

实验二：分布式数据库数据库数据查询

学号： 202103151422

姓名： 温家伟

班级： 大数据分析 2101

1、实验环境安装情况（用☒替换☐即可）

- a) ☒自安装环境 ☐高校邦系统（如果选择后者，以下三个不用回答）
- b) ☐单机 ☒多机
- c) ☐单数据库实例 ☒两个数据库实例 ☐多个数据库实例
- d) ☒同类型数据库实例 ☐两个类型数据库实例 ☐多类型数据库实例
- e) ☐Mycat ☒ShardingSphere
- f) ☒MySQL ☐OpenGauss ☐其他_____

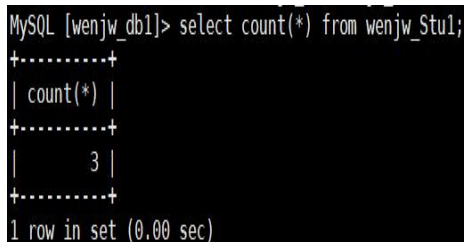
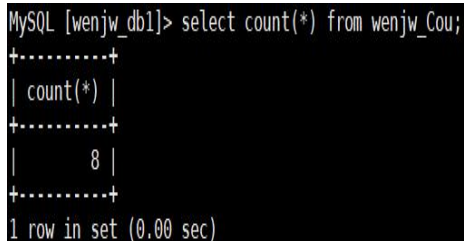
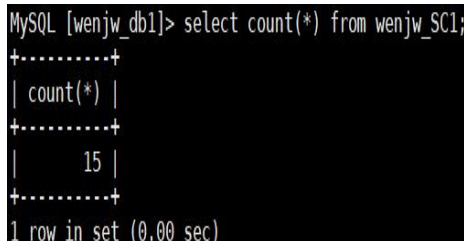
2、实验内容

- a) 针对实验运行环境（用☒替换☐即可）
- ☒命令行下进行实验 ☐Java 应用程序进行实验 ☐Python 应用程序进行实验
- ☐其他_____
- b) 针对实验一的学生表 Stu、课程表 Cou 和学生选课表 SC，继续插入一些数据，尽量贴合实际，以备后续查询使用，插入数据之后完成如下查询：
- 利用 Count（）函数查询整个库中每个表的元组数。
- 能否实现：☒能 ☐不能（如果可以完成下表）

表	整个库（Mycat 或 ShardingSphere）
Stu	SQL 语句：select Count(*) from wenjw_Stu; 结果（截图）： <pre>mysql> select count(*) from wenjw_Stu; +-----+ count(*) +-----+ 6 +-----+ 1 row in set (0.10 sec)</pre>
Cou	SQL 语句：select Count(*) from wenjw_Cou; 结果（截图）： <pre>mysql> select count(*) from wenjw_Cou; +-----+ count(*) +-----+ 8 +-----+ 1 row in set (0.00 sec)</pre>
SC	SQL 语句：select Count(*) from wenjw_SC; 结果（截图）：

	<pre>mysql> select count(*) from wenjw_SC; +-----+ count(*) +-----+ 30 +-----+ 1 row in set (0.05 sec)</pre>
--	------------------------------------------------------------------------------------------------------------------------------

利用 Count () 函数查询每个库中每个表的元组数。

表	数据库 1	数据库 2
Stu	SQL 语句: select Count(*) from wenjw_Stu0; 结果 (截图): <pre>mysql> select count(*) from wenjw_Stu0; +-----+ count(*) +-----+ 3 +-----+ 1 row in set (0.01 sec)</pre>	SQL 语句: select Count(*) from wenjw_Stu1; 结果 (截图): 
Cou	SQL 语句: select Count(*) from wenjw_Cou; 结果 (截图): <pre>mysql> select count(*) from wenjw_Cou; +-----+ count(*) +-----+ 8 +-----+ 1 row in set (0.00 sec)</pre>	SQL 语句: select Count(*) from wenjw_Cou; 结果 (截图): 
SC	SQL 语句: select Count(*) from wenjw_SC0; 结果 (截图): <pre>mysql> select count(*) from wenjw_SC0; +-----+ count(*) +-----+ 15 +-----+ 1 row in set (0.00 sec)</pre>	SQL 语句: select Count(*) from wenjw_SC1; 结果 (截图): 

c) 针对实验一的学生选课表 SC，插入数据之后完成如下更新操作：

利用 Update 整个库中 SC 表的不及格学生的成绩，用原来的成绩*1.2 进行更新。

能否实现： ☒ 能

☐ 不能（如果可以完成下表）

表	整个库（Mycat 或 ShardingSphere）
SC	SQL 语句：

update wenjw_SC set Grade = Grade * 1.2 where Grade < 60;

结果（截图）：

sql 语句执行如下图所示：

mysql> update wenjw_SC set Grade = Grade * 1.2 where Grade < 60;
Query OK, 7 rows affected (0.08 sec)

下面左右分别为 update 前后的 wenjw_SC 表内容：

mysql> select * from wenjw_SC;

Sno	Cno	Grade
2006	12013	88.0
2006	12014	96.0
2006	12015	87.0
2006	12016	92.0
2006	12018	100.0
2102	12011	65.0
2102	12013	55.0
2102	12015	59.0
2102	12016	58.0
2102	12017	60.0
2104	12014	79.0
2104	12015	80.0
2104	12016	73.0
2104	12017	66.0
2104	12018	85.0
2005	12012	70.0
2005	12013	75.0
2005	12014	81.0
2005	12016	68.0
2005	12018	58.0
2101	12011	100.0
2101	12012	100.0
2101	12013	100.0
2101	12014	100.0
2101	12018	100.0
2103	12012	60.0
2103	12013	15.0
2103	12015	55.0
2103	12017	66.0
2103	12018	55.0

30 rows in set (0.06 sec)

mysql> select * from wenjw_SC;

Sno	Cno	Grade
2006	12013	88.0
2006	12014	96.0
2006	12015	87.0
2006	12016	92.0
2006	12018	100.0
2102	12011	65.0
2102	12013	66.0
2102	12015	70.8
2102	12016	69.6
2102	12017	60.0
2104	12014	79.0
2104	12015	80.0
2104	12016	73.0
2104	12017	66.0
2104	12018	85.0
2005	12012	70.0
2005	12013	75.0
2005	12014	81.0
2005	12016	68.0
2005	12018	69.6
2101	12011	100.0
2101	12012	100.0
2101	12013	100.0
2101	12014	100.0
2101	12018	100.0
2103	12012	60.0
2103	12013	18.0
2103	12015	66.0
2103	12017	66.0
2103	12018	66.0

30 rows in set (0.05 sec)

- d) 针对实验一的学生表 Stu、课程表 Cou 和学生选课表 SC，完成如下查询：
- 查询课程名为 人工智能 的所有学生的学号、姓名和成绩（Stu、SC 和 Cou 三表连接，要求按照成绩进行降序排序）。

表	整个库（Mycat 或 ShardingSphere）
不用 Join 关键字	<p>能否实现： <input checked="" type="checkbox"/> 能 <input type="checkbox"/> 不能（如果可以完成后续）</p> <p>SQL 语句：select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu, wenjw_Cou, wenjw_SC where wenjw_Stu.Sno = wenjw_SC.sno and wenjw_Cou.Cno = wenjw_SC.Cno and wenjw_Cou.Cname = '人工智能' order by Grade desc;</p> <p>结果（截图）：</p>

	<pre>mysql> select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu, wenjw_Cou, wenjw_SC where wenjw_Stu.Sno = wenjw_SC.sno and wenjw_Cou.Cno = wenjw_SC.Cno and wenjw_Co u.Cname = '人工智能' order by Grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2005 秋晓荷 70.0 2103 毛假发 60.0 +-----+-----+-----+ 3 rows in set (0.07 sec)</pre>
使用 Inner Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能 (如果可以完成后续)</p> <p>SQL 语句: <code>select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu inner join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno inner join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by Grade desc;</code></p> <p>结果 (截图):</p> <pre>mysql> select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu inner join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno inner join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by Grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2005 秋晓荷 70.0 2103 毛假发 60.0 +-----+-----+-----+ 3 rows in set (0.04 sec)</pre>
使用 Left Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能 (如果可以完成后续)</p> <p>SQL 语句: <code>select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu left join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno left join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by wenjw_SC.grade desc;</code></p> <p>结果 (截图):</p> <pre>mysql> select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu left join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno left join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by wenjw_SC.grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2005 秋晓荷 70.0 2103 毛假发 60.0 +-----+-----+-----+ 3 rows in set (0.07 sec)</pre>
使用 Right Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能 (如果可以完成后续)</p> <p>SQL 语句: <code>select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_SC right join wenjw_Stu on wenjw_Stu.sno = wenjw_SC.sno right join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where</code></p>

	<p>wenjw_Cou.cname = '人工智能' and wenjw_SC.sno is not null order by wenjw_SC.grade desc;</p> <p>结果（截图）：</p> <pre>mysql> select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade e from wenjw_SC right join wenjw_Stu on wenjw_Stu.sno = wen jw_SC.sno right join wenjw_Cou on wenjw_Cou.cno = wenjw_SC. cno where wenjw_Cou.cname = '人工智能' and wenjw_SC.sno is not null order by wenjw_SC.grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2005 秋晓荷 70.0 2103 毛假发 60.0 +-----+-----+-----+ 3 rows in set (0.05 sec)</pre>
使用 Outer Join	<p>能否实现： <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句：select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grade from wenjw_Stu left outer join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno left outer join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by wenjw_SC.grade desc;</p> <p>结果（截图）：</p> <pre>mysql> select wenjw_Stu.sno, wenjw_Stu.sname, wenjw_SC.grad e from wenjw_Stu left outer join wenjw_SC on wenjw_Stu.sno = wenjw_SC.sno left outer join wenjw_Cou on wenjw_Cou.cno = wenjw_SC.cno where wenjw_Cou.cname = '人工智能' order by w enjw_SC.grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2005 秋晓荷 70.0 2103 毛假发 60.0 +-----+-----+-----+ 3 rows in set (0.04 sec)</pre>

查询课号为 12011 的所有学生的学号、姓名和成绩（Stu 和 SC 两表连接，要求按照成绩进行降序排序）。

表	整个库（Mycat 或 ShardingSphere）
不用 Join 关键字	<p>能否实现： <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句：select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu, wenjw_SC where wenjw_Stu.Sno = wenjw_SC.Sno and wenjw_SC.Cno = '12011' order by Grade desc;</p> <p>结果（截图）：</p>

	<pre>mysql> select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu, wenjw_SC where wenjw_Stu.Sno = wenjw_SC.Sno and wenjw_SC.Cno = '12011' order by Grade desc;</pre> <pre>+-----+-----+-----+ Sno Sname Grade +-----+-----+-----+ 2101 温家伟 100.0 2102 金娇薄 65.0 +-----+-----+-----+ 2 rows in set (0.05 sec)</pre>
使用 Inner Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句: <code>select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu inner join wenjw_SC on wenjw_Stu.Sno = wenjw_SC.Sno where wenjw_SC.Cno = '12011' order by grade desc;</code></p> <p>结果（截图）:</p> <pre>mysql> select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu inner join wenjw_SC on wenjw_Stu.Sno = wenjw_SC.Sno where wenjw_SC.Cno = '12011' order by grade desc;</pre> <pre>+-----+-----+-----+ Sno Sname Grade +-----+-----+-----+ 2101 温家伟 100.0 2102 金娇薄 65.0 +-----+-----+-----+ 2 rows in set (0.04 sec)</pre>
使用 Left Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句:</p> <p>结果（截图）:</p> <pre>select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu left join wenjw_SC on wenjw_Stu.Sno = wenjw_SC.Sno and wenjw_SC.Cno = '12011' and wenjw_SC.Grade is not null where wenjw_SC.Grade is not null order by grade desc;</pre> <pre>mysql> select wenjw_Stu.Sno, Sname, Grade from wenjw_Stu left join wenjw_SC on wenjw_Stu.Sno = wenjw_SC.Sno and wenjw_SC.Cno = '12011' and wenjw_SC.Grade is not null where wenjw_SC.Grade is not null order by grade desc;</pre> <pre>+-----+-----+-----+ Sno Sname Grade +-----+-----+-----+ 2101 温家伟 100.0 2102 金娇薄 65.0 +-----+-----+-----+ 2 rows in set (0.04 sec)</pre>
使用 Right Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句: <code>select wenjw_Stu.sno, sname, grade from wenjw_SC right join wenjw_Stu on wenjw_Stu.sno = wenjw_SC.sno and wenjw_SC.cno = '12011' where wenjw_SC.grade is not null order by grade desc;</code></p> <p>结果（截图）:</p>

	<pre>mysql> select wenjw_Stu.sno, sname, grade from wenjw_SC right join wenjw_Stu on wenjw_Stu.sno = wenjw_SC.sno and wenjw_SC.cno = '12011' where wenjw_SC.grade is not null order by grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2102 金娇薄 65.0 +-----+-----+-----+ 2 rows in set (0.04 sec)</pre>
使用 Outer Join	<p>能否实现: <input checked="" type="checkbox"/>能 <input type="checkbox"/>不能（如果可以完成后续）</p> <p>SQL 语句:</p> <pre>select wenjw_Stu.sno, sname, grade from wenjw_SC right outer join wenjw_Stu on wenjw_Stu.sno = wenjw_SC.sno and wenjw_SC.cno = '12011' where wenjw_SC.grade is not null order by grade desc;</pre> <p>结果（截图）:</p> <pre>mysql> select wenjw_Stu.sno, sname, grade from wenjw_SC right outer join wenjw_Stu on wenjw_Stu.sno = wenjw_SC.sno and wenjw_SC.cno = '12011' where wenjw_SC.grade is not null order by grade desc;</pre> <pre>+-----+-----+-----+ sno sname grade +-----+-----+-----+ 2101 温家伟 100.0 2102 金娇薄 65.0 +-----+-----+-----+ 2 rows in set (0.27 sec)</pre>