



7. Microsoft Training

7.1 C#

Prerequisites:

1. C/C++

Duration: 60 Lectures

Course Content:

1. Introduction

- 1.1. .NET Executables and the CLR
- 1.2. A .NET Test bed for C# Programming
- 1.3. Using Visual Studio

2. First C# Programs

- 2.1. Hello, World
- 2.2. Namespaces
- 2.3. Variables and Expressions
- 2.4. Using C# as a Calculator
- 2.5. Input/output in C#
- 2.6. .NET Framework Class Library

3. Data Types in C#

- 3.1. Data Types
- 3.2. Integer Types
- 3.3. Floating Point Types
- 3.4. Decimal Type
- 3.5. Characters and Strings
- 3.6. Boolean Type
- 3.7. Conversions



3.8. Nullable Types

4. Operators and Expressions

- 4.1. Operator Cardinality
- 4.2. Arithmetic Operators
- 4.3. Relational Operators
- 4.4. Logical Operators
- 4.5. Bitwise Operators
- 4.6. Assignment Operators
- 4.7. Expressions
- 4.8. Checked and Unchecked

5. Control Structures

- 5.1. If Tests
- 5.2. Loops
- 5.3. Arrays
- 5.4. Foreach
- 5.5. More about Control Flow
- 5.6. Switch

6. Object-Oriented Programming

- 6.1. Objects
- 6.2. Classes
- 6.3. Inheritance
- 6.4. Polymorphism
- 6.5. Object-Oriented Languages
- 6.6. Components

7. Classes

- 7.1. Classes as Structured Data
- 7.2. Methods
- 7.3. Constructors and Initialization
- 7.4. Static Fields and Methods



7.5. Constant and Read only

8. More about Types

8.1. Overview of Types in C#

8.2. Value Types

8.3. Boxing and Unboxing

8.4. Reference Types

9. Methods, Properties and Operators

9.1. Methods

9.2. Parameter Passing

9.3. Method Overloading

9.4. Variable-Length Parameter Lists

9.5. Properties

9.6. Operator Overloading

10. Characters and Strings

10.1. Characters

10.2. Strings

10.3. String Input

10.4. String Methods

10.5. String Builder Class

10.6. Programming with Strings

11. Arrays and Indexers

11.1. Arrays

11.2. System.Array

11.3. Random Number Generation

11.4. Jagged Arrays

11.5. Rectangular Arrays



11.6. Arrays as Collections

11.7. Indexers

12. Inheritance

12.1. Single Inheritance

12.2. Access Control

12.3. Method Hiding

12.4. Initialization

13. Virtual Methods and Polymorphism

13.1. Virtual Methods and Dynamic Binding

13.2. Method Overriding

13.3. Fragile Base Class Problem

13.4. Polymorphism

13.5. Abstract Classes

13.6. Sealed Classes

13.7. Heterogeneous Collections

14. Formatting and Conversion

14.1. ToString

14.2. Format Strings

14.3. String Formatting Methods

14.4. Type Conversions

15. Exceptions

15.1. Exception Fundamentals

15.2. Structured Exception Handling

15.3. User-Defined Exception Classes

15.4. Inner Exceptions

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16. Interfaces

- 16.1. Interface Fundamentals
- 16.2. Programming with Interfaces
- 16.3. Using Interfaces at Runtime
- 16.4. Resolving Ambiguities

17. .NET Interfaces and Collections

- 17.1. Collections
- 17.2. IEnumerable and IEnumerator
- 17.3. Copy Semantics and ICloneable
- 17.4. Comparing Objects
- 17.5. Generic Types
- 17.6. Type-Safe Collections

18. Delegates and Events

- 18.1. Delegates
- 18.2. Anonymous Methods
- 18.3. Events

19. Introduction to Windows Forms

- 19.1. Creating Windows Applications Using Visual Studio
- 19.2. Partial Classes
- 19.3. Buttons, Labels and Textboxes
- 19.4. Handling Events
- 19.5. List box Controls

20. Additional C# Features

- 20.1. Auto-Implemented Properties
- 20.2. Implicitly Typed Variables
- 20.3. Object Initializers
- 20.4. Collection Initializers
- 20.5. Anonymous Types



20.6. Partial Methods

20.7. Extension Methods

20.8. Lambda Expressions

20.9. Language-Integrated Query (LINQ)



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