

Visual C# .NET 2003: Learning to Program

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Meet the expert: Jesse Liberty is the author of Programming C#, Programming ASP.NET, and a dozen other books on Web development and object-oriented programming. Jesse is a Distinguished Software Engineer and Architect for ATT, Ziff Davis, PBS, and Xerox. He has been a contributing author to C Report, MSDN, and other industry journals.

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Course description: This course begins with an overview of C# and the .NET platform. You will learn the fundamentals of the C# language, including how to set up the application development environment, and how to write your first simple C# applications. You will learn about variables and constants, expressions and statements, operators and namespaces, and how to create classes and instantiate objects. You will be introduced to database development with ADO.NET and building ASP.NET applications. You'll use streams to read and write data both to your local machine and across the network and the Internet. Finally, you'll explore interoperability with legacy COM objects such as ActiveX controls and COM components.

Course outline:

Overview of .NET

- Introduction
- The goals
- .NET Platform
- .NET Features
- .NET Resources
- .NET Processes
- Summary

Working Examples

- Introduction
- Getting Started
- Basic Windows App
- View Event Handler
- Language Fundamentals
- Classes, Objects, Types
- Methods
- Summary

Console Applications

- Introduction
- Comments
- Console Objects
- Namespaces
- Dot Operator
- App in Notepad
- Compile/Run
- Visual Studio App
- Build/Run
- Summary

Variables and Constants

- Introduction
- Declarations
- Replaceable Parameters

- Variable Assignment
- Constants
- Set Variables
- Variable Usage
- Set Enumeration
- Summary

Programming Elements

- Introduction
- Types
- Strings
- Identifiers
- Statement/Expression
- Whitespace
- Summary

Branching Basics

- Introduction
- Branch Types
- Unconditional
- Basic Branching
- Return Statements
- Local Variables
- Debug Branch
- Conditional/If
- Summary

Switch/Iteration Statements

- Introduction
- Switch Expressions
- String to Integer
- Switch Statements
- Iteration Types
- For Statements
- Iteration Statements

- While/Do While
- For Loop
- Summary

Operators

- Introduction
- Relational
- Mathematical
- Logical
- Short Circuit Eval
- Modulus Operator
- Prefix/Postfix
- Test Logicals
- Return True/False
- Short Circuit Test
- Summary

Classes/Objects

- Introduction
- Access Modifiers
- Class Methods
- This Keyword
- Default Constructors
- Class Variables
- Instantiate an Object
- Declare an Instance
- Add a Member Variable
- Overload a Constructor
- Pass in a Value
- Review and Run
- Summary

Invoking Static Methods

- Introduction
- Static Members

- Destroying Objects
- Dispose Method
- Summary

Member Variables

- Introduction
- Value/Reference Types
- Pass by Parameters
- Pass by References
- Pass by Values
- Return Multiple Values
- Out Keyword
- Define Properties
- Using Get and Set
- Set a Breakpoint
- Summary

Inheritance

- Introduction
- Derived Classes
- Polymorphism
- Override Methods
- Pass Enumerated Types
- Class Declarations
- Step-Through Example
- Summary

Boxing/Operator Overload

- Introduction
- Boxing
- Operator Overloading
- Type Conversion
- Creating Type Roman
- Computing the Value
- Convert Integer to Roman

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- Display Results
- Implicit Conversion
- Explicit Conversion
- Summary

Interfaces

- Introduction
- Implement Interface
- Additional Classes
- Build Interface App
- CreateInstance
- Create Second Interface
- Test Second Interface
- Interface Properties
- Interface Methods
- Test Extended Interface
- Interface as a Parameter
- Is Keyword
- Step Through Is Code
- As Keyword
- Summary

Arrays

- Introduction
- Foreach Loop
- Create Array
- Iterate For/Foreach
- Initialize Array Content
- Summary

Multi-Dimensional Arrays

- Introduction
- Rectangular Arrays
- Initialize Array
- Multi-Dimensional Issues
- Jagged Arrays
- Params Keyword
- Summary

Indexers

- Introduction
- Create Indexer
- Create/Fill Array
- Add Offset into Array
- String Indexer
- Summary

IEnumerable

- Introduction
- Implement IEnumerator
- IEnumerable Objects
- Step Through Enumerator
- Summary

IComparables

- Introduction
- IComparable Interface
- Utilizing IComparable
- Custom Comparison
- Custom IComparable
- Runtime/Sort Choice

- Creating Custom Compare
- Summary

Collection Classes

- Introduction
- Queues
- Using Queue Class
- Stacks
- Using Stack Class
- Stacks to Arrays
- Dictionary/Hashtable
- Using Hashtable
- Summary

Strings

- Introduction
- String Methods/Properties
- StringBuilder Class
- Regular Expressions
- String Manipulations
- Using Properties/Methods
- Splitting with Strings
- Splitting with Regex
- Summary

Exceptions

- Introduction
- Try/Catch/Finally
- Throw an Exception
- Using a Catch Block
- Special Exception Handler
- Finally Block
- Using HelpLink/StackTrace
- Summary

Nested Exceptions

- Introduction
- Using Custom Exceptions
- Looping Catch Blocks
- Creating a Nesting
- Step Through Nesting
- Summary

Delegates

- Introduction
- Delegating Methods
- Implementing Delegates
- Delegates as Parameters
- Invoking Delegate Methods
- Static Delegates
- Delegates as Properties
- Summary

Multicast Delegates

- Introduction
- Using Multicast
- Invoke Multiple Methods
- Summary

Events

- Introduction
- Sample Event Program
- Event Handling

- Event Notification
- Event Classes
- Debug Event Program
- Register Delegate to Event
- Add Method/Set Index
- EventArgs Instance
- Fire New Event
- Add Offset/Catch Event
- Summary

Windows Applications

- Introduction
- Basic Window Form
- Windows App by Hand
- Set Event Handler
- Save/Compile
- Use Visual Studio.NET
- Modify Application
- Summary

Windows Forms

- Introduction
- Check Box
- Radio Buttons
- Output Label
- Additional Controls
- View Code/Run
- Summary

XML Comments

- Introduction
- Using XML Comments
- XML Documentation
- XML as HTML Files
- Summary

Relational Databases

- Introduction
- Database Fundamentals
- Database Components
- Database Structure
- SQL Server Diagrams
- Query Analyzer
- Building Queries
- Refining Information
- Summary

ADO.NET Objects

- Introduction
- Object Model
- Data Objects
- Create ADO Applications
- SqlDataAdapter
- ListBox
- OleDbDataAdapter
- Summary

Data Relationships

- Introduction
- DataGrids in ADO
- SqlConnection Object

- SqlCommand Object
- DataAdapter
- Populate DataGrid
- Relating Data
- DataRelation Object
- Test/Debug ADO App
- Use Debug Tools
- Show Order Details
- Summary

Updates

- Introduction
- Populate ListBox
- Update Displayed Data
- Update Drop-Down Menu
- Update Database Data
- Update Multiple Tables
- Summary

Transactions

- Introduction
- Stored Procedures
- Use Stored Procedures
- Pass Parameters
- Transaction Support
- Connection Transaction
- Commit/Rollback
- Summary

Update Using DataAdapter

- Introduction
- DataSet Method
- Map Column Names
- Update with ADO.NET
- Update with DataAdapter
- Summary

Concurrency

- Introduction
- Sproc
- Params for Concurrency
- ADO.NET w/Concurrency
- CommandBuilder
- Summary

Web Forms

- Introduction
- ASP.NET Web App
- Add Label/Button
- Run Web App
- Controls
- ASP.NET Events
- DataGrid Controls
- Bind DataGrid
- Event Handling TableCells
- Create New Method
- Create DataRowView
- Extract DataItem
- Summary

Attributes

- Introduction

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- Attribute Targets
- Custom Attributes
- Create Custom Attributes
- Use Attributes
- Named Attributes
- ILDasm
- Summary
- Create .NET Project
- Register Control
- Add Control to Toolbox
- Summary

Reflections

- Introduction
- Array of Attributes
- Discovery
- Summary

Streaming Data

- Introduction
- Explore Directory
- Read/Write Streams
- Buffered Stream
- StreamReader/Writer
- Summary

Asynchronous I/O

- Introduction
- Callback Delegate
- Test Constructor
- Buffers/Token
- Buffering at Work
- HttpRequest
- Read Page from Web
- Web Streaming Objects
- Summary

Network I/O

- Introduction
- Network I/O
- Sockets/Ports
- Support Network I/O
- Server Side
- Client Side
- Server/Client Interaction
- Client Handler
- Asynch Read/Write
- Send Text String
- Asynch File Read
- Asynch File Streaming
- Summary

Serialization

- Introduction
- Binary Serialization
- Serialize to Disk
- Deserialize
- Nonserialized Option
- Summary

ActiveX

- Introduction
- Create ActiveX Control
- Create VB Project
- ActiveX Event Handler