

SQL WITH—CTE (Common Table Expression)

Your First WITH (CTE)

The same question as you saw in `your first subquery` is provided here along with the solution.

QUESTION: You need to find the average number of events for each channel per day.

SOLUTION:

```
SELECT channel, AVG(events) AS average_events
FROM (SELECT DATE_TRUNC('day', occurred_at) AS day,
             channel, COUNT(*) as events
      FROM web_events
      GROUP BY 1,2) sub
GROUP BY channel
ORDER BY 2 DESC;
```

Let's try this again using a **WITH** statement.

Notice, you can pull the inner query:

```
SELECT DATE_TRUNC('day', occurred_at) AS day,
       channel, COUNT(*) as events
FROM web_events
GROUP BY 1,2
```

This is the part we put in the **WITH** statement. Notice, we are aliasing the table as `events` below:

```
WITH events AS (
  SELECT DATE_TRUNC('day', occurred_at) AS day,
         channel, COUNT(*) as events
  FROM web_events
  GROUP BY 1,2)
```

Now, we can use this newly created `events` table as if it is any other table in our database:

```
WITH events AS (  
    SELECT DATE_TRUNC('day', occurred_at) AS day,  
           channel, COUNT(*) AS events  
    FROM web_events  
    GROUP BY 1,2)  
  
SELECT channel, AVG(events) AS average_events  
FROM events  
GROUP BY channel  
ORDER BY 2 DESC;
```

For the above example, we don't need anymore than the one additional table, but imagine we needed to create a second table to pull from. We can create an additional table to pull from in the following way:

```
WITH table1 AS (  
    SELECT *  
    FROM web_events),  
  
    table2 AS (  
    SELECT *  
    FROM accounts)  
  
SELECT *  
FROM table1  
JOIN table2  
ON table1.account_id = table2.id;
```

```
WITH cte1 as(  
    select * from  
    Submissions s  
    left join Hackers h  
    on s.hacker_id=h.hacker_id),  
  
    cte2 as(  
        select submission_date,hacker_id,count(distinct(submission_id))  
        from Submissions  
        group by 1,2)  
  
select submission_date,hacker_id,count(distinct(submission_id) as csd)  
from Submissions  
group by 1,2
```