CTES e Window Function

```
SELECT t1."date"
    ,t1."rank"
    ,t1.song
    ,t1.artist
    ,t1."last-week"
    ,t1."peak-rank"
    ,t1."weeks-on-board"
FROM PUBLIC. "Billboard" AS t1 limit 100;
SELECT
   tl.artist
    ,t1.song
FROM PUBLIC. "Billboard" AS t1
order by tl.artist
    ,t1.song;
SELECT
   tl.artist
    ,count(*) as qtd artist
FROM PUBLIC. "Billboard" AS t1
group by tl.artist
order by tl.artist
SELECT
   t1.song
    ,count(*) as qtd_song
FROM PUBLIC. "Billboard" AS t1
group by tl.song
order by t1.song
SELECT t1.artist
    ,t2.qtd artist
    ,t1.song
    ,t3.qtd_song
```

```
FROM PUBLIC. "Billboard" AS t1
LEFT JOIN (
    SELECT t1.artist
        ,count(*) AS qtd artist
    FROM PUBLIC. "Billboard" AS t1
    GROUP BY tl.artist
    ORDER BY tl.artist
    ) AS t2 ON (t1.artist = t2.artist)
LEFT JOIN (
    SELECT t1.song
        ,count(*) AS qtd song
    FROM PUBLIC. "Billboard" AS t1
    GROUP BY tl.song
    ORDER BY tl.song
    ) AS t3 ON (t1.song = t3.song);
WITH cte artist
AS (
    SELECT tl.artist
        ,count(*) AS qtd artist
    FROM PUBLIC. "Billboard" AS t1
    GROUP BY tl.artist
    ORDER BY tl.artist
    )
    ,cte song
AS (
    SELECT t1.song
        ,count(*) AS qtd song
    FROM PUBLIC. "Billboard" AS t1
    GROUP BY t1.song
    ORDER BY t1.song
    )
SELECT t1.artist
    ,t2.qtd_artist
    ,t1.song
    ,t3.qtd_song
FROM PUBLIC. "Billboard" AS t1
LEFT JOIN cte artist AS t2 ON (t1.artist = t2.artist)
LEFT JOIN cte_song AS t3 ON (t1.song = t3.song);
```

CTEs

Common Table Expressions

OU

Expressões de Tabela Comuns

"Uma CTE tem o uso bem similar ao de uma subquery ou tabela derivada, com a vantagem do conjunto de dados poder ser utilizado mais de uma vez na consulta, ganhando performance (nessa situação) e também, melhorando a legibilidade do código. Por estes motivos, o uso da CTE tem sido bastante difundido como substituição à outras soluções citadas." <u>Dirceu Resende</u>

Sintaxe:

```
WITH expression_name [ ( column_name [,...n] ) ]
AS
  ( CTE_query_definition )
```

Window Function

Para que serve?

Poupar esforços em ações de ranqueamento e classificação dentro do banco de dados. PAra isso, o Postgres cria uma partição dos dados(window).

Elas complementam as funções de SUM, COUNT, AVG, MAX e MIN.

Podem ser:

- numeração de registros: ROW_NUMBER()
- ranqueamento: RANK(), DENSE RANK(), PERCENT RANK()
- subdivisão: NTILE(), LAG(), lead)
- recuperação de registros: FIRST_VALUE(), LAST_VALUE(), NTH_VALUE()
- distancia relativa: CUME_DIST()

```
with CTE_BILLBOARD as (
select distinct
    t1.artist
    ,t1.song
FROM PUBLIC."Billboard" AS t1
order by t1.artist
    ,t1.song
)
select *
    ,row_number() over(order by artist, song) as "row_number"
    ,row_number() over(partition by artist order by artist, song) as
```

Exemplo geral

```
WITH T(StyleID, ID, Nome)
     AS (SELECT 1,1, 'Rhuan' UNION ALL
         SELECT 1.1, 'Andre' UNION ALL
         SELECT 1,2, 'Ana' UNION ALL
         SELECT 1,2, 'Maria' UNION ALL
         SELECT 1,3, 'Letícia' UNION ALL
         SELECT 1,3, 'Lari' UNION ALL
         SELECT 1.4, 'Edson' UNION ALL
         SELECT 1,4, 'Marcos' UNION ALL
         SELECT 1,5, 'Rhuan' UNION ALL
         SELECT 1,5, 'Lari' UNION ALL
         SELECT 1,6, 'Daisy' UNION ALL
         SELECT 1,6, 'João'
SELECT *,
       ROW NUMBER() OVER(PARTITION BY StyleID ORDER BY ID) AS
"ROW NUMBER",
       RANK() OVER(PARTITION BY StyleID ORDER BY ID)

AS "RANK",
       DENSE RANK() OVER(PARTITION BY StyleID ORDER BY ID) AS
"DENSE RANK",
       PERCENT_RANK() OVER(PARTITION BY StyleID ORDER BY ID) AS
"PERCENT RANK",
       CUME DIST() OVER(PARTITION BY StyleID ORDER BY ID) AS "CUME DIST",
       CUME DIST() OVER(PARTITION BY StyleID ORDER BY ID DESC) AS
"CUME DIST DESC",
```

```
FIRST_VALUE(Nome) OVER(PARTITION by StyleID ORDER BY ID) AS
"FIRST_VALUE",
    LAST_VALUE(Nome) OVER(PARTITION by StyleID ORDER BY ID) AS
"LAST_VALUE",
    NTH_VALUE(Nome,5) OVER(PARTITION by StyleID ORDER BY ID) AS
"NTH_VALUE",
    NTILE (5) OVER (ORDER BY StyleID) as "NTILE_5",
    LAG(Nome, 1) over(order by ID) as "LAG_NOME",
    LEAD(Nome, 1) over(order by ID) as "LEAD_NOME"
FROM T ;
```