SQL Server Tutorial

Part 134 - Sequence object in SQL Server 2012

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In this session we will learn

- Sequence object in SQL Server

Link to Dot Net Basics, ASP.NET, C#, ADO.NET and SQL Server video series
http://www.youtube.com/user/kudvenkat/playlists

Suggested Videos
Part 131 - Identifying object dependencies in SQL Server
Part 132 - sys.dm_sql_referencing_entities in SQL Server
Part 133 - sp_depends in SQL Server

Sequence object in SQL Server 2012

Sequence object
- Introduced in SQL Server 2012
- Generates sequence of numeric values in an ascending or descending order

Syntax :

```
CREATE SEQUENCE [schema_name . ] sequence_name
    [ AS [ built_in_integer_type | user-defined_integer_type ] ]
    [ START WITH <constant> ]
    [ INCREMENT BY <constant> ]
    [ { MINVALUE [ <constant> ] } | { NO MINVALUE } ]
    [ { MAXVALUE [ <constant> ] } | { NO MAXVALUE } ]
    [ CYCLE | { NO CYCLE } ]
    [ { CACHE [ <constant> ] } | { NO CACHE } ]
    [ ; ]
```

Sequence object in SQL Server 2012

```
CREATE SEQUENCE [schema_name . ] sequence_name
    [ AS [ built_in_integer_type | user-defined_integer_type ] ]
    [ START WITH <constant> ]
    [ INCREMENT BY <constant> ]
    [ { MINVALUE [ <constant> ] } | { NO MINVALUE } ]
    [ { MAXVALUE [ <constant> ] } | { NO MAXVALUE } ]
    [ CYCLE | { NO CYCLE } ]
    [ { CACHE [ <constant> ] } | { NO CACHE } ]
    [ ; ]
```

Property	Description
DataType	Built-in integer type (tinyint , smallint, int, bigint, decimal etc...) or user-defined integer type. Default bigint.
START WITH	The first value returned by the sequence object
INCREMENT BY	The value to increment or decrement by. The value will be decremented if a negative value is specified.
MINVALUE	Minimum value for the sequence object
MAXVALUE	Maximum value for the sequence object
CYCLE	Specifies whether the sequence object should restart when the max value (for incrementing sequence object) or min value (for decrementing sequence object) is reached. Default is NO CYCLE, which throws an error when minimum or maximum value is exceeded.
CACHE	Cache sequence values for performance. Default value is CACHE.

Sequence object in SQL Server 2012

Creating an Incrementing Sequence

```sql
CREATE SEQUENCE [dbo].[SequenceObject]
AS INT
START WITH 1
INCREMENT BY 1
```

Generating the Next Sequence Value

```sql
SELECT NEXT VALUE FOR [dbo].[SequenceObject]
```

Retrieving the current sequence value

```sql
SELECT current_value FROM sys.sequences WHERE name = 'SequenceObject'
```

Reset the sequence value

```sql
ALTER SEQUENCE [SequenceObject] RESTART WITH 1
```

Using sequence value in an INSERT query

```sql
INSERT INTO Employees VALUES (NEXT VALUE for [dbo].[SequenceObject], 'Ben', 'Male')
INSERT INTO Employees VALUES (NEXT VALUE for [dbo].[SequenceObject], 'Sara', 'Female')
```

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Creating a decrementing Sequence :

```
CREATE SEQUENCE [dbo].[SequenceObject]
AS INT
START WITH 100
INCREMENT BY -1
```

Specifying MIN and MAX values for the sequence

```
CREATE    SEQUENCE [dbo].[SequenceObject]
          START WITH 100
          INCREMENT BY 10
          MINVALUE 100
          MAXVALUE 150
```

If you call NEXT VALUE, when the value reaches 150 (MAXVALUE)

The sequence object 'SequenceObject' has reached its minimum or maximum value.
Restart the sequence object to allow new values to be generated.

Sequence object in SQL Server 2012

Recycling Sequence values : When the sequence object has reached it's maximum value, and if you want to restart from the minimum value, set CYCLE option

```
ALTER    SEQUENCE [dbo].[SequenceObject]
         INCREMENT BY 10
         MINVALUE 100
         MAXVALUE 150
         CYCLE
```
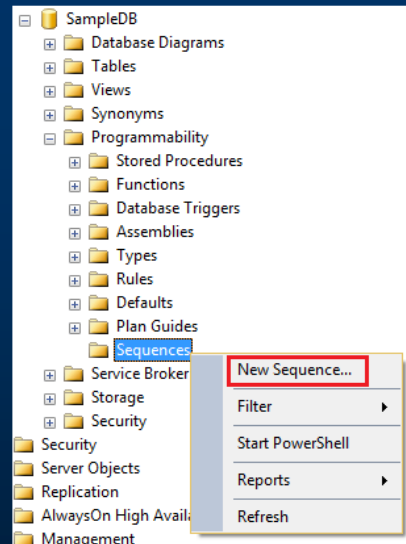
To improve performance, the Sequence object values can be cached using the CACHE option.

```
CREATE   SEQUENCE [dbo].[SequenceObject]
         START WITH 1
         INCREMENT BY 1
         CACHE 10
```

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Sequence object in SQL Server 2012

Using SQL Server Graphical User Interface (GUI) to create the sequence object :

1. **Expand the database folder**
2. **Expand Programmability folder**
3. **Right click on Sequences folder**
4. **Select New Sequence**

- SampleDB
  - Database Diagrams
  - Tables
  - Views
  - Synonyms
  - Programmability
    - Stored Procedures
    - Functions
    - Database Triggers
    - Assemblies
    - Types
    - Rules
    - Defaults
    - Plan Guides
    - Sequences
  - Service Broker
  - Storage
  - Security
- Security
- Server Objects
- Replication
- AlwaysOn High Availa
- Management

New Sequence...	
Filter	▶
Start PowerShell	
Reports	▶
Refresh	

Next video : Difference between SEQUENCE and IDENTITY in SQL Server

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Additional Resources

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Resources:

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