实验报告4-20301174-万兴全

数据操作详细过程（包含SQL命令及执行结果展示）。

每题5分，总计160分。
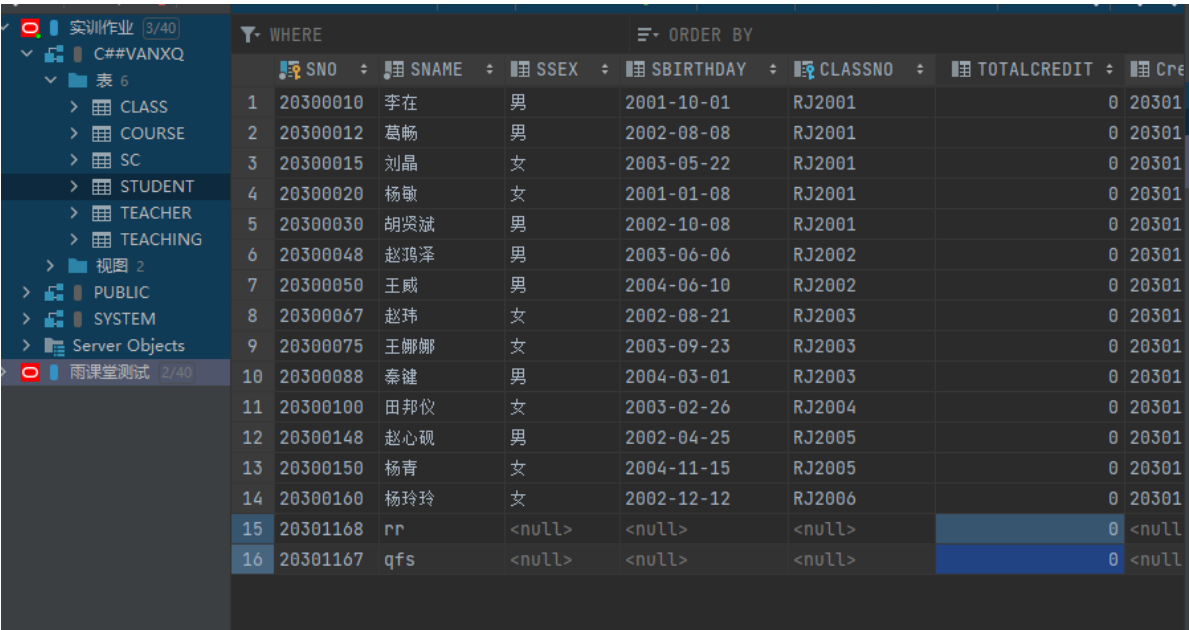
(一) 复杂数据查询

使用**SQL命令执行如下查询操作：**

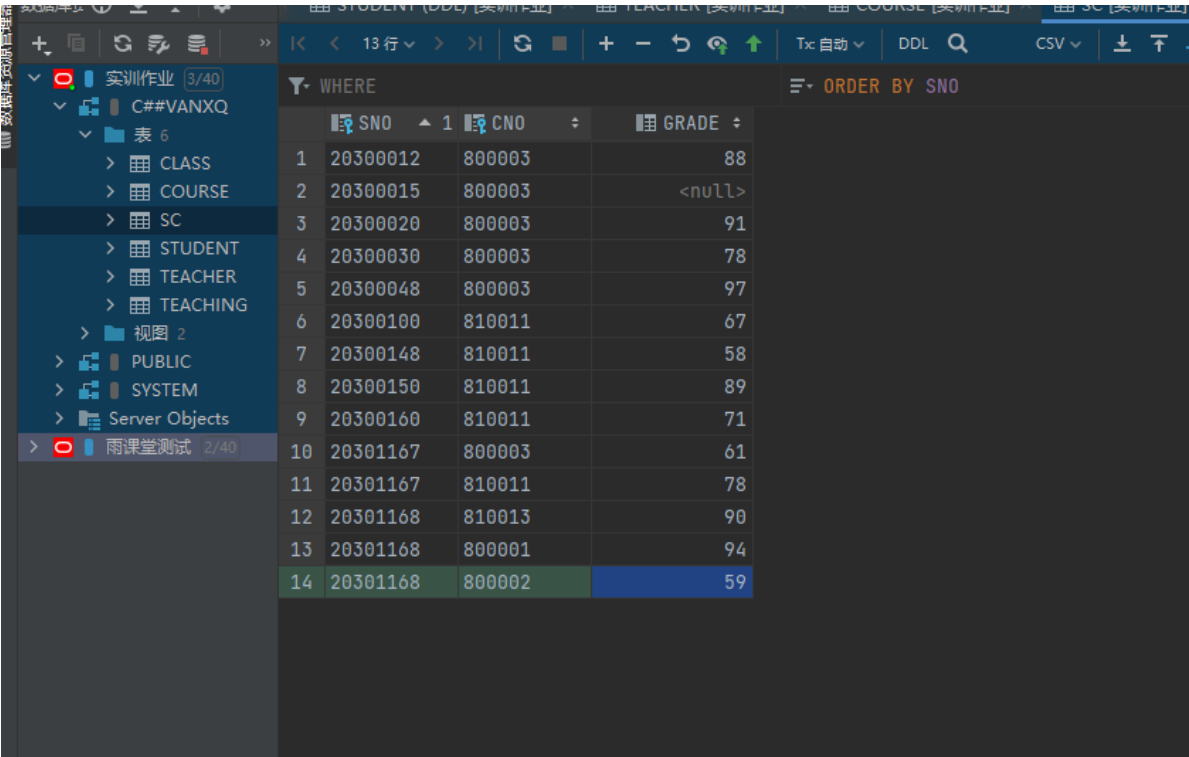 如果查询结果为空，可以自行补充数据到基表中。

（1） 查询所有同学的学分情况（假设课程成绩>=60时可获得该门课程的学分），显示学号、姓名、总学分（用JOIN）

插入一些值，防null

```
select student.sno,sname,sum(course.ccredit) as totalcredit
from student join sc on student.sno = sc.sno right join course on
course.cno=sc.cno
where grade>=60
group by sname,student.sno;
```


(2) 查询所有同学的平均成绩及选课门数，显示学号、姓名、平均成绩、选课门数

```
select student.sno,student.sname,avg(grade), count(sc.cno) as chosen_course
from student join sc on student.sno = sc.sno
group by student.sno, student.sname;
```


(3) 查询所有选修了课程但未参加考试的所有同学及相应的课程，显示学号、姓名、课程号、课程名称

插入一些值，防null


```sql
select student.sno,student.sname,s.cno,c2.cname
from student join sc s on student.sno = s.sno join course c2 on c2.cno = s.cno
where grade is null ;
```


(4) 查询所有选修了课程但考试不及格的所有同学及相应的课程，显示学号、姓名、课程号、课程名称、成绩

```
select s.sno,sname,s2.cno,course.cname,grade
from student s join sc s2 on s.sno = s2.sno join course on s2.cno = course.cno
where grade<60;
```


（5）查询选修了课程名为"程序设计语言"的所有同学及成绩情况，显示学生姓名、课程成绩（用ANY运算符）

插入一些值，防null

```sql
select student.sname,grade
from student join sc s on student.sno = s.sno join course c2 on c2.cno = s.cno
where cname = any('程序设计语言');
```


（6）查询"软件开发"系的所有同学及成绩情况，显示学号、姓名、班级名称、课程号、课程名称、成绩

```sql
select student.sno,sname,classname,course.cno,cname,grade
from student join class c2 on c2.classno = student.classno join sc s on
student.sno = s.sno join course on course.cno=s.cno
where classdept = any('软件开发');
```
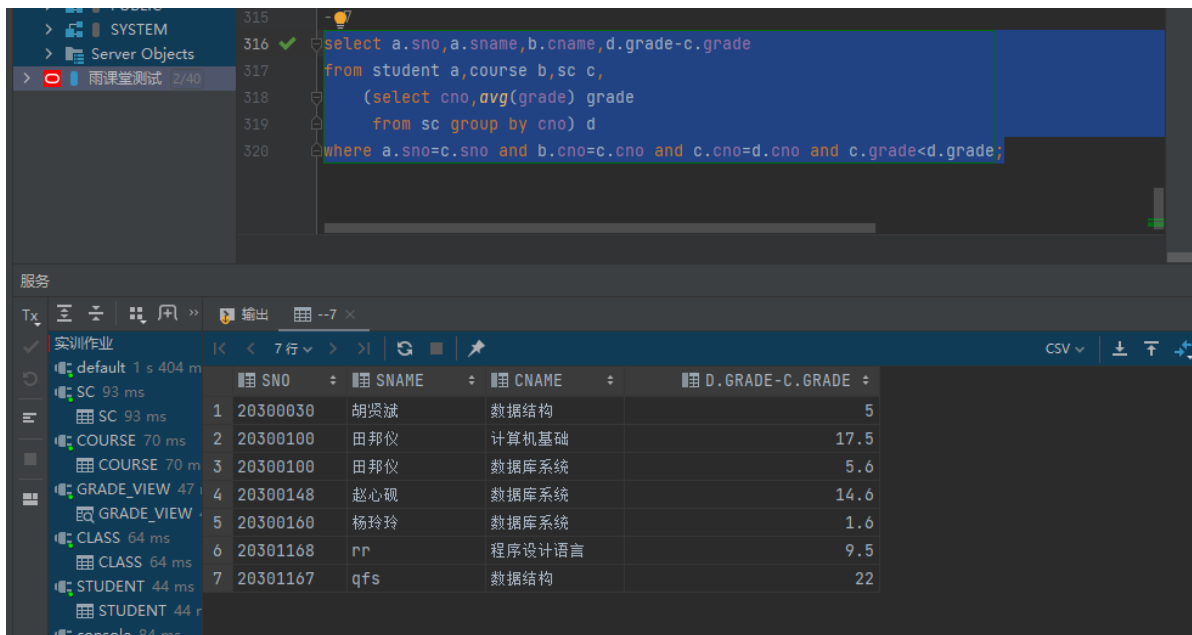
```
--6
select student.sno,sname,classname,course.cno,cname,grade
from student join class c2 on c2.classno = student.classno join sc s on student.sno = s
where classdept = any('软件开发');
```

	SNO	SNAME	CLASSNAME	CNO	CNAME	GRADE
1	20300100	田邦仪	软件2004	810011	数据库系统	67
2	20300160	杨玲玲	软件2006	810011	数据库系统	71
3	20300012	葛畅	软件2001	800003	数据结构	88
4	20300015	刘晶	软件2001	800003	数据结构	<null>
5	20300020	杨敏	软件2001	800003	数据结构	91
6	20300030	胡贤斌	软件2001	800003	数据结构	78
7	20300048	赵鸿泽	软件2002	800003	数据结构	97
8	20300020	杨敏	软件2001	800002	程序设计语言	80
9	20300100	田邦仪	软件2004	800001	计算机基础	59

（7） 查询成绩低于同门课程平均成绩的信息，显示学生学号、姓名、课程名称及低于平均成绩的值（即比平均成绩低多少）

```
select a.sno,a.sname,b.cname,d.grade-c.grade
from student a,course b,sc c,
    (select cno,avg(grade) grade
     from sc group by cno) d
where a.sno=c.sno and b.cno=c.cno and c.cno=d.cno and c.grade<d.grade;
```



```
--7
select a.sno,a.sname,b.cname,d.grade-c.grade
from student a,course b,sc c,
    (select cno,avg(grade) grade
     from sc group by cno) d
where a.sno=c.sno and b.cno=c.cno and c.cno=d.cno and c.grade<d.grade;
```

	SNO	SNAME	CNAME	D.GRADE-C.GRADE
1	20300030	胡贤斌	数据结构	5
2	20300100	田邦仪	计算机基础	17.5
3	20300100	田邦仪	数据库系统	5.6
4	20300148	赵心砚	数据库系统	14.6
5	20300160	杨玲玲	数据库系统	1.6
6	20301168	rr	程序设计语言	9.5
7	20301167	qfs	数据结构	22

（8） 查询和"葛畅"在同一班级的同学的姓名（使用子查询）

```
select sname
from Student
where classno=(select classno
               from Student
               where sname='葛畅');
```
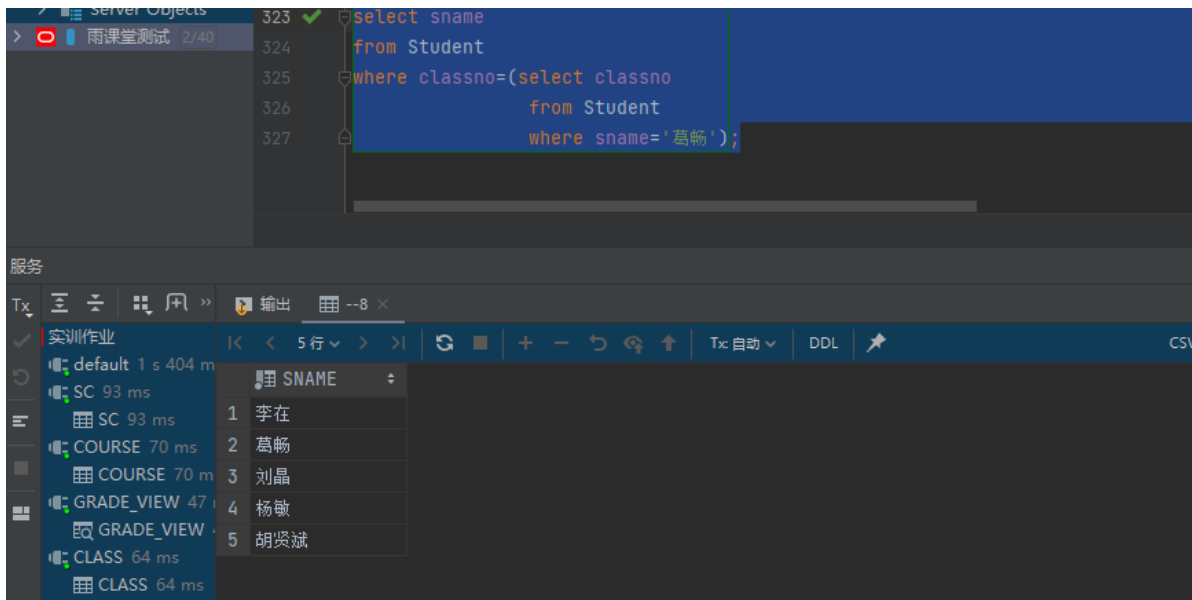
(9) 查询没有选修"计算机基础"课程的学生姓名（用NOT EXISTS）

```sql
select sname
from Student
where not exists(
    select *
    from SC,course
    where student.sno=sc.sno and sc.cno=course.cno and cname='计算机基础');
```
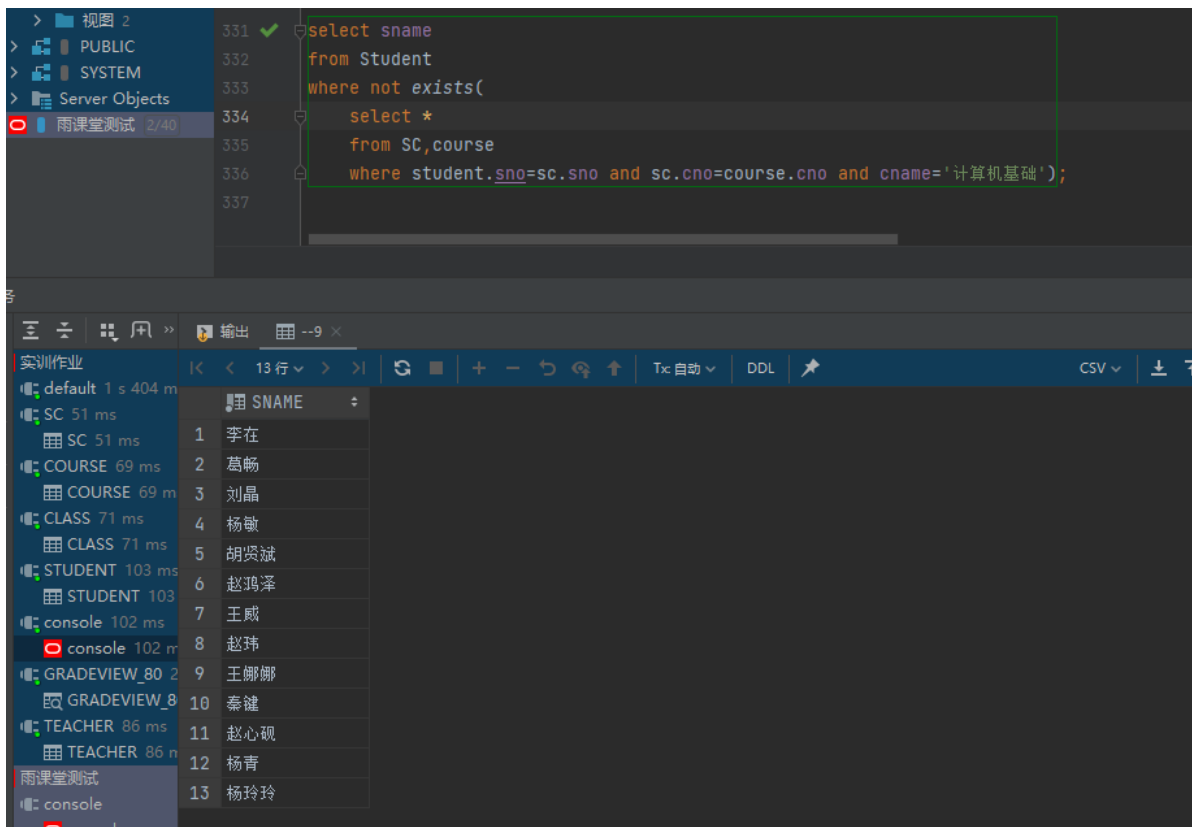

(10) 查询主讲"数据库系统"和主讲"数据结构"的教师姓名（用UNION）

```
select teacher.tname
from Teacher join Teaching on Teacher.tno=Teaching.tno join Course on
Course.cno=Teaching.cno
where cname='数据库系统'
union
select teacher.tname
from Teacher join Teaching on Teacher.tno=Teaching.tno join Course on
Course.cno=Teaching.cno
where cname='数据结构';
```
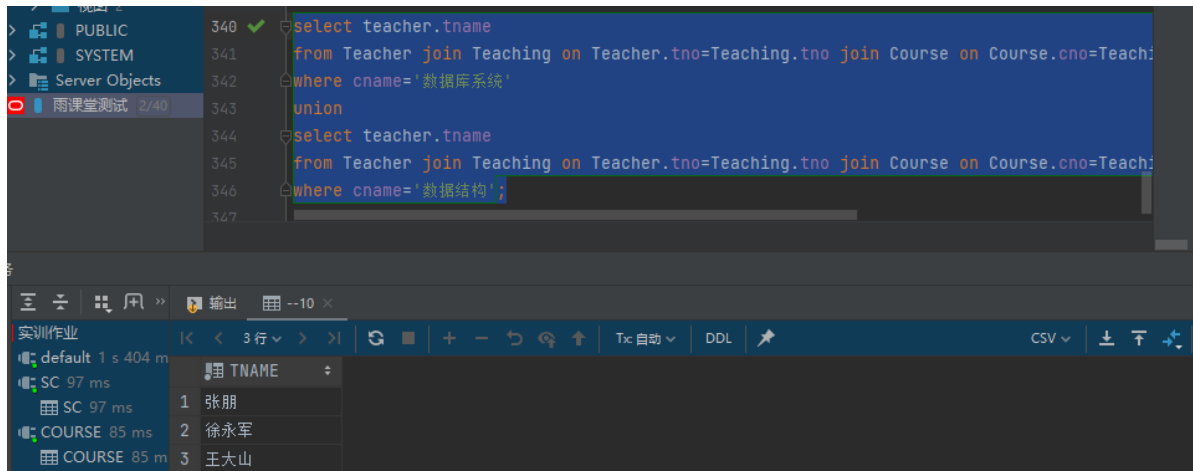

（11）　查询讲授了所有课程的教师的姓名

插入一些值，防null

FROM C##VANXQ.TEACHING t
) WHERE ROWNUM <= 501
[2022-04-15 20:40:02] 在 60 ms (execution: 4 ms, fetching: 56 ms) 内检索到从 1 开始的 10 行
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '800002', null)
[2022-04-15 20:41:11] 9 ms 中有 1 行受到影响
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '800003', null)
[2022-04-15 20:41:11] 2 ms 中有 1 行受到影响
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '810011', null)
[2022-04-15 20:41:11] 1 ms 中有 1 行受到影响
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '810013', null)
[2022-04-15 20:41:11] 2 ms 中有 1 行受到影响
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '810015', null)
[2022-04-15 20:41:11] 2 ms 中有 1 行受到影响
C##VANXQ> SELECT * FROM (
                        SELECT t.*, ROWID
                        FROM C##VANXQ.TEACHING t
) WHERE ROWNUM <= 501
[2022-04-15 20:41:11] 在 4 ms (execution: 1 ms, fetching: 3 ms) 内检索到从 1 开始的 15 行

```sql
select tname
from teacher
where not exists
    (select *
     from course
     where not exists
        (select *
         from teaching
         where teacher.tno=teaching.tno and teaching.cno=course.cno));
```
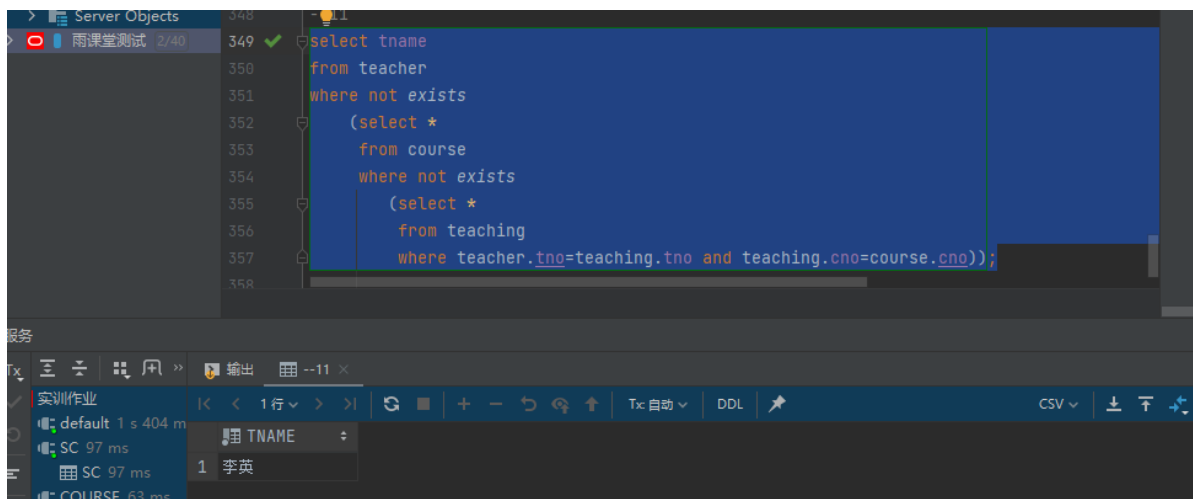
（12）　查询同时选修学课程800001和800002的女同学的姓名
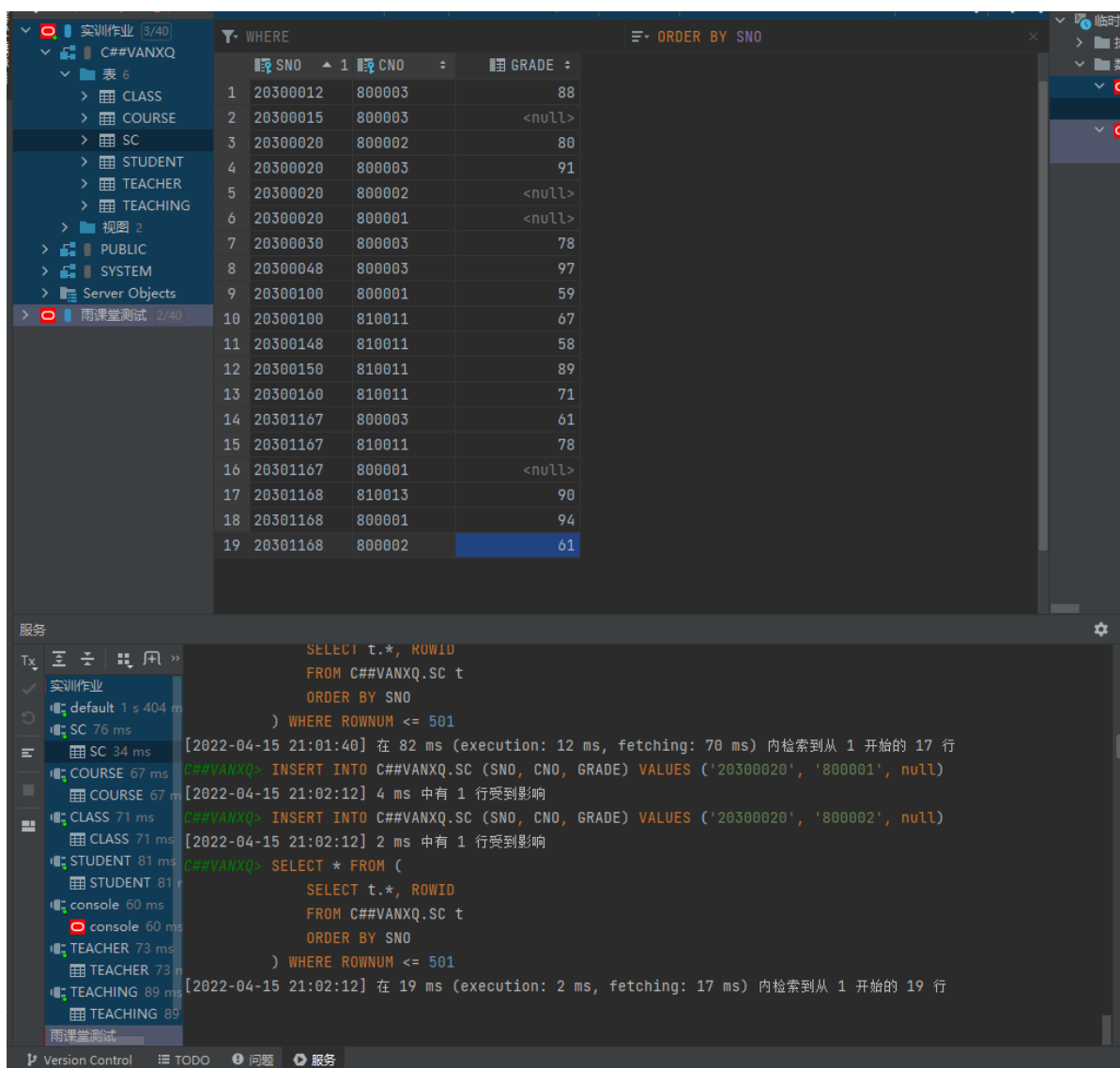

```
select student.sname
from student,sc s1,sc s2
where student.sno=s1.sno and student.sno=s2.sno and student.ssex='女' and
s1.cno='800001' and s2.cno='800002'
group by sname;
```

```
358
359      --12
360  ✓  ⊟select student.sname
361      from student,sc s1,sc s2
362      where student.sno=s1.sno and student.sno=s2.sno and student.ssex='女' and s1.cno='80000
363  ⊟group by sname;
364
```
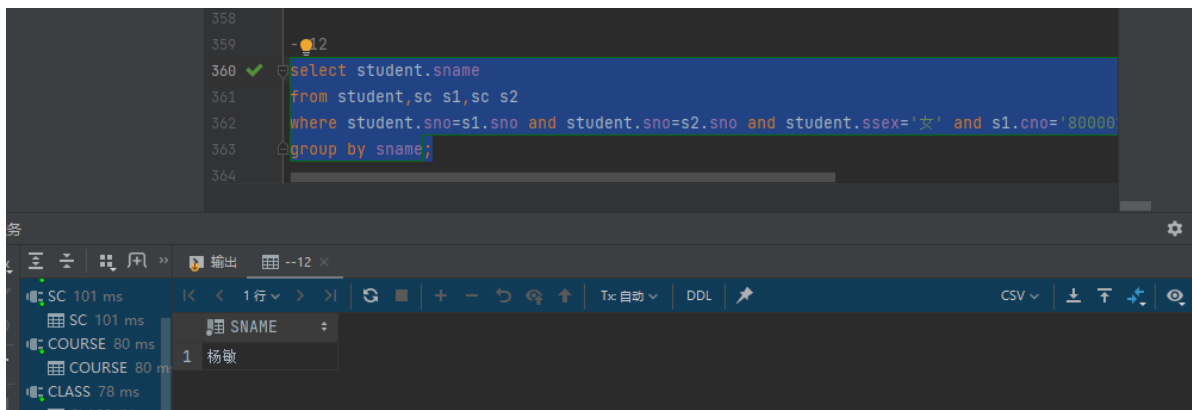
（13）　查询有一门课程成绩为95分的女同学的姓名

添加新值防空


```
select sname
from student,sc
where student.sno=sc.sno and sc.grade=95;
```


（14）　查询选课数量大于3门的女同学的姓名

```sql
select sname
from student,sc
where student.sno=sc.sno and student.ssex='女'
having count(*) >3
group by sname,student.sno;
```


(15)　查询平均成绩大于80分的男同学的姓名

```sql
select sname
from student,sc
where student.sno=sc.sno and student.ssex='男'
having avg(grade) >80
group by student.sno,sname;
```


(16)　查询徐永军老师所教的每一门课程的平均成绩

```sql
select avg(grade)
from sc,teaching,teacher
where teacher.tno=teaching.tno and sc.cno=teaching.cno and teacher.tname='徐永军'
group by teaching.cno;
```

```
384    --16
385 ✔  select avg(grade)
386    from sc,teaching,teacher
387    where teacher.tno=teaching.tno and sc.cno=teaching.cno and teacher.tname='徐永军'
388    group by teaching.cno;
```

数据源: 实训作业
架构: C##VANXQ
表: TEACHING

```
-- auto-generated definition
create table TEACHING
(
    TNO        NUMBER(6)
        references TEACHER,
    CNO        VARCHAR2(6)
        references COURSE,
    LANGUAGE VARCHAR2(10)
```

输出 | --16 ×

| |< < 2行 ∨ > >| S ■ 📌 |

	⊞ AVG(GRADE) ÷
1	83
2	72.6

（17）　查询男同学每一个年龄组的人数,要求按人数升序输出人数超过20人的年龄组

增加值防查空

HERE	⊞ SSEX ÷	⊞ SBIRTHDAY ÷	⊞ CLASSNO ÷	⊞ TOTALCREDIT ÷	⊞ CreatedBy ÷	⊞ AGE ÷	⊞
	男	2001-10-01	RJ2001	0	20301174	18	<nu
	男	2002-08-08	RJ2001	0	20301174	18	<nu
	女	2003-05-22	RJ2001	0	20301174	18	<nu
	女	2001-01-08	RJ2001	0	20301174	18	<nu
	男	2002-10-08	RJ2001	0	20301174	18	<nu
	男	2003-06-06	RJ2002	0	20301174	18	<nu
	男	2004-06-10	RJ2002	0	20301174	18	<nu
	女	2002-08-21	RJ2003	0	20301174	18	<nu
	女	2003-09-23	RJ2003	0	20301174	18	<nu
	男	2004-03-01	RJ2003	0	20301174	18	<nu
	女	2003-02-26	RJ2004	0	20301174	18	<nu
	男	2002-04-25	RJ2005	0	20301174	18	<nu
	女	2004-11-15	RJ2005	0	20301174	18	<nu
	女	2002-12-12	RJ2006	0	20301174	18	<nu
	男	<null>	<null>	<null>	<null>	18	<nu
	男	<null>	<null>	<null>	<null>	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu

```
select age,count(*)
from student
where ssex='男'
group by age
having count(*) >20 order by count(*);
```


（18）　查询每门课程成绩都大于90分的学生姓名

改表防查空

	SNO ▲ 1	CNO	GRADE ÷
1	20300012	800003	88
2	20300015	800003	<null>
3	20300020	800002	80
4	20300020	800003	91
5	20300020	800001	<null>
6	20300020	800002	95
7	20300030	800003	78
8	20300048	800003	97
9	20300100	800001	59
10	20300100	810011	67
11	20300148	810011	58
12	20300150	810011	89
13	20300160	810011	71
14	20301167	800003	61
15	20301167	810011	78
16	20301167	800001	<null>
17	20301168	810013	91
18	20301168	800001	94
19	20301168	800002	95

```sql
select sname
from student,sc
    where sc.sno=student.sno
    having min(grade)>90
group by sname,student.sno;
```

```sql
400 ✔  select sname
401     from student,sc
402         where sc.sno=student.sno
403         having min(grade)>90
404     group by sname,student.sno;
405
406
```

输出   --18 ×

SC 85 ms   2行 ∨   Tx 自动 ∨   DDL
SC 55 ms   SNAME ÷
COURSE 80 ms   1 rr
COURSE 80 m

（19）　查询比所有女同学年龄要大的男同学的姓名

改表防空

IE	SSEX	SBIRTHDAY	CLASSNO	TOTALCREDIT	CreatedBy	AGE	
	男	2001-10-01	RJ2001	0	20301174	18	<nu
	男	2002-08-08	RJ2001	0	20301174	18	<nu
	女	2003-05-22	RJ2001	0	20301174	18	<nu
	女	2001-01-08	RJ2001	0	20301174	18	<nu
	男	2002-10-08	RJ2001	0	20301174	18	<nu
	男	2003-06-06	RJ2002	0	20301174	18	<nu
	男	2004-06-10	RJ2002	0	20301174	18	<nu
	女	2002-08-21	RJ2003	0	20301174	18	<nu
	女	2003-09-23	RJ2003	0	20301174	18	<nu
	男	2004-03-01	RJ2003	0	20301174	18	<nu
	女	2003-02-26	RJ2004	0	20301174	18	<nu
	男	2002-04-25	RJ2005	0	20301174	18	<nu
	女	2004-11-15	RJ2005	0	20301174	18	<nu
	女	2002-12-12	RJ2006	0	20301174	18	<nu
	男	<null>	<null>	<null>	<null>	18	<nu
	男	<null>	<null>	<null>	<null>	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	18	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu
	男	<null>	<null>	0	20301174	20	<nu

```sql
select sname
from student
where ssex='男' and age>(select max(student.age)
                        from student
                        where ssex='女');
```

```
407    --19
408  ⊟select sname
409    from student
410  ⊟where ssex='男' and age>(select max(student.age)
411                            from student
412  ⊟                        where ssex='女');
413
414
415
```


	SNAME
1	k
2	l
3	m
4	n
5	o
6	p
7	q

(20) 查询未选修800002课程的女同学的姓名

```
select sname
from student,sc
    where student.sno=sc.sno and ssex='女' and cno<>800002;
```



```
      --20
417  ⊟select sname
418    from student,sc
419  ⊟    where student.sno=sc.sno and ssex='女' and cno<>800002;
420
421
```


	SNAME
1	田邦仪
2	杨敏
3	刘晶
4	杨敏
5	田邦仪
6	杨青
7	杨玲玲

(21) 查询所有课程成绩都及格的学生姓名

```
select sname
from student,sc
    where sc.sno=student.sno
    having min(grade)>=60
group by sname,student.sno;
```

```
422    --21
423 ✔ ⊟select sname
424    from student,sc
425        where sc.sno=student.sno
426        having min(grade)>=60
427    ⊟group by sname,student.sno;
```

SC 106 ms

⊞ SC 106 ms

COURSE 64 ms

⊞ COURSE 64 m

CLASS 118 ms

⊞ CLASS 118 ms

STUDENT 98 ms

⊞ STUDENT 62 n

onsole 61 ms

⊡ console 61 ms

TEACHER 89 ms

⊞ TEACHER 89 n

输出 ⊞ --21 ✕

|< < 8行∨ > >| | 🅂 ■ | + — ↺ ⟳ ↑ | Tx 自动∨ | DDL

	SNAME ‡
1	qfs
2	rr
3	杨敏
4	葛畅
5	胡贤斌
6	赵鸿泽
7	杨青
8	杨玲玲

（22） 查询选修课所有课程的学生姓名

防止查空，增值

	SNO ▲ 1	CNO	GRADE
1	20300012	800003	88
2	20300015	800003	\<null\>
3	20300020	800002	80
4	20300020	800003	91
5	20300020	800001	\<null\>
6	20300020	800002	95
7	20300030	800003	78
8	20300048	800003	97
9	20300100	800001	59
10	20300100	810011	67
11	20300148	810011	58
12	20300150	810011	89
13	20300160	810011	71
14	20301167	800003	61
15	20301167	810011	78
16	20301167	800001	79
17	20301168	810013	91
18	20301168	800001	94
19	20301168	800002	95
20	20301168	800003	\<null\>
21	20301168	810011	\<null\>
22	20301168	810015	\<null\>

WHERE ORDER BY SNO

```sql
select sname
from student
where not exists(select *
    from course
    where not exists(select *
        from sc
        where sc.sno=student.sno and sc.cno=course.cno));
```

```
429
430        --22
431 ✔   ⊟select sname
432      from student
433    ⊟where not exists(select *
434            from course
435            where not exists(select *
436                from sc
437    ⊟            where sc.sno=student.sno and sc.cno=course.cno));
438
439
```

SNAME
1 rr

(23) 查询选修了葛畅同学所选修的所有课程的学生姓名

```
select sname
from student
    where not exists(select *
                        from (select cno
                                from sc
                                where sc.sno=(select student.sno
                                                from student
                                                where sname='葛畅'))table_1 where not
exists(select*

 from sc

 where student.sno=sc.sno and sc.cno = table_1.cno)) ;
```

```
441
442 ✔  ⊟
443
444
445
446
447    ⊟student.sno
448
449    ⊟畅'))table_1 where not exists(select*
450                            from sc
451    ⊟            where student.sno=sc.sno and sc.cno = table_1.cno)) ;
452
```

SNAME
1 葛畅
2 刘晶
3 杨敏
4 胡贤斌
5 赵鸿泽
6 rr
7 qfs

(24)   查询平均成绩最高的学生姓名

```sql
select sname,avg(grade)
from student,sc
    where sc.sno=student.sno
group by sname
having avg(grade)>=all(select avg(grade)
                       from sc
                       where grade is not null
                       group by sc.sno);
```

```
445        --24
446 ✔  ⊟select sname,avg(grade)
447     from student,sc
448         where sc.sno=student.sno
449     group by sname
450    ⊟having avg(grade)>=all(select avg(grade)
451                            from sc
452                            where grade is not null
453    ⊟                       group by sc.sno);
454
```

```
⊞ »  ⚡ 输出   ⊞ --24 ×

|< < 1行∨ > >| | ↻ ■ | ★

| | ▮⊞ SNAME       ⇕ | ▮⊞ AVG(GRADE) ⇕ |
| 1 | 赵鸿泽          |              97 |
```

(25)   找出比所在班级平均成绩高的学生信息

```sql
select sname,avg(grade)
from student,sc
    where sc.sno=student.sno
group by sname
having avg(grade)>=all(select avg(grade)
                       from sc
                       where grade is not null
                       group by sc.sno);
```

	SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	AGE
1	20300020	杨敏	女	2001-01-08	RJ2001	18
2	20300012	葛畅	男	2002-08-08	RJ2001	18
3	20300150	杨青	女	2004-11-15	RJ2005	18
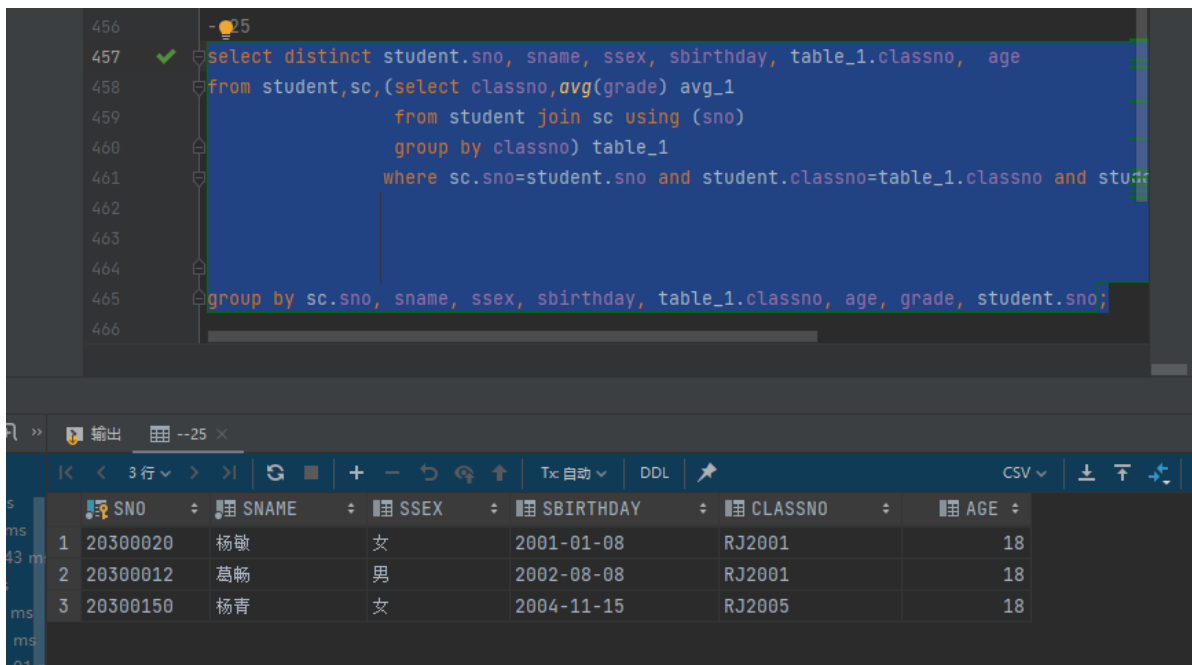
(二) 使用DML

使用**SQL DML命令完成下列对3张表Student、Course、SC的各种更新操作，并查询显示测试结果：**

（1） 将选修徐永军老师所教课程的同学的成绩提高5%

1.05会报错，有限制，用1.03

```
update sc
set grade=grade*1.03
where sno in(select sc.sno
             from student,sc
             where student.sno =sc.sno and cno in(select cno
                                                  from teaching
                                                  where tno=( select tno
                                                              from teacher
                                                              where  tname='徐
永军')));

select sname,grade
from student,sc
    where student.sno=sc.sno and cno in(select cno
                                        from teaching
                                        where tno=(select tno
                                                   from teacher
                                                   where tname='徐永军'));
```

```
479            --1
480          update sc
481          set grade=grade*1.03
482          where sno in(select sc.sno
483                       from student,sc
484                       where student.sno =sc.sno and cno in(select cno
485                                                             from teaching
486                                                             where tno=( select tno
487                                                                         from teacher
488                                                                         where  tname='徐永军'))
489    ✓     select sname,grade
490          from student,sc
491          where student.sno=sc.sno and cno in(select cno from teaching where tno=(select tno
492
493            --2
494          create table STUD(
```

输出   Result 138 ×

13行 ⟲ ■ ★   CSV ⌄ ± ⊤

SNAME	GRADE
1 葛畅	91
2 刘晶	<null>
3 杨敏	94
4 胡贤斌	80
5 赵鸿泽	100
6 田邦仪	69
7 赵心砚	60
8 杨青	92
9 杨玲玲	73
10 rr	<null>
11 rr	<null>
12 qfs	63
13 qfs	80

（2）　在基本表Student中检索每一门课程成绩都大于等于80分的学生学号、姓名、性别，并把检索到的值送往另一个已存在的基本表STUD（S#，SNAME，SEX）。

```
create table STUD(
    s## varchar2(8),
    sname varchar2(8),
    ssex varchar2(2)
);

alter table STUD
    modify ssex varchar2(3);
alter table STUD
    modify sname varchar2(9);
insert into STUD select sc.sno,sname,ssex
                 from student,sc
                     where grade>=80 and student.sno=sc.sno;


select *from STUD;
```

(3) 在基本表SC中删除尚无成绩的选课记录。

```
delete from sc
where grade is null;
select * from sc;
```

```
516  ✓  ⊟delete from sc
517     ⊟where grade is null;
518  ✓  select * from sc;
519
520
521
```


	SNO	CNO	GRADE
1	20301167	800003	63
2	20301168	810013	94
3	20301168	800001	97
4	20301168	800002	98
5	20301167	800001	81
6	20300100	800001	61
7	20300020	800002	82
8	20300020	800002	98
9	20300012	800003	91
10	20300020	800003	94
11	20300030	800003	80
12	20300048	800003	100
13	20300100	810011	69
14	20300148	810011	60
15	20300150	810011	92
16	20300160	810011	73
17	20301167	810011	80

(4) 把王威同学的学习选课和成绩全部删除。

```
delete from sc
where sno=(select sno
           from student
           where sname='王威');
select * from sc;
```

```
521
522        --4
523      delete from sc
524      where sno=(select sno
525                  from student
526                  where sname='王威');
527    ✔  select * from sc;
```


	SNO	CNO	GRADE
1	20301167	800003	63
2	20301168	810013	94
3	20301168	800001	97
4	20301168	800002	98
5	20301167	800001	81
6	20300100	800001	61
7	20300020	800002	82
8	20300020	800002	98
9	20300012	800003	91
10	20300020	800003	94
11	20300030	800003	80
12	20300048	800003	100
13	20300100	810011	69
14	20300148	810011	60
15	20300150	810011	92
16	20300160	810011	73
17	20301167	810011	80

（5）　把选修数据结构课不及格的成绩全改为空值。

改值

17 行 ∨

WHERE　　　　　　　　　　　　　　　　　　　　　ORDER BY SNO

	SNO ▲ 1	CNO	GRADE
1	20300012	800003	59
2	20300020	800002	82
3	20300020	800003	94
4	20300020	800002	98
5	20300030	800003	80
6	20300048	800003	100
7	20300100	800001	61
8	20300100	810011	69
9	20300148	810011	60
10	20300150	810011	92
11	20300160	810011	73
12	20301167	800003	63
13	20301167	810011	80
14	20301167	800001	81
15	20301168	810013	94
16	20301168	800001	97
17	20301168	800002	98

```
update sc
set grade=null
where grade<60 and cno=(select cno from course where cname ='数据结构');
select * from sc;
```

```
--5
update sc
set grade=null
where grade<60 and cno=(select cno from course where cname ='数据结构');
select * from sc;
```

	SNO	CNO	GRADE
1	20301167	800003	63
2	20301168	810013	94
3	20301168	800001	97
4	20301168	800002	98
5	20301167	800001	81
6	20300100	800001	61
7	20300020	800002	82
8	20300020	800002	98
9	20300012	800003	<null>
10	20300020	800003	94
11	20300030	800003	80
12	20300048	800003	100
13	20300100	810011	69
14	20300148	810011	60
15	20300150	810011	92
16	20300160	810011	73
17	20301167	810011	80

(6) 把低于总平均成绩的女同学的成绩提高5%

```
update sc
set grade=grade*1.05
where sno in(select sno
            from sc
            where sno in(select sc.sno
                         from student,sc
                         where sc.sno=student.sno and ssex='女'and grade
<(select avg(grade)
                                                                   from
sc))
            group by sno);
select * from sc;
```

```
537        --6
538    │ update sc
539      set grade=grade*1.05
540    │ where sno in(select sno
541                    from sc
542          │         where sno in(select sc.sno
543                                    from student,sc
544          │                        where sc.sno=student.sno and ssex='女'and grade <(select avg
545          │                                from sc))
546          │         group by sno);
547    ✔   select * from sc;
548
```

	SNO	CNO	GRADE
1	20301167	800003	63
2	20301168	810013	94
3	20301168	800001	97
4	20301168	800002	98
5	20301167	800001	81
6	20300100	800001	61
7	20300020	800002	82
8	20300020	800002	98
9	20300012	800003	<null>
10	20300020	800003	94
11	20300030	800003	80
12	20300048	800003	100
13	20300100	810011	69
14	20300148	810011	60
15	20300150	810011	92
16	20300160	810011	73

（7） 在基本表SC中修改800004课程的成绩，若成绩小于等于75分时提高5%，若成绩大于75分时提高4%但不能超过100分（用两个UPDATE语句实现），成绩只取整数部分（基表该字段类型为Integer）。按照需要，自己在相关基表中插入测试数据。

```
update sc
set grade=grade *1.05
where cno=800004 and grade<=75;
update sc
set grade=grade*1.04
where cno=800004 and grade>75;
select * from sc;
```

```
550  ✔  update sc
551       set grade=grade *1.05
552       where cno=800004 and grade<=75;
553  ✔  update sc
554       set grade=grade*1.04
555       where cno=800004 and grade>75;
556  ✔  select * from sc;
557
558
```

	SNO	CNO	GRADE
1	20301167	800003	63
2	20301168	810013	94
3	20301168	800001	97
4	20301168	800002	98
5	20301167	800001	81
6	20300100	800001	61
7	20300020	800002	82
8	20300020	800002	98
9	20300012	800003	\<null\>
10	20300020	800003	94
11	20300030	800003	80
12	20300048	800003	100
13	20300100	810011	69
14	20300148	810011	60
15	20300150	810011	92
16	20300160	810011	73
17	20301167	810011	80

附源代码

```
--第四次实验报告
--1


select student.sno,sname,sum(course.ccredit) as totalcredit
from student join sc on student.sno = sc.sno right join course on
course.cno=sc.cno
where grade>=60
group by sname,student.sno;

--2
select student.sno,student.sname,avg(grade), count(sc.cno) as chosen_course
from student join sc on student.sno = sc.sno
group by student.sno, student.sname;

--3
select student.sno,student.sname,s.cno,c2.cname
from student join sc s on student.sno = s.sno join course c2 on c2.cno = s.cno
where grade is null ;

--4
select s.sno,sname,s2.cno,course.cname,grade
```

```sql
from student s join sc s2 on s.sno = s2.sno join course on s2.cno = course.cno
where grade<60;

--5
select student.sname,grade
from student join sc s on student.sno = s.sno join course c2 on c2.cno = s.cno
where cname = any('程序设计语言');

--6
select student.sno,sname,classname,course.cno,cname,grade
from student join class c2 on c2.classno = student.classno join sc s on
student.sno = s.sno join course on course.cno=s.cno
where classdept = any('软件开发');

--7
select a.sno,a.sname,b.cname,d.grade-c.grade
from student a,course b,sc c,
    (select cno,avg(grade) grade
     from sc group by cno) d
where a.sno=c.sno and b.cno=c.cno and c.cno=d.cno and c.grade<d.grade;

--8
select sname
from Student
where classno=(select classno
              from Student
              where sname='葛畅');

--9

select sname
from Student
where not exists(
    select *
    from SC,course
    where student.sno=sc.sno and sc.cno=course.cno and cname='计算机基础');

--10

select teacher.tname
from Teacher join Teaching on Teacher.tno=Teaching.tno join Course on
Course.cno=Teaching.cno
where cname='数据库系统'
union
select teacher.tname
from Teacher join Teaching on Teacher.tno=Teaching.tno join Course on
Course.cno=Teaching.cno
where cname='数据结构';

--11
select tname
from teacher
where not exists
    (select *
     from course
    where not exists
        (select *
         from teaching
```

```sql
                where teacher.tno=teaching.tno and teaching.cno=course.cno));

--12
select student.sname
from student,sc s1,sc s2
where student.sno=s1.sno and student.sno=s2.sno and student.ssex='女' and
s1.cno='800001' and s2.cno='800002'
group by sname;

--13
select sname
from student,sc
where student.sno=sc.sno and sc.grade=95;

--14
select sname
from student,sc
where student.sno=sc.sno and student.ssex='女'
having count(*) >3
group by sname,student.sno;

--15
select sname
from student,sc
where student.sno=sc.sno and student.ssex='男'
having avg(grade) >80
group by student.sno,sname;

--16
select avg(grade)
from sc,teaching,teacher
where teacher.tno=teaching.tno and sc.cno=teaching.cno and teacher.tname='徐永军'
group by teaching.cno;


--17
select age,count(*)
from student
where ssex='男'
group by age
having count(*) >20 order by count(*);


--18
select sname
from student,sc
    where sc.sno=student.sno
    having min(grade)>90
group by sname,student.sno;


--19
select sname
from student
where ssex='男' and age>(select max(student.age)
                        from student
                        where ssex='女');
```

```sql
--20
select sname
from student,sc
    where student.sno=sc.sno and ssex='女' and cno<>800002;


--21
select sname
from student,sc
    where sc.sno=student.sno
    having min(grade)>=60
group by sname,student.sno;


--22
select sname
from student
where not exists(select *
    from course
    where not exists(select *
        from sc
        where sc.sno=student.sno and sc.cno=course.cno));



--23
select sname
from student
    where not exists(select *
                    from (select cno
                        from sc
                        where sc.sno=(select student.sno
                                from student
                                where sname='葛畅'))table_1 where not
exists(select*

 from sc

 where student.sno=sc.sno and sc.cno = table_1.cno)) ;



--24
select sname,avg(grade)
from student,sc
    where sc.sno=student.sno
group by sname
having avg(grade)>=all(select avg(grade)
                    from sc
                    where grade is not null
                    group by sc.sno);


--25
select distinct student.sno, sname, ssex, sbirthday, table_1.classno,  age
from student,sc,(select classno,avg(grade) avg_1
```

```sql
              from student join sc using (sno)
              group by classno) table_1
            where sc.sno=student.sno and student.classno=table_1.classno and
student.sno in(select sno

             from sc

             group by sno

             having avg(grade)>avg_1)
group by sc.sno, sname, ssex, sbirthday, table_1.classno, age, grade,
student.sno;



--1
update sc
set grade=grade*1.03
where sno in(select sc.sno
          from student,sc
          where student.sno =sc.sno and cno in(select cno
                                          from teaching
                                            where tno=( select tno
                                                        from teacher
                                                        where  tname='徐
永军')));
select sname,grade
from student,sc
    where student.sno=sc.sno and cno in(select cno
                                    from teaching
                                    where tno=(select tno
                                                from teacher
                                                where tname='徐永军'));

--2
create table STUD(
    s## varchar2(8),
    sname varchar2(8),
    ssex varchar2(2)
);

alter table STUD
    modify ssex varchar2(3);
alter table STUD
    modify sname varchar2(9);
insert into STUD select sc.sno,sname,ssex
                from student,sc
                    where grade>=80 and student.sno=sc.sno;

select *from STUD;


--3
delete from sc
where grade is null;
select * from sc;
```

```sql
--4
delete from sc
where sno=(select sno
            from student
            where sname='王威');
select * from sc;

--5
update sc
set grade=null
where grade<60 and cno=(select cno from course where cname ='数据结构');
select * from sc;




--6
update sc
set grade=grade*1.05
where sno in(select sno
              from sc
              where sno in(select sc.sno
                            from student,sc
                            where sc.sno=student.sno and ssex='女'and grade
<(select avg(grade)
                                                                      from
sc))
              group by sno);
select * from sc;

--7
update sc
set grade=grade *1.05
where cno=800004 and grade<=75;
update sc
set grade=grade*1.04
where cno=800004 and grade>75;
select * from sc;
```