

数据库系统实验
实验报告

题目	(实验 5)
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一、实验环境

- 1、操作系统：Windows 10
- 2、DBMS：mysql

二、实验内容

1、在教学管理数据库jxgl中，使用mysql在表中录入表的数据

本次实验是在上次实验的数据基础上增加了一些数据，下面列出所有增加的数据

student

Sno	Sname	Ssex	Sage	Sdept
2005010	赵青江	男	18	Cs
2005011	张丽萍	女	19	Ch
2005012	陈景欢	男	20	Is
2005013	陈婷婷	女	16	Ph
2005014	李军	女	16	Ph

course

cno	cname	cpno	ccredit
1	数据库系统	5	4
2	数学分析	NULL	2
3	信息系统导论	1	3
4	操作系统原理	6	3
5	数据结构	7	4
6	数据处理基础	NULL	4
7	C语言	6	7

SC

Sno	Cno	Grade
2005010	1	87
2005010	2	
2005010	3	80
2005010	4	87
2005010	6	85
2005011	1	52
2005011	2	47
2005011	3	53
2005011	5	45
2005012	1	84
2005012	3	
2005012	4	67
2005012	5	81

student

```
insert into student values('2005010','赵青江','男',18,'cs');
insert into student values('2005011','张丽萍','女',19,'ch');
insert into student values('2005012','陈景欢','男',20,'is');
insert into student values('2005013','陈婷婷','女',16,'ph');
insert into student values('2005014','李军','女',16,'ph');
```

course

```
insert into course values('1','数据库系统','5',4);
insert into course values('2','数学分析',null,2);
insert into course values('3','信息系统导论','1',3);
insert into course values('4','操作系统原理','6',3);
insert into course values('5','数据结构','7',4);
insert into course values('6','数据处理基础',null,4);
insert into course values('7','c语言','6',7);
```

SC

```

insert into sc values('2005010','1',87);
insert into sc values('2005010','2',null);
insert into sc values('2005010','3',80);
insert into sc values('2005010','4',87);
insert into sc values('2005010','6',85);
insert into sc values('2005011','1',52);
insert into sc values('2005011','2',47);
insert into sc values('2005011','3',53);
insert into sc values('2005011','5',45);
insert into sc values('2005012','1',84);
insert into sc values('2005012','3',null);
insert into sc values('2005012','4',67);
insert into sc values('2005012','5',81);

```

插入时得到结果均为

```
Query OK, 1 row affected (0.00 sec)
```

表明表内数据输入成功

通过select命令查询到表内具体数据如下

```

mysql> select * from sc;
+-----+-----+-----+
| sno    | cno  | grade |
+-----+-----+-----+
| 2005001 | 1    | 87    |
| 2005001 | 2    | 67    |
| 2005001 | 3    | 90    |
| 2005002 | 2    | 95    |
| 2005003 | 3    | 88    |
| 2005010 | 1    | 87    |
| 2005010 | 2    | NULL  |
| 2005010 | 3    | 80    |
| 2005010 | 4    | 87    |
| 2005010 | 6    | 85    |
| 2005011 | 1    | 52    |
| 2005011 | 2    | 47    |
| 2005011 | 3    | 53    |
| 2005011 | 5    | 45    |
| 2005012 | 1    | 84    |
| 2005012 | 3    | NULL  |
| 2005012 | 4    | 67    |
| 2005012 | 5    | 81    |
+-----+-----+-----+
18 rows in set (0.00 sec)

```

```
mysql> select * from course;
```

Cno	Cname	Cpno	Credit
1	数据库系统	5	4
2	数学分析	NULL	2
3	信息系统导论	1	3
4	操作系统原理	6	3
5	数据结构	7	4
6	数据处理基础	NULL	4
7	C语言	6	7

```
7 rows in set (0.00 sec)
```

```
mysql> select * from student;
```

Sno	Sname	Ssex	Sage	Sdept
2005001	钱横	男	18	Cs
2005002	王林	女	19	Cs
2005003	李民	男	20	Is
2005004	赵欣然	女	16	Ma
2005010	赵青江	男	18	Cs
2005011	张丽萍	女	19	Ch
2005012	陈景欢	男	20	Is
2005013	陈婷婷	女	16	Ph
2005014	李军	女	16	Ph

```
9 rows in set (0.00 sec)
```

(2) 使用sql语句进行一下更新操作

1、给IS系的学生开设7号课程，建立相应的选课记录，成绩为空

```
insert into sc
select sno,'7',null
from student
where sdept='Is';
```

运行结果

```
Query OK, 2 rows affected (0.04 sec)
Records: 2 Duplicates: 0 Warnings: 0
```

sc表更新后

```
mysql> select * from sc;
```

sno	cno	grade
2005001	1	87
2005001	2	67
2005001	3	90

```

| 2005002 | 2 | 95 |
| 2005003 | 3 | 88 |
| 2005003 | 7 | NULL |
| 2005010 | 1 | 87 |
| 2005010 | 2 | NULL |
| 2005010 | 3 | 80 |
| 2005010 | 4 | 87 |
| 2005010 | 6 | 85 |
| 2005011 | 1 | 52 |
| 2005011 | 2 | 47 |
| 2005011 | 3 | 53 |
| 2005011 | 5 | 45 |
| 2005012 | 1 | 84 |
| 2005012 | 3 | NULL |
| 2005012 | 4 | 67 |
| 2005012 | 5 | 81 |
| 2005012 | 7 | NULL |
+-----+-----+-----+
20 rows in set (0.00 sec)

```

2、在表student中检索每门课均不及格的学生学号、姓名、年龄、性别及所在系信息，并把检索到的信息存入新表ts中

```

create table ts like student;
insert into ts
select sno, sname, ssex, sage, sdept from student natural join sc
group by sno
having max(grade) < 60;

```

结果为

```

Query OK, 1 row affected (0.00 sec)
Records: 1 Duplicates: 0 Warnings: 0

```

查询ts表得到

```

mysql> select * from ts
-> ;
+-----+-----+-----+-----+
| Sno      | Sname    | Ssex | Sage | Sdept |
+-----+-----+-----+-----+
| 2005011 | 张丽萍   | 女   | 19   | Ch     |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

```

3、将学号为2005001的学生姓名改为“刘华”，年龄增加1岁

```

update student set sname = '刘华', sage = sage+1
where sno = '2005001';

```

运行结果

```
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

查询student表得

```
mysql> select * from student
-> ;

+-----+-----+-----+-----+-----+
| Sno   | Sname | Ssex | Sage | Sdept |
+-----+-----+-----+-----+-----+
| 2005001 | 刘华   | 男   | 19   | Cs     |
| 2005002 | 王林   | 女   | 19   | Cs     |
| 2005003 | 李民   | 男   | 20   | Is     |
| 2005004 | 赵欣然 | 女   | 16   | Ma     |
| 2005010 | 赵青江 | 男   | 18   | Cs     |
| 2005011 | 张丽萍 | 女   | 19   | Ch     |
| 2005012 | 陈景欢 | 男   | 20   | Is     |
| 2005013 | 陈婷婷 | 女   | 16   | Ph     |
| 2005014 | 李军   | 女   | 16   | Ph     |
+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

4、把选修了“数据库系统”课程而成绩不及格的学生的成绩全部改为空值

```
update sc set grade=NULL
where cno =
    (select cno from course
     where cname='数据库系统'
    )
and grade<60;
```

运行结果

```
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

sc 表更新后

```
select * from sc
where cno =
    (select cno from course
     where cname = '数据库系统'
    );
```

得到

```

+-----+-----+-----+
| sno    | cno | grade |
+-----+-----+-----+
| 2005001 | 1   | 87    |
| 2005010 | 1   | 87    |
| 2005011 | 1   | NULL   |
| 2005012 | 1   | 84    |
+-----+-----+-----+
4 rows in set (0.00 sec)

```

此时我们可以看到学号为 2005011 的之前成绩为 52，在这里被更新为了 null，说明完成了上述操作

5、学生王林在 3 号课程考试作弊，该课成绩改为空值

观察数据，发现王林的3号考试并未在sc表中，所以我们先加上一个数据

```

insert into sc
select sno, '3', 60
from student
where sname='王林';

```

```

select * from sc
where sno =
(select sno from student
where sname = '王林'
);

```

```

+-----+-----+-----+
| sno    | cno | grade |
+-----+-----+-----+
| 2005002 | 2   | 95    |
| 2005002 | 3   | 60    |
+-----+-----+-----+
2 rows in set (0.00 sec)

```

可以看到此时数据已经添加成功，开始实验

```

update sc set grade =NULL
where sno =
(select sno from student
where sname = '王林'
)and cno='3';

```

运行结果

```

Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

```

查询sc表

```
select * from sc
where sno =
    (select sno from student
     where sname = '王林'
    )and cno='3';
```

结果

```
+-----+-----+-----+
| sno    | cno | grade |
+-----+-----+-----+
| 2005002 | 3   | NULL  |
+-----+-----+-----+
1 row in set (0.00 sec)
```

6、把成绩低于总平均成绩的女同学成绩提高5%

```
with avggrade as
    (select avg(grade) from sc)
update sc set grade = grade * 1.05
where sno in
    (select sno from student
     where ssex = '女')
    and grade < (select * from avggrade);
```

因为一开始直接将select avg(grade) from sc括号后置于最下面那一行会产生错误，所以将其进行改名后处理

运行结果

```
Query OK, 3 rows affected (0.01 sec)
Rows matched: 3  Changed: 3  Warnings: 0
```

```
select * from sc natural join student where ssex = '女';
```

检验结果

```
mysql> select * from sc natural join student where ssex = '女';
+-----+-----+-----+-----+-----+-----+-----+
| sno    | cno | grade | Sname    | Ssex | Sage | Sdept |
+-----+-----+-----+-----+-----+-----+-----+
| 2005002 | 2   | 95    | 王林     | 女   | 19   | Cs     |
| 2005002 | 3   | NULL  | 王林     | 女   | 19   | Cs     |
| 2005011 | 1   | NULL  | 张丽萍   | 女   | 19   | Ch     |
| 2005011 | 2   | 49    | 张丽萍   | 女   | 19   | Ch     |
| 2005011 | 3   | 56    | 张丽萍   | 女   | 19   | Ch     |
| 2005011 | 5   | 47    | 张丽萍   | 女   | 19   | Ch     |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```


7、在基本表sc中修改课程号为“2”号课程的成绩，成绩小于等于80分时降低2%，成绩大于80分时降低1% (用两个update语句实现)

```
update sc set grade = grade *0.98
where grade<=80 and cno = '2';
update sc set grade = grade *0.99
where grade>80 and cno = '2';
```

此时两个update语句就两个分号结束

```
mysql> update sc set grade = grade *0.98
      -> where grade<=80 and cno = '2';
Query OK, 2 rows affected (0.01 sec)
Rows matched: 2  Changed: 2  Warnings: 0

mysql> update sc set grade = grade *0.99
      -> where grade>80 and cno = '2';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
#检验
select * from sc
where cno='2';
```

```
+-----+-----+-----+
| sno    | cno | grade |
+-----+-----+-----+
| 2005001 | 2   | 66    |
| 2005002 | 2   | 94    |
| 2005010 | 2   | NULL  |
| 2005011 | 2   | 48    |
+-----+-----+-----+
4 rows in set (0.00 sec)
```

8、把“钱横”的选课记录全部删去

因为上述题目中对钱横做了修改，即将钱横更改为了刘华，这里先进行复原

```
update student set sname = '钱横'
where sno = '2005001';
```

```
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

开始实验

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

```
Query OK, 3 rows affected (0.01 sec)
```

检验

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

```
Empty set (0.00 sec)
```

9、能删除2005001的学生记录吗？一定要删除应该如何操作？给出操作命令

可以的，但是因为student表中含有sc表的外码约束，所以必须先删去sc表中的2005001的数据再删去student表中的数据

```
delete from sc
where sno='2005001';
delete from student
where sno='2005001';
```

```
mysql> delete from sc
      -> where sno='2005001';
Query OK, 0 rows affected (0.00 sec)

mysql> delete from student
      -> where sno='2005001';
Query OK, 1 row affected (0.01 sec)
```

检查一下此时的student表

```
select * from student
where sno='2005001';
```

```
Empty set (0.00 sec)
```

实验结束。