

LINQ to JSON



Xavier Morera

@xmorera | www.xaviermorera.com

What Is 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 to SQL, LINQ to XML, LINQ to ADO.NET, LINQ to objects
- Circa Visual Studio 2008
- We can use it with Json.NET

LINQ to JSON

- Under Newtonsoft.JSON.Linq
- JTokenReader/JTokenWriter -> fast, non cached, forward only
- Parse JSON → JObject.Parse()
- Create JSON
 - JSONArray array = new JSONArray()
 - JObject author = new JObject(new Jproperty("name", "Xavier"))
- Query JSON
 - → author["name"]
 - → author.SelectToken("\$.author[?(@.name == 'Xavier')]")

Create JSON Using LINQ

Imperative

Declarative

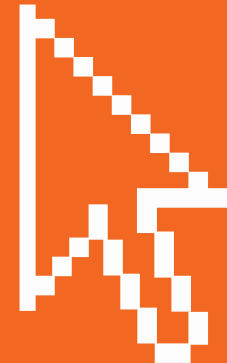
FromObject

Demo 19: Create JSON Using LINQ

Imperative

Declarative

FromObject



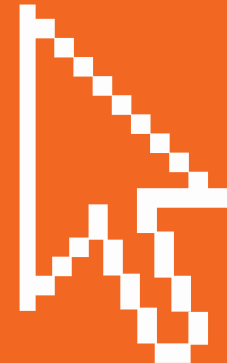
Parsing JSON Using LINQ

```
JsonObject.Parse(authorJson)
```

```
(JsonObject) JToken.ReadFrom(new JsonTextReader(streamReader))
```

Demo 20: Parse JSON

String
Stream



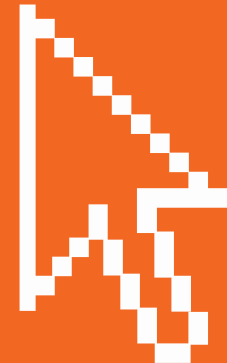
Query JSON with LINQ

- Multiple ways of getting data from JSON objects using LINQ
 - Property name → `Author["name"]`
 - Collection index → `Author[0]`
- `Children` allows you to get collections to enumerate
- And apply functions → `where/order by/select/sum/...`
- Provides fine grained control while working with JSON objects

Demo 21: Query JSON with LINQ

Query JSON

LINQ Style



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
- Regarding JSONPath
 - JSONPath (<http://goessner.net/articles/JsonPath/>)
 - Similar to XPath for those familiar with XML

JSONPath

- Dot notation
 - `$.views[0].watchedSeconds`
- Bracket notation
 - `$['views'][0]['watchedSeconds']`
- Iterate and filter
 - `$.views[?(@.course == 'Solr')]`
- Wildcards and Expressions
- Descendants
 - `$..secondsWatched`

Demo 22: SelectToken

Get Any JToken with a Single String
Full JSONPath Support



Annotations

- Associate objects with LINQ to JSON JObject, JArray and JValue.
- Not part of JSON specification
- Not represented as part of JSON text
- Json.NET specific
- Used to track events, changes or anything in particular
- Example: Useful as dynamic and self-contained logging mechanism

Demo 23: Annotations

Objects for Use Within Application



Takeaway

Newtonsoft.JSON.
Linq

JTokenReader
JTokenWriter

Parse JSON

Create JSON

Query JSON

SelectToken
(JSONPath)