Object-Oriented Programming in Visual Basic

Course Summary

Description

This course is a practical introduction to programming in Visual Basic and the use of services provided by .NET. It emphasizes the Visual Basic language and how to build Visual Basic applications from an object-oriented perspective. Knowledge of the earlier version of the language, Visual Basic 6, is not required. It is current to Visual Studio 2008 and .NET 3.5, which introduces important new features such as local type inference, extension methods, lambda expressions and Language-Integrated Query (LINQ). The new features are covered in a new chapter.

.NET is a revolutionary advance in programming technology that greatly simplifies application development. Microsoft's popular Visual Basic programming language has been upgraded to take advantage of the new .NET features. Visual Basic has become a fully object-oriented programming language with capabilities comparable to C++, Java, and Microsoft's new language C#.

One of the strengths of Visual Basic, and the reason it has enjoyed such widespread use, is the ease with which Windows application can be developed. Microsoft has revamped the way that Windows applications are built under .NET. Windows Forms, used by .NET languages, represents a class library that brings uniformity to the components of a Windows application. The course includes substantial coverage of using Windows Forms in Visual Basic, including creating database applications with ADO.NET.

Objectives

At the end of this course, students will be able to:

- Gain an understanding of the .NET architecture
- Gain a working knowledge of the Visual Basic programming language
- Learn how to build object-oriented applications using Visual Basic
- Learn how to implement Windows desktop applications using Windows Forms, including programs that interact with databases
- Gain a working knowledge of local type inference, object initializers, anonymous types, extension methods, lambda expression, LINQ, and other new features in Visual Basic 2008.

Topics

- .NET: What You Need To Know
- Fundamentals of Visual Basic Programming
- Control Structures
- Procedures
- Advanced Data Types
- Exception Handling
- Inheritance
- Interfaces and Collections
- Introduction to Windows Forms
- Windows Forms Controls
- User Interface Features
- Database Programming
- New Features in Visual Basic 2008

Prerequisites

Students should have some programming experience.

Duration

Five days

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Course Outline

I. .NET: What You Need To Know
- A. .NET Executables and the CLR
- B. A .NET Testbed for Visual Basic Programming
- C. Visual Studio 2008

II. Fundamentals of Visual Basic Programming
- A. Program Structure
- B. Namespaces
- C. Data Types
- D. Variables
- E. Conversions
- F. Operators and Expressions
- G. Console I/O

III. Control Structures
- A. If Statement
- B. Select Case Statement
- C. Do/Loop Statement
- D. For/Next Statement
- E. Exit and Continue

IV. Procedures
- A. Subroutines
- B. Functions
- C. Pass-by-value Versus Pass-by-reference
- D. Access modifiers
- E. Overloading
- F. Optional Parameters

V. Advanced Data Types
- A. Arrays
- B. Enumerations
- C. Structures

VI. Exception Handling
- A. Error Detection
- B. Exception Handling

VII. Object-Oriented Programming
- A. Object-Oriented Concepts
- B. Defining Classes
- C. Methods and Properties
- D. Shared Data and Methods
- E. Constructors

VIII. Inheritance
- A. Inheritance
- B. Controlling Base Class Construction
- C. Access Control
- D. Polymorphism
- E. Events
- F. Abstract and Not Inheritable Classes
- G. Type Conversion in Inheritance

IX. Interfaces and Collections
- A. Interface Fundamentals
- B. Programming with Interfaces
- C. Using Interfaces at Runtime
- D. Resolving Ambiguities
- E. Collections
- F. Generic Types
- G. Type-Safe Collections

X. Introduction to Windows Forms
- A. Creating Windows Applications Using Visual Studio 2008
- B. Partial Classes
- C. Handling Events
- D. Common Controls

XI. Windows Forms Controls
- A. Buttons, Labels and Textboxes
- B. Radio Buttons and Group Boxes
- C. Check Boxes
- D. List Boxes and Combo Boxes
- E. Timer Control
- F. Flexible Event Handling

XII. User Interface Features
- A. Dialog Boxes
- B. Menus

XIII. Database Programming
- A. ADO.NET
- B. .NET Data Providers
- C. Using Data Readers
- D. Using Data Sets
- E. .NET 2.0 Data Binding

XIV. New Features in Visual Basic 2008
- A. Local Type Inference
- B. Object Initializers
- C. Array Initializers
- D. Anonymous Types
- E. Partial Methods
- F. Extension Methods
- G. Lambda Expressions
- H. Query Keywords

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