

Module 3

Oracle SQL Analytic Functions

Lesson 2: Extended Syntax and Ranking Functions



Lesson Objectives

- Write statements using the PARTITIONED BY clause
- Understand conceptual differences among ranking functions
- Reflect about evaluation order of SELECT clauses



Analytic Function Processing

- Rows
 - FROM**
 - WHERE**
- Groups
 - GROUP BY**
 - HAVING**
- Analytic
 - Create partitions**
 - Evaluate functions**
 - Order partitions**
- Result
 - ORDER BY**
 - SELECT**



Extended Partitioning Syntax

- `<AnalyticFunction> ([<column-list>])
OVER ([PARTITION BY <partitioning>]
[ORDER BY <ordering>])`
 - PARTITION BY keywords
 - Divides result into partitions
 - Analytic function evaluated for each partition

- **Example**

```
RANK () OVER (  
    PARTITION BY CustState  
    ORDER BY SUM(SalesDollar) ) AS SalesRank
```



Ranking with Partitioning Example

- Rank customers by descending sum of dollar sales
- Partition ranking on customer state

```
SELECT CustState, CustName, SUM(SalesDollar) AS SumSales,  
       RANK() OVER (PARTITION BY CustState  
                    ORDER BY SUM(SalesDollar) DESC) SalesRank  
FROM SSSales, SSCustomer  
WHERE SSSales.CustId = SSCustomer.CustId  
GROUP BY CustState, CustName  
ORDER BY CustState;
```



Ranking Functions

- **RANK**
 - Ranking gaps
- **DENSE_RANK**
 - No ranking gaps
- **NTILE**
 - Equal division
 - Specify divisions
- **ROW_NUMBER**

Golf Leaderboard		
Score	RANK()	DENSE_RANK()
-10	1	1
-9	2	2
-9	2	2
-8	4	3



Combined Ranking Example

- Compare ranking functions
- Rank customers by descending sum of unit sales
- Evaluate functions on entire results (no partitioning)

```
SELECT CustZip, SUM(SalesUnits) AS SumSalesUnits,  
       RANK() OVER (ORDER BY SUM(SalesUnits) DESC) SURank,  
       DENSE_RANK() OVER (ORDER BY SUM(SalesUnits) DESC) SUDenseRank,  
       NTILE(4) OVER (ORDER BY SUM(SalesUnits) DESC) SUNTile,  
       ROW_NUMBER() OVER (ORDER BY SUM(SalesUnits) DESC) SURowNum  
FROM SSSales, SSCustomer  
WHERE SSSales.CUSTID = SSCustomer.CUSTID  
GROUP BY CustZip;
```



Additional Problems

- Example 3
 - Dense rank item brands descending by the number of sales rows
 - Partition ranking by year
 - Only include brands with more than 5 sales in a year
 - Show item brand, year, count, and dense rank in the result
- Example 4
 - Rank (both) item brands by descending sum of dollar sales in 2014
 - Partition rankings by month
 - Show item brand, month, sum of sales, and ranks (both)
- Solutions in a module 3 document



Summary

- Analytic functions evaluated over partitions
- Ranking functions for qualitative evaluation

