

Mastering COM Development Using Microsoft Visual C++

MOC1012

5 Days

Introduction

This CD-based course will teach developers who use the Microsoft® Visual C++® development system how to create component object model (COM) objects using Visual C++ and the Active Template Library (ATL)

Microsoft Certified Professional Exams

- None

Prerequisites

- Describe and use the following C++ fundamentals:
 - Constructors and destructors
 - Virtual functions
 - Conversion functions
 - Function overloading
 - Operator overloading
 - Accessors
 - Single and multiple inheritance
 - Templates
- Use the Microsoft Windows® operating system and the Visual Studio™ development system

Objectives

- ✓ Use COM to address component-based software development issues.
- ✓ Build clients of COM objects.
- ✓ Build COM object servers.
- ✓ Create ActiveX™ controls.
- ✓ Use Visual C++ extensions to create clients of COM objects.
- ✓ Build COM objects that reuse existing COM objects.
- ✓ Add events to COM objects and clients.
- ✓ Create COM objects with dual interfaces.

Outline

Module 1: Introduction to COM

Issues surrounding software development that the Component Object Model attempts to address

Module 2: Creating a Client of a COM Object

Creating a COM object client using C++

Module 3: Creating a COM Object

Fundamentals of COM

Creating a simple COM object

Module 4: Implementing Multiple Interfaces

Techniques to implement COM objects with multiple interfaces

Module 5: Introduction to the Active Template Library

Structure, primary features, and basic use of the Active Template Library in creating COM components

Using the Visual C++ extensions to create a client of a COM object

Module 6: Automation

Creating COM components that support automation

Using IDispatch to implement automation

Dispinterfaces

Early and late binding

Interface Definition Language (IDL) basics

Module 7: Dual Interfaces

Improving efficiency of automation interfaces by turning them into dual interfaces

Module 8: Adding Events

Using ATL classes to add events to a COM object and to an MFC client of the COM object

Module 9: Creating an ActiveX Control

Creating an ActiveX control using ATL

Basic parts of ATL used to make an ActiveX control work, such as the message map and the OnPaint method

Different property types, such as ambient properties and stock properties

Creating a property page

Module 10: Object Reuse in COM

Reusing objects in COM through containment and aggregation

Differences between inheritance and aggregation

Differences between implementation inheritance and interface inheritance

Reuse through COM containment

Reuse through COM aggregation

Creating an aggregated object using ATL

Module 11: Custom Interfaces

Creating and marshaling custom interfaces

Creating a proxy/stub dynamic-link library (DLL) to marshal a custom interface

How the standard marshaling architecture works in COM

Module 12: Threading Modules

COM threading models

How mixed threading models with in-process and out-of-process clients and servers can cause marshaling issues

Module 13: Collections

Creating and using enumerator components to create an object model

Creating an object model consisting of both public and private objects via COM services or some internal creation method