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## Introduction to C# and .NET

(3 days)

### Course overview

If you are getting started with programming and you're aiming to use C# and .NET, then this is the course for you. The course explains essential programming concepts and object-oriented techniques, and explores fundamental C# syntax in this context.

After attending this course, you will be ready to start writing simple C# and .NET applications. You will also be well prepared for the C# 7 Development course, which dives deeper into C# syntax and .NET APIs.

### What you'll learn

- Fundamental programming concepts
- Essential C# syntax
- Object oriented concepts
- How to implement OO in C#
- High-level introduction to the .NET Framework

### Prerequisites

- The course does not assume prior programming experience

### Course details

- **Programming Fundamentals:** Types of programming languages; Structuring programs; Some simple code examples
- **Getting Started with C# and .NET:** Overview of C#; Overview of .NET; Compiling C# code at the command line; Using Visual Studio to create and build a simple console application
- **Core C# Syntax:** Basic syntax rules; Getting started with C# variables; Going further with C# variables; Getting started with C# operators
- **Flow of Control Concepts:** What is flow control; Making decisions; Making loops; Putting it all together to create algorithms
- **Flow of Control in C#:** Writing if and if-else statements; Writing switch statements; Writing for and for-each loops
- **Writing and Calling Methods:** What are methods; Defining and calling methods; Parameters and return values
- **Introduction to Object Oriented Concepts:** What is OO; Abstraction via classes; Encapsulation; Inheritance; OO design
- **Classes and Objects in C#:** Defining a simple class; Namespaces; Fields, constructors, methods, and properties; Creating new objects; Static members; A quick overview of some useful classes in .NET

- [Arrays and Collections](#): Creating a simple array; Overview of generics; Creating simple collections and dictionaries; Overview of collection operations
- [Inheritance](#): What is inheritance; Defining subclasses and superclasses in C#; Polymorphism
- [Additional Techniques](#): Overview of delegates and lambdas; Exceptions; Interfaces
- [High-Level Tour of the .NET Framework](#): Creating a GUI application; Creating a web application; Creating a REST web service; Database access