REAL WORLD
TECHNOLOGY TRAINING & SOLUTIONS
"Training You Can Really Use"

20483: Programming in C#

Duration: 5 Days
Method: Instructor-Led Training (ILT) | Live Online Training

Course Description

This course teaches participants the programming skills that are required for developers to create Windows applications using the Visual C#® language. During the course, participants review the basics of Visual C# program structure, language syntax, and implementation details. Then, they consolidate their knowledge throughout the class as they build an application that incorporates several features of the .NET Framework 4.7.

Target Audience

This course is intended for:

- Experienced Developers with at least one month of experience programming in an object-oriented environment.
  NOTE: *This course is not designed for students who are new to programming.*

Prerequisites

To attend this course, candidates must have:

- Programming experience in C, C++, JavaScript, Objective-C, Microsoft® Visual Basic®, or Java.
- Understanding of the concepts of object-oriented programming.
- Some experience using C# to complete basic programming tasks.
- Hands-on experience using C# that demonstrates their understanding of how to:
  - Name, declare, initialize and assign values to variables within an application.
  - Use: arithmetic operators to perform arithmetic calculations involving one or more variables; relational operators to test the relationship between two variables or expressions; logical operators to combine expressions that contain relational operators.
  - Create the code syntax for simple programming statements using C# language keywords and recognize syntax errors using the Visual Studio® IDE.
  - Create a simple branching structure using an IF statement.
  - Create a simple looping structure using a For statement to iterate through a data array.
  - Use the Visual Studio IDE to locate simple logic errors.

Prerequisites *Continued*

- Hands-on experience using C# that demonstrates their understanding of how to:
    - Design and build a simple user interface using standard controls from the Visual Studio toolbox.
    - Create a function that accepts arguments (parameters and returns a value of a specified type).
    - Connect to a SQL Server® database and the basics of how to retrieve and store data.
    - Sort data in a loop.
    - Recognize the classes and methods used in a program.

Course Objectives

Upon successful completion of this course, attendees will be able to:

- Describe the core syntax and features of Visual C#.
- Create methods, handle exceptions, and describe the monitoring requirements of large-scale applications.
- Implement the basic structure and essential elements of a typical desktop application.
- Create classes, define and implement interfaces, and create and use generic collections.
- Use inheritance to create a class hierarchy and to extend a .NET Framework class.
- Read and write data by using file input/output and streams, and serialize and deserialize data in different formats.
- Create and use an entity data model for accessing a database and use LINQ to query data.
- Access and query remote data by using the types in the System.Net namespace and WCF Data Services.
- Build a graphical user interface by using XAML.
- Improve the throughput and response time of applications by using tasks and asynchronous operations.
- Integrate unmanaged libraries and dynamic components into a Visual C# application.
- Examine the metadata of types by using reflection, create and use custom attributes, generate code at runtime, and manage assembly versions.
- Encrypt and decrypt data by using symmetric and asymmetric encryption.

Course Topics

Module 1: Review of Visual C# Syntax

- Overview of Writing Application by Using Visual C#
- Data Types, Operators, and Expressions
- Visual C# Programming Language Constructs

Course Topics *Continued*

Module 2: Creating Methods, Handling Exceptions, and Monitoring Applications

- Creating and Invoking Methods
- Creating Overloaded Methods and Using Optional and Output Parameters
- Handling Exceptions
- Monitoring Applications

Module 3: Basic types and constructs of Visual C#

- Implementing Structs and Enums
- Organizing Data into Collections
- Handling Events

Module 4: Creating Classes and Implementing Type-Safe Collections

- Creating Classes
- Defining and Implementing Interfaces
- Implementing Type-Safe Collections

Module 5: Creating a Class Hierarchy by Using Inheritance

- Creating Class Hierarchies
- Extending .NET Framework Classes

Module 6: Reading and Writing Local Data

- Reading and Writing Files
- Serializing and Deserializing Data
- Performing I/O by Using Streams

Module 7: Accessing a Database

- Creating and Using Entity Data Models
- Querying Data by Using LINQ

Module 8: Accessing Remote Data

- Accessing Data Across the Web
- Accessing Data by Using OData Connected Services

Module 9: Designing the User Interface for a Graphical Application

- Using XAML to Design a User Interface
- Binding Controls to Data

Module 10: Improving Application Performance and Responsiveness

- Implementing Multitasking
- Performing Operations Asynchronously
- Synchronizing Concurrent Access to Data

Module 11: Integrating with Unmanaged Code

- Creating and Using Dynamic Objects
- Managing the Lifetime of Objects and Controlling Unmanaged Resources

Module 12: Creating Reusable Types and Assemblies

- Examining Object Metadata
- Creating and Using Custom Attributes
- Generating Managed Code
- Versioning, Signing, and Deploying Assemblies

Module 13: Encrypting and Decrypting Data

- Implementing Symmetric Encryption
- Implementing Asymmetric Encryption

LABS INCLUDED