

实验报告2-20301174-万兴全

报告内容描述数据操作详细过程，包含SQL命令及执行结果的展示；每题5分。

使用SQL命令执行如下操作：

- (1) 查询所有同学的所有基本信息

```
select * from student;
```

The screenshot shows a SQL IDE interface. At the top, a query editor displays the command `select * from student;`. Below the editor, a list of services is shown on the left, including `@localhost`, `TEACHING`, `CLASS`, `SC`, `STUDENT`, `COURSE`, `TEACHER`, and `console`. The main area displays the execution results of the query, showing a table with 14 rows of student data. The table has columns for SNO, NAME, SEX, BIRTHDAY, and several other attributes. The data is as follows:

SNO	NAME	SEX	BIRTHDAY	...
1	李在	男	2001-10...	RJ2001
2	葛杨	男	2002-08...	RJ2001
3	刘晶	女	2003-05...	RJ2001
4	杨敏	女	2001-01...	RJ2001
5	胡贤斌	男	2002-10...	RJ2001
6	赵鸿泽	男	2003-06...	RJ2002
7	王威	男	2004-06...	RJ2002
8	赵玮	女	2002-08...	RJ2003
9	王娜娜	女	2003-09...	RJ2003
10	秦键	男	2004-03...	RJ2003
11	田邦仪	女	2003-02...	RJ2004
12	赵心砚	男	2002-04...	RJ2005
13	杨青	女	2004-11...	RJ2005
14	杨玲玲	女	2002-12...	RJ2006

- (2) 查询所有女教师的所有信息

```
select * from teacher where tsex = '女';
```

136
137 ✓ `select * from teacher where tsex = '女';`
138

服务

Tx 输出 C##VANXQ.TEACHER x

TNO	TNAME	TSEX	TBIRTHDAY	TTITLE	"CreatedBy"
1	李英	女	1975-11-03	讲师	20301174
2	许红霞	女	1966-02-12	副教授	20301174
3	李桂菁	女	1960-12-15	教授	20301174
4	王一凡	女	1974-12-08	讲师	20301174

(3) 查询所有男同学的学号、姓名、出生日期

```
select sno,sname,sbirthday from student where ssex = '男';
```

139
140 ✓ `select sno,sname,sbirthday from student where ssex = '男';`

服务

Tx 输出 C##VANXQ.STUDENT x

SNO	SNAME	SBIRTHDAY
1	李在	2001-10-01
2	葛畅	2002-08-08
3	胡贤斌	2002-10-08
4	赵鸿泽	2003-06-06
5	王威	2004-06-10
6	秦键	2004-03-01
7	赵心砚	2002-04-25

(4) 在基本表student中为age列，增加默认值为18

```
alter table STUDENT  
add age integer default 18;
```

The screenshot shows a database management tool interface. On the left, a tree view displays the database structure, including tables like CLASS, COURSE, SC, STUDENT, TEACHER, and TEACHING. The main area shows the STUDENT table with columns: SNO, SNAME, SSEX, SBIRTHDAY, CLASSNO, Totalcredit, CreatedBy, and AGE. The AGE column is highlighted with a red box. The data is as follows:

SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	Totalcredit	CreatedBy	AGE
1	李在	男	2001-10-01	RJ2001	0	20301174	18
2	葛杨	男	2002-08-08	RJ2001	0	20301174	18
3	刘晶	女	2003-05-22	RJ2001	0	20301174	18
4	杨敏	女	2001-01-08	RJ2001	0	20301174	18
5	胡贤斌	男	2002-10-08	RJ2001	0	20301174	18
6	赵鸿泽	男	2003-06-06	RJ2002	0	20301174	18
7	王威	男	2004-06-10	RJ2002	0	20301174	18
8	赵玮	女	2002-08-21	RJ2003	0	20301174	18
9	王娜娜	女	2003-09-23	RJ2003	0	20301174	18
10	秦健	男	2004-03-01	RJ2003	0	20301174	18
11	田邦仪	女	2003-02-26	RJ2004	0	20301174	18
12	赵心砚	男	2002-04-25	RJ2005	0	20301174	18
13	杨青	女	2004-11-15	RJ2005	0	20301174	18
14	杨玲玲	女	2002-12-12	RJ2006	0	20301174	18

(5) 在基本表Student中增加addr: varchar(20)列, 然后将其长度由20改为25

```
alter table STUDENT
    add addr varchar(20);
alter table STUDENT
    modify ADDR VARCHAR2(25);
```

The screenshot shows the same database management tool interface, but now the STUDENT table has an additional column, ADDR. The ADDR column is highlighted with a red box. The data is as follows:

SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	Totalcredit	CreatedBy	AGE	ADDR
1	李在	男	2001-10-01	RJ2001	0	20301174	18	<null>
2	葛杨	男	2002-08-08	RJ2001	0	20301174	18	<null>
3	刘晶	女	2003-05-22	RJ2001	0	20301174	18	<null>
4	杨敏	女	2001-01-08	RJ2001	0	20301174	18	<null>
5	胡贤斌	男	2002-10-08	RJ2001	0	20301174	18	<null>
6	赵鸿泽	男	2003-06-06	RJ2002	0	20301174	18	<null>
7	王威	男	2004-06-10	RJ2002	0	20301174	18	<null>
8	赵玮	女	2002-08-21	RJ2003	0	20301174	18	<null>
9	王娜娜	女	2003-09-23	RJ2003	0	20301174	18	<null>
10	秦健	男	2004-03-01	RJ2003	0	20301174	18	<null>
11	田邦仪	女	2003-02-26	RJ2004	0	20301174	18	<null>
12	赵心砚	男	2002-04-25	RJ2005	0	20301174	18	<null>
13	杨青	女	2004-11-15	RJ2005	0	20301174	18	<null>
14	杨玲玲	女	2002-12-12	RJ2006	0	20301174	18	<null>

(6) 在基本表student中增加register_date: date列, 并为其设置默认值为当前系统时间, 再删除该列

先增加并设置

```
alter table STUDENT
    add register_date date default sysdate;
```

SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	Totalcredit	CreatedBy	AGE	ADDR	REGISTER_DATE
1	李在	男	2001-10-01	RJ2001	0	20301174	18	<null>	2022-04-03 11:13:40
2	葛杨	男	2002-08-08	RJ2001	0	20301174	18	<null>	2022-04-03 11:13:40
3	刘晶	女	2003-05-22	RJ2001	0	20301174	18	<null>	2022-04-03 11:13:40
4	杨敏	女	2001-01-08	RJ2001	0	20301174	18	<null>	2022-04-03 11:13:40
5	胡景斌	男	2002-10-08	RJ2001	0	20301174	18	<null>	2022-04-03 11:13:40
6	赵鸣泽	男	2003-06-06	RJ2002	0	20301174	18	<null>	2022-04-03 11:13:40
7	王威	男	2004-06-10	RJ2002	0	20301174	18	<null>	2022-04-03 11:13:40
8	赵玮	女	2002-08-21	RJ2003	0	20301174	18	<null>	2022-04-03 11:13:40
9	王娜娜	女	2003-09-23	RJ2003	0	20301174	18	<null>	2022-04-03 11:13:40
10	秦健	男	2004-03-01	RJ2003	0	20301174	18	<null>	2022-04-03 11:13:40
11	田邦仪	女	2003-02-26	RJ2004	0	20301174	18	<null>	2022-04-03 11:13:40
12	赵心视	男	2002-04-25	RJ2005	0	20301174	18	<null>	2022-04-03 11:13:40
13	杨青	女	2004-11-15	RJ2005	0	20301174	18	<null>	2022-04-03 11:13:40
14	杨玲玲	女	2002-12-12	RJ2006	0	20301174	18	<null>	2022-04-03 11:13:40

再删除

```
alter table STUDENT
drop column register_date;
```

SNO	SNAME	SSEX	SBIRTHDAY	CLASSNO	Totalcredit	CreatedBy	AGE	ADDR
1	李在	男	2001-10-01	RJ2001	0	20301174	18	<null>
2	葛杨	男	2002-08-08	RJ2001	0	20301174	18	<null>
3	刘晶	女	2003-05-22	RJ2001	0	20301174	18	<null>
4	杨敏	女	2001-01-08	RJ2001	0	20301174	18	<null>
5	胡景斌	男	2002-10-08	RJ2001	0	20301174	18	<null>
6	赵鸣泽	男	2003-06-06	RJ2002	0	20301174	18	<null>
7	王威	男	2004-06-10	RJ2002	0	20301174	18	<null>
8	赵玮	女	2002-08-21	RJ2003	0	20301174	18	<null>
9	王娜娜	女	2003-09-23	RJ2003	0	20301174	18	<null>
10	秦健	男	2004-03-01	RJ2003	0	20301174	18	<null>
11	田邦仪	女	2003-02-26	RJ2004	0	20301174	18	<null>
12	赵心视	男	2002-04-25	RJ2005	0	20301174	18	<null>
13	杨青	女	2004-11-15	RJ2005	0	20301174	18	<null>
14	杨玲玲	女	2002-12-12	RJ2006	0	20301174	18	<null>

(7) 在基本表course中将cname设置为唯一值 (unique)

```
alter table COURSE
add unique (cname);
```

course表的源代码

```
-- auto-generated definition
create table COURSE
(
  CNO    VARCHAR2(6)  not null
        primary key,
  CNAME  VARCHAR2(30) not null
        unique,
  CCREDIT NUMBER
        check (ccredit between 1 and 4)
);
```

此处显示已添加unique

(8) 基本表course中创建索引: (cno desc)

```
create index cno_index on COURSE(cno desc);
```

```
C##VANXQ> create index cno_desc on course(cno desc)
[2022-04-03 14:46:47] 在 57 ms 内完成
```

(9) 在基本表Student中增加约束条件: 男生年龄小于24岁, 女生年龄小于22岁。

```
alter table STUDENT
add check ( (ssex='男'and age<24)or (ssex='女'and age<22));
```

```
C##VANXQ> alter table STUDENT
add check ( (ssex='男'and age<24)or (ssex='女'and age<22))
[2022-04-03 14:51:04] 在 60 ms 内完成
```

(10) 查询所有在“2003-01-01”之前出生的女同学的学号、姓名、性别、出生日期

```
select sno,sname,ssex,sbirthday
from STUDENT
where sbirthday < to_date('2003/1/1','yyyy/mm/dd') and ssex = '女';
```

The screenshot shows a database IDE with a SQL query editor at the top and a results pane below. The query is:

```
select sno,sname,ssex,sbirthday
from STUDENT
where sbirthday < to_date('2003/1/1','yyyy/mm/dd') and ssex = '女';
```

The results pane shows a table with 4 columns: SNO, SNAME, SSEX, and SBIRTHDAY. It contains 3 rows of data:

SNO	SNAME	SSEX	SBIRTHDAY	
1	20300020	杨敏	女	2001-01-08
2	20300067	赵玮	女	2002-08-21
3	20300160	杨玲玲	女	2002-12-12

(11) 查询在1970年1月1日之后出生的教师的教师号、姓名、出生日期

```
select tno,tname,tbirthday
from TEACHER
where tbirthday> to_date('1970/1/1','yyyy/mm/dd');
```

```

167
168 ✓ select tno,tname,tbirthday
169      from TEACHER
170      where tbirthday> to_date('1970/1/1','yyyy/mm/dd');

```

服务

Tx 输出 C##VANXQ.TEACHER X

@localhost

- COURSE
 - COURSE
- TEACHING
- console 108 ms
 - console 108 ms
- STUDENT
- TEACHER
- CLASS
- SC

	TNO	TNAME	TBIRTHDAY
1	1	李英	1975-11-03
2	3	张朋	1970-02-13
3	4	陈为军	1985-08-14
4	5	宋浩然	1976-04-23
5	9	王一凡	1974-12-08
6	10	田峰	1988-01-18

(12) 查询所有姓“李”的男同学的学号、姓名、性别、出生日期

```

select sno,sname,ssex,sbirthday
  from STUDENT
  where sname like '李%' and ssex = '男';

```

```

171
172 ✓ select sno,sname,ssex,sbirthday
173      from STUDENT
174      where sname like '李%' and ssex = '男';

```

服务

Tx 输出 C##VANXQ.STUDENT X

@localhost

- COURSE
 - COURSE
- TEACHING
- console 97 ms
 - console 97 ms
- STUDENT 171 ms
 - STUDENT 171 ms
- TEACHER
- CLASS
- SC

	SNO	SNAME	SSEX	SBIRTHDAY
1	20300010	李在	男	2001-10-01

(13) 查询所有职称不是“讲师”的教师的教师号、姓名、职称

```

select tno,tname,ttitle
  from TEACHER
  where '讲师' not in teacher.ttitle;

```

```

175
176 ✓ select tno,tname,ttitle
177      from TEACHER
178      where '讲师'not in teacher.ttitle;

```

服务

Tx: 输出 C##VANXQ.TEACHER x

@localhost

- COURSE
- TEACHING
- console 70 ms
- console 70 ms
- STUDENT 171 ms
- STUDENT 171 ms
- TEACHER
- CLASS
- SC

	TNO	TNAME	TTITLE
1	2	王大山	副教授
2	4	陈为军	助教
3	6	许红霞	副教授
4	7	徐永军	教授
5	8	李桂菁	教授
6	10	田峰	助教

(14) 查询虽然选修了课程，但未参加考试的所有同学的学号

```

select sno
  from SC
  where grade is null ;

```

```

181
182 ✓ select sno
183      from SC
184      where grade is null ;

```

服务

Tx: 输出 C##VANXQ.SC x

@localhost

- COURSE
- TEACHING
- console 86 ms
- console 86 ms
- STUDENT 171 ms
- STUDENT 171 ms
- TEACHER
- CLASS
- SC 136 ms
- SC 136 ms

	SNO
1	20300015

(15) 查询各个课程号的选课人数

```
select cno , count(sno)
  from SC
  group by cno;
```

服务

Tx

@localhost

- COURSE 166 ms
- COURSE 166 ms
- TEACHING
- console 71 ms
- console 71 ms
- STUDENT 171 ms
- STUDENT 171 ms
- TEACHER
- CLASS 153 ms
- CLASS 153 ms
- SC 92 ms
- SC 92 ms

输出 Result 16 x

2行

CNO	COUNT(SNO)
1 800003	5
2 810011	4

(16) 查询所有用英文授课 (Language 字段值为English) 的教师的教师号、姓名及其英语授课的门数

```
select tg.tno,tname,count(cno)
  from TEACHER t,TEACHING tg
  where t.tno = tg.tno and tg.language='English'
  group by tg.tno, tname;
```



```

198
199  ✓ select tg.tno,tname,count(cno)
200      from TEACHER t,TEACHING tg
201      where t.tno = tg.tno and tg.language='English'
202      group by tg.tno, tname;

```

服务

Tx 输出 Result 19 x

@localhost

- COURSE 166 ms
- TEACHING 82 ms
- console 77 ms
- STUDENT 171 ms
- TEACHER 109 ms
- CLASS 153 ms
- SC 92 ms

	TNO	TNAME	COUNT(CNO)
1	1	李英	1
2	4	陈为军	1
3	7	徐永军	2

(17) 查询讲授2门及以上课程的教师号、姓名

```

select t.tno, tname
  from TEACHING tg join TEACHER t on tg.tno = t.tno
  group by tname, t.tno
  having count(cno)>=2;

```

```

194  ✓ select t.tno, tname
195      from TEACHING tg join TEACHER t on tg.tno = t.tno
196      group by tname, t.tno
197      having count(cno)>=2;
198

```

服务

Tx 输出 (22) 查询讲授2门课以上的教师号 x

@localhost

- COURSE 51 ms
- TEACHING 100 ms
- console 70 ms
- STUDENT 66 ms
- TEACHER 109 ms
- CLASS 153 ms
- SC 92 ms

	TNO	TNAME
1	2	王大山
2	7	徐永军

(18) 查询选修了810011课程的学生平均分、最低分数和最高分数

```
select avg(grade), min(grade), max(grade)
  from SC
  where cno=810011;
```

The screenshot shows a database IDE with a SQL editor at the top containing the query:


```
select avg(grade), min(grade), max(grade)
  from SC
  where cno=810011;
```

 Below the editor, the '服务' (Services) pane on the left lists various database services and their execution times. The 'console' service is selected. The '输出' (Output) pane on the right displays the result set for 'Result 20':

	AVG(GRADE)	MIN(GRADE)	MAX(GRADE)
1	71.25	58	89

(19) 查询所有考试不及格的同学的学号、成绩，并按成绩降序排列

```
select sno,grade
  from sc
  where grade<60
  order by grade desc;
```

The screenshot shows a database IDE with a SQL editor at the top containing the query:


```
select sno,grade
  from sc
  where grade<60
  order by grade desc;
```

 Below the editor, the '服务' (Services) pane on the left lists various database services and their execution times. The 'console' service is selected. The '输出' (Output) pane on the right displays the result set for 'C##VANXQ.SC':

	SNO	GRADE
1	20300148	58

(20) 查询1960年以后出生的, 职称为讲师的教师的姓名、出生日期, 并按出生日期升序排列。

```
select tname, tbirthday
  from teacher
  where ttitle='讲师' and tbirthday>=to_date('1960-01-01','yyyy-mm-dd')
  order by tbirthday ;
```

The screenshot shows a database IDE interface. The top panel displays a SQL query: `select tname, tbirthday from teacher where ttitle='讲师' and tbirthday>=to_date('1960-01-01','yyyy-mm-dd') order by tbirthday ;`. The bottom panel shows the execution results in a table with two columns: TNAME and TBIRTHDAY. The results are as follows:

	TNAME	TBIRTHDAY
1	张朋	1970-02-13
2	王一凡	1974-12-08
3	李英	1975-11-03
4	宋浩然	1976-04-23