

REPORT



과 목 :	데이터베이스이론및실습
제출일자 :	2024.04.01
담당교수 :	권기현
학 과 :	정보통신공학과
학 번 :	201920479
이 름 :	김행복

-- 8-1) FROM 절에 여러 테이블 선언하기

```
SELECT * from EMP, DEPT ORDER BY EMPNO;
```

SQL | 인출된 모든 행: 56(0.127초)

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO_1	DNA...	LOC
1	7369 SMITH	CLERK	7902	1980/12/17	800	(null)	20	40	OPERATIONS	BOSTON
2	7369 SMITH	CLERK	7902	1980/12/17	800	(null)	20	30	SALES	CHICAGO
3	7369 SMITH	CLERK	7902	1980/12/17	800	(null)	20	20	RESEARCH	DALLAS
4	7369 SMITH	CLERK	7902	1980/12/17	800	(null)	20	10	ACCOUNTING	NEW YORK
5	7499 ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	30	SALES	CHICAGO
6	7499 ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	10	ACCOUNTING	NEW YORK
7	7499 ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	20	RESEARCH	DALLAS
8	7499 ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	40	OPERATIONS	BOSTON
9	7521 WARD	SALESMAN	7698	1981/02/22	1250	500	30	30	SALES	CHICAGO
10	7521 WARD	SALESMAN	7698	1981/02/22	1250	500	30	10	ACCOUNTING	NEW YORK
11	7521 WARD	SALESMAN	7698	1981/02/22	1250	500	30	40	OPERATIONS	BOSTON
12	7521 WARD	SALESMAN	7698	1981/02/22	1250	500	30	20	RESEARCH	DALLAS

-- 8-2) 열 이름을 교하는 조건식으로 조인하기

```
SELECT * FROM EMP, DEPT
```

```
WHERE EMP.DEPTNO = DEPT.DEPTNO
```

```
ORDER BY EMPNO;
```

SQL | 인출된 모든 행: 14(0.062초)

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO_1	DNAME	LOC
3	7521 WARD	SALESMAN	7698	1981/02/22	1250	500	30	30	SALES	CHICAGO
4	7566 JONES	MANAGER	7839	1981/04/02	2975	(null)	20	20	RESEARCH	DALLAS
5	7654 MARTIN	SALESMAN	7698	1981/09/28	1250	1400	30	30	SALES	CHICAGO
6	7698 BLAKE	MANAGER	7839	1981/05/01	2850	(null)	30	30	SALES	CHICAGO
7	7782 CLARK	MANAGER	7839	1981/06/09	2450	(null)	10	10	ACCOUNTING	NEW YORK
8	7788 SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	20	RESEARCH	DALLAS
9	7839 KING	PRESIDENT	(null)	1981/11/17	5000	(null)	10	10	ACCOUNTING	NEW YORK
10	7844 TURNER	SALESMAN	7698	1981/09/08	1500	0	30	30	SALES	CHICAGO
11	7876 ADAMS	CLERK	7788	1983/01/12	1100	(null)	20	20	RESEARCH	DALLAS
12	7900 JAMES	CLERK	7698	1981/12/03	950	(null)	30	30	SALES	CHICAGO
13	7902 FORD	ANALYST	7566	1981/12/03	3000	(null)	20	20	RESEARCH	DALLAS
14	7934 MILLER	CLERK	7782	1982/01/23	1300	(null)	10	10	ACCOUNTING	NEW YORK

-- 8-3) 테이블 이름을 별칭으로 표현하기

```
SELECT * FROM EMP E, DEPT D
```

```
WHERE E.DEPTNO = D.DEPTNO
```

```
ORDER BY EMPNO;
```

SQL | 인출된 모든 행: 14(0.036초)

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO_1	DNAME	LOC
1	7369	SMITH	CLERK	7902	1980/12/17	800	(null)	20	20	RESEARCH	DALLAS
2	7499	ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	30	SALES	CHICAGO
3	7521	WARD	SALESMAN	7698	1981/02/22	1250	500	30	30	SALES	CHICAGO
4	7566	JONES	MANAGER	7839	1981/04/02	2975	(null)	20	20	RESEARCH	DALLAS
5	7654	MARTIN	SALESMAN	7698	1981/09/28	1250	1400	30	30	SALES	CHICAGO
6	7698	BLAKE	MANAGER	7839	1981/05/01	2850	(null)	30	30	SALES	CHICAGO
7	7782	CLARK	MANAGER	7839	1981/06/09	2450	(null)	10	10	ACCOUNTING	NEW YORK
8	7788	SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	20	RESEARCH	DALLAS
9	7839	KING	PRESIDENT	(null)	1981/11/17	5000	(null)	10	10	ACCOUNTING	NEW YORK
10	7844	TURNER	SALESMAN	7698	1981/09/08	1500	0	30	30	SALES	CHICAGO
11	7876	ADAMS	CLERK	7788	1983/01/12	1100	(null)	20	20	RESEARCH	DALLAS
12	7900	JAMES	CLERK	7698	1981/12/03	950	(null)	30	30	SALES	CHICAGO

-- 8-4) 두 테이블에 부서 번호가 똑같은 열 이름으로 포함되어 있을 때

```
SELECT EMPNO, ENAME, DEPTNO, DNAME, LOC
```

```
FROM EMP E, DEPT D
```

```
WHERE E.DEPTNO = D.DEPTNO;
```

ORA-00918: 열의 정의가 애매합니다
00918. 00000 - "column ambiguously defined"
***Cause:**
***Action:**
15행, 22열에서 오류 발생





-- 8-5) 열 이름에 각각의 테이블 이름도 함께 명시할 때

```
SELECT E.EMPNO, E.ENAME, D.DEPTNO, D.DNAME, D.LOC
```

```
FROM EMP E, DEPT D
```

```
WHERE E.DEPTNO = D.DEPTNO
```

```
ORDER BY D.DEPTNO, E.EMPNO;
```

    **SQL** | 인출된 모든 행: 14(0.112초)

	EMPNO	ENAME	DEPTNO	DNAME	LOC
1	7782	CLARK	10	ACCOUNTING	NEW YORK
2	7839	KING	10	ACCOUNTING	NEW YORK
3	7934	MILLER	10	ACCOUNTING	NEW YORK
4	7369	SMITH	20	RESEARCH	DALLAS
5	7566	JONES	20	RESEARCH	DALLAS
6	7788	SCOTT	20	RESEARCH	DALLAS
7	7876	ADAMS	20	RESEARCH	DALLAS
8	7902	FORD	20	RESEARCH	DALLAS
9	7499	ALLEN	30	SALES	CHICAGO
10	7521	WARD	30	SALES	CHICAGO
11	7654	MARTIN	30	SALES	CHICAGO
12	7698	BLAKE	30	SALES	CHICAGO

-- 8-6) WHERE절에 추가로 조건식 넣어 출력하기

```
SELECT E.EMPNO, E.ENAME, E.SAL, D.DEPTNO, D.DNAME, D.LOC
```

```
FROM EMP E, DEPT D
```

```
WHERE E.DEPTNO = D.DEPTNO
```


```
AND SAL >= 3000;
```

	EMPNO	ENAME	SAL	DEPTNO	DNAME	LOC
1	7839	KING	5000	10	ACCOUNTING	NEW YORK
2	7788	SCOTT	3000	20	RESEARCH	DALLAS
3	7902	FORD	3000	20	RESEARCH	DALLAS

-- 8-7) 급여 범위를 지정하는 조건식으로 조인하기

```
SELECT * FROM EMP E, SALGRADE S
```

```
WHERE E.SAL BETWEEN S.LOSAL AND S.HISAL;
```

 SQL | 인출된 모든 행: 14(0.034초)


	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	GRADE	LOSAL	HISAL
1	7369	SMITH	CLERK	7902	1980/12/17	800	(null)	20	1	700	1200
2	7876	ADAMS	CLERK	7788	1983/01/12	1100	(null)	20	1	700	1200
3	7900	JAMES	CLERK	7698	1981/12/03	950	(null)	30	1	700	1200
4	7521	WARD	SALESMAN	7698	1981/02/22	1250	500	30	2	1201	1400
5	7654	MARTIN	SALESMAN	7698	1981/09/28	1250	1400	30	2	1201	1400
6	7934	MILLER	CLERK	7782	1982/01/23	1300	(null)	10	2	1201	1400
7	7499	ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	3	1401	2000
8	7844	TURNER	SALESMAN	7698	1981/09/08	1500	0	30	3	1401	2000
9	7566	JONES	MANAGER	7839	1981/04/02	2975	(null)	20	4	2001	3000
10	7698	BLAKE	MANAGER	7839	1981/05/01	2850	(null)	30	4	2001	3000
11	7782	CLARK	MANAGER	7839	1981/06/09	2450	(null)	10	4	2001	3000
12	7788	SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	4	2001	3000

-- 8-8) 같은 테이블을 두 번 사용하여 자체 조인하기

```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_NAME
```

```
FROM EMP E1, EMP E2
```

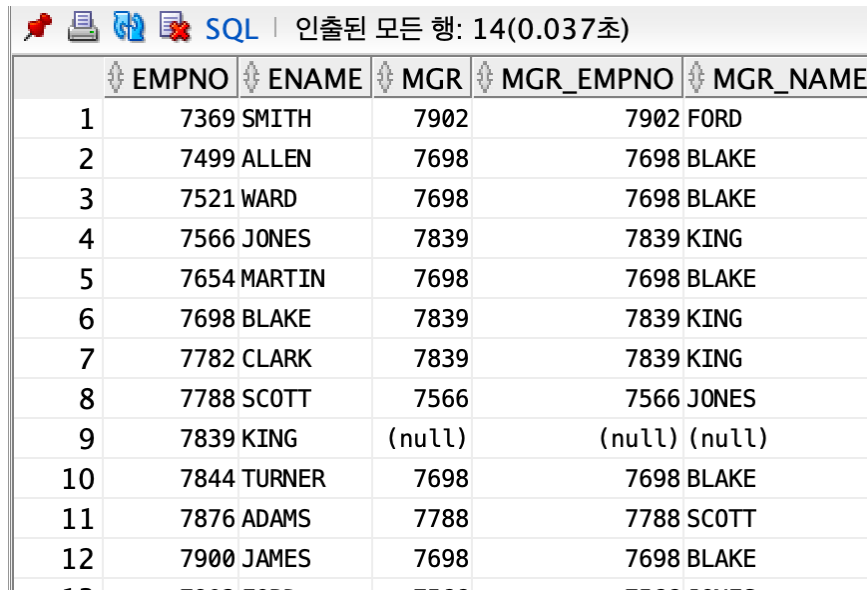
```
WHERE E1.MGR = E2.MGR;
```

 SQL | 인출된 모든 행: 41(0.036초)

	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_NAME
1	7369	SMITH	7902	7369	SMITH
2	7499	ALLEN	7698	7499	ALLEN
3	7521	WARD	7698	7499	ALLEN
4	7654	MARTIN	7698	7499	ALLEN
5	7844	TURNER	7698	7499	ALLEN
6	7900	JAMES	7698	7499	ALLEN
7	7499	ALLEN	7698	7521	WARD
8	7521	WARD	7698	7521	WARD
9	7654	MARTIN	7698	7521	WARD
10	7844	TURNER	7698	7521	WARD
11	7900	JAMES	7698	7521	WARD
12	7566	JONES	7839	7566	JONES

-- 8-9) 왼쪽 외부 조인 사용하기

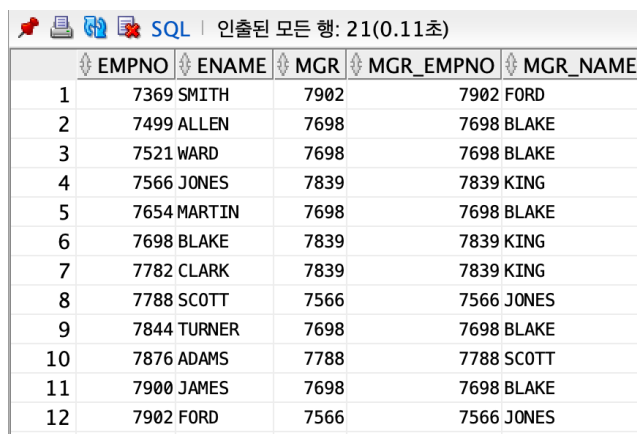
```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_NAME  
  
FROM EMP E1, EMP E2  
  
WHERE E1.MGR = E2.EMPNO(+)  
  
ORDER BY E1.EMPNO;
```



	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_NAME
1	7369	SMITH	7902	7902	FORD
2	7499	ALLEN	7698	7698	BLAKE
3	7521	WARD	7698	7698	BLAKE
4	7566	JONES	7839	7839	KING
5	7654	MARTIN	7698	7698	BLAKE
6	7698	BLAKE	7839	7839	KING
7	7782	CLARK	7839	7839	KING
8	7788	SCOTT	7566	7566	JONES
9	7839	KING	(null)	(null)	(null)
10	7844	TURNER	7698	7698	BLAKE
11	7876	ADAMS	7788	7788	SCOTT
12	7900	JAMES	7698	7698	BLAKE

-- 8-10) 오른쪽 외부 조인 사용하기

```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_NAME  
  
FROM EMP E1, EMP E2  
  
WHERE E1.MGR(+) = E2.EMPNO  
  
ORDER BY E1.EMPNO;
```



	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_NAME
1	7369	SMITH	7902	7902	FORD
2	7499	ALLEN	7698	7698	BLAKE
3	7521	WARD	7698	7698	BLAKE
4	7566	JONES	7839	7839	KING
5	7654	MARTIN	7698	7698	BLAKE
6	7698	BLAKE	7839	7839	KING
7	7782	CLARK	7839	7839	KING
8	7788	SCOTT	7566	7566	JONES
9	7844	TURNER	7698	7698	BLAKE
10	7876	ADAMS	7788	7788	SCOTT
11	7900	JAMES	7698	7698	BLAKE
12	7902	FORD	7566	7566	JONES

-- 8-11) NATURAL JOIN 사용하여 조인하기

```
SELECT E.EMPNO, E.ENAME, E.JOB, E.MGR, E.HIREDATE, E.SAL, E.COMM, DEPTNO, D.DNAME, D.LOC
FROM EMP E NATURAL JOIN DEPT D
ORDER BY DEPTNO, E.EMPNO;
```

SQL | 인출된 모든 행: 14(0.036초)

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DNAME	LOC
1	7782	CLARK	MANAGER	7839	1981/06/09	2450	(null)	10	ACCOUNTING	NEW YORK
2	7839	KING	PRESIDENT	(null)	1981/11/17	5000	(null)	10	ACCOUNTING	NEW YORK
3	7934	MILLER	CLERK	7782	1982/01/23	1300	(null)	10	ACCOUNTING	NEW YORK
4	7369	SMITH	CLERK	7902	1980/12/17	800	(null)	20	RESEARCH	DALLAS
5	7566	JONES	MANAGER	7839	1981/04/02	2975	(null)	20	RESEARCH	DALLAS
6	7788	SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	RESEARCH	DALLAS
7	7876	ADAMS	CLERK	7788	1983/01/12	1100	(null)	20	RESEARCH	DALLAS
8	7902	FORD	ANALYST	7566	1981/12/03	3000	(null)	20	RESEARCH	DALLAS
9	7499	ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	SALES	CHICAGO
10	7521	WARD	SALESMAN	7698	1981/02/22	1250	500	30	SALES	CHICAGO
11	7654	MARTIN	SALESMAN	7698	1981/09/28	1250	1400	30	SALES	CHICAGO
12	7698	BLAKE	MANAGER	7839	1981/05/01	2850	(null)	30	SALES	CHICAGO

-- 8-12) JOIN ~ USING을 사용하여 조인하기

```
SELECT E.EMPNO, E.ENAME, E.JOB, E.MGR, E.HIREDATE, E.SAL, E.COMM, DEPTNO, D.DNAME, D.LOC
FROM EMP E JOIN DEPT D USING(DEPTNO)
WHERE SAL >= 3000
ORDER BY DEPTNO, E.EMPNO;
```

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DNAME	LOC
1	7839	KING	PRESIDENT	(null)	1981/11/17	5000	(null)	10	ACCOUNTING	NEW YORK
2	7788	SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	RESEARCH	DALLAS
3	7902	FORD	ANALYST	7566	1981/12/03	3000	(null)	20	RESEARCH	DALLAS

-- 8-13) JOIN ~ ON으로 등가 조인하기

```
SELECT E.EMPNO, E.ENAME, E.JOB, E.MGR, E.HIREDATE, E.SAL, E.COMM, E.DEPTNO, D.DNAME, D.LOC
FROM EMP E JOIN DEPT D ON(E.DEPTNO = D.DEPTNO)

WHERE SAL <= 3000

ORDER BY DEPTNO, E.EMPNO;
```

SQL | 인출된 모든 행: 13(0.03초)

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DNAME	LOC
1	7782	CLARK	MANAGER	7839	1981/06/09	2450	(null)	10	ACCOUNTING	NEW YORK
2	7934	MILLER	CLERK	7782	1982/01/23	1300	(null)	10	ACCOUNTING	NEW YORK
3	7369	SMITH	CLERK	7902	1980/12/17	800	(null)	20	RESEARCH	DALLAS
4	7566	JONES	MANAGER	7839	1981/04/02	2975	(null)	20	RESEARCH	DALLAS
5	7788	SCOTT	ANALYST	7566	1982/12/09	3000	(null)	20	RESEARCH	DALLAS
6	7876	ADAMS	CLERK	7788	1983/01/12	1100	(null)	20	RESEARCH	DALLAS
7	7902	FORD	ANALYST	7566	1981/12/03	3000	(null)	20	RESEARCH	DALLAS
8	7499	ALLEN	SALESMAN	7698	1981/02/20	1600	300	30	SALES	CHICAGO
9	7521	WARD	SALESMAN	7698	1981/02/22	1250	500	30	SALES	CHICAGO
10	7654	MARTIN	SALESMAN	7698	1981/09/28	1250	1400	30	SALES	CHICAGO
11	7698	BLAKE	MANAGER	7839	1981/05/01	2850	(null)	30	SALES	CHICAGO
12	7844	TURNER	SALESMAN	7698	1981/09/08	1500	0	30	SALES	CHICAGO

-- 8-14) 왼쪽 외부 조인을 SQL-99로 작성하기

```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_ENAME
FROM EMP E1 LEFT OUTER JOIN EMP E2 ON (E1.MGR = E2.EMPNO)

ORDER BY E1.EMPNO;
```

SQL | 인출된 모든 행: 14(0.148초)

	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_ENAME
1	7369	SMITH	7902	7902	FORD
2	7499	ALLEN	7698	7698	BLAKE
3	7521	WARD	7698	7698	BLAKE
4	7566	JONES	7839	7839	KING
5	7654	MARTIN	7698	7698	BLAKE
6	7698	BLAKE	7839	7839	KING
7	7782	CLARK	7839	7839	KING
8	7788	SCOTT	7566	7566	JONES
9	7839	KING	(null)	(null)	(null)
10	7844	TURNER	7698	7698	BLAKE
11	7876	ADAMS	7788	7788	SCOTT
12	7900	JAMES	7698	7698	BLAKE

-- 8-15) 왼쪽 외부 조인을 SQL-99로 작성하기

```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_ENAME
FROM EMP E1 RIGHT OUTER JOIN EMP E2 ON (E1.MGR = E2.EMPNO)

ORDER BY E1.EMPNO;
```

SQL | 인출된 모든 행: 21(0.037초)

	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_ENAME
1	7369	SMITH	7902	7902	FORD
2	7499	ALLEN	7698	7698	BLAKE
3	7521	WARD	7698	7698	BLAKE
4	7566	JONES	7839	7839	KING
5	7654	MARTIN	7698	7698	BLAKE
6	7698	BLAKE	7839	7839	KING
7	7782	CLARK	7839	7839	KING
8	7788	SCOTT	7566	7566	JONES
9	7844	TURNER	7698	7698	BLAKE
10	7876	ADAMS	7788	7788	SCOTT
11	7900	JAMES	7698	7698	BLAKE
12	7902	FORD	7566	7566	JONES

-- 8-16) 전체 외부 조인을 SQL-99로 작성하기

```
SELECT E1.EMPNO, E1.ENAME, E1.MGR, E2.EMPNO AS MGR_EMPNO, E2.ENAME AS MGR_ENAME
FROM EMP E1 FULL OUTER JOIN EMP E2 ON (E1.MGR = E2.EMPNO)

ORDER BY E1.EMPNO;
```

	EMPNO	ENAME	MGR	MGR_EMPNO	MGR_ENAME
1	7369	SMITH	7902	7902	FORD
2	7499	ALLEN	7698	7698	BLAKE
3	7521	WARD	7698	7698	BLAKE
4	7566	JONES	7839	7839	KING
5	7654	MARTIN	7698	7698	BLAKE
6	7698	BLAKE	7839	7839	KING
7	7782	CLARK	7839	7839	KING
8	7788	SCOTT	7566	7566	JONES
9	7839	KING	(null)	(null)	(null)
10	7844	TURNER	7698	7698	BLAKE
11	7876	ADAMS	7788	7788	SCOTT
12	7900	JAMES	7698	7698	BLAKE