Teradata Bacis

Lesson 07: Teradata Popular OLAP Examples

Module Object

- To be familiar with popular OLAP functions.
- To be familiar with the PARTITION By concept.
- To be familiar with RANK() . ROW_NUMBER(), QULIFY functions.

Example Table “OLAP_EXAMPLE”

```
SEL..'' FROM  .R  .M_FR_TRNG_DB.O LAP_EXAMPLE ;
    TID_B.I
```

	TranId ...ci	Sto:JielD	YearNum	MonthNum	Prodl	Sa.lea
1	1	E001	2011	1	P001	330
1	2	E001	2011	1	P002	150
2	3	E001	2011	1	P003	270
.3	4	E001	2011	1	P004	210
5	5	W001	2011	1	P001	10
6	6	W001	2011	1	P002	25
7	7	W001	2011	1	P003	50
8	8	W001	2011	1	P004	S0
9	9	N001	2011	1	P001	120
10	10	N001	2011	1	P002	130
11	11	N001	2011	1	P003	100
12	12	N001	2011	1	P004	90
13	13	S001	2011	1	P001	250
14	14	S001	2011	1	P002	250
15	15	S001	2011	1	P003	280
16	16	S001	2011	1	P004	300
17	17	E001	2011	2	P001	0
18	18	E001	2011	.2	P002	0
19	19	E001	2011	2	P003	0
20	20	E001	2011	2	P004	0
21	21	W001	2011	7	P001	0
22	22	W001	2011	2	P002	100
23	23	W001	2011	2	P003	150
24	24	W001	2011	2	P004	100
25	25	N001	2011	2	P001	0
26	26	N001	2011	2	ROIJ2	90
27	27 1)11100		2011	2	ROOi3	80
28	28 N001		.2{)111	2	P004	50
29	29	S001	2011	2	P001	0
30	30	S001	2011	2	P002	30
31	31	S001	2011	2	P003	20
32	32	S001	2011	2	P004	30
33	33	E001	2011	3	P001	120
34	34! BIJIOl		2011	3	P00 2	0
35	35 EOBl		2011	3	POI)\3	150
36	36 E001		2011	3	P004	180
37	37	W001	2011	3	P001	100
38	38	W001	2011	3	P002	0
39	39	W001	2011	3	P003	90
40	40	W001	2011	3	P004	120
41	41	N001	2011	3	P001	0
42	42	N001	2011	3	P002	0
43	43 1)11100		2011	3	P003	0
44	44	N001	2011	3	P004	0
45	45	S001	2(111	3	POCilr'l	180
46	46	S001	2:0 11	3	H 02	0
47	47	S001	20 11	3	P003	22D
48	48	S001	2011	3	P004	250

Usage of PARTITION by to derive RANK

How to find the rank for each product; based on the sum sales value within each Store.

```
SEL STOREID,PRODID, SUM(SALES) SSALES,
RANK() OVER (PARTITION BY STOREID ORDER BY SSALES DESC) AS RNK
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE
GROUP BY STOREID, PRODID ;
```

	StoreID	ProdID	SSALES	RNK
1	E001	P001	450	1
2	E001	P003	420	2
3	E001	P004	390	3
4	E001	P002	150	4
5	N001	P002		
6	N001	P003		
7	N001	P004		
8	N001	P001		
9	S001	P004		
10	S001	P003		
11	S001	P001		
12	S001	P002		
13	W001	P004		
14	W001	P003		
15	W001	P002		
16	W001	P001		

Usage of RANK & QUALIFY

How to find the Rank#1 product based upon the sum sales value (desc) within each store.

	StoreID	Prod	SSALES	
1	E001	P001		1
2	N001	P002		1
3	S001	P004		
4	W001	P004		

```
SEL STOREID,PRODID, SUM(SALES) SSALES,
RANK() OVER (PARTITION BY STOREID ORDER BY SSALES DESC) AS RNK
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE
GROUP BY STOREID, PRODID
QUALIFY RNK = 1;
```

Usage of ROWS BETWEEN (PRECEDING-FOLLOWINGCURRENT ROW)

How to find the moving sum for each product including current row and 3 rows prideding.

```
SUM (SALES) OVER ( PARTITION BY PRODID ORDER BY TRANID
ROWS BETWEEN 3 PRECEDING AND CURRENT ROW )
FROM TID_131 1.11_FR_TAB.GLAP_EXAMPLE ;
```

	R.-.::::x::IID	Sales	Moving Sum (Sales)
1	P001	330	330
2	P001	10	340
3	P001	120	460
4	P001		710
5	P001		380
6	P001	0	370
7	P001		250
8	P001		
9	P001		
10	P001		
11	P001		
12	P001		
13	P002		151rni
14	P002		175
15	P002		
16	P002		.1555
17	P002	0	
18	P002		
19	P002		
20	P002		.22:liJll
21	P002	0	
22	P002	0	120
23	P002	0	30
24	P002	0	
25	P003	270	270
26	P003	5'0	320
27	P003	..00	420
28	P003	280	700
29	PI:803.	0	430
3C1	p		530
3,	P003		510
32	P003		250
33	P003	..50	400
34	P003	90	340
35	P003		260
36	P003	22iO	460
37	P004	1:0	210
38	p 004	.80	290
39	p[]!(Ja4.	"90	380
40	P 004	300	680
41	p 004	0	470
42	p p004	100	490
43	p 004	50	450
44	004	30	180
45	P ; p	180	360
46	p 004	120	380
47	004	0	330
48	004	250	

Example Table “OLAP_EXAMPLE_CLASS”

```
SEL * FROM TD_BIM_FR_TRNG_DB.O      _EXAMPLE_C     S
```

	STUDID	STUDNAME	SUBID	MARKS
1	1	A	C	85
2	1	A	M	80
3	1	A	P	90
4	2	B	C	80
5	2	B	M	95
6	2	B	P	92
7	3	C	C	79
8	3	C	M	93
9	3	C	P	83
10	4	D	C	82
11	4	D	M	67
12	4	D	P	78
13	5	E	C	80
14	5	E	M	75
15	5	E	P	78
16	6	F	C	74
17	6	F	M	71
18	6	F	P	70
19	7	G	C	69
20	7	G	M	56
21	7	G	P	50
22	8	H	C	49
23	8	H	M	56
24	8	H	P	61
25	9	I	C	66
26	9	I	M	73
27	9	I	P	78
28	10	J	C	52
29	10	J	M	80
30	10	J	P	56

Usage of RANK & PARTITION BY

How to find t.nfi RA-NK 01-f each s·ud· · on h subj ect b·ased on ir eacJ the, n obt.a'i ed nar-ks..,

	STUDID	STUDI	E	MARKS	SUBI	Rank (MARKS)
1	1	A		85	C	1
2	4	D		82	C	2
3	2	B		80	C	3
4	5	E		80	C	3
5	3	C		79	C	5
6	6	F		74	C	
7	7	G		69	C	
8	9	I		66	C	
9	10	J		52	C	9
10	8	H		49	C	10
11	2	B		95	M	
12	3	C		93	M	2
13	1	A		80	M	
14	10	J		80	M	3
15	5	E		75	M	5
16	9	I		73	M	6
17	6	F		71	M	7
18	4	D		67	M	
19	8	H		56	M	9
20	7	G		56	M	9
21	2	B		92	P	
22	1	A		90	p	
23	3	C		..		3
24	4	D		78	P	4
25	5	E		78	P	4
26	9	I		78	P	4
27	6	F		70	P	7
28	8	H		61	P	8
29	10	J		56	P	9
30	7	G		50	P	10

Usage of RANK & PARTITION BY

How to find the RANK of each student on each subject based on their obtained marks...

```
SEL STUDID,STUDNAME,MARKS,SUBID,
RANK() OVER ( PARTITION BY SUBID ORDER BY MARKS DESC)
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS ;
```

	STUDID	STUDNAME	MARKS	SUBID	Rank (MARKS)
1	1	A	85	C	1
2	4	D	82	C	2
3	2	B	80	C	3
4	5	E	80	C	3
5	3	C	79	C	5
6	6	F	74	C	6
7	7	G	69	C	7
8	9	I	66	C	8
9	10	J	52	C	9
10	8	H	49	C	10
11	2	B	95	M	1
12	3	C	93	M	2
13	1	A	80	M	3
14	10	J	80	M	3
15	5	E	75	M	5
16	9	I	73	M	6
17	6	F	71	M	7
18	4	D	67	M	8
19	8	H	56	M	9
20	7	G	56	M	9
21	2	B	92	P	1
22	1	A	90	P	2
23	3	C	83	P	3
24	4	D	78	P	4
25	5	E	78	P	4
26	9	I	78	P	4
27	6	F	70	P	7
28	8	H	61	P	8
29	10	J	56	P	9
30	7	G	50	P	10

Usage of RANK, QUALIFY & PARTITION BY

```
How to find the students
within Rank 3 for SUBID 'M'.
```

	STUDID	STUDNAME	MARKS	SUBID	Rank (MARKS)
1	2	B	95	M	1
2	3	C	93	M	2
3	1	A	80	M	3
4	10	J	80	M	3

Usage of RANK, QUALIFY & PARTITION BY

How to find the students within Rank 3 for SUBID 'M'.

	STUDID	STUDNAME	MARKS	SUBID	Rank (MARKS)
1	2	B	95	M	1
2	3	C	93	M	2
3	1	A	80	M	3
4	10	J	80	M	3

```
SEL STUDID,STUDNAME,MARKS,SUBID,
RANK() OVER ( PARTITION BY SUBID ORDER BY MARKS DESC)
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS
QUALIFY RANK() OVER ( PARTITION BY SUBID ORDER BY MARKS DESC) <= 3
AND SUBID = 'M' ;
```

Usage of RANK, QUALIFY & PARTITION BY

How to find the student who has scored minimum in all 3 subjects.

	STUDID	STUDNAME	smarks	RNK
1	8	H	166	10

Usage of RANK, QUALIFY & PARTITION BY

How to find the student who has scored minimum in all 3 subjects.

	STUDID	STUDNAME	smarks	RNK
1	8	H	166	10

```
SEL STUDID, STUDNAME, SUM(MARKS) AS SMARKS,
RANK () OVER ( ORDER BY SMARKS DESC) AS RNK
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS
GROUP BY STUDID, STUDNAME
QUALIFY RNK = 10 ;
```

Usage of RANK, QUALIFY & PARTITION BY

How to find the change in RANKs for each student.

	STUDID	STUDNAME	SMARKS	RNK	CHANGE
1	2	B	267	1	1
2	1	A	255	2	-1
3	3	C	255	2	1
4	5	E	233	4	1
5	4	D	227	5	-1
6	9	I	217	6	3
7	6	F	215	7	-1
8	10	J	188	8	2
9	7	G	175	9	-2
10	8	H	166	10	-2

Usage of RANK, QUALIFY & PARTITION BY

How to find the change in RANKs for each student.

	STUDID	STUDNAME	SMARKS	RNK	CHANGE
1	2	B	267	1	1
2	1	A	255	2	-1
3	3	C	255	2	1
4	5	E	233	4	1
5	4	D	227	5	-1
6	9	I	217	6	3
7	6	F	215	7	-1
8	10	J	188	8	2
9	7	G	175	9	-2
10	8	H	166	10	-2

```
SEL STUDID, STUDNAME, SUM(MARKS) AS SMARKS,
RANK () OVER ( ORDER BY SMARKS DESC) AS RNK,
(STUDID - RNK) AS CHANGE
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS
GROUP BY STUDID, STUDNAME ;
```

Usage of RANK & PARTITION BY

Find the Subtotal makrs for students with STUDID 1 and 2.

```
SEL STUDID, STUDNAME,  MARKS
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS
WITH SUM(MARKS) (TITLE 'INDIVIDUAL_MARKS' ) BY STUDID, STUDNAME
WHERE STUDID in ( 1, 2 ) ;

 *** Query completed. 8 rows found. 3 columns returned.
 *** Total elapsed time was 1 second.


     STUDID  STUDNAME         MARKS
-----------  ----------  -----------
           1  A                   80
           1  A                   85
           1  A                   90
                          -----------
       INDIVIDUAL_MARKS          255

           2  B                   95
           2  B                   80
           2  B                   92
                          -----------
       INDIVIDUAL_MARKS          267

BTEQ -- Enter your SQL request or BTEQ command:
```

Usage of RANK & PARTITION BY

Difference between RANK ROW_NUMBER.

```
SEL STUDID, STUDNAME, SUM(MARKS) AS SMARKS
RANK () OVER ( ORDER BY SMARKS DESC)
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLAS5
GROUP BY STUDID, STUDNAME ;
```

```
SEL STUDID, STUDNAME, SUM(MARKS) AS SMARKS,
ROW_NUMBER () OVER ( ORDER BY SMARKS DESC)
FROM TD_BIM_FR_TRNG_DB.OLAP_EXAMPLE_CLASS
GROUP BY STUDID, STUDNAME ;
```

	STUDID	STUDNAME	SMARKS	Rank (SMARKS)
1	2	B	267	1
2	3	C	255	2
3	1	A	255	2
4	5	E	233	4
5	4	D	227	5
6	9	I	217	6
7	6	F	215	7
8	10	J	188	8
9	7	G	175	9
10	8	H	166	1

	STUDID	STUDNAME	SMARKS	Row_Number
1	2	B	267	1
2	1	A	255	2
3	3	C	255	3
4	5	E	233	4
5	4	D	227	5
6	9	I	217	6
7	6	F	215	7
8	10	J	188	8
9	7	G	175	9
10	8	H	166	10

Q&A

- 1. Which two partitioning expressions are available to both single-
  - level and multi-level partitioned tables? (Choose two.)
  - A. MODULO_N partitioning
  - B. CASE_N partitioning
  - C. RANGE_N partitioning
  - D. Direct partitioning on a numeric column

- 2. What are two reasons a customer would choose table
- partitioning? (Choose two.)
  - A. to improve performance of full table scans
  - B. to reduce the I/O for range constrained queries
  - C. for better distribution of data between the AMPs
  - D. for the ability to archive specific partitions in a table

Q&A

- 3. On which two table types can a multi-level partitioned primary index (MLPPI) be created? (Choose two.)
  - A. Volatile tables
  - B. Derived tables
  - C. Global temporary tables
  - D. Compressed join indexes

- 4. Which two table types support multi-level partitioned primary indexes (MLPPI)? (Choose two.)
  - A. Base tables
  - B. Compressed Join Indexes
  - C. Global temporary Trace tables
  - D. Non-compressed join indexes