

Lecture 11 , Fall 2017/2018

数据库系统实验

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- 本节课提纲

- 实验目的

- 实验示例

- 练习

- 实验目的

学习用户自定义约束，并实践用户完整性，利用短语NOT NULL, UNIQUE, CHECK保证用户定义完整性。

实验示例

1.建立worker表，并自定义两个约束U1，U2，其中U1规定Name字段唯一，U2规定sage(级别)字段的上限为28。并在worker表中插入一条合法记录。



```
SQLQuery2.sql - (...BRTDQO\dgn (54))*  
1 Use SCHOOL  
2 Create Table Worker(  
3   Number char(5),  
4   Name char(8) constraint U1 unique,  
5   Sex char(1),  
6   Sage int constraint U2 check (Sage<=28),  
7   Department char(20),  
8   constraint PK_Worker Primary Key (Number))  
9  
10 Insert into Worker(Number,Name,Sex,Sage,Department)  
11 Values('00001','李勇','M',14,'科技部')  
12 Select * From Worker
```

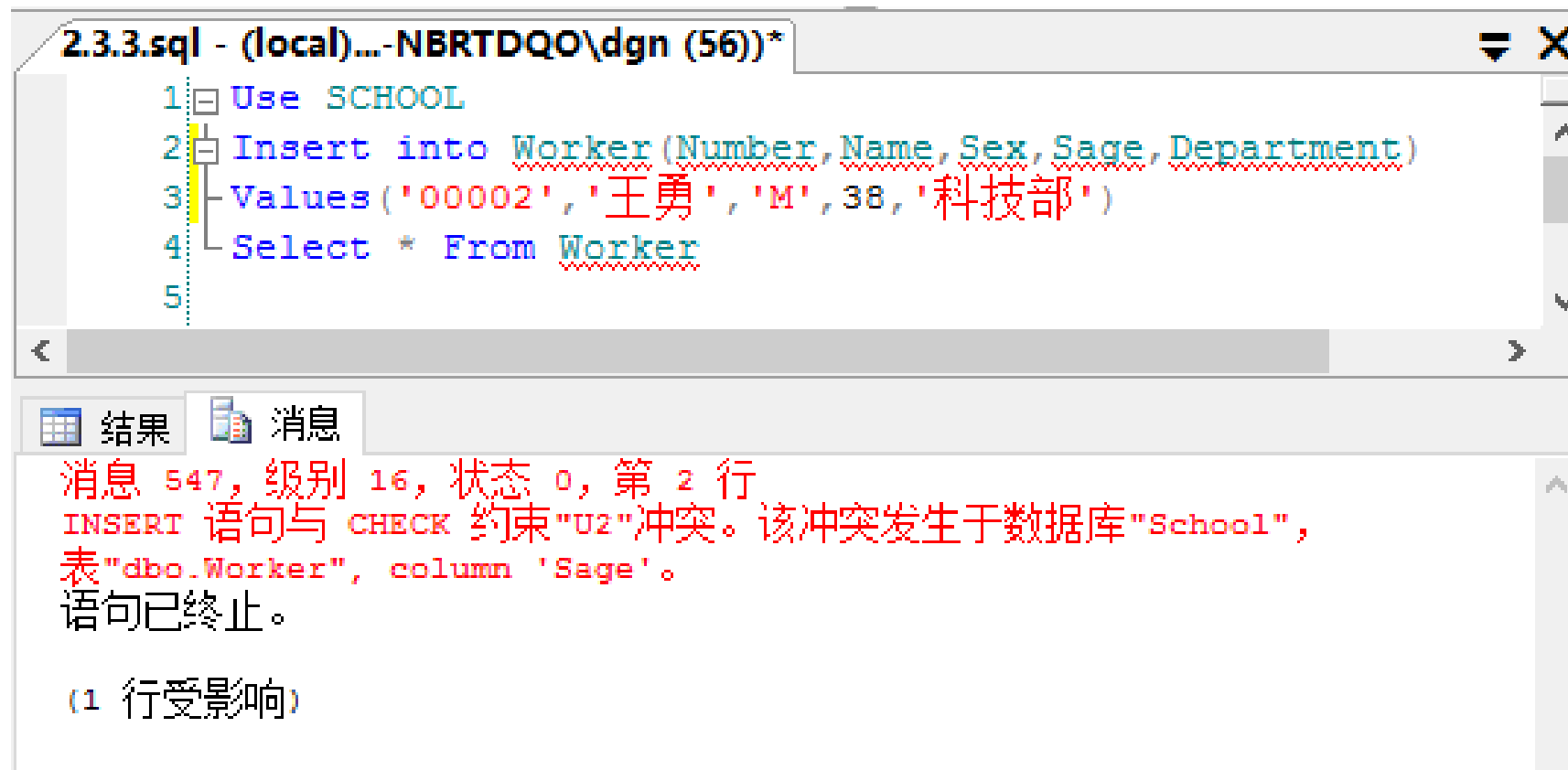
结果 消息

	Number	Name	Sex	Sage	Department
1	00001	李勇	M	14	科技部

插入数据成功

实验示例

2.演示插入违反U2约束的示例（ U2规定sage属性的值必须小于等于28 ）



The screenshot shows a SQL query window titled "2.3.3.sql - (local)...\NBRTDQO\dgn (56))*". The query contains the following SQL statements:

```
1 Use SCHOOL
2 Insert into Worker (Number, Name, Sex, Sage, Department)
3 Values ('00002', '王勇', 'M', 38, '科技部')
4 Select * From Worker
5
```

Below the query window, the "消息" (Messages) tab is active, displaying the following error message in red text:

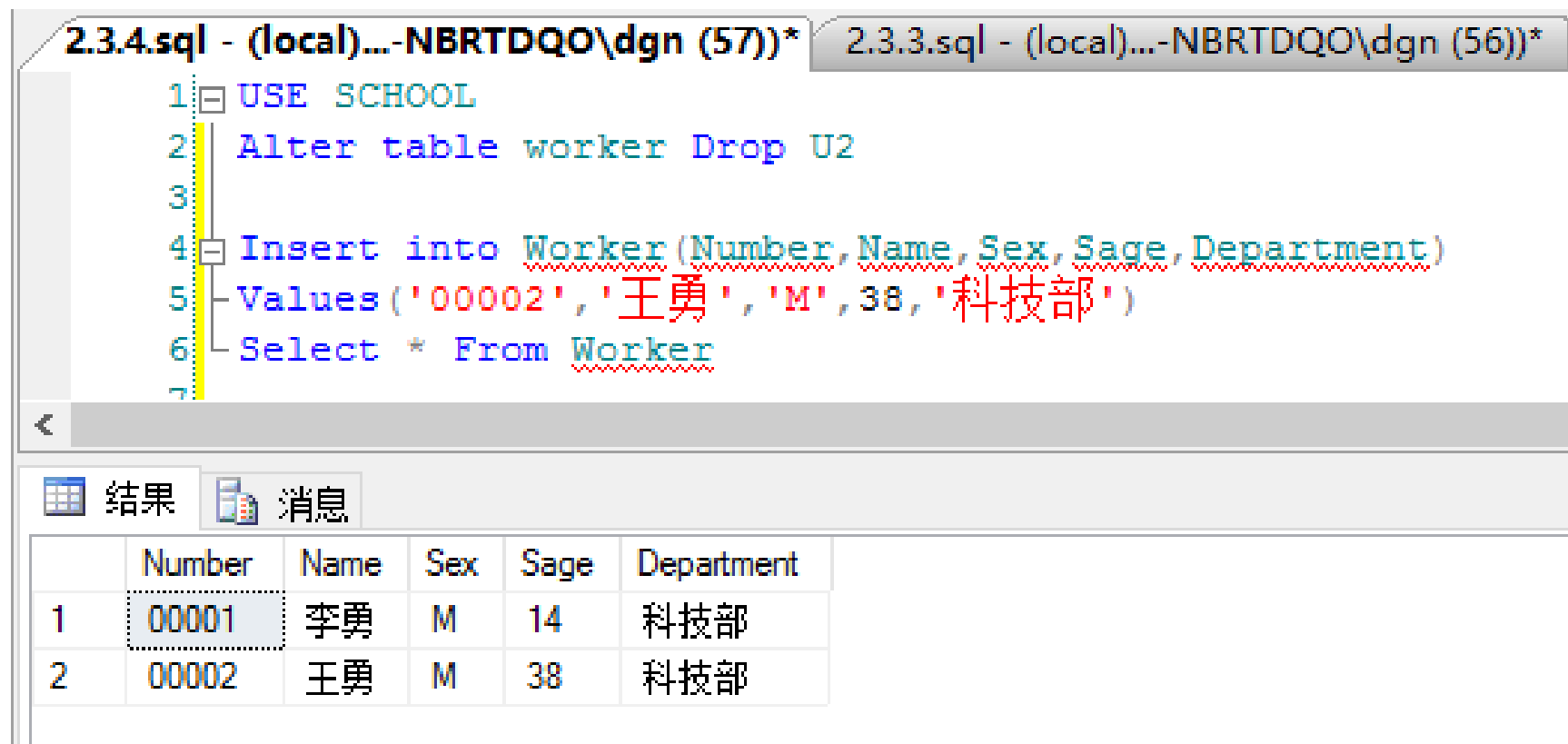
消息 547, 级别 16, 状态 0, 第 2 行
INSERT 语句与 CHECK 约束"U2"冲突。该冲突发生于数据库"School",
表"dbo.Worker", column 'Sage'。
语句已终止。

(1 行受影响)

因为违反U2约束，所以数据插入失败

实验示例

3. 去除U2约束，再重新插入示例二的数据。



The screenshot shows a SQL script in a text editor with two tabs. The active tab is '2.3.4.sql - (local)...-NBRTDQO\dgn (57))*'. The script contains the following SQL statements:

```
1 USE SCHOOL
2 Alter table worker Drop U2
3
4 Insert into Worker(Number, Name, Sex, Sage, Department)
5 Values('00002', '王勇', 'M', 38, '科技部')
6 Select * From Worker
```

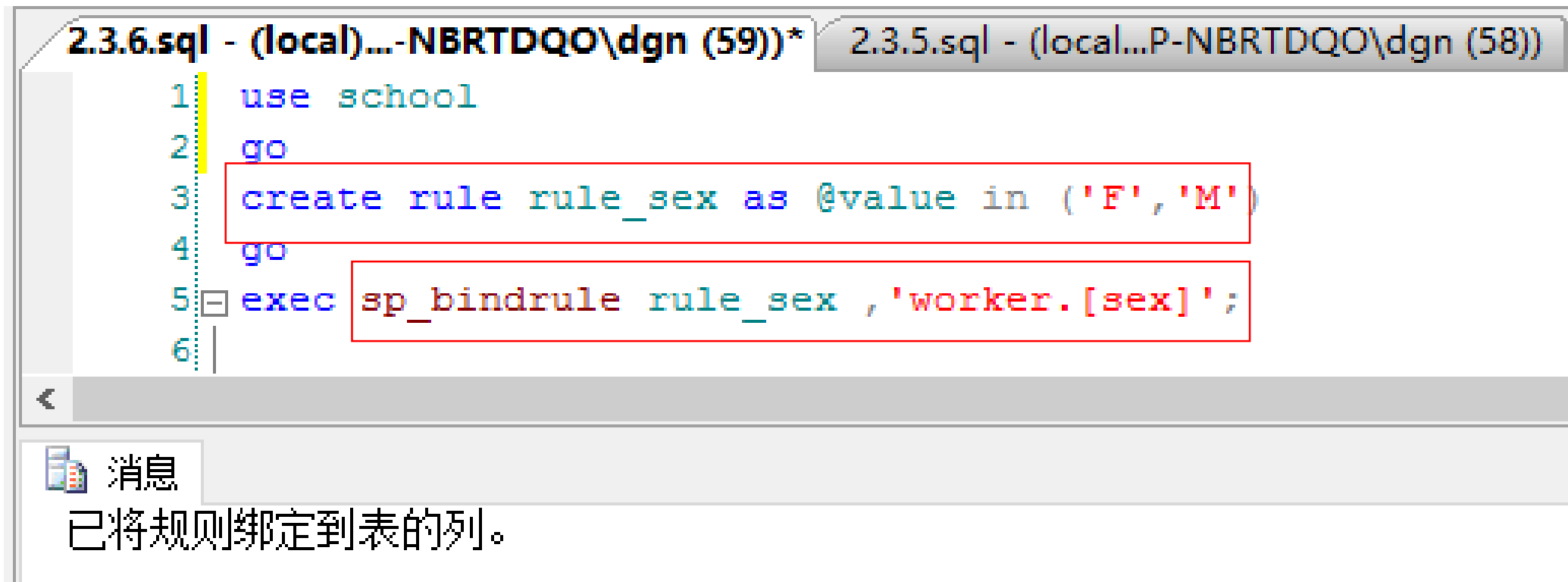
Below the script editor, there is a '结果' (Results) tab and a '消息' (Messages) tab. The '结果' tab is active, displaying a table with the following data:

	Number	Name	Sex	Sage	Department
1	00001	李勇	M	14	科技部
2	00002	王勇	M	38	科技部

因为去除了约束U2，所以插入数据成功

- 实验示例

4.创建规则rule_sex，规定插入或更新的值只能是M或F，并绑定到worker的sex字段。



The screenshot shows a SQL Server Enterprise Manager interface. At the top, there are two tabs: '2.3.6.sql - (local)...\NBRTDQO\dgn (59))*' and '2.3.5.sql - (local...P-NBRTDQO\dgn (58))'. The active tab displays a SQL script with the following lines:

```
1 use school
2 go
3 create rule rule_sex as @value in ('F','M')
4 go
5 exec sp_bindrule rule_sex , 'worker.[sex]';
6
```

Red boxes highlight the 'create rule' statement on line 3 and the 'exec sp_bindrule' statement on line 5. Below the script editor, there is a '消息' (Messages) pane with a message icon and the text: '已将规则绑定到表的列。' (The rule has been bound to the column of the table.)

先创建规则，再绑定

实验示例

5.演示违反rule_sex规则的插入示例。

2.3.7.sql - (local...P-NBRTDQO\dgn (60))

2.3.6.sql - (local)...-NBRTDQO\dgn (59))*

2.3.5.sql

```
1 use school
2 insert into worker values ('00003','王浩','1','25','研发部');
3
```

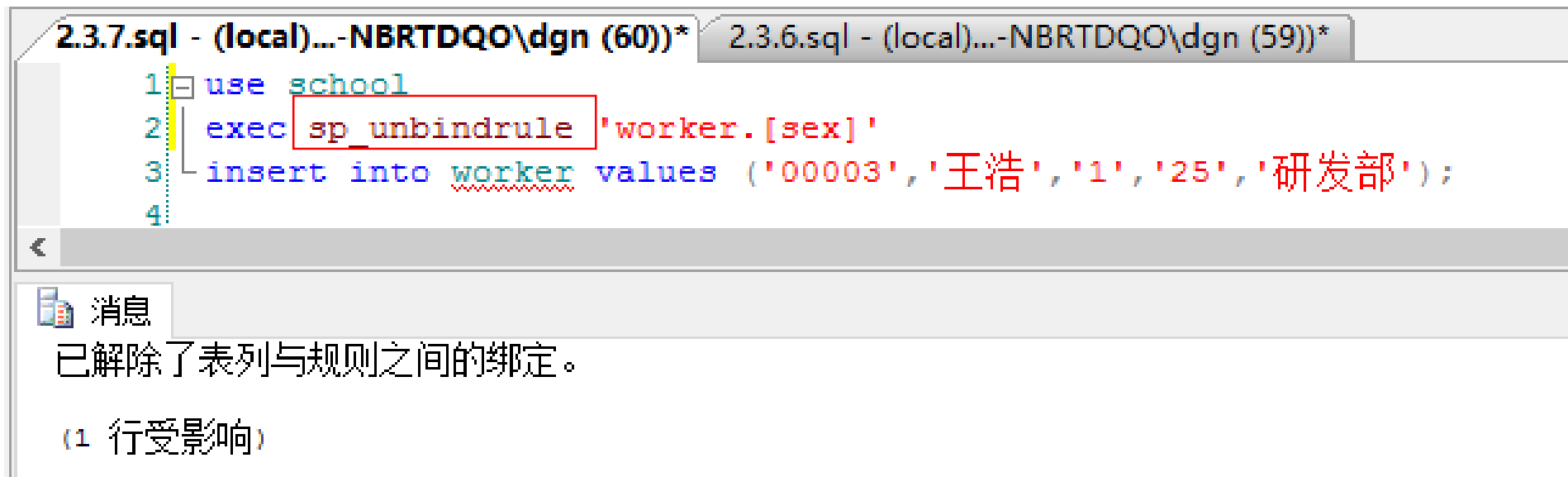
必须是M或F

消息

消息 513，级别 16，状态 0，第 2 行
列的插入或更新与先前的 CREATE RULE 语句所指定的规则发生冲突。
该语句已终止。冲突发生于数据库 'School'，表 'dbo.Worker'，列 'Sex'。
语句已终止。

- 实验示例

6.解除rule_sex的绑定，再插入示例5中的数据。



The screenshot shows a SQL Server Enterprise Manager interface. At the top, there are two tabs: '2.3.7.sql - (local)...\NBRTDQO\dgn (60))*' and '2.3.6.sql - (local)...\NBRTDQO\dgn (59))*'. The active tab '2.3.7.sql' contains the following SQL code:

```
1 use school
2 exec sp_unbindrule 'worker.[sex]'
3 insert into worker values ('00003', '王浩', '1', '25', '研发部');
4
```

Below the query window, there is a '消息' (Messages) pane. It displays the message: '已解除了表列与规则之间的绑定。' (The binding between the table column and the rule has been removed.) and '(1 行受影响)' (1 row affected).

解除绑定后，插入数据成功

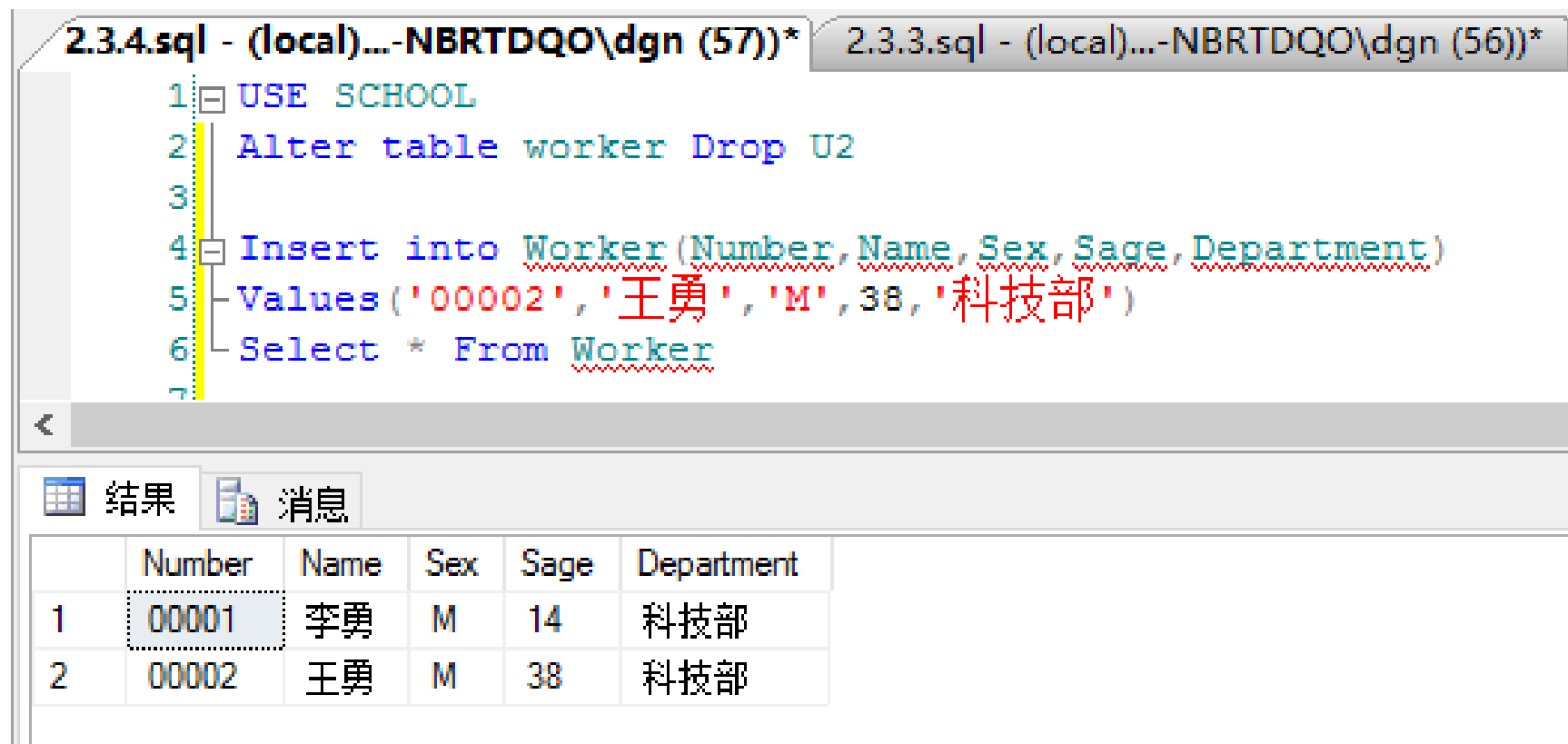
- 练习

以下练习均在worker表上进行（请按照示例中worker建表）

- (1) 加入约束U3，令sage值大于等于0。
- (2) 演示插入违反约束U3的记录。
- (3) 演示插入不违反约束U3的记录。
- (4) 加入约束U4，令sage值 <0 ，观察执行是否成功，分析原因。
- (5) 加入规则R2，确保插入的记录的sage值在1到100之间，并绑定到sage属性。
- (6) 演示插入违反R2的记录。
- (7) 解除规则R2的绑定，并重复(6)的操作。
- (8) 已知示例三中已插入sage为38的记录，那么加入规则R3，令sage大于50。观察加入规则R3的操作是否能成功。

实验示例

3.去除U2约束，再重新插入示例二的数据。



The screenshot shows a SQL script editor with two tabs. The active tab is '2.3.4.sql - (local)...-NBRTDQO\dgn (57))*'. The script contains the following SQL statements:

```
1 USE SCHOOL
2 Alter table worker Drop U2
3
4 Insert into Worker(Number, Name, Sex, Sage, Department)
5 Values('00002', '王勇', 'M', 38, '科技部')
6 Select * From Worker
7
```

Below the script editor, there is a '结果' (Results) tab and a '消息' (Messages) tab. The '结果' tab is active, displaying a table with the following data:

	Number	Name	Sex	Sage	Department
1	00001	李勇	M	14	科技部
2	00002	王勇	M	38	科技部

因为去除了约束U2，所以插入数据成功