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Data Management Solutions
Custom Development Solutions

Agenda

- 1 Useful operators
- 2 Extension Methods
- 3 Generic types
- 4 Delegates
- 5 Anonymous functions
- 6 Anonymous types
- 7 LINQ to objects
- 8 Design principles
- 9 Recommended best practices

- Ternary operator (?:)
- Null coalescing operator(??)
- Null conditional operator(?)

- Extension methods enable you to "add" methods to existing types without creating a new derived type, recompiling, or otherwise modifying the original type
- Extension methods are static methods declared and must be declared in a static class
- Extension methods differ vs regular methods by an input variable that has **this** before it's type is declared
- Extension methods are the only methods that can be called on a NULL object without receiving the famous "Object reference not set to an instance of an object." error

3 Generic types

Generics introduce to the .NET Framework the concept of type parameters, which make it possible to design classes and methods that defer the specification of one or more types until the class or method is declared and instantiated by client code.

```
public class GenericList<T>
{
    void Add(T input) { }
}
class TestGenericList
{
    private class ExampleClass { }
    static void Main()
    {
        GenericList<int> list1 = new GenericList<int>();
        GenericList<string> list2 = new GenericList<string>();
        GenericList<object> list3 = new GenericList<object>();
    }
}
```

Most useful generic types from BCL: List<T>, System.Nullable<T>

A delegate is a reference type variable that holds the reference to a method. The reference can be changed at runtime.

You can either use predefined delegates: Action, Func or create custom delegates

5 Anonymous functions

Two types:

- Anonymous methods(superseded)
- Lambda expressions

A lambda expression is an anonymous function that you can use to create delegates or expression tree types. By using lambda expressions, you can write local functions that can be passed as arguments or returned as the value of function calls.

6 Anonymous types

Anonymous types provide a convenient way to encapsulate a set of read-only properties into a single object without having to explicitly define a type first.

LINQ = Language Integrated Query

LINQ works using extension methods on generic collections to transpose or filter collections.

When you do any operation on a collection, think **LINQ** first.

- **How to use IEnumerable?**
- **When is it Deferred vs Immediate?**
- **What is closure?**

- DRY

Don't Repeat Yourself

- KISS

Keep It Simple Stupid

(or Keep It Stupid Simple)

- YAGNI

You Aren't Gonna Need It

Single **R**esponsibility **P**inciple

Open **C**losed **P**inciple

Liskov **S**ubstitution **P**inciple

Interface **S**egregation **P**inciple

Dependency **I**nversion **P**inciple

9 Recommended best practices

- When dealing with a collection first think of LINQ.
- Keep methods under 20 lines
- Keep classes under 200 lines
- Keep readable and intuitive names for classes/properties/fields/methods etc

Q & A

Exercitii:

- Faceti un exemplu cu niste POCO-uri
- Instantiati niste colectii generice si umpleti-le cu cu instante de clasa POCO
- **Jucati-va cat mai mult cu metodele de LINQ**
- Folositi LINQ pentru a transpune colectia intr-un tip anonim
- Adaugati unei colectii existente cel putin un extension method



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