



deliver more than expected

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WHY YOU SHOULD LOVE LINQ TO OBJECTS

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TELERIK

DELIVER MORE THAN EXPECTED

One-stop shop for .NET tools & UI components



UI Components

Dev Tools

QA/PM Tools



WHO AM I?

- Patterns & Practices Evangelist, Telerik, Inc.
- Microsoft MVP
- MCSD, MCDBA, CSM, CSP
- Developer().Speaker().Writer()
- Lead Director, Cincinnati .NET User's Group
- Founder, Agile Conferences, Inc.



LANGUAGE INTEGRATED QUERY

- Set of .NET language enhancements and libraries for working with data
- Many variations shipping from Microsoft
 - LINQ To Objects
 - LINQ To XML
 - LINQ To DataSets
 - LINQ To SQL
 - LINQ To Entities
 - Parallel LINQ
- Additional OSS implementations



.NET LANGUAGE ENHANCEMENTS

- Extension Methods
- Object/Collection Initializers
- Implicitly Typed Local Variables
- Anonymous Types
- Lambda Expressions
- Query Expressions





New Language Features



EXTENSIONS OR QUERIES?

- Query Syntax is similar to SQL
 - FROM-WHERE-ORDERBY-SELECT
 - FROM is first to gain intellisense support
 - Easier for developers with database experience
 - Not all options available
- Extension methods built on `IEnumerable<T>` and `IQueryable<T>`
 - Query Syntax is converted to Extension methods by compiler
 - `IEnumerable<T>` also referred to Sequence





Extension Methods vs. Query Syntax



BASE OPERATORS

- Projection
 - Select[Many]*
- Restriction
 - Where*
- Partitioning
 - Take[While]*
 - Skip[While]*
- Ordering
 - OrderBy[Descending]*
 - ThenBy[Descending]*
- Elements
 - First[OrDefault]
 - Last[OrDefault]
 - Single[OrDefault]
 - ElementAt[OrDefault]
 - DefaultIfEmpty*
- Quantifiers
 - Any
 - All
 - Contains





Projections, Filtering, Ordering, Elements,
Quantifiers



ADDITIONAL OPERATORS

- Sets
 - Distinct*/Union*/Intersect*
 - Except*/Concat*
- Aggregation
 - Count/LongCount
 - Sum/Average
 - Max/Min
 - Aggregate
- Generators
 - Range*
 - Repeat*
 - Empty*
- Equality
 - SequenceEqual
- Merging
 - Zip





DEMO

Sets, Aggregation, Generators, Equality, Merging



CONVERSION, JOIN, GROUPING

- Conversions
 - AsEnumerable*
 - ToArray
 - ToList
 - ToDictionary
 - ToLookup
 - OfType*
 - Cast*
- Query Expression Adds
 - Let
 - Into
- Join
 - Group*
 - GroupJoin*
- Grouping
 - GroupBy*





DEMO

Conversions, Joins, Grouping, Variables



DEFERRED EXECUTION

- Predicates only get tested when the query is iterated over
 - `foreach ()`
 - `ToList()`
- Query does not need to be redefined between runs



REFERENCES

- LINQ To Objects Using C# 4.0
 - Troy Magennis; Addison-Wesley
- Pro LINQ in C# 2010
 - Adam Freeman, Joseph C Rattz, Jr.; Apress
- LINQ: .NET Language-Integrated Query
 - Don Box, Anders Hejlsberg <http://tinyurl.com/5lw6jw>
- MSDN
 - <http://msdn.microsoft.com/en-us/netframework/aa904594>



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