

이럴 때는



SQL을 재작성해서 튜닝하세요. 네번째!

■ 학습 내용

1. 악성 SQL을 분석하여 왜 튜닝이 필요한지 이해합니다.
2. 튜닝후 SQL이 왜 더 성능이 우수한지 학습합니다.
3. ChatGPT를 나에게 더 최적화 해서 SQL튜닝하는 tip을 배웁니다.

■ 학습 목표

데이터 분석함수로 SQL을 재작성하여 튜닝할 수 있게 됩니다.

사원번호, 이름, 월급, 이전행의 월급이 출력되게하시오

emp 테이블

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT		1981-11-17	5000		10
7698	BLAKE	MANAGER	7839	1981-05-01	2850		30
7782	CLARK	MANAGER	7839	1981-05-09	2450		10
7566	JONES	MANAGER	7839	1981-04-01	2975		20
7654	MARTIN	SALESMAN	7698	1981-09-10	1250	1400	30
7499	ALLEN	SALESMAN	7698	1981-02-11	1600	300	30
7844	TURNER	SALESMAN	7698	1981-08-21	1500	0	30
7900	JAMES	CLERK	7698	1981-12-11	950		30
7521	WARD	SALESMAN	7698	1981-02-23	1250	500	30
7902	FORD	ANALYST	7566	1981-12-11	3000		20
7369	SMITH	CLERK	7902	1980-12-09	800		20
7788	SCOTT	ANALYST	7566	1982-12-22	3000		20
7876	ADAMS	CLERK	7788	1983-01-15	1100		20
7934	MILLER	CLERK	7782	1982-01-11	1300		10

출력결과

EMPNO	ENAME	SAL	BEFORE_SAL
7369	SMITH	800	
7499	ALLEN	1600	800
7521	WARD	1250	1600
7566	JONES	2975	1250
7654	MARTIN	1250	2975
7698	BLAKE	2850	1250
7782	CLARK	2450	2850
7788	SCOTT	3000	2450
7839	KING	5000	3000
7844	TURNER	1500	5000
7876	ADAMS	1100	1500
7900	JAMES	950	1100
7902	FORD	3000	950
7934	MILLER	1300	3000

튜닝전 :

```
select a.empno ,a.ename, a.sal, b.sal as before_sal
  from ( select rownum no1, empno,ename, sal
        from ( select empno, ename, sal
              from emp
              order by empno ) ) a,
        ( select rownum + 1 no2, empno, ename, sal
          from ( select empno, ename, sal
                from emp
                order by empno ) ) b
 where a.no1 = b.no2 (+)
 order by no1;
```

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7782	CLARK	2450	2850
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7876	ADAMS	1100	1500
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7902	FORD	3000	950
7934	MILLER	1300	3000

첫번째 in line view

```
select rownum no1, empno,ename, sal
      from ( select empno, ename, sal
              from emp
              order by empno );
```

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```
select rownum no1, empno, ename, sal
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NO1	EMPNO	ENAME	SAL
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4	7566	JONES	2975
5	7654	MARTIN	1250
6	7698	BLAKE	2850
7	7782	CLARK	2450
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11	7876	ADAMS	1100
12	7900	JAMES	950
13	7902	FORD	3000
14	7934	MILLER	1300

두번째 in line view

```
select rownum + 1 no2, empno, ename, sal
  from ( select empno, ename, sal
        from emp
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```


첫번째 in line view

```
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13	7902	FORD	3000
14	7934	MILLER	1300

두번째 in line view

```
select rownum + 1 no2, empno, ename, sal
  from ( select empno, ename, sal
        from emp
        order by empno );
```

NO2	EMPNO	ENAME	SAL
2	7369	SMITH	800
3	7499	ALLEN	1600
4	7521	WARD	1250
5	7566	JONES	2975
6	7654	MARTIN	1250
7	7698	BLAKE	2850
8	7782	CLARK	2450
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두 집합을 조인한다면 ?

```
select rownum no1, empno, ename, sal
  from ( select empno, ename, sal
        from emp
        order by empno );
```

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select rownum + 1 no2, empno, ename, sal
  from ( select empno, ename, sal
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```

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7902	FORD	3000	950
7934	MILLER	1300	3000

튜닝후 :

```
select empno, ename, sal,  
       lag(sal,1) over ( order by empno ) as sal_lag  
from emp;
```

출력결과

EMPNO	ENAME	SAL	BEFORE_SAL
7369	SMITH	800	
7499	ALLEN	1600	800
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 where a.no1 = b.no2 (+)
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```

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	OMem	lMem	Used-Mem
0	SELECT STATEMENT		1		14	00:00:00.01	14			
1	SORT ORDER BY		1	14	14	00:00:00.01	14	2048	2048	2048 (0)
* 2	HASH JOIN OUTER		1	14	14	00:00:00.01	14	1476K	1476K	1055K (0)
3	VIEW		1	14	14	00:00:00.01	7			
4	COUNT		1		14	00:00:00.01	7			
5	VIEW		1	14	14	00:00:00.01	7			
6	SORT ORDER BY		1	14	14	00:00:00.01	7	2048	2048	2048 (0)
7	TABLE ACCESS FULL	EMP	1	14	14	00:00:00.01	7			
8	VIEW		1	14	14	00:00:00.01	7			
9	COUNT		1		14	00:00:00.01	7			
10	VIEW		1	14	14	00:00:00.01	7			
11	SORT ORDER BY		1	14	14	00:00:00.01	7	2048	2048	2048 (0)
12	TABLE ACCESS FULL	EMP	1	14	14	00:00:00.01	7			

튜닝후 :

```
select empno, ename, sal,  
       lag(sal,1) over ( order by empno ) as sal_lag  
from emp;
```

Id	Operation	Name	Starts	E-Rows	A-Rows	A-Time	Buffers	OMem	lMem	Used-Mem
0	SELECT STATEMENT		1		14	00:00:00.01	6			
1	WINDOW SORT		1	14	14	00:00:00.01	6	2048	2048	2048 (0)
2	TABLE ACCESS FULL	EMP	1	14	14	00:00:00.01	6			



ChatGPT 를 통해서 쉽게 SQL 튜닝하기