



SQL JOINS related syntax and examples

SQL Join (ANSI syntax) Operators

↳ 포진

- Oracle also supports ANSI standard Join syntax, since Oracle 9i
- FROM table1 [INNER] JOIN table2 ON table1.column = table2.column

OR

- FROM table1 [INNER] JOIN table2 USING (common_col_name)
- Note that you need to put ().

↳ column이 같을 때 → () 안에 하나만 넣음 ex. USING (sid)
ON이랑 같은 기능 : column 이름이 달라도 =로 이어지면 됨

(Q1) SELECT S.sname
FROM Sailors S, Reserves R
WHERE S.sid = R.sid and R.bid = 103;

① SELECT S.sname
FROM Sailors S INNER JOIN Reserves R ON S.sid = R.sid
WHERE R.bid = 103;

② SELECT S.sname
FROM Sailors S JOIN Reserves R ON S.sid = R.sid
WHERE R.bid = 103;

③ SELECT S.sname
FROM Sailors S JOIN Reserves R USING (sid)
WHERE R.bid = 103;

(column 이름이
같은 경우 ↓

SQL Join (ANSI synt.) cont'd

□ Examples: for more than two tables

- ① SELECT S.sname
FROM Sailors S, Reserves R, Boats B
WHERE S.sid = R.sid and R.bid = B.bid and B.color='Red';
- ② SELECT S.sname
FROM Sailors S INNER JOIN Reserves R ON S.sid = R.sid INNER JOIN Boats B ON R.bid = ~~S~~.bid
WHERE B.color='Red';
- ③ SELECT S.sname
FROM Sailors S JOIN Reserves R ON S.sid = R.sid JOIN Boats B ON R.bid = ~~S~~.bid
WHERE B.color='Red';
- ④ SELECT S.sname
FROM Sailors S JOIN Reserves R USING (sid) JOIN Boats B USING (bid)
WHERE B.color='Red';
- ⑤ SELECT sname
FROM Sailors JOIN Reserves USING (sid) JOIN Boats USING (bid) WHERE color='Red';

SQL Join (ANSI synt.) cont'd

- Examples: for more than one columns.
- Let's say that table T1 and table T2 have two columns to be joined.

T1 (A, C1*, C2*)

T2 (C1, C2, B)

① SELECT A
FROM T1, T2
WHERE T1.C1= T2.C1 and T1.C2=T2.C2;

② SELECT A
FROM T1 INNER JOIN T2 ON T1.C1= T2.C1 and T1.C2=T2.C2;

③ SELECT A
FROM T1 JOIN T2 ON T1.C1= T2.C1 and T1.C2=T2.C2;

④ SELECT A
FROM T1 JOIN T2 USING (C1, C2);

SQL Join (ANSI synt.) cont'd

- OUTER 도 비슷한 Syntax 구조
- FROM table1 OUTER JOIN table2 ON table1.column = table2.column
OR FROM table1 [INNER] JOIN table2 USING (common_col_name)
- 여러 개 컬럼도 INNER JOIN과 같은 형식으로 확장. LEFT, FULL도 마찬가지 방식임

Examples:

① SELECT S.sid, R.bid
FROM Sailors S right outer join Reserves R / WHERE S.sid = R.sid;

② SELECT S.sname
FROM Sailors S RIGHT OUTER JOIN Reserves R ON S.sid = R.sid

③ SELECT S.sname
FROM Sailors S RIGHT OUTER JOIN Reserves R USING (sid)

④ SELECT A FROM T1 RIGHT OUTER JOIN T2 ON T1.C1= T2.C1 and T1.C2=T2.C2;

⑤ SELECT A FROM T1 RIGHT OUTER JOIN T2 USING (C1, C2);

(on : joined table에 조건 지정
where : join 후에 조건 지정
→ inner join은 where도 같지만
outer join은 where과 다를 수 있음! → 이차원
이 안쓰고 where도 해도 됨!

Nested Query in From clause

- Old SQL allowed nested queries in WHERE. In modern DBMS, You may have nested queries in FROM as well.

chap 05
Q36

Example (similar to Q36). Find the average age of sailors for each rating level that has at least two such sailors.

```
SELECT S.rating, AVG (S.age) AS avg_age
FROM Sailors S
GROUP BY S.rating
HAVING 1 < (SELECT COUNT(*)
             FROM Sailors S2
             WHERE S.rating=S2.rating);
```

이렇게 하면 안됨?

```
select s.rating, avg(s.age)
from sailors s
group by s.rating
having count(*)>1;
```

```
SELECT Temp.rating, Temp.avg_age AS avg_age
FROM (SELECT rating, AVG (S.age) AS avg_age, COUNT(*) AS ratingcount
      FROM Sailor S
      GROUP BY S.rating) AS Temp
WHERE Temp.ratingcount > 1
```

rating	avg_age	ratingcount
1	22.0	1
2		2
7		2
8		2
9		1
10		2

Nested Query in From clause

σ 행
 π 열

\bowtie |X| |Y| join 기호

- Old SQL allowed nested queries in WHERE. In modern DBMS, You may have nested queries in FROM as well.

```
SELECT sel_A
FROM T1, T2
WHERE cond_A
```

$\hookrightarrow \Pi_{\text{sel_A}} (\rho_{\text{cond_A}} (T1 \times T2))$

```
SELECT sel_A
FROM T1, (select sel_B from T2 where cond_B1) as T2_new
WHERE cond_B2
```

$\Pi_{\text{sel_A}} (\rho_{\text{cond_B2}} (T1 \times (\Pi_{\text{sel_B}} \rho_{\text{cond_B1}} T2)))$