DBMS – LAB -04

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ROLL NO: S20200010212

SECTION: C

TASK: (LAB EXERCISES)

SQL COMMANDS

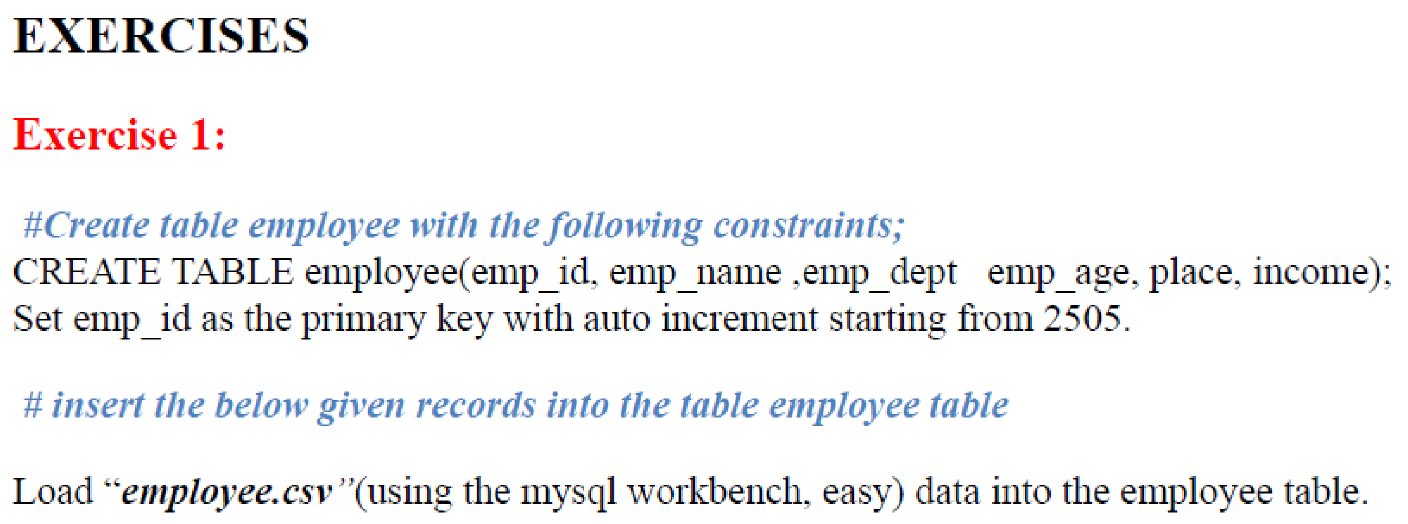
1. GROUP BY CLAUSE

2. ORDER BY CLAUSE

EXERCISE 1:

CREATING TABLE

AND LOADING DATA FROM GIVEN DATA BY USING MYSQL WORK BENCH



EXERCISES

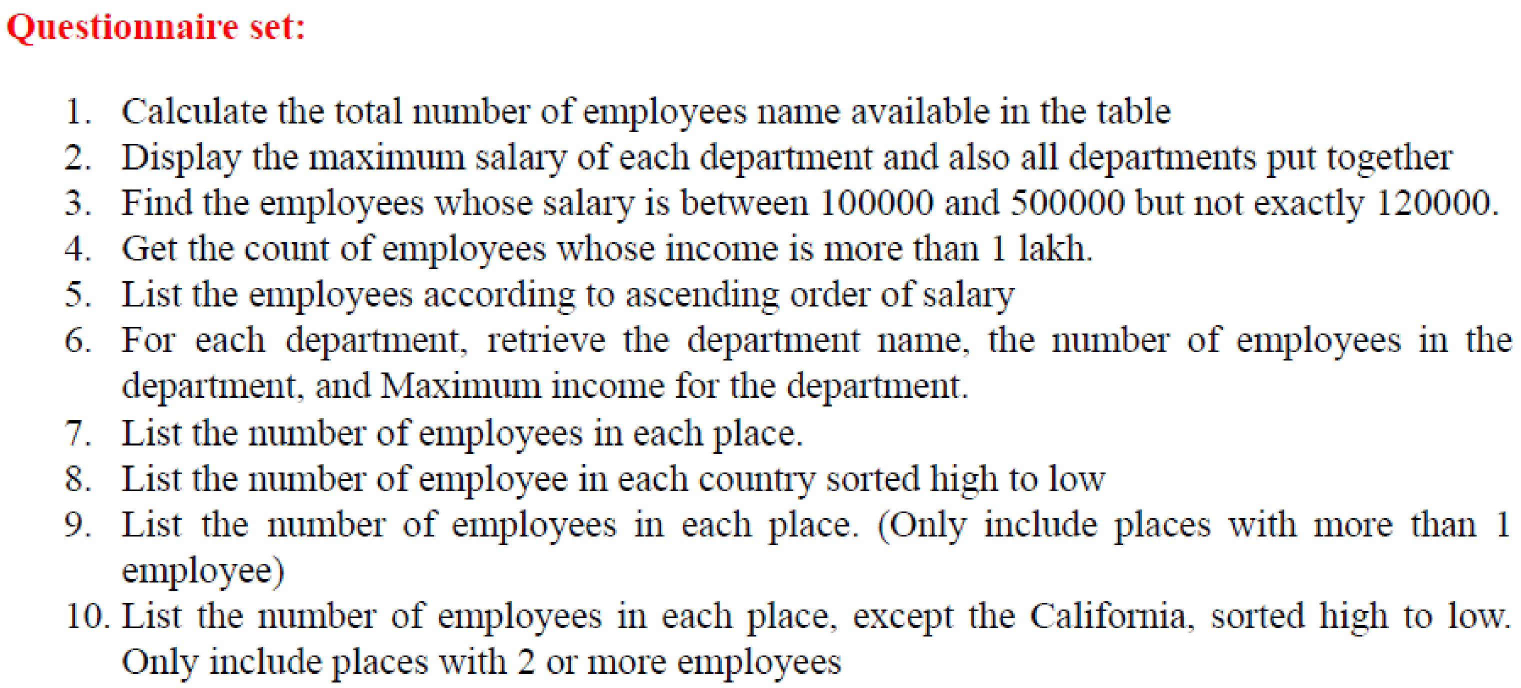
Exercise 1:

#Create table employee with the following constraints;
CREATE TABLE employee(emp_id, emp_name ,emp_dept   emp_age, place, income);
Set emp_id as the primary key with auto increment starting from 2505.

# insert the below given records into the table employee table

Load "***employee.csv***"(using the mysql workbench, easy) data into the employee table.

QUESTION :

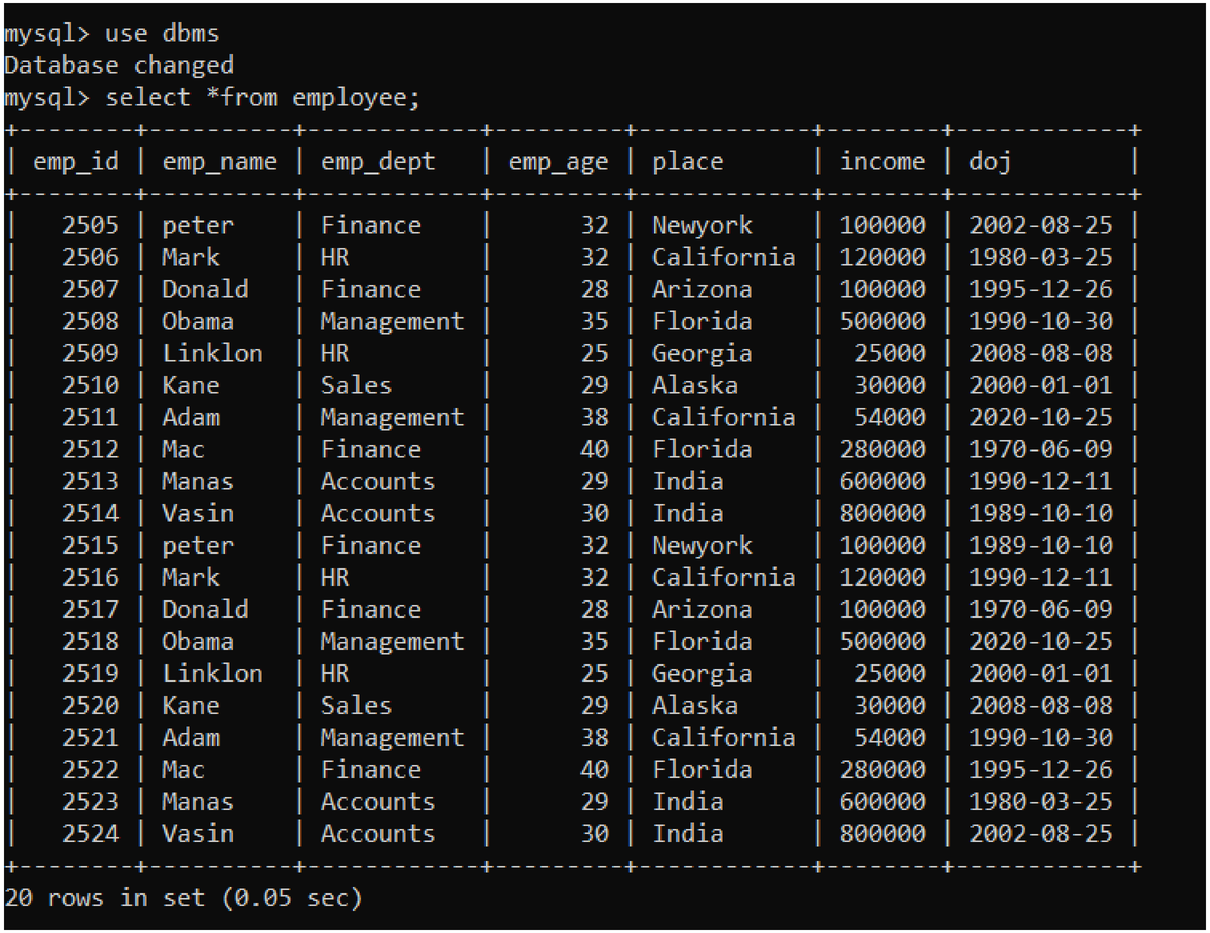


Questionnaire set:

1. Calculate the total number of employees name available in the table
2. Display the maximum salary of each department and also all departments put together
3. Find the employees whose salary is between 100000 and 500000 but not exactly 120000.
4. Get the count of employees whose income is more than 1 lakh.
5. List the employees according to ascending order of salary
6. For each department, retrieve the department name, the number of employees in the department, and Maximum income for the department.
7. List the number of employees in each place.
8. List the number of employee in each country sorted high to low
9. List the number of employees in each place. (Only include places with more than 1 employee)
10. List the number of employees in each place, except the California, sorted high to low. Only include places with 2 or more employees

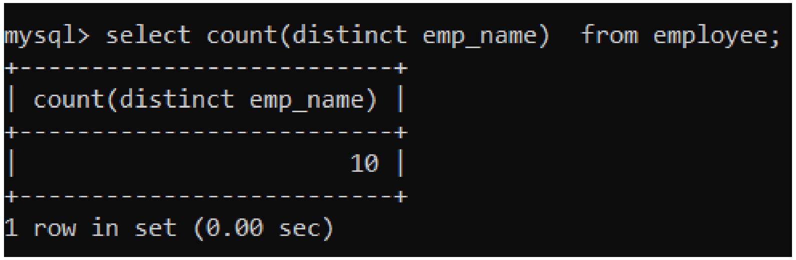
MYSQL COMMAND PROMPT SCREEN SHOTS:

TABLE CONTENT :



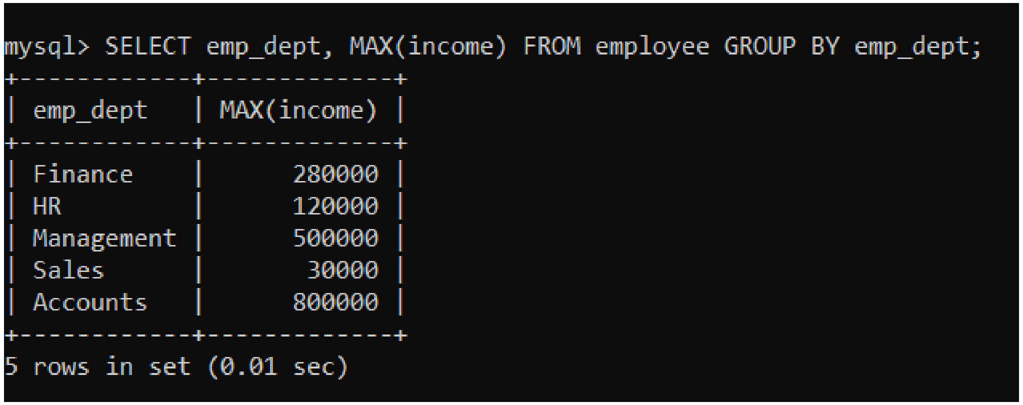
```
mysql> use dbms
Database changed
mysql> select *from employee;
+--------+----------+------------+---------+------------+--------+------------+
| emp_id | emp_name | emp_dept   | emp_age | place      | income | doj        |
+--------+----------+------------+---------+------------+--------+------------+
|   2505 | peter    | Finance    |      32 | Newyork    | 100000 | 2002-08-25 |
|   2506 | Mark     | HR         |      32 | California | 120000 | 1980-03-25 |
|   2507 | Donald   | Finance    |      28 | Arizona    | 100000 | 1995-12-26 |
|   2508 | Obama    | Management |      35 | Florida    | 500000 | 1990-10-30 |
|   2509 | Linklon  | HR         |      25 | Georgia    |  25000 | 2008-08-08 |
|   2510 | Kane     | Sales      |      29 | Alaska     |  30000 | 2000-01-01 |
|   2511 | Adam     | Management |      38 | California |  54000 | 2020-10-25 |
|   2512 | Mac      | Finance    |      40 | Florida    | 280000 | 1970-06-09 |
|   2513 | Manas    | Accounts   |      29 | India      | 600000 | 1990-12-11 |
|   2514 | Vasin    | Accounts   |      30 | India      | 800000 | 1989-10-10 |
|   2515 | peter    | Finance    |      32 | Newyork    | 100000 | 1989-10-10 |
|   2516 | Mark     | HR         |      32 | California | 120000 | 1990-12-11 |
|   2517 | Donald   | Finance    |      28 | Arizona    | 100000 | 1970-06-09 |
|   2518 | Obama    | Management |      35 | Florida    | 500000 | 2020-10-25 |
|   2519 | Linklon  | HR         |      25 | Georgia    |  25000 | 2000-01-01 |
|   2520 | Kane     | Sales      |      29 | Alaska     |  30000 | 2008-08-08 |
|   2521 | Adam     | Management |      38 | California |  54000 | 1990-10-30 |
|   2522 | Mac      | Finance    |      40 | Florida    | 280000 | 1995-12-26 |
|   2523 | Manas    | Accounts   |      29 | India      | 600000 | 1980-03-25 |
|   2524 | Vasin    | Accounts   |      30 | India      | 800000 | 2002-08-25 |
+--------+----------+------------+---------+------------+--------+------------+
20 rows in set (0.05 sec)
```

1.



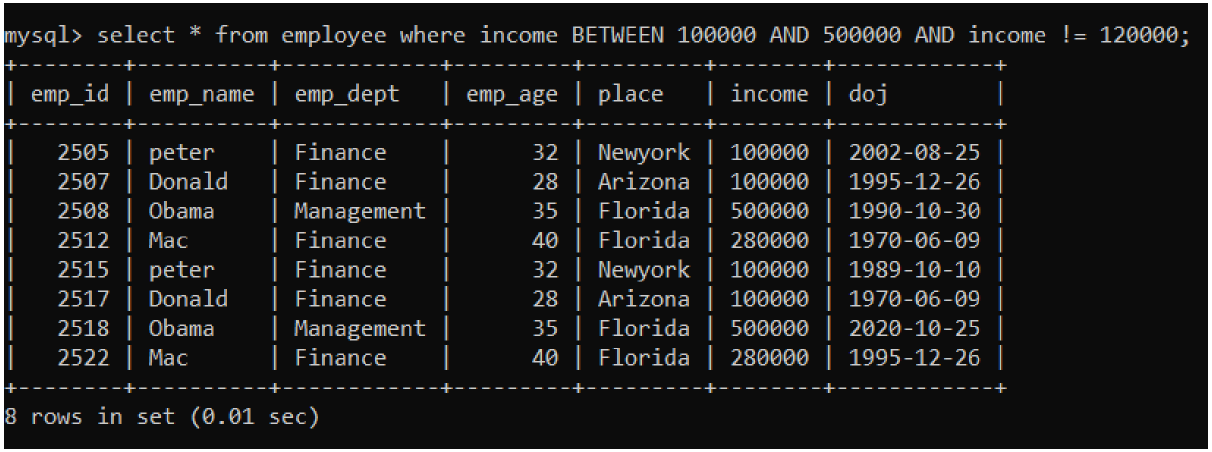
```
mysql> select count(distinct emp_name)  from employee;
+--------------------------+
| count(distinct emp_name) |
+--------------------------+
|                       10 |
+--------------------------+
1 row in set (0.00 sec)
```

2.



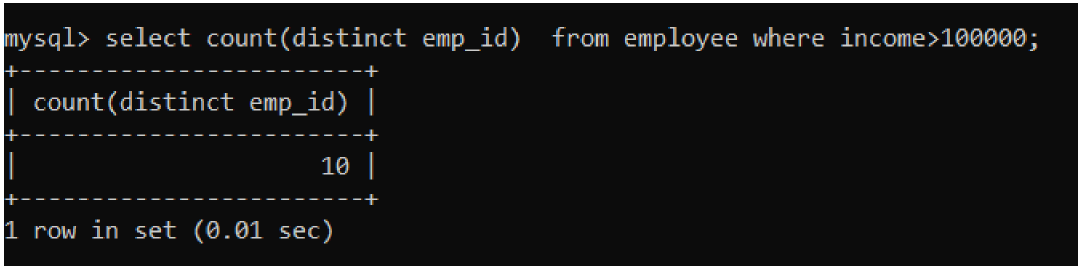
```
mysql> SELECT emp_dept, MAX(income) FROM employee GROUP BY emp_dept;
+------------+-------------+
| emp_dept   | MAX(income) |
+------------+-------------+
| Finance    |      280000 |
| HR         |      120000 |
| Management |      500000 |
| Sales      |       30000 |
| Accounts   |      800000 |
+------------+-------------+
5 rows in set (0.01 sec)
```

3.



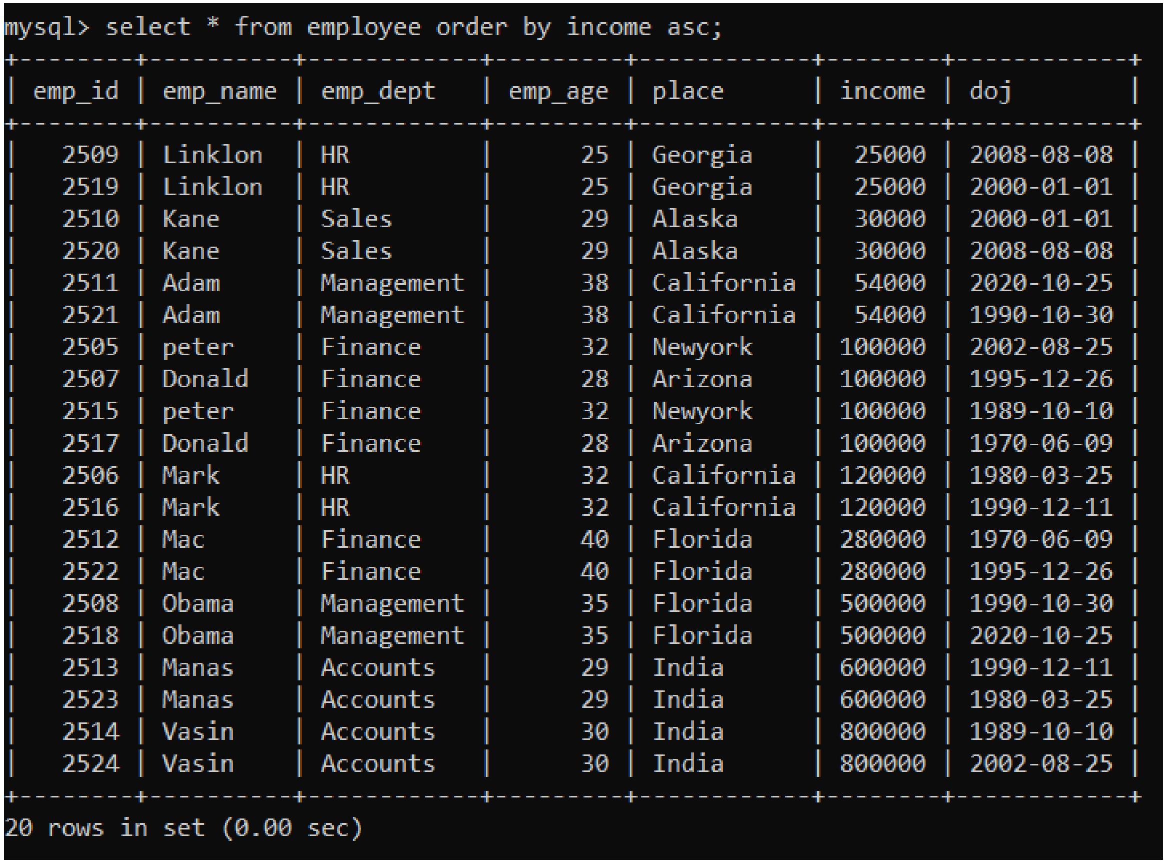
```
mysql> select * from employee where income BETWEEN 100000 AND 500000 AND income != 120000;
+--------+----------+------------+---------+---------+--------+------------+
| emp_id | emp_name | emp_dept   | emp_age | place   | income | doj        |
+--------+----------+------------+---------+---------+--------+------------+
|   2505 | peter    | Finance    |      32 | Newyork | 100000 | 2002-08-25 |
|   2507 | Donald   | Finance    |      28 | Arizona | 100000 | 1995-12-26 |
|   2508 | Obama    | Management |      35 | Florida | 500000 | 1990-10-30 |
|   2512 | Mac      | Finance    |      40 | Florida | 280000 | 1970-06-09 |
|   2515 | peter    | Finance    |      32 | Newyork | 100000 | 1989-10-10 |
|   2517 | Donald   | Finance    |      28 | Arizona | 100000 | 1970-06-09 |
|   2518 | Obama    | Management |      35 | Florida | 500000 | 2020-10-25 |
|   2522 | Mac      | Finance    |      40 | Florida | 280000 | 1995-12-26 |
+--------+----------+------------+---------+---------+--------+------------+
8 rows in set (0.01 sec)
```

4.



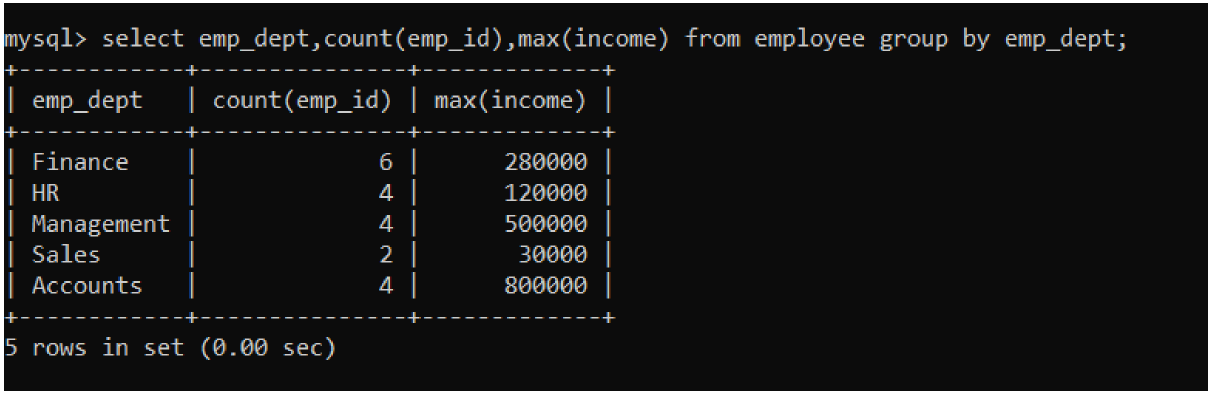
```
mysql> select count(distinct emp_id)  from employee where income>100000;
+------------------------+
| count(distinct emp_id) |
+------------------------+
|                     10 |
+------------------------+
1 row in set (0.01 sec)
```

5.



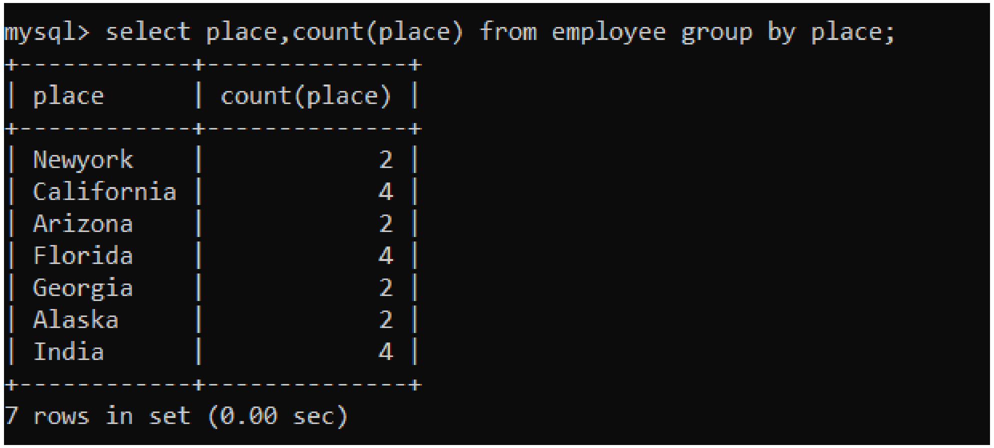
```
mysql> select * from employee order by income asc;
+--------+----------+------------+---------+------------+--------+------------+
| emp_id | emp_name | emp_dept   | emp_age | place      | income | doj        |
+--------+----------+------------+---------+------------+--------+------------+
|   2509 | Linklon  | HR         |      25 | Georgia    |  25000 | 2008-08-08 |
|   2519 | Linklon  | HR         |      25 | Georgia    |  25000 | 2000-01-01 |
|   2510 | Kane     | Sales      |      29 | Alaska     |  30000 | 2000-01-01 |
|   2520 | Kane     | Sales      |      29 | Alaska     |  30000 | 2008-08-08 |
|   2511 | Adam     | Management |      38 | California |  54000 | 2020-10-25 |
|   2521 | Adam     | Management |      38 | California |  54000 | 1990-10-30 |
|   2505 | peter    | Finance    |      32 | Newyork    | 100000 | 2002-08-25 |
|   2507 | Donald   | Finance    |      28 | Arizona    | 100000 | 1995-12-26 |
|   2515 | peter    | Finance    |      32 | Newyork    | 100000 | 1989-10-10 |
|   2517 | Donald   | Finance    |      28 | Arizona    | 100000 | 1970-06-09 |
|   2506 | Mark     | HR         |      32 | California | 120000 | 1980-03-25 |
|   2516 | Mark     | HR         |      32 | California | 120000 | 1990-12-11 |
|   2512 | Mac      | Finance    |      40 | Florida    | 280000 | 1970-06-09 |
|   2522 | Mac      | Finance    |      40 | Florida    | 280000 | 1995-12-26 |
|   2508 | Obama    | Management |      35 | Florida    | 500000 | 1990-10-30 |
|   2518 | Obama    | Management |      35 | Florida    | 500000 | 2020-10-25 |
|   2513 | Manas    | Accounts   |      29 | India      | 600000 | 1990-12-11 |
|   2523 | Manas    | Accounts   |      29 | India      | 600000 | 1980-03-25 |
|   2514 | Vasin    | Accounts   |      30 | India      | 800000 | 1989-10-10 |
|   2524 | Vasin    | Accounts   |      30 | India      | 800000 | 2002-08-25 |
+--------+----------+------------+---------+------------+--------+------------+
20 rows in set (0.00 sec)
```

6.



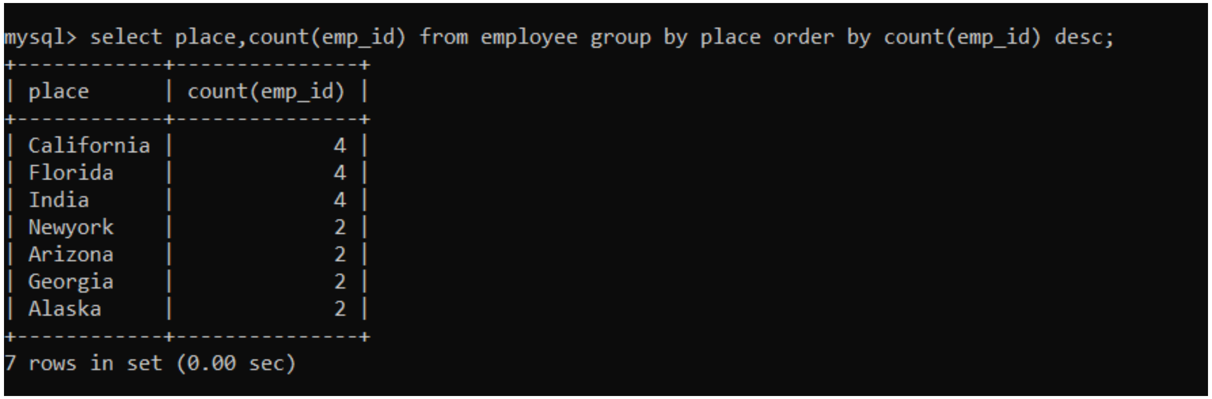
```
mysql> select emp_dept,count(emp_id),max(income) from employee group by emp_dept;
+------------+---------------+-------------+
| emp_dept   | count(emp_id) | max(income) |
+------------+---------------+-------------+
| Finance    |             6 |      280000 |
| HR         |             4 |      120000 |
| Management |             4 |      500000 |
| Sales      |             2 |       30000 |
| Accounts   |             4 |      800000 |
+------------+---------------+-------------+
5 rows in set (0.00 sec)
```

7.



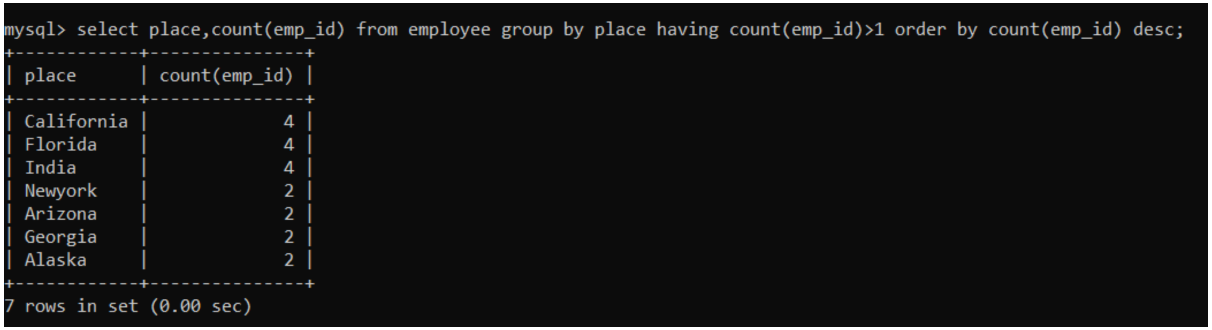
```
mysql> select place,count(place) from employee group by place;
+------------+--------------+
| place      | count(place) |
+------------+--------------+
| Newyork    |            2 |
| California |            4 |
| Arizona    |            2 |
| Florida    |            4 |
| Georgia    |            2 |
| Alaska     |            2 |
| India      |            4 |
+------------+--------------+
7 rows in set (0.00 sec)
```

8.



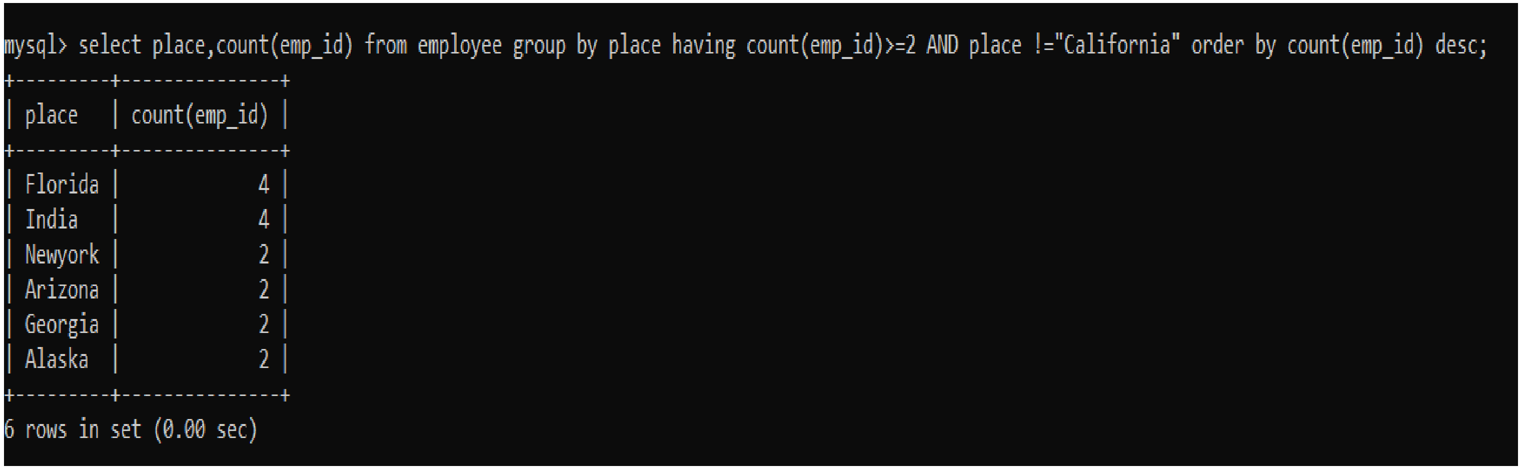
```
mysql> select place,count(emp_id) from employee group by place order by count(emp_id) desc;
+------------+---------------+
| place      | count(emp_id) |
+------------+---------------+
| California |             4 |
| Florida    |             4 |
| India      |             4 |
| Newyork    |             2 |
| Arizona    |             2 |
| Georgia    |             2 |
| Alaska     |             2 |
+------------+---------------+
7 rows in set (0.00 sec)
```

9.



```
mysql> select place,count(emp_id) from employee group by place having count(emp_id)>1 order by count(emp_id) desc;
+------------+---------------+
| place      | count(emp_id) |
+------------+---------------+
| California |             4 |
| Florida    |             4 |
| India      |             4 |
| Newyork    |             2 |
| Arizona    |             2 |
| Georgia    |             2 |
| Alaska     |             2 |
+------------+---------------+
7 rows in set (0.00 sec)
```

10.



```
mysql> select place,count(emp_id) from employee group by place having count(emp_id)>=2 AND place !="California" order by count(emp_id) desc;
+---------+---------------+
| place   | count(emp_id) |
+---------+---------------+
| Florida |             4 |
| India   |             4 |
| Newyork |             2 |
| Arizona |             2 |
| Georgia |             2 |
| Alaska  |             2 |
+---------+---------------+
6 rows in set (0.00 sec)
```

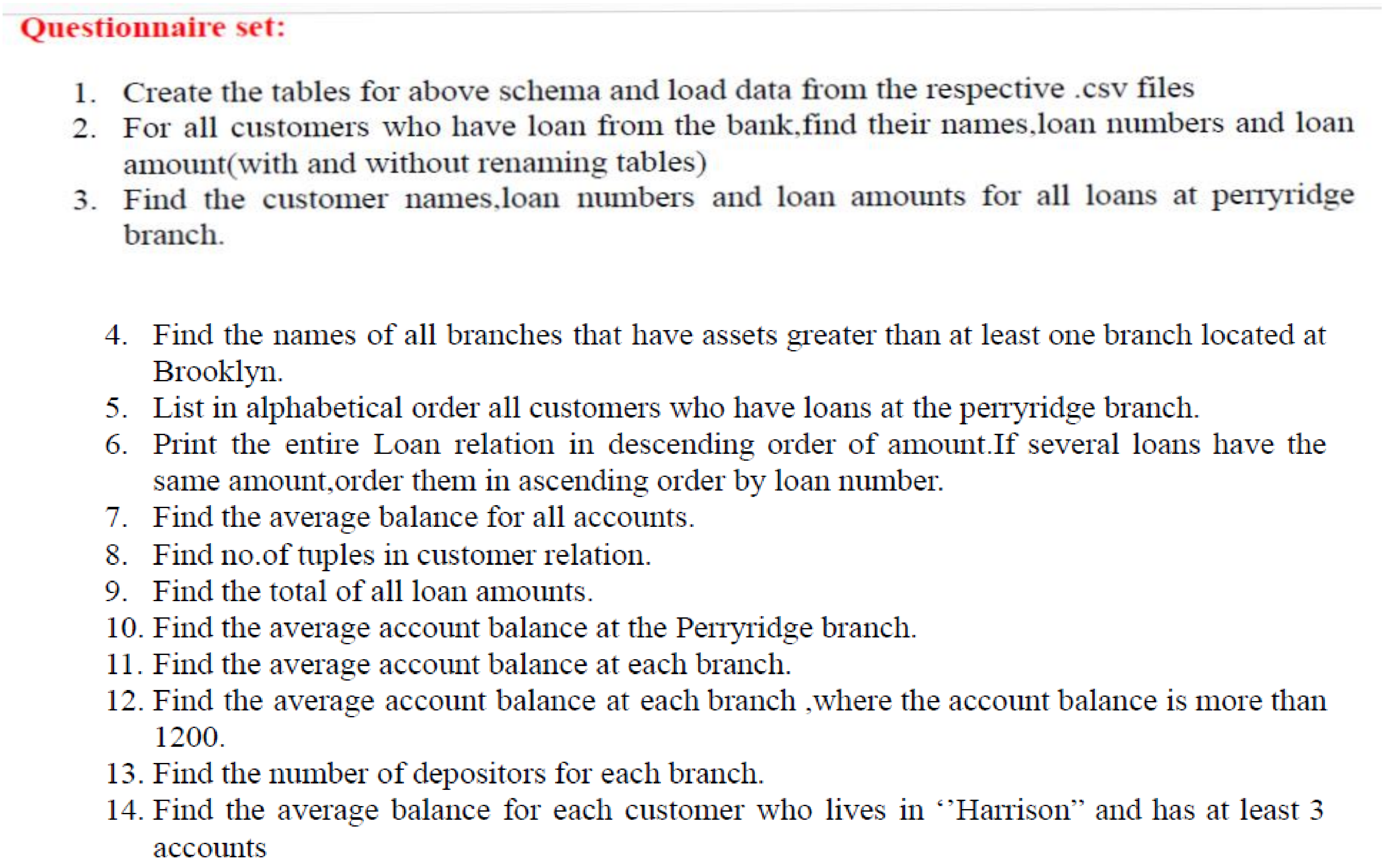
EXERCISE 2:

QUESTIONS :

Exercise2:

Tables for Exercise2

1. Create table customer (customer_name char(20),customer_street char(30),customer_city char(30),PRIMARY KEY(customer_name));
2. Create table branch (branch_name char(15),branch_city char(30),assets numeric(16,2),PRIMARY KEY(branch_name));
3. Create table account (account_number char(15),branch_name char (15),balance numeric(12,2),PRIMARY KEY(account_number),FOREIGN KEY (branch_name) REFERENCES branch(branch_name));
4. Create table depositor(customer_name char(20),account_number char(10),PRIMARY KEY(customer_name,account_number),FOREIGN KEY (customer_name) REFERENCES customer(customer_name),FOREIGN KEY (account_number) REFERENCES account(account_number));
5. Create table loan(loan_number varchar(6),branch_name char(15),amount int,PRIMARY KEY(loan_number),FOREIGN KEY (branch_name) REFERENCES branch(branch_name));
6. Create table borrower(customer_name char(20),loan_number varchar(6),PRIMARY KEY(customer_name,loan_number),FOREIGN KEY (customer_name) REFERENCES customer(customer_name),FOREIGN KEY (loan_number) REFERENCES loan(loan_number));



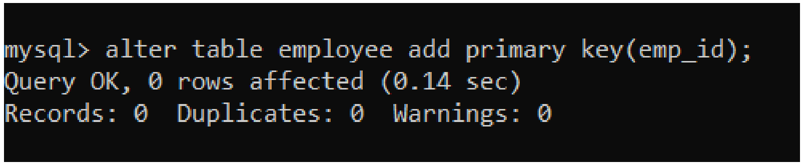
Questionnaire set:

1. Create the tables for above schema and load data from the respective .csv files
2. For all customers who have loan from the bank,find their names,loan numbers and loan amount(with and without renaming tables)
3. Find the customer names,loan numbers and loan amounts for all loans at perryridge branch.
4. Find the names of all branches that have assets greater than at least one branch located at Brooklyn.
5. List in alphabetical order all customers who have loans at the perryridge branch.
6. Print the entire Loan relation in descending order of amount.If several loans have the same amount,order them in ascending order by loan number.
7. Find the average balance for all accounts.
8. Find no.of tuples in customer relation.
9. Find the total of all loan amounts.
10. Find the average account balance at the Perryridge branch.
11. Find the average account balance at each branch.
12. Find the average account balance at each branch ,where the account balance is more than 1200.
13. Find the number of depositors for each branch.
14. Find the average balance for each customer who lives in ''Harrison'' and has at least 3 accounts

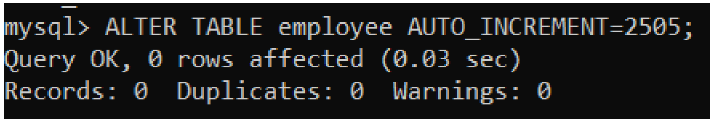
EXERCISE 2:

CREATE TABLE employee(emp_id int, emp_name varchar(20), emp_dept varchar(20),emp_age int, place varchar(20), income int, doj date);

ALTER TABLE employee auto_increment=2505;



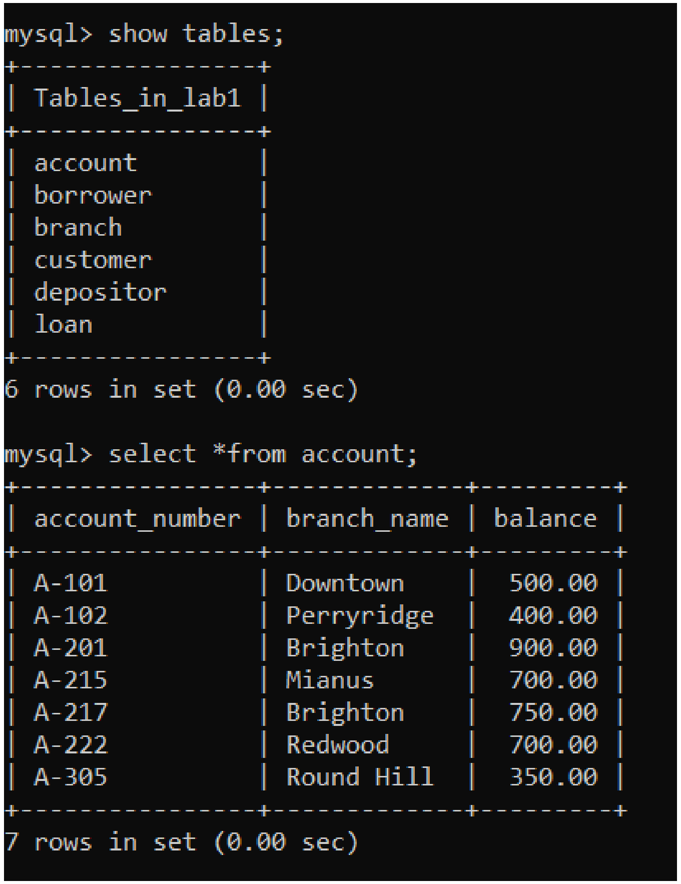
```
mysql> alter table employee add primary key(emp_id);
Query OK, 0 rows affected (0.14 sec)
Records: 0  Duplicates: 0  Warnings: 0
```



```
mysql> ALTER TABLE employee AUTO_INCREMENT=2505;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

1.

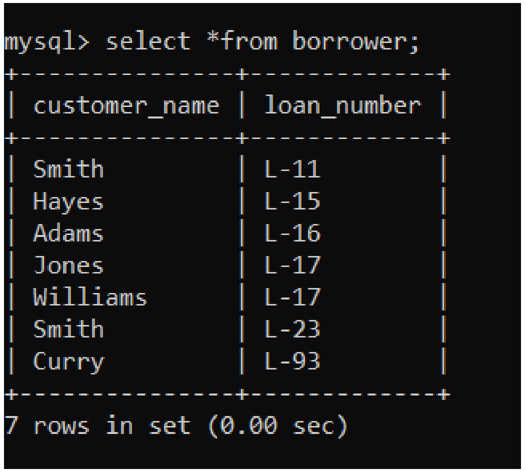
ACCOUNT TABLE:



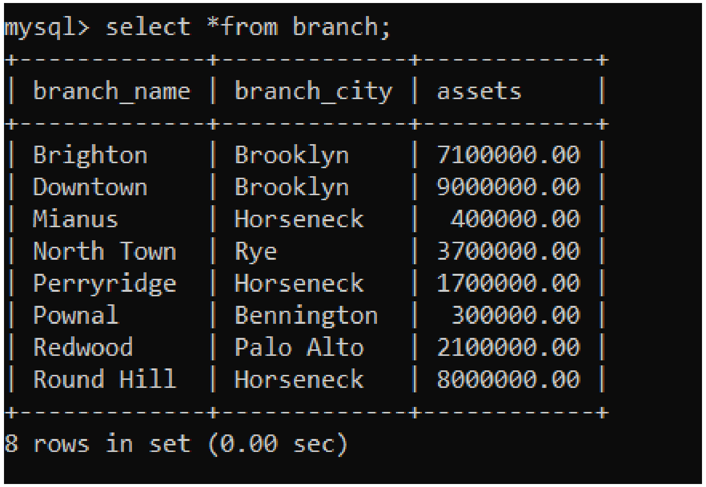
```
mysql> show tables;
+----------------+
| Tables_in_lab1 |
+----------------+
| account        |
| borrower       |
| branch         |
| customer       |
| depositor      |
| loan           |
+----------------+
6 rows in set (0.00 sec)

mysql> select *from account;
+----------------+-------------+---------+
| account_number | branch_name | balance |
+----------------+-------------+---------+
| A-101          | Downtown    |  500.00 |
| A-102          | Perryridge  |  400.00 |
| A-201          | Brighton    |  900.00 |
| A-215          | Mianus      |  700.00 |
| A-217          | Brighton    |  750.00 |
| A-222          | Redwood     |  700.00 |
| A-305          | Round Hill  |  350.00 |
+----------------+-------------+---------+
7 rows in set (0.00 sec)
```

BORROWER TABLE:



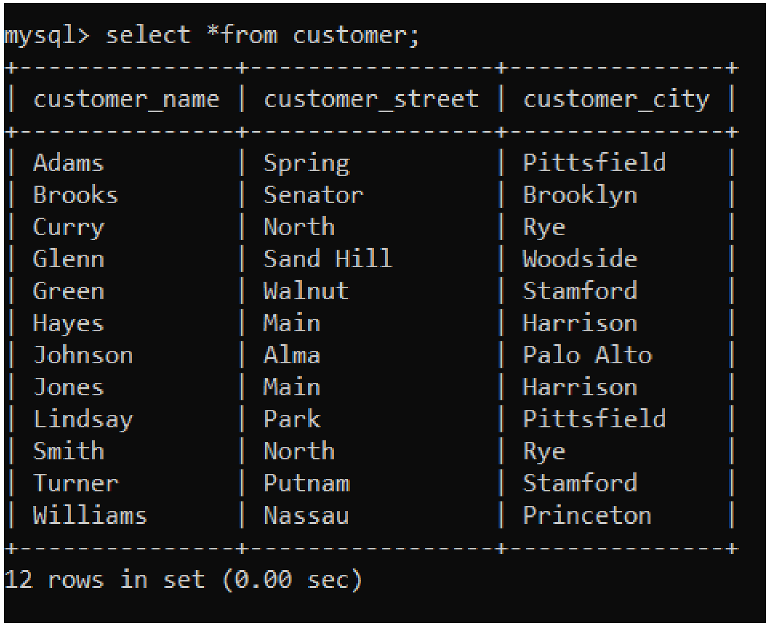
```
mysql> select *from borrower;
+---------------+-------------+
| customer_name | loan_number |
+---------------+-------------+
| Smith         | L-11        |
| Hayes         | L-15        |
| Adams         | L-16        |
| Jones         | L-17        |
| Williams      | L-17        |
| Smith         | L-23        |
| Curry         | L-93        |
+---------------+-------------+
7 rows in set (0.00 sec)
```



```
mysql> select *from branch;
+-------------+-------------+------------+
| branch_name | branch_city | assets     |
+-------------+-------------+------------+
| Brighton    | Brooklyn    | 7100000.00 |
| Downtown    | Brooklyn    | 9000000.00 |
| Mianus      | Horseneck   |  400000.00 |
| North Town  | Rye         | 3700000.00 |
| Perryridge  | Horseneck   | 1700000.00 |
| Pownal      | Bennington  |  300000.00 |
| Redwood     | Palo Alto   | 2100000.00 |
| Round Hill  | Horseneck   | 8000000.00 |
+-------------+-------------+------------+
8 rows in set (0.00 sec)
```

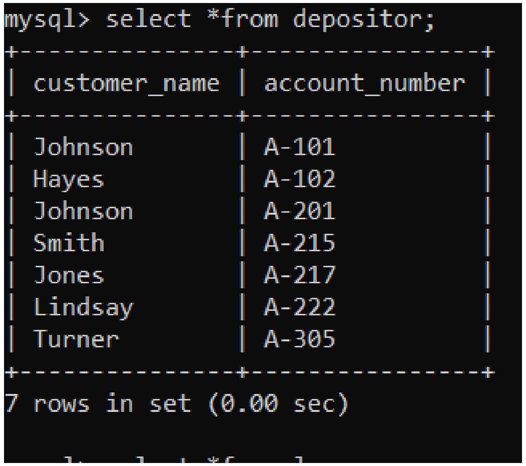
(BRANCH TABLE)

CUSTOMER TABLE:



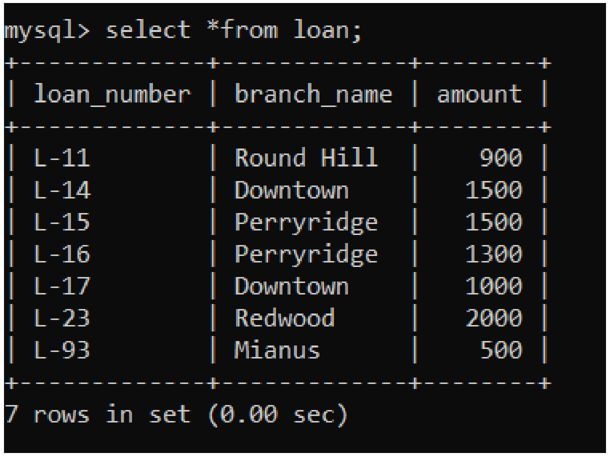
```
mysql> select *from customer;
+---------------+-----------------+---------------+
| customer_name | customer_street | customer_city |
+---------------+-----------------+---------------+
| Adams         | Spring          | Pittsfield    |
| Brooks        | Senator         | Brooklyn      |
| Curry         | North           | Rye           |
| Glenn         | Sand Hill       | Woodside      |
| Green         | Walnut          | Stamford      |
| Hayes         | Main            | Harrison      |
| Johnson       | Alma            | Palo Alto     |
| Jones         | Main            | Harrison      |
| Lindsay       | Park            | Pittsfield    |
| Smith         | North           | Rye           |
| Turner        | Putnam          | Stamford      |
| Williams      | Nassau          | Princeton     |
+---------------+-----------------+---------------+
12 rows in set (0.00 sec)
```

DEPOSITER TABLE:



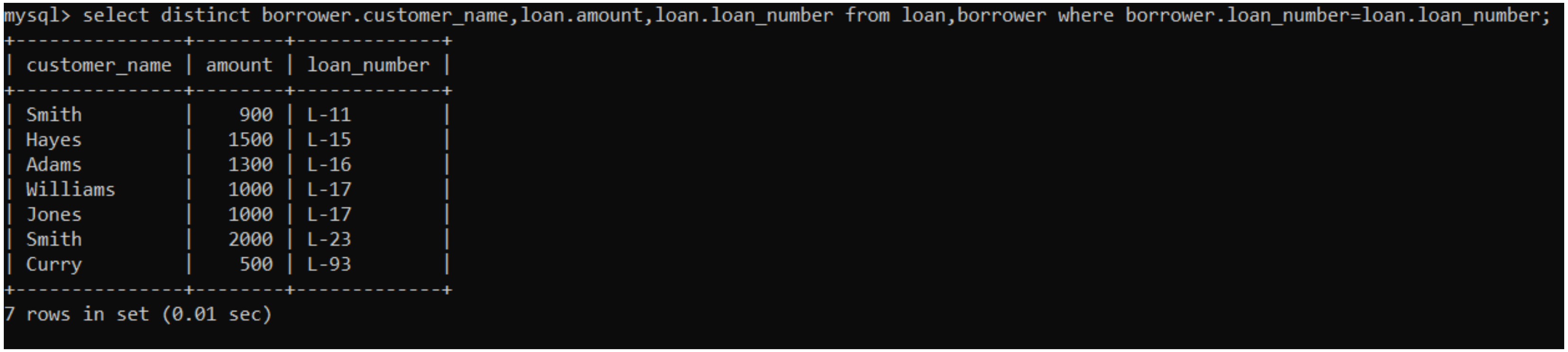
```
mysql> select *from depositor;
+---------------+----------------+
| customer_name | account_number |
+---------------+----------------+
| Johnson       | A-101          |
| Hayes         | A-102          |
| Johnson       | A-201          |
| Smith         | A-215          |
| Jones         | A-217          |
| Lindsay       | A-222          |
| Turner        | A-305          |
+---------------+----------------+
7 rows in set (0.00 sec)
```

LOAN TABLE:



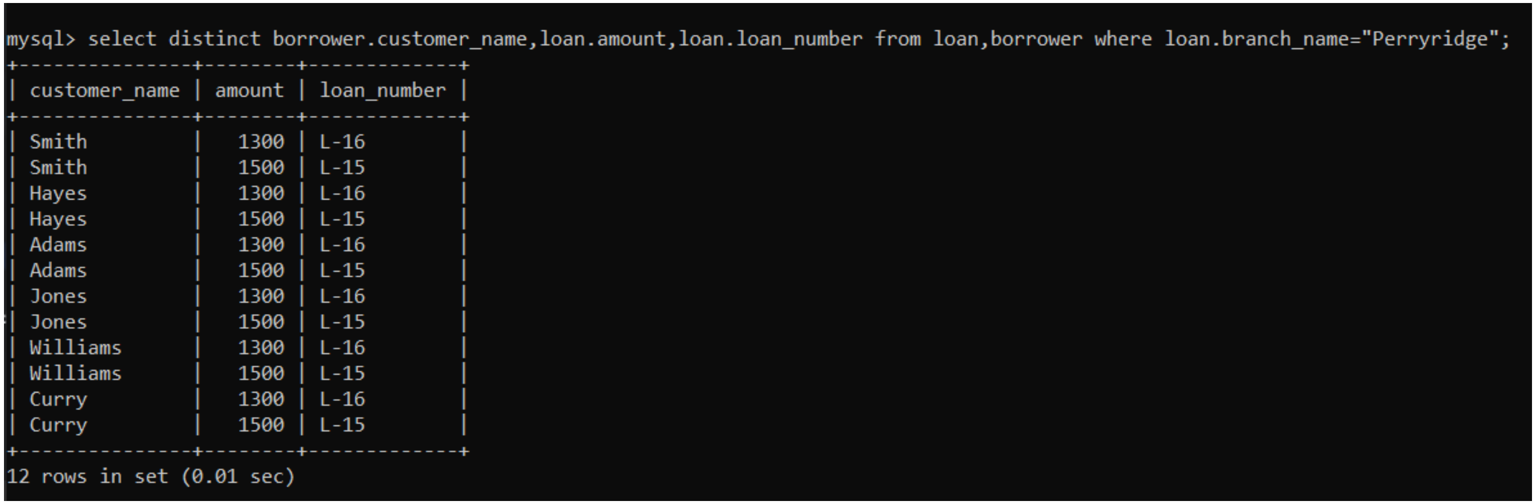
```
mysql> select *from loan;
+-------------+-------------+--------+
| loan_number | branch_name | amount |
+-------------+-------------+--------+
| L-11        | Round Hill  |    900 |
| L-14        | Downtown    |   1500 |
| L-15        | Perryridge  |   1500 |
| L-16        | Perryridge  |   1300 |
| L-17        | Downtown    |   1000 |
| L-23        | Redwood     |   2000 |
| L-93        | Mianus      |    500 |
+-------------+-------------+--------+
7 rows in set (0.00 sec)
```

2.



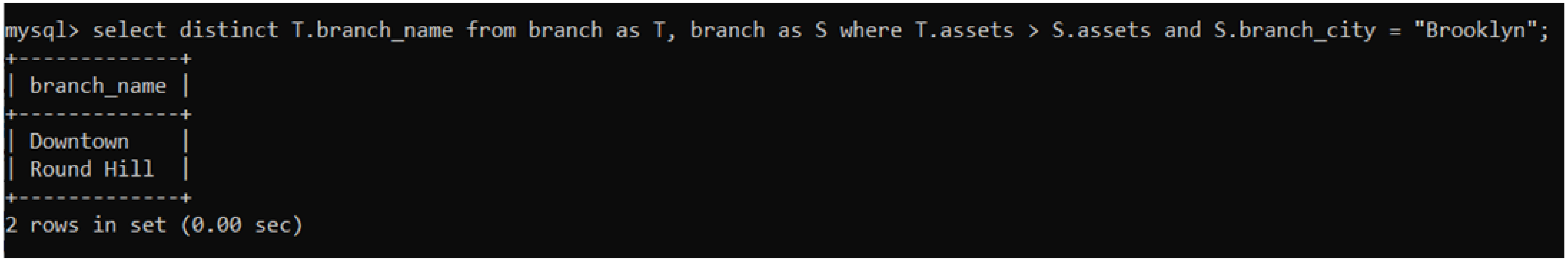
```
mysql> select distinct borrower.customer_name,loan.amount,loan.loan_number from loan,borrower where borrower.loan_number=loan.loan_number;
+---------------+--------+-------------+
| customer_name | amount | loan_number |
+---------------+--------+-------------+
| Smith         |    900 | L-11        |
| Hayes         |   1500 | L-15        |
| Adams         |   1300 | L-16        |
| Williams      |   1000 | L-17        |
| Jones         |   1000 | L-17        |
| Smith         |   2000 | L-23        |
| Curry         |    500 | L-93        |
+---------------+--------+-------------+
7 rows in set (0.01 sec)
```

3.



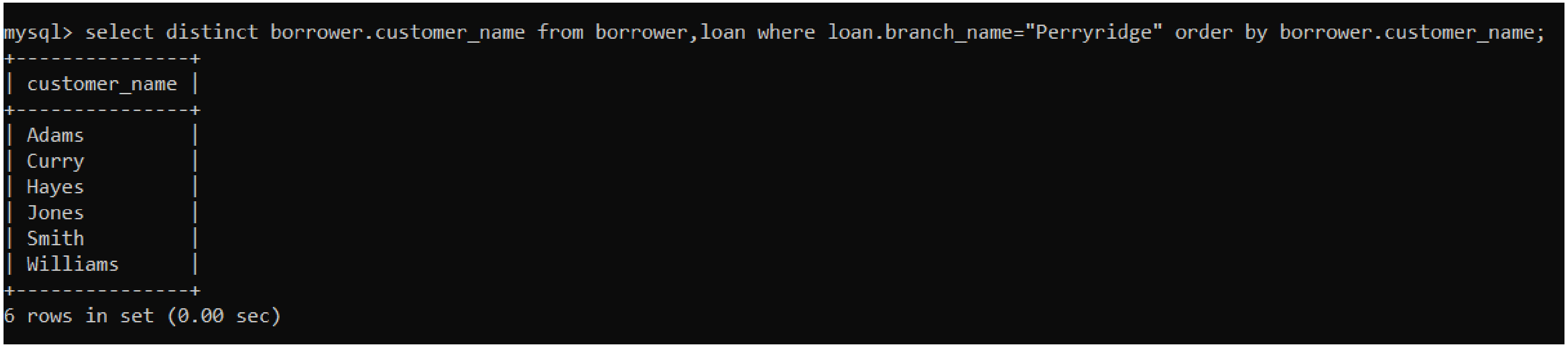
```
mysql> select distinct borrower.customer_name,loan.amount,loan.loan_number from loan,borrower where loan.branch_name="Perryridge";
+---------------+--------+-------------+
| customer_name | amount | loan_number |
+---------------+--------+-------------+
| Smith         |   1300 | L-16        |
| Smith         |   1500 | L-15        |
| Hayes         |   1300 | L-16        |
| Hayes         |   1500 | L-15        |
| Adams         |   1300 | L-16        |
| Adams         |   1500 | L-15        |
| Jones         |   1300 | L-16        |
| Jones         |   1500 | L-15        |
| Williams      |   1300 | L-16        |
| Williams      |   1500 | L-15        |
| Curry         |   1300 | L-16        |
| Curry         |   1500 | L-15        |
+---------------+--------+-------------+
12 rows in set (0.01 sec)
```

4.



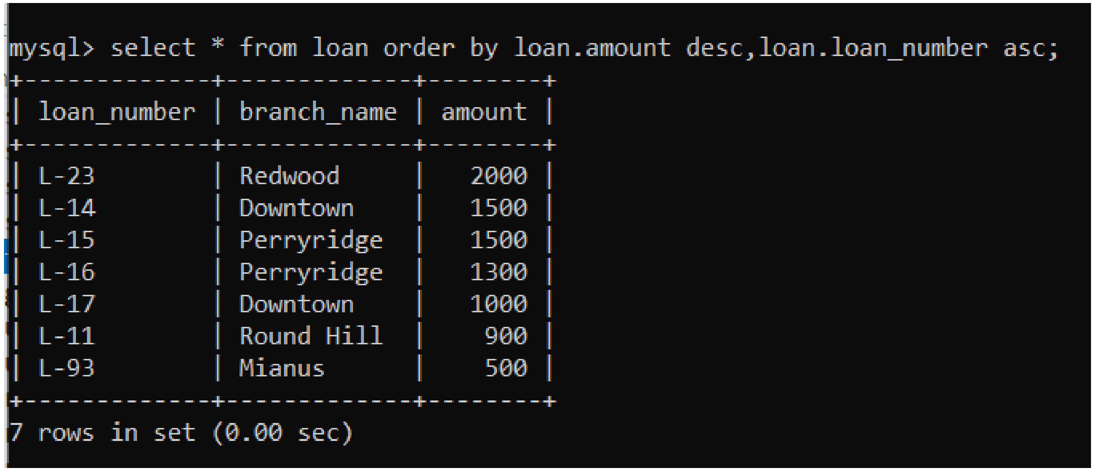
```
mysql> select distinct T.branch_name from branch as T, branch as S where T.assets > S.assets and S.branch_city = "Brooklyn";
+-------------+
| branch_name |
+-------------+
| Downtown    |
| Round Hill  |
+-------------+
2 rows in set (0.00 sec)
```

5.



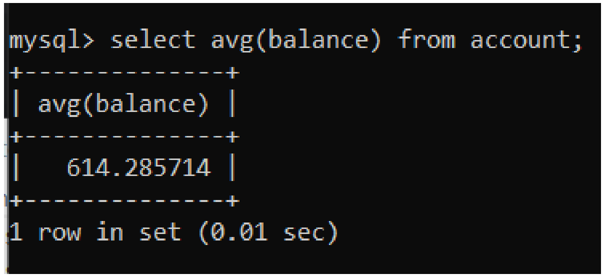
```
mysql> select distinct borrower.customer_name from borrower,loan where loan.branch_name="Perryridge" order by borrower.customer_name;
+---------------+
| customer_name |
+---------------+
| Adams         |
| Curry         |
| Hayes         |
| Jones         |
| Smith         |
| Williams      |
+---------------+
6 rows in set (0.00 sec)
```

6.



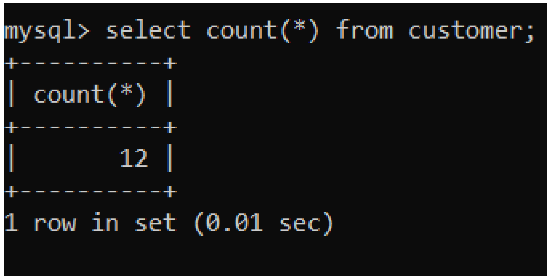
```
mysql> select * from loan order by loan.amount desc,loan.loan_number asc;
+-------------+-------------+--------+
| loan_number | branch_name | amount |
+-------------+-------------+--------+
| L-23        | Redwood     |   2000 |
| L-14        | Downtown    |   1500 |
| L-15        | Perryridge  |   1500 |
| L-16        | Perryridge  |   1300 |
| L-17        | Downtown    |   1000 |
| L-11        | Round Hill  |    900 |
| L-93        | Mianus      |    500 |
+-------------+-------------+--------+
7 rows in set (0.00 sec)
```

7.



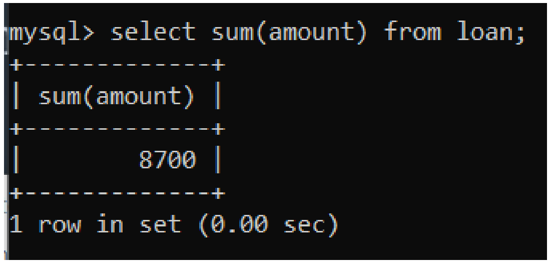
```
mysql> select avg(balance) from account;
+--------------+
| avg(balance) |
+--------------+
|   614.285714 |
+--------------+
1 row in set (0.01 sec)
```

8.



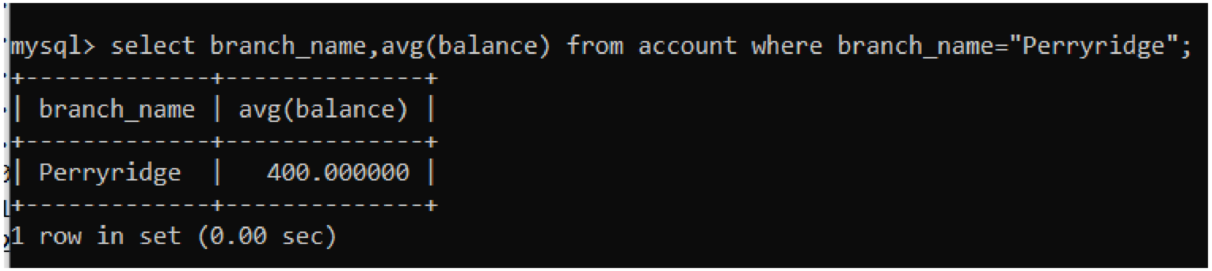
```
mysql> select count(*) from customer;
+----------+
| count(*) |
+----------+
|       12 |
+----------+
1 row in set (0.01 sec)
```

9.



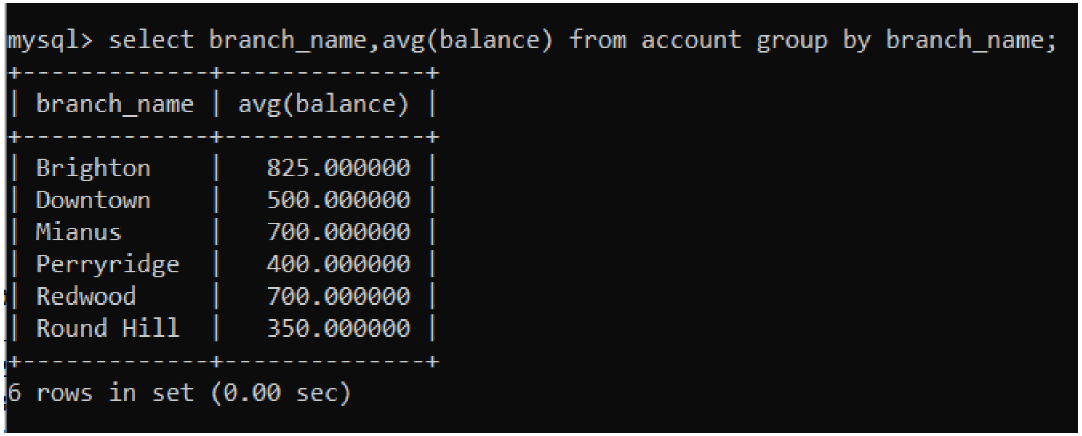
```
mysql> select sum(amount) from loan;
+-------------+
| sum(amount) |
+-------------+
|        8700 |
+-------------+
1 row in set (0.00 sec)
```

10.



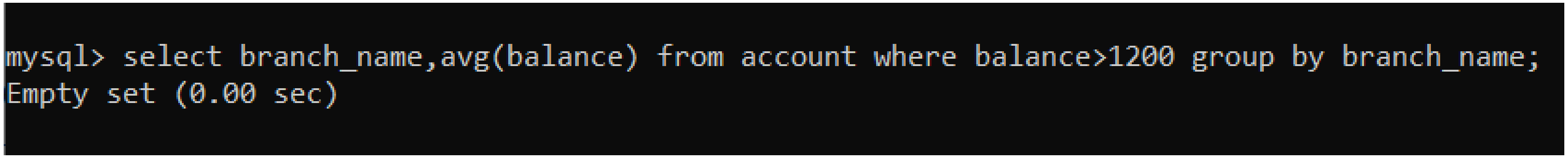
```
mysql> select branch_name,avg(balance) from account where branch_name="Perryridge";
+-------------+--------------+
| branch_name | avg(balance) |
+-------------+--------------+
| Perryridge  |   400.000000 |
+-------------+--------------+
1 row in set (0.00 sec)
```

11.



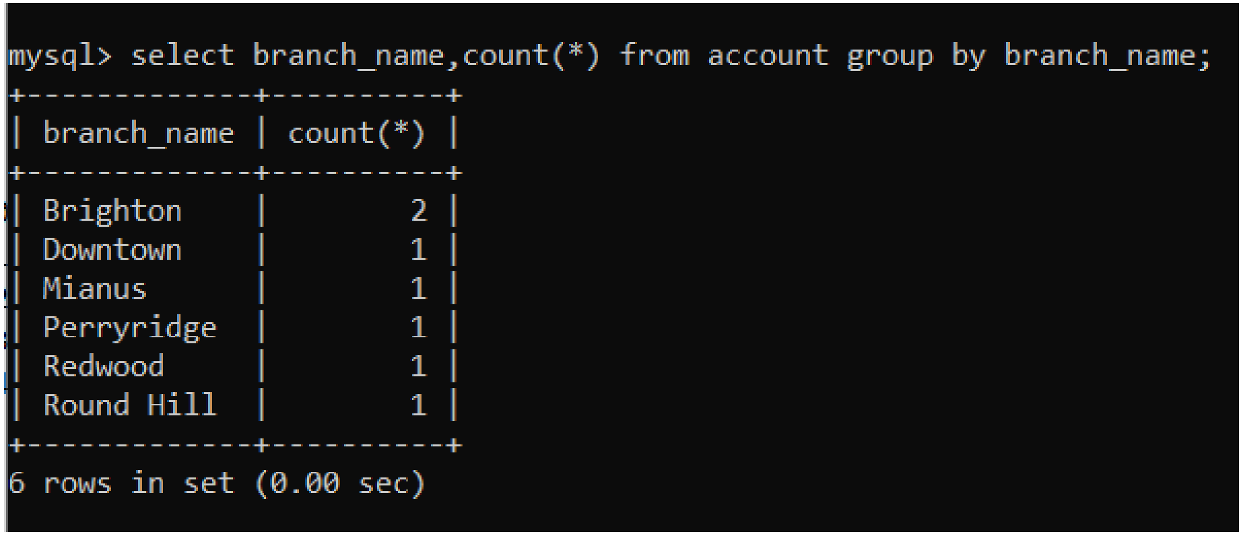
```
mysql> select branch_name,avg(balance) from account group by branch_name;
+-------------+--------------+
| branch_name | avg(balance) |
+-------------+--------------+
| Brighton    |   825.000000 |
| Downtown    |   500.000000 |
| Mianus      |   700.000000 |
| Perryridge  |   400.000000 |
| Redwood     |   700.000000 |
| Round Hill  |   350.000000 |
+-------------+--------------+
6 rows in set (0.00 sec)
```

12.



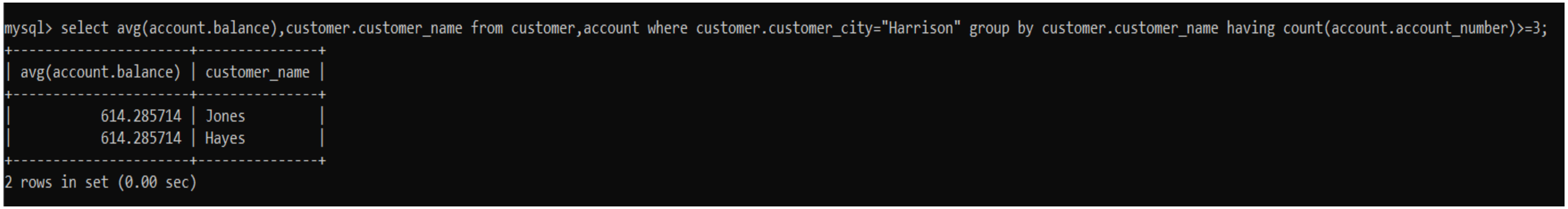
```
mysql> select branch_name,avg(balance) from account where balance>1200 group by branch_name;
Empty set (0.00 sec)
```

13.



```
mysql> select branch_name,count(*) from account group by branch_name;
+-------------+----------+
| branch_name | count(*) |
+-------------+----------+
| Brighton    |        2 |
| Downtown    |        1 |
| Mianus      |        1 |
| Perryridge  |        1 |
| Redwood     |        1 |
| Round Hill  |        1 |
+-------------+----------+
6 rows in set (0.00 sec)
```

14.



```
mysql> select avg(account.balance),customer.customer_name from customer,account where customer.customer_city="Harrison" group by customer.customer_name having count(account.account_number)>=3;
+----------------------+---------------+
| avg(account.balance) | customer_name |
+----------------------+---------------+
|           614.285714 | Jones         |
|           614.285714 | Hayes         |
+----------------------+---------------+
2 rows in set (0.00 sec)
```

THANK YOU