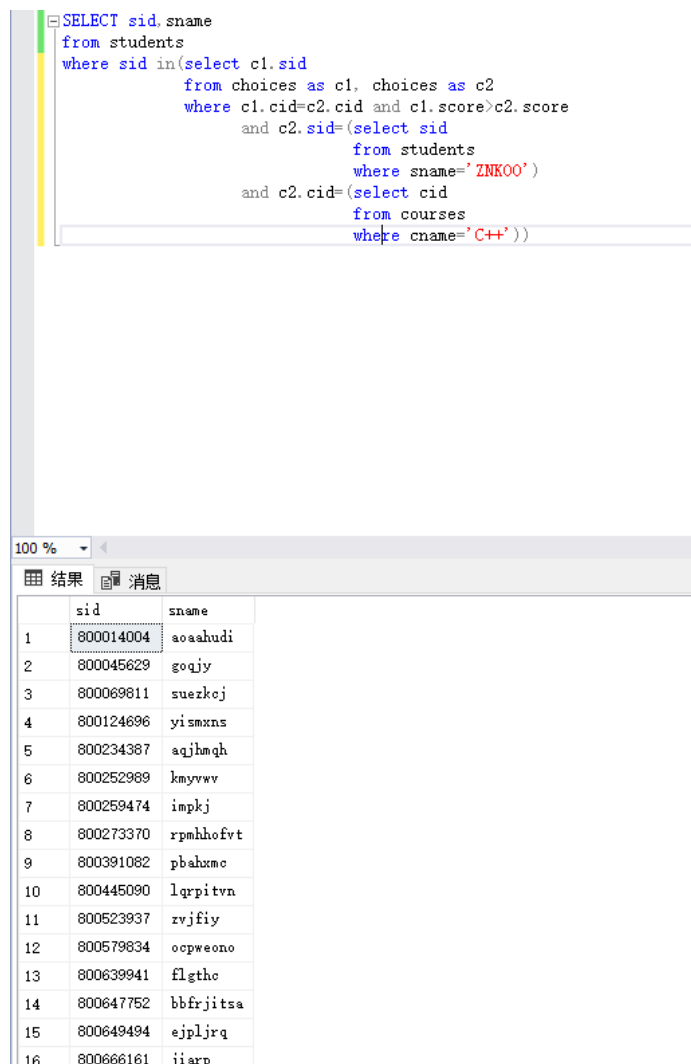


第四次实验

(1)查询选修C++课程的成绩比姓名为 ZNKOO的学生高的所有学生的编号和姓名;

```
SELECT sid,sname
from students
where sid in(select c1.sid
              from choices as c1, choices as c2
              where c1.cid=c2.cid and c1.score>c2.score
              and c2.sid=(select sid
                          from students
                          where sname='ZNKOO')
              and c2.cid=(select cid
                          from courses
                          where cname='C++'))
```

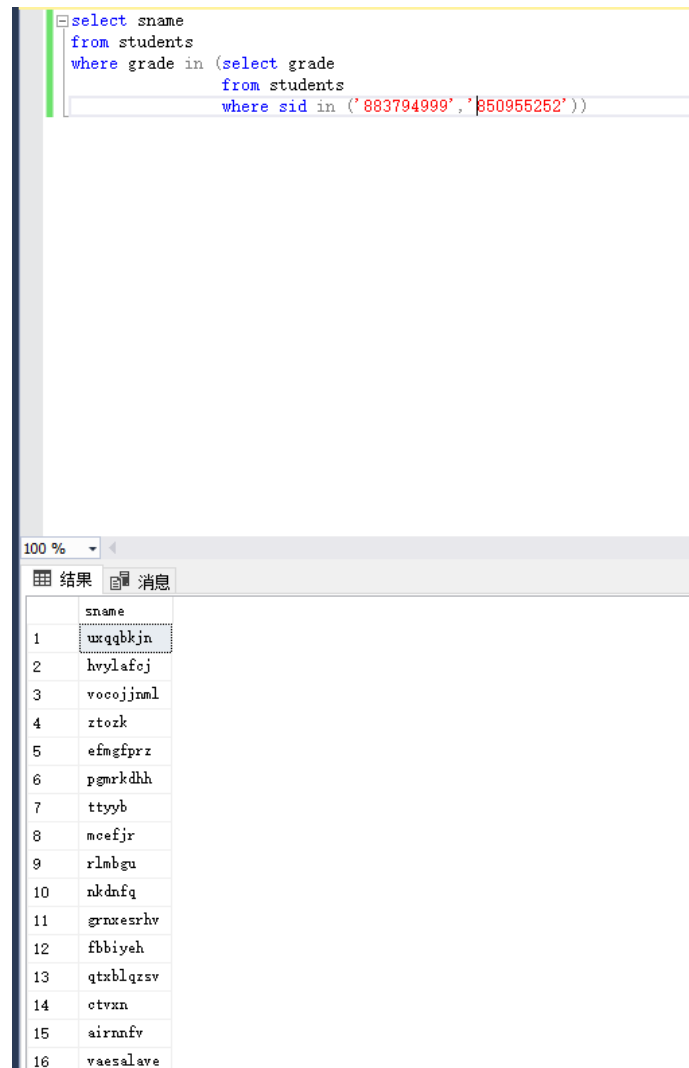


The screenshot shows a database query interface. The top part displays the SQL query for finding students who scored higher than the student named 'ZNKOO' in the 'C++' course. The bottom part shows the results of the query, which is a table with two columns: 'sid' and 'sname'. The results list 16 students, with the first student having 'sid' 800014004 and 'sname' 'aoaahudi'.

	sid	sname
1	800014004	aoaahudi
2	800045629	goqjy
3	800069811	suezkej
4	800124696	yismxns
5	800234387	aqjhmgh
6	800252989	kmvww
7	800259474	impkj
8	800273370	rpmhhofvt
9	800391082	pbahxmc
10	800445090	lqrpitvn
11	800523937	zvjfii
12	800579834	ocpweono
13	800639941	flgthc
14	800647752	bbfrjitsa
15	800649494	ejpljrq
16	800666161	jiarp

(2)找出和学生883794999或学生850955252的年级一样的学生的姓名;

```
select sname
from students
where grade in (select grade
                from students
                where sid in ('883794999','850955252'))
```



The screenshot shows a database query interface. At the top, the SQL query is displayed in a text area:

```
select sname
from students
where grade in (select grade
                from students
                where sid in ('883794999','850955252'))
```

Below the query, there is a tabbed interface with two tabs: "结果" (Results) and "消息" (Messages). The "结果" tab is active, showing a table with 16 rows of student names. The first row is highlighted with a mouse cursor.

	sname
1	uxqqbkjn
2	hwylafej
3	vocojjnml
4	ztozk
5	efmgfprz
6	pgmrkdhh
7	ttvyb
8	mcefjr
9	rlmbgu
10	nkdnfq
11	grnxesrhv
12	fbbiyeh
13	qtxblqzsv
14	ctvxzn
15	airnnfv
16	vaesalave

(3)查询没有选修Java的学生名称;

```
select sname
from students
where sid not in (select sid
                  from choices
                  where cid = (select cid
                                from courses
                                where cname = 'JAVA'))
```

select sname
from students
where sid not in (select sid
from choices
where cid = (select cid
from courses
where cname = 'JAVA'))

100 %	结果	消息
sname		
1	vnbgzsvv	
2	waqcj	
3	fiiluommh	
4	ogvnu	
5	uxqqbkjn	
6	ehlyeg	
7	roxaihj	
8	zapyv	
9	zyuoh	
10	uwphrw	
11	aoaahudi	
12	fnvxgrisg	
13	mztqyvc	
14	egwnnf	
15	yqjhake	
16	hvyrafej	

(4)找出课时最少的课程的详细信息;

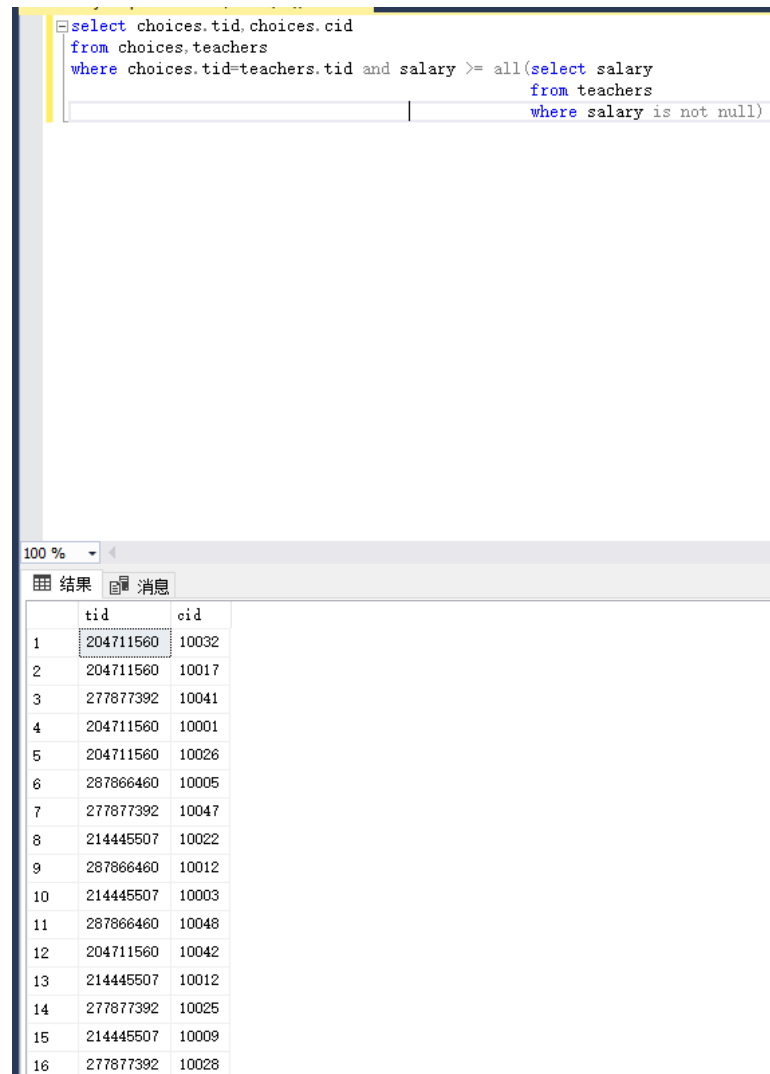
```
select *
from courses
where hour<=all(select hour
from courses)
```

select *
from courses
where hour<=all(select hour
from courses)

100 %	结果	消息
cid	cname	hour
1	10024	use case 18
2	10034	windows 18

(5)查询工资最高的教师的编号和开设的课程号;

```
select choices.tid,choices.cid
from choices,teachers
where choices.tid=teachers.tid and salary >= all(select salary
                                                from teachers
                                                where salary is not
null)
```



The screenshot shows a database query interface. The top part displays the SQL query: `select choices.tid,choices.cid from choices,teachers where choices.tid=teachers.tid and salary >= all(select salary from teachers where salary is not null)`. Below the query, there is a tab labeled "结果" (Results) which is active. It shows a table with two columns: "tid" and "cid". The table contains 16 rows of data. The first row is highlighted with a dashed border.

	tid	cid
1	204711560	10032
2	204711560	10017
3	277877392	10041
4	204711560	10001
5	204711560	10026
6	287866460	10005
7	277877392	10047
8	214445507	10022
9	287866460	10012
10	214445507	10003
11	287866460	10048
12	204711560	10042
13	214445507	10012
14	277877392	10025
15	214445507	10009
16	277877392	10028

(6)找出选修课程ERP成绩最高的学生编号;

```
select sid
from choices
where score=(select max(score)
              from choices
              where cid=(select cid
                          from courses
                          where cname='ERP'))
and cid=(select cid
          from courses
          where cname='ERP')
```

```

select sid
from choices
where score=(select max(score)
              from choices
              where cid=(select cid
                        from courses
                        where cname='ERP'))
and cid=(select cid
          from courses
          where cname='ERP')

```

结果	消息
sid	
831163985	
862976850	
840891316	
844440501	
883884237	
862654622	
839342232	
865296034	
843643589	
0 827092658	
1 866949513	
2 896273784	
3 891039970	
4 871790824	
5 871923399	
6 850185316	

(7)查询没有学生选修的课程名称;

```

select cname
from courses
where cid not in (select cid
                  from choices)

```

```

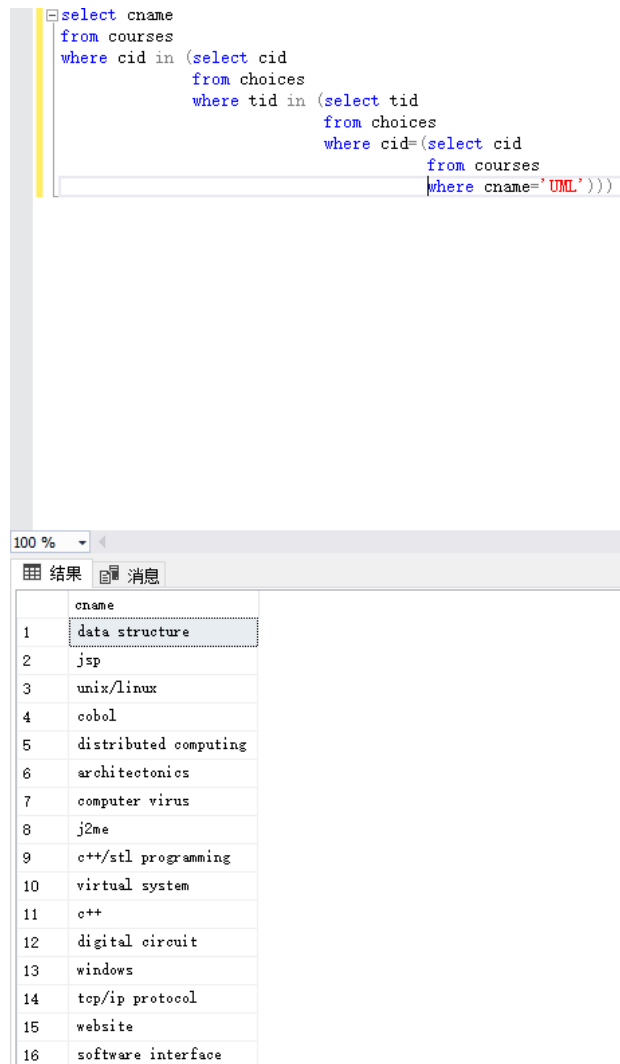
select cname
from courses
where cid not in (select cid
                  from choices)

```

结果	消息
cname	

(8)查询讲授课程UML的教师所讲授的所有课程名称;

```
select cname
from courses
where cid in (select cid
              from choices
              where tid in (select tid
                           from choices
                           where cid=(select cid
                                       from courses
                                       where cname='UML'))))
```



The screenshot shows a database query interface. At the top, the SQL query is entered in a text area. Below the query area, there is a tabbed interface with two tabs: '结果' (Results) and '消息' (Messages). The '结果' tab is active, displaying a table with 16 rows of course names. The table has a single column labeled 'cname'. The rows contain the following course names: data structure, jsp, unix/linux, cobol, distributed computing, architectonics, computer virus, j2me, c++/stl programming, virtual system, c++, digital circuit, windows, tcp/ip protocol, website, and software interface.

	cname
1	data structure
2	jsp
3	unix/linux
4	cobol
5	distributed computing
6	architectonics
7	computer virus
8	j2me
9	c++/stl programming
10	virtual system
11	c++
12	digital circuit
13	windows
14	tcp/ip protocol
15	website
16	software interface

(9)使用集合交运算, 查询既选修了database又选修了UML课程的学生编号;

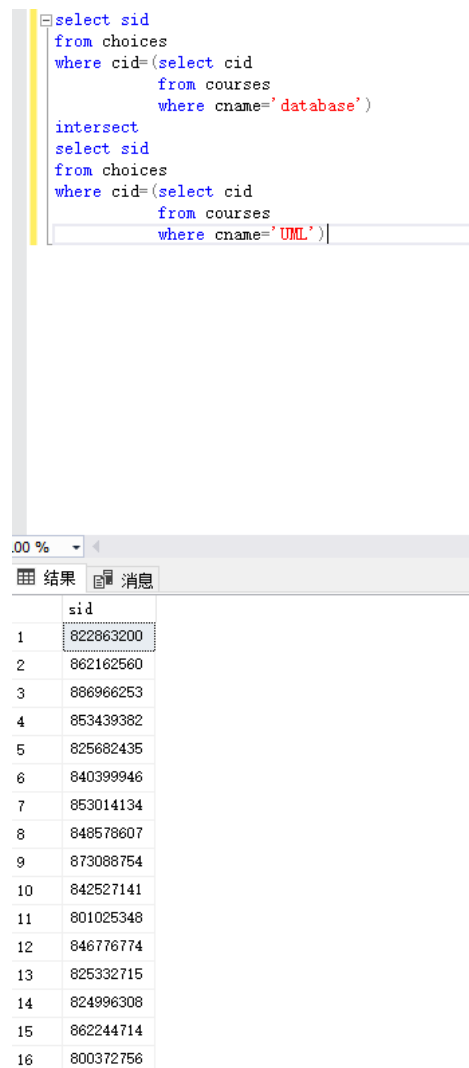
```

select sid
from choices
where cid=(select cid
            from courses
            where cname='database')

intersect

select sid
from choices
where cid=(select cid
            from courses
            where cname='UML')

```



SQL Query Editor:

```

select sid
from choices
where cid=(select cid
            from courses
            where cname='database')

intersect

select sid
from choices
where cid=(select cid
            from courses
            where cname='UML')

```

Results:

	sid
1	822863200
2	862162560
3	886966253
4	853439382
5	825682435
6	840399946
7	853014134
8	848578607
9	873088754
10	842527141
11	801025348
12	846776774
13	825332715
14	824996308
15	862244714
16	800372756

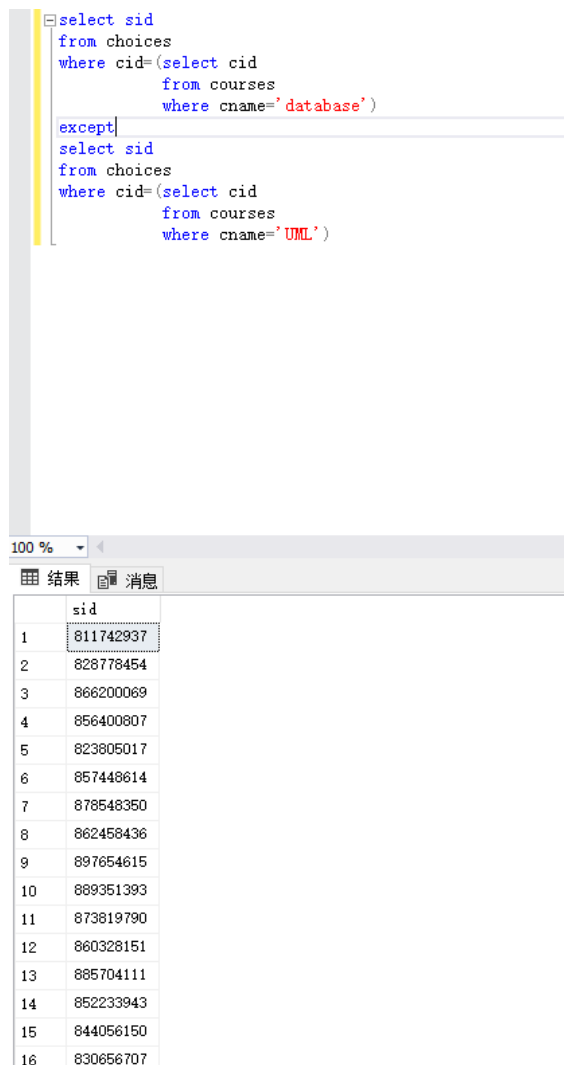
(10)使用集合减运算， 查询选修了database却没有选修UML课程的学生编号;

```

select sid
from choices
where cid=(select cid
            from courses
            where cname='database')

except
select sid
from choices
where cid=(select cid
            from courses
            where cname='UML')

```



The screenshot shows a SQL IDE interface. The top pane contains a query with two SELECT statements separated by an EXCEPT operator. The first SELECT statement filters for courses named 'database', and the second filters for courses named 'UML'. The bottom pane shows the results of the query as a table with 16 rows, each containing a unique 'sid' value.

```

select sid
from choices
where cid=(select cid
            from courses
            where cname='database')

except
select sid
from choices
where cid=(select cid
            from courses
            where cname='UML')

```

	sid
1	811742937
2	828778454
3	866200069
4	856400807
5	823805017
6	857440614
7	878548350
8	862458436
9	897654615
10	889351393
11	873819790
12	860328151
13	885704111
14	852233943
15	844056150
16	830656707