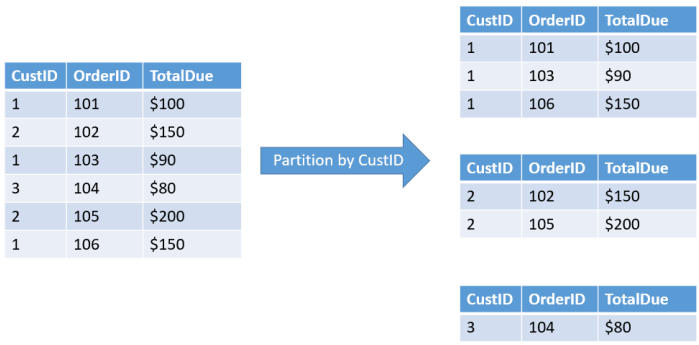
Window Functions using PostgreSQL

A window function performs a calculation across a set of table rows that are somehow related to the current row. This is comparable to the type of calculation that can be done with an aggregate function. But unlike regular aggregate functions, use of a window function does not cause rows to become grouped into a single output row — the rows retain their separate identities. Behind the scenes, the window function is able to access more than just the current row of the query result.

Through introducing window functions, there are two statements that you may not be familiar with: **OVER** and **PARTITION BY**. These are key to window functions. Not every window function uses **PARTITION BY**; we can also use **ORDER BY** or no statement at all depending on the query we want to run.

Details to Partitioning the data based on the column:



Aggregates in Window Functions with and without ORDER BY

The **ORDER BY** clause is one of two clauses integral to window functions.

The **ORDER** and **PARTITION** define what is referred to as the "window"—the ordered subset of data over which calculations are made. Removing **ORDER BY** just leaves an unordered partition; in our query's case, each column's value is simply an aggregation (e.g., sum, count, average, minimum, or maximum) of all the standard_qty values in its respective account_id.

The easiest way to think about this - leaving the ORDER BY out is equivalent to "ordering" in a way that all rows in the partition are "equal" to each other. Indeed, you can get the same effect by explicitly adding the ORDER BY clause like this: ORDER BY 0 (or "order by" any constant expression), or even, more emphatically, ORDER BY NULL. [sql - Analytic count over partition with and without ORDER BY clause - Stack Overflow]

Resources:

PostgreSQL: Documentation: 9.1: Window Functions

SQL SERVER - What is the OVER Clause? - Notes from the Field #101 - SQL Authority with Pinal Dave

sql - Oracle "Partition By" Keyword - Stack Overflow

Analytic Functions - Ask TOM (oracle.com)

Note: You can't use window functions and standard aggregations in the same query. More specifically, you can't include window functions in a GROUP BY clause.