Practical LINQ

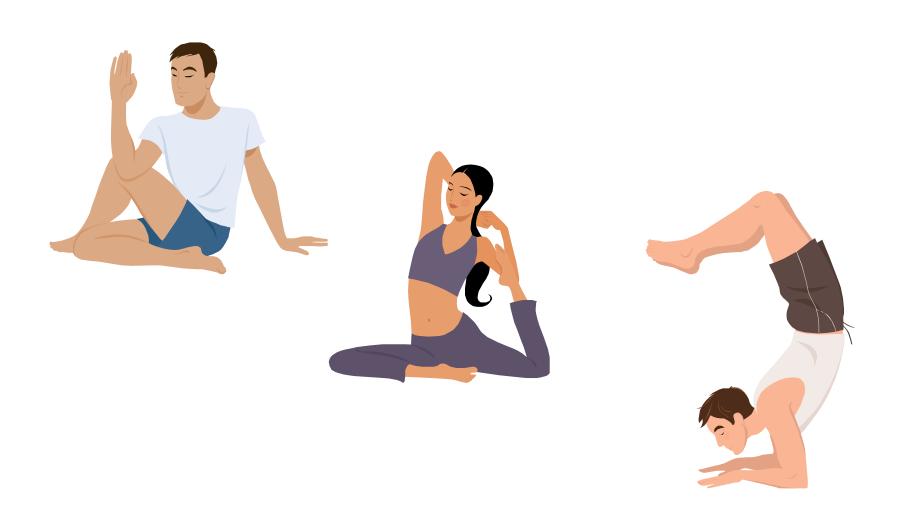
LINQ by Example

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Examples Not Descriptions



LINQ Syntax

- Query Syntax
 - Declarative
 - In the language
- Method Syntax
 - Methods
 - In the .NET Framework (System.Linq)
- Semantically equivalent

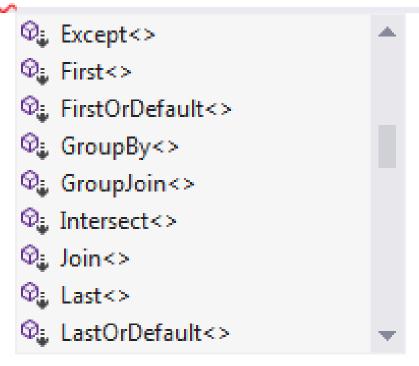
LINQ Syntax

Semantically equivalent

In the .NET Framework (System.Ling)

Enumerable Class

Enumerable.



Terminology

- LINQ
 - Query Syntax
 - Method Syntax
- Extension Methods
- Delegates
- Lambda Expressions

LINQ

- Language Integrated Query
- Standard Set of Query Operators
 - Traversal
 - Filter
 - Projection

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```
var query = from c in customerList
    where c.CustomerId == customerId
    select c;
```

Query Syntax

- Defines a LINQ query using SQL-like syntax
- Converted to method syntax by the compiler
- Not every LINQ operator is available when using this syntax

```
var query = from c in customerList
    where c.CustomerId == customerId
    select c;
```

Extension Methods

- Method added to a type to extend its functionality
- Static Class
- Static Method
- this keyword
- Called as an instance method

```
public static class StringExtensions
{
  public static string ConvertToTitleCase(this string source)
  {
    CultureInfo cultureInfo = Thread.CurrentThread.CurrentCulture;
    TextInfo textInfo = cultureInfo.TextInfo;
    return textInfo.ToTitleCase(source)
  }
}
```

Method Syntax

- Defines a LINQ query by calling extension methods
- Extension methods defined in the Enumerable class of System.Linq
- Often have parameters that take Lambda expressions

Delegate

- Delegates the responsibility for an operation to another function
- Object-oriented, type-safe function pointer
- Defined with:
 - A named method
 - A delegate expression
 - A Lambda expression

Lambda Expression

- Unnamed, inline function
- Single statement
 - Does not require a return
- Multiple statement
- Used in delegate parameters



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Chaining

Extension methods can be chained together

Deferred Execution

- LINQ queries are executed when the query variable is iterated over
- NOT when the query variable is declared

```
var query = from c in customerList
    where c.CustomerId == customerId
    select c;
foundCustomer = query.First();
```

Summary

LINQ

- Query syntax
- Method syntax

Terms, Terms, Terms

- Extension Methods
- Delegates
- Lambda Expressions