

STUDENT:

TEACHERS:

COURSES:

1. 代码:

结果:

执行前:

执行后，外层修改回滚 (grade 还是 1992):

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

2. 代码:

```
BEGIN TRAN OUTER
    UPDATE TEACHERS SET salary=3930 WHERE tid='200003125'
    SAVE TRAN OUTER_DONE
BEGIN TRAN INNER
    INSERT INTO COURSES VALUES ('10001', 'database', 96)
    IF @@ERROR != 0
        BEGIN
            ROLLBACK TRAN OUTER_DONE
            PRINT 'FAILURE'
            RETURN
        END
    COMMIT TRAN INNER
COMMIT TRAN OUTER

SELECT TOP 1 * FROM TEACHERS
```

结果:

消息

(1) 行受影响:
消息 2627, 级别 14, 状态 1, 第 5 行
违反了 PRIMARY KEY 约束 'PK_COURSES'。不能在对象 'dbo.COURSES' 中插入重复键。
语句已终止。
FAILURE

执行前

	tid	tname	email	salary
1	200003125	fqmmmyi	wcjcg@glq.net	3928

执行后

结果 消息

	tid	tname	email	salary
1	200003125	fqmmmyi	wcjcg@glq.net	3930

3. 包含事务的存储过程代码:

```
CREATE PROCEDURE UPDATECOURSEINFO
    @courseid CHAR(10),
    @hour INT,
    @returnstring VARCHAR(100) OUT
AS
BEGIN TRAN
    IF NOT EXISTS(SELECT cid FROM COURSES WHERE cid=@courseid)
    BEGIN
        SELECT @returnstring='课程信息不存在'
        GOTO ONERROR
    END

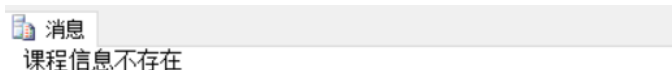
    UPDATE COURSES SET hour=@hour WHERE cid=@courseid
    IF @@ERROR != 0
    BEGIN
        SELECT @returnstring='修改课时失败'
        GOTO ONERROR
    END

    SELECT @returnstring='课时修改成功'
    PRINT @returnstring
    COMMIT TRAN
ONERROR:
    PRINT @returnstring
    ROLLBACK TRAN
GO
```

更新失败操作:

```
DECLARE @courseid CHAR(10)
DECLARE @hour INT
DECLARE @returnstring VARCHAR(100)
EXEC UPDATECOURSEINFO '10000', 90, @returnstring OUT
```

结果:




消息
课程信息不存在

更新成功操作:

```
DECLARE @courseid CHAR(10)
DECLARE @hour INT
DECLARE @returnstring VARCHAR(100)
EXEC UPDATECOURSEINFO '10001', 90, @returnstring OUT
```

结果:



消息
(1 行受影响)
课时修改成功
课时修改成功
消息 3903, 级别 16, 状态 1, 过程 UPDATECOURSEINFO, 第 23 行
ROLLBACK TRANSACTION 请求没有对应的 BEGIN TRANSACTION。

4. 事务一代码:

```
GO
BEGIN TRAN
    UPDATE STUDENTS SET grade=1993 WHERE sid='800001216'
    WAITFOR DELAY '00:00:10'
    --SELECT * FROM STUDENTS WHERE sid='800001216'
ROLLBACK TRAN
    --SELECT * FROM STUDENTS WHERE sid='800001216'
```

事务二代码:

```
GO
SET TRANSACTION ISOLATION LEVEL READ UNCOMMITTED
SELECT * FROM STUDENTS WHERE sid='800001216'
IF @@ROWCOUNT <> 0
    BEGIN
        WAITFOR DELAY '00:00:10'
        SELECT * FROM STUDENTS WHERE sid='800001216'
    END
```

结果:

	sid	sname	email	grade
1	800001216	gfrgs	hhce4@qhldj.gov	1993

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

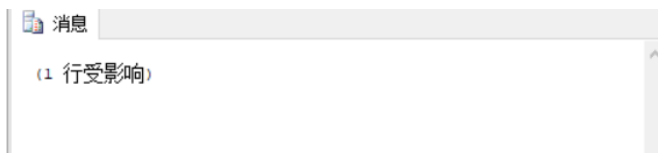
5. 事务一代码:

```
GO
BEGIN TRAN
    UPDATE STUDENTS SET grade=1993 WHERE sid='800001216'
    WAITFOR DELAY '00:00:10'
    --SELECT * FROM STUDENTS WHERE sid='800001216'
ROLLBACK TRAN
    --SELECT * FROM STUDENTS WHERE sid='800001216'
```

事务二代码:

```
GO
SET TRANSACTION ISOLATION LEVEL READ COMMITTED
SELECT * FROM STUDENTS WHERE sid='800001216'
IF @@ROWCOUNT <> 0
    BEGIN
        WAITFOR DELAY '00:00:10'
        SELECT * FROM STUDENTS WHERE sid='800001216'
    END
```

事务一结果:



事务二结果:

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

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

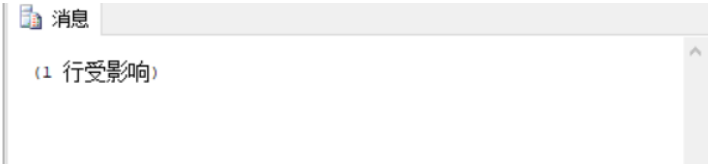
6. 事务一代码:

```
SET TRANSACTION ISOLATION LEVEL REPEATABLE READ
UPDATE STUDENTS SET grade=1993 WHERE sid='800001216'
```

事务二代码:

```
SET TRANSACTION ISOLATION LEVEL REPEATABLE READ
BEGIN TRAN
    SELECT * FROM STUDENTS WHERE sid='800001216'
    IF @@ROWCOUNT != 0
        BEGIN
            WAITFOR DELAY '00:00:10'
            SELECT * FROM STUDENTS WHERE sid='800001216'
        END
END
```

事务一结果:



事务二结果:

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

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

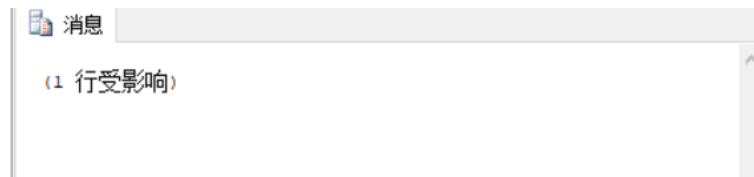
7. 事务一代码:

```
SET TRANSACTION ISOLATION LEVEL SERIALIZABLE  
INSERT INTO STUDENTS VALUES ('800000000', 'AA', 'BBB@163.COM', 2000)
```

事务二代码:

```
SET TRANSACTION ISOLATION LEVEL SERIALIZABLE  
BEGIN TRAN  
SELECT * FROM STUDENTS WHERE sid='800000000'  
WAITFOR DELAY '00:00:10'  
SELECT * FROM STUDENTS WHERE sid='800000000'  
ROLLBACK TRAN
```

事务一结果:



事务二结果:

