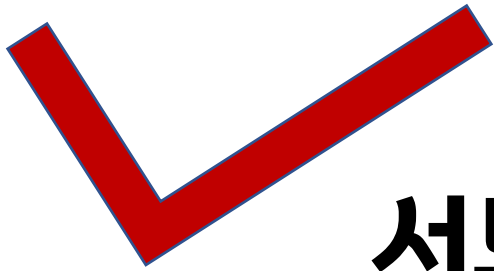


이럴때는



서브쿼리를 세미조인이 되게하라 !

■ 학습 내용

1. 순수하게 서브쿼리로 실행되었을때와 안티조인으로 수행되었을때의 차이를 학습
2. 해쉬 안티조인으로 수행되게 하는 방법을 학습합니다.
3. 해쉬 right 안티조인으로 수행되게 하는 방법을 학습합니다.

■ 학습 목표

세미조인으로 수행되게 서브쿼리문을 튜닝할 수 있습니다.

1. 서브쿼리의 데이터가 많을때

서브쿼리 부터 실행되게 되면?

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id in ( select /*+ no_unnest push_subq */ cust_id
                    from sales100 s 918843건
                    where amount_sold between 0 and 10000 );
```

main query (points to the main query part)

sub query (points to the subquery part)

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers
0	SELECT STATEMENT		1		50	00:00:16.03	2013K
* 1	TABLE ACCESS FULL	CUSTOMERS100	1	50	50	00:00:16.03	2013K
* 2	TABLE ACCESS FULL	SALES100	497	2	50	00:00:18.00	2013K

2. 서브쿼리의 데이터가 많을때

메인쿼리 부터 실행되게 되면?

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id in ( select /*+ no_unnest no_push_subq */
                    cust_id
                    from sales100 s 918843건
                    where amount_sold between 0 and 10000 );
```

main query (points to the main query part)

sub query (points to the subquery part)

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers
0	SELECT STATEMENT		1		50	00:00:05.98	2013K
* 1	FILTER		1		50	00:00:05.98	2013K
2	TABLE ACCESS FULL	CUSTOMERS100	1	55500	497	00:00:00.01	17
* 3	TABLE ACCESS FULL	SALES100	497	2	50	00:00:18.09	2013K

3. 서브쿼리의 데이터가 많을때

해쉬 세미조인으로 실행되게 되면?

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id in ( select /*+ unnest hash_sj */ cust_id
                    from sales100 s 918843건
                    where amount_sold between 0 and 10000 );
```

main query (points to the main query part)

sub query (points to the subquery part)

	Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	OMem	lMem	Used-Mem
	0	SELECT STATEMENT		1		50	00:00:00.05	1523			
*	1	HASH JOIN SEMI		1	7059	50	00:00:00.05	1523	14M	2068K	15M (0)
	2	TABLE ACCESS FULL	CUSTOMERS100	1	55500	55500	00:00:00.02	1520			
*	3	TABLE ACCESS FULL	SALES100	1	918K	50	00:00:00.01	3			

4. 서브쿼리의 데이터가 많을때

해쉬 right 세미조인으로 실행되게 되면?

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id in ( select /*+ unnest hash_sj
                        swap_join_inputs(s) */ cust_id
                    from sales100 s 918843건
                    where amount_sold between 0 and 10000 );
```

main query (points to the main query part)

sub query (points to the subquery part)

	Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	OMem	lMem	Used-Mem
	0	SELECT STATEMENT		1		50	00:00:00.15	4456			
*	1	HASH JOIN RIGHT SEMI		1	7059	50	00:00:00.15	4456	43M	6071K	47M (0)
*	2	TABLE ACCESS FULL	SALES100	1	918K	918K	00:00:00.03	4440			
	3	TABLE ACCESS FULL	CUSTOMERS100	1	55500	497	00:00:00.01	16			