

## 中山大学数据科学与计算机学院

## 移动信息工程专业-数据库系统

## 本科生实验报告

(2017-2018 学年秋季学期)

课程名称：数据库系统实验

教学班级	15M1	专业（方向）	移动互联网
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## 一、实验目的

1. 通过实验加深对数据安全性的理解，熟悉视图机制在自主存取控制上的应用。
2. 利用 DBCC 命令读取日志。

## 二、实验内容

1. 关系数据库中授权的数据对象粒度从大到小为数据库、表、列、元组。直接使用授权机制所能达到的数据对象的最小粒度是列，为了使数据粒度达到元组这一级，必须利用视图机制和授权机制配合使用。
2. 利用 DBCC 命令读取日志。

## 三、实验过程及结果

- (1) 在 school 数据库上创建用户“王二”，在 students 表上创建视图 grade2000，将年级为 2000 的学生元组放入视图。

Step1: 在数据库 School 上创建用户“王二”

```
exec sp_addlogin '王二', '123456', 'School', 'English'  
go  
use School  
go  
exec sp_grantdbaccess '王二'|
```

消息

命令已成功完成。

Step2: 用管理员账户在 students 表上创建视图 grade2000

```
use School  
go  
create view grade2000 as  
select * from STUDENTS  
where grade=2000|
```

消息

命令已成功完成。



- (2) 授予用户王二在视图 grade2000 的 select 权限。

Step1: 用 sa 用户授予王二在视图 grade2000 的 select 权限

```
use School
go
grant select on grade2000 to 王二
```

消息  
命令已成功完成。

Step2: 以王二身份登录，可以查询 grade2000 视图

```
use School
go
select * from grade2000
```

结果 消息

	sid	sname	email	grade
1	800000000	abc	aa@aa.com	2000
2	800013889	nahhluoe	w6org6@maq.com	2000
3	800029781	kkivmiw	vb8bt76@jkha.edu	2000
4	800031798	oenbdg	c0cjho@kesxd.org	2000

Step3: 进行其他操作发现没有权限

```
use School
go
update grade2000 set email='abcd8123.com' where sid='800000000'
```

消息  
消息 230, 级别 14, 状态 1, 第 1 行  
The UPDATE permission was denied on the column 'email' of the object 'grade2

- (3) 授予用户王二在视图 grade2000 的修改 sname 列的权限。

Step1: 用 sa 用户授予王二在视图 grade2000 修改 sname 列权限

```
use School
go
grant update on dbo.[grade2000] ([sname])
to 王二
```

消息  
命令已成功完成。

Step2: 用王二登录后对视图中 sid 为 800000000 的学生修改名字

```
use School
go
update grade2000 set sname='abcd' where sid='800000000'
```

消息

(1 行受影响)

Step3: 修改其他发现不行:



```
use School
go
update grade2000 set email='a@123.com' where sid='800000000'
```

消息  
消息 230, 级别 14, 状态 1, 第 1 行  
The UPDATE permission was denied on the column 'email' of the object 'grade2

(4) 查看 SQL Server 错误日志。

日志文件查看器 - (local)

选择日志

- ☒ SQL Server
  - ☒ 当前 - 2018/1/5 8:06:00
  - ☐ 存档编号1 - 2018/1/5 1:48:00
  - ☐ 存档编号2 - 2018/1/4 13:04:00
  - ☐ 存档编号3 - 2018/1/4 1:50:00
  - ☐ 存档编号4 - 2018/1/1 16:22:00
  - ☐ 存档编号5 - 2017/12/30 12:34:00
  - ☐ 存档编号6 - 2017/12/20 1:41:00
- ☐ Windows NT
- ☐ 数据库邮件

状态

上次刷新: 2018/1/5 15:08:53

筛选器: 无

查看筛选设置

进度

已完成 (65 条记录)。

日志文件摘要 (S): 未应用任何筛选器

日期	源	消息
2018/1/5 14:20:15	spid55	Using 'xpstar.dll' version '2007.100.1600' to execute extended stored procedure 'xp_instance_regread'.
2018/1/5 14:20:15	spid55	Attempting to load library 'xpstar.dll' into memory. This is an informational message only. No user action is required.
2018/1/5 13:43:32	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:38:04	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:33:41	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:28:14	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:12:57	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:07:29	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 13:03:07	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 12:57:40	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 12:53:18	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 12:47:50	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 12:42:22	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 8:46:14	spid15	A significant part of sql server process memory has been paged out. This may result in a performance degradation.
2018/1/5 8:07:33	spid51	Setting database option COMPATIBILITY_LEVEL to 100 for database ReportServerTempDB.
2018/1/5 8:07:32	spid51	Setting database option COMPATIBILITY_LEVEL to 100 for database ReportServer.
2018/1/5 8:07:26	spid65	Recovery is complete. This is an informational message only. No user action is required.
2018/1/5 8:07:22	spid28s	Starting up database 'lab2'.
2018/1/5 8:07:22	spid25s	Starting up database 'ReportServer'.
2018/1/5 8:07:22	spid27s	Starting up database 'School'.
2018/1/5 8:07:22	spid11s	Starting up database 'msdb'.
2018/1/5 8:07:22	spid26s	Starting up database 'ReportServerTempDB'.

所选行详细信息 (D):

日期	源	消息
2018/1/5 12:53:18	SQL Server (当前 - 2018/1/5 8:06:00)	A significant part of sql server process memory has been paged out. This may result in a performance degradation. Duration: 655 seconds. Working set (KB): 35788, committed (KB): 78040, memory utilization: 45%.

关闭 (C)

利用 DBCC 读取当前活动日志:

```
DBCC log (School)
```

结果 消息

	Current LSN	Operation	Context	Transaction ID	LogBlockGeneration
1	000004cc:000001ca:0001	LOP_SET_BITS	LCX_DIFF_MAP	0000:00000000	0
2	000004cc:000001ca:0002	LOP_BEGIN_XACT	LCX_NULL	0000:00085ae9	0
3	000004cc:000001ca:0003	LOP_MODIFY_COLUMNS	LCX_CLUSTERED	0000:00085ae9	0
4	000004cc:000001ca:0004	LOP_SET_BITS	LCX_DIFF_MAP	0000:00000000	0
5	000004cc:000001ca:0005	LOP_MODIFY_COLUMNS	LCX_HEAP	0000:00085ae9	0
6	000004cc:000001ca:0006	LOP_MODIFY_COLUMNS	LCX_CLUSTERED	0000:00085ae9	0



## 四、 实验感想

这次实验又熟悉了一遍视图机制和创建授权用户，并知道了视图机制在自主存取控制上的应用。同时我也知道了如何查看 SQL server 的错误日志，这为我们排查错误起到了一定的帮助。