KOENIG SOLUTIONS · COURSE OUTLINE

C# Essentials (Microsoft, .NET 6)

Learn C# language essentials, object-oriented programming, delegates, events and Windows Forms basics on .NET 6.

3 Days	7	63
DURATION	MODULES	TOPICS

COURSE OVERVIEW

Microsoft .NET is an advance in programming technology that greatly simplifies application development, both for traditional, proprietary applications and for the emerging paradigm of Web-based services. .NET 6 is a unified platform, for browser, cloud, desktop, IoT, and mobile apps. It is based on .NET Core, the package-based implementation that is cross-platform, running on Mac and Linux besides Windows. It completes the unification of the .NET platform begun with .NET 5. This three-day course is designed for the experienced programmer to help you quickly come up to speed on the C# language. It is current to Visual Studio 2022, .NET 6 and C# 10. Important newer features such as dynamic data types, named and optional arguments, tuples, asynchronous programming keywords, nullable reference types, record types and top-level statements are covered. This course concisely covers the essentials of programming using Microsoft's C# programming language. It starts with an overview of .NET architecture and the basics of running C# programs in a .NET environment. The next two chapters cover C# language essentials and object-oriented programming in C#. The next chapter discusses how C# relates to .NET. The following chapter covers delegates and events. The course includes a succinct introduction to creating GUI programs using Windows Forms. The course concludes with a chapter covering the newer features in C#. Appendices provide a tutorial on Visual Studio 2022, an overview of LINQ, and coverage of unsafe code and pointers in C#. The course is practical, with many example programs and a progressively developed case study. The goal is to quickly bring you up to speed in writing C# programs. The student will receive a comprehensive set of materials, including course notes and all the programming examples.

WHO THIS COURSE IS FOR

- **C# Developers**
- **Software Developers**
- **.NET Developers**
- **Application Programmers**

LEARNING OBJECTIVES

- Acquire a working knowledge of C# programming
- Learn about important interactions between C# and .NET
- Learn how to implement simple GUI programs using Windows Forms
- Gain a working knowledge of important newer features in C#

COURSE SYLLABUS

7 Modules, 63 Topics

01

Introduction to .NET

TOPICS

What is .NET? · .NET Framework, .NET Core and .NET 6 · Application Models · Managed Code · Visual Studio 2022 · Console Programs and New Console Template · GUI Programs

02

C# Overview for the Sophisticated Programmer

TOPICS

- First C# Console Application
- Namespaces
- Data Types
- Conversions
- Control Structures
- Subroutines and Functions
- Parameter Passing
- Strings
- Arrays
- Implicitly Typed Variables
- Console I/O
- Formatting
- Exception Handling

03

Object-Oriented Programming in C#

TOPICS

- Classes
- Access Control
- Methods and Properties
- Asymmetric Accessor Accessibility
- Static Data and Methods
- Constant and Readonly Fields
- Auto-Implemented Properties
- Inheritance
- Overriding Methods
- Abstract Classes
- Sealed Classes
- Access Control and Assemblies

04

C# and .NET

TOPICS

- Components
- Interfaces
- System.Object
- .NET and COM
- Collections
- IEnumerable and IEnumerator
- Copy Semantics in C#
- Generic Types
- Type-Safe Collections
- Object Initializers
- Collection Initializers
- Anonymous Types
- Attributes

05

Delegates and Events

TOPICS

Delegates · Anonymous Methods · Lambda Expressions · Random Number Generation · Events

06

Introduction to Windows Forms

TOPICS

- Creating Windows Applications Using Visual Studio 2022
- Partial Classes
- Buttons, Labels and Textboxes
- Handling Events
- Listbox Controls

07

Newer Features in C#

TOPICS

Dynamic Data Type · Named and Optional Arguments · Variance in Generic Interfaces · Asynchronous Programming Keywords · New Features in C# 6 and C# 7 · Nullable Reference Types · Record Types · Top-level Statements

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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