

SQL Server and JSON

It's not a Horror Movie!

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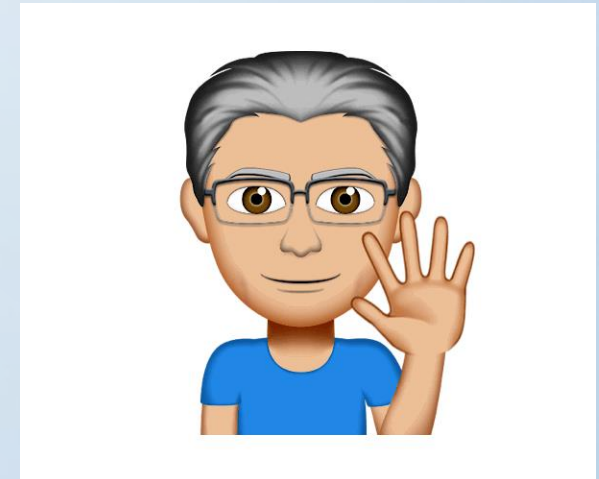


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About Me

- Business Intelligence and Integration Architect at Wellesley College
- Oracle Database Design and Development – 30 years
- SQL Server Database and Business Intelligence Stack – 5 years
- Boston Code Camp 26, 27, 28, 29 Attendee
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AGENDA

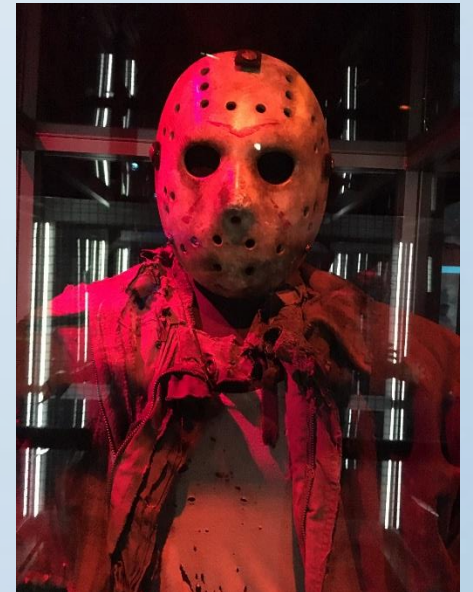
- What is JSON?
- Why Use JSON with SQL Server?
- SQL Server 2016 Support for JSON
- Get JSON Formatted Data Into SQL Server Tables
- Get Data Out from SQL Server Tables in JSON Format
- Power BI Visualization of JSON Data

What is JSON?

- JavaScript **O**bject **N**otation
- Lightweight Data Interchange Format
- Facilitates Integration of Data Between Systems / Applications
- Easy to Read and Write
- Easy to Parse and Generate

Source: <http://www.json.org/>

Photo taken at Museum of Pop Culture – Seattle, WA



What is JSON?

- Name / Value Pairs
 - `{"title":"Scream","year":1996,"director":"Wes Craven"}`
 - `{"title":"Halloween","year":1978,"director":"John Carpenter"}`
- JSON Data Types
 - String, Number, Boolean (true or false), null
 - Array
 - `"genre":["Horror", "Slasher"]`
 - Object
 - `"movie":{"MovieId":29213,"Title":"Friday the 13th","ReleaseYear":1980,"Director":"Sean S. Cunningham","CastListing":["Betsy Palmer", "Adrienne King", "Kevin Bacon"],"Genre":"Horror"}`



Photo taken at Museum of Pop Culture – Seattle, WA

Movies JSON Data Set

The screenshot shows the JSON Editor Online interface. The left pane displays a JSON array of movie objects. The right pane shows a search result for 'halloween'.

JSON Editor Online Interface:

- Left Pane (Raw JSON):** Displays a JSON array of movie objects. The visible portion includes:

```
[{"cast": "Harold Lloyd", "genre": null, "notes": null, "title": "Huckleberry Finn", "year": 1920, "director": "William Desmond Taylor", "cast": "Wallace Beery", "genre": null, "notes": null, "title": "If I Were King", "year": 1920, "director": "J. Gordon Edwards", "cast": "William Farnum, Betty Ross Clarke", "genre": "Drama", "notes": null, "title": "In Wrong", "year": 1920, "director": "Albert Russell", "cast": "Hoot Gibson", "genre": "Western", "notes": null, "title": "The Jack-Knife Man", "year": 1920, "director": "King Vidor", "cast": "F. A. Turner, Harry Todd", "genre": "Drama", "notes": null, "title": "The Jay Bird", "year": 1920, "director": "Phil Rosen", "cast": "Hoot Gibson", "genre": "Western", "notes": null, "title": "Judy of Rogue's Harbor", "year": 1920, "director": "William Desmond Taylor", "cast": "Mary Miles Minter, Charles Meredith", "genre": "Drama", "notes": null, "title": "Lady Rose's Daughter", "year": 1920, "director": "Hugh Ford", "cast": "Elsie Ferguson, David Powell", "genre": null, "notes": null, "title": "The Last of the Mohicans", "year": 1920, "director": "Clarence Brown, Maurice Tourneur", "cast": "Wallace Beery", "genre": "Adventure", "notes": null, "title": "The Leopard Woman", "year": 1920, "director": "Wesley Ruggles", "cast": "Louise Glaum, House Peters", "genre": "Adventure Romance", "notes": "Feature length", "title": "Love, Honor, and Behave", "year": 1920, "director": "F. Richard Jones, Erle C. Kenton", "cast": "Charlie Murray", "genre": null, "notes": null, "title": "Madame X", "year": 1920, "director": "Frank Lloyd", "cast": "Pauline Frederick", "genre": null, "notes": null, "title": "The Man with the Punch", "year": 1920, "director": "Edward Laemmle", "cast": "Hoot Gibson", "genre": null, "notes": null, "title": "The Mark of Zorro", "year": 1920, "director": "Fred Niblo", "cast": "Douglas Fairbanks", "genre": "Swashbuckler", "notes": null, "title": "Masked", "year": 1920, "director": null, "cast": "Hoot Gibson", "genre": null, "notes": null, "title": "The Mollycoddle", "year": 1920, "director": null, "cast": null, "genre": null, "notes": null, "title": null, "year": null}
```
- Right Pane (Search Results):** Shows 17 results for the search term 'halloween'. The results are displayed as a list of objects with highlighted fields:

```
[{"id": 10094, "count": 6}, {"id": 10095, "count": 6}, {"id": 10096, "count": 6}, {"id": 10097, "count": 6, "title": "Halloween", "year": 1978, "director": "John Carpenter", "cast": "Donald Pleasence, Jamie Lee Curtis, P.J. Soles, Charles Cyphers, Kyle Richards", "genre": "Horror", "notes": "inspired Halloween film franchise"}, {"id": 10098, "count": 6}, {"id": 10099, "count": 6}, {"id": 10100, "count": 6}, {"id": 10101, "count": 6}, {"id": 10102, "count": 6}, {"id": 10103, "count": 6}]
```

Footer: JSON Editor Online 3.7.5 • History • Sourcecode • Report a bug • Data policy • Copyright 2011-2016 Jos de Jong

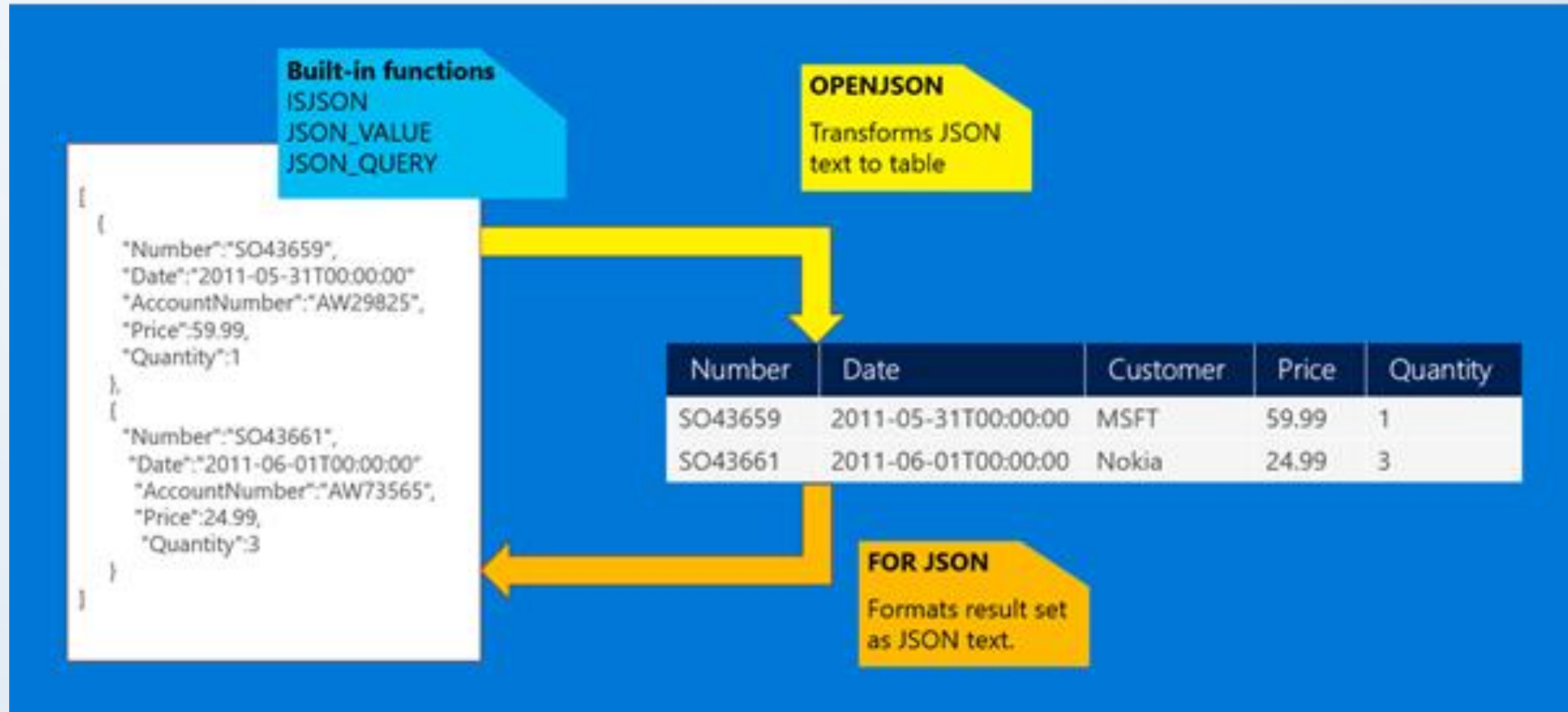
Why Use JSON with SQL Server?

- Automate Data In to SQL Server From NoSQL Sources
- Automate Data Out From SQL Server from NoSQL Sources
- Integrate Data To / From Many Cloud-Based Services
- Represents Nested Relationships Flexibly
- More Compact and Readable Than CSV and XML Formats

Photo taken at Museum of Pop Culture – Seattle, WA



SQL Server 2016 Support for JSON



Source: <https://docs.microsoft.com/en-us/sql/relational-databases/json/json-data-sql-server?view=sql-server-2017>

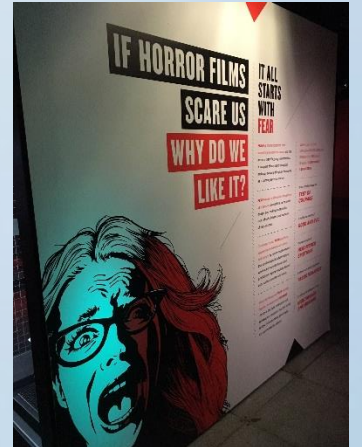
SQL Server 2016 Support for JSON

- Facilitating Data In
 - ISJSON
 - OPENROWSET
 - OPENJSON

Note: No JSON-specific column data type. Use nvarchar(max)

- Facilitating Data Out
 - FOR JSON AUTO
 - FOR JSON PATH
 - FOR JSON PATH, ROOT
 - INCLUDE_NULL_VALUES
 - JSON_VALUE
 - JSON_QUERY

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Get JSON Formatted Data Into SQL Server Tables

```
insert into dbo.MoviesJSON(MoviesJSON)
```

```
select MoviesData.*
```

```
from openrowset (bulk 'C:\Presentations\Boston Code Camp\wikipedia-movie-data-master\movies.json', single_clob) as MoviesData;
```

```
select ISJSON(MoviesJSON) IsJSON, MoviesJSON, len(MoviesJSON) as LengthMoviesJSON
```

```
from dbo.MoviesJSON;
```

Photo taken at Museum of Pop Culture– Seattle, WA



SQL Server 2016 – JSON In Demo



Image Source: Pixabay

Get Data Out from SQL Server Tables in JSON Format

```
select *
```

```
from dbo.Movies
```

```
where Genre like '%Horror%'
```

```
FOR JSON PATH, ROOT('Movies');
```

```
select *
```

```
from dbo.Movies
```

```
where Genre like '%Horror%'
```

```
FOR JSON PATH, WITHOUT_ARRAY_WRAPPER;
```



Photo taken at Museum of Pop Culture – Seattle, WA

SQL Server 2016 – JSON Out Demo



Image Source: Pixabay

Power BI / JSON Data Visualization Demo



Image Source: Pixabay

References

- <https://github.com/prust/wikipedia-movie-data>
- <http://www.json.org/>
- <https://docs.microsoft.com/en-us/sql/relational-databases/json/json-data-sql-server?view=sql-server-2017>
- <https://www.red-gate.com/simple-talk/sql/learn-sql-server/json-support-in-sql-server-2016/>
- <https://docs.microsoft.com/en-us/sql/relational-databases/json/solve-common-issues-with-json-in-sql-server?view=sql-server-2017>
- <https://channel9.msdn.com/Shows/Data-Exposed/SQL-Server-2016-and-JSON-Support>
- <https://channel9.msdn.com/Shows/Data-Exposed/Using-JSON-in-SQL-Server-2016-and-Azure-SQL-Database>
- <https://channel9.msdn.com/events/DataDriven/SQLServer2016/JSON-as-a-bridge-between-NoSQL-and-relational-worlds>

Thank You!

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