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DATA SATURDAY PLOVDIV 2022

MS SQL New Functions, Syntaxes, Tips & Tricks

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About me

Senior Database Developer @SPAN.eu

AD 2018 - Leading Data Events in Croatia
AD 2019 - Introduced SQL Saturday in Croatia
AD 2020 - Co-founder & organizer of #Dataweekender…

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MS SQL NEW FUNCTIONS, SYNTAXES, TIPS & TRICKS

1. STRING(s)
   - STRING_SPLIT
   - STRING_AGG
   - UTF8
2. COMPRESS AND DECOMPRESS
3. Other…
4. Something completely new ☺

STRINGS – SQL 2016

1. **STRING_SPLIT**
   - table-valued function
   - splitting string values by a separator
2. STRING_ESCAPE
   - escapes special characters
3. FORMATMESSAGE (2008)
   - FORMATMESSAGE ({ msg_number | ' msg_string ' } , [param_value [,...n]])

STRINGS – SQL 2016

1. STRING_SPLIT
   - table-valued function
   - splitting string values by a separator
2. **STRING_ESCAPE**
   - escapes special characters ,,by a rule”
3. FORMATMESSAGE (2008)
   - FORMATMESSAGE ({ msg_number | ' msg_string ' } , [param_value [,...n]])

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   - FORMATMESSAGE ({msg_number | '**msg_string**' },
   - [param_value [,...n]])


DEMO

STRINGS – SQL 2017

1. **TRIM -> LTRIM(RTRIM(String)) = TRIM(String)**
2. STRING_AGG
   - string aggregation using a separator
3. TRANSLATE
   - replaces multiple characters inside the given string value
4. CONCAT_WS
   - concatenating two or more string values

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DEMO

STRINGS – SQL 2019

STRING OR BINARY DATA WOULD BE TRUNCATED

- Old error message
- Msg 8152, Level 16, State 30, Line 18
- String or binary data would be truncated.
- New error message
- Msg 2628, Level 16, State 1, Line 35
- String or binary data would be truncated in table ‘SomeDatabase.dbo.SomeTable ', column ‘Col'. Truncated value: ‘XXX’

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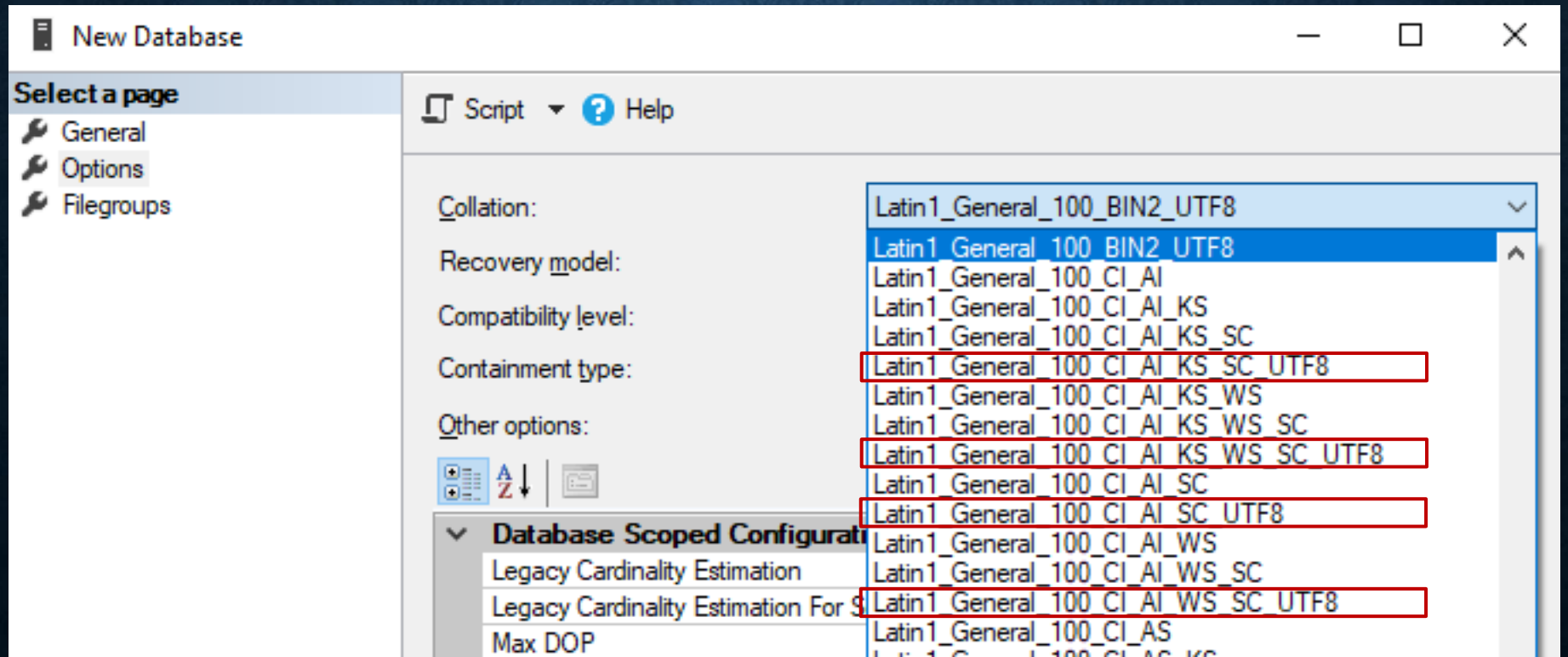
```
ALTER DATABASE SCOPED CONFIGURATION SET
VERBOSE_TRUNCATION_WARNINGS = OFF;
```

STRINGS – SQL 2019 UTF8

- Allow application(s) internationalization without converting all strings to Unicode
- Implemented as new collation -> 1.553 new collations)



STRINGS – SQL 2019 UTF8

SQL 2019 supports UTF 8 collation -> SQL 2019 підтримує сортування UTF 8

```
USE NONUTF8
GO

DECLARE @v VARCHAR(100) = 'SQL 2019 підтримує сортування UTF 8';
SELECT @v AS String, DATALENGTH(@v) AS DataLengthValue;
DECLARE @nv NVARCHAR(100) = N'SQL 2019 підтримує сортування UTF 8';
SELECT @nv AS String, DATALENGTH(@nv) AS DataLengthValue;
GO
```

Results | Messages

String	DataLengthValue
SQL 2019 ????????? ?????????? UTF 8	35

String	DataLengthValue
SQL 2019 підтримує сортування UTF 8	70

```
USE UTF8;
GO

DECLARE @8v VARCHAR(100) = 'SQL 2019 підтримує сортування UTF 8';
SELECT @8v AS String, DATALENGTH(@8v) AS DataLengthValue;
DECLARE @8nv NVARCHAR(100) = N'SQL 2019 підтримує сортування UTF 8
SELECT @8nv AS String, DATALENGTH(@8nv) AS DataLengthValue;
GO
```

Results | Messages

	String	DataLengthValue
1	SQL 2019 підтримує сортування UTF 8	54

	String	DataLengthValue
1	SQL 2019 підтримує сортування UTF 8	70


DEMO

COMPRESS AND DECOMPRESS (1/2)

- 2016+
- ROW, PAGE…
- Syntax:

- COMPRESS (expression)
- - **Expression** - nvarchar(n), nvarchar(max), varchar(n), varchar(max), varbinary(n), varbinary(max), char(n), nchar(n), or binary(n) expression.
- **- Return**

COMPRESS AND DECOMPRESS (2/2)

- GZIP
- INDEX
- XML, Log-s, Rarely used data

COMPRESS AND DECOMPRESS

- Opposite of COMPRESS?
- Syntax:

- DECOMPRESS (expression)
- **- Expression -** Is a varbinary(n), varbinary(max), or binary(n)
- **- Return ->** data in varbinary(max)

- Casting is recommended


DEMO

CREATE OR ALTER

```
CREATE PROCEDURE dbo.sp_SQLNewFunctions AS
BEGIN
    SELECT 'This demo is cool :)' AS Result
END
```

Messages

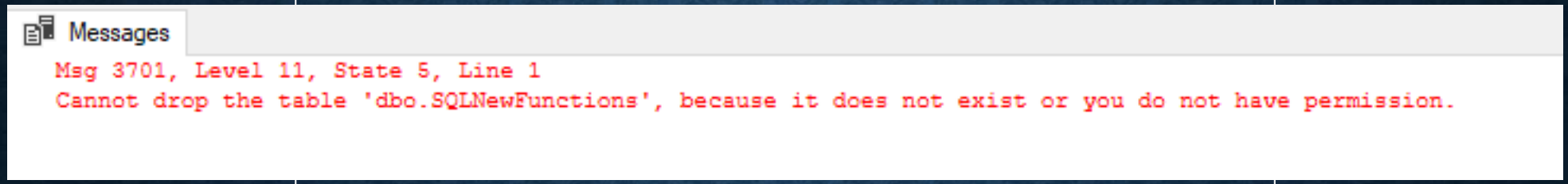
```
Msg 2714, Level 16, State 3, Procedure sp_SQLNewFunctions, Line 1 [Batch Start Line 0]
There is already an object named 'sp_SQLNewFunctions' in the database.
```

```
IF OBJECT_ID(N'dbo.sp_SQLNewFunctions','P') IS NOT NULL
    EXEC('DROP PROCEDURE dbo.sp_SQLNewFunctions');
CREATE PROCEDURE dbo.sp_SQLNewFunctions AS
BEGIN
    SELECT 'This demo is cool :)' AS Result
END


CREATE OR ALTER PROCEDURE dbo.sp_SQLNewFunctions AS
BEGIN
    SELECT 'This demo is cool :)' AS Result
END
```

DROP IF EXISTS (A.K.A. DIE)

```
DROP TABLE dbo.SQLNewFunctions;
```




```
IF OBJECT_ID('dbo.SQLNewFunctions','U') IS NOT
NULL DROP TABLE dbo.SQLNewFunctions


DROP TABLE IF EXISTS dbo.SQLNewFunctions;
```

DATEDIFF_BIG

```
DECLARE
  @StartDate DATETIME = GETDATE()
  , @EndDate DATETIME = DATEADD(day, 1, @StartDate)

SELECT DATEDIFF(MCS, @StartDate, @EndDate ) AS "Microsecond diff"
```

Results | Messages

```
Msg 535, Level 16, State 0, Line 21
The datediff function resulted in an overflow. The number of dateparts separating two date/time instances is too large. Try to use datediff with a less precise datepart.
```

```
DECLARE
   @StartDate DATETIME = GETDATE()
  , @EndDate DATETIME = DATEADD(day, 1, @StartDate)

SELECT
…
  , DATEDIFF_BIG(MCS, @StartDate, @EndDate ) AS "Microsecond diff"
  , DATEDIFF_BIG(NS, @StartDate, @EndDate ) AS "Nanosecond diff"
```

Results | Messages

	Week diff	Day diff	Hour diff	Minute diff	Second diff	Millisecond diff	Microsecond diff	Nanosecond diff
1	0	1	24	1440	86400	86400000	86400000000	86400000000000

HASHBYTES

- SQL 2005 - ~~MD2, MD4, MD5, SHA, SHA1~~
- SQL 2012 - SHA2_256, SHA2_512

- - Input: 8 000 bytes


DEMO

GREATEST() & LEAST()

- Azure SQL
  - Azure SQL Database
  - Azure SQL Managed Instance
  - Azure Synapse Analytics - serverless SQL pool only

GREATEST/LEAST (expression1 [,...expressionN])

GREATEST() & LEAST()

Return types:

- highest precedence
- same data type or implicitly convert
- numeric types

GREATEST() & LEAST()

Remarks and limitations:

- Comparable data type that can be implicitly converted
- Implicit conversion
- NULL
- Types not supported for comparison: varchar(max), varbinary(max) or nvarchar(max) exceeding 8,000 bytes, cursor, geometry, geography, image, non-byte-ordered user-defined types, ntext, table, text, and xml.

GREATEST() & LEAST()

GREATEST (expression1 [,...expressionN])

GREATEST() & LEAST()

LEAST (expression1 [,...expressionN])


DEMO

THANKS

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