

第十四次实验

(1)设置“未提交读”隔离级别 (READ UNCOMMITTED) , 在students表上演示读“脏”数据。

```
1 begin tran
2     update students set grade='2001' where sid='800001216'
3     waitfor delay '00:00:20'
4     select * from students where sid='800001216'
5 rollback tran
6     select * from students where sid='800001216'
```

```
begin tran
    update students set grade='2001' where sid='800001216'
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
rollback tran
    select * from students where sid='800001216'
```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	2001

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

```
1 set transaction isolation level read uncommitted
2 select * from students where sid='800001216'
3 if @@rowcount<>0 begin
4     waitfor delay '00:00:20'
5     select * from students where sid='800001216'
6 end
```

```

set transaction isolation level read uncommitted
select * from students where sid='800001216'
if @@rowcount<>0 begin
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
end

```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	2001

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

事务 1 更新数据过程与查询 2 的执行过程没有隔离开来，所以导致上述现象。

(2)设置“提交读”隔离级别(READ COMMITTED)，在students表上演示避免读“脏”数据。

```

1 set transaction isolation level read committed
2 select * from students where sid='800001216'
3 if @@rowcount<>0 begin
4     waitfor delay '00:00:20'
5     select * from students where sid='800001216'
6 end

```

```

set transaction isolation level read committed
select * from students where sid='800001216'
if @@rowcount<>0 begin
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
end

```

00 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

设置“提交读”级别，两次查询结果是事务1提交后的值

(3)设置“可重复读”隔离级别(REPEATABLE READ), 在students表上演示避免读“脏”数据、不可重复读, 但不能避免幻象读。

避免读“脏”数据

```
1 begin tran
2     update students set grade='2001' where sid='800001216'
3     waitfor delay '00:00:20'
4     select * from students where sid='800001216'
5 rollback tran
6     select * from students where sid='800001216'
```

```
begin tran
    update students set grade='2001' where sid='800001216'
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
rollback tran
    select * from students where sid='800001216'
```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	2001

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

```
1 set transaction isolation level repeatable read
2 select * from students where sid='800001216'
3 if @@rowcount<>0 begin
4     waitfor delay '00:00:20'
5     select * from students where sid='800001216'
6 end
```

```

set transaction isolation level repeatable read
select * from students where sid='800001216'
if @@rowcount<>0 begin
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
end

```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

避免不可重复读

```

1 set transaction isolation level repeatable read
2 update students set grade='2001' where sid='800001216'

```

```

set transaction isolation level repeatable read
update students set grade='2001' where sid='800001216'

```

100 %

消息

(1 行受影响)

完成时间: 2021-12-13T15:12:35.4705374+08:00

```

1 set transaction isolation level repeatable read
2 begin tran
3 select * from students where sid='800001216'
4 if @@rowcount<>0 begin
5     waitfor delay '00:00:20'
6     select * from students where sid='800001216'
7 end
8 rollback tran

```

```

set transaction isolation level repeatable read
begin tran
select * from students where sid='800001216'
if @@rowcount<>0 begin
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
end
rollback tran

```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

	sid	sname	email	grade
1	800001216	gfixrgs	hhce4@qhldj.gov	1992

不能避免幻象读

```

1 set transaction isolation level repeatable read
2 delete from students where sid='800001216'

```

```

set transaction isolation level repeatable read
delete from students where sid='800001216'

```

100 %

消息

(1 行受影响)

完成时间: 2021-12-13T15:23:34.8443624+08:00

```

1 set transaction isolation level repeatable read
2 begin tran
3 select * from students where sid='800001216'
4 if @@rowcount<>0 begin
5     waitfor delay '00:00:20'
6     select * from students where sid='800001216'
7 end
8 rollback tran

```

```

set transaction isolation level repeatable read
begin tran
select * from students where sid='800001216'
if @@rowcount<>0 begin
    waitfor delay '00:00:20'
    select * from students where sid='800001216'
end
rollback tran

```

100 %

结果 消息

	sid	sname	email	grade
1	800001216	gfxrgs	hhce4@qhldj.gov	2001

	sid	sname	email	grade
1	800001216	gfxrgs	hhce4@qhldj.gov	2001

两次查询结果相同，然而其实该记录已被删除，出现"幻象读"

(4)设置“可串行化”隔离级别(SERIALIZABLE)，在students表上演示防止其他用户在事务提交之前更新数据。

```

1 set transaction isolation level serializable
2 insert into students values('800001216','sty','sty@163.com','2001')

```

```

set transaction isolation level serializable
insert into students values('800001216','sty','sty@163.com','2001')

```

100 %

消息

(1 行受影响)

完成时间: 2021-12-13T15:37:30.4228123+08:00

```

1 set transaction isolation level serializable
2 begin tran
3 select * from students where sid='800001216'
4 waitfor delay '00:00:10'
5 select * from students where sid='800001216'
6 rollback tran

```

```
set transaction isolation level serializable
begin tran
select * from students where sid='800001216'
waitfor delay '00:00:10'
select * from students where sid='800001216'
rollback tran
```

00 %

结果 消息

sid	sname	email	grade
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sid	sname	email	grade
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事务的执行完全串行，在执行过程中防止插入，所以查询为空