

0. Introduction

0.1. What to learn

0.2. In Sumary

1. T003_IdentityColumn_01.sql

2. T003_IdentityColumn_02.sql

0. Introduction

0.1. What to learn

- Create Table with Identity Column
- TRUNCATE TABLE TableA;
- DBCC CHECKIDENT(TableA, RESEED, 1);
- SCOPE_IDENTITY();
- @@IDENTITY;
- IDENT_CURRENT('TableA');
- IDENT_CURRENT('TableB');

0.2. In Sumary

1.

--TRUNCATE TABLE TableA;

--DBCC CHECKIDENT(TableA, RESEED, 1);

Truncate Table and DBcc CheckIdent should **always** be used together.

That means clear all data and reset Identity column.

2.

Don't use SCOPE_IDENTITY() or @@IDENTITY

Because these are too confused.

Always use **IDENT_CURRENT('TableName')**

This will always return the last identity value.

2.1.

In brief:

* SCOPE_IDENTITY()

returns the last identity value that is created in the same session and in the same scope.

* @@IDENTITY

returns the last identity value that is created in the same session and across any scope.

@@IDENTITY stored the Identity Column Value from last affected scope in the same session.

* IDENT_CURRENT('tblPerson')

returns the last identity value that is created for a specific table across any session and any scope.

2.2.

In the same Seccion (Connection):

Every comand in current sql query edit window is

ONE CONNECTION to SQL server.

ONE CONNECTION means in the ONE session in this case.

2.3.

In the same Scope:

Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.

1. T003_IdentityColumn_01.sql

```
=====
--T003_IdentityColumn
=====
/*
What to learn
- Create Table with Identity Column
- TRUNCATE TABLE TableA;
- DBCC CHECKIDENT(TableA, RESEED, 1);
*/
=====
--T003_01
-- DBCC CHECKIDENT(TableA, RESEED, 1);
-----
--T003_01_01
-- Create Table with Identity Column
IF ( EXISTS ( SELECT      *
               FROM        INFORMATION_SCHEMA.TABLES
               WHERE       TABLE_NAME = 'TableA' ) )

    BEGIN
        TRUNCATE TABLE TableA;
        DROP TABLE TableA;

    END;

GO -- Run the previous command and begins new batch
CREATE TABLE TableA
(
    Id INT IDENTITY(1, 1)
        PRIMARY KEY
        NOT NULL ,
    Value NVARCHAR(20)
)
    ON
[PRIMARY];
GO -- Run the previous command and begins new batch
/*
1.
--Id INT IDENTITY(1, 1)
--      PRIMARY KEY
--      NOT NULL ,
It means Id is the Primary Key and the type is int.
Id will start from 1 (the first one is identity seed),
and then increase 1 (the second one is identity increment)
2.
-- ON [PRIMARY]
When you create database, SQL server will generate
one .MDF(primary data file) and one .LDF(log file)
Sometimes a SQL Server database will include one or more .NDF (secondary data files).
-- ON [PRIMARY]
means create this table on the .MDF(primary data file).
*/
-----
--T003_01_02
-- Insert data
```

```

INSERT TableA
VALUES ( N'Name01' );
SET IDENTITY_INSERT TableA ON;
INSERT TableA
      ( Id, [Value] )
VALUES ( 2, N'Name02' );
SET IDENTITY_INSERT TableA OFF;
SELECT *
FROM TableA;
GO -- Run the previous command and begins new batch
/*
1.
You do not have to provide value for identity column
because it is auto generated.
If you want to provide value for identity column,
then you have to set IDENTITY_INSERT is ON.
--SET IDENTITY_INSERT TableA ON;
--INSERT ...
--SET IDENTITY_INSERT TableA OFF;
2.
Now, we have ID=1 and ID=2 Record.
*/

```

	Id	Value
1	1	Name01
2	2	Name02

```

-----
--T003_01_03
-- Delete a data and Insert data
DELETE TableA
WHERE Id = 2;
INSERT TableA
VALUES ( N'Name03' );
SELECT *
FROM TableA;
GO -- Run the previous command and begins new batch
/*
1.
INT type Identity Column will not fill the gap
-->
When you delete the ID=2 record.
And the you insert another record,
It will auto generate ID=3.
Because ID=1 and ID=2 has been used.
The new record ID will not be 2.
2.
Now, we have ID=1 and ID=3 Record.
*/

```

	Id	Value
1	1	Name01
2	3	Name03

```

-----
--T003_01_04
-- DBCC CHECKIDENT(TableA, RESEED, 1);
SELECT *
FROM TableA;
DBCC CHECKIDENT(TableA, RESEED, 1);
INSERT TableA

```

```
VALUES ( N'Name04' );
SELECT *
FROM TableA;
GO -- Run the previous command and begins new batch
/*
1.
-- DBCC CHECKIDENT(TableA, RESEED, 1);
1.1.
Output message
--Checking identity information: current identity value '3'.
--DBCC execution completed. If DBCC printed error messages, contact your system administrator.
1.2.
You used to have ID=1 and ID=3 Record.
Then you execute
--DBCC CHECKIDENT(TableA, RESEED, 1);
Check the value of Identity Column of Table 'TableA', then reset the seed to 1.
Seed=1 means the next ID of new record will be 2 (identity seed).
You have just insert ID=2 Record.
2.
Now,you have ID=1,ID=2,ID=3 Record.
and the Identity Column Seed=2 at the moment
*/
```

	Id	Value
1	1	Name01
2	3	Name03

	Id	Value
1	1	Name01
2	2	Name04
3	3	Name03

```
-----
--T003_01_05
--Insert Data
SELECT *
FROM TableA;
INSERT TableA
VALUES ( N'Name05' );
SELECT *
FROM TableA;
/*
1.
Output error message.
--Msg 2627, Level 14, State 1, Line 153
--Violation of PRIMARY KEY constraint 'PK__TableA__3214EC0703341784'.
--Cannot insert duplicate key in object 'dbo.TableA'.
--The duplicate key value is (3).
--The statement has been terminated.
You used to have ID=1,ID=2,ID=3 Record.
and the Identity Column Seed=2 at the moment.
Identity Column Seed=2 means your next insert will be ID=3.
Now, You are trying to insert next record.
However, ID=3 has already been there.
Thus, Error has occurred.
2.
Now,you have ID=1,ID=2,ID=3 Record.
and the Identity Column Seed=3 at the moment
*/
```

```
(3 rows affected)
Msg 2627, Level 14, State 1, Line 164
Violation of PRIMARY KEY constraint 'PK__TableA__3214EC07E1589FE8'. Cannot insert duplicate key in object 'dbo.TableA'. The duplicate key value is (3).
The statement has been terminated.
(3 rows affected)
```

```

-----
--T003_01_06
--Insert Data
SELECT *
FROM TableA;
INSERT TableA
VALUES ( N'Name06' );

```

```

SELECT *
FROM TableA;
/*
1.

```

You used to have ID=1,ID=2,ID=3 Record.
and the Identity Column Seed=3 at that moment.
Seed=3 means the next ID of new record will be 4 (identity seed).
ID=4 has NOT been there yet.
Thus, you can insert successfully.

2.
Now, you have ID=1,ID=2,ID=3,ID=4 Record.
and the Identity Column Seed=4 at the moment.
Seed=4 means the next ID of new record will be 5 (identity seed).
*/

	Id	Value
1	1	Name01
2	2	Name04
3	3	Name03

	Id	Value
1	1	Name01
2	2	Name04
3	3	Name03
4	4	Name06

```

-----
--T003_01_06
--- TRUNCATE TABLE TableA;
TRUNCATE TABLE TableA;
DBCC CHECKIDENT(TableA, RESEED, 1);
/*
1.

```

-- TRUNCATE TABLE TableA;
and
--DELETE TableA
are both doing the same thing to delete every data in the table.
However, TRUNCATE TABLE is better
because TRUNCATE TABLE will delete the data and clean up the space.
DELETE will delete the data without clean up the space.
It is more possible to cause data fragmentation.

2.
Output message
--Checking identity information: current identity value 'NULL'.
--DBCC execution completed. If DBCC printed error messages, contact your system administrator.

3.
--DBCC CHECKIDENT(TableA, RESEED, 1);
Check the value of Identity Column of Table 'TableA', then reset the seed to 1.
Seed=1 means the next ID of new record will be 2 (identity seed).
However,
You have executed TRUNCATE Table (delete every data and clean up space).
This will make your current identity value 'NULL'
Only when current identity value 'NULL',
then Seed=1 means the next ID of new record will be 1 (identity seed).
That means

DBCC CHECKIDENT need to be used very carefully.

You better execute TRUNCATE Table (delete every data and clean up space).

Then execute

```
--DBCC CHECKIDENT(TableA, RESEED, 1);
```

```
*/
```

Checking identity information: current identity value 'NULL'.

DBCC execution completed. If DBCC printed error messages, contact your system administrator.

```
-----  
--T003_01_07
```

```
--Insert
```

```
SELECT *
```

```
FROM TableA;
```

```
INSERT TableA
```

```
VALUES ( N'Name07' );
```

```
SELECT *
```

```
FROM TableA;
```

```
/*
```

```
1.
```

You do not have to provide value for identity column because it is auto generated.

```
2.
```

Now, we have ID=1 Record.

```
*/
```

Id	Value
----	-------

	Id	Value
1	1	Name07

```
=====
```

```
--T003_02
```

```
/*
```

What to learn

- SCOPE_IDENTITY();

- @@IDENTITY;

- IDENT_CURRENT('TableA');

- IDENT_CURRENT('TableB');

```
*/
```

```
-----
```

```
--T003_02_01
```

```
--Create Sample Data
```

```
IF ( EXISTS ( SELECT *
```

```
FROM INFORMATION_SCHEMA.TABLES
```

```
WHERE TABLE_NAME = 'TableA' ) )
```

```
BEGIN
```

```
TRUNCATE TABLE TableA;
```

```
DROP TABLE TableA;
```

```
END;
```

```
GO -- Run the previous command and begins new batch
```

```
IF ( EXISTS ( SELECT *
```

```
FROM INFORMATION_SCHEMA.TABLES
```

```
WHERE TABLE_NAME = 'TableB' ) )
```

```
BEGIN
```

```
TRUNCATE TABLE TableB;
```

```

        DROP TABLE TableB;

    END;

GO -- Run the previous command and begins new batch
CREATE TABLE TableA
(
    ID INT IDENTITY(1, 1)
        PRIMARY KEY
        NOT NULL ,
    [Value] NVARCHAR(20)
);
CREATE TABLE TableB
(
    ID INT IDENTITY(1, 1)
        PRIMARY KEY
        NOT NULL ,
    [Value] NVARCHAR(20)
);
-----
--T003_02_02
SELECT  SCOPE_IDENTITY();
--NULL
SELECT  @@IDENTITY;
--NULL
SELECT  IDENT_CURRENT('TableA');
--1
SELECT  IDENT_CURRENT('TableB');
--1
GO -- Run the previous command and begins new batch
/*
1.
[ID] [int] IDENTITY(1,1) NOT NULL,
It means ID is the Primary Key and the type is int.
ID will start from 1 (the first one is identity seed),
and then increase 1 (the second one is identity increment)
2.
2.1.
In brief:
* SCOPE_IDENTITY()
returns the last identity value that is created in the same session and in the same scope.
* @@IDENTITY
returns the last identity value that is created in the same session and across any scope.
@@IDENTITY stored the Identity Column Value from last affected scope in the same session.
* IDENT_CURRENT('tblPerson')
returns the last identity value that is created for a specific table across any session and any scope.
2.2.
In the same Seccion (Connection):
Every comand in current sql query edit window is
ONE CONNECTION to SQL server.
ONE CONNECTION means in the ONE session in this case.
2.3.
In the same Scope:
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.
3.
Originally,
Table A have nothing
Table B have nothing.
Therefore,
SCOPE_IDENTITY() return 0
@@IDENTITY return 0
IDENT_CURRENT('TableA') return 1
IDENT_CURRENT('TableB') return 1
*/

```

```

-----
--T003_02_02
INSERT INTO TableA
VALUES ( 'x1' );
SELECT *
FROM TableA;
SELECT SCOPE_IDENTITY();
--1
SELECT @@IDENTITY;
--1
SELECT IDENT_CURRENT('TableA');
--1
SELECT IDENT_CURRENT('TableB');
--1
GO -- Run the previous command and begins new batch
/*
1.
Table A have (ID=1,Value='x1')
Table B have nothing.
Thus,
SCOPE_IDENTITY() return 1
@@IDENTITY return 1
IDENT_CURRENT('TableA') return 1
IDENT_CURRENT('TableB') return 1
*/

```

```

-----
--T003_02_03
INSERT INTO TableA
VALUES ( 'x2' );
SELECT *
FROM TableA;
SELECT SCOPE_IDENTITY();
--2
SELECT @@IDENTITY;
--2
SELECT IDENT_CURRENT('TableA');
--2
SELECT IDENT_CURRENT('TableB');
--1
GO -- Run the previous command and begins new batch
/*
1.
Table A have (ID=1,Value='x1'), (ID=2,Value='x2')
Table B have nothing.
Thus,
SCOPE_IDENTITY() return 2
@@IDENTITY return 2
IDENT_CURRENT('TableA') return 2
IDENT_CURRENT('TableB') return 1
*/

```

```

-----
--T003_02_04
IF EXISTS ( SELECT *
            FROM sys.objects
            WHERE [name] = N'tgForInsert'
            AND [type] = 'TR' )
BEGIN
    DROP TRIGGER tgForInsert;
END;
GO -- Run the previous command and begins new batch

```



```

CREATE TRIGGER tgForInsert ON TableA
    AFTER INSERT
AS
    BEGIN
        INSERT INTO TableB
            SELECT [Value]
            FROM    Inserted;
    END;

```

GO -- Run the previous command and begins new batch

/*

1.

Create a trigger which
will insert the same value to TableB
when you insert to TableA.

*/

--T003_02_05

SELECT *

FROM TableA;

SELECT *

FROM TableB;

--Table A have (ID=1,Value='x1'), (ID=2,Value='x2')

--Table B have nothing.

SELECT SCOPE_IDENTITY();

--2

SELECT @@IDENTITY;

--2

SELECT IDENT_CURRENT('TableA');

--2

SELECT IDENT_CURRENT('TableB');

--1

INSERT INTO TableA

VALUES ('x3');

SELECT *

FROM TableA;

SELECT *

FROM TableB;

--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')

--Table B have (ID=3,Value='x3').

SELECT SCOPE_IDENTITY();

--3

SELECT @@IDENTITY;

--1

SELECT IDENT_CURRENT('TableA');

--3

SELECT IDENT_CURRENT('TableB');

--1

/*

1.

1.1.

In brief:

* SCOPE_IDENTITY()

returns the last identity value that is created in the same session and in the same scope.

* @@IDENTITY

returns the last identity value that is created in the same session and across any scope.

@@IDENTITY stored the Identity Column Value from last affected scope in the same session.

* IDENT_CURRENT('tblPerson')

returns the last identity value that is created for a specific table across any session and any scope.

1.2.

In the same Seccion (Connection):

Every comand in current sql query edit window is

ONE CONNECTION to SQL server.
ONE CONNECTION means in the ONE session in this case.

1.3.
In the same Scope:
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.

2.
Originally,
We have insert 2 values into Table A.
Thus,
Table A have (ID=1,Value='x1'), (ID=2,Value='x2')
Table B have nothing.
SCOPE_IDENTITY() return 2
@@IDENTITY return 2
IDENT_CURRENT('TableA') return 2
IDENT_CURRENT('TableB') return 1
Then
We create a TableA Trigger "tgForInsert" which
will insert the same value to TableB
when you insert to TableA.

3.
After insert (ID=3,Value='x3') into TableA
Table A will have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
Table B will have (ID=1,Value='x3') by the TableA Trigger "tgForInsert"
Then,
SCOPE_IDENTITY() return 3
--@@IDENTITY return 1
--IDENT_CURRENT('TableA') return 3
--IDENT_CURRENT('TableB') return 1

3.1.
SCOPE_IDENTITY()
returns the last identity value that is created in the same session and in the same scope.
--SCOPE_IDENTITY() return 3
because this number is from that
We have inserted 3 times to TableA
in the same session and in the same scope.

3.2.
--@@IDENTITY return 1
because this number is from that
the TableA Trigger "tgForInsert" was triggered
and insert (ID=1,Value='x3') to TableB.
@@IDENTITY stored the Identity Column Value from last affected scope in the same session.
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.
Same session(CONNECTION) means every sql command in ONE sql query edit window.

3.3.
IDENT_CURRENT('tblPerson')
returns the last identity value that is created for a specific table across any session and any scope.
--IDENT_CURRENT('TableA') return 3
--IDENT_CURRENT('TableB') return 1
Both return the last identity value
across any session and any scope.
This is the safest way to get the last identity column value.
*/

2. T003_IdentityColumn_02.sql

```
-- T003_IdentityColumn -----
--=====
--T003_03
/*
What to learn
```

```

- SCOPE_IDENTITY();
- @@IDENTITY;
- IDENT_CURRENT('TableA');
- IDENT_CURRENT('TableB');
*/

-----
--T003_03_01
-- Ch08_02_01
SELECT SCOPE_IDENTITY();
--NULL
SELECT @@IDENTITY;
--NULL
SELECT IDENT_CURRENT('TableA');
--3
SELECT IDENT_CURRENT('TableB');
--1
GO -- Run the previous command and begins new batch
/*
1.
1.1.
In brief:
* SCOPE_IDENTITY()
returns the last identity value that is created in the same session and in the same scope.
* @@IDENTITY
returns the last identity value that is created in the same session and across any scope.
@@IDENTITY stored the Identity Column Value from last affected scope in the same session.
* IDENT_CURRENT('tblPerson')
returns the last identity value that is created for a specific table across any session and any scope.
1.2.
In the same Seccion (Connection):
Every comand in current sql query edit window is
ONE CONNECTION to SQL server.
ONE CONNECTION means in the ONE session in this case.
1.3.
In the same Scope:
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.
2.
SCOPE_IDENTITY() return NULL
@@IDENTITY return NULL
IDENT_CURRENT('TableA') return 3
IDENT_CURRENT('TableB') return 1
*/

-----
--T003_03_02
SELECT SCOPE_IDENTITY();
--NULL
SELECT @@IDENTITY;
--NULL
SELECT IDENT_CURRENT('TableA');
--3
SELECT IDENT_CURRENT('TableB');
--1
SELECT *
FROM TableA;
SELECT *
FROM TableB;
--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
--Table B have (ID=3,Value='x3').
INSERT INTO TableB
VALUES ( 'x2' );
SELECT SCOPE_IDENTITY();
--2
SELECT @@IDENTITY;

```

```

--2
SELECT IDENT_CURRENT('TableA');
--3
SELECT IDENT_CURRENT('TableB');
--2
SELECT *
FROM TableA;
SELECT *
FROM TableB;
--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
--Table B have (ID=3,Value='x3'), (ID=2,Value='x2')
GO -- Run the previous command and begins new batch
/*
1.
Originally,
Table A will have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
Table B will have (ID=1,Value='x3')
SCOPE_IDENTITY() return NULL
@@IDENTITY return NULL
IDENT_CURRENT('TableA') return 3
IDENT_CURRENT('TableB') return 1
2.
After insert (ID=2,Value='x2') into TableB
Table A will have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
Table B will have (ID=1,Value='x3'), (ID=2,Value='x2')
SCOPE_IDENTITY() return 2
@@IDENTITY return 2
IDENT_CURRENT('TableA') return 3
IDENT_CURRENT('TableB') return 2
2.1.
SCOPE_IDENTITY() return 2
because this number is from that
We have inserted 2 times to TableB
in the same session and in the same scope.
2.2.
@@IDENTITY return 2
because this number is from that
We have inserted 2 times to TableB
in the same session and in the same scope.
@@IDENTITY stored the Identity Column Value from last affected scope in the same session.
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.
Same session(CONNECTION) means every sql command in ONE sql query edit window.
2.3.
IDENT_CURRENT('TableA') return 3
IDENT_CURRENT('TableB') return 2
Both return the last identity value
across any session and any scope.
This is the safest way to get the last identity column value.
*/
-----
--T003_03_03
SELECT SCOPE_IDENTITY();
--2
SELECT @@IDENTITY;
--2
SELECT IDENT_CURRENT('TableA');
--3
SELECT IDENT_CURRENT('TableB');
--2
SELECT *
FROM TableA;
SELECT *
FROM TableB;
--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')

```

```

--Table B have (ID=3,Value='x3'), (ID=2,Value='x2')
INSERT INTO TableA
VALUES ( 'x4' );
SELECT SCOPE_IDENTITY();
--4
SELECT @@IDENTITY;
--3
SELECT IDENT_CURRENT('TableA');
--4
SELECT IDENT_CURRENT('TableB');
--3
SELECT *
FROM TableA;
SELECT *
FROM TableB;
--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3'), (ID=4,Value='x4')
--Table B have (ID=3,Value='x3'), (ID=2,Value='x2'), (ID=3,Value='x4')
/*
1.
Originally,
--Table A have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3')
--Table B have (ID=3,Value='x3'), (ID=2,Value='x2')
SCOPE_IDENTITY() return 2
@@IDENTITY return 2
IDENT_CURRENT('TableA') return 3
IDENT_CURRENT('TableB') return 2
2.
After We insert (ID=4,Value='x4') into TableA
The TableA Trigger "tgForInsert" will insert (ID=3,Value='x4') into TableB
Thus,
Table A will have (ID=1,Value='x1'), (ID=2,Value='x2'), (ID=3,Value='x3'), (ID=4,Value='x4')
Table B will have (ID=1,Value='x3'), (ID=2,Value='x2'), (ID=3,Value='x4')
SCOPE_IDENTITY() return 4
@@IDENTITY return 3
IDENT_CURRENT('TableA') return 4
IDENT_CURRENT('TableB') return 3
2.1.
SCOPE_IDENTITY() return 4
because this number is from that
We have inserted 4 times to TableA
in the same session and in the same scope.
2.2.
@@IDENTITY return 3
because this number is from that
We have inserted 3 times to TableB
in the same session and in the same scope.
@@IDENTITY stored the Identity Column Value from last affected scope in the same session.
Same Scope means every sql command in ONE Stored procedure or ONE function, or ONE trigger.
Same session(CONNECTION) means every sql command in ONE sql query edit window.
2.3.
IDENT_CURRENT('TableA') return 4
IDENT_CURRENT('TableB') return 3
Both return the last identity value
across any session and any scope.
This is the safest way to get the last identity column value.
*/
=====
--T003_04
--Clean up
IF EXISTS ( SELECT *
            FROM sys.objects
            WHERE [name] = N'tgForInsert'
            AND [type] = 'TR' )
BEGIN

```

```
        DROP TRIGGER tgForInsert;
    END;
GO -- Run the previous command and begins new batch
IF ( EXISTS ( SELECT      *
                FROM        INFORMATION_SCHEMA.TABLES
                WHERE        TABLE_NAME = 'TableA' ) )
    BEGIN
        TRUNCATE TABLE TableA;
        DROP TABLE TableA;
    END;
GO -- Run the previous command and begins new batch
IF ( EXISTS ( SELECT      *
                FROM        INFORMATION_SCHEMA.TABLES
                WHERE        TABLE_NAME = 'TableB' ) )
    BEGIN
        TRUNCATE TABLE TableB;
        DROP TABLE TableB;
    END;
GO -- Run the previous command and begins new batch
```