## LINQ to JSON



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## LINQ

#### Language-Integrated Query

#### **Extends Powerful Query Capabilities**

- To C# and VB.NET

#### **Functions**

#### Standard and easily learned patterns

- For querying and updating data
- Potentially to any store



## LINQ

LINQ to SQL, LINQ to XML, LINQ to ADO.NET, LINQ to objects

Circa Visual Studio 2008

We can use it with Json.NET

**Under Newtonsoft.JSON.Ling** 



#### LINQ to JSON

**Creating JSON** 

**Parsing JSON** 

**Querying JSON with LINQ** 

Querying JSON with SelectToken



## Create JSON Using LINQ





**Create JSON Using LINQ: Imperatively** 





**Create JSON Using LINQ: Declaratively** 





Create JSON Using LINQ: FromObject



JObject.Parse(authorJson)

(JObject) JToken.ReadFrom(new JsonTextReader(streamReader))

#### Parsing JSON Using LINQ

Parse JSON from a string

Load JSON directly from a file





**Parse JSON from String** 





Parse JSON from Stream



# Querying JSON with LINQ

## Multiple ways of getting data from JSON objects using LINQ

- Property name Author["name"]
- Collection index → Author[0]

#### Children

- Get collections under the object

#### And apply functions

- where/order by/select/sum/...

Fine grained control working with JSON





Simple LINQ to JSON





Read Values from JSON Using LINQ





**Querying JSON with LINQ Functions** 



## SelectToken for Dynamic Querying



#### The most powerful way of querying

With LINQ to JSON

Single string used to get desired JToken

- JSONPath

Null is returned if nothing found

Combine SelectToken with LINQ functions



## JSONPath:

http://goessner.net/articles/JsonPath

Similar to XPath for those familiar with XML



#### **JSONPath**

\$.views[0].watchedSeconds

\$.['views'][0]
['watchedSeconds']

\$.views

Bracket notation

Item

\$.views[?(@.course == 'Solr')]

\*
Wildcards and

**Expressions** 

Iterate and filter

Descendants

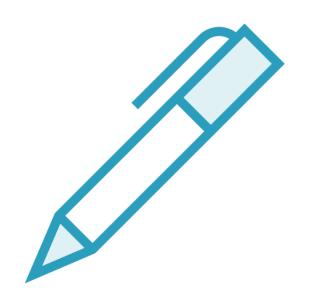
\$..secondsWatched



**Using SelectToken** 



#### Annotations



#### Associate objects with LINQ to JSON

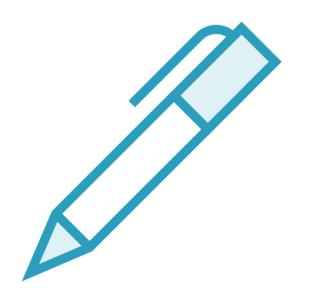
- JObjects, Jarrays, and JValues

Not part of JSON specification

Not represented as part of JSON text

- Json.NET specific

#### Annotations



#### Used to track

Events, changes, or anything in particular

#### **Example**

 Useful as dynamic and self-contained logging mechanism



#### **Annotations**



## Takeaway



Newtonsoft.JSON.Linq

JTokenReader and JTokenWriter

**Parse JSON** 

**Create JSON** 

- Imperative
- Declarative
- FromObject



### Takeaway



#### **Query JSON**

- Property value
- Collection index

#### Children can be used

- To iterate over descendent objects

SelectToken (JSONPath)

