CSE370: Database Systems

Assignment 03 | Fall 2024

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Question 1 : Find the name and loan number of all customers having a loan at the Downtown branch.

Query : select customer.customer_name,loan_number from borrower join loan on borrower.load_number = loan.loan_number and loan.branch_name = 'Downtown' join customer on borrower.customer_id = customer.customer_id;

```
MariaDB [bank_22301076]> SELECT customer.customer_name, loan.loan_number
    -> FROM borrower
    -> JOIN loan ON borrower.loan_number = loan.loan_number AND loan.branch_name =
    -> 'Downtown'
    -> JOIN customer ON borrower.customer_id = customer.customer_id;
+---------------+-------------+
| customer_name | loan_number |
+---------------+-------------+
| Johnson       | L-14        |
| Jones         | L-17        |
| Williams      | L-17        |
+---------------+-------------+
```

Question 2 : Find all the possible pairs of customers who are from the same city. show in the format Customer1, Customer2, City

Query : select c1.customer_name as customer1, c2.customer_name as customer2, c1.customer_city as city from customer c1 join customer c2 ON c1.customer_city = c2.customer_city and c1.customer_id < c2.customer_id;

```
MariaDB [bank_22301076]> select c1.customer_name as customer1, c2.customer_name as customer2, c1.customer_city as city from custom
er c1 join customer c2 ON 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 (0.001 sec)
```

Question 3 : If the bank gives out 4% interest to all accounts, show the total interest across each branch. Print Branch_name, Total_Interest

Query : select account.branch_name as branch_name, sum(account.balance * 0.04) as total_interest from account group by account.branch_name;

```
MariaDB [bank_22301076]> select account.branch_name as branch_name, sum(account.balance * 0.04) as total_interest from account
    -> group by account.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 (0.000 sec)
```

Question 4 : Find account numbers with the highest balances for each city in the database

Query : select b.branch_city, a.account_number, a.balance from account a inner join branch b on a.branch_name = b.branch_name where a.balance = (select max(a2.balance) from account a2 inner join branch b2 on a2.branch_name = b2.branch_name where b2.branch_city = b.branch_city) order by b.branch_city;

```
MariaDB [bank_22301076]> select b.branch_city, a.account_number, a.balance from account a inner join branch b on a.branch_name = b.branch_name where a.balance = (select max(a2.balance)
    -> from account a2 inner join branch b2 on a2.branch_name = b2.branch_name where b2.branch_city = b.branch_city) order by b.branch_city;
+-------------+----------------+---------+
| branch_city | account_number | balance |
+-------------+----------------+---------+
| Brooklyn    | A-201          |     900 |
| Horseneck   | A-215          |     700 |
| Palo Alto   | A-222          |     700 |
+-------------+----------------+---------+
3 rows in set (0.001 sec)
```

Question 5 : Show the loan number, loan amount, and name of customers with 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. [Hint for top 5: Check the "limit" keyword in mysql]

Query : select * from (select loan.loan_number, amount, customer_name from loan inner join borrower on loan.loan_number = borrower.loan_number inner join customer ON customer.customer_id = borrower.customer_id order by amount desc limit 5) as table1 order by amount, loan_number desc;

```
MariaDB [bank_22301076]> select * from ( select loan.loan_number, amount, customer_name from loan inner join borrower on loan.loan_number = borrower.loan_number inner join customer ON customer.customer_id = bo
rrower.customer_id order by amount desc limit 5) as table1 order by amount, loan_number desc;
+-------------+--------+---------------+
| loan_number | 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)
```

Question 6 : Find the names of customers with an account and also a loan at the Perryridge branch

Query : select distinct c.customer_name from customer c inner join depositor d on c.customer_id = d.customer_id inner join account a on d.account_number = a.account_number inner join borrower b on c.customer_id = b.customer_id inner join loan l ON b.loan_number = l.loan_number and l.branch_name = a.branch_name
where a.branch_name = 'Perryridge';

```
MariaDB [bank_22301076]> select distinct c.customer_name from customer c inner join depositor d on c.customer_id = d.customer_id inner join account a on d.account_number = a.account_number inner join borrower
b on c.customer_id = b.customer_id inner join loan l ON b.loan_number = l.loan_number and l.branch_name = a.branch_name
    -> where a.branch_name = 'Perryridge';
+---------------+
| customer_name |
+---------------+
| Hayes         |
+---------------+
1 row in set (0.001 sec)
```

Question 7 : Find the total loan amount of all customers having at least 2 loans from the bank. Show in format customer name, total_loan

Query : select c.customer_name, count(*) as number_of_loans, 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 where c.customer_id in (select b2.customer_id from borrower b2 group by b2.customer_id having count(*) >= 2) group by c.customer_id order by total_loan desc;

```
MariaDB [bank_22301076]> select c.customer_name, count(*) as number_of_loans, 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 where c.customer_id in ( select b2.customer_id from borrower b2 group by b2.customer_id
    -> having count(*) >= 2 ) group by c.customer_id order by total_loan desc;
+---------------+-----------------+------------+
| customer_name | number_of_loans | total_loan |
+---------------+-----------------+------------+
| Smith         |               2 |       2900 |
+---------------+-----------------+------------+
1 row in set (0.001 sec)
```