实　验　报　告

学　　号	2312001 4029	姓　　名	张心顺	专业班级	经济学 23 级
课程名称	**数据库系统**			学期	**2025 年秋季学期**
任课教师	刘艳艳	完成日期	20251028	上机课时间	20251023
实 验 名 称	MySQL 实现教务系统的数据库设计				

一、实验要求（10%）

在教务系统的数据库设计时，完成以下内容:

(1)创建教务系统各数据库表，包括:Student，Course，Sc。设置主键和外键，以及用户定义的完整性约束条件。

(2)输入数据，体验实体完整性、参照完整性、以及用户定义的完整性约束。

(3)实现简单的数据浏览以及数据增删改

(4)用附件中的实验报告模板完成实验报告

二、实验内容及步骤（80%）

(1)创建教务系统各数据库表，包括:Student，Course，Sc。设置主键和外键，以及用户定义的完整性约束条件。

```
mysql> CREATE DATABASE edus;
Query OK, 1 row affected (0.02 sec)

mysql> CREATE TABLE Student (
    -> Sno INT PRIMARY KEY,
    -> Sname VARCHAR(50) NOT NULL,
    -> Ssex ENUM('男', '女') NOT NULL,
    -> Sage INT CHECK (Sage BETWEEN 10 AND 100),
    -> Sdept VARCHAR(50) NOT NULL
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> CREATE TABLE Course (
    -> Cno INT PRIMARY KEY,
    -> Cname VARCHAR(100) NOT NULL,
    -> Ccredit DECIMAL(3,1) CHECK (Ccredit >= 0)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> CREATE TABLE SC (
    -> Sno INT,
    -> Cno INT,
    -> Grade DECIMAL(4,1) CHECK (Grade BETWEEN 0 AND 100),
    -> PRIMARY KEY (Sno, Cno),
    -> FOREIGN KEY (Sno) REFERENCES Student(Sno) ON DELETE CASCADE,
    -> FOREIGN KEY (Cno) REFERENCES Course(Cno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)
```

```
mysql> CREATE DATABASE edus;
Query OK, 1 row affected (0.02 sec)

mysql> USE edus;
Database changed
mysql> CREATE TABLE Student (
    -> Sno INT PRIMARY KEY,
    -> Sname VARCHAR(50) NOT NULL,
    -> Ssex ENUM('男', '女') NOT NULL,
    -> Sage INT CHECK (Sage BETWEEN 10 AND 100),
    -> Sdept VARCHAR(50) NOT NULL
    -> );
Query OK, 0 rows affected (0.04 sec)
mysql> CREATE TABLE Course (
    -> Cno INT PRIMARY KEY,
    -> Cname VARCHAR(100) NOT NULL,
    -> Ccredit DECIMAL(3,1) CHECK (Ccredit >= 0)
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> CREATE TABLE SC (
    -> Sno INT,
    -> Cno INT,
    -> Grade DECIMAL(4,1) CHECK (Grade BETWEEN 0 AND 100),
    -> PRIMARY KEY (Sno, Cno),
    -> FOREIGN KEY (Sno) REFERENCES Student(Sno) ON DELETE CASCADE,
    -> FOREIGN KEY (Cno) REFERENCES Course(Cno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)
```

```
mysql> CREATE TABLE Department (
    -> Dept_id INT PRIMARY KEY,
    -> Dept_name VARCHAR(50) NOT NULL UNIQUE,
    -> Dean_name VARCHAR(50),
    -> Office_location VARCHAR(100)
    -> );
```

```
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Class (
    -> Class_id INT PRIMARY KEY,
    -> Class_name VARCHAR(50) NOT NULL,
    -> Class_type ENUM('本科', '研究生') NOT NULL,
    -> Dept_id INT,
    -> Head_teacher VARCHAR(50),
    -> FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id) ON DELETE SET NULL
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Office (
    -> Office_id INT PRIMARY KEY,
    -> Office_name VARCHAR(50) NOT NULL,
    -> Dept_id INT,
    -> Director VARCHAR(50),
    -> FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Teacher (
    -> Tno INT PRIMARY KEY,
    -> Tname VARCHAR(50) NOT NULL,
    -> Ttitle ENUM('教授', '副教授', '讲师', '助教') NOT NULL,
    -> Office_id INT,
    -> Research_area VARCHAR(100),
    -> FOREIGN KEY (Office_id) REFERENCES Office(Office_id) ON DELETE SET NULL
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Course_Type (
    -> Course_id INT PRIMARY KEY,
    -> Course_level ENUM('本科', '研究生') NOT NULL,
    -> FOREIGN KEY (Course_id) REFERENCES Course(Cno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.08 sec)

mysql> CREATE TABLE Student_Class (
    -> Sno INT,
    -> Class_id INT,
    -> Enrollment_year YEAR,
    -> PRIMARY KEY (Sno, Class_id),
    -> FOREIGN KEY (Sno) REFERENCES Student(Sno) ON DELETE CASCADE,
```

```
    -> FOREIGN KEY (Class_id) REFERENCES Class(Class_id) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> CREATE TABLE Department (
    -> Dept_id INT PRIMARY KEY,
    -> Dept_name VARCHAR(50) NOT NULL UNIQUE,
    -> Dean_name VARCHAR(50),
    -> Office_location VARCHAR(100)
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Class (
    -> Class_id INT PRIMARY KEY,
    -> Class_name VARCHAR(50) NOT NULL,
    -> Class_type ENUM('本科', '研究生') NOT NULL,
    -> Dept_id INT,
    -> Head_teacher VARCHAR(50),
    -> FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id) ON DELETE SET NULL
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Office (
    -> Office_id INT PRIMARY KEY,
    -> Office_name VARCHAR(50) NOT NULL,
    -> Dept_id INT,
    -> Director VARCHAR(50),
    -> FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Teacher (
    -> Tno INT PRIMARY KEY,
    -> Tname VARCHAR(50) NOT NULL,
    -> Ttitle ENUM('教授', '副教授', '讲师', '助教') NOT NULL,
    -> Office_id INT,
    -> Research_area VARCHAR(100),
    -> FOREIGN KEY (Office_id) REFERENCES Office(Office_id) ON DELETE SET NULL
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE TABLE Course_Type (
    -> Course_id INT PRIMARY KEY,
    -> Course_level ENUM('本科', '研究生') NOT NULL,
    -> FOREIGN KEY (Course_id) REFERENCES Course(Cno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.08 sec)

mysql> CREATE TABLE Student_Class (
    -> Sno INT,
    -> Class_id INT,
    -> Enrollment_year YEAR,
    -> PRIMARY KEY (Sno, Class_id),
    -> FOREIGN KEY (Sno) REFERENCES Student(Sno) ON DELETE CASCADE,
    -> FOREIGN KEY (Class_id) REFERENCES Class(Class_id) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> CREATE TABLE Supervision (
    -> Supervisor_id INT,
    -> Graduate_id INT,
    -> Start_date DATE,
    -> Research_topic VARCHAR(200),
    -> PRIMARY KEY (Supervisor_id, Graduate_id),
    -> FOREIGN KEY (Supervisor_id) REFERENCES Teacher(Tno) ON DELETE CASCADE,
    -> FOREIGN KEY (Graduate_id) REFERENCES Student(Sno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> SHOW TABLES;
+----------------+
| Tables_in_edus |
+----------------+
| class          |
| course         |
| course_type    |
| department     |
| office         |
| sc             |
| student        |
| student_class  |
| supervision    |
| teacher        |
+----------------+
10 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE Supervision (
    -> Supervisor_id INT,
    -> Graduate_id INT,
    -> Start_date DATE,
    -> Research_topic VARCHAR(200),
    -> PRIMARY KEY (Supervisor_id, Graduate_id),
    -> FOREIGN KEY (Supervisor_id) REFERENCES Teacher(Tno) ON DELETE CASCADE,
    -> FOREIGN KEY (Graduate_id) REFERENCES Student(Sno) ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> SHOW TABLES;
+----------------+
| Tables_in_edus |
+----------------+
| class          |
| course         |
| course_type    |
| department     |
| office         |
| sc             |
| student        |
| student_class  |
| supervision    |
| teacher        |
+----------------+
10 rows in set (0.00 sec)
```

(2)输入数据，体验实体完整性、参照完整性、以及用户定义的完整性约束。

```
mysql> INSERT INTO Student (Sno, Sname, Ssex, Sage, Sdept) VALUES
    -> (1001, '张强', '男', 20, '计算机科学'),
    -> (1002, '李艳', '女', 19, '软件工程'),
    -> (1003, '王刚', '男', 21, '数据科学'),
    -> (1004, '孙芳', '女', 20, '计算机科学'),
    -> (1005, '刘丽', '女', 22, '软件工程');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Course (Cno, Cname, Ccredit) VALUES
    -> (101, '程序设计基础', 3.0),
    -> (102, '数据结构', 3.5),
    -> (103, '数据库原理', 3.5),
    -> (104, '操作系统', 3.5),
    -> (201, '高等数学', 5.0),
    -> (202, '线性代数', 3.0);
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO SC (Sno, Cno, Grade) VALUES
    -> (1001, 101, 85.5),
```

```
    -> (1001, 201, 90.5),
    -> (1001, 102, 76.5),
    -> (1002, 101, 78.0),
    -> (1002, 201, 82.0),
    -> (1003, 101, 92.5),
    -> (1003, 201, 88.0),
    -> (1004, 103, 79.0),
    -> (1005, 202, 91.0);
Query OK, 9 rows affected (0.01 sec)
Records: 9  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Student (Sno, Sname, Ssex, Sage, Sdept) VALUES
    -> (1001, '张强', '男', 20, '计算机科学'),
    -> (1002, '李艳', '女', 19, '软件工程'),
    -> (1003, '王刚', '男', 21, '数据科学'),
    -> (1004, '孙芳', '女', 20, '计算机科学'),
    -> (1005, '刘丽', '女', 22, '软件工程');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0
mysql> INSERT INTO Course (Cno, Cname, Ccredit) VALUES
    -> (101, '程序设计基础', 3.0),
    -> (102, '数据结构', 3.5),
    -> (103, '数据库原理', 3.5),
    -> (104, '操作系统', 3.5),
    -> (201, '高等数学', 5.0),
    -> (202, '线性代数', 3.0);
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO SC (Sno, Cno, Grade) VALUES
    -> (1001, 101, 85.5),
    -> (1001, 201, 90.5),
    -> (1001, 102, 76.5),
    -> (1002, 101, 78.0),
    -> (1002, 201, 82.0),
    -> (1003, 101, 92.5),
    -> (1003, 201, 88.0),
    -> (1004, 103, 79.0),
    -> (1005, 202, 91.0);
Query OK, 9 rows affected (0.01 sec)
Records: 9  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Department (Dept_id, Dept_name, Dean_name, Office_location)
VALUES
    -> (1, '计算机科学学院', '张教授', '信息楼 A 座 301'),
    -> (2, '软件工程学院', '李教授', '信息楼 B 座 201'),
    -> (3, '数据科学学院', '王教授', '信息楼 C 座 101');
```

```
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Class (Class_id, Class_name, Class_type, Dept_id,
Head_teacher) VALUES
    -> (101, '计算机科学 2023 级 1 班', '本科', 1, '赵老师'),
    -> (102, '软件工程 2023 级 1 班', '本科', 2, '钱老师'),
    -> (103, '数据科学 2023 级 1 班', '本科', 3, '孙老师'),
    -> (201, '计算机科学研究生 1 班', '研究生', 1, '周老师');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Office (Office_id, Office_name, Dept_id, Director) VALUES
    -> (1, '人工智能教研室', 1, '吴教授'),
    -> (2, '软件工程教研室', 2, '郑教授'),
    -> (3, '大数据教研室', 3, '冯教授');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Department (Dept_id, Dept_name, Dean_name, Office_location) VALUES
    -> (1, '计算机科学学院', '张教授', '信息楼A座301'),
    -> (2, '软件工程学院', '李教授', '信息楼B座201'),
    -> (3, '数据科学学院', '王教授', '信息楼C座101');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Class (Class_id, Class_name, Class_type, Dept_id, Head_teacher) VALUES
    -> (101, '计算机科学2023级1班', '本科', 1, '赵老师'),
    -> (102, '软件工程2023级1班', '本科', 2, '钱老师'),
    -> (103, '数据科学2023级1班', '本科', 3, '孙老师'),
    -> (201, '计算机科学研究生1班', '研究生', 1, '周老师');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Office (Office_id, Office_name, Dept_id, Director) VALUES
    -> (1, '人工智能教研室', 1, '吴教授'),
    -> (2, '软件工程教研室', 2, '郑教授'),
    -> (3, '大数据教研室', 3, '冯教授');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Teacher (Tno, Tname, Ttitle, Office_id, Research_area) VALUES
    -> (5001, '陈教授', '教授', 1, '机器学习与人工智能'),
    -> (5002, '林副教授', '副教授', 1, '计算机视觉'),
    -> (5003, '黄讲师', '讲师', 2, '软件测试'),
    -> (5004, '刘教授', '教授', 3, '数据挖掘');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Teacher (Tno, Tname, Ttitle, Office_id, Research_area) VALUES
    -> (5001, '陈教授', '教授', 1, '机器学习与人工智能'),
    -> (5002, '林副教授', '副教授', 1, '计算机视觉'),
    -> (5003, '黄讲师', '讲师', 2, '软件测试'),

mysql> INSERT INTO Course_Type (Course_id, Course_level) VALUES
    -> (101, '本科'),
    -> (102, '本科'),
    -> (103, '本科'),
    -> (104, '本科'),
    -> (201, '本科'),
    -> (202, '本科');
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Student_Class (Sno, Class_id, Enrollment_year) VALUES
    -> (1001, 101, 2023),
    -> (1002, 102, 2023),
    -> (1003, 103, 2023),
    -> (1004, 101, 2023),
    -> (1005, 102, 2023),
    -> (1006, 201, 2023);
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Supervision (Supervisor_id, Graduate_id, Start_date,
Research_topic) VALUES
    -> (5001, 1006, '2023-09-01', '深度学习在图像识别中的应用研究');
Query OK, 1 row affected (0.02 sec)
```

```
mysql> INSERT INTO Class (Class_id, Class_name, Class_type, Dept_id, Head_teacher) VALUES
    -> (101, '计算机科学2023级1班', '本科', 1, '赵老师'),
    -> (102, '软件工程2023级1班', '本科', 2, '钱老师'),
    -> (103, '数据科学2023级1班', '本科', 3, '孙老师'),
    -> (201, '计算机科学研究生1班', '研究生', 1, '周老师');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Office (Office_id, Office_name, Dept_id, Director) VALUES
    -> (1, '人工智能教研室', 1, '吴教授'),
    -> (2, '软件工程教研室', 2, '郑教授'),
    -> (3, '大数据教研室', 3, '冯教授');
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Teacher (Tno, Tname, Ttitle, Office_id, Research_area) VALUES
    -> (5001, '陈教授', '教授', 1, '机器学习与人工智能'),
    -> (5002, '林副教授', '副教授', 1, '计算机视觉'),
    -> (5003, '黄讲师', '讲师', 2, '软件测试'),
    -> (5004, '刘教授', '教授', 3, '数据挖掘');
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Course_Type (Course_id, Course_level) VALUES
    -> (101, '本科'),
    -> (102, '本科'),
    -> (103, '本科'),
    -> (104, '本科'),
    -> (201, '本科'),
    -> (202, '本科');
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Student_Class (Sno, Class_id, Enrollment_year) VALUES
    -> (1001, 101, 2023),
    -> (1002, 102, 2023),
    -> (1003, 103, 2023),
    -> (1004, 101, 2023),
    -> (1005, 102, 2023),
    -> (1006, 201, 2023);
Query OK, 6 rows affected (0.02 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Supervision (Supervisor_id, Graduate_id, Start_date, Research_topic) VALUE
S
    -> (5001, 1006, '2023-09-01', '深度学习在图像识别中的应用研究');
Query OK, 1 row affected (0.02 sec)
```

(3)实现简单的数据浏览以及数据增删改

浏览：

```
mysql> SELECT * FROM Student;
+------+-------+------+------+------------+
| Sno  | Sname | Ssex | Sage | Sdept      |
+------+-------+------+------+------------+
| 1001 | 张强  | 男   |   20 | 计算机科学 |
| 1002 | 李艳  | 女   |   19 | 软件工程   |
| 1003 | 王刚  | 男   |   21 | 数据科学   |
| 1004 | 孙芳  | 女   |   20 | 计算机科学 |
| 1005 | 刘丽  | 女   |   22 | 软件工程   |
+------+-------+------+------+------------+
```

```
5 rows in set (0.01 sec)

mysql> SELECT * FROM Course;
+-----+--------------+---------+
| Cno | Cname        | Ccredit |
+-----+--------------+---------+
| 101 | 程序设计基础 |     3.0 |
| 102 | 数据结构     |     3.5 |
| 103 | 数据库原理   |     3.5 |
| 104 | 操作系统     |     3.5 |
| 201 | 高等数学     |     5.0 |
| 202 | 线性代数     |     3.0 |
+-----+--------------+---------+
6 rows in set (0.00 sec)
```

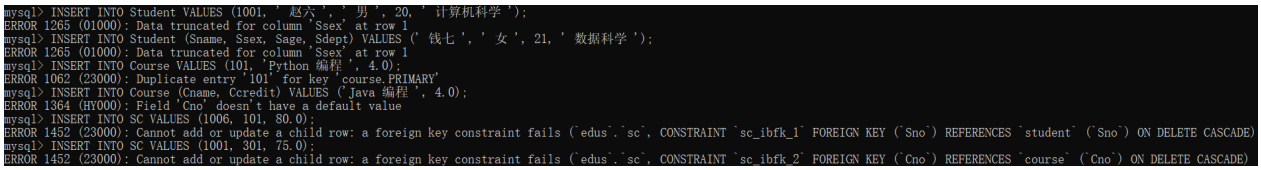
```
mysql> SELECT * FROM Student;
+------+-------+------+------+------------+
| Sno  | Sname | Ssex | Sage | Sdept      |
+------+-------+------+------+------------+
| 1001 | 张强  | 男   |   20 | 计算机科学 |
| 1002 | 李艳  | 女   |   19 | 软件工程   |
| 1003 | 王刚  | 男   |   21 | 数据科学   |
| 1004 | 孙芳  | 女   |   20 | 计算机科学 |
| 1005 | 刘丽  | 女   |   22 | 软件工程   |
+------+-------+------+------+------------+
5 rows in set (0.01 sec)

mysql> SELECT * FROM Course;
+-----+--------------+---------+
| Cno | Cname        | Ccredit |
+-----+--------------+---------+
| 101 | 程序设计基础 |     3.0 |
| 102 | 数据结构     |     3.5 |
| 103 | 数据库原理   |     3.5 |
| 104 | 操作系统     |     3.5 |
| 201 | 高等数学     |     5.0 |
| 202 | 线性代数     |     3.0 |
+-----+--------------+---------+
6 rows in set (0.00 sec)
```

实体完整性与参照完整性：

```
mysql> INSERT INTO Student VALUES (1001, ' 赵六 ', ' 男 ', 20, ' 计算
机科学 ');
ERROR 1265 (01000): Data truncated for column 'Ssex' at row 1
mysql> INSERT INTO Student (Sname, Ssex, Sage, Sdept) VALUES (' 钱七
```

```
', ' 女 ', 21, ' 数据科 学 ');
ERROR 1265 (01000): Data truncated for column 'Ssex' at row 1
mysql> INSERT INTO Course VALUES (101, 'Python 编程 ', 4.0);
ERROR 1062 (23000): Duplicate entry '101' for key 'course.PRIMARY'
mysql> INSERT INTO Course (Cname, Ccredit) VALUES ('Java 编程 ', 4.0);
ERROR 1364 (HY000): Field 'Cno' doesn't have a default value
mysql> INSERT INTO SC VALUES (1006, 101, 80.0);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key
constraint fails (`edus`.`sc`, CONSTRAINT `sc_ibfk_1` FOREIGN KEY
(`Sno`) REFERENCES `student` (`Sno`) ON DELETE CASCADE)
mysql> INSERT INTO SC VALUES (1001, 301, 75.0);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key
constraint fails (`edus`.`sc`, CONSTRAINT `sc_ibfk_2` FOREIGN KEY
(`Cno`) REFERENCES `course` (`Cno`) ON DELETE CASCADE)
```



增删改：

```
mysql> INSERT INTO Student VALUES (1006, '郑十', '男', 20, '数据科学
');
Query OK, 1 row affected (0.06 sec)

mysql> UPDATE Student SET Sage=20 WHERE Sno=1002;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> DELETE FROM SC WHERE Sno=1001 AND Cno=102;
Query OK, 1 row affected (0.02 sec)

mysql> SELECT * FROM Student;
+------+-------+------+------+------------+
| Sno  | Sname | Ssex | Sage | Sdept      |
+------+-------+------+------+------------+
| 1001 | 张强  | 男   |   20 | 计算机科学 |
| 1002 | 李艳  | 女   |   20 | 软件工程   |
| 1003 | 王刚  | 男   |   21 | 数据科学   |
| 1004 | 孙芳  | 女   |   20 | 计算机科学 |
| 1005 | 刘丽  | 女   |   22 | 软件工程   |
| 1006 | 郑十  | 男   |   20 | 数据科学   |
+------+-------+------+------+------------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM SC;
+------+-----+-------+
| Sno  | Cno | Grade |
```

```
+------+-----+-------+
| 1001 | 101 |  85.5 |
| 1001 | 201 |  90.5 |
| 1002 | 101 |  78.0 |
| 1002 | 201 |  82.0 |
| 1003 | 101 |  92.5 |
| 1003 | 201 |  88.0 |
| 1004 | 103 |  79.0 |
| 1005 | 202 |  91.0 |
+------+-----+-------+
8 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Student VALUES (1006, '郑十', '男', 20, '数据科学');
Query OK, 1 row affected (0.06 sec)

mysql> UPDATE Student SET Sage=20 WHERE Sno=1002;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> DELETE FROM SC WHERE Sno=1001 AND Cno=102;
Query OK, 1 row affected (0.02 sec)

mysql> SELECT * FROM Student;
+------+-------+------+------+------------+
| Sno  | Sname | Ssex | Sage | Sdept      |
+------+-------+------+------+------------+
| 1001 | 张强  | 男   |   20 | 计算机科学 |
| 1002 | 李艳  | 女   |   20 | 软件工程   |
| 1003 | 王刚  | 男   |   21 | 数据科学   |
| 1004 | 孙芳  | 女   |   20 | 计算机科学 |
| 1005 | 刘丽  | 女   |   22 | 软件工程   |
| 1006 | 郑十  | 男   |   20 | 数据科学   |
+------+-------+------+------+------------+
6 rows in set (0.00 sec)

mysql> SELECT * FROM SC;
+------+-----+-------+
| Sno  | Cno | Grade |
+------+-----+-------+
| 1001 | 101 |  85.5 |
| 1001 | 201 |  90.5 |
| 1002 | 101 |  78.0 |
| 1002 | 201 |  82.0 |
| 1003 | 101 |  92.5 |
| 1003 | 201 |  88.0 |
| 1004 | 103 |  79.0 |
| 1005 | 202 |  91.0 |
+------+-----+-------+
8 rows in set (0.00 sec)
```

三、心得总结（写出自己在完成实验过程中遇到的问题、解决方法，以及体会、收获等）

（10%）

刚开始写代码的时候，忘记了一些语法，从 ppt 中复习后重新开始构思。一开始数据库反复建立又反复删除，总是想做到完美但总是出现小的问题。后来不着急写代码，先把表的列都想好，约束也都想好，随后直接打出来，得到一个基本的数据库。

在此基础之上，参照课上的例题与知识，给出了测试实体完整性等的语句，完成了基本的操作。

后来经过老师提醒，发现建的表不够。于是又增加到十个表，也输入了数据。