Day 7 Common Table Expressions (CTE)

What is a CTE?

- A **common table expression** (**CTE**) is a named temporary result set that exists only within the execution scope of a single SQL statement.
- In MySQL every query generates a temporary result or relation. In order to give a name to those temporary result set, **CTE** is used.

Key points related to CTE are:

- It is defined by using the **WITH** clause.
- The **WITH** clause allows us to specify more than one **CTEs** in a single query.
- A **CTE** can reference other **CTEs** that are part of the same **WITH** clause, but those **CTEs** should be defined earlier.
- The execution scope of **CTE** exists within the particular statement in which it is used.

General Syntax :

```
WITH cte_name(column_list) AS
       ( query )
SELECT *
FROM cte_name;
```

Use Case :

Problem: The names of users who have posted more than the average no of posts.

```
WITH total_photos AS
    (   SELECT
            user_id,
            COUNT(*) AS total_photos
        FROM
            photos
        GROUP BY
            user_id
    ),
total_avg AS
    (
        SELECT
            ROUND(AVG(total_photos),2) as total_avg
        FROM
            total_photos
    )
```

```
SELECT
    id,
    username,
    total_photos
FROM
    users as U
LEFT JOIN
    total_photos AS t
ON
    u.id = t.user_id
WHERE
    id IN
        (SELECT
            user_id
        FROM
            total_photos
        WHERE
            total_photos > (SELECT
                                total_avg
                            FROM
                                total_avg));
```

Output :

id	username	total_photos
6	Travon.Waters	5
8	Tabitha_Schamberger11	4
9	Gus93	4
11	Justina.Gaylord27	5
12	Dereck65	4
13	Alexandro35	5
15	Billy52	4
16	Annalise.McKenzie16	4
23	Eveline95	12
26	Josianne.Friesen	5
28	Dario77	4
29	Jaime53	8
32	Irwin.Larson	4
33	Yvette.Gottlieb91	5
43	Janet.Armstrong	5
44	Seth46	4

....

Note : avg_photos = 3.47

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