**데이터베이스 시스템 과제물 제출**

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**[문제 1] GROUPBY와 CUBE 비교**

(1)

SQL> SELECT deptno, job, ROUND(AVG(sal),1) AVG\_SAL, COUNT(\*) CNT\_EMP

2 FROM emp

3 GROUP BY deptno, CUBE(job);

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

10 3600 2

10 3190 5

10 CLERK 1300 1

10 MANAGER 2450 1

10 PRESIDENT 5000 1

20 2175 5

20 CLERK 950 2

20 ANALYST 3000 2

20 MANAGER 2975 1

30 3000 1

30 1771.4 7

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

30 CLERK 950 1

30 MANAGER 2850 1

30 SALESMAN 1400 4

(3)

SQL> SELECT deptno, job, ROUND(AVG(sal),1) AVG\_SAL, COUNT(\*) CNT\_EMP

2 FROM emp

3 GROUP BY deptno, ROLLUP(job);

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

10 3600 2

10 CLERK 1300 1

10 MANAGER 2450 1

10 PRESIDENT 5000 1

10 3190 5

20 CLERK 950 2

20 ANALYST 3000 2

20 MANAGER 2975 1

20 2175 5

30 3000 1

30 CLERK 950 1

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

30 MANAGER 2850 1

30 SALESMAN 1400 4

30 1771.4 7

(2)

SQL> SELECT deptno, job, ROUND(AVG(sal),1) AVG\_SAL, COUNT(\*) CNT\_EMP

2 FROM emp

3 GROUP BY job, CUBE(deptno);

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

3400 3

10 3600 2

30 3000 1

CLERK 1037.5 4

10 CLERK 1300 1

20 CLERK 950 2

30 CLERK 950 1

ANALYST 3000 2

20 ANALYST 3000 2

MANAGER 2758.3 3

10 MANAGER 2450 1

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

20 MANAGER 2975 1

30 MANAGER 2850 1

SALESMAN 1400 4

30 SALESMAN 1400 4

PRESIDENT 5000 1

10 PRESIDENT 5000 1

(4)

SQL> SELECT deptno, job, ROUND(AVG(sal),1) AVG\_SAL, COUNT(\*) CNT\_EMP

2 FROM emp

3 GROUP BY job, ROLLUP(deptno);

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

10 3600 2

30 3000 1

3400 3

10 CLERK 1300 1

20 CLERK 950 2

30 CLERK 950 1

CLERK 1037.5 4

20 ANALYST 3000 2

ANALYST 3000 2

10 MANAGER 2450 1

20 MANAGER 2975 1

DEPTNO JOB AVG\_SAL CNT\_EMP

---------- --------- ---------- ----------

30 MANAGER 2850 1

MANAGER 2758.3 3

30 SALESMAN 1400 4

SALESMAN 1400 4

10 PRESIDENT 5000 1

PRESIDENT 5000 1

**결과에 차이가 있는 것을 확인하였습니다.**

**[문제2] 전체를 GROUPBY 했을 경우 실습**

(1)

SQL> SELECT deptno, job, sal

2 FROM emp

3 GROUP BY GROUPING SETS(deptno, ROLLUP(job,sal));

DEPTNO JOB SAL

---------- --------- ----------

3000

3600

CLERK 800

CLERK 1100

CLERK 1300

CLERK 950

CLERK

ANALYST 3000

ANALYST

MANAGER 2450

DEPTNO JOB SAL

---------- --------- ----------

MANAGER 2850

MANAGER 2975

MANAGER

SALESMAN 1500

SALESMAN 1600

SALESMAN 1250

SALESMAN

PRESIDENT 5000

PRESIDENT

10

20

DEPTNO JOB SAL

---------- --------- ----------

30

(2)

SQL> SELECT deptno, NULL job, NULL sal

2 FROM emp

3 GROUP BY deptno

4 UNION ALL

5 SELECT NULL deptno, job, sal

6 FROM emp

7 GROUP BY ROLLUP(job,sal);

DEPTNO JOB SAL

---------- --------- ----------

30

20

10

3000

3600

CLERK 800

CLERK 1100

CLERK 1300

CLERK 950

CLERK

DEPTNO JOB SAL

---------- --------- ----------

ANALYST 3000

ANALYST

MANAGER 2450

MANAGER 2850

MANAGER 2975

MANAGER

SALESMAN 1500

SALESMAN 1600

SALESMAN 1250

SALESMAN

PRESIDENT 5000

DEPTNO JOB SAL

---------- --------- ----------

PRESIDENT

(3)

SQL> SELECT deptno, NULL job, NULL sal

2 FROM emp

3 GROUP BY deptno

4 UNION ALL

5 SELECT NULL deptno, job, sal

6 FROM emp

7 GROUP BY job, sal

8 UNION ALL

9 SELECT NULL deptno, job, NULL sal

10 FROM emp

11 GROUP BY job

12 UNION ALL

13 SELECT NULL deptno, NULL job, NULL sal

14 FROM emp

15 GROUP BY();

DEPTNO JOB SAL

---------- --------- ----------

30

20

10

CLERK 1300

SALESMAN 1600

SALESMAN 1250

CLERK 950

PRESIDENT 5000

MANAGER 2450

CLERK 800

ANALYST 3000

DEPTNO JOB SAL

---------- --------- ----------

MANAGER 2850

3600

3000

MANAGER 2975

SALESMAN 1500

CLERK 1100

CLERK

SALESMAN

PRESIDENT

MANAGER

DEPTNO JOB SAL

---------- --------- ----------

ANALYST

**1과 2의 경우, deptno에 대해 정리가 반대로 되어있는 모습이었고.**

**2와 3의 경우, 3이 job에 대해 정리가 되어있지 않은 모습이었습니다.**

**[문제3] 2가지 유형의 GROUPBY 사례 실습**

SQL> SELECT DEPTNO, JOB, NULL, AVG(SAL)

2 FROM emp

3 GROUP BY DEPTNO, JOB

4 UNION ALL

5 SELECT NULL, JOB, MGR, AVG(SAL)

6 FROM emp

7 GROUP BY JOB, MGR;

DEPTNO JOB NULL AVG(SAL)

---------- --------- ---------- ----------

20 MANAGER 2975

20 CLERK 950

30 SALESMAN 1400

30 CLERK 950

30 3000

10 PRESIDENT 5000

30 MANAGER 2850

10 CLERK 1300

10 MANAGER 2450

20 ANALYST 3000

10 3600

DEPTNO JOB NULL AVG(SAL)

---------- --------- ---------- ----------

3400

PRESIDENT 5000

CLERK 7902 800

CLERK 7698 950

CLERK 7788 1100

CLERK 7782 1300

SALESMAN 7698 1400

MANAGER 7839 2758.33333

ANALYST 7566 3000

SQL> SELECT DEPTNO, JOB, MGR, AVG(SAL)

2 FROM emp

3 GROUP BY GROUPING SETS((DEPTNO,JOB),(JOB,MGR));

DEPTNO JOB MGR AVG(SAL)

---------- --------- ---------- ----------

3400

PRESIDENT 5000

CLERK 7902 800

CLERK 7698 950

CLERK 7788 1100

CLERK 7782 1300

SALESMAN 7698 1400

MANAGER 7839 2758.33333

ANALYST 7566 3000

20 MANAGER 2975

20 CLERK 950

DEPTNO JOB MGR AVG(SAL)

---------- --------- ---------- ----------

30 SALESMAN 1400

30 CLERK 950

30 3000

10 PRESIDENT 5000

30 MANAGER 2850

10 CLERK 1300

10 MANAGER 2450

20 ANALYST 3000

10 3600

**NULL과 MGR의 순서가 바뀌어 결과가 동일하지 않았습니다.**

**[문제4] LISTAGG 함수 실습**

SQL> SET line 200

SQL> COL listagg FOR a50

SQL> SELECT deptno,

2 LISTAGG(ename,'->') WITHIN GROUP(ORDER BY hiredate) "LISTAGG"

3 FROM emp

4 GROUP BY deptno;

DEPTNO LISTAGG

---------- --------------------------------------------------

10 KING->CLARK->MILLER->Tiger->Tiger

20 FORD->JONES->SCOTT->SMITH->ADAMS

30 ALLEN->WARD->JAMES->TURNER->MARTIN->BLAKE->Cat

**LISTAGG 함수를 이용하여 ->를 붙여 출력하였습니다.**

**[문제5] DECODE와 PIVOT 비교**

SQL> CREATE TABLE cal

2 (

3 weekno number(4),

4 day var

5

SQL> CREATE TABLE cal

2 (

3 weekno NUMBER(4),

4 day VARCHAR(8),

5 dayno NUMBER(4)

6 );

Table created.

SQL> INSERT INTO cal VALUES(1,'SUN',1);

1 row created.

SQL> INSERT INTO cal VALUES(1,'MON',2);

1 row created.

SQL> INSERT INTO cal VALUES(1,'TUE',3);

1 row created.

SQL> INSERT INTO cal VALUES(1,'WED',4);

1 row created.

SQL> INSERT INTO cal VALUES(1,'THU',5);

1 row created.

SQL> INSERT INTO cal VALUES(1,'FRI',6);

1 row created.

SQL> INSERT INTO cal VALUES(1,'SAT',7);

1 row created.

SQL> INSERT INTO cal VALUES(2,'SUN',8);

1 row created.

SQL> INSERT INTO cal VALUES(2,'MON',9);

1 row created.

SQL> INSERT INTO cal VALUES(2,'TUE',10);

1 row created.

SQL> INSERT INTO cal VALUES(2,'WED',11);

1 row created.

SQL> INSERT INTO cal VALUES(2,'THU',12);

1 row created.

SQL> INSERT INTO cal VALUES(2,'FRI',13);

1 row created.

SQL> INSERT INTO cal VALUES(2,'SAT',14);

1 row created.

SQL> COL week FOR a4

SQL> SELECT \* FROM (SELECT weekno "WEEK", day, dayno FROM cal)

2 PIVOT

3 ( MAX(dayno) FOR day IN(

4 'SUN' AS "SUN",

5 'MON' AS "MON",

6 'TUE' AS "TUE",

7 'WED' AS "WED",

8 'THU' AS "THU",

9 'FRI' AS "FRI",

10 'SAT' AS "SAT" )

11 )

12 ORDER BY "WEEK";

WEEK SUN MON TUE WED THU FRI SAT

---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------

########## 1 2 3 4 5 6 7

########## 8 9 10 11 12 13 14

**weekno 칼럼에서 깨짐 현상이 발생했으나, 나머지 요소들은 온전히 출력되었습니다.**

**[문제6] 칼럼 요소별로 카운팅**

SQL> SELECT deptno,

2 COUNT(DECODE(job,'CLERK','0')) "CLERK",

3 COUND(DECODE(job,'MANAGER','0')) "MANAGER",

4 COUN

5

SQL> SELECT deptno,

2 COUNT(DECODE(job,'CLERK','0')) "CLERK",

3 COUNT(DECODE(job,'MANAGER','0')) "MANAGER",

4 COUNT(DECODE(job,'PRESIDENT','0')) "PRESIDENT",

5 COUNT(DECODE(job,'ANALYST','0')) "ANALYST",

6 COUNT(DECODE(job,'SALESMAN','0')) "SALESMAN"

7 FROM emp

8 GROUP BY deptno

9 ORDER BY deptno;

DEPTNO CLERK MANAGER PRESIDENT ANALYST SALESMAN

---------- ---------- ---------- ---------- ---------- ----------

10 1 1 1 0 0

20 2 1 0 2 0

30 1 1 0 0 4

**칼럼의 요소별로 카운팅에 성공하였습니다.**

**[문제7] PIVOT 함수로 칼럼 요소별로 카운팅**

SQL> SELECT \* FROM (SELECT deptno, job, empno FROM emp)

2 PIVOT

3 (

4 COUNT(empno) FOR job IN ('CLERK' AS "CLERK"

5 , 'MANAGER' AS "MANAGER", 'PRESIDENT' AS "PRESIDENT",

6 'ANALYST' AS "ANALYST", 'SALESMAN' AS "SALESMAN")

7 )

8 ORDER BY deptno;

DEPTNO CLERK MANAGER PRESIDENT ANALYST SALESMAN

---------- ---------- ---------- ---------- ---------- ----------

10 1 1 1 0 0

20 2 1 0 2 0

30 1 1 0 0 4

**PIVOT 함수로 간단하게 칼럼의 요소별로 카운팅에 성공하였습니다.**