

# Linebreaks in T-SQL and friends

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## About me

- Aged 34
- Diplom-Informatiker ( $\simeq$  Master in Computer Science)
- First contact with coding in the 90s (VB 3.1)
- First contact with Regular Expressions and (My)SQL through PHP around 2000
- Currently employed as Software Developer with focus on T-SQL, but also using C# and PowerShell
- Experience in Java, Bash-, BAT-scripting, Ruby, ...



# Line Breaks

## Definition

**Newline** (frequently called **line ending**, **end of line (EOL)**, **line feed**, or **line break**) is a *control character* or *sequence of control characters* in a character encoding specification (e.g. ASCII or EBCDIC) that is used to signify the end of a line of text and the start of a new one.<sup>[1]</sup> Some text editors set this special character when pressing the  **Enter** key.

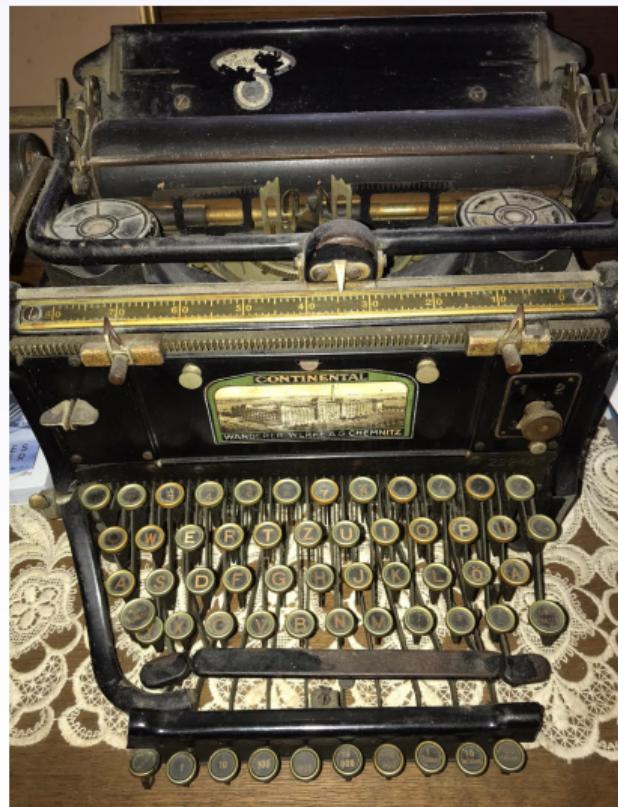
When displaying (or printing) a text file, this control character causes the text editor to show the following characters in a new line.

<https://en.wikipedia.org/wiki/Newline>

## Idea & Implementation

There are three common encodings of line breaks in computers:

- character 13 (carriage-return) followed by 10 (line-feed)  
(Dos/Windows; CR LF; C-like: \r\n; PoSh: `r`n)  
Modelled after how a type-writer behaves, when you switch to a new line
- character 10  
(Unix/Linux; LF; C-like: \n; PoSh: `n)  
Common with programmers/the web for brevity
- character 13  
(Mac; CR; C-like: \r; PoSh: `r)  
After Mac OS X adopted the Unix standard of LF, this is mostly extinct



# Line-Breaks in T-SQL

- Preferred style: T-SQL mostly handles line-breaks just like other space characters, however some operations like BULK INSERT have ROWTERMINATORS where LF or CR LF are default

<https://docs.microsoft.com/en-us/sql/relational-databases/import-export/specify-field-and-row-terminators-sql-server#using-row-terminators>

- Storing a line-break in a string

- Literal

```
DECLARE @S varchar(42) = 'One  
Two'
```

- Explicit

```
DECLARE @S varchar(42) = 'One'+CHAR(13)+CHAR(10)+'Two'
```

# Line-Breaks in Results

- Line-breaks will be returned in your results & converted when using FOR XML or FOR JSON
- JSON:

```
SELECT x='One'+CHAR(13)+CHAR(10)+'Two' FOR JSON PATH;
```

— yields `N'[{"x":"One\r\nTwo"}]'`

- XML:

```
SELECT x='One'+CHAR(13)+CHAR(10)+'Two' FOR XML PATH;
```

— yields `N'<row><x>One\r\nTwo</x></row>'`

CR may cause trouble even encoded as `\r\n`; see e.g.

<https://docs.microsoft.com/en-us/dotnet/api/system.xml.xmlwritersettings.newlinehandling>

# String Escapes in T-SQL

- Generally all characters are taken as they are (within the collation)
- To get one ' write ''
- There is however 'Line Continuation'

```
DECLARE @Sql nvarchar(max) = N'  
    SELECT x=''One\'' + CHAR(13)  
        + CHAR(10)  
        + 'Two\'' + CHAR(10)  
        + 'Three\'' + CHAR(13)  
        + 'Four'' FOR JSON PATH'  
EXEC (@Sql);  
— yields N'[{"x":"OneTwoThree\  
rFour"}]'
```



## Escaping line-continuation

- <https://docs.microsoft.com/en-us/sql/t-sql/language-elements/sql-server-utilities-statements-backslash> **does not list any escapes for line-continuation**
- But you can do this

```
SELECT @Sql = REPLACE(@Sql, '\'+'+CHAR(10),  
    '\\"'+CHAR(10)+CHAR(10))
```

```
SELECT @Sql = REPLACE(@Sql, '\'+'+CHAR(13)+CHAR(10),  
    '\\"'+CHAR(10)+CHAR(13)+CHAR(10))
```

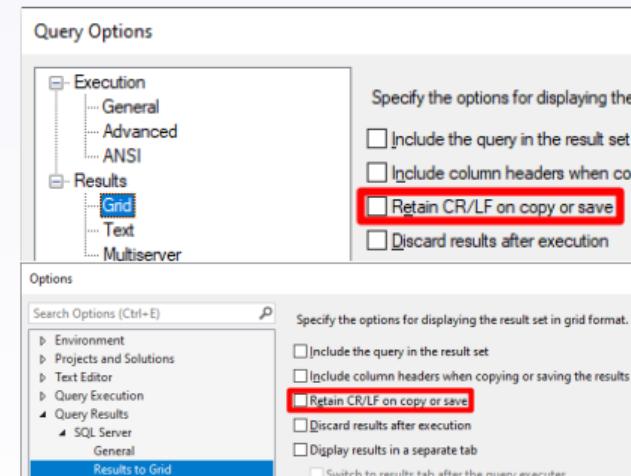
```
SELECT @Sql = REPLACE(@Sql, '\'+'+CHAR(13),  
    '\\"'+CHAR(13))
```

```
EXEC (@Sql);
```

— yields *N'[{ "x ":"One|||r|nTwo|||nThree|||rFour "}]'*

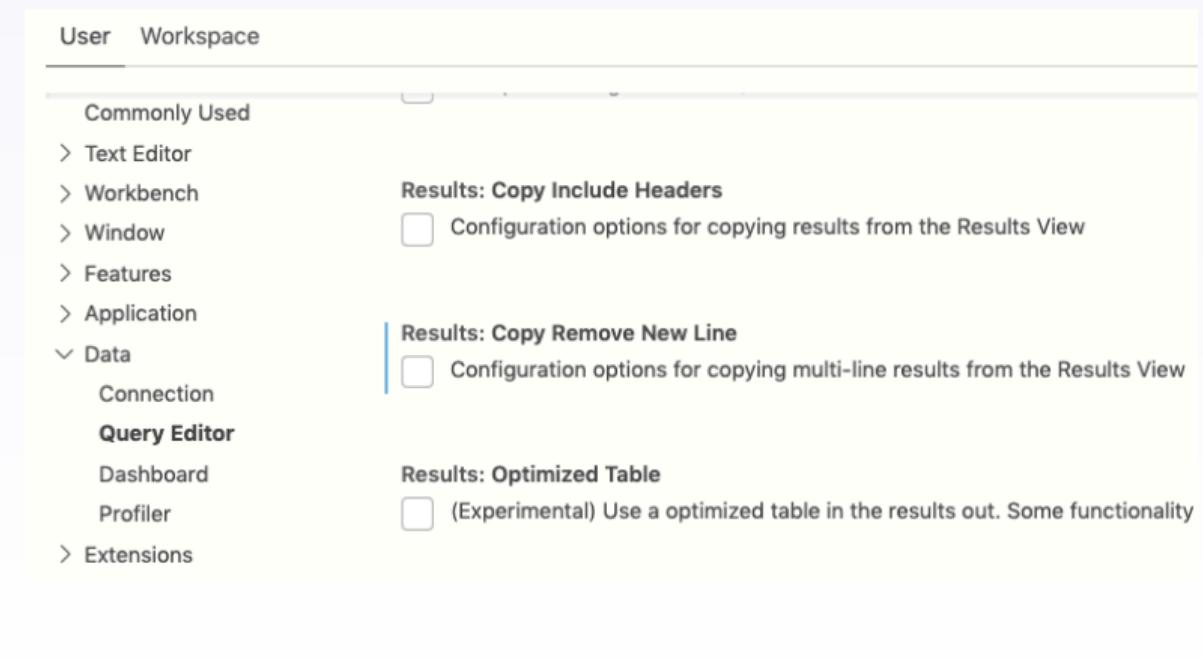
# SQL Management Studio

- SSMS will **by default** discard line-breaks in grid-results!
- There is one setting to change it for the current session/tab (Query → Query Options)
- and **another** to change it for new sessions (Tools → Options)



# Azure Data Studio

Under Settings go to Data → Query Editor → Results: Copy Remove New Line (`queryEditor.results.copyRemoveNewLine`); immediately takes effect



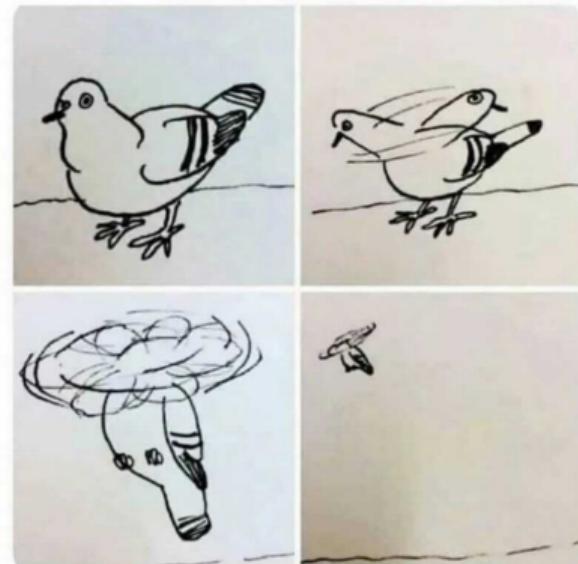
- Git has `core.eol` which can be set to `lf`, `crlf` or `native` (which is the default)  
<https://git-scm.com/docs/git-config#Documentation/git-config.txt-coreeol>
- Effectively Git will try to only store LF in text-files, but restore them with the correct line-breaks
- This is the reason why text-files downloaded from e.g. GitHub may have LF as line-breaks
- A similar 'transport' mechanism may be known from FTP



- Most people think line-breaks 'just work'
- Most people think they only ever need to take care of quotes in T-SQL-strings
- Reality is at it again and makes it a bit more complicated

## Summary

When your program  
is a complete mess,  
but it does its job



(Author unknown)

Please provide feedback