Aggregation in SQL

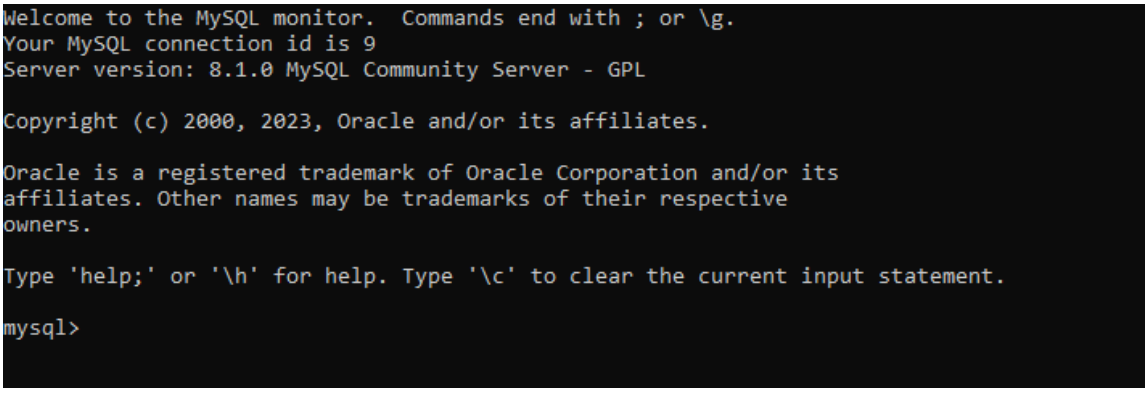
Welcome to this lab activity

In this lab activity, you will explore how to use aggregation functions: ‘SUM’, ‘COUNT’, ‘MIN’ and ‘MAX’.

Task 1: Start the MySQL interactive shell

Start the MySQL shell, logging in with the root user and password.

When you start the MySQL shell, you should see the MySQL prompt:



Task 2: View databases

1. First, see what databases you already have linked to your virtual server:

```
SHOW DATABASES;
```

You will already have a couple, including the `myOtherBookshop` database that you created in the previous lab activity and the `myRestaurantMenu` database from a previous lab exercise.

Task 3: Counting rows

Let’s now count the number of rows that match a particular query.

First, work with the `myOtherBookshop` database:

2. Switch to the `myOtherBookshop` database:

```
USE myOtherBookshop;
```

3. Find the number of books

```
SELECT COUNT(id) FROM Book
```

4. Find the number of books priced at less than £30.

```
SELECT COUNT(id) FROM Book WHERE Book.price < 30;
```

Task 4: Summing values across rows

Let's now sum the total of a field in a table.

5. Find the sum of all the prices of the books in your book shop:

```
SELECT SUM(price) FROM Book;
```

Task 5: Finding the min and max values

6. Find the cheapest and most expensive book:

```
SELECT MIN(price) FROM Book;
SELECT MAX(price) FROM Book;
```

Task 6: Aggregates by groups

Frequently, we don't want to aggregate across a whole table. Rather, we want to aggregate by groups of rows, with the grouping specified by another column in the table.

For example, to find the number of books by category, group the rows by category and count the number of rows in each category. To achieve this, use the GROUP BY clause.

7. Find the number of books per category:

```
SELECT category, COUNT(id)
FROM Book
GROUP BY category;
```

We can also perform aggregates on more complex queries. For example, if you want to find the number of books by publisher, join to the Publisher table and group by the publisher's name.

8. Find the number of books per publisher:

```
SELECT Publisher.name, COUNT(Book.id)
FROM   Book
JOIN   Publisher ON Book.publisher_id = Publisher.id
GROUP BY Publisher.name;
```

Task 7: Exit MySQL shell

In your Terminal panel, type the following command:

```
exit
```

Task 8: Explore further

When tackling these lab activities, it's always good to stretch yourself by doing some research and attempting some changes on your own.

Do some research on other aggregation functions that are available in MySQL.

Write a query that finds the average book price by publisher.

Write a query that finds the number of books broken down by **both** publisher and category.

End of lab

Congratulations on completing this lab.

You have seen how you can use different aggregation functions when querying a database.

In the next lab, you will explore how to use LEFT and RIGHT JOINS in SQL.