner join depositor d on c.customer_id = d.customer_id;
+-------------+---------------+---------------+----------------+
| customer_id | customer_name | customer_city | account_number |
+-------------+---------------+---------------+----------------+
| C-101       | Jones         | Harrison      | A-217          |
| C-201       | Smith         | Rye           | A-215          |
| C-211       | Hayes         | Harrison      | A-102          |
| C-215       | Lindsay       | Pittsfield    | A-222          |
| C-220       | Turner        | Stamford      | A-305          |
| C-226       | Johnson       | Palo Alto     | A-101          |
| C-226       | Johnson       | Palo Alto     | A-201          |
+-------------+---------------+---------------+----------------+
7 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select c.customer_name, c.customer_city, d.account_number, a.balance, a.branch_name
    -> from customer c
    -> join depositor d on c.customer_id = d.customer_id
    -> join account a on a.account_number = d.account_number;
+---------------+---------------+----------------+---------+-------------+
| customer_name | customer_city | account_number | balance | branch_name |
+---------------+---------------+----------------+---------+-------------+
| Jones         | Harrison      | A-217          |     750 | Brighton    |
| Smith         | Rye           | A-215          |     700 | Mianus      |
| Hayes         | Harrison      | A-102          |     400 | Perryridge  |
| Lindsay       | Pittsfield    | A-222          |     700 | Redwood     |
| Turner        | Stamford      | A-305          |     350 | Round Hill  |
| Johnson       | Palo Alto     | A-101          |     500 | Downtown    |
| Johnson       | Palo Alto     | A-201          |     900 | Brighton    |
+---------------+---------------+----------------+---------+-------------+
7 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select c.customer_name, c.customer_city
    -> from customer c
    -> join borrower b on b.customer_id = c.customer_id
    -> join loan l on l.loan_number = b.loan_number
    -> where l.branch_name = 'Perryridge';
+---------------+---------------+
| customer_name | customer_city |
+---------------+---------------+
| Hayes         | Harrison      |
| Adams         | Pittsfield    |
+---------------+---------------+
```

```
MariaDB [bank_22301396]> select a.account_number, a.balance
    -> from account a
    -> where a.balance between 700 and 900;
+----------------+---------+
| account_number | balance |
+----------------+---------+
| A-201          |     900 |
| A-215          |     700 |
| A-217          |     750 |
| A-222          |     700 |
+----------------+---------+
```

```
MariaDB [bank_22301396]> select c.customer_name
    -> from customer c
    -> where c.customer_street like '%Hill';
+---------------+
| customer_name |
+---------------+
| Glenn         |
+---------------+
```

```
MariaDB [bank_22301396]> select b.branch_name
    -> from branch b
    -> where b.assets > any (select b.assets from branch b where b.branch_city = 'Brooklyn');
+-------------+
| branch_name |
+-------------+
| Downtown    |
| Round Hill  |
+-------------+
2 rows in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select b.branch_name
    -> from branch b
    ->  where b.assets > all (select b.assets from branch b where b.branch_city = 'Horseneck');
+-------------+
| branch_name |
+-------------+
| Downtown    |
+-------------+
```

```
MariaDB [bank_22301396]> select c.customer_name
    -> from customer c
    -> join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    ->  where a.branch_name = 'Brighton'
    -> order by customer_name asc;
+---------------+
| customer_name |
+---------------+
| Johnson       |
| Jones         |
+---------------+
```

```
MariaDB [bank_22301396]> select l.loan_number, l.amount
    -> from loan l
    -> order by l.amount desc, l.loan_number asc;
+-------------+--------+
| loan_number | amount |
+-------------+--------+
| L-23        |   2000 |
| L-14        |   1500 |
| L-15        |   1500 |
| L-16        |   1300 |
| L-17        |   1000 |
| L-11        |    900 |
| L-93        |    500 |
+-------------+--------+
```

```
MariaDB [bank_22301396]> select a.branch_name
    ->  from account a
    ->  group by a.branch_name
    -> having avg(a.balance) >= 700;
+-------------+
| branch_name |
+-------------+
| Brighton    |
| Mianus      |
| Redwood     |
+-------------+
```

```
MariaDB [bank_22301396]> select c.customer_name, a.account_number
    -> from customer c
    -> join depositor d on c.customer_id = d.customer_id
    -> join account a on a.account_number = d.account_number
    -> order by a.balance desc limit 3;
+--------------+----------------+
| customer_name | account_number |
+--------------+----------------+
| Johnson      | A-201          |
| Jones        | A-217          |
| Smith        | A-215          |
+--------------+----------------+
```

```
MariaDB [bank_22301396]> select distinct c.customer_name
    ->  from customer c
    -> join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    ->  where a.branch_name in (select a2.branch_name from account a2 join depositor d2 on d2.account_number = a2.accoun
t_number join customer c2 on c2.customer_id = d2.customer_id where c2.customer_name = 'Johnson');
+---------------+
| customer_name |
+---------------+
| Jones         |
| Johnson       |
+---------------+
2 rows in set (0.001 sec)

MariaDB [bank_22301396]> select distinct c.customer_name
    -> from customer c
    ->  join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    ->  where a.branch_name in (select a.branch_name from account a join depositor d on d.account_number = a.account_num
ber join customer c on c.customer_id = d.customer_id where c.customer_name = 'Johnson');
+---------------+
| customer_name |
+---------------+
| Jones         |
| Johnson       |
+---------------+
```

```
MariaDB [bank_22301396]> select distinct c.customer_name
    -> from customer c
    -> join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    -> where a.branch_name not in (select a.branch_name from account a join depositor d on d.account_number = a.account_
number join customer c on c.customer_id = d.customer_id join borrower b on b.customer_id = c.customer_id join loan l on
l.loan_number = b.loan_number where l.branch_name = 'Mianus');
+---------------+
| customer_name |
+---------------+
| Jones         |
| Smith         |
| Hayes         |
| Lindsay       |
| Turner        |
| Johnson       |
+---------------+
```

Kintu evabe outer query teo loan table ke join korle output e loan, account duitai jei customer der ache shudhu tader naam show kore. But amader ke mianus branch e jar loan ache shei account chara baki shob account show korte bolse. Tai ei question er jonno eta hobe na.

```
MariaDB [bank_22301396]>  select distinct c.customer_name
    -> from customer c
    -> join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    ->  join borrower b on b.customer_id = c.customer_id
    -> join loan l on l.loan_number = b.loan_number where a.branch_name not in (select a.branch_name from account a join
 depositor d on d.account_number = a.account_number join customer c on c.customer_id = d.customer_id join borrower b on
b.customer_id = c.customer_id join loan l on l.loan_number = b.loan_number where l.branch_name = 'Mianus');
+---------------+
| customer_name |
+---------------+
| Jones         |
| Smith         |
| Hayes         |
| Johnson       |
+---------------+
4 rows in set (0.002 sec)
```

```
MariaDB [bank_22301396]> select b.branch_name, count(c.customer_id) as num_of_customer
    -> from customer c
    -> join depositor d on d.customer_id = c.customer_id
    -> join account a on a.account_number = d.account_number
    -> join branch b on b.branch_name = a.branch_name
    -> group by b.branch_name
    -> having count(a.account_number) >= 1;
+-------------+-----------------+
| branch_name | num_of_customer |
+-------------+-----------------+
| Brighton    |               2 |
| Downtown    |               1 |
| Mianus      |               1 |
| Perryridge  |               1 |
| Redwood     |               1 |
| Round Hill  |               1 |
+-------------+-----------------+
```

```
MariaDB [bank_22301396]> select c.customer_name, avg(a.balance)
    -> from customer c
    -> join depositor d on c.customer_id = d.customer_id
    -> join account a on a.account_number = d.account_number
    -> where c.customer_city = 'Palo Alto'
    -> group by customer_name
    -> having count(a.account_number) >= 2;
+---------------+----------------+
| customer_name | avg(a.balance) |
+---------------+----------------+
| Johnson       |       700.0000 |
+---------------+----------------+
1 row in set (0.001 sec)
```

```
MariaDB [bank_22301396]> select c.customer_name, a.account_number
    -> from customer c
    -> join depositor d on c.customer_id = d.customer_id
    -> join account a on a.account_number = d.account_number
    -> order by a.balance desc
    -> limit 1 offset 2;
+---------------+----------------+
| customer_name | account_number |
+---------------+----------------+
| Smith         | A-215          |
+---------------+----------------+
1 row in set (0.001 sec)
```

——----------DONE----------