Analytical Functions are Cool!

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Agenda

- ***What are Analytic Functions***
- ***Analytic Function Syntax***
- ***Analytic Function Examples***
  - Simple Example
  - Top N Ranking Functions
  - Lag/Lead Functions
  - Pivot queries
- ***Question & Answer***

What are Analytic Functions

- ***Extension of ANSI SQL***
- ***Major catagories***
  - Grouping Sets
  - With Clause
  - Top n Ranking
  - Aggregate Window

What are Analytic Functions

- ***Extension of ANSI SQL (Cont)***
- ***Major catagories***
  - First and Last
  - Reporting Functions
  - Lag and Lead
  - Case and Width_Bucket Functions

Analytic Function syntax

- ***Function Clause***
  - The function clause begins with a SQL function. A function statement can include any one of the 33 Analytical Functions, such as SUM, COUNT, ETC.

Analytic Function syntax

- ***Over Statement***
  - Select MAX() **OVER ()**
  - The OVER() statement signals a start of an Analytic function. That is what differentiates an Analytical Function from a regular Oracle SQL function.

Analytic Function syntax

- ***Partitioning clause***
  - Select MAX() OVER(partition by field1).

    The portioning clause is used to setup the group of data that the Analytic function would be applied to. Though, it's akin to a Group by statement in a SQL query, it is applied to the result set of a query, and not a group.

Analytic Function syntax

- ***Order by Clause***
  - Select MAX() OVER(Partition by field order by)

    Order by specify the order of the window in the group by statement. The Order by clause is a keyword in the Oracle Analytic syntax that is requirement for using some Analytic functions

Analytic Function syntax

- ***Window Clause***
  - species the relative rows to which the Analytic function needs to be applied.

Analytic Function Examples

- ***Simple Example***

```
SQL>  Select *
  1       from ( Select cust_name, sum(clm_amt)clm_amt
  2                 from  customer
  3            group by cust_name
  4          order by clm_amt desc desc ) v
  5              )
  6          and rownum < 11
  7 /
```

Analytic Function Examples

- ***Simple Example result***

CUST_NAME	CLM_AMT
XYZ	100,000,000
Lexus Corp	80,000,000
First America	60,000,000
Yelp	78,000,000
ABC	75,000,000
Omega Int.	74,000,000
S Corp	70,000,000
Acme	25,000,000
Sun Enterprise	23,000,000
Film studio	17,000,000

Analytic Function Examples

- ***Analytic Version***

```
SQL> select cust_name,
  2  SUM(clm_amt) OVER (partition by cust_name) clm_amt
  3 /
```

Analytic Function Examples

- ***Analytic Example result***

CUST_NAME	CLM_AMT
XYZ	100,000,000
Lexus Corp	80,000,000
First America	60,000,000
Yelp	78,000,000
ABC	75,000,000
Omega Int.	74,000,000
S Corp	70,000,000
Acme	25,000,000
Sun Enterprise	23,000,000
Film studio	17,000,000

Analytic Function Examples

- ***LEAD/LAG Functions***

```
SQL> select cust_name,
  2  LAG(clm_amt,1,0) OVER (partition by cust_name order by clm_amt)
CLM_AMT_PREF

  3  LEAD(clm_amt,1,0) OVER (partition by cust_name order by clm_amt)
CLM_AMT_NEXT

  4    from member
  5 /
```

Analytic Function Examples

- ***LEAD/LAG Function result***

CUST_NAME	CLM_AMT	CLM_AMT_PREV	CLM_AMT_NEXT
XYZ	**100,000,000**	**0**	**80,000,000**
Lexus Corp	**80,000,000**	**100,000,000**	60,000,000
First America	60,000,000	80,000,000	78,000,000
Yelp	78,000,000	60,000,000	75,000,000
ABC	75,000,000		
Omega Int.	74,000,000		
S Corp	70,000,000		
Acme	25,000,000		
Sun Enterprise	23,000,000		
Film studio	17,000,000		**0**

Analytic Function Examples

- ***Top N ranking Function***

```
SQL> select cust_name, clm_amt,
  2         dense_rank() OVER (partition by clm_amt)
dr
  3     from  ( select cust_name,
  4              SUM(clm_amt) OVER (partition by
cust_name) clm_amt
  5          )
  6 /
```

Analytic Function Examples

- ***Top N ranking result***

CUST_NAME	CLM_AMT	DR
XYZ	100,000,000	1
Lexus Corp	80,000,000	2
First America	60,000,000	3
Yelp	78,000,000	4
ABC	75,000,000	5
Omega Int.	74,000,000	6
S Corp	70,000,000	7
Acme	25,000,000	8
Sun Enterprise	23,000,000	9
Film studio	17,000,000	10

The end...

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Questions and Answers

- ***Got Questions ?***

References

- ***SS64.com. (1999-2010). Analytic Features: http://ss64.com/ora/syntax-analytic.html***

- ***Tom Kyte (2001). Expert One-on-One Oracle: Wrox Press Ltd.***