

数据库第三次作业

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1.

检索符合下述条件的商品的编号: 至少有一个客户通过与该客户位于同一个城市的供应商订购过该商品;

```
select distinct pid from Order o, Customer c, Agent a
where o.cid == c.cid and o.aid == a.aid and c.city == a.city;
```

2.

检索符合下述条件的顾客的编号: 在2021年没有购买过商品;

```
select cid from Customer
where cid not in (select cid from Order where year(orddate) == '2021');
```

3.

检索符合下述条件的商品的编号: 在所有有客户的城市中都被销售过;

```
select pid from Product p
where not exists (select city from Customer c
where city not in (select city from Order o
where p.pid == o.pid));
```

4.

检索符合下述条件的供应商的编号: 为居住在Duluth和Kyoto的所有客户订购过同一种商品;

```
select aid from Agent a
  where exists (select pid from Product p
    where not exists (select cid from Customer c
      where city in ('Duluth', 'Kyoto')
      and cid not in (select cid from Order o
        where o.aid == a.aid and o.pid == p.pid)));
```

5.

检索符合下述条件的供应商的编号: 向供应商自己所在城市中的所有顾客都销售过商品;

```
select aid from Agent a
  where not exists (select cid from Customer c
    where c.city == a.city and cid not in (select cid from Order o
      where o.aid == a.aid));
```

6.

检索享有最高销售提成比例的供应商 (请分别写出使用统计函数和不使用统计函数的两种不同表示方法);

使用统计函数:

```
select aname from Agent
  where per == (select max(per) from Agent);
```

不使用统计函数:

```
select aname from Agent
  where per >=all (select per from Agent);
```

7.

检索只购买过一次商品的顾客的编号 (请写出三种不同类型的查询语句);

第一种:

```
select o1.cid from Order o1
  where o1.cid not in (select o2.cid from Order o2, Order o3
    where o2.cid == o3.cid and o2.ordno < o3.ordno);
```

第二种:

```
select cid from Customer c
  where 1 == (select count(ordno) from Order o
             where c.cid == o.cid);
```

第三种:

```
select cid from Order
  group by cid
  having count(ordno) == 1;
```

8.

对每一位供应商在每一年的销售情况进行统计, 结果返回供应商的编号和名称, 年份, 该供应商在这一年的累计销售金额, 订单条数及顾客人数, 统计结果先按照年份从小到大排序, 同一年份的再按照累计销售金额从大到小排序输出;

```
select a.aid, a.aname, year(o.ordno) as yea, sum(o.dols) as casales, count(o.c)
  from Agent a, Order o
  where o.aid == a.aid
  group by a.aid, yea
  order by yea asc, casales desc;
```

9.

检索每一个顾客的最后的两份订单, 结果返回客户编号及其最后两份订单的订购日期, 结果包括只有一份订单的顾客 (倒数第二份订单的订购日期返回空值), 以及没有购买过任何商品的顾客 (两个日期属性均返回空值);

```
select c.cid, max(o.ordno), max(s.ordno)
  from Customer c, Order o,
  (select o2.ordno, o2.cid from Order o2
   where o2.cid == o.cid and o2.ordno < (select max(ordno) from Order
   where o2.cid == o3.cid)) s
  where c.cid == o.cid;
```

10.

检索符合下述要求的客户的编号: 在该客户订购过的所有商品中, 每一种商品的平均每笔订单的订购数量均达到或超过 300.

```
select cid from Customer c
  where not exists (select o1.pid from Order o1
    where o1.cid == c.cid and 300 > (select avg(qty) from Order o2
      where o1.pid == o2.pid));
```