

## ■STEP1. BASIC

- 필요한 데이터만 출력

### Q001

- EMP테이블의 모든 열을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
9	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
10	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
11	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
12	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
13	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
14	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```
SELECT *  
FROM EMP
```

### Q002

- EMP테이블에서 부서번호가 30인 데이터만 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
4	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30

```

SELECT *
FROM EMP
WHERE DEPTNO = 30;

```

### Q003

- EMP테이블에서 AND를 이용하여 부서번호가 30이고 JOB이 'SALESMAN' 인 데이터만 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
2	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
3	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
4	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30

```

SELECT *
FROM EMP
WHERE DEPTNO = 30
AND JOB = 'SALESMAN';

```

#### Q004

- EMP테이블에서 OR를 이용하여 부서번호가 30이거나 JOB이 'CLERK' 인 데이터만 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
4	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
7	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
8	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
9	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE DEPTNO = 30
      OR JOB = 'CLERK';

```

#### Q005

- EMP테이블에서 SAL 열에 12를 곱한값이 36000인 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
2	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```
SELECT *
FROM EMP
WHERE SAL * 12 = 36000;
```

#### Q006

- EMP테이블에서 SAL 열이 3000이상인 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
3	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```

SELECT *
FROM EMP
WHERE SAL >= 3000;

```

### Q007

- EMP테이블에서 ENAME 열의 첫문자가 F와 같거나 뒤에 있는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
3	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
4	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
7	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
8	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
9	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
10	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```
SELECT *
FROM EMP
WHERE ENAME >= 'F';
```

#### Q008

- EMP테이블에서 ENAME 열의 문자열이 첫문자 F, 두번째 문자 O, 세번째 문자 R, 네번째문자열이 Z 인 문자열보다 앞에 있는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
4	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
5	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20

```

SELECT *
FROM EMP
WHERE ENAME <= 'FORZ';

```

### Q009

- EMP테이블에서 != 를 이용하여 SAL열이 3000이 아닌 행을 조회하시오.



	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
9	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
12	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE SAL != 3000;

```

## Q010

- EMP테이블에서 <> 를 이용하여 SAL열이 3000이 아닌 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
9	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
12	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE SAL <> 3000;

```

## Q011

- EMP테이블에서 ^= 를 이용하여 SAL열이 3000이 아닌 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
9	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
12	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE SAL <= 3000;

```

## Q012

- EMP테이블에서 NOT를 이용하여 SAL열이 3000이 아닌 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
9	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
12	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE NOT SAL = 3000;

```

### Q013

- EMP테이블에서 OR 를 이용하여 JOB 열이 'MANAGER' , 'SALESMAN' , 'CLERK' 중 하나라도 포함되는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
4	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
5	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
6	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
7	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
8	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
9	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
10	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
11	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE JOB = 'MANAGER'
OR JOB = 'SALESMAN'
OR JOB = 'CLERK';

```

#### Q014

- EMP테이블에서 IN 를 이용하여 JOB 열이 'MANAGER' , 'SALESMAN' , 'CLERK' 중 하나라도 포함되는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
4	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
5	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
6	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
7	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
8	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
9	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
10	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
11	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE JOB IN ('MANAGER', 'SALESMAN', 'CLERK');

```

### Q015

- EMP테이블에서 등가연산자(!=, <>, ^=)와 AND 를 이용하여 JOB 열이 'MANAGER', 'SALESMAN', 'CLERK' 중 하나라도 포함되지않는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
3	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```

SELECT *
FROM EMP
WHERE JOB != 'MANAGER'
AND JOB <> 'SALESMAN'
AND JOB ^= 'CLERK';

```

#### Q016

- EMP테이블에서 NOT IN 를 이용하여 JOB 열이 'MANAGER' , 'SALESMAN' , 'CLERK' 중 하나라도 포함되지 않는 행을 조회하시오.



	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
3	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```

SELECT *
FROM EMP
WHERE JOB NOT IN ('MANAGER', 'SALESMAN', 'CLERK');

```

### Q017

- EMP테이블에서 대소비교연산자(<=, >=) and 를 이용하여 sal 열이 2000이상 3000이하인인 행을 조회 하시오.



	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
4	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
5	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```

SELECT *
FROM EMP
WHERE SAL >= 2000
AND SAL <= 3000;

```

### Q018

- EMP테이블에서 BETWEEN AND 를 이용하여 sal 열이 2000이상 3000이하인 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
4	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
5	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```
SELECT *
FROM EMP
WHERE SAL BETWEEN 2000 AND 3000;
```

### Q019

- EMP테이블에서 NOT BETWEEN AND 를 이용하여 sal 열이 2000이상 3000이하인 사이 이외의 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
4	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
7	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
8	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
9	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE SAL NOT BETWEEN 2000 AND 3000;

```

## Q020

- EMP테이블에서 ENAME이 S로 시작하는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
2	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20

```
SELECT *
FROM EMP
WHERE ENAME LIKE 'S%';
```

## Q021

- EMP테이블에서 ENAME의 두번째 글자가 L인 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30

```
SELECT *
FROM EMP
WHERE ENAME LIKE '_L%';
```

## Q022

- EMP테이블에서 ENAME에 AN이 포함되어 있는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
2	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20

```
SELECT *
FROM EMP
WHERE ENAME LIKE '%AM%';
```

### Q023

- EMP테이블에서 ENAME에 AN이 포함되어 있지 않는 행을 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
6	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
7	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
8	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
9	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
12	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE ENAME NOT LIKE '%AM%';

```

#### Q024

- EMP테이블에서 별칭을 사용하여 다음과 같이 '연간총수입' 행을 조회하시오.

	ENAME	SAL	ANNSAL	COMM
1	KING	5000	(null)	(null)
2	BLAKE	2850	(null)	(null)
3	CLARK	2450	(null)	(null)
4	JONES	2975	(null)	(null)
5	MARTIN	1250	16400	1400
6	ALLEN	1600	19500	300
7	TURNER	1500	18000	0
8	JAMES	950	(null)	(null)
9	WARD	1250	15500	500
10	FORD	3000	(null)	(null)
11	SMITH	800	(null)	(null)
12	SCOTT	3000	(null)	(null)
13	ADAMS	1100	(null)	(null)
14	MILLER	1300	(null)	(null)

```
SELECT ENAME, SAL, SAL*12+COMM AS ANNSAL, COMM
FROM EMP;
```

#### Q025 # 코드 확인

- NULL의 의미
- 비어 있는 상태, 현재 무슨 값인지 확정 되지 않은 상태, 값 자체가 존재하지 않은 상태
- NULL과 비교연산자(=) 와 같이 사용하면 안됨.
- 어떤값인지 모르므로 작은지, 큰지 모르기 때문에 값이 안나옴.





	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
7	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
8	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
9	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
10	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE COMM IS NULL;

```

## Q027

- EMP테이블에서 직송상관이 있는데이터만 조회하시오
- MGR열이 NULL 이 아닌 행조회

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
2	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
3	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
4	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
5	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
6	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
7	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
8	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
9	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
10	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
11	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
12	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
13	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```
SELECT *
FROM EMP
WHERE MGR IS NOT NULL;
```

**Q028 # 코드 확인 - 되는 코드는?**

- 있는지 없는지만 판단.
- 다음코드를 해석하시오.

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DE
1	SCOTT	ANALYST	7566	1987-06-19	3000	0.12	DEPT
2	ADAMS	CLERK	7566	1987-06-23	1100	0.14	DEPT
3	JONES	MANAGER	7566	1987-06-23	2800	0.09	DEPT
4	BLAKE	MANAGER	7566	1987-06-23	2400	0.09	DEPT
5	WATSON	CLERK	7566	1987-06-23	1300	0.14	DEPT
6	SCOTT	ANALYST	7566	1987-06-23	3000	0.12	DEPT
7	ADAMS	CLERK	7566	1987-06-23	1100	0.14	DEPT
8	JONES	MANAGER	7566	1987-06-23	2800	0.09	DEPT
9	BLAKE	MANAGER	7566	1987-06-23	2400	0.09	DEPT
10	WATSON	CLERK	7566	1987-06-23	1300	0.14	DEPT

```
SELECT *
FROM EMP
WHERE SAL > NULL
AND COMM IS NULL;
```

### Q029 # 코드 확인 - 되는 코드는?

- 있는지 없는지만 판단.
- 다음코드를 해석하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7698	BLAKE	MANAGER	7839	81/05/01	2850	(null)	30
3	7782	CLARK	MANAGER	7839	81/05/09	2450	(null)	10
4	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7902	FORD	ANALYST	7566	81/12/11	3000	(null)	20
7	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
8	7788	SCOTT	ANALYST	7566	82/12/22	3000	(null)	20
9	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
10	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

```

SELECT *
FROM EMP
WHERE SAL > NULL
OR COMM IS NULL;

```

#### Q030 # 코드 확인

- UNION을 이용하여 DEPTNO가 10이거나, 20인 데이터의 EMPNO, ENAME, SAL, DEPTNO 열을 조회하시오.

	EMPNO	ENAME	SAL	DEPTNO
1	7369	SMITH	800	20
2	7566	JONES	2975	20
3	7782	CLARK	2450	10
4	7788	SCOTT	3000	20
5	7839	KING	5000	10
6	7876	ADAMS	1100	20
7	7902	FORD	3000	20
8	7934	MILLER	1300	10

```
SELECT EMPNO, ENAME, SAL, DEPTNO
FROM EMP
WHERE DEPTNO = 10
UNION
```

```
SELECT EMPNO, ENAME, SAL, DEPTNO
FROM EMP
WHERE DEPTNO = 20;
```

**Q031 # 코드 확인 - 에러가 나는 이유는?**

- 열의 갯수가 다를때

ORA-01789: query block has incorrect number of result columns

<https://docs.oracle.com/error-help/db/ora-01789/01789, 00000> - "query block has incorrect number of result columns"

\*Cause: All of the queries participating in a set expression do not contain the same number of SELECT list columns.  
\*Action: Check that all the queries in the set expression have the same number of SELECT list columns.

```
SELECT EMPNO, ENAME, SAL, DEPTNO
FROM EMP
WHERE DEPTNO = 10
UNION
SELECT EMPNO, ENAME, SAL
FROM EMP
WHERE DEPTNO = 20;
```

**Q032 # 코드 확인 - 에러가 나는 이유는?**

- 자료형이 다를때때

ORA-01790: expression must have same datatype as corresponding expression

<https://docs.oracle.com/error-help/db/ora-01790/01790, 00000> - "expression must have same datatype as

\*Cause: A SELECT list item corresponds to a SELECT list item with a different datatype in another query of the same set expression.

\*Action: Check that all corresponding SELECT list items have the same datatypes. Use the TO\_NUMBER, TO\_CHAR, and TO\_DATE functions to do explicit data conversions.

172행, 8열에서 오류 발생

```
SELECT EMPNO, ENAME, SAL, DEPTNO
```

```
FROM EMP
```

```
WHERE DEPTNO = 10
```

```
UNION
```

```
SELECT ENAME, EMPNO, DEPTNO, SAL
```

```
FROM EMP
```

```
WHERE DEPTNO = 20;
```

**Q033 # 코드 확인 - 동작하는 이유는?**

- 출력 열개수와 자료형이 같으므로 동작가능!



	EMPNO	ENAME	SAL	DEPTNO
1	800	CLERK	20	800
2	1100	CLERK	20	1100
3	2975	MANAGER	20	2975
4	3000	ANALYST	20	3000
5	7782	CLARK	2450	10
6	7839	KING	5000	10
7	7934	MILLER	1300	10

```

SELECT EMPNO, ENAME, SAL, DEPTNO
  FROM EMP
 WHERE DEPTNO = 10
UNION
SELECT SAL, JOB, DEPTNO, SAL
  FROM EMP
 WHERE DEPTNO = 20;

```

#### Q034 코드 확인

- UNION과 UNION ALL의 차이는?

	EMPNO	ENAME	SAL	DEPTNO
1	7782	CLARK	2450	10
2	7839	KING	5000	10
3	7934	MILLER	1300	10

```
SELECT EMPNO, ENAME, SAL, DEPTNO
```

```
FROM EMP
```

```
WHERE DEPTNO = 10
```

```
UNION
```

```
SELECT EMPNO, ENAME, SAL, DEPTNO
```

```
FROM EMP
```

```
WHERE DEPTNO = 10;
```

### Q035 코드 확인

- UNION과 UNION ALL의 차이는?

	EMPNO	ENAME	SAL	DEPTNO
1	7839	KING	5000	10
2	7782	CLARK	2450	10
3	7934	MILLER	1300	10
4	7839	KING	5000	10
5	7782	CLARK	2450	10
6	7934	MILLER	1300	10

```

SELECT EMPNO, ENAME, SAL, DEPTNO
  FROM EMP
 WHERE DEPTNO = 10
UNION ALL
SELECT EMPNO, ENAME, SAL, DEPTNO
  FROM EMP
 WHERE DEPTNO = 10;

```

#### Q036 코드 확인

- MINUS의 의미는?
- EMP테이블 전체행을 조회한 첫번째 SELECT문의 결과에서 10번부서에 있는 사원데이터를 제외한 결과 값

	EMPNO	ENAME	SAL	DEPTNO
1	7369	SMITH	800	20
2	7499	ALLEN	1600	30
3	7521	WARD	1250	30
4	7566	JONES	2975	20
5	7654	MARTIN	1250	30
6	7698	BLAKE	2850	30
7	7788	SCOTT	3000	20
8	7844	TURNER	1500	30
9	7876	ADAMS	1100	20
10	7900	JAMES	950	30
11	7902	FORD	3000	20

```
SELECT EMPNO, ENAME, SAL, DEPTNO
```

```
FROM EMP
```

```
MINUS
```

```
SELECT EMPNO, ENAME, SAL, DEPTNO
```

```
FROM EMP
```

```
WHERE DEPTNO = 10;
```

### Q037 코드 확인

- INTERSECT 의미는? 교집합
- 두 SELECT 문의 결과값이 같은데이터만 출력

	EMPNO	ENAME	SAL	DEPTNO
1	7782	CLARK	2450	10
2	7839	KING	5000	10
3	7934	MILLER	1300	10

```
SELECT EMPNO, ENAME, SAL, DEPTNO
FROM EMP
INTERSECT
SELECT EMPNO, ENAME, SAL, DEPTNO
FROM EMP
WHERE DEPTNO = 10;
```

## ■STEP2.

### EX001

- EMP테이블에서 ENAME이 S로 끝나는 사원데이터를 모두 조회하시오

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
2	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
3	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20

## EX002

- EMP테이블에서 DEPTNO가 30인 사원 중 직책이(JOB)이 SALESMAN 인 사원의 EMPNO, ENAME, JOB, SAL, DEPTNO를 조회하시오

	EMPNO	ENAME	JOB	SAL	DEPTNO
1	7654	MARTIN	SALESMAN	1250	30
2	7499	ALLEN	SALESMAN	1600	30
3	7844	TURNER	SALESMAN	1500	30
4	7521	WARD	SALESMAN	1250	30

### EX003

-- 집합연산자( UNION을 )를 사용하지 않은 방식

- EMP테이블에서 IN 연산자를 이용하여 DEPTNO 가 20 또는 30인 사원의 SAL이 2000 초과인 사원을 조회하시오

	EMPNO	ENAME	JOB	SAL	DEPTNO
1	7698	BLAKE	MANAGER	2850	30
2	7566	JONES	MANAGER	2975	20
3	7902	FORD	ANALYST	3000	20
4	7788	SCOTT	ANALYST	3000	20

-- 집합연산자( UNION을 )를 사용한 방식

- EMP테이블에서 IN 연산자를 이용하여 DEPTNO 가 20 또는 30인 사원의 SAL이 2000 초과인 사원을 조회하시오

	EMPNO	ENAME	JOB	SAL	DEPTNO
1	7698	BLAKE	MANAGER	2850	30
2	7566	JONES	MANAGER	2975	20
3	7902	FORD	ANALYST	3000	20
4	7788	SCOTT	ANALYST	3000	20

#### EX004

- EMP테이블에서 NOT BETWEEN AND 연산자를 사용하지 않고 SAL이 2000이상 3000이하의 값을 가진 데이터만 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7839	KING	PRESIDENT	(null)	81/11/17	5000	(null)	10
2	7654	MARTIN	SALESMAN	7698	81/09/10	1250	1400	30
3	7499	ALLEN	SALESMAN	7698	81/02/11	1600	300	30
4	7844	TURNER	SALESMAN	7698	81/08/21	1500	0	30
5	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
6	7521	WARD	SALESMAN	7698	81/02/23	1250	500	30
7	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
8	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
9	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10



### EX005

- EMP테이블에서 ENAME에 E가 포함되고 DEPTNO가 30인 사원의 급여가 1000~2000사이가 아닌 사원의 ENAME, EMPNO, SAL, DEPTNO 를 조회하시오.

	ENAME	EMPNO	SAL	DEPTNO
1	BLAKE	7698	2850	30
2	JAMES	7900	950	30

### EX006

- EMP테이블에서 COMM 이 없고 , MGR은 존재하면 JOB 이 'MANAGER', 'CLERK' 인 사원 중 사원의 이름2번째 글자 L 이 아닌 사원의 정보를 조회하시오.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7566	JONES	MANAGER	7839	81/04/01	2975	(null)	20
2	7900	JAMES	CLERK	7698	81/12/11	950	(null)	30
3	7369	SMITH	CLERK	7902	80/12/09	800	(null)	20
4	7876	ADAMS	CLERK	7788	83/01/15	1100	(null)	20
5	7934	MILLER	CLERK	7782	82/01/11	1300	(null)	10

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