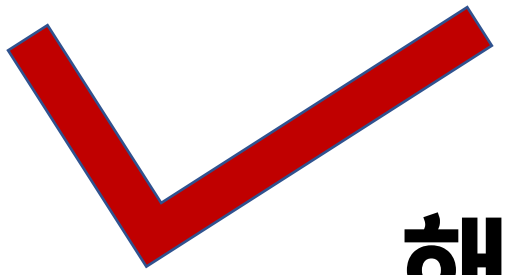
이럴때는



해쉬조인으로 유도하자 ! 두번째

▣ 학습 내용

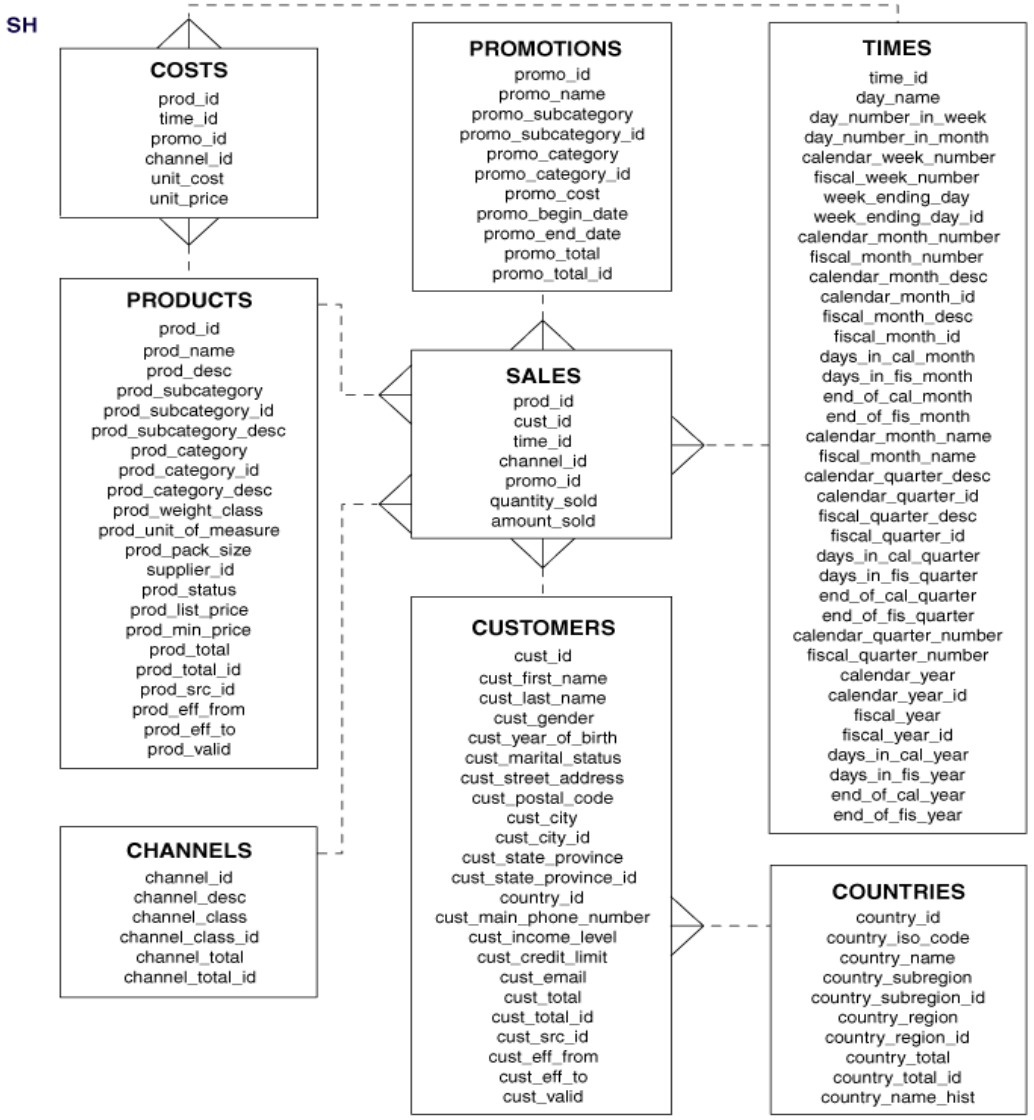
1. 3개 이상의 테이블을 해쉬조인 할때 해쉬 테이블을 선정하는법을 이해합니다.

2. 검색조건이 있었을때의 해쉬조인시 해쉬 테이블을 선정하는 방법을 이해합니다.

▣ 학습 목표

3개이상의 해쉬조인시 힌트를 이용하여 해쉬 테이블을 지정할 수 있습니다.

1. 3개 이상의 테이블을 해쉬조인 할때 조인순서는?



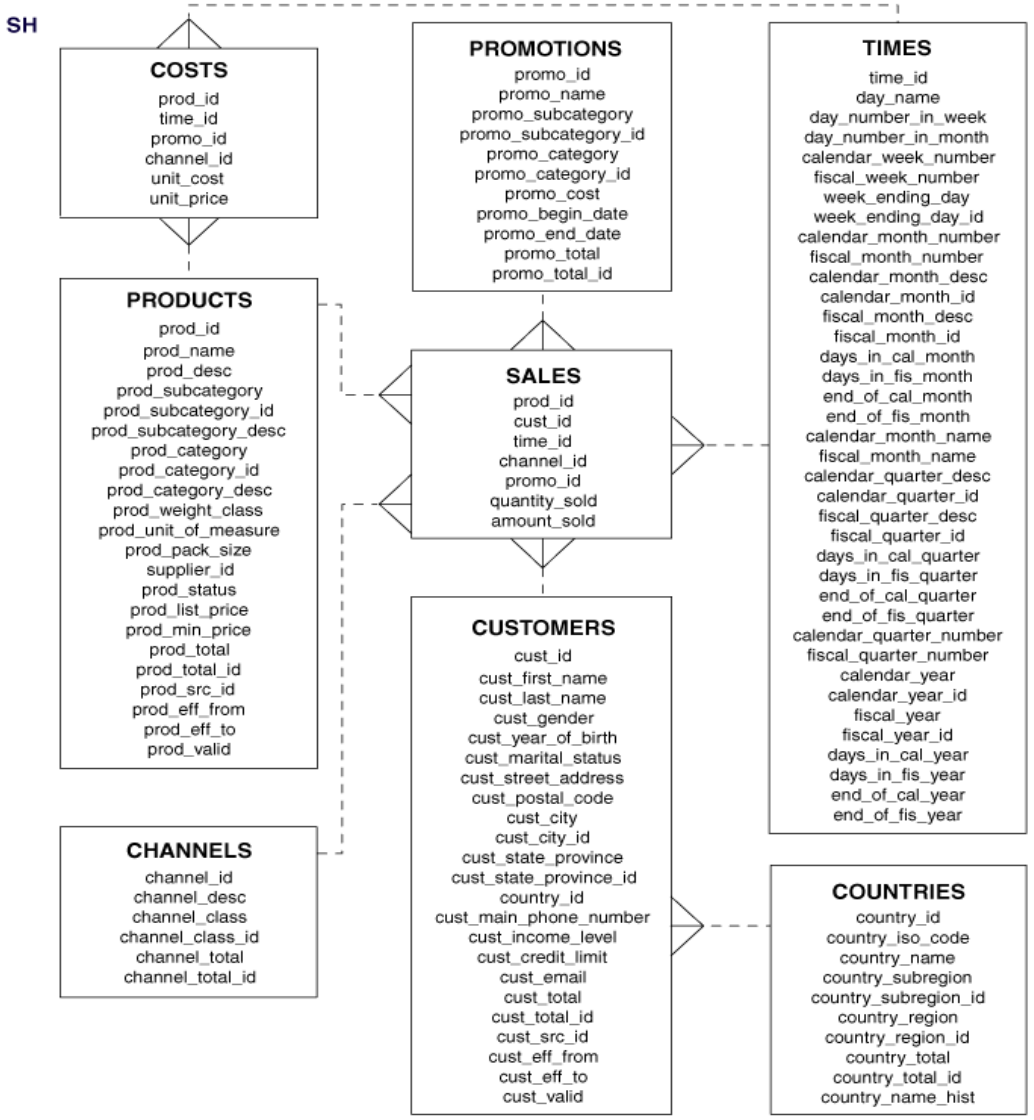

```
select /*+                    ?                    */
 p.prod_name, t.CALENDAR_YEAR,  sum(s.amount_sold)
 from  sales100 s, times100 t, products100 p
 where  s.time_id = t.time_id
 and  s.prod_id = p.prod_id
 group  by  p.prod_name, t.calendar_year;
```

① select count(*) from products100; 72건

② select count(*) from sales100; 918843건

③ select count(*) from times100; 1826건

2. 3개 이상의 테이블을 해쉬조인 할때 조인순서의 답




```
select /*+  leading(p s t) use_hash(s) use_hash(t)  */
 p.prod_name, t.CALENDAR_YEAR,  sum(s.amount_sold)
 from  sales100 s, times100 t, products100 p
 where  s.time_id = t.time_id
 and  s.prod_id = p.prod_id
 group  by  p.prod_name, t.calendar_year;
```

```
select /*+  leading(t s p) use_hash(s) use_hash(p)  */
 p.prod_name, t.CALENDAR_YEAR,  sum(s.amount_sold)
 from  sales100 s, times100 t, products100 p
 where  s.time_id = t.time_id
 and  s.prod_id = p.prod_id
 group  by  p.prod_name, t.calendar_year;
```

3. 3개 이상의 테이블을 해쉬조인 할때 해쉬 테이블 구성방법

```
select /*+  leading(t s p) use_hash(s) use_hash(p)  */
  p.prod_name, t.CALENDAR_YEAR,  sum(s.amount_sold)
  from  sales100 s, times100 t, products100 p
  where  s.time_id = t.time_id
  and  s.prod_id = p.prod_id
  group  by  p.prod_name, t.calendar_year;
```

```
-------------------------------------------------------------------------------------------------------------------------------
| Id  | Operation                | Name          | Starts | E-Rows | A-Rows |   A-Time    | Buffers |  OMem |  1Mem | Used-Mem |
-------------------------------------------------------------------------------------------------------------------------------
|   0 | SELECT STATEMENT         |               |      1 |        |      2 |00:00:00.12 |    4499 |       |       |          |
|   1 |  HASH GROUP BY           |               |      1 |      2 |      2 |00:00:00.12 |    4499 |  1223K|  1223K|  628K (0)|
|*  2 |   HASH JOIN              |               |      1 |   3195 |   6669 |00:00:00.12 |    4499 |    28M|  4517K|   35M (0)|
|*  3 |    HASH JOIN             |               |      1 |    460K|    492K|00:00:00.06 |    4495 |  1744K|  1744K| 1671K (0)|
|*  4 |     TABLE ACCESS FULL    | TIMES100      |      1 |    731 |    731 |00:00:00.01 |      54 |       |       |          |
|   5 |     TABLE ACCESS FULL    | SALES100      |      1 |    918K|    918K|00:00:00.03 |    4440 |       |       |          |
|*  6 |    TABLE ACCESS FULL     | PRODUCTS100   |      1 |      1 |      1 |00:00:00.01 |       3 |       |       |          |
-------------------------------------------------------------------------------------------------------------------------------

Predicate Information (identified by operation id):
---------------------------------------------------

   2 - access("S"."PROD ID"="P"."PROD ID")
   3 - access("S"."TIME ID"="T"."TIME ID")
   4 - filter(("T"."CALENDAR YEAR"=2000 OR "T"."CALENDAR YEAR"=2001))
   6 - filter("P"."PROD NAME" LIKE 'Deluxe%')
```

4. products100 테이블을 해쉬 테이블로 구성하려면?

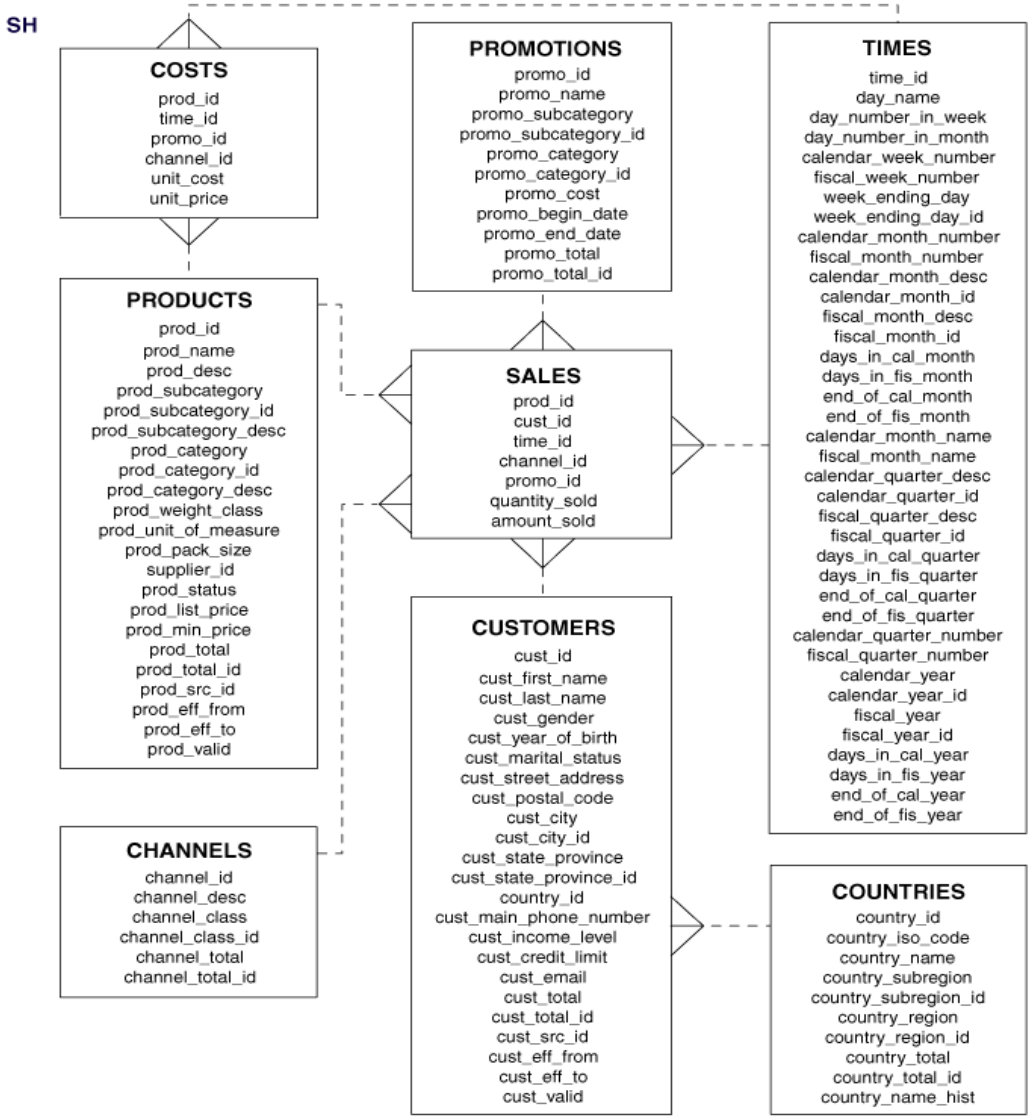
```
select /*+ leading(t s p) use_hash(s) use_hash(p) swap_join_inputs(p) */
  p.prod_name, t.CALENDAR_YEAR, sum(s.amount_sold)
  from  sales100 s, times100 t, products100 p
  where  s.time_id = t.time_id
  and  s.prod_id = p.prod_id
  group  by  p.prod_name, t.calendar_year;
```

```
-------------------------------------------------------------------------------------------------------------------------
| Id  | Operation             | Name        | Starts | E-Rows | A-Rows |   A-Time    | Buffers |  OMem |  1Mem | Used-Mem |
-------------------------------------------------------------------------------------------------------------------------
|   0 | SELECT STATEMENT      |             |      1 |        |      2 |00:00:00.07 |    4499 |       |       |          |
|   1 |  HASH GROUP BY        |             |      1 |      2 |      2 |00:00:00.07 |    4499 |  1223K|  1223K|  639K (0)|
|*  2 |   HASH JOIN           |             |      1 |   3195 |   6669 |00:00:00.13 |    4499 |  1538K|  1538K|  606K (0)|
|*  3 |    TABLE ACCESS FULL  | PRODUCTS100 |      1 |      1 |      1 |00:00:00.01 |       3 |       |       |          |
|*  4 |    HASH JOIN          |             |      1 |   460K |   492K |00:00:00.06 |    4495 |  1744K|  1744K| 1542K (0)|
|*  5 |     TABLE ACCESS FULL | TIMES100    |      1 |   731  |   731  |00:00:00.01 |      54 |       |       |          |
|   6 |     TABLE ACCESS FULL | SALES100    |      1 |   918K |   918K |00:00:00.03 |    4440 |       |       |          |
-------------------------------------------------------------------------------------------------------------------------

Predicate Information (identified by operation id):
---------------------------------------------------

   2 - access("S"."PROD_ID"="P"."PROD_ID")
   3 - filter("P"."PROD_NAME" LIKE 'Deluxe%')
   4 - access("S"."TIME_ID"="T"."TIME_ID")
   5 - filter(("T"."CALENDAR_YEAR"=2000 OR "T"."CALENDAR_YEAR"=2001))
```

5. 검색조건이 있었을때의 해쉬조인 순서는?



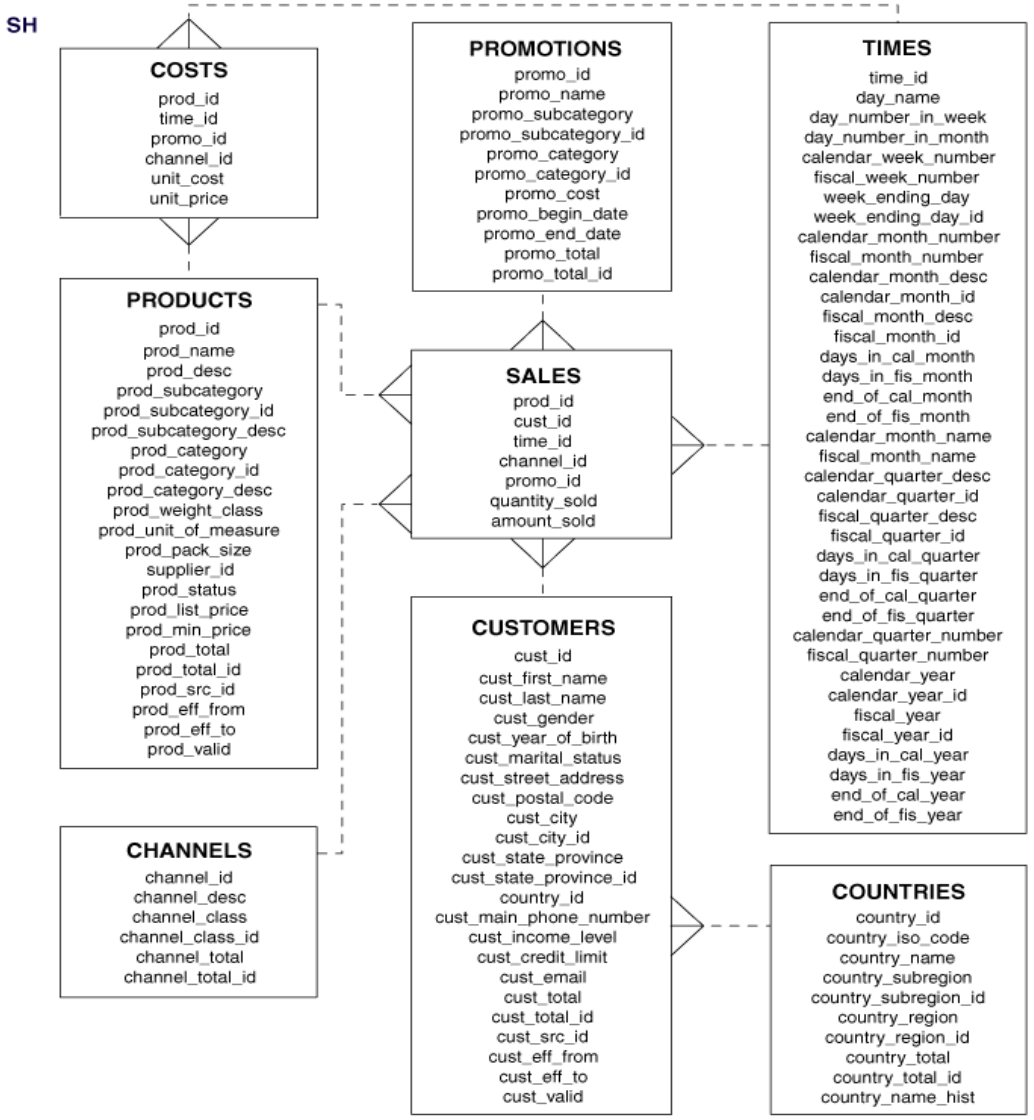

```
select /*+                                    ?                                    */
p.prod_name, t.CALENDAR_YEAR, sum(s.amount_sold)
  from   sales100  s, times100  t, products100  p
  where   s.time_id = t.time_id
  and  s.prod_id = p.prod_id
   and  t.CALENDAR_YEAR in (2000,2001)
   and p.prod_name like 'Deluxe%'
   group  by  p.prod_name, t.calendar_year;
```

① select count(*) from products100
where prod_name like 'Deluxe%'; 1건

② select count(*) from sales100; 918843건

③ select count(*)
from times100
where CALENDAR_YEAR in (2000,2001); 731건

6. 검색조건이 있었을때의 해쉬조인 순서는 답




```
select /*+  leading(p s t) use_hash(s) use_hash(t)
            swap_join_inputs(p)     */
p.prod_name, t.CALENDAR_YEAR, sum(s.amount_sold)
 from  sales100  s, times100  t, products100  p
 where   s.time_id = t.time_id
 and  s.prod_id = p.prod_id
  and  t.CALENDAR_YEAR in (2000,2001)
  and p.prod_name like 'Deluxe%'
  group  by  p.prod_name, t.calendar_year;
```

① select count(*) from products100
   where prod_name like 'Deluxe%'; 1건

② select count(*) from sales100; 918843건

③ select count(*)
   from times100
  where CALENDAR_YEAR in (2000,2001); 731건