

1、左外连接|

- 查询所有客户的姓名及订单编号？

```
mysql> select c.cust_id, c.cust_name, o.order_num
-> from
-> customers c
-> inner join
-> orders o
-> on c.cust_id = o.cust_id;
+-----+-----+
| cust_id | cust_name | order_num |
+-----+-----+
| 10001 | Coyote Inc. | 20005 |
| 10001 | Coyote Inc. | 20009 |
| 10001 | Coyote Inc. | 20010 |
| 10001 | Coyote Inc. | 20011 |
| 10003 | Wascols | 20006 |
| 10004 | Yosemite Place | 20007 |
| 10005 | E Fudd | 20008 |
+-----+-----+
7 rows in set (0.00 sec)

mysql>
```

- 查询所有客户的姓名及订单编号，包括没有下过单的？

```
mysql> select c.cust_id, c.cust_name, o.order_num
-> from
-> customers c
-> left outer join
-> orders o
-> on c.cust_id = o.cust_id;
+-----+-----+
| cust_id | cust_name | order_num |
+-----+-----+
| 10001 | Coyote Inc. | 20005 |
| 10001 | Coyote Inc. | 20009 |
| 10001 | Coyote Inc. | 20010 |
| 10001 | Coyote Inc. | 20011 |
| 10002 | Mouse House | NULL |
| 10003 | Wascols | 20006 |
| 10004 | Yosemite Place | 20007 |
| 10005 | E Fudd | 20008 |
+-----+-----+
8 rows in set (0.00 sec)

mysql>
```

- 查询没有下过单的客户姓名

```
mysql> select c.cust_id, c.cust_name, o.order_num
-> from
-> customers c
-> left outer join
-> orders o
-> on c.cust_id = o.cust_id
-> where o.order_num is null;
+-----+-----+
| cust_id | cust_name | order_num |
+-----+-----+
| 10002 | Mouse House | NULL |
+-----+-----+
1 row in set (0.00 sec)

mysql>
```

- 查询所有供应商的名称及供应的产品名称，包括没有供应产品的供应商？

```
mysql> select v.vend_id, v.vend_name, p.prod_name
-> from vendors v
-> left outer join
-> products p
-> on v.vend_id = p.vend_id;
+-----+-----+
| vend_id | vend_name | prod_name |
+-----+-----+
| 1001 | Anvils R Us | .5 ton anvil |
| 1001 | Anvils R Us | 1 ton anvil |
| 1001 | Anvils R Us | 2 ton anvil |
| 1002 | LT Supplies | Fuses |
| 1002 | LT Supplies | Oil can |
| 1003 | ACME | Detonator |
| 1003 | ACME | Bird seed |
| 1003 | ACME | Carrots |
| 1003 | ACME | Safe |
| 1003 | ACME | Sling |
| 1003 | ACME | TNT (1 stick) |
| 1003 | ACME | TNT (5 sticks) |
| 1004 | Furball Inc. | NULL |
| 1005 | Jet Set | JetPack 1000 |
| 1005 | Jet Set | JetPack 2000 |
| 1006 | Jouets Et Ours | NULL |
+-----+-----+
16 rows in set (0.00 sec)

mysql>
```

- 查询没有供应产品的供应商？

```
mysql> select v.vend_id, v.vend_name, p.prod_name
-> from vendors v
-> left outer join
-> products p
-> on v.vend_id = p.vend_id
-> where p.prod_name is null;
+-----+-----+
| vend_id | vend_name | prod_name |
+-----+-----+
| 1004 | Furball Inc. | NULL |
| 1006 | Jouets Et Ours | NULL |
+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

```
# 子查询实现
mysql> select vend_name
-> from vendors
-> where vend_id
-> not in
-> (select vend_id from products);
+-----+
| vend_name |
+-----+
| Furball Inc. |
| Jouets Et Ours |
+-----+
2 rows in set (0.00 sec)

mysql>
```

2、右外连接

- 与左连接类似
- 左连接与外连接可以相互转换，只是注意表位置就行

- 课堂练习：
 - 查询没有被购买过的产品名称？

```
select p.prod_name
from
orderitems o
right join
products p
on o.prod_id = p.prod_id
where o.prod_id is null;
```

- 查询2005年9月被购买过的产品名称及订单编号？

```
select o.order_num, o.order_date, p.prod_name from orders o
inner join orderitems i
on o.order_num = i.order_num
inner join products p
on i.prod_id = p.prod_id
where year(o.order_date) = '2005' and MONTH(o.order_date)='09';

select o.order_num, o.order_date, p.prod_name from orders o
inner join orderitems i
on o.order_num = i.order_num
inner join products p
on i.prod_id = p.prod_id
where date(o.order_date) BETWEEN '2005-09-01' and '2005-09-30';

◦ 查询2005年9月没有被购买过的产品信息？
```

```
# 题目： 查询2005年9月没有被购买过的产品信息？

# 第一种写法 错的，这种基准就错了，inner join连的是购买过的
# 这样写出来的是所有下了单的，但是日期不在2005年9月的订单及产品
select o.order_num, o.order_date, p.prod_name from orders o
inner join orderitems i
on o.order_num = i.order_num
inner join products p
on i.prod_id = p.prod_id
where date(o.order_date) not BETWEEN '2005-09-01' and '2005-09-30';

# 这种也有问题，多了一条产品id为FB，产品名称为 (Bird seed) 的，-这种写法，查出来结果有10行 【那个产品被买过】
select p.prod_name, oi.order_num, o.order_date
from products p
left join orderitems oi
on p.prod_id = oi.prod_id
left join orders o
on oi.order_num = o.order_num
where (date(order_date) not between "2005-09-01" and "2005-09-30") or o.order_num is null;

# 正确思路1：
# 上面已经找到了2005年9月购买过的产品名称(3表内连接)，那么在产品表里面排除这些产品名称即可
select p1.prod_name
from products p1 where p1.prod_name not in
(select distinct p.prod_name
from orders o
inner join orderitems i
on o.order_num = i.order_num
inner join products p
on i.prod_id = p.prod_id
where YEAR(o.order_date) = '2005' and month(o.order_date) = '09');

+-----+
| prod_name |
+-----+
| 2 ton anvil |
| Detonator |
| Carrots |
| Fuses |
| JetPack 1000 |
| Oil can |
| Safe |
| Sling |
| TNT (1 stick) |
+-----+
9 rows in set (0.04 sec)

mysql>
```

```
# 正确思路2：
# 先找到2005年9月购买过的产品编号(2表连接即可)，再使用子查询，或者 左连接方式

# 子查询
select p.prod_name
from products p
where p.prod_id not in (
select distinct oi.prod_id
from orders o
inner join orderitems oi
on o.order_num = oi.order_num
where (Year(o.order_date) = '2005' and month(o.order_date) = '09'));

# 左连接
select p.prod_name
from products p
left outer join
(select distinct oi.prod_id
from orders o
inner join orderitems oi
on o.order_num = oi.order_num
where (Year(o.order_date) = '2005' and month(o.order_date) = '09')) as a
on p.prod_id = a.prod_id
where a.prod_id is null;

o
```

- 查询被购买过的价格大于10的产品名称、订单编号、购买数量

```
mysql> select p.prod_name, o.order_num, o.quantity
-> from orderitems o
-> INNER JOIN
-> products p
-> on o.prod_id = p.prod_id
-> where p.prod_price>10;
+-----+-----+
| prod_name | order_num | quantity |
+-----+-----+
| JetPack 2000 | 20006 | 1 |
| 2 ton anvil | 20009 | 1 |
| 2 ton anvil | 20010 | 1 |
| 2 ton anvil | 20011 | 1 |
+-----+-----+
4 rows in set (0.00 sec)

mysql>
```

- 查询购买了TNT2产品的客户名称及订单编号？

```
mysql> select c.cust_name, d.order_num from
-> orderitems o
-> inner join
-> orders d
-> on o.order_num = d.order_num
-> inner join
-> customers c
-> on d.cust_id = c.cust_id
-> where o.prod_id="TNT2";
+-----+-----+
| cust_name | order_num |
+-----+-----+
| Coyote Inc. | 20005 |
| Yosemite Place | 20007 |
+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

- 查询state是MI/OH/IN三个州的客户在2005年购买的订单信息，返回客户名称、州、订单编号？

```
# 第一种写法：

mysql> select o.order_num, c.cust_name, c.cust_state
-> from customers c
-> inner join orders o
-> on c.cust_id = o.cust_id
-> where c.cust_state in ('MI','OH','IN') and year(o.order_date)='2005';
+-----+-----+
| order_num | cust_name | cust_state |
+-----+-----+
| 20005 | Coyote Inc. | MI |
| 20009 | Coyote Inc. | MI |
| 20010 | Coyote Inc. | MI |
| 20011 | Coyote Inc. | MI |
| 20006 | Wascols | IN |
+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

```
# 第二种写法：
mysql> select o.order_num, a.cust_name, a.cust_state from
-> (select * from customers where cust_state in ('MI','OH','IN')) as a
-> inner join
-> (select * from orders where year(order_date)='2005') as b
-> on a.cust_id = b.cust_id;
+-----+-----+
| order_num | cust_name | cust_state |
+-----+-----+
| 20005 | Coyote Inc. | MI |
| 20009 | Coyote Inc. | MI |
| 20010 | Coyote Inc. | MI |
| 20011 | Coyote Inc. | MI |
| 20006 | Wascols | IN |
+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

3、全连接

- full join # mysql不支持这种语法
- 左外连接和右外连接的结果再取个并集

4、联合查询/组合查询

- union # 自动去重
- union all # 没有去重
- 将两个查询结果放到一起，他们之间可以没有关联
 - 列数必须相同，否则要报错哦
- 查询客户id，姓名与供应商id，供应商姓名，放到一起展示

```
mysql> select cust_id, cust_name from customers
-> union
-> select vend_id, vend_name from vendors;
+-----+-----+
| cust_id | cust_name |
+-----+-----+
| 10001 | Coyote Inc. |
| 10002 | Mouse House |
| 10003 | Wascols |
| 10004 | Yosemite Place |
| 10005 | E Fudd |
| 1001 | Anvils R Us |
| 1002 | LT Supplies |
| 1003 | ACME |
| 1004 | Furball Inc. |
| 1005 | Jet Set |
| 1006 | Jouets Et Ours |
+-----+-----+
11 rows in set (0.00 sec)

mysql>
```

- 查询价格小于等于5的产品以及供应商1001和1002生产的所有产品(不考虑价格)

```
select * from products where prod_price<5 or vend_id in (1001,1002);

select * from products where prod_price<5
UNION
select * from products where vend_id in (1001,1002);
```

5、几个图