

# 《数据库技术实验》报告

第 一 次实验	日期: 2022-09-18	得分:
学号:	姓名: <i>Steven</i>	专业: 智能科学与技术

## 一、实验目的

1. 熟悉 MySQL 的实验环境。
2. 掌握创建、修改、删除数据库和表的 SQL 语句。

## 二、实验内容

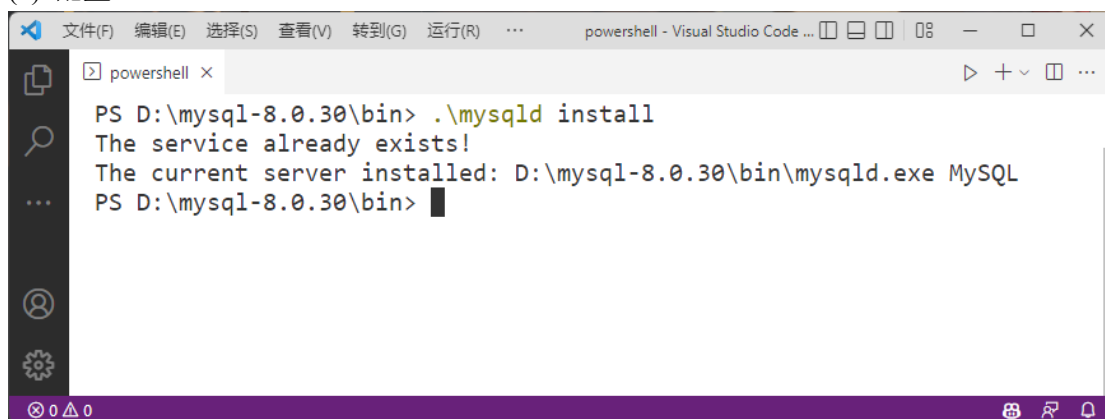
1. 安装、配置、启动/停止、登录/退出 MySQL。
2. 创建数据库 Student\_Course 及其学生表 Student、课程表 Course、学生选课表 SC, 设置各个表中属性的数据类型、主码和外码, 并录入数据, 查看实体完整性和参照完整性约束是否起效。
3. 查看 MySQL 自带数据库 World 的各个表中属性的数据类型、主码和外码。

## 三、实验过程及实验结果

1.

(1) 安装略

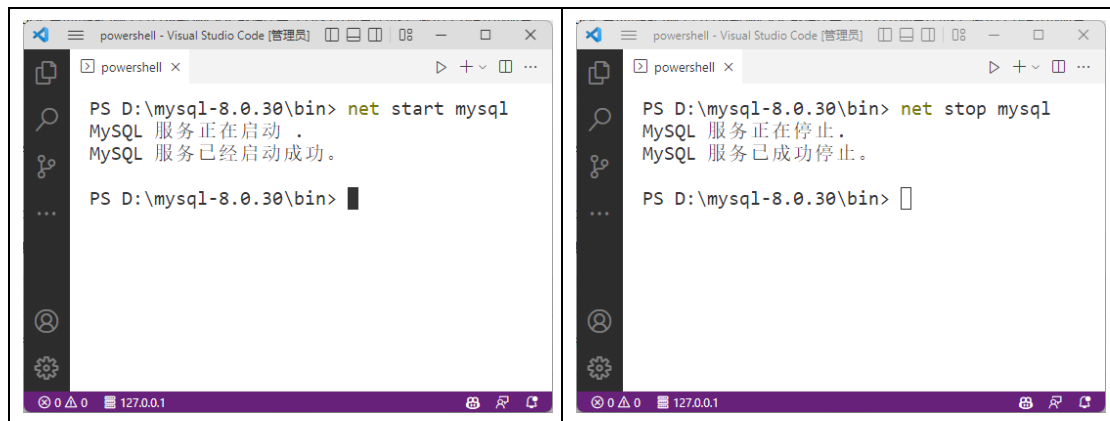
(2) 配置



```
PS D:\mysql-8.0.30\bin> .\mysqld install
The service already exists!
The current server installed: D:\mysql-8.0.30\bin\mysqld.exe MySQL
PS D:\mysql-8.0.30\bin>
```

(3) 启动/停止 MySQL

net start mysql	net stop mysql
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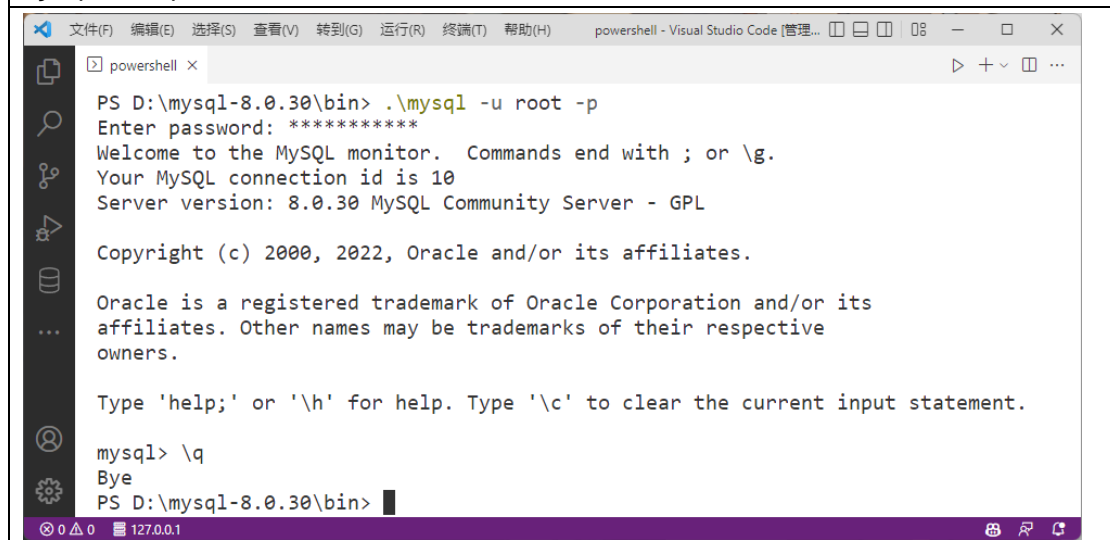


#### (4) 登录/退出 MySQL

`mysql -u root -p`  
(密码)



`mysql > \q`



2.

(1) 创建数据库、表，并设置数据类型、主码和外码

```

CREATE DATABASE Student_Course;
-- 创建 Student_Course 库

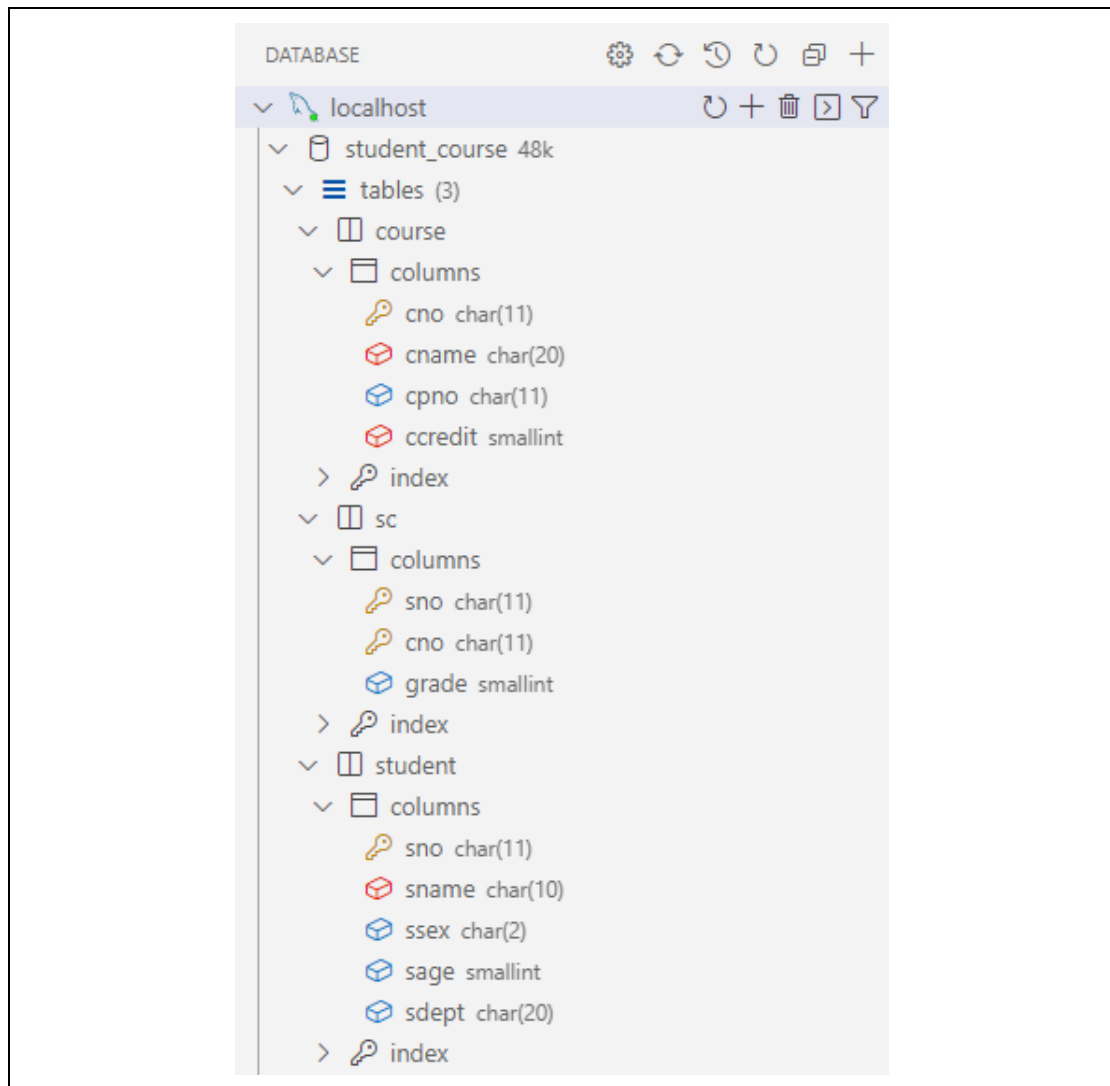
use Student_Course;
-- 选中 Student_Course 库

CREATE TABLE
    Student(
        sno CHAR(11) PRIMARY KEY,
        sname CHAR(10) NOT NULL,
        ssex CHAR(2),
        sage SMALLINT(2),
        sdept CHAR(20)
    );
-- 创建 Student Table

CREATE TABLE
    Course(
        cno CHAR(11),
        cname CHAR(20) NOT NULL,
        cpno CHAR(11),
        ccredit SMALLINT(2) NOT NULL,
        PRIMARY KEY(cno),
        FOREIGN KEY(cpno) REFERENCES Course(cno)
    );
-- 创建 Course Table

CREATE TABLE
    SC(
        sno CHAR(11),
        cno CHAR(11),
        grade SMALLINT(3),
        PRIMARY KEY(sno, cno),
        FOREIGN KEY(sno) REFERENCES Student(sno),
        FOREIGN KEY(cno) REFERENCES Course(cno)
    );
-- 创建 SC Table

```



(2) 输入数据并测试实体完整性和参照完整性

```
INSERT INTO
    student(sno, sname, ssex, sage, sdept)
VALUES (
    20201060351,
    "testName",
    "男",
    18,
    "计算机科学与技术"
);
```

```

-> student(sno, sname, ssex, sage, sdept)
-> VALUES (
->      20201060351,
->      "testName",
->      "男",
->      18,
->      "计算机科学与技术"
-> );
ERROR 1062 (23000): Duplicate entry '20201060351' for key 'student.PRIMARY'
mysql>

```

由于主键 sno 重复，所以无法添加，确认实体完整性。

```

INSERT INTO
    course(cno, cname, cpno, ccredit)
VALUES (
    '3011140073',
    '数据库技术',
    '3011140073',
    3
);
-- 插入课程信息

```

```

INSERT INTO
    sc(sno, cno, grade)
VALUES (20201060351, '3011140073', 3);
-- 插入选课信息
DELETE FROM student WHERE sno='20201060351';
-- 测试

```

```

ERROR 1451 (23000): Cannot delete or update a parent row: a fo
reign key constraint fails (`student_course`.`sc`, CONSTRAINT
`sc_ibfk_1` FOREIGN KEY (`sno`) REFERENCES `student` (`sno`))
mysql>

```

参照完整性测试完成。

3.

```

use World;
SELECT * FROM country;

```

SELECT \* FROM country

SELECT \* FROM country

耗时: 14ms < 1 2 3 > 共 239 条

Code	Name	Continent	Region	SurfaceArea	IndepYear	Population	LifeExpectancy	GNP	GNPOld	LocalName	GovernmentForm	HeadOfState	Capital	Code2
ABW	Aruba	North America	Caribbean	193.00	(NULL)	103000	78.4	820.00	793.00	Aruba	Nonmetropolitan Territo	Beatrix	129	AW
AFG	Afghanistan	Asia	Southern and Central As	652090.00	1919	22720000	45.9	5976.00	(NULL)	Afghanistan/Afghanestan	Islamic Emirate	Mohammad Omar	1	AF
AGO	Angola	Africa	Central Africa	1246700.00	1975	12878000	38.3	6548.00	7984.00	Angola	Republic	José Eduardo dos Santo	56	AO
AIA	Anguilla	North America	Caribbean	96.00	(NULL)	8000	76.1	63.20	(NULL)	Anguilla	Dependent Territory of t	Elisabeth II	62	AI
ALB	Albania	Europe	Southern Europe	28748.00	1912	3401200	71.6	3205.00	2500.00	Shqipëria	Republic	Rexhep Mejdani	34	AL
AND	Andorra	Europe	Southern Europe	468.00	1278	78000	83.5	1690.00	(NULL)	Andorra	Parliamentary Coprincip		55	AD
ANT	Netherlands Antilles	North America	Caribbean	800.00	(NULL)	217000	74.7	1941.00	(NULL)	Nederlandse Antillen	Nonmetropolitan Territo	Beatrix	33	AN
ARE	United Arab Emirates	Asia	Middle East	83600.00	1971	2441000	74.1	37966.00	36846.00	Al-'Imarat al-'Arabiyya al-	Emirate Federation	Zayid bin Sultan al-Nah	65	AE
ARG	Argentina	South America	South America	2780400.00	1816	37032000	75.1	340238.00	323310.00	Argentina	Federal Republic	Fernando de la Rúa	69	AR
ARM	Armenia	Asia	Middle East	29800.00	1991	3520000	66.4	1813.00	1627.00	Hajastan	Republic	Robert Kotlarian	126	AM
ASM	American Samoa	Oceania	Polynesia	199.00	(NULL)	68000	75.1	334.00	(NULL)	Amerika Samoa	US Territory	George W. Bush	54	AS
ATA	Antarctica	Antarctica	Antarctica	13120000.00	(NULL)	0	(NULL)	0.00	(NULL)	-	Co-administrated	(NULL)	(NULL)	AQ
ATF	French Southern territor	Antarctica	Antarctica	7780.00	(NULL)	0	(NULL)	0.00	(NULL)	Terrés australes françai	Nonmetropolitan Territo	Jacques Chirac	(NULL)	TF
ATG	Antigua and Barbuda	North America	Caribbean	442.00	1981	68000	70.5	612.00	584.00	Antigua and Barbuda	Constitutional Monarchy	Elisabeth II	63	AG
AUS	Australia	Oceania	Australia and New Zeala	7741220.00	1901	18886000	79.8	351182.00	362911.00	Australia	Constitutional Monarchy	Elisabeth II	135	AU
AUT	Austria	Europe	Western Europe	83859.00	1918	8091800	77.7	211860.00	206025.00	Österreich	Federal Republic	Thomas Klestil	1523	AT
AZE	Azerbaijan	Asia	Middle East	86600.00	1991	7734000	62.9	4127.00	4100.00	Azərbaycan	Federal Republic	Heydər Əliyev	144	AZ
BDI	Burundi	Africa	Eastern Africa	27834.00	1962	6093000	46.2	903.00	982.00	Burundi/Uburundi	Republic	Pierre Buyoya	352	BI
BEL	Belgium	Europe	Western Europe	30518.00	1830	10239000	77.8	249704.00	243948.00	België/Belgique	Constitutional Monarchy	Albert II	179	BE
BEN	Benin	Africa	Western Africa	112622.00	1960	6097000	50.2	2337.00	2141.00	Bénin	Republic	Mathieu Kérékou	187	BJ
BFA	Burkina Faso	Africa	Western Africa	274000.00	1960	11937000	46.7	2425.00	2201.00	Burkina Faso	Republic	Blaise Compaoré	549	BF
BGD	Bangladesh	Asia	Southern and Central As	143998.00	1971	129135000	60.2	32852.00	31966.00	Bangladesh	Republic	Shahabuddin Ahmad	150	BD
BGR	Bulgaria	Europe	Eastern Europe	110994.00	1908	8190900	70.9	12178.00	10169.00	България	Republic	Petar Stojanov	539	BG
BHR	Bahrain	Asia	Middle East	694.00	1971	617000	73.0	6366.00	6087.00	Al-Baḥrayn	Monarchy (Emirate)	Ḥamad bin Isa al-Khalīf	149	BH

查看所有的属性

SHOW COLUMNS FROM country FROM World;

Field	Type	Null	Key	Default	Extra
1 Code	char(3)	NO	PRI		
2 Name	char(52)	NO			
3 Continent	enum('Asia','Europe','No	NO		Asia	
4 Region	char(26)	NO			
5 SurfaceArea	decimal(10,2)	NO		0.00	
6 IndepYear	smallint	YES		(NULL)	
7 Population	int	NO		0	
8 LifeExpectancy	decimal(3,1)	YES		(NULL)	
9 GNP	decimal(10,2)	YES		(NULL)	
10 GNPOld	decimal(10,2)	YES		(NULL)	
11 LocalName	char(45)	NO			
12 GovernmentForm	char(45)	NO			
13 HeadOfState	char(60)	YES		(NULL)	
14 Capital	int	YES		(NULL)	
15 Code2	char(2)	NO			

查看 country 表的所有列，其中 Code 列为主码

#### 四、遇到的问题及解决的方法

1. 对于语法不熟，有时会因为一个分号，一个逗号而卡住好久。
2. 最初并不太理解 Foreign Key、Primary Key 的含义，之后重新复习了 PPT 后才明白。

#### 五、思考题

- 1.

MySQL 提供了整型、浮点型、日期型、字符串型 4 大类数据类型，而在每大类之下还有细分，例如整型还可分成 INTEGER、SMALLINT 等，字符串还可分成 CHAR、VARCHAR 等

2.

这三个属性分别是这三个表中的主码，用于在其各自的表中标识某一条记录。他们之间的关系是 SC 中的 sno 和 cno 依赖于 Student 中的 sno 和 Course 中的 cno 存在。

3.

World 中包括三个表，country、countryLanguage 和 city，这其中每个表都是实体，每个实体的各列都是一种属性，而这些实体之间存在着联系。用 E-R 图表示如下：

