

이럴때는



**서브쿼리를 해쉬 안티 조인이 되게하라 !**

## ■ 학습 내용

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

## ■ 학습 목표

세미조인으로 수행되게 서브쿼리문을 튜닝할 수 있습니다.

## 서브쿼리 부터 실행되게 되면?

```
select /*+ gather_plan_statistics */ *  
from customers100 c 55500건  
where c.cust_id not in ( select /*+ no_unnest push_subq */  
                        cust_id  
                        from sales100 s 918843건  
                        where amount_sold between 0 and 10000 );
```

	Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	Reads
0		SELECT STATEMENT		1		50	00:00:02.75	226K	4440
* 1		TABLE ACCESS FULL	CUSTOMERS100	1	2775	50	00:00:02.75	226K	4440
* 2		TABLE ACCESS FULL	SALES100	57	2	7	00:00:02.74	226K	4434

## 2. 서브쿼리의 데이터가 많을때

### 메인쿼리 부터 실행되게 되면?

**main query**

```
select /*+ gather_plan_statistics */ *  
from customers100 c 55500건  
where c.cust_id not in ( sub query  
                        select /*+ no_unnest no_push_subq */  
                          cust_id  
                        from sales100 s 918843건  
                        where amount_sold between 0 and 10000 );
```

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers
0	SELECT STATEMENT		1		50	00:00:02.16	226K
* 1	FILTER		1		50	00:00:02.16	226K
2	TABLE ACCESS FULL	CUSTOMERS100	1	55500	57	00:00:00.01	5
* 3	TABLE ACCESS FULL	SALES100	57	2	7	00:00:02.08	226K

### 3.서브쿼리의 데이터가 많을때

## 해쉬 안티조인으로 실행되게 되면?

**main query**

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id not in ( select /*+ unnest hash_aj */ cust_id
                        from sales100 s 918843건
                        where amount_sold between 0 and 10000 );
```

**sub query**

	Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	Reads	OMem	lMem	Used-Mem
	0	SELECT STATEMENT		1		50	00:00:00.41	5960	1511			
*	1	HASH JOIN ANTI		1	48441	50	00:00:00.41	5960	1511	14M	2068K	15M (0)
	2	TABLE ACCESS FULL	CUSTOMERS100	1	55500	55500	00:00:00.01	1520	1511			
*	3	TABLE ACCESS FULL	SALES100	1	918K	918K	00:00:00.03	4440	0			

## 4. 서브쿼리의 데이터가 많을때

해쉬 right 안티조인으로 실행되게 되면?

**main query**

**sub query**

```
select /*+ gather_plan_statistics */ *
from customers100 c 55500건
where c.cust_id not in ( select /*+ unnest hash_sj
                             swap_join_inputs(s) */ cust_id
                        from sales100 s 918843건
                        where amount_sold between 0 and 10000 );
```

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	OMem	lMem	Used-Mem
0	SELECT STATEMENT		1		50	00:00:00.15	4444			
* 1	HASH JOIN RIGHT ANTI		1	48441	50	00:00:00.15	4444	43M	6071K	47M (0)
* 2	TABLE ACCESS FULL	SALES100	1	918K	918K	00:00:00.03	4440			
3	TABLE ACCESS FULL	CUSTOMERS100	1	55500	57	00:00:00.01	4			