SQL Window Functions Overview

Essential tools for advanced data analysis in SQL

Ranking Functions: row_number(), rank(), dense_rank()

row_number()

Unique sequential number per row

rank()

Assigns rank with gaps for ties

dense_rank()

Ranks without gaps in ties

The OVER() Clause

- Defines window for functions
- Used with ranking and analytic functions
- Enables frame specification

Partitioning Data: PARTITION BY

- Divides data into groups for functions
- Resets computation per partition
- Improves targeted analysis precision

TABLE: EMP

Empid	empname	**empphone**	**empsal**	**deptno**
101	Ajay	234567	20000	25
102	Vijay	654378	15000	30
103	Ramesh	345678	10000	25
104	Ram	346279	15000	10

Ordering Within Windows: ORDER BY

- Defines row order inside partitions
- Impacts ranking and lead/lag computations
- Supports ascending and descending modes

Lead and Lag Functions: lead() & lag()

lead()

Accesses next row value

- Useful for comparisons
- Lookahead calculations

lag()

Accesses previous row value

- Lookback calculations
- Detect changes over time

Value Retrieval Functions: nth_value() & first_value()

first_value()

Returns first row value in window

- Anchor point for comparison

nth_value()

Returns nth row value in window

- Accesses any position in ordered set

Key Takeaways & Applications

- Window functions enable complex analytics
- Partition and order tailor analysis scope
- Lead, lag, and rank unlock powerful insights