GROUP 9

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MySQL CROSS JOIN

MySQL is an open-source relational database management system that uses Structured Query Language (SQL) to manipulate databases. It stores data in a table format. It provides various statements to perform Create, Read, Update, and Delete operations on a database table. Among these operations, MySQL also provides the CROSS JOIN statement to combine rows from different tables.

MySQL CROSS JOIN

MySQL CROSS JOIN is a join procedure that is used to combine two or more tables. It is also known as a Cartesian join and returns the Cartesian product of two or more tables. It combines each row of one table with each row of another table and returns a new table with all possible combinations.

```
MariaDB [shop]> select * from customer;
+----+--------+---------------------+
| id | fname  | date                |
+----+--------+---------------------+
|  1 | iquen  | 2024-03-21 23:10:03 |
|  2 | von    | 2024-03-21 23:10:03 |
|  3 | wendel | 2024-03-21 23:10:03 |
|  4 | orly   | 2024-03-21 23:10:03 |
+----+--------+---------------------+
4 rows in set (0.001 sec)

MariaDB [shop]>
```

```
MariaDB [shop]> insert into item(item_id,itemname)values(2,'snipe')
    -> ,(3,'knife')
    -> ,(4,'granade');
Query OK, 3 rows affected (0.004 sec)
Records: 3  Duplicates: 0  Warnings: 0

MariaDB [shop]> select *from item
    -> ;
+---------+----------+---------------------+
| item_id | itemname | date                |
+---------+----------+---------------------+
|       1 | gun      | 2024-03-21 23:15:20 |
|       2 | snipe    | 2024-03-21 23:16:33 |
|       3 | knife    | 2024-03-21 23:16:33 |
|       4 | granade  | 2024-03-21 23:16:33 |
+---------+----------+---------------------+
4 rows in set (0.001 sec)
```

```
MariaDB [shop]> select * from customer cross join item;
+----+--------+---------------------+---------+----------+---------------------+
| id | fname  | date                | item_id | itemname | date                |
+----+--------+---------------------+---------+----------+---------------------+
|  1 | iquen  | 2024-03-21 23:10:03 |       1 | gun      | 2024-03-21 23:15:20 |
|  2 | von    | 2024-03-21 23:10:03 |       1 | gun      | 2024-03-21 23:15:20 |
|  3 | wendel | 2024-03-21 23:10:03 |       1 | gun      | 2024-03-21 23:15:20 |
|  4 | orly   | 2024-03-21 23:10:03 |       1 | gun      | 2024-03-21 23:15:20 |
|  1 | iquen  | 2024-03-21 23:10:03 |       2 | snipe    | 2024-03-21 23:16:33 |
|  2 | von    | 2024-03-21 23:10:03 |       2 | snipe    | 2024-03-21 23:16:33 |
|  3 | wendel | 2024-03-21 23:10:03 |       2 | snipe    | 2024-03-21 23:16:33 |
|  4 | orly   | 2024-03-21 23:10:03 |       2 | snipe    | 2024-03-21 23:16:33 |
|  1 | iquen  | 2024-03-21 23:10:03 |       3 | knife    | 2024-03-21 23:16:33 |
|  2 | von    | 2024-03-21 23:10:03 |       3 | knife    | 2024-03-21 23:16:33 |
|  3 | wendel | 2024-03-21 23:10:03 |       3 | knife    | 2024-03-21 23:16:33 |
|  4 | orly   | 2024-03-21 23:10:03 |       3 | knife    | 2024-03-21 23:16:33 |
|  1 | iquen  | 2024-03-21 23:10:03 |       4 | granade  | 2024-03-21 23:16:33 |
|  2 | von    | 2024-03-21 23:10:03 |       4 | granade  | 2024-03-21 23:16:33 |
|  3 | wendel | 2024-03-21 23:10:03 |       4 | granade  | 2024-03-21 23:16:33 |
|  4 | orly   | 2024-03-21 23:10:03 |       4 | granade  | 2024-03-21 23:16:33 |
+----+--------+---------------------+---------+----------+---------------------+
16 rows in set (0.001 sec)
```

The HAVING clause is used to filter grouped data in SQL queries.

- It is applied after the GROUP BY clause and before the ORDER BY clause.
- HAVING is used with aggregate functions (e.g., 'SUM', 'COUNT', 'AVG', 'MAX', 'MIN') to filter grouped results.

```
SELECT department_id, SUM(salary) AS total_salary
FROM employees
GROUP BY department_id
HAVING SUM(salary) > 100000;
```

This query retrieves department IDs and their total salaries, filtering out departments where the total salary exceeds $100,000.

```
SELECT category, COUNT(*) AS num_products
FROM products
GROUP BY category
HAVING COUNT(*) > 10;
```

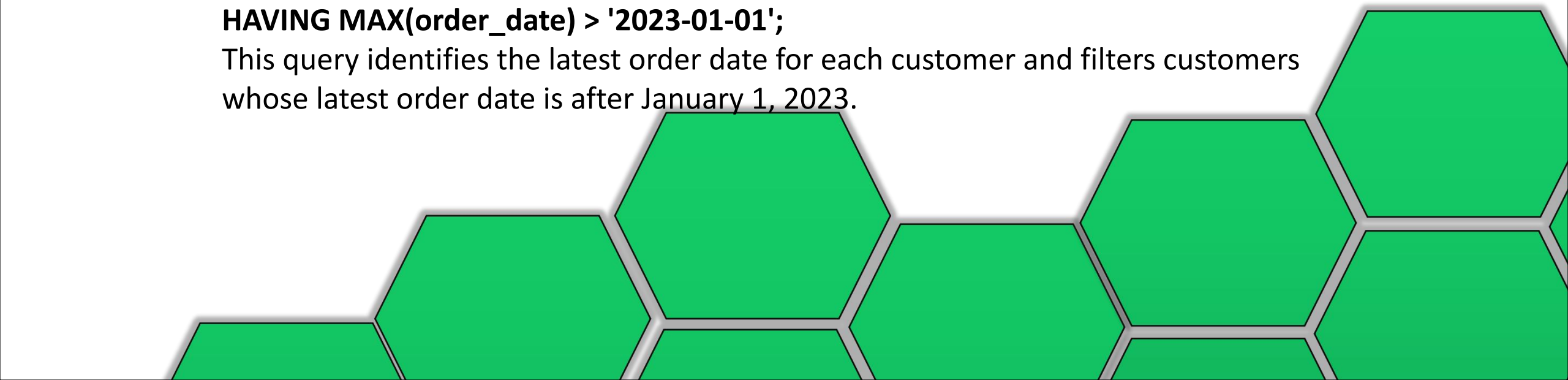
This query counts the number of products in each category, filtering categories with more than 10 products.

```
SELECT supplier_id, AVG(unit_price) AS avg_price
FROM products
GROUP BY supplier_id
HAVING AVG(unit_price) > 50;
```

This query calculates the average unit price by supplier and filters out suppliers whose average unit price is more than $50.

```
SELECT customer_id, MAX(order_date) AS last_order_date
FROM orders
GROUP BY customer_id
HAVING MAX(order_date) > '2023-01-01';
```

This query identifies the latest order date for each customer and filters customers whose latest order date is after January 1, 2023.



The **GROUP BY** statement groups rows that have the same values into summary rows

The **GROUP BY** statement is often used with aggregate functions **(COUNT(), MAX(), MIN(), SUM(), AVG())** to group the result-set by one or more columns.