

Object-Oriented Programming in C#

Description

This thorough and comprehensive C# course is a practical introduction to programming in C#, utilizing the services provided by .NET. This course emphasizes the C# language. Important newer features such as dynamic data type, named and optional arguments, the use of variance in generic interfaces, asynchronous programming keywords, and tuples are covered in a final lesson. A supplement covers the fundamentals of Language Integrated Query (LINQ).

This course is intended to be fully accessible to programmers who do not already have a strong background in object-oriented programming in C-like languages, such as C++ or Java. It is ideal, for example, for procedural programmers who desire to learn C#.

An important thrust of the course is to teach C# programming from an object-oriented perspective. It is often difficult for programmers trained originally in a procedural language to start “thinking in objects.” This course introduces object-oriented concepts early, and C# is developed in a way that leverages its object orientation. A case study is used to illustrate creating a complete system using C# and .NET. Besides supporting traditional object-oriented features, such as classes, inheritance, and polymorphism, C# introduces several additional features, such as properties, indexers, delegates, events, and interfaces that make C# a compelling language for developing object-oriented and component-based systems. This course provides thorough coverage of all these features.

C# as a language is elegant and powerful. But to utilize its capabilities fully, you need to have a good understanding of how it works with the .NET Framework. The course explores several important interactions between C# and the .NET Framework, and it includes an introduction to major classes for collections, delegates, and events. It includes a succinct introduction to creating GUI programs using Windows Forms. The course concludes with a lesson covering the newer features in the language through C# 7.0.

Delegates will learn how to

- Acquire a working knowledge of C# programming.
 - implement programs using C# and classes from the .NET Framework.
 - implement simple GUI programs using Windows Forms.
 - Gain a working knowledge of dynamic data type, named and optional arguments, and other new features in C# 4.0.
 - do asynchronous programming using new keywords in C# 5.0.
 - Become aware of new features in C# 6.0 and C# 7.0.
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Outline

NET: What You Need To Know

First C# Programs

Data Types in C#

Operators and Expressions

Control Structures

Object-Oriented Programming

Classes

More about Types

Methods, Properties and Operators

Characters and Strings

Arrays and Indexers

Inheritance

Virtual Methods and Polymorphism

Formatting and Conversion

Exceptions

Interfaces

.NET Interfaces and Collections

Delegates and Events

Introduction to Windows Forms

Newer Features in C#

Prerequisites

Knowledge of C#