

《数据库系统实验》

实验报告

题目	实验 13
姓名	宋渝杰
学号	18340146
班级	计科六班

一、实验环境：

win10+MySQL 8.0（后两问在 MYSQL 5.7）

二、实验内容与完成情况：

第 163 页“实验内容与要求”第 1 题：

先创建数据库和表、输入数据，代码如下：

```
create database jxgl;  
use jxgl;
```

```
# 建表  
create table student  
(sno varchar(7),  
sname varchar(5),  
sage numeric(2,0),  
ssex varchar(1),  
sdept varchar(5),  
primary key(sno));
```

```
create table course  
(cno varchar(4),  
cname varchar(6),  
cpno varchar(4),  
ccredit numeric(1,0),  
primary key(cno));
```

```
create table sc  
(sno varchar(7),  
cno varchar(4),  
grade int,  
primary key(sno,cno));
```

```

# 加入课本数据和部分自创数据
insert into student values('2005001','钱横',18,'男','Cs');
insert into student values('2005002','王林',19,'女','Cs');
insert into student values('2005003','李民',20,'男','Is');
insert into student values('2005004','赵欣然',16,'女','Ma');
insert into student values('2005005','刘备',25,'男','Wa');
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',3);
insert into sc values('2005001','1',87);
insert into sc values('2005002','1',82);
insert into sc values('2005003','1',92);
insert into sc values('2005004','1',82);
insert into sc values('2005005','1',null);
insert into sc values('2005001','2',67);
insert into sc values('2005002','2',95);
insert into sc values('2005001','3',90);
insert into sc values('2005003','3',88);
insert into sc values('2005001','4',90);
insert into sc values('2005001','5',78);
insert into sc values('2005001','7',55);

```

题目 1.1: 对表 sc, course 和 student 分别做表备份和表恢复

代码:

```

# 备份
show variables like '%secure%';
lock tables sc read;
select * into outfile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\sc.bak'
from sc;
unlock tables;
lock tables student read;
select * into outfile 'C:\\ProgramData\\MySQL\\MySQL Server
8.0\\Uploads\\student.bak' from student;
unlock tables;
lock tables course read;
select * into outfile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\course.bak'
from course;

```




```
unlock tables;
```

恢复

```
load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\sc.bak' replace into table sc;
load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\student.bak' replace into table student;
load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\course.bak' replace into table course;
```

结果：下图第一张为备份成功生成的文件，第二张为成功恢复的截图

电脑 > BOOTCAMP (C:) > ProgramData > MySQL > MySQL Server 8.0 > Uploads

名称	修改日期	类型	大小
 course.bak	2020/12/05 下午 8:32	BAK 文件	1 KB
 sc.bak	2020/12/05 下午 8:32	BAK 文件	1 KB
 student.bak	2020/12/05 下午 8:32	BAK 文件	1 KB

31

20:36:48

load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\sc.bak'...

12 row(s) affected Records: 12 Deleted: 0 Skipped: 0 Warnings: 0

0.172 sec

32

20:36:50

load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\student....

5 row(s) affected Records: 5 Deleted: 0 Skipped: 0 Warnings: 0

0.016 sec

33

20:36:52

load data low_priority infile 'C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\course.b...

7 row(s) affected Records: 7 Deleted: 0 Skipped: 0 Warnings: 0

0.031 sec

题目 1.2：对教学管理系统采用不同方法进行完整备份和恢复

利用程序工具进行完整备份和还原：

代码：完整备份：

```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysqldump -u root -p jxgl >C:\temp\jxgl.sql
Enter password: *****
```

电脑 > BOOTCAMP (C:) > temp >					▼	↺	🔍
名称	修改日期	类型	大小				
 jxgl.sql	2020/12/05 下午 8:46	SQL Text File	4 KB				

恢复：

```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -u root -p jxgl <C:\temp\jxgl.sql
Enter password: *****
```

使用 workbench 进行完整备份和还原：

完整备份：

Query 1Administration - Data Export

Local instance MySQL80

Data Export

Advanced Options...

Object SelectionExport Progress

Tables to Export

Exp...Schema

☒jxgl

☐sakila

☐sys

☐world

Exp...Schema Objects

Refresh

Dump Structure and Dat

Select Views

Select Tables

Unselect All

Objects to Export

☐Dump Stored Procedures and Functions

☐Dump Events

☐Dump Triggers

Export Options

☒Export to Dump Project Folder

C:\Users\Song\Documents\dumps\Dump20201206

...

Each table will be exported into a separate file. This allows a selective restore, but may be slower.

☐Export to Self-Contained File

C:\Users\Song\Documents\dumps\Dump20201206.sql

...

All selected database objects will be exported into a single, self-contained file.

☐Create Dump in a Single Transaction (self-contained file only)

☐Include Create Schema

Press [Start Export] to start...

Start Export

Query 1Administration - Data Export

Local instance MySQL80

Data Export

Advanced Options...

Object SelectionExport Progress

Export Completed

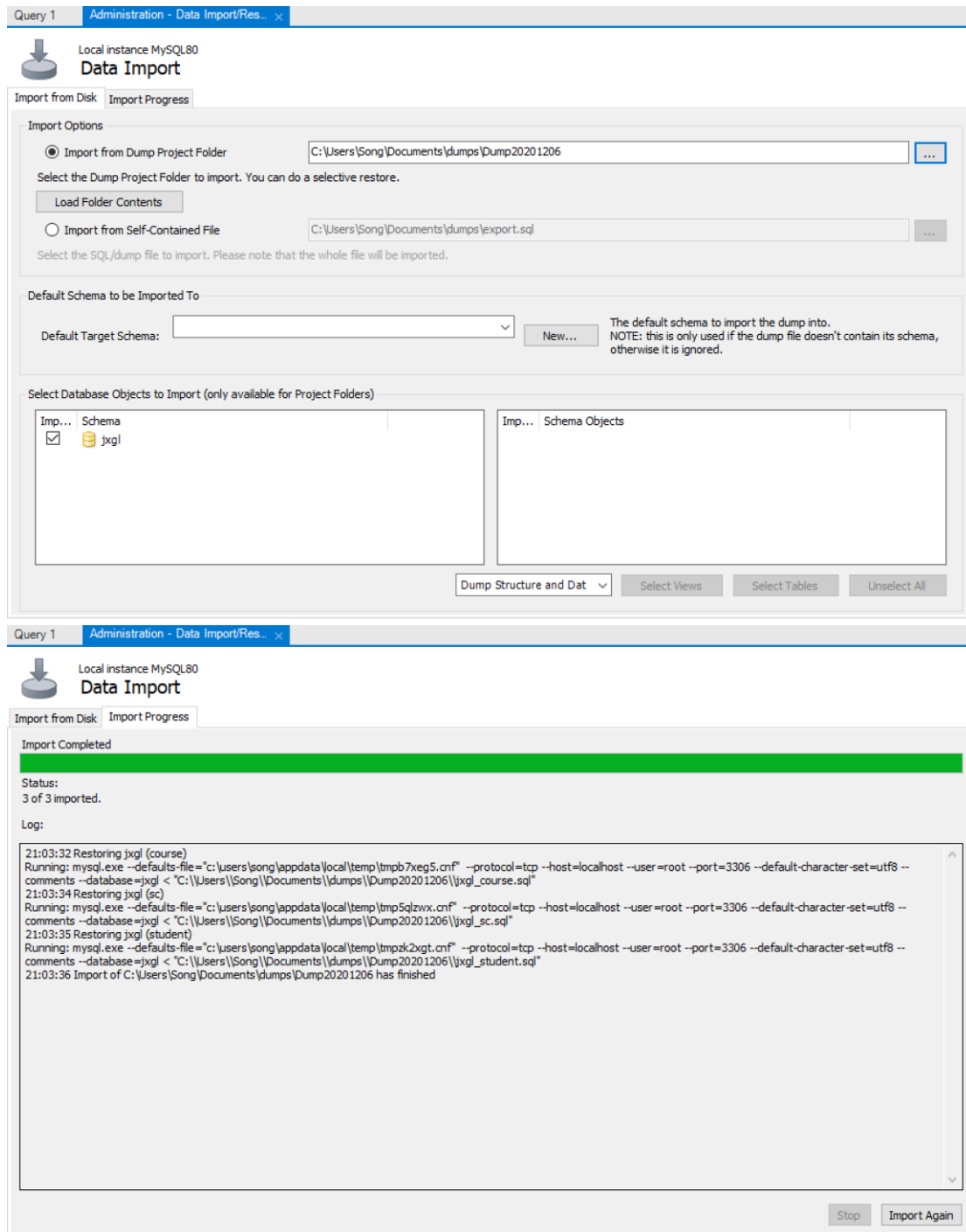
Status:
3 of 3 exported.

Log:
21:01:30 Dumping jxgl (sc)
Running: mysqldump.exe --defaults-file="c:\users\song\appdata\local\temp\tmpdsguzq.cnf" --user=root --host=localhost --protocol=tcp --port=3306 --default-character-set=utf8 --skip-triggers "jxgl" "sc"
21:01:31 Dumping jxgl (course)
Running: mysqldump.exe --defaults-file="c:\users\song\appdata\local\temp\tmpvtzu5p.cnf" --user=root --host=localhost --protocol=tcp --port=3306 --default-character-set=utf8 --skip-triggers "jxgl" "course"
21:01:31 Dumping jxgl (student)
Running: mysqldump.exe --defaults-file="c:\users\song\appdata\local\temp\tmpwtycgj.cnf" --user=root --host=localhost --protocol=tcp --port=3306 --default-character-set=utf8 --skip-triggers "jxgl" "student"
21:01:31 Export of C:\Users\Song\Documents\dumps\Dump20201206 has finished

Stop

Export Again

还原：



题目 1.3: 对教学管理系统于 2020 年 12 月 6 日 19:20:00 进行了差异备份；19:25:00 时数据库发生故障，根据其差异备份和日志文件进行时间点恢复。

由于 8.0 版本在这一问中出现无法修改二进制日志地址问题，故后两问采取同学电脑 5.7 版本的 MYSQL 进行实验

首先将以下语句放入 `C:\ProgramData\MySQL\MySQL Server 5.7\my.ini` 文件末尾：
`log-bin=C:\ProgramData\MySQL\MySQL Server 5.7\Uploads\mysql_log_bin`

之后在 cmd 输入以下指令

```
mysqlbinlog --stop-datetime="2020-12-06 19:20:00" mysql_log_bin.000001|mysql -u root -h localhost -p
```

```
mysqlbinlog --start-datetime="2020-12-06 19:25:01" mysql_log_bin.000001|mysql -u root -h localhost -p
```

结果：

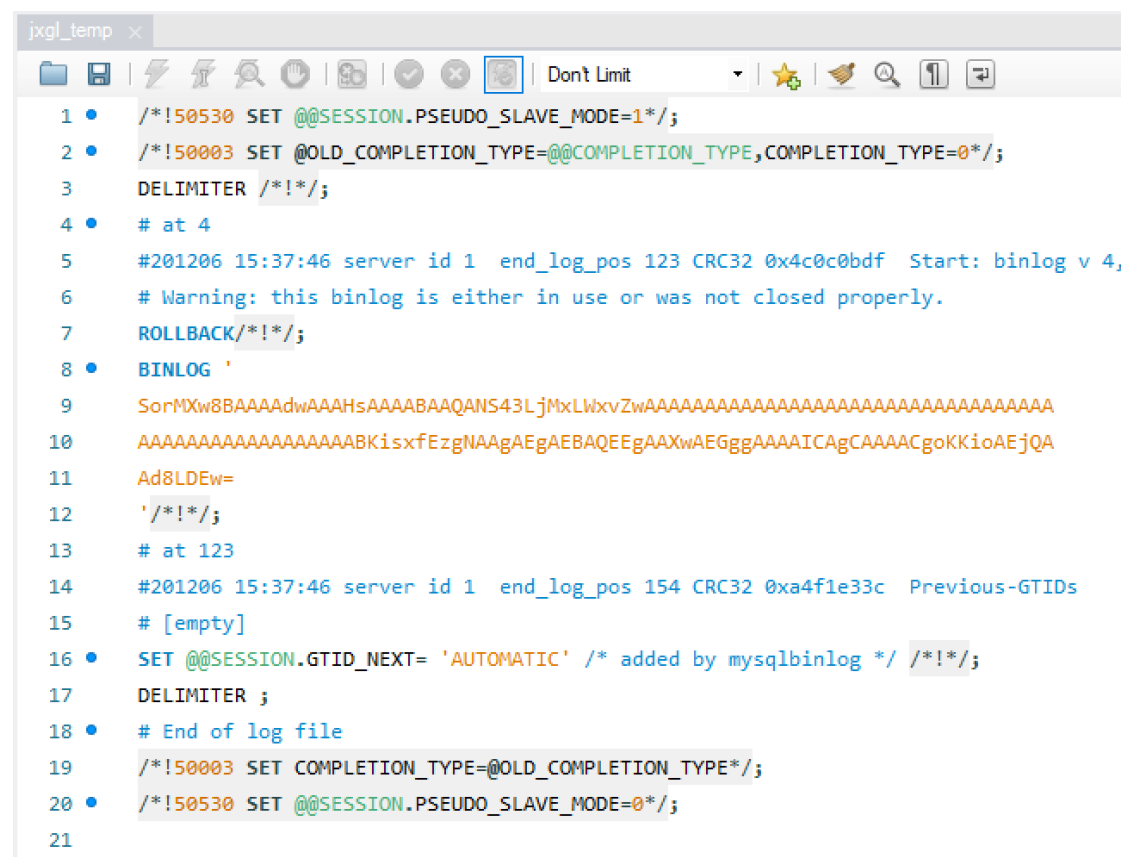
```
C:\ProgramData\MySQL\MySQL Server 5.7\Uploads>mysqlbinlog --stop-datetime="2020-12-06 19:20:00" mysql_log_bin.000001|mysql -u root -h localhost -p
Enter password: *****
C:\ProgramData\MySQL\MySQL Server 5.7\Uploads>mysqlbinlog --start-datetime="2020-12-06 19:25:01" mysql_log_bin.000001|mysql -u root -h localhost -p
Enter password: *****
```

题目 1.4：对教学管理系统于 2020 年 12 月 6 日 19:20:00 进行了差异备份；19:25:00 时数据库发生故障，根据其差异备份和日志文件进行位置恢复

首先通过这条命令来创建一个小的文本文件：

```
mysqlbinlog mysql_log_bin.000001> jxgl_temp.sql
```

cmd 运行该命令生成 jxgl_temp.sql 后，打开寻找出错语句位置（4 和 123）



```
jxgl_temp x
1 • /*!50530 SET @@SESSION.PSEUDO_SLAVE_MODE=1*/;
2 • /*!50003 SET @OLD_COMPLETION_TYPE=@@COMPLETION_TYPE,COMPLETION_TYPE=0*/;
3 DELIMITER /*!*/;
4 • # at 4
5 #201206 15:37:46 server id 1 end_log_pos 123 CRC32 0x4c0c0bdf Start: binlog v 4,
6 # Warning: this binlog is either in use or was not closed properly.
7 ROLLBACK/*!*/;
8 • BINLOG '
9 SorMXw8BAAAAAwAAAHsAAAABAQAANS43LjMxLWxvZwAAAAAAAAAAAAAAAAAAAAAAAAAAAA
10 AAAAAAAAAAAAAAAAAABKisxfEzgNAAgAEBAQEegAAXwAEGggAAAAICAgCAAAACgoKKioAEjQA
11 Ad8LDEw=
12 '/*!*/;
13 # at 123
14 #201206 15:37:46 server id 1 end_log_pos 154 CRC32 0xa4f1e33c Previous-GTIDs
15 # [empty]
16 • SET @@SESSION.GTID_NEXT= 'AUTOMATIC' /* added by mysqlbinlog */ /*!*/;
17 DELIMITER ;
18 • # End of log file
19 /*!50003 SET COMPLETION_TYPE=@OLD_COMPLETION_TYPE*/;
20 • /*!50530 SET @@SESSION.PSEUDO_SLAVE_MODE=0*/;
21
```

cmd 输入以下命令进行错误恢复：

```
mysqlbinlog --stop-position="4" mysql_log_bin.000001|mysql -u root -h localhost -p
```

```
mysqlbinlog --start-position="123" mysql_log_bin.000001|mysql -u root -h localhost -p
```

结果:

```
C:\ProgramData\MySQL\MySQL Server 5.7\Uploads>mysqlbinlog --start-position="123" mysql_log_bin.000001|mysql -u root -h localhost -p
```

```
C:\ProgramData\MySQL\MySQL Server 5.7\Uploads>mysqlbinlog --stop-position="4" mysql_log_bin.000001|mysql -u root -h localhost -p
```