数据库第六次作业

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1. 尝试进行多表连接

创建表

```
1  create table t1 (id char(1), g number(3));
2  create table t2 (id char(1), g number(3));
3  create table t3 (id char(1), g number(3));
4
5  INSERT INTO t1 VALUES('A',70);
6  INSERT INTO t1 VALUES('B',80);
7  INSERT INTO t1 VALUES('C',75);
8  INSERT INTO t1 VALUES('D',90);
9
10 INSERT INTO t2 VALUES('B',70);
11 INSERT INTO t2 VALUES('D',50);
12 INSERT INTO t2 VALUES('E',60);
13
14 INSERT INTO t3 VALUES('A',90);
15 INSERT INTO t3 VALUES('B',90);
16 INSERT INTO t3 VALUES('E',55);
17 INSERT INTO t3 VALUES('F',93);
```

连接表

```
1  select nvl(nvl(t1.id, t2.id), t3.id) N, t1.g g1, t2.g g2, t3.g g3
2  from t1 full outer join t2 on t1.id = t2.id
3  full outer join t3 on t1.id = t3.id or t2.id = t3.id
4  order by N;
```

```
SQL = select nvl(nvl(t1.id, t2.id), t3.id) N, t1.g g1, t2.g g2, t3.g g3
  2  from t1 full outer join t2 on t1.id = t2.id
  3  full outer join t3 on t1.id = t3.id or t2.id = t3.id
  4  order by N;

N          G1          G2          G3
- ---------- ---------- ----------
A          70                      90
B          80          70          90
C          75
D          90          50
E                      60          55
F                                  93

已选择6行。
```

2. 完成以下SQL语句

1. 列出平均总收入（工资+提成）最高的部门名称

```
1  select dname, m from (
2      select deptno, avg(sal+nvl(comm, 0)) m
3      from emp group by deptno order by m desc
4  ) natural join dept where rownum <= 1;
```

```
SQL = select dname, m from (
  2      select deptno, avg(sal+nvl(comm, 0)) m
  3      from emp group by deptno order by m desc
  4  ) natural join dept where rownum <= 1;

DNAME                M
-------------- ----------
ACCOUNTING     3516.66667

SQL = []
```

2. 列出部门工资中位数比公司工资中位数高的部门名称

```
1  select dname, M from (
2      select deptno,median(sal) M
3      from emp
4      group by deptno
5  ) natural join dept where M > (
6      select median(sal) from emp
7  );
```

```
SQL =  select dname, M from (
  2       select deptno,median(sal) M from emp group by deptno
  3  ) natural join dept where M > (
  4       select median(sal) from emp
  5  );

DNAME                    M
-------------- ----------
ACCOUNTING            2950
RESEARCH              3210

SQL =
```

3. 求底层员工（即没有直属下属）中工资最高的员工名字

```
1  select ename, sal from (
2      select ename, sal from emp minus (
3          select b.ename, b.sal
4          from emp a, emp b
5          where a.mgr=b.empno
6      ) order by sal desc
7  ) where rownum <= 1;
```

```
SQL =  select ename, sal from (
  2      (select ename, sal from emp) minus
  3      (select b.ename, b.sal from emp a, emp b where a.mgr=b.empno)
  4      order by sal desc
  5  ) where rownum <= 1;

ENAME            SAL
---------- ----------
TURNER          2180

SQL =
```
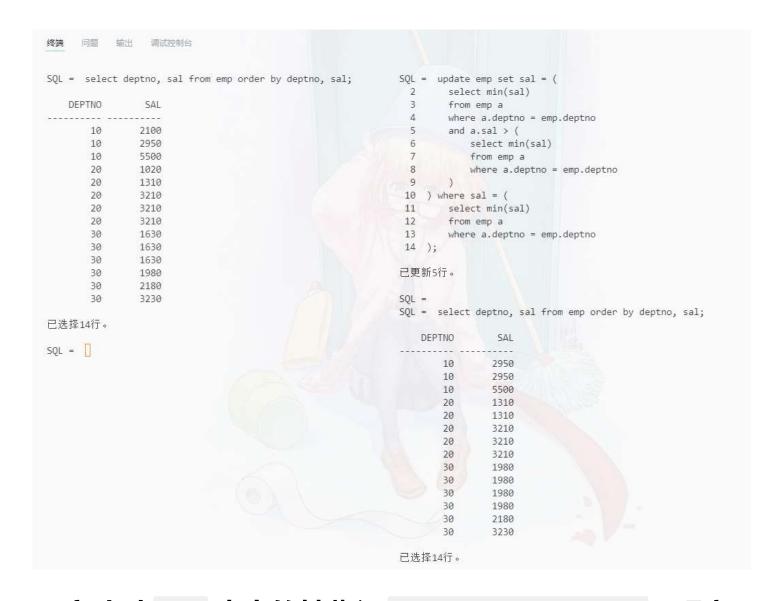
4. 列出部门的名称和部门内员工的不同工种数

```
1  select dname, count(job) from (
2      select distinct dname, job
3      from emp natural join dept
4  ) group by dname;
```

```
SQL = select dname, count(job) from (
  2      select distinct dname, job from emp natural join dept
  3  ) group by dname;

DNAME           COUNT(JOB)
-------------- ----------
ACCOUNTING               3
RESEARCH                 3
SALES                    3

SQL = 
```

5. 求每年进入公司工作的员工数

```
1  select to_char(hiredate, 'yyyy') yy, count(*)
2  from emp group by to_char(hiredate, 'yyyy');
```

```
SQL = select to_char(hiredate, 'yyyy') yy, count(*)
  2  from emp group by to_char(hiredate, 'yyyy');

YY      COUNT(*)
---- ----------
1987           2
1980           1
1982           1
1981          10

SQL = 
```

6. 把每个部门工资最低的员工的工资调整到与该部门倒数第 2 一致（注意有并列的情况）

```
1   select deptno, sal from emp order by deptno, sal;
2
3   update emp set sal = (
4       select min(sal)
5       from emp a
6       where a.deptno = emp.deptno
7       and a.sal > (
8           select min(sal)
9           from emp a
10          where a.deptno = emp.deptno
11      )
12  ) where sal = (
13      select min(sal)
14      from emp a
15      where a.deptno = emp.deptno
16  );
17
18  select deptno, sal from emp order by deptno, sal;
```

```
SQL = select deptno, sal from emp order by deptno, sal;

    DEPTNO        SAL
---------- ----------
        10       2100
        10       2950
        10       5500
        20       1020
        20       1310
        20       3210
        20       3210
        20       3210
        30       1630
        30       1630
        30       1630
        30       1980
        30       2180
        30       3230

已选择14行。

SQL = █
```

```
SQL = update emp set sal = (
  2      select min(sal)
  3      from emp a
  4      where a.deptno = emp.deptno
  5      and a.sal > (
  6          select min(sal)
  7          from emp a
  8          where a.deptno = emp.deptno
  9      )
 10  ) where sal = (
 11      select min(sal)
 12      from emp a
 13      where a.deptno = emp.deptno
 14  );

已更新5行。

SQL =
SQL = select deptno, sal from emp order by deptno, sal;

    DEPTNO        SAL
---------- ----------
        10       2950
        10       2950
        10       5500
        20       1310
        20       1310
        20       3210
        20       3210
        20       3210
        30       1980
        30       1980
        30       1980
        30       1980
        30       2180
        30       3230

已选择14行。
```

3. 实验对 emp 表中的某些行 select...for update 。观察其它会话对 emp 表进行的读写操作受到什么影响。

select for update 后直到 commit 为止，无法开启其他关于指定行的修改事务。

4. 给出第 6 周课程幻灯片第 3 页中提到的"ITPUB 论坛盗币事件"的解决方案

```
try:
    select ...
    update ...
    money = select ...
    if money < 0:
        raise Exception()
    else:
        commit
except:
    rollback()
    send_error()
```