

MOC 6461A VB: Visual Studio 2008: Windows Communication Foundation

- **Course Number:** 6461A
- **Course Length:** 3 Days

Certification Exam

This course will help you prepare for the following Microsoft exam:

Exam 70-503

TS: Microsoft .NET Framework 3.5 – Windows Communication Foundation Application Development

Course Overview

This course provides students with the knowledge and skills to build and configure a Windows Communication Foundation (WCF) solution.

Prerequisites

Before attending this course, students should have intermediate experience of developing applications by using previous versions of Microsoft Visual Studio development system at level 200.

Audience

This course is intended for application developers who know how to build and consume Web services in Microsoft .NET Framework 2.0 and how to use the common features of the base class library. The application developers do not have to understand concepts such as advanced WS-*, Web Services Enhancements (WSE), service life cycle management, and diagnostics.

Course Outline

Course Introduction

Course Introduction

3m

Module 01 - Getting Started with Windows Communication Foundation

1hr 38m

Getting Started with Windows Communication Foundation

Lesson: Designing an Application to be Part of a Service Oriented Architecture (SOA)

Benefits of Service Oriented Architecture

Designing an SOA Application

Services, Components, and Objects

WCF and SOA

WCF in an SOA Context

Lesson: Overview of WCF Architecture

Service-Oriented Development with WCF

Sending a WCF Message

The ABC of Endpoints

Structure of a Service

A Unified Programming Model

Communicating With Non-WCF Services

Lesson: Using a Language-Level Interface As a Service Contract

Example of a Simple Contract

The ServiceContract Attribute

The OperationContract Attribute

Data and Messages

Contracts, Metadata, and Artifacts

Lesson: Implementing a Simple WCF Service in Visual Studio 2008

Defining the Service Contract and Service Class

Hosting the Service

Configuring the Service

Demo - Creating a Simple Bank Service

Lesson: Consuming a Simple WCF Service in Visual Studio 2008

Importing the Metadata

Calling the Service by Using the Proxy

Demo - Calling a Simple Bank Service

Module 01 - Review

Module 02 - Configuring and Hosting WCF Services

1hr 41m

Configuring and Hosting WCF Services

Lesson: Programmatically Configuring a Managed Application to Host a WCF Service

Hosting WCF Service in a Self-Hosted Managed Application

Separation of Concerns in a WCF Service

An Example Contract

An Example Service Implementation

An Example Self-Hosted WCF Service

Life Cycle of a Self-Hosted WCF Service

Demo - Creating and Configuring a Self-Hosted WCF Service

Lesson: Programmatically Configuring a Managed Application to Call a WCF Service

Prerequisites for Calling a WCF Service from a Client

Obtaining Service Information

Using WCF Service Proxies

Demo - Creating and Configuring a Client for a WCF Service

Lesson: Defining Client and Service Settings By Using File-Based Configuration

File-Based Configuration

Identifying WCF Entries in Configuration Files

Demo - File-Based Configuration

Lesson: Selecting a Hosting Option for a WCF Service

Hosting a WCF Service

Service Hosting Options

Implementing a Self-Hosted Service

Hosting in a Windows Service

Implementing an IIS-Hosted Service

Implementing a WAS-Hosted Service

Configuring WAS

Demo - Implementing a WCF Service in Different Hosts

Lesson: Deploying a WCF Service

Preparing Services for Deployment

Deploying IIS-Hosted Services

Deploying WAS-Hosted Services

Deploying Self-Hosted Services

Demo - Deploying a Service to a Remote Host

Module 02 – Review

Module 03 - Endpoints and Behaviors

1hr 18m

Endpoints and Behaviors

Lesson: Exposing WCF Services over Different Endpoints

Relating Services to Endpoints

Bindings and Channels

HTTP-Based Bindings

Connection-Oriented Bindings

Queue-Based Bindings

Changing an Endpoint to Use a Different Binding

Using Both Bindings

Exposing Multiple Contracts

Configuring Bindings

Lesson: Adding Behaviors to Services and Endpoints

WCF Behaviors

Service Behaviors

Operation Behaviors

Endpoint Behaviors

Lesson: Interoperating with Non-WCF Web Services

Overview of WCF Web Service Interoperability

Interoperability with Older Web Services

Demo - Consuming an ASP.NET Web Service

Web Service Standards Supported by WCF

Example: Security Interoperability

Creating a Custom Binding

Module 03 - Review

Module 04 - Debugging and Diagnostics

53m

Debugging and Diagnostics

Lesson: Logging Messages

Tracking What Is Happening in a WCF Application

Message Logging in WCF

Adding a Trace Listener to Log Messages

Controlling Message Logging

Including Security Information in Message Logs

Filtering Which Messages to Log

Viewing Messages

Lesson: Activity Tracing

Enabling Activity Tracing

Custom Activity Tracing

End-to-End Service Tracing

Demo - Working with Activity Trace Information

Module 04 - Review

Module 05 - Designing and Defining Contracts

1hr 44m

Designing and Defining Contracts

Lesson: Designing a Coherent and Cohesive WCF Service Interface

Designing by Contract

Contracts and Messages

Contracts and Message Contents

Contracts and Message Handling

Contracts and Message Exchange Patterns

Contracts and Versioning

Lesson: Defining a Service Contract

Service Contracts

Service Names

Service Namespaces

Contract Implementation

Demo - Defining a Service Contract

Lesson: Defining Operations on a Service

Defining an Operation Contract

Operation Contracts and Names

Operation Overloading

One-Way Operations

Defining Duplex Contracts
Demo - One-Way Operations and Callbacks

Lesson: Defining a Data Contract

Data Contracts
Defining a Data Contract
Customizing a Data Contract
Versioning Data Contracts
Consuming Data Contracts
Demo - Defining a Data Contract
Module 05 - Review

Module 06 - Handling Errors

1hr 12m

Handling Errors

Lesson: Relating .NET Framework Exceptions to Service-Level Faults

Relating Exceptions to Services
Converting Exceptions to Faults
Structure of a SOAP Fault
Faults in Metadata

Lesson: Using Faults in a Service

Designing Service Error Handling
Deciding What Information to Include in Faults
Typed and Untyped Faults
Using a Typed Fault
Service Behavior and Exceptions
Applying Consistent Error Handling
Diagnosing Unexpected Exceptions
Demo - Handling and Generating Exceptions in a WCF Service

Lesson: Handling Faults and Exceptions on Clients

Handling Service Exceptions
Communication Exceptions
Handling Untyped Faults
Faults and Different Communication Patterns
Demo - Handling Service Exceptions in a Client
Module 06 Review

Module 07 - Improving WCF Service Quality

1hr 25m

Improving WCF Service Quality

Lesson: Managing WCF Service Instances

Instance Life Cycle Options
Creating a Service Instance Per-Call
Creating a Service Instance Per-Client

Creating a Single Service Instance

Requiring Session Capability

Demo - Instance Management

Lesson: Managing Concurrency Issues

Concurrency Issues

Concurrency in WCF Services

Single Threaded Mode

Reentrant Threaded Mode

Multiple Threaded Mode

Lesson: Improving WCF Service Quality

Improving Service Quality

Throttling Service Access

Throttling, Instance Management, and Threading

Improving Service Availability and Throughput

Impact of WCF Settings on Load-Balancing and Failover

Lesson: Improving Data Transfer Throughput

Improving Performance for Large Binary Data

Understanding MTOM Encoding

Enabling MTOM Encoding

Implementing Streaming

Stream Handling

Comparing Streaming and MTOM

Demo - Passing Large Binary Data in WCF

Module 07 Review

Module 08 - Implementing WCF Security

1hr 30m

Implementing WCF Security

Lesson: Overview of Security in WCF

Security Objectives in WCF

Authentication Mechanisms

Authorization Mechanisms

Claims-Based Security in WCF

Integrity and Confidentiality

Delivering Message-Level Integrity

Delivering Message-Level Confidentiality

Delivering Transport-Level Confidentiality

Applying Security in WCF

Federated Security

Lesson: Applying Overall Security Requirements to a Binding

Security Modes for Bindings

Applying Default Security Settings

Transport-Level Security Mode
Applying Security Mode Through Configuration
Message-Level Security Mode
Selecting Security Modes for Bindings
Requiring a Protection Level
Web Service Security
Protecting Connections to Older Web Services
Internet Security for Older Web Services
Lesson: Specifying Required Client and Service Credentials

Transport-Level Client Credential Types
Requiring Credentials
Supplying Credentials
Supplying Credentials Programmatically
Supplying Credentials By Using Behaviors
Windows CardSpace and WCF Credentials
Demo - Setting Security Modes and Credentials

Lesson: Working with Security Information

Accessing Security Information in a Service
Accessing Identity Information
Enforcing Authorization Requirements
Accessing Claims Programmatically
Impersonation
Demo - Accessing Security Information
Module 08 Review

Module 09 - Implementing Transactions

1hr

Implementing Transactions
Lesson: Overview of Transactions in a Service-Oriented Application
Transaction Properties
Coordinating Transactions
Transaction Context
Distributed Transactions
Coordinating Distributed Transactions
Web Services and Transactions
Lesson: Creating Transactional Service Operations
Selecting a Transaction-Aware Binding
Setting Transactional Requirements of an Operation
Defining Isolation and Timeout for an Operation
Controlling Transactions on Service Operations
Demo - Automatic Transaction Initiation
Lesson: Enabling the Flow of Transactions From Client to Service

Configuring a Client to Propagate Transactions
Starting a Transaction on the Client
Handling Client Transaction Exceptions
Transactional Behavior of Instances and Sessions
Demo - Transaction Flow From Client to Service
Module 09 Review
Course Closure

Total Duration: 12h 24m