数据库实验报告

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实验题目： 1.3 数据高级查询

一. 实验目的

掌握 SQL 嵌套查询和集合查询等各种高级查询的设计方法。

二. 实验内容和要求

针对 TPC-H 数据库，正确分析用户查询要求，设计各种嵌套查询和集合查询。

三. 实验重点和难点

实验重点：嵌套查询

实验难点：相关子查询、多层 exist 嵌套查询

四. 实验工具

MySQL、SQL Server、Navicat

五. 实验过程

（1）In 嵌套查询

查询订购了“佳能”制造的“佳能墨盒”的顾客。

方法一

```
SELECT *
FROM customer
WHERE customer.custkey IN (SELECT orders.custkey
                           FROM orders, part, lineitem
                           WHERE part.mfgr = ’佳能’ AND
part.`name` = ’佳能墨盒’ AND
part.partkey = lineitem.partkey AND
```

```
    orders.orderkey = lineitem.orderkey
                                                    );
```

部分结果截屏如下：

方法二

```
    (SELECT customer.*
                                                    FROM orders, part,
lineitem, customer
                                                    WHERE part.mfgr = '
佳能' AND

    part.`name` = '佳能墨盒' AND

    part.partkey = lineitem.partkey AND

    orders.orderkey = lineitem.orderkey AND

    customer.custkey = orders.custkey
                                                    );
```

部分结果截屏如下：

（2）单层 exists 嵌套查询

查询没有订购过“佳能”制造的“佳能墨盒”的顾客。

111111111111111111111111111

```
SELECT *
FROM customer
WHERE custkey NOT IN (SELECT customer.custkey
                      FROM orders, part, lineitem, customer
                      WHERE part.mfgr = '佳能' AND
                            part.`name` = '佳能墨盒' AND
                            part.partkey = lineitem.partkey AND
                            orders.orderkey = lineitem.orderkey AND
                            customer.custkey = orders.custkey
                      );
```

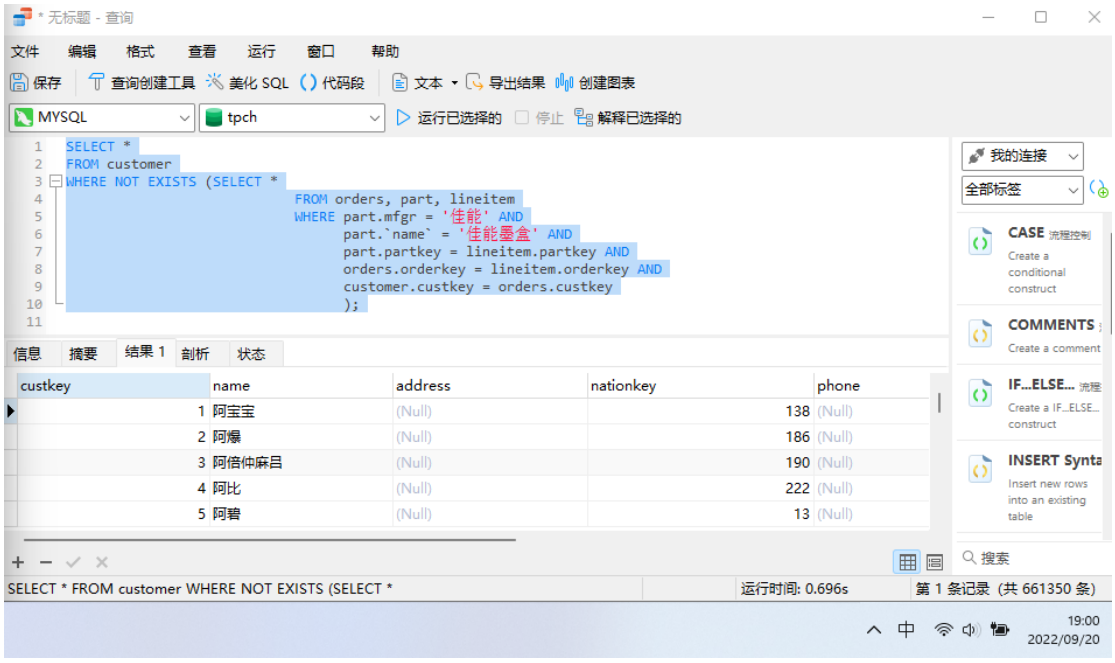
22222222222222222222222222222222

```
SELECT *
FROM customer
WHERE NOT EXISTS (SELECT *
```

```
                                                    FROM    orders,    part,
lineitem
                                                    WHERE part.mfgr = '佳能'
AND
                                                        part.`name`
= '佳能墨盒' AND
    part.partkey = lineitem.partkey AND
    orders.orderkey = lineitem.orderkey AND
    customer.custkey = orders.custkey
                                                    );
```

第一个用的是 not in
第二个用的是 not exists

部分结果截屏如下：



（3）双层 exists 嵌套查询（注：由于表太大，可能非常耗时！）

查询至少购买过顾客“齐光远”购买过的全部零件的顾客姓名。

```
SELECT customer.`name`
FROM customer
WHERE EXISTS (SELECT *
                    FROM
                    WHERE EXISTS (
```

```
                SELECT *
                FROM
                WHERE
            )
)
```

部分结果截屏如下：

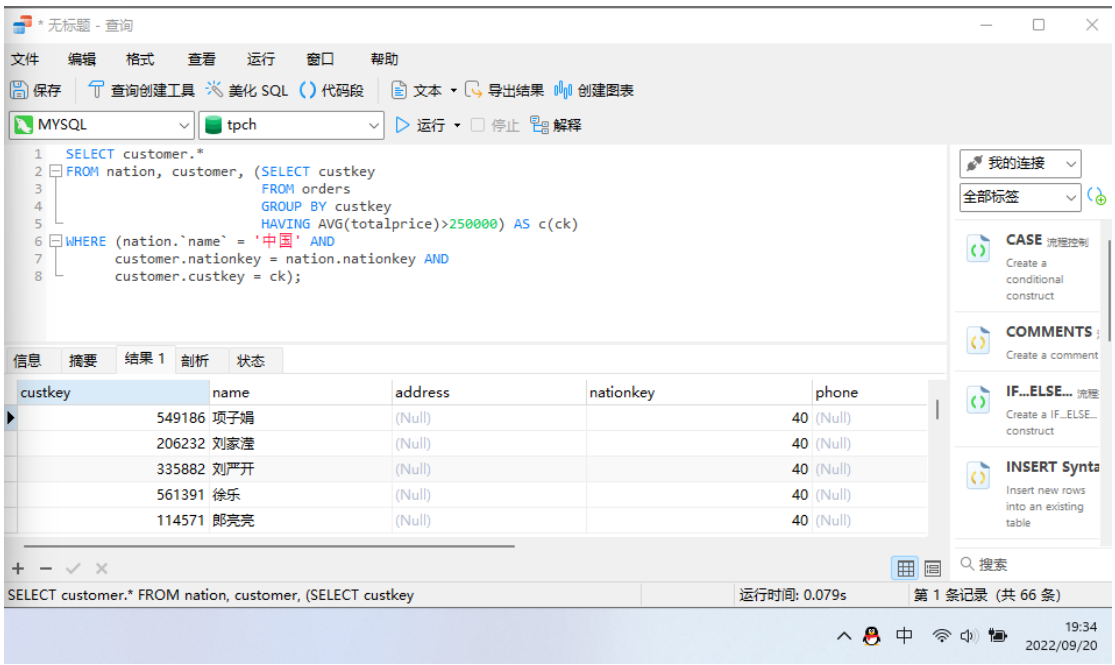
时间过长。。。。

（4）From 子句中的嵌套查询

查询订单平均金额超过 25 万元的顾客中的中国籍顾客信息。

```
SELECT customer.*
FROM nation, customer, (SELECT custkey
                        FROM orders
                        GROUP BY custkey
                        HAVING
AVG(totalprice)>250000) AS c(ck)
WHERE (nation.`name` = '中国' AND
       customer.nationkey = nation.nationkey AND
       customer.custkey = ck);
```

部分结果截屏如下：

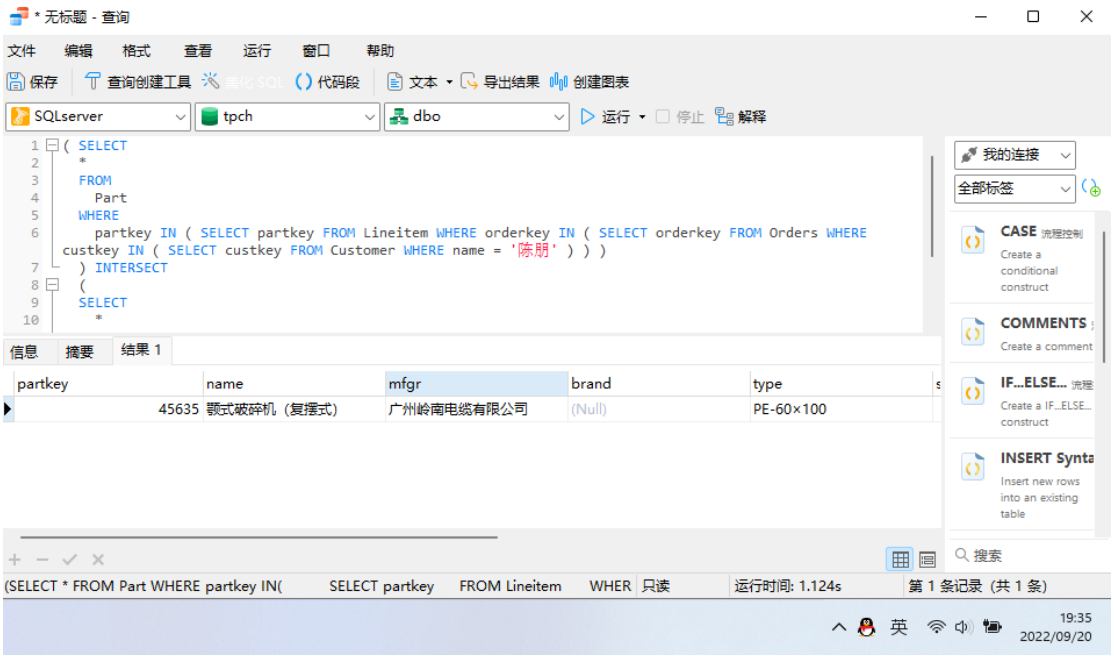


（5）集合查询（交）

查询顾客“陈朋”和“宋金保” 都订过的全部零件的信息。

```
( SELECT
    *
    FROM
        Part
    WHERE
        partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '陈朋' ) ) )
    ) INTERSECT
    (
    SELECT
        *
    FROM
        Part
    WHERE
        partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '宋金保' ) ) )
    )
```

部分结果截屏如下：

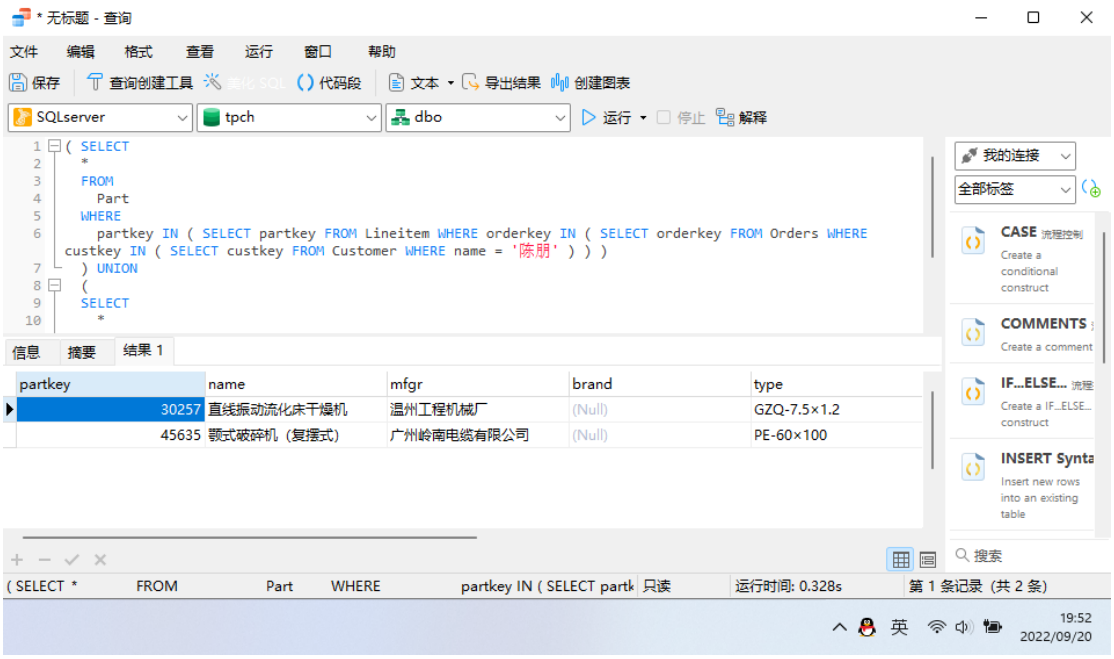


（6）集合查询（并）

查询顾客“陈朋”和“宋金保”订购的全部零件的信息。

```
( SELECT
    *
    FROM
        Part
    WHERE
        partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '陈朋' ) ) )
    ) UNION
    (
    SELECT
        *
    FROM
        Part
    WHERE
    partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '宋金保' ) ) )
    )
```

部分结果截屏如下：



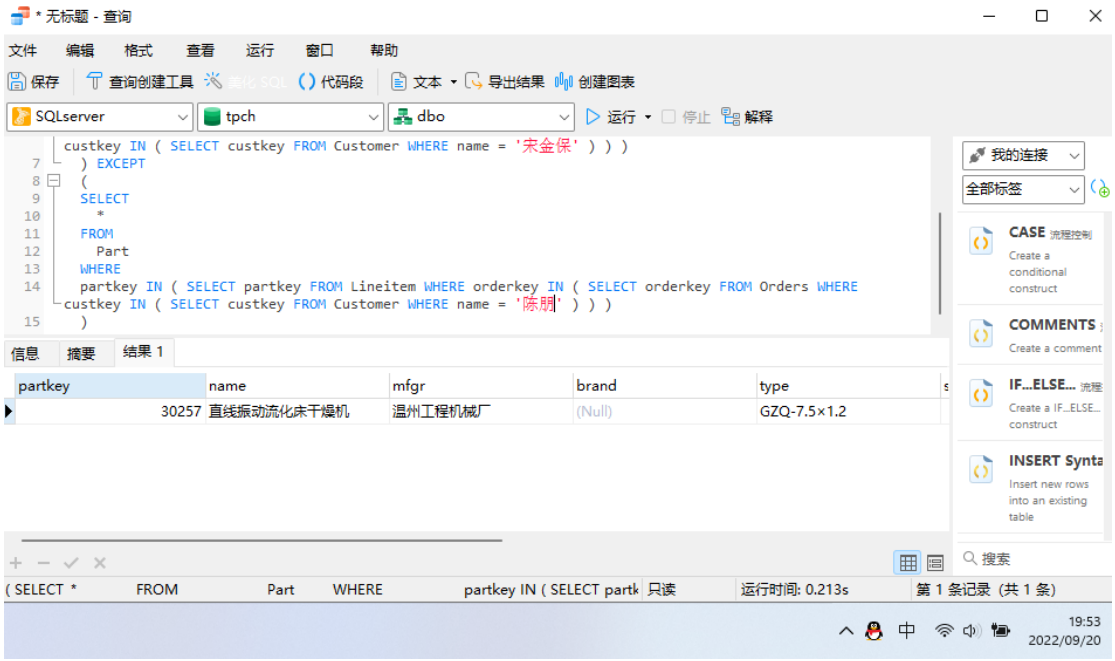
（7） 集合查询（差）

查询顾客“宋金保”订过而顾客“陈朋”没订过的零件的信息。

```
( SELECT
    *
    FROM
```

```
    Part
WHERE
    partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '宋金保' ) ) )
) EXCEPT
(
SELECT
    *
FROM
    Part
WHERE
partkey IN ( SELECT partkey FROM Lineitem WHERE orderkey IN ( SELECT orderkey FROM Orders WHERE custkey IN ( SELECT custkey FROM Customer WHERE name = '陈朋' ) ) )
)
```

部分结果截屏如下：



六. 与实验结果相关的文件

无

七. 实验总结