

## C# Advanced Training - Live Online Training

### Objectives

You know extended language constructs and methods in C#.

### Participants

Software developers, software architects

### Requirements

Solid knowledge of the C# basics as covered in our training "C# Programming with .NET"

### Live-Online-Training

\* Price per attendee, in Euro plus VAT

Training code: LE-C#-FOR

### Face-To-Face - English

#### Duration

3 days

### Live Online - German

Date	Duration
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23.10. – 25.10.2023	3 days
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### Face-To-Face - German

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## C# Advanced Training - Live Online Training

### Content

#### C# Version Overview

#### Useful Language Features in C#

- Partial classes
- Partial methods
- Automatic properties and their functions
- Automatic type inference
- Anonymous types
- Simplified object initialization
- Optional and named parameters- dos and don'ts
- Dynamic data type
- Memory layout adjustment for structures (e.g. for unions in C#)
- Exercise: Practical use of language extensions

**Extension Methods**

- Programming, use, limitations
- Exercise: Creating extension methods

**Generic Classes (Generics) in C#**

- Using generic classes
- Creating a generic class
- Using constraints for type parameters
- Generic methods
- Nullable types
- Exercise: Implementing a generic class

**Extended Delegate Methods**

- Anonymous methods
- Lambda expressions
- Using Lambda expressions as callback
- Asynchronous call of delegates
- Exercise: Working with callbacks

**Creating Own Collection Classes**

- Overview of collection interfaces
- Using and programming enumerators
- 'yield' operator
- Exercise: Implementing the enumerator interface

**Language Integrated Query (LINQ)**

- Formulating LINQ queries
- LINQ operations
- Exceptions and LINQ
- LINQ to objects
- LINQ to SQL
- LINQ to XML
- Parallel LINQ (PLINQ)
- Exercise: Using LINQ for data selection

**Asynchronous Programming with async and await**

- Definition of 'async' and 'await'
- How can an asynchronous method return values?
- Creating own asynchronous tasks
- How to make an own class 'awaitable'
- Examples

**Reflection**

- Collecting information about types
- Method execution
- Reading and setting property and field values
- Querying attributes
- Loading assemblies at runtime
- Exercise: Unknown type reflection

**Data Serialization**

- XML serialization
- Contract serialization

**Regular Expressions**

- Overview
- Searching and replacing text

**Exercises in the C# Advanced Training**

- Practical use of language extensions
- Creating extension methods
- Implementing a generic class
- Using anonymous methods and Lambda expressions
- Implementing the enumerator interface
- Using LINQ for data selection

- Unknown type reflection
- The practical exercises are carried out after working through the related topics

**MicroConsult PLUS**

- We will provide you with a download link for your exercises and the solutions from this workshop.