

640- WestLake Capstone Series: Advanced .NET Programming

Reflection

- Understanding Reflection
- Using the Type Class
- Invoking Members and Instantiating Objects

Delegates

- What are Delegates?
- Defining, Instantiating, and Invoking Delegates
- Example: Using Delegates and Multicast Delegates

Events

- Understanding Events
- Common Existing Events
- Creating Event Handlers to Respond To Events
- Defining Your Own Events
- Example: Defining and Raising Events

Introduction to Multi-Threaded Programming in the .NET Framework

- What are Threads?
- The .NET Thread Class
- Controlling a Thread
- Storing Thread References and GetHashCode()
- The Form's Invoke Method
- Example: Looking At a Thread
- Timer Threads

Thread Synchronization

- The Challenge of Multi-Threaded Programming
- Thread Synchronization
- Method Synchronization
- Synchronizing Collection Objects
- Lock/SyncLock Keywords and the Monitor Class
- Synchronizing with the ReaderWriterLock
- Synchronization Using Events

Intermediate OO: Aggregation, Namespaces, and Advanced Scope

- What is Aggregation?
- Example: A Generator Modeled In Software
- Namespaces
- Advanced Access and Scope
- Example: Our Generator in an Assembly

Refresher: ADO.NET Introduction

- What is ADO.NET?
- An Overview of Relational Database Concepts
- What is an RDBMS?
- The ADO.NET Object Model
- Getting the Data Out
- The IDataReader Interface
- Introducing the Database Used for the Course
- Example: Selecting Records Using a DataReader

Refresher: ADO.NET DataSets and the Disconnected Model

- What is a DataSet?
- Accessing Data Through a DataSet's Tables and Rows
- Example: Selecting Records from a Database using a DataSet

ADO.NET Commands and Stored Procedures

- What is the Command class?
- Executing a Stored Procedure or Query
- Passing Input Parameters to a Stored Procedure or Query

ADO.NET Inserts, Updates, and Deletes

- Modifying Data

Introducing XML

- What is XML?
- XML Logical Structure
- XML Physical Structure
- XML Design Patterns
- Applications of XML (and related technologies)

Parsing XML in .NET with the Xml Namespace

- Overview of Classes for Parsing XML

- Parsing XML With XmlReader Classes
- Parsing XML With the XmlDocument Class

Advanced: Modifying and Saving XML Using the XmlDocument

- A Refresher on the XML DOM and the .NET XmlDocument
- Modifying an XmlDocument
- Example: Storing Window Positions in an XML Preferences File

Producing XML from Database Data via ADO.NET

- Example: Generate and View XML from a DataSet

Reading XML Data into a DataSet

- The ReadXml() Method

Importing XML into the Database

- XML -> DataSet -> Database

Introduction to Serialization in .NET

- What is Serialization?
- Different Serialization Techniques
- Automatic Serialization with the Formatter
- Controlling What Gets Serialized
- Handling Multiple Versions, Forward and Backward
- Manual Serialization with ISerializable

Serializing To XML

- What is XML Serialization?
- Advantages and Disadvantages to XML Serialization
- Serialization of Complex and Derived Types
- Shaping the XML
- Example: An Adult MovieViewer, with a Collection
- XML Schema Definition Tool (xsd.exe)

Introducing Components

- Why Are Components Useful?
- Using Assemblies to Package and Deploy Components

COM Interoperability With .NET

- Refresher on OLE Automation
- COM Interop
- Example: Automating Excel

Overview of the .NET Framework – A Refresher

- Introduction
- .NET Framework Base Class Library (BCL)
- Common Language Runtime (CLR)
- Common Type System
- Common Language Specification
- Namespaces
- Assemblies
- Application Domains

The .NET Distributed Architecture

- Introduction
- The Progression of Application Design
- Remote Processing
- The World Wide Web
- The .NET Solution
- Roles in Distributed .NET Development

Setting Up Course Exercise Solutions

- Create a Blank Solution

Messaging

- Messaging Architecture
- Messaging Network Setup
- Creating and Referencing Message Queues
- Sending Messages
- Receiving Messages
- Message Queue Security
- Sending and Receiving Complex Objects
- Example: Message Queue Inspector

Remoting

- Remoting Architecture
- Instantiating Using Activator Methods: GetObject() and CreateInstance()
- Communicating From the Remote Object Using Events
- Asynchronous Calls

Transactions

- What are Transactions?
- How does .NET provide support for transactions?
- Manual Transactions
- Automatic Transactions

Networking in .NET: WebClient, WebRequest, and WebResponse

- System.NET Namespace
- The WebClient Class
- HTTP Derivations of WebRequest and WebResponse
- TCP and Socket Classes

.NET Security

- Why do we need security?
- Code Access Security
- Cryptographic Security
- Web Service Security
- ASP.NET Web Forms User Authentication and Authorization

Deployment

- Overview of Deployment in .NET
- VS.NET Build Configurations
- Copying a Web Application
- Creating a Web Setup Project

Deployment Settings Using Conditional Compilation With Compile-Time Constants

- Compile-Time Compilation Constants
- Use Build Configurations In Your Projects
- Suggested Build Configuration Model
- Example: Using Build Configuration Settings to Show and Hide Controls

Refresher: Parsing XML in .NET with the Xml Namespace

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- Parsing XML With XmlReader Classes
- Parsing XML With the XmlDocument Class

Modifying and Saving XML Using the XmlDocument

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