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-- 多表关联查询（以两个表为例）
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--多表查询方式：1. where条件查询
--              2. 嵌套查询
--              3. 左联，右联、内联的关联查询


mysql> select * from stu;
    +----+----------+-----+-----+--------+
    | id | name     | sex | age | classid |
    +----+----------+-----+-----+--------+
    |  1 | zhangsan | m   |  20 | lamp71 |
    |  2 | lisi     | w   |  22 | lamp71 |
    |  3 | wangwu   | m   |  23 | lamp72 |
    |  4 | zhaoliu  | w   |  24 | lamp68 |
    |  5 | tianqi   | w   |  28 | lamp71 |
    |  6 | aa       | m   |  19 | lamp72 |
    |  7 | bb       | w   |  29 | lamp72 |
    |  8 | cc       | m   |  33 | lamp71 |
    |  9 | dd       | w   |  22 | lamp72 |
    | 11 | qq       | w   |  22 | lamp71 |
    | 14 | kk       | w   |  26 | lamp71 |
    +----+----------+-----+-----+--------+
    11 rows in set (0.00 sec)

mysql> select * from grade;
    +----+-----+-----+-------+
    | id | sid | php | mysql |
    +----+-----+-----+-------+
    |  1 |   3 |  80 |    90 |
    |  2 |   4 |  58 |    59 |
    |  3 |   1 |  94 |    95 |
    |  4 |   2 |  90 |    78 |
    |  5 |   5 |  57 |    87 |
    |  6 |   8 |  89 |    56 |
    +----+-----+-----+-------+
    6 rows in set (0.00 sec)


-- 一、where条件查询
----------------------------------------
-- 1. 查询1号学生的考试成绩。要求只显示（学号、姓名、php和mysql）字段
mysql> select stu.id,stu.name,grade.php,grade.mysql from grade,stu
    -> where stu.id=grade.sid and stu.id=1;
    +----+----------+-----+-------+
    | id | name     | php | mysql |
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     +----+----------+-----+-------+
  |  1 | zhangsan |  94 |    95 |
     +----+----------+-----+-------+
  1 row in set (0.00 sec)
  -- 采用对表起别名的方式查询
mysql> select s.id,s.name,g.php,g.mysql from grade g,stu s
    -> where s.id=g.sid and s.id=1;


-- 2. 查看所有考试信息，要求只显示（学号、姓名、php和mysql）字段
mysql> select s.id,s.name,g.php,g.mysql from stu s,grade g where s.id=g.sid;
     +----+----------+-----+-------+
  | id | name     | php | mysql |
     +----+----------+-----+-------+
  |  3 | wangwu   |  80 |    90 |
  |  4 | zhaoliu  |  58 |    59 |
  |  1 | zhangsan |  94 |    95 |
  |  2 | lisi     |  90 |    78 |
  |  5 | tianqi   |  57 |    87 |
  |  8 | cc       |  89 |    56 |
     +----+----------+-----+-------+
  6 rows in set (0.00 sec)

-- 3. 查看所有71期考试信息，要求只显示（学号、姓名、班级、php和mysql）字段
mysql> select s.id,s.name,s.classid,g.php,g.mysql from stu s,grade g
    -> where s.id=g.sid and s.classid='lamp71';
     +----+----------+---------+-----+-------+
  | id | name     | classid | php | mysql |
     +----+----------+---------+-----+-------+
  |  1 | zhangsan | lamp71  |  94 |    95 |
  |  2 | lisi     | lamp71  |  90 |    78 |
  |  5 | tianqi   | lamp71  |  57 |    87 |
  |  8 | cc       | lamp71  |  89 |    56 |
     +----+----------+---------+-----+-------+
  4 rows in set (0.00 sec)

-- 4. 查看php考试通过的学生信息。要求只显示（学号、姓名、php）字段
mysql> select s.id,s.name,g.php from stu s,grade g where s.id=g.sid and g.php>=60;
     +----+----------+-----+
  | id | name     | php |
     +----+----------+-----+
  |  3 | wangwu   |  80 |
  |  1 | zhangsan |  94 |
  |  2 | lisi     |  90 |
  |  8 | cc       |  89 |
     +----+----------+-----+
  4 rows in set (0.00 sec)
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-- 5. 查看学生考试信息，按总成绩降序排序，要求只显示（学号、姓名、php，mysql、总成绩）字段
mysql> select s.id,s.name,g.php,g.mysql,g.php+g.mysql num from stu s,grade g
    -> where s.id=g.sid  order by num desc;
+----+----------+-----+-------+-----+
| id | name     | php | mysql | num |
+----+----------+-----+-------+-----+
|  1 | zhangsan |  94 |    95 | 189 |
|  3 | wangwu   |  80 |    90 | 170 |
|  2 | lisi     |  90 |    78 | 168 |
|  8 | cc       |  89 |    56 | 145 |
|  5 | tianqi   |  57 |    87 | 144 |
|  4 | zhaoliu  |  58 |    59 | 117 |
+----+----------+-----+-------+-----+
6 rows in set (0.00 sec)


-- 6. 统计参加考试的每个班php成绩及格人数和不及人数；
    --1)先显示所有PHP成绩信息
    select s.classid,g.php from stu s grade g where s.id=g.sid
    +---------+-----+
    | classid | php |
    +---------+-----+
    | lamp72  |  80 |
    | lamp68  |  58 |
    | lamp71  |  94 |
    | lamp71  |  90 |
    | lamp71  |  57 |
    | lamp71  |  89 |
    +---------+-----+
    --2)再统计每个班级参加PHP考试的人数    （内部执行:先查询再分组最后输出并计算）---分组统计
    select s.classid,count(g.php) from stu s,grade g
    where s.id=g.sid group by s.classid;
    +---------+-------------+
    | classid | count(g.php)|
    +---------+-------------+
    | lamp68  |           1 |
    | lamp71  |           4 |
    | lamp72  |           1 |
    +---------+-------------+
    --3)结合以上统计及格和不及格的人数
mysql> select s.classid,count(g.php) m,sum(g.php>=60) y,sum(g.php<60) n
    from stu s,grade g where s.id=g.sid group by s.classid;
    +---------+---+------+------+
    | classid | m | y    | n    |
    +---------+---+------+------+
```

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141    | lamp68  | 1 |     0 |     1 |
142    | lamp71  | 4 |     3 |     1 |
143    | lamp72  | 1 |     1 |     0 |
144    +---------+---+-------+-------+
145    3 rows in set (0.00 sec)
146
147  --查看每个班级中PHP成绩最高分
148  mysql> select s.classid,max(g.php) from stu s,grade g
149      where s.id=g.sid group by s.classid;
150      +---------+------------+
151      | classid | max(g.php) |
152      +---------+------------+
153      | lamp68  |         78 |
154      | lamp71  |         94 |
155      | lamp72  |         80 |
156      +---------+------------+
157      3 rows in set (0.00 sec)
158  --查看班里最高分是谁? (相同高分也显示)
159
160
161  -- 二、 嵌套查询 (一个表的查询结果作为另一个表的查询条件)
162    --------------------------------------------------------
163  -- 1. 查看年龄最大是谁? (单表查询  注意:一个表可以通过取别名查询)
164      --select * from stu order by age desc limit 1;无法获取最大年龄相同的多个值
165    mysql> select * from stu where age=(select max(age) from stu);--先查到最大作为条件
166      +----+------+-----+-----+---------+
167      | id | name | sex | age | classid |
168      +----+------+-----+-----+---------+
169      |  8 | cc   | m   |  33 | lamp71  |
170      | 14 | kk   | w   |  33 | lamp71  |
171      +----+------+-----+-----+---------+
172      2 rows in set (0.00 sec)
173
174  --2. 使用嵌套查询lamp71期的考试信息(多表查询)
175  mysql> select * from grade where sid in(select id from stu where classid='lamp71');
176  --select g.* from grade g,stu s where s.id=g.sid and s.classid='lamp71';
177      +----+-----+-----+-------+
178      | id | sid | php | mysql |
179      +----+-----+-----+-------+
180      |  3 |   1 |  94 |    95 |
181      |  4 |   2 |  90 |    78 |
182      |  5 |   5 |  57 |    87 |
183      |  6 |   8 |  89 |    56 |
184      +----+-----+-----+-------+
185      4 rows in set (0.00 sec)
186
187
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-- 三、关联查询（左联：left join，右联 right join 内联 inner join）
--------------------------------------------------------------------
--1. 查看所有学生的考试信息，要求只显示（学号、姓名、php和mysql）字段  以学生为主
--一.2. 查看所有考试信息，要求只显示（学号、姓名、php和mysql）字段  以考试为主    要区分开
mysql> select stu.id,stu.name,grade.php,grade.mysql from stu left join grade on
stu.id=grade.sid;
+----+----------+------+-------+
| id | name     | php  | mysql |
+----+----------+------+-------+
|  1 | zhangsan |   94 |    95 |
|  2 | lisi     |   90 |    78 |
|  3 | wangwu   |   80 |    90 |
|  4 | zhaoliu  |   58 |    59 |
|  5 | tianqi   |   57 |    87 |
|  6 | aa       | NULL |  NULL |
|  7 | bb       | NULL |  NULL |
|  8 | cc       |   89 |    56 |
|  9 | dd       | NULL |  NULL |
| 11 | qq       | NULL |  NULL |
| 14 | kk       | NULL |  NULL |
+----+----------+------+-------+
11 rows in set (0.00 sec)
--别名方式
mysql> select s.id,s.name,g.php,g.mysql from stu s left join grade g
    -> on s.id=g.sid;
+----+----------+------+-------+
| id | name     | php  | mysql |
+----+----------+------+-------+
|  1 | zhangsan |   94 |    95 |
|  2 | lisi     |   90 |    78 |
|  3 | wangwu   |   80 |    90 |
|  4 | zhaoliu  |   58 |    59 |
|  5 | tianqi   |   57 |    87 |
|  6 | aa       | NULL |  NULL |
|  7 | bb       | NULL |  NULL |
|  8 | cc       |   89 |    56 |
|  9 | dd       | NULL |  NULL |
| 11 | qq       | NULL |  NULL |
| 14 | kk       | NULL |  NULL |
+----+----------+------+-------+
11 rows in set (0.00 sec)

mysql>


-- 内联查询等价于为where条件查询
mysql> select s.id,s.name,g.php,g.mysql from stu s inner join grade g
    -> on s.id=g.sid;
+----+----------+------+-------+
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```
| id | name      | php | mysql |
+----+-----------+-----+-------+
|  3 | wangwu    |  80 |    90 |
|  4 | zhaoliu   |  58 |    59 |
|  1 | zhangsan  |  94 |    95 |
|  2 | lisi      |  90 |    78 |
|  5 | tianqi    |  57 |    87 |
|  8 | cc        |  89 |    56 |
+----+-----------+-----+-------+
6 rows in set (0.00 sec)

mysql> select s.id,s.name,g.php,g.mysql from stu s,grade g where s.id=g.sid;
+----+-----------+-----+-------+
| id | name      | php | mysql |
+----+-----------+-----+-------+
|  3 | wangwu    |  80 |    90 |
|  4 | zhaoliu   |  58 |    59 |
|  1 | zhangsan  |  94 |    95 |
|  2 | lisi      |  90 |    78 |
|  5 | tianqi    |  57 |    87 |
|  8 | cc        |  89 |    56 |
+----+-----------+-----+-------+
6 rows in set (0.00 sec)


--商品类别的处理
mysql> desc type;
+-------+------------------+------+-----+---------+----------------+
| Field | Type             | Null | Key | Default | Extra          |
+-------+------------------+------+-----+---------+----------------+
| id    | int(11) unsigned | NO   | PRI | NULL    | auto_increment |
| name  | varchar(32)      | YES  |     | NULL    |                |
| pid   | int(11) unsigned | YES  |     | 0       |                |
| path  | varchar(255)     | YES  |     | NULL    |                |
+-------+------------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)

-- 查询商品类别id号为1的所有子类，包含子类中的子类：条件是 当前类别的path和id+逗号
mysql> select * from type where path like "0,1,%";

-- 查询商品类别id号为1的所有子类对应的商品信息
mysql> select * from goods where typeid in(select id from type where path like "0,1,%");
mysql> select * from goods where typeid in(select id from type where path like "%,1,%");
mysql> select g.*,t.name from goods g,type t
where g.typeid=t.id and g.typeid in(select id from type where path like "0,1,%");
```