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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. The course also gives an introduction to some of the common APIs in .NET 6.

What you'll learn

- Fundamental programming concepts
- Essential C# syntax
- Object oriented concepts
- How to implement OO in C#

Prerequisites

- The course does not assume prior programming experience

Course details

- **Programming Fundamentals:** Types of programming languages; Structuring programs; Some simple code examples
- **Introduction to .NET:** Overview of .NET; Creating a .NET app at the command line; Creating a .NET app by using Visual Studio; Understanding top-level statements
- **C# Core Language Features:** 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 loops
- **Writing and Calling Functions:** What are functions; Defining and calling functions; 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
- **Inheritance:** What is inheritance; Defining subclasses and superclasses in C#; Polymorphism
- **Interfaces:** What are interfaces; Defining interfaces; Implementing interfaces