

# 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。

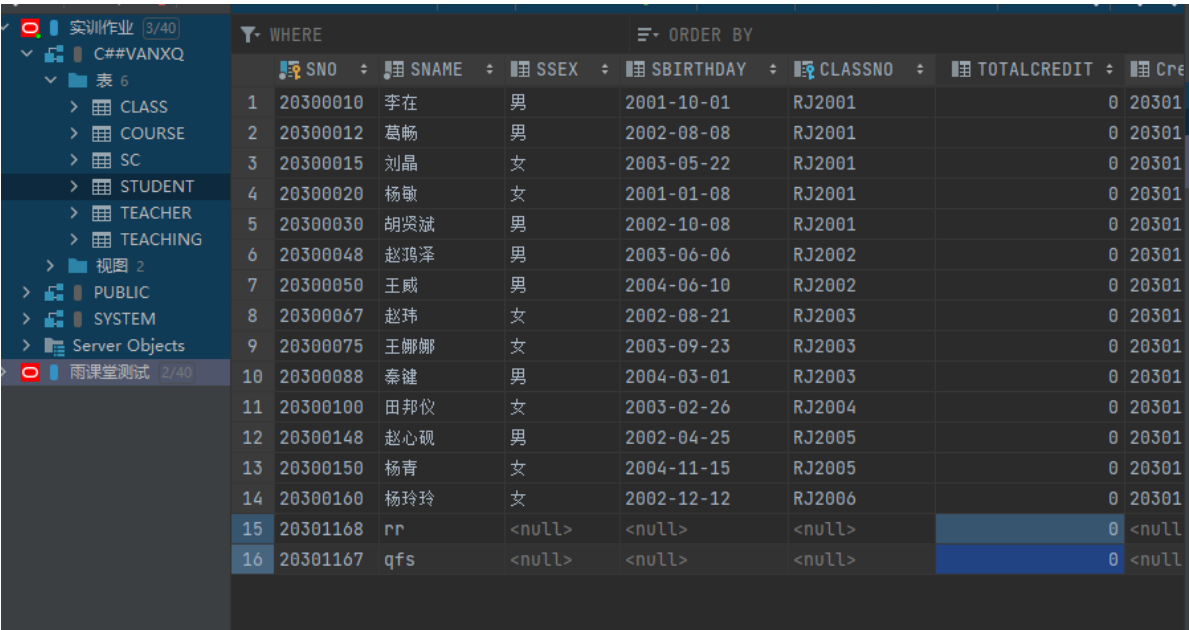
## (一) 复杂数据查询

使用\*\*SQL命令执行如下查询操作： \*\*

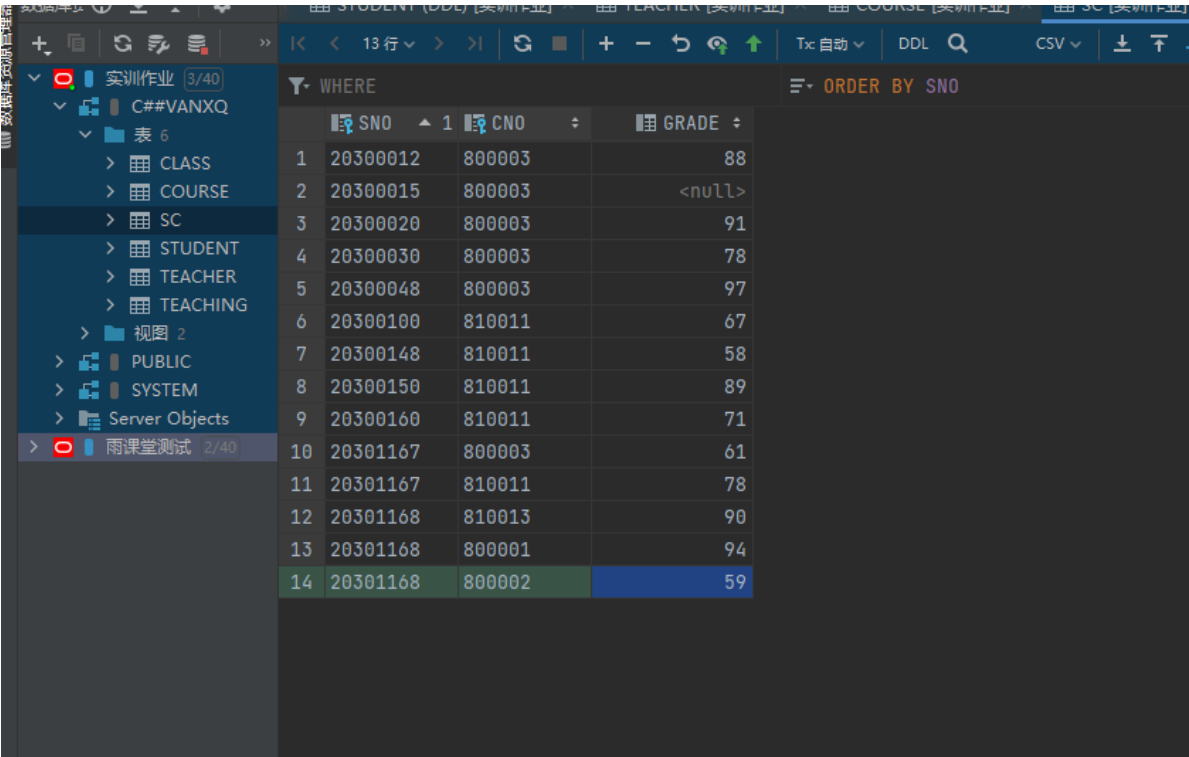
如果查询结果为空，可以自行补充数据到基表中。

(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



	SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	TOTALCREDIT	CREDIT
1	20300010	李在	男	2001-10-01	RJ2001	0	20301
2	20300012	葛畅	男	2002-08-08	RJ2001	0	20301
3	20300015	刘晶	女	2003-05-22	RJ2001	0	20301
4	20300020	杨敏	女	2001-01-08	RJ2001	0	20301
5	20300030	胡贤斌	男	2002-10-08	RJ2001	0	20301
6	20300048	赵鸿泽	男	2003-06-06	RJ2002	0	20301
7	20300050	王威	男	2004-06-10	RJ2002	0	20301
8	20300067	赵玮	女	2002-08-21	RJ2003	0	20301
9	20300075	王娜娜	女	2003-09-23	RJ2003	0	20301
10	20300088	秦健	男	2004-03-01	RJ2003	0	20301
11	20300100	田邦仪	女	2003-02-26	RJ2004	0	20301
12	20300148	赵心砚	男	2002-04-25	RJ2005	0	20301
13	20300150	杨青	女	2004-11-15	RJ2005	0	20301
14	20300160	杨玲玲	女	2002-12-12	RJ2006	0	20301
15	20301168	rr	<null>	<null>	<null>	0	<null>
16	20301167	qfs	<null>	<null>	<null>	0	<null>



	SNO	CNO	GRADE
1	20300012	800003	88
2	20300015	800003	<null>
3	20300020	800003	91
4	20300030	800003	78
5	20300048	800003	97
6	20300100	810011	67
7	20300148	810011	58
8	20300150	810011	89
9	20300160	810011	71
10	20301167	800003	61
11	20301167	810011	78
12	20301168	810013	90
13	20301168	800001	94
14	20301168	800002	59

```
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;
```

284

```
285 select student.sno,sname,sum(course.ccredit) as totalcredit
286 from student join sc on student.sno = sc.sno right join course on course.cno=sc.cno
287 where grade>=60
288 group by sname,student.sno;
289
290
```

服务

Tx 输出 --1 x

实训作业

	SNO	SNAME	TOTALCREDIT
default 1 s 404 ms	1 20300012	葛畅	4
SC 32 ms	2 20300020	杨敏	4
SC 32 ms	3 20300030	胡贤斌	4
COURSE 83 ms	4 20300048	赵鸿泽	4
COURSE 83 ms	5 20300100	田邦仪	4
GRADE_VIEW 47 ms	6 20300150	杨青	4
GRADE_VIEW 47 ms	7 20300160	杨玲玲	4
CLASS 90 ms	8 20301167	qfs	8
CLASS 90 ms	9 20301168	rr	7
STUDENT 131 ms			
STUDENT 131 ms			
console 61 ms			
console 61 ms			

(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;
```

```

290
291 select student.sno, student.sname, avg(grade), count(sc.cno) as chosen_course
292 from student join sc on student.sno = sc.sno
293 group by student.sno, student.sname;
294
295

```

(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

The screenshot shows the SQL Developer interface. On the left, a tree view shows the database structure, including tables like CLASS, COURSE, SC, STUDENT, TEACHER, and TEACHING. The main window displays a table with columns SNO, CNO, and GRADE. The table contains 15 rows, with the last row (SNO: 20301168, CNO: 800002, GRADE: 61) highlighted. Below the table, the 'Services' pane shows a list of tasks and their execution times. The 'console' pane shows the execution of a query that inserts a new row into the SC table.

SNO	CNO	GRADE
20300012	800003	88
20300015	800003	<null>
20300020	800003	91
20300030	800003	78
20300048	800003	97
20300100	810011	67
20300148	810011	58
20300150	810011	89
20300160	810011	71
20301167	800003	61
20301167	810011	78
20301167	800001	<null>
20301168	810013	90
20301168	800001	94
20301168	800002	61

```
[2022-04-15 19:31:10] 3 ms 中有 1 行受到影响
C##VANXQ> SELECT * FROM (
    SELECT t.*, ROWID
    FROM C##VANXQ.SC t
    ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:31:10] 在 33 ms (execution: 5 ms, fetching: 28 ms) 内检索到从 1 开始的 14 行
C##VANXQ> SELECT * FROM (
    SELECT t.*, ROWID
    FROM C##VANXQ.SC t
    ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:32:29] 在 76 ms (execution: 3 ms, fetching: 73 ms) 内检索到从 1 开始的 14 行
C##VANXQ> INSERT INTO C##VANXQ.SC (SNO, CNO, GRADE) VALUES ('20301167', '800001', null)
[2022-04-15 19:32:47] 13 ms 中有 1 行受到影响
C##VANXQ> SELECT * FROM (
    SELECT t.*, ROWID
    FROM C##VANXQ.SC t
    ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:32:47] 在 32 ms (execution: 10 ms, fetching: 22 ms) 内检索到从 1 开始的 15 行
```

```
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 ;
```

The screenshot shows the SQL Developer interface. The main window displays a query result with columns SNO, SNAME, CNO, and CNAME. The result contains two rows: (20301167, qfs, 800001, 计算机基础) and (20300015, 刘晶, 800003, 数据结构). The 'console' pane shows the execution of the query.

SNO	SNAME	CNO	CNAME
20301167	qfs	800001	计算机基础
20300015	刘晶	800003	数据结构

```
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

数据库工具界面显示 SQL 查询结果和日志。

**WHERE** 查询结果 (ORDER BY SNO):

SNO	CNO	GRADE
1	20300012	800003
2	20300015	800003
3	20300020	800003
4	20300030	800003
5	20300048	800003
6	20300100	800001
7	20300100	810011
8	20300148	810011
9	20300150	810011
10	20300160	810011
11	20301167	800003
12	20301167	810011
13	20301167	800001
14	20301168	810013
15	20301168	800001
16	20301168	800002

**SQL 日志:**

```

SELECT t.*, ROWID
FROM C#VANXQ.SC t
ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:32:47] 在 32 ms (execution: 10 ms, fetching: 22 ms) 内检索到从 1 开始的 15 行
C#VANXQ> SELECT * FROM (
SELECT t.*, ROWID
FROM C#VANXQ.SC t
ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:40:28] 在 63 ms (execution: 3 ms, fetching: 60 ms) 内检索到从 1 开始的 15 行
C#VANXQ> INSERT INTO C#VANXQ.SC (SNO, CNO, GRADE) VALUES ('20300100', '800001', 59)
[2022-04-15 19:41:01] 3 ms 中有 1 行受到影响
C#VANXQ> SELECT * FROM (
SELECT t.*, ROWID
FROM C#VANXQ.SC t
ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:41:01] 在 15 ms (execution: 3 ms, fetching: 12 ms) 内检索到从 1 开始的 16 行
  
```

```

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;
  
```

SQL 查询语句和结果:

```

301 select s.sno,sname,s2.cno,course.cname,grade
302 from student s join sc s2 on s.sno = s2.sno join course on s2.cno = course.cno
303 where grade<60;
304
305
  
```

**查询结果:**

SNO	SNAME	CNO	CNAME	GRADE	
1	20300100	田邦仪	800001	计算机基础	59
2	20300148	赵心砚	810011	数据库系统	58

(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

The screenshot shows the SQL Developer interface. On the left, the 'Server Objects' tree is expanded to '雨课堂测试 (2/40)'. The main window displays a query result for a table with columns SNO, CNO, and GRADE. The query is ordered by SNO. The results show 17 rows of data. Below the table, the 'Script' window shows the following SQL commands:

```

[2022-04-15 19:40:40] 在 70 ms (execution: 3 ms, fetching: 70 ms) 内检索到从 1 开始的 10 行
C##VANXQ> INSERT INTO C##VANXQ.SC (SNO, CNO, GRADE) VALUES ('20300020', '800002', 80)
[2022-04-15 19:47:20] 2 ms 中有 1 行受到影响
C##VANXQ> SELECT * FROM (
    SELECT t.*, ROWID
    FROM C##VANXQ.SC t
    ORDER BY SNO
) WHERE ROWNUM <= 501
[2022-04-15 19:47:20] 在 20 ms (execution: 3 ms, fetching: 17 ms) 内检索到从 1 开始的 17 行

```

```

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');

```

The screenshot shows the SQL Developer interface. The main window displays a query result for a table with columns SNAME and GRADE. The query is ordered by SNAME. The results show 2 rows of data. Below the table, the 'Script' window shows the following SQL commands:

```

--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');

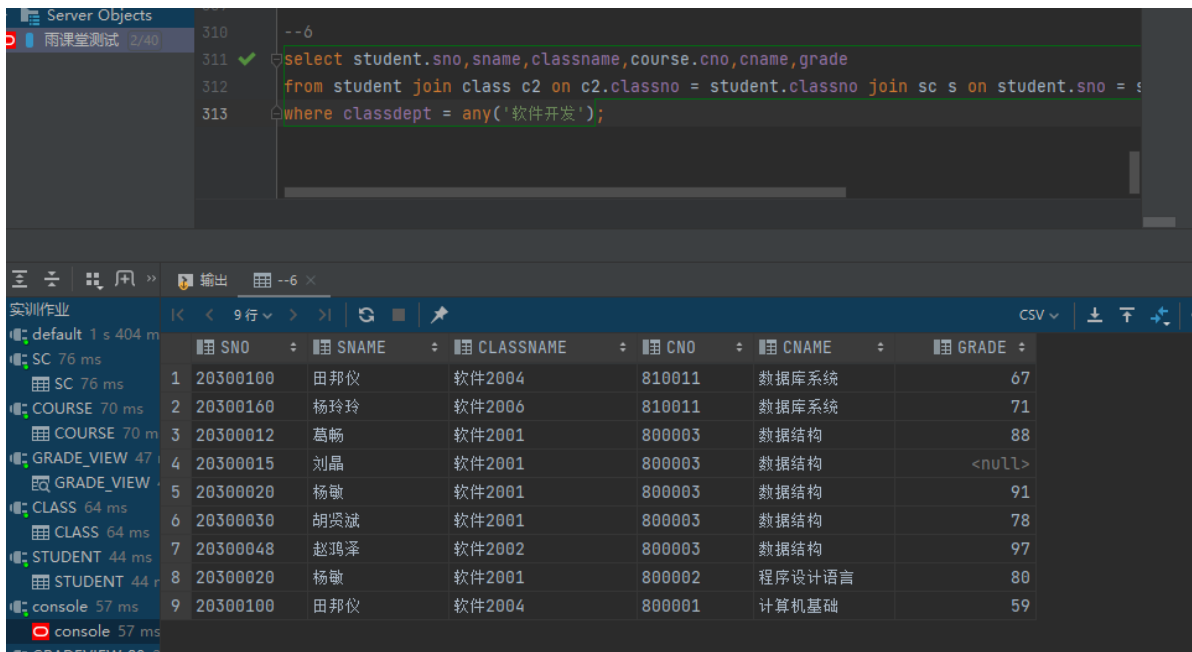
```

(6) 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

```

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');

```

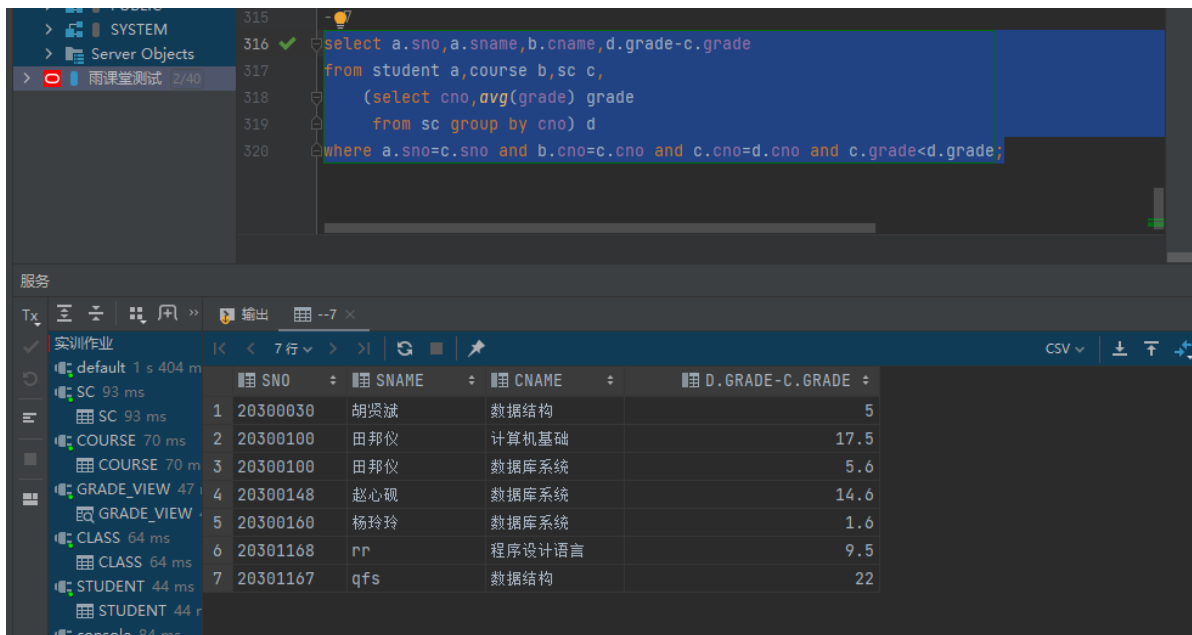


```
--6
select student.sno,sname,classname,course.cno,cname,grade
from student join class c2 on c2.classno = student.classno join sc s on student.sno = s
where classdept = any('软件开发');
```

SNO	SNAME	CLASSNAME	CNO	CNAME	GRADE
20300100	田邦仪	软件2004	810011	数据库系统	67
20300160	杨玲玲	软件2006	810011	数据库系统	71
20300012	葛畅	软件2001	800003	数据结构	88
20300015	刘晶	软件2001	800003	数据结构	<null>
20300020	杨敏	软件2001	800003	数据结构	91
20300030	胡贤斌	软件2001	800003	数据结构	78
20300048	赵鸿泽	软件2002	800003	数据结构	97
20300020	杨敏	软件2001	800002	程序设计语言	80
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;
```

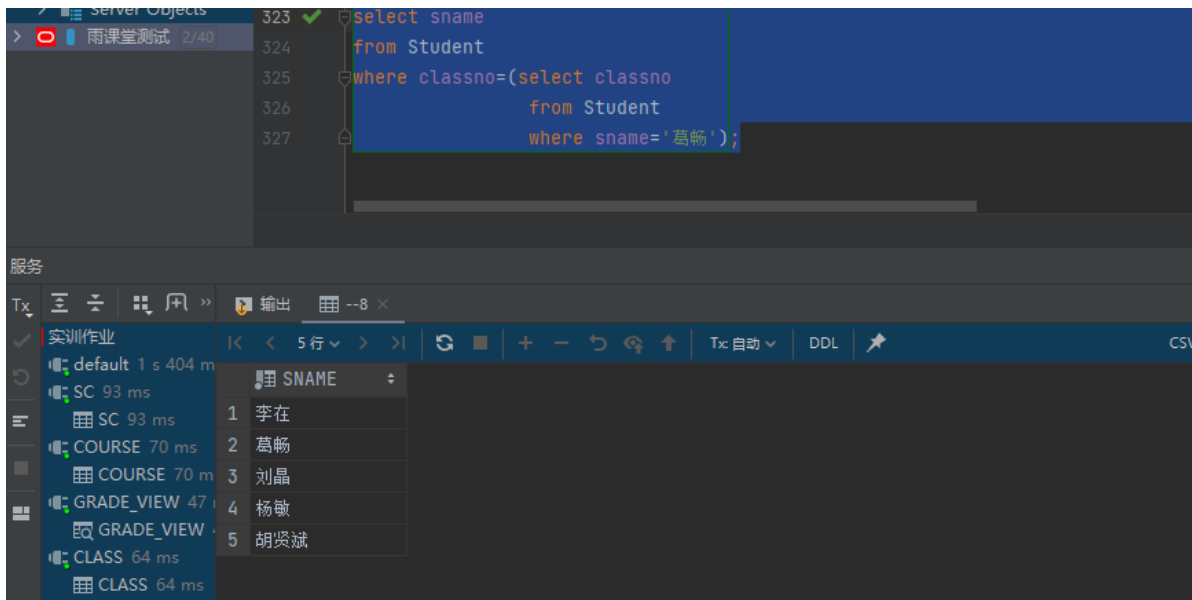


```
select a.sno,a.sname,b.cname,d.grade-c.grade
from student a,course b,sc c,
(select cno,avg(grade) grade
from sc group by cno) d
where a.sno=c.sno and b.cno=c.cno and c.cno=d.cno and c.grade<d.grade;
```

SNO	SNAME	CNAME	D.GRADE-C.GRADE
20300030	胡贤斌	数据结构	5
20300100	田邦仪	计算机基础	17.5
20300100	田邦仪	数据库系统	5.6
20300148	赵心砚	数据库系统	14.6
20300160	杨玲玲	数据库系统	1.6
20301168	rrr	程序设计语言	9.5
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');
```

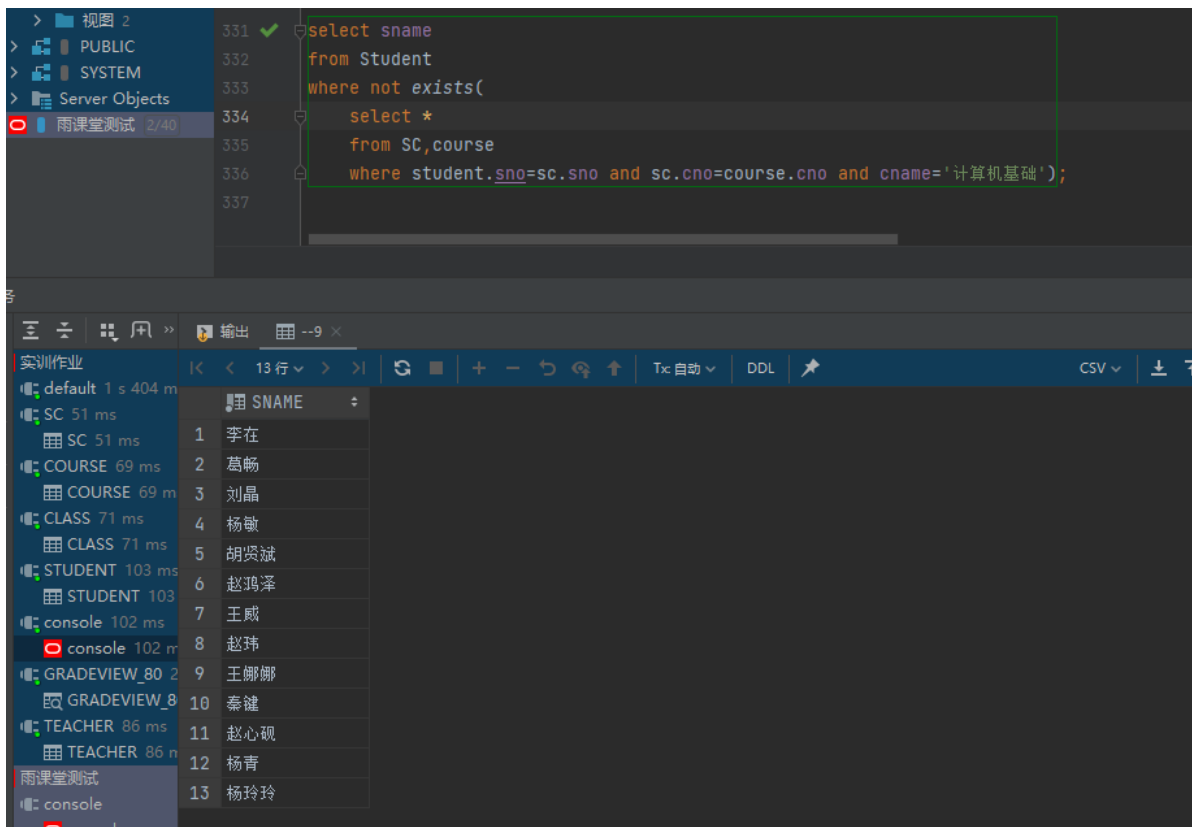


(9) 查询没有选修“计算机基础”课程的学生姓名 (用NOT EXISTS)

```

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');

```

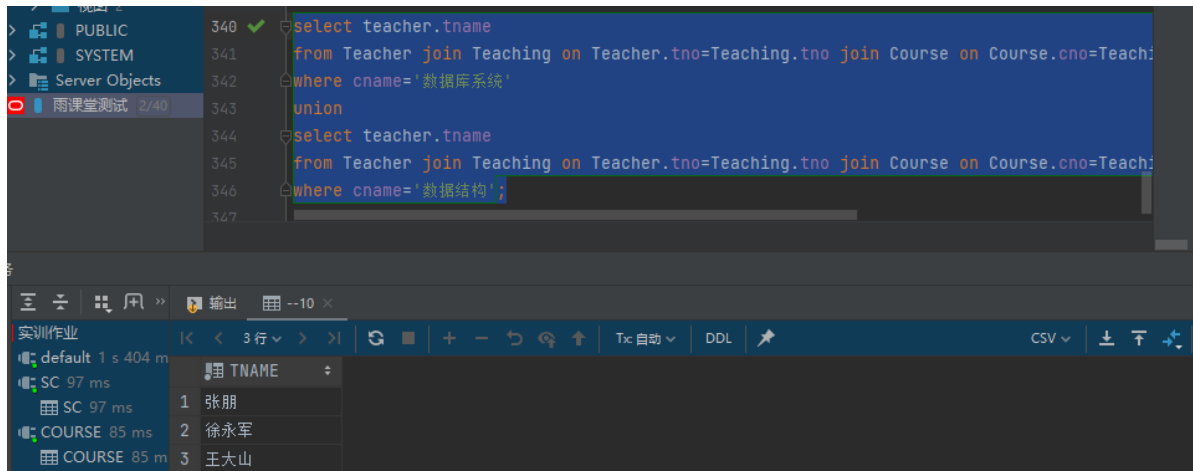


(10) 查询主讲“数据库系统”和主讲“数据结构”的教师姓名 (用UNION)

```

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



SQL Developer interface showing a query result and a service log.

**Query Result:**

TNO	CNO	LANGUAGE
1	800001	English
2	800002	Chinese
3	800003	Bilingual
4	810011	Chinese
5	810013	English
6	800001	Chinese
7	800002	Chinese
8	800003	English
9	810011	English
10	810013	Bilingual
11	1 800002	<null>
12	1 800003	<null>
13	1 810011	<null>
14	1 810013	<null>
15	1 810015	<null>

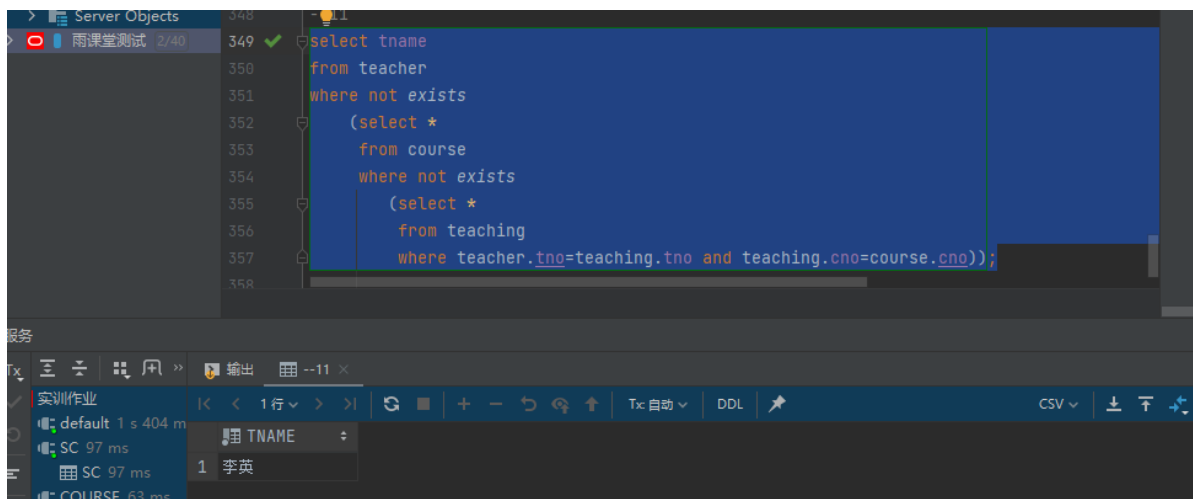
**Service Log:**

```

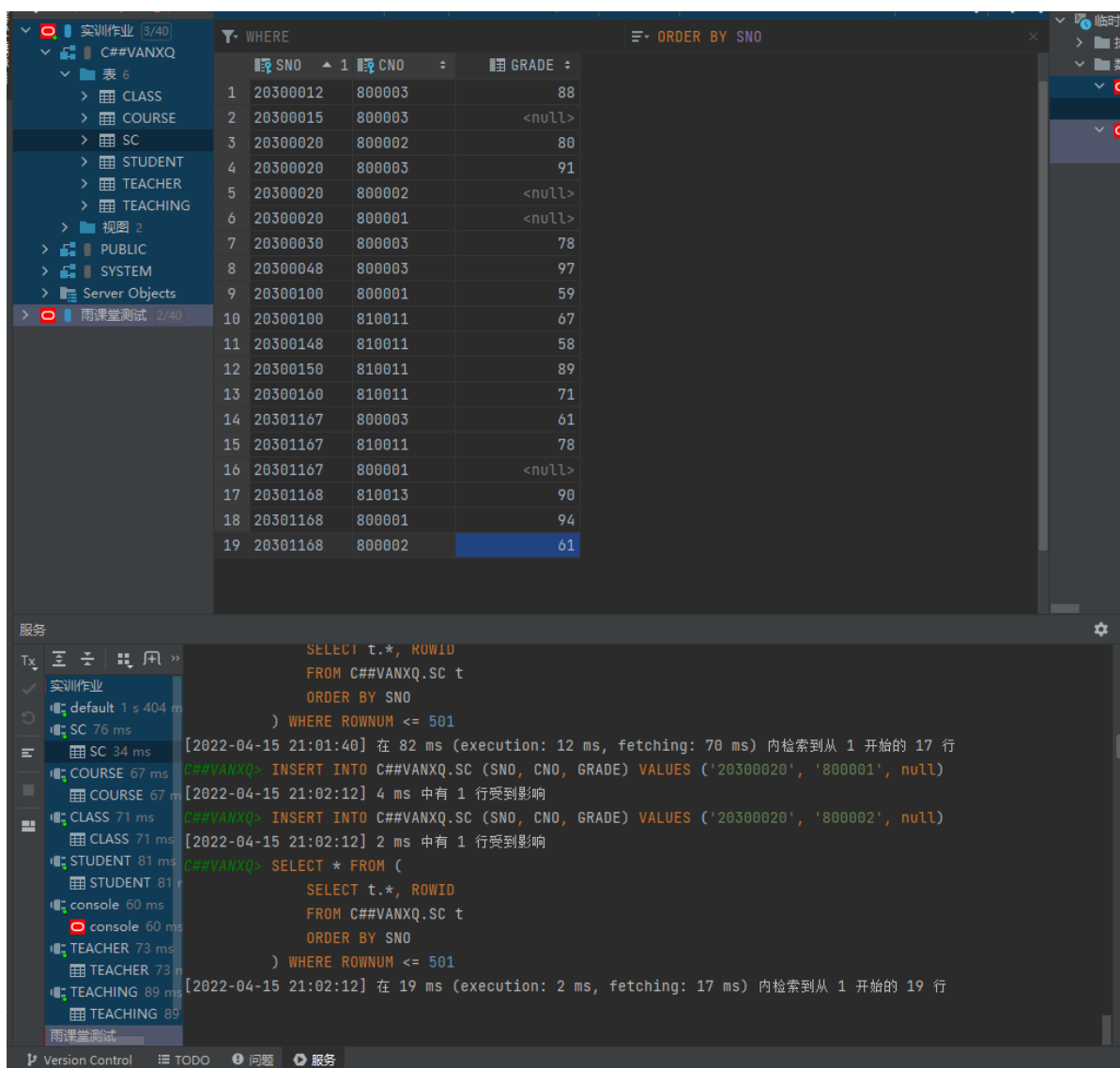
[2022-04-15 20:40:02] 在 60 ms (execution: 4 ms, fetching: 56 ms) 内检索到从 1 开始的 10 行
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '800002', null)
[2022-04-15 20:41:11] 9 ms 中有 1 行受到影响
C##VANXQ> INSERT INTO C##VANXQ.TEACHING (TNO, CNO, LANGUAGE) VALUES (1, '800003', null)
[2022-04-15 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
  
```

```

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));
  
```



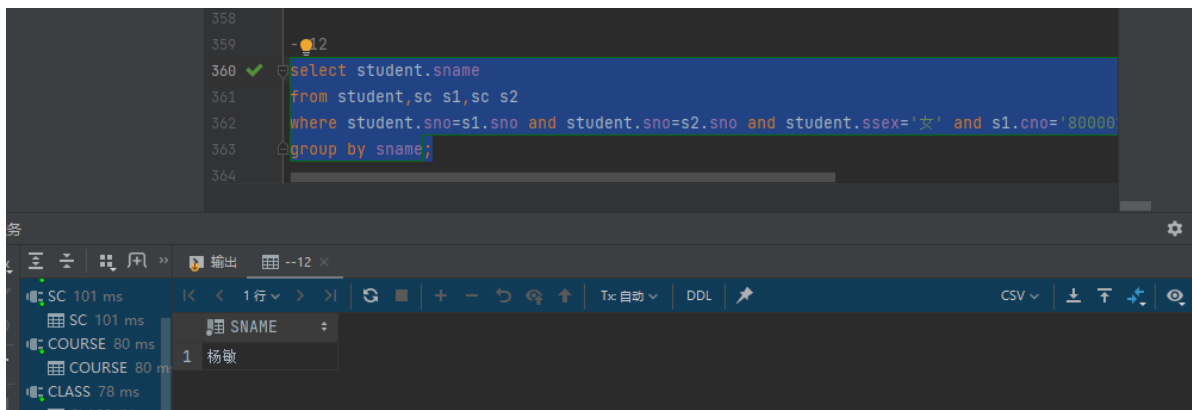
(12) 查询同时选修学课程800001和800002的女同学的姓名



```

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;

```



(13) 查询有一门课程成绩为95分的女同学的姓名

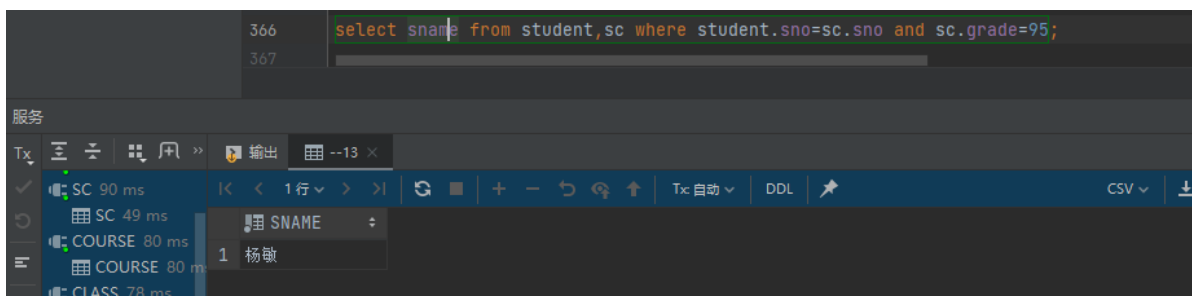
添加新值防空

	SNO	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	90
18	20301168	800001	94
19	20301168	800002	61

```

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

```

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

```

```

370
371 ✓ select sname
372     from student,sc
373     where student.sno=sc.sno and student.ssex='女'
374     having count(*) >3
375     group by sname,student.sno;
376

```

输出 --14 ×

SNAME
1 杨敏

(15) 查询平均成绩大于80分的男同学的姓名

```

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

```

```

378 ✓ select sname
379     from student,sc
380     where student.sno=sc.sno and student.ssex='男'
381     having avg(grade) >80
382     group by student.sno,sname;

```

输出 --15 ×

SNAME
1 葛畅
2 赵鸿泽

(16) 查询徐永军老师所教的每一门课程的平均成绩

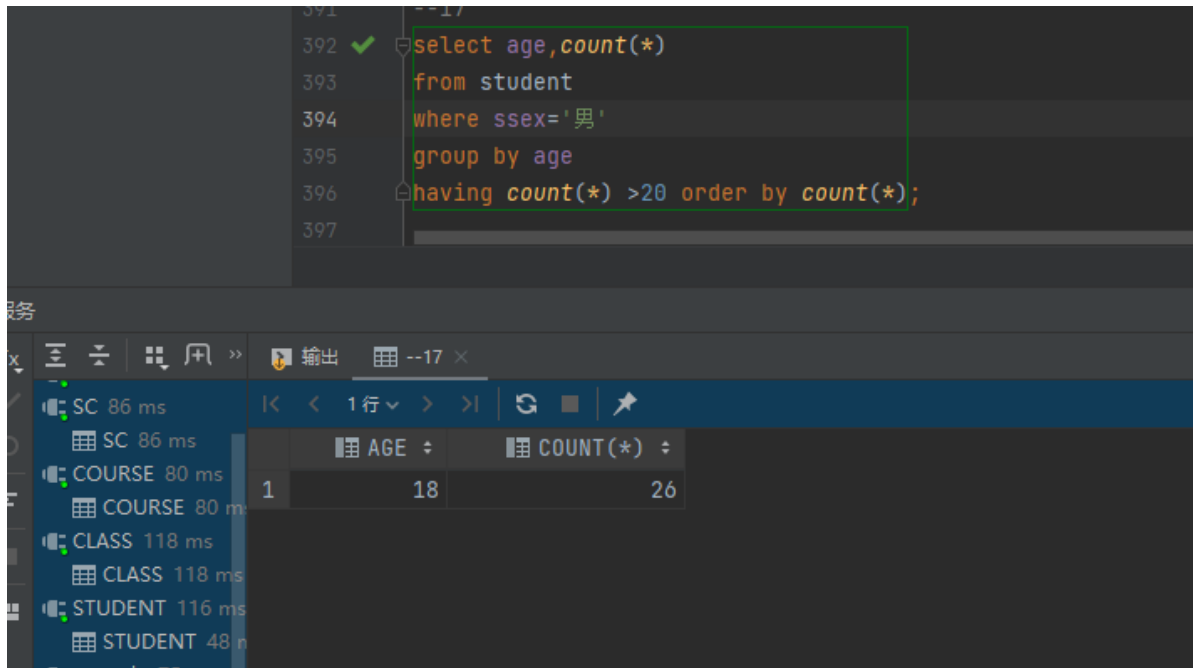
```

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;

```



```
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

SQL Query Results (19 rows):

	SNO	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

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

SQL Query Execution Results:

```

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

```

Execution Log:

- SC 85 ms
- SC 55 ms
- COURSE 80 ms
- COURSE 80 ms

Output Table (1 row):

SNAME
rr

(19) 查询比所有女同学年龄要大的男同学的姓名

改表防空

[illegible]

```
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

```

输出 --19

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;

```

```

416  --20
417  ✓ select sname
418      from student,sc
419      where student.sno=sc.sno and ssex='女' and cno<>800002;
420
421

```

输出 --20

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  
COURSE 64 ms  
COURSE 64 ms  
CLASS 118 ms  
CLASS 118 ms  
STUDENT 98 ms  
STUDENT 62 ms  
console 61 ms  
console 61 ms  
TEACHER 89 ms  
TEACHER 89 ms

	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	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>	

```

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
```

ms 输出 --22 ×

ms 1 行 1 列

SNAME
rr

ms 89 ms  
ms 80 ms  
ms 80 ms

(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
```

ms 输出 --23 ×

ms 7 行 1 列

SNAME
1 葛畅
2 刘晶
3 杨敏
4 胡兴斌
5 赵鸿泽
6 rr
7 qfs

ms

(24) 查询平均成绩最高的学生姓名

```
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);
```

The screenshot shows a SQL IDE with a query editor and a results pane. The query in the editor is:

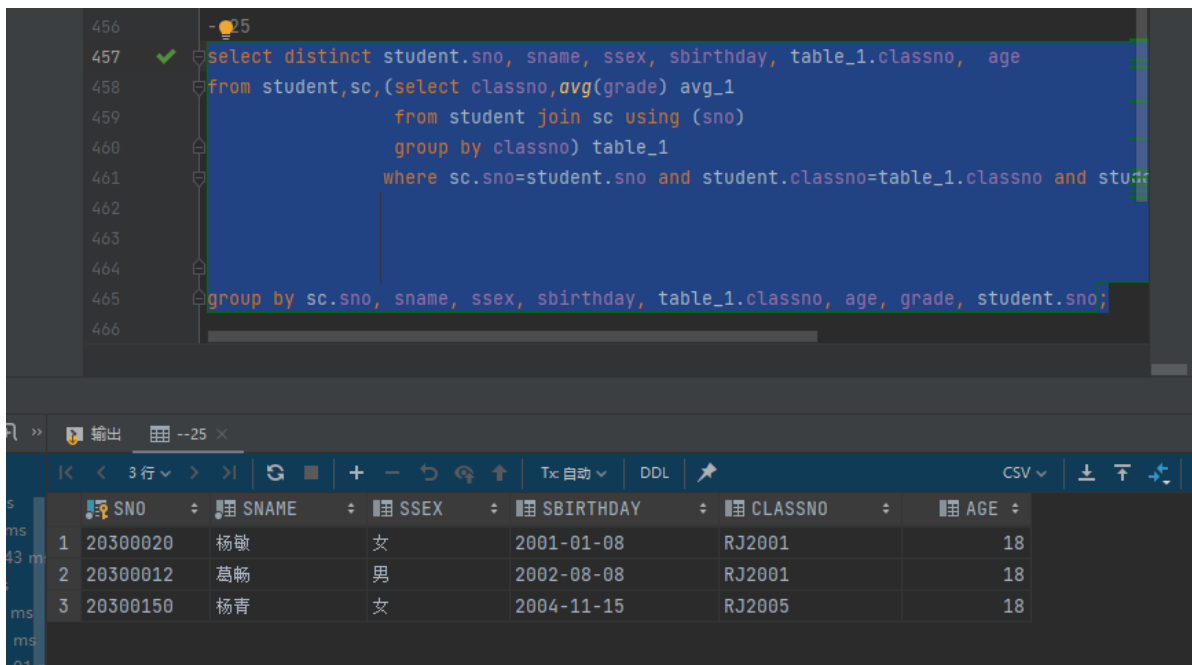
```
--24
select sname,avg(grade)
from student,sc
where sc.sno=student.sno
group by sname
having avg(grade)>=all(select avg(grade)
                        from sc
                        where grade is not null
                        group by sc.sno);
```

The results pane shows a single row of data:

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

```
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);
```



## (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                                                                from teacher
493                                                                where tname='徐永军'))
493      --2
494      create table STUD(

```

输出 Result 138

	SNAME	GRADE
1	葛畅	91
2	刘晶	<null>
3	杨敏	94
4	胡煊斌	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;

```

```
97
98 create table STUD(
99     s## varchar2(8),
100     sname varchar2(8),
101     ssex varchar2(2)
102 );
103
104 alter table STUD
105     modify ssex varchar2(3);
106 alter table STUD
107     modify sname varchar2(9);
108 insert into STUD select sc.sno,sname,ssex
109     from student,sc
110     where grade>=80 and student.sno=sc.sno;
111
112 ✓ select *from STUD;
```

STUD

输出 C##VANXQ.STUD x

12行 > | 自动 DDL CSV 上 下 刷新

S##	SNAME	SSEX
20300012	葛畅	男
20300020	杨敏	女
20300020	杨敏	女
20300020	杨敏	女
20300030	胡贤斌	男
20300048	赵鸿泽	男
20300150	杨青	女
20301168	rr	男
20301168	rr	男
20301168	rr	男
20301167	qfs	男
20301167	qfs	男

(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

输出 C##VANXQ.SC

17行

SNO	CNO	GRADE
1	20301167	800003
2	20301168	810013
3	20301168	800001
4	20301168	800002
5	20301167	800001
6	20300100	800001
7	20300020	800002
8	20300020	800002
9	20300012	800003
10	20300020	800003
11	20300030	800003
12	20300048	800003
13	20300100	810011
14	20300148	810011
15	20300150	810011
16	20300160	810011
17	20301167	810011

(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;
```

输出 C##VANXQ.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

C##VANXQ / 表 / 用 SC

DL [实训作业] × TEACHER [实训作业] × TEACHING [实训作业] × COURSE [实训作业] ×

17行 DDL

WHERE ORDER BY SNO

	SNO	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;

```

528		--5
529		
530	✓	update sc
531		set grade=null
532		where grade<60 and cno=(select cno from course where cname = '数据结构');
533	✓	select * from sc;
534		
535		
536		

	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
2	20301168	810013
3	20301168	800001
4	20301168	800002
5	20301167	800001
6	20300100	800001
7	20300020	800002
8	20300020	800002
9	20300012	800003
10	20300020	800003
11	20300030	800003
12	20300048	800003
13	20300100	810011
14	20300148	810011
15	20300150	810011
16	20300160	810011

(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;

```

The screenshot shows a database IDE with a SQL editor and a results pane. The SQL editor contains the following queries:

```

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;

```

The results pane shows the output of the last query, displaying a table with columns SNO, CNO, and GRADE. The table contains 17 rows of data.

SNO	CNO	GRADE
1	20301167	800003
2	20301168	810013
3	20301168	800001
4	20301168	800002
5	20301167	800001
6	20300100	800001
7	20300020	800002
8	20300020	800002
9	20300012	800003
10	20300020	800003
11	20300030	800003
12	20300048	800003
13	20300100	810011
14	20300148	810011
15	20300150	810011
16	20300160	810011
17	20301167	810011

## 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

```

```
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
```

```

        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');

```



```
--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
```

```

        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;

```

```

--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;

```