

Window functions

Window functions

- <https://www.postgresql.org/docs/current/static/tutorial-window.html>
- "Window function" performs a calculation over table rows that are "similar" in some way
- Unlike aggregation functions, there is no grouping
- The function sees only rows that are the result of the entire SELECT query, i.e. only after filtering rows with WHERE, GROUP BY and HAVING commands
 - If you need to filter the rows after the calculation of the window function, it is necessary to use a subselect.

Example

- `SELECT depname, empno, salary, avg(salary) OVER (PARTITION BY depname) FROM empsalary;`

depname	empno	salary	avg
develop	11	5200	5020.0000000000000000
develop	7	4200	5020.0000000000000000
develop	9	4500	5020.0000000000000000
develop	8	6000	5020.0000000000000000
develop	10	5200	5020.0000000000000000
personnel	5	3500	3700.0000000000000000
personnel	2	3900	3700.0000000000000000
sales	3	4800	4866.666666666666667
sales	1	5000	4866.666666666666667
sales	4	4800	4866.666666666666667

Example

- `SELECT depname, empno, salary, rank() OVER (PARTITION BY depname ORDER BY salary DESC) FROM empsalary;`

depname	empno	salary	rank
develop	8	6000	1
develop	10	5200	2
develop	11	5200	2
develop	9	4500	4
develop	7	4200	5
personnel	2	3900	1
personnel	5	3500	2
sales	1	5000	1
sales	4	4800	2
sales	3	4800	2

Example

- If we omit PARTITION BY, the partition is the entire table:
- `SELECT salary, sum(salary) OVER () FROM empsalary;`

```
salary | sum
-----+-----
5200   | 47100
5000   | 47100
3500   | 47100
4800   | 47100
3900   | 47100
4200   | 47100
4500   | 47100
4800   | 47100
6000   | 47100
5200   | 47100
```

Example

- „Window frame“ – each row has its own list of rows within the partition to execute on „window function“
 - Applies to some window functions
 - If we specify order by, then the window frame contains rows in the partition up to the given row (+ rows with the same value)
- `SELECT salary, sum(salary) OVER (ORDER BY salary) FROM empsalary;`

salary		sum
3500		3500
3900		7400
4200		11600
4500		16100
4800		25700
4800		25700
5000		30700
5200		41100
5200		41100
6000		47100

Example

- If we don't want to specify the same window twice, we can name it:

```
SELECT
    sum(salary) OVER w,
    avg(salary) OVER w
FROM empsalary
WINDOW w AS (PARTITION BY depname ORDER BY salary DESC);
```

List of window functions

- All aggregation functions

+

- <https://www.postgresql.org/docs/current/static/functions-window.html>

Syntax

- <https://www.postgresql.org/docs/current/static/sql-expressions.html#SYNTAX-WINDOW-FUNCTIONS>