

# Developing Applications Using Visual Basic 2008/2010: Vol 1

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**Meet the expert:** Ken Getz is a featured instructor for several of our Visual Studio courses. He is a Visual Basic and Visual C# expert and has been recognized multiple times as a Microsoft MVP. Ken is a seasoned instructor, successful consultant, and the author or co-author of several best-selling books. He is a frequent speaker at technical conferences like Tech-Ed, VSLive, and DevConnections and he has written for several of the industry's most-respected publications including Visual Studio Magazine, CoDe Magazine, and MSDN Magazine.

Robert Green is a Visual Studio expert and a featured instructor for several of our Visual Basic and Visual C# courses. He is currently a Technical Evangelist in the Developer Platform and Evangelism (DPE) group at Microsoft. He has also worked for Microsoft on the Developer Tools marketing team and as Community Lead on the Visual Basic team. Robert has several years of consulting experience focused on developer training and is a frequent speaker at technology conferences including TechEd, VSLive, VSConnections, and Advisor Live.

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**Course description:** Visual Studio 2008/2010 adds a large set of new functionality for the Visual Studio developer. From new language features, including LINQ (Language Integrated Query), to new client-side data support, Visual Studio 2008/2010 and the .NET Framework 3.5/4.0 make it easier than ever to create robust, enterprise-level applications. You will learn how to build solid applications using structured exception handling, how to use the Visual Studio debugging features, how to use MenuStrip and ToolStrip controls, and how to add unprecedented flexibility to your user interfaces using the container controls. As you continue through this course you will learn about important development topics that are not normally covered in a beginning Windows application programming course such as an introduction to .NET interoperability, using .NET Serialization, Windows Management Instrumentation (WMI), and drawing your own user interfaces using the System.Drawing namespace. You will dig deeper into the most complex of Visual Studio built-in controls, the DataGridView control, Windows Communication Foundation (WCF), using ClickOnce, Windows Workflow Foundation (WF), and many more topics that will extend your knowledge, your capabilities, and your value as a developer. This course now supports both Visual Basic 2008 and 2010.

## Course outline:

### Introduction to WinForms

- Introduction
- Demo: Create First Solution
- Work with Windows in VS
- Work with Form Properties
- Save Changes
- View Toolbox
- Add Controls to Form
- Investigate Snap Lines
- Adjust Ctl Size/Positions
- Control Tab Order
- Run the Project
- Peek behind the Scenes
- View the Designer Code
- Dispose()
- InitializeComponent()
- Summary

### WinForms Events

- Introduction
- Add Event Handling Code
- Add Menu to the Form

- Add ShortcutKeys
- Non-Graphical Components
- ToolTip Component
- Form Opacity
- Timer Component
- Summary

### Handle Events

- Introduction
- Overview: Handle Events
- Work with Events
- Demo: Events
- View Form Events
- Examine MouseClick()
- Work with Forms
- Forms as Dialog Boxes
- Retrieve Info
- React to Keystrokes
- Retrieve Return Value
- Starting the Application
- Demo: Dialog Form
- Demo: Start Up Form

- View Under Event Covers
- Delegates
- Click Event Declaration
- MouseClick Declaration
- Demo: Review Event Hookup
- Handle Multiple Controls
- Add/RemoveHandlers
- Handles vs AddHandler
- Demo: AddHandler
- Summary

### Exploring Events

- Introduction
- Overview: Form/Control Events
- Form Events
- Demo: Explore Form Events
- Keyboard Events
- KeyPress vs KeyDown/Up
- KeyPress
- KeyUp/KeyDown Events
- Demo: Keyboard Events
- Mouse Events

- MouseMove Event
- MouseUp/MouseDown Events
- Demo: Mouse Events
- Validate User Input
- Validating Event
- ErrorProvider Component
- Create a Cancel Button
- Demo: Validate Data
- Demo: Validating Event
- Demo: Cancel Button
- Summary

### Common Controls

- Introduction
- Label Control
- Demo: Label Control
- TextBox Control
- Demo: TextBox Control
- Button Control
- Demo: Button Control
- Summary

### More Common Controls

- Introduction

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- CheckBox Control
- RadioButton Control
- Demo: CheckBox/RadioButton
- ComboBox Control
- Demo: ComboBox Control
- ListBox Control
- Demo: ListBox Control
- CheckListBox Control
- Demo: CheckListBox Control
- Summary

## Even More Common Controls

- Introduction
- LinkLabel Control
- NumericUpDown Control
- LinkLabel/NumericUpDown
- PictureBox Control
- ProgressBar Control
- PictureBox/ProgressBar
- Summary

## Handling Exceptions

- Introduction
- Overview: Exception Handling
- Demo: No Exception Handling
- What User Sees
- Simple Try/Catch Block
- Unhandled Exceptions
- Exception Object
- Display Your Own Message
- Catching Specific Exceptions
- Multiple Exceptions
- Inheritance Hierarchy
- Demo: Multiple Exceptions
- Summary

## Raising Exceptions

- Introduction
- Throw Keyword
- Search for Handlers
- Exception Handling Options
- Throwing Exceptions
- Demo: Pass Error Information
- Run Code Unconditionally
- Finally and/or Catch
- Demo: Finally / Catch
- Demo: Use a Using Block
- Unhandled Exceptions
- Demo: Unhandled Exceptions
- Create an Exception
- Demo: Create Exception Class
- Summary

## Strings

- Introduction

- Overview: String Class
- Creating Strings
- Demo: Creating Strings
- String Properties
- Compare / CompareOrdinal
- Concat / Format
- IsNullOrEmpty
- Join / Split
- Instance String Methods
- Demo: String Methods
- Text w/StringBuilder
- StringBuilder Class
- Output Text w/Multiple Lines
- Investigate Stringbuilder Class
- Demo: StringBuilder Class
- Summary

## Dates and Times

- Introduction
- Work with Dates and Times
- DateTime Constructors
- Demo: Dates / Times
- Shared Static Members
- Simple Properties
- Conversion Methods
- Calculation Methods
- Shared Static Methods
- Use the DateTime Type
- Localized Date Information
- Demo: Format Dates/Times
- TimeSpan Type
- Create TimeSpan Values
- Demo: TimeSpan Type
- Measure Elapsed Time
- Summary

## Accessing Data

- Introduction
- Overview of ADO.NET
- ADO.NET Classes
- OleDb vs SqlConnection
- ADO.NET Architecture
- DataTable Object
- Demo: Create DataTable
- Connect to Data Source
- Demo: Create Conn. String
- View app.config
- Use Connection String
- Exception Handling
- Use Using Block

- Overview: Commands
- Command Object
- Work w/Data Readers
- Close the Connection
- Work w/SQLDataReader
- Summary

## Working with Data

- Introduction
- Overview: Work w/Data
- Use a Data Adapter
- Get Data into a DataSet
- DataSet Object
- Fill a DataSet
- Demo: OleDb DataSet
- Tables, Rows and Columns
- Use DataRows
- Data Columns and Schema
- Demo: SQL DataTable
- Choose ADO.NET Provider
- SQL .NET Data Provider
- OLE DB .NET Data Provider
- ODBC Data Provider
- Multiple Providers
- Demo: Multiple Providers
- Summary

## LINQ

- Introduction
- Working with Data
- LINQ and VB/C#
- LINQ and Language Features
- LINQ Usages
- LINQ Overview
- LINQ Syntax
- Demo: Query Expressions
- Intellisense with LINQ
- Extension Methods
- Demo: Custom Extension
- More Complex Objects
- Object Initializers
- Demo: Object Initializers
- Query Extension Methods
- Lambda Expressions
- Demo: Lambda Expressions
- Anonymous Types
- Demo: Anonymous Types
- Interesting Examples
- Demo: List Processes
- LINQ and Delayed Execution

- Summary

## LINQ to SQL

- Introduction
- Overview: LINQ to SQL
- Create Data Model
- Demo: Add LINQ to SQL Class
- Demo: View Data Model
- Demo: Query SQL Database
- Demo: Call Stored Proc
- Anonymous Types w/SQL
- Demo: Anonymous Types
- Modify SQL Data
- Demo: Modify SQL Data
- Summary

## LINQ to DataSets / XML

- Introduction
- Overview: LINQ to DataSets
- LINQ to Typed DataSets
- Demo: Typed DataSets
- LINQ to Untyped DataSets
- Demo: Untyped DataSets
- LINQ tor XML
- Demo: LINQ to XML
- Transform XML
- Demo: Transform XML
- For More Information
- Summary

## Data Binding

- Introduction
- Create a Data Source
- Configuration Wizard
- Data Sources Window
- Create Data Bound Form
- Demo: Data Bound Form
- Test Data Bound Form
- Data Binding Controls
- DataSet
- TableAdapter
- TableAdapterManager
- BindingSource Component
- BindingNavigator Control
- Demo: View DataSet
- Demo: TableAdapter
- Demo: BindingSource
- Demo: BindingNavigator
- Summary

## Relationships / Lookup Tables

- Introduction
- Data from Related Tables
- Demo: One to Many Relations

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- Enforce Ref. Integrity
- Demo: Enforce Ref. Integrity
- Display from Lookup Tables
- Demo: Lookup Tables
- Add Search to a Form
- TableAdapter Queries
- Demo: Add Search to a Form
- TA Query Config Wiz
- Search Criteria Builder
- Filter by Values
- Demo: Filter by Values
- Summary

## Data Validation

- Introduction
- Data Validation
- User Made Changes
- Validate at Form Level
- Validate Entered Data
- Demo: Validate Data
- Validate at Data Level
- Demo: Data Level Validation
- View DataSet Code
- ColumnChanging() Event
- ProductsRowChanging() Event
- TableNewRow() Event
- DataHasErrors() Procedure
- Work with Local Data
- Summary

## Binding Navigator/Source

- Introduction
- BindingNavigator Control
- BindNav ToolStripItems
- Built-In/Custom Functionality
- Add a BindingNavigator
- Demo: BindingNavigator
- BindingSource Component
- Data Navigation
- Data Manipulation
- Sorting / Filtering
- Work w/Underlying Data
- Demo: BindingSource
- Demo: Sort/Filter
- Demo: Copying Data
- Summary

## DataGridView

- Introduction
- DataGridView Control
- Customize Displayed Data
- Demo: Build a DataGridView

- Format Cells at Runtime
- Demo: Format at Runtime
- Display Calculated Values
- Demo: Calculated Values
- Demo: Add Columns
- Display Images
- Demo: Display Images
- Add Controls to DataGridView
- Demo: Adding Controls
- Summary

## Report Viewer

- Introduction
- Create / View Reports
- Demo: Create New Report
- ReportViewer Control
- Demo: Use Report Wizard
- Summary

## Introduction to WPF

- Introduction
- Overview: WPF
- View Example WPF App
- What's Wrong w/Win Forms
- What WPF Provides
- Graphics and Composition
- WPF Questions
- Family.Show App
- Inconvenient Truth
- WPF and XAML
- XAML /WPF Designer
- Demo: A Simple WPF App
- Explore WPF App Parts
- View XAML Markup
- Modify Properties
- Add Controls
- Handle Events
- Useful Project Tools
- Investigate Routed Events
- Properties of RoutedEventArgs
- Demo: Modify the App
- Summary

## Content and Grid Controls

- Introduction
- Overview: Content Controls
- Add Image to ListBox
- Content Property
- Work w/Layout Controls
- StackPanel Control
- Add TextBox to StackPanel
- List Box as Container

- Grid Control
- Create Row/Column Definitions
- Specifying Column/Row Sizes
- Add Controls to Grid
- Dependency Properties
- DependencyObject Class
- Investigate Dependency Props
- Declare the Property
- In Constructor
- Property Wrapper
- Use Attached Properties
- Programming the Grid
- Summary

## WPF Layout

- Introduction
- Examine Solution App
- Controls in App
- Create the Layout
- Create New Project
- Layout Controls on Form
- Add Second Grid
- Add Controls to Grid
- Save / Test Form
- MediaPlayer Control
- Demo: MediaPlayer Control
- Add Stack Panel
- Add Media Element Control
- Add a Slider
- Configure Buttons
- Configure Stack Panel
- Configure Slider
- Configure Column Sizes
- Summary

## WPF Code

- Introduction
- Add Timer to User Control
- Add Constructor
- Event Handler/Button Code
- Hook Up Event Handlers
- Add the User Control
- Test the Application
- Create / Bind Data Source
- Create ThumbnailList Class
- Demo: ThumbnailList Class
- Prepare Window1 Class
- Demo: Window1 Class
- Hook up Data Binding
- Demo: Data Binding

- Data Binding Syntax
- Display the Video
- Add Data Converter/Template
- Create a Type Converter
- IValueConverter Interface
- Demo: Type Converter
- Add Converter Resource
- Add Resources
- Create Data Template
- Demo: Converter Resource
- Demo: Add Data Template
- Save / Test Application
- Summary

## Files and Folders

- Introduction
- System.IO Namespace
- Selecting Files
- Filter Property
- More Properties
- Show Dialog Box
- Work with Multiple Files
- Events
- SaveFileDialog Control
- Demo: OpenFileDialog Ctrl
- Browse for Folder
- Using FolderBrowserDialog
- Demo: FolderBrowserDialog Ctrl
- Handle Path Information
- Demo: Display Path Info
- Summary

## Directories and Files

- Introduction
- Overview: Directories / Files
- Why Two Sets of Classes
- Demo: FileInfo Classes
- Investigate the Objects
- FileSystemInfo Class
- Directory Class
- Display Sample Info
- Fill the TreeView
- Expand TreeView Node
- Polymorphism
- Demo: Directory Class Methods
- Demo: Fill TreeView
- Demo: Display Drive Info
- Demo: Display File Info
- Stream-Based Objects
- Demo: Stream Reader/Writer

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- Alternate Solutions
- Summary

## Application Properties

- Introduction
- Project Designer
- App Props/Assembly Info
- App Framework Props
- Application Events
- Demo: Application Props
- Demo: Project Designer
- Demo: View Assembly.Info
- Demo: Solution/View Files
- Demo: App Framework Props
- Demo: Application Events
- View Splash Screen Code
- Compilation Properties
- Option Explicit / Option Strict
- Compiler Errors / Warnings
- Build Events
- Demo: Compile Properties
- Demo: Configuration Settings
- Demo: Output Path
- Demo: Option Explicit/Strict
- Demo: Compiler Warnings
- Demo: Build Events
- Demo: Adv. Compiler Options
- Debug Properties
- Start Action/Options
- Enable Debuggers & Demo
- Summary

## Refs/Resources/Settings

- Introduction
- Overview: Project References
- References Page
- Demo: Project References
- Unused References
- Add Reference
- Add New Reference path
- Imported Namespaces
- Project Resources
- Demo: Project Resources
- Demo: Local Resources
- Resources at Runtime
- Project Settings
- Demo: Project Settings
- Summary

## Break Points

- Introduction
- Debugging Applications

- Set Breakpoints
- Continue Program Execution
- Conditional Breakpoints
- Specify Breakpoint Hit Count
- Set Breakpoint on a Method
- Breakpoints Window
- Break on Exceptions
- Demo: Breakpoints
- Demo: Set Breakpoints
- Demo: Cont. Program Exec.
- Demo: Conditional Breakpoints
- Demo: Breakpoint Hit Count
- Demo: Breakpoints Window
- Demo: Break on Exceptions
- Summary

## Expressions / Edit Continue

- Introduction
- Evaluate Expressions
- DataTips and Visualizers
- Debugging Windows
- Edit and Continue
- Demo: DataTips/Visualizers
- Watch Window/QuickWatch
- Demo: Locals Window
- Demo: Autos Window
- Demo: Immediate Window
- Demo: Edit / Continue
- Debug Code in Assembly
- Demo: Debug in Assemblies
- Summary

## Tracing / Unit Tests

- Introduction
- Tracing Applications
- Trace Sources
- Trace Switches
- Trace Listeners
- Trace Filtering
- Tracing Config Files
- Demo: Trace Source/Switches
- Demo: Trace Listeners
- Demo: Trace Filtering
- Demo: Tracing Config Files
- Unit Tests
- Demo: Unit Testing
- Summary

## Container Controls

- Introduction
- Overview: Container Controls
- GroupBox Control

- GroupBox Control Members
- Demo: GroupBox Control
- Panel Control
- Demo: Panel Control
- SplitContainer Control
- Demo: SplitContainer Control
- Demo: SplitContainer Events
- TabControl Control
- Demo: TabControl Control
- Demo: Work w/Tab Pages
- Demo: TabControl Events
- Summary

## FlowLayout / TableLayout

- Introduction
- FlowLayoutPanel Control
- Work w/FlowLayoutPanel
- FlowDirection Property
- WrapContents Property
- AutoScroll / AutoScrollMargin
- FlowBreak Extender Property
- TableLayoutPanel Control
- Work w/TableLayoutPanel
- Set Row and Column Styles
- Position New Controls
- Add Controls Programmatically
- Work w/Other Properties
- Lay out Columns or Rows
- Extender Properties
- Control Methods
- Summary

## Introducing Strips

- Introduction
- Overview: Strip Controls
- Demo: MenuStrip
- Add Menu Images
- Use VS Automatic Menus
- ToolStrip Control
- ToolStrip ItemClicked()
- StatusStrip Control
- Add StatusLabel
- ToolStripStatusLabel
- BorderStyle Property
- BorderSides Property
- Spring Property
- Demo: StatusStrip Appearance
- ContextMenuStrip Control
- ToolStripContainer Control
- Work w/ToolStripItem

- Item Collection Editor
- ToolStripItem Display Styles
- Runtime Customizations
- AllowItemReorder Issues
- Save/Restore Customizations
- Layout Issues / Overflow
- Summary

## Using Strips

- Introduction
- RichTextBox Demo
- ZoomToolStripComboBox
- List of Font Sizes
- Add items Programmatically
- ModifySelectionFont()
- WebBrowser Demo
- Status Strip
- Navigating() Event
- StatusTextChanged()
- ProgressChanged()
- DocumentCompleted()
- Summary

## Notify Icon / Web Browser

- Introduction
- NotifyIcon Control
- Demo: NotifyIcon
- NotifyIcon Properties
- Handle Form Closing
- Handle Events
- Handle Menu Items
- Display a Balloon
- WebBrowser Control
- Demo: WebBrowser
- WebBrowser Navigation
- Display Dialog Boxes
- React to Environment Changes
- Update Status Text
- Update Progress Bar
- Update Title Bar
- Update Address TextBox
- Enable Back / Forward
- Summary

## Masked / RichTextBox

- Introduction
- MaskedTextBox Control
- Mask Characters
- Demo: MaskedTextBox
- TextMaskFormat
- CutCopyMaskFormat
- InsertKeyMode

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- MaskInputRejected Event
- Status Properties
- RichTextBox Control
- Demo: RichTextBox
- Handling State
- Undo and Redo
- Work w/Clipboard
- Work w/Fonts and Styles
- Toggle Font Styles
- Fore / Back Colors
- Modify Alignment
- Zoom / Links / SelectAll
- Summary

## **TreeView / MonthCalendar**

- Introduction
- TreeView Control
- Style Properties
- Add Nodes
- Expand a Node
- ListView Control
- Set Up the Images
- Fill a List of Files
- Show Items in Groups
- Sort the Columns
- IComparer Interface
- ColumnClick Event
- DateTimePicker
- MonthCalendar Control
- Limit Input Dates
- Set First Day of the Week
- Format the MonthCalendar
- Modify Control's Display
- Work w/Selected Dates
- Handle Bolded Dates
- DateTimePicker Control
- Control Date/Time Format
- Select Min and Max Dates
- Format the DateTimePicker
- Summary

## **My.Application**

- Introduction
- My.Application
- My.Application.Info
- My.Application.Log
- Demo: My.Application.Info
- Demo: My.Application.Log
- Summary

## **My.Computer**

- Introduction

- Overview: My.Computer
- My.Computer.Audio
- My.Computer.Clipboard
- My.Computer.Clock
- My.Computer.FileSystem
- Demo: My.Computer.Name
- Demo: My.Computer.Screen
- Demo: My.Computer.Audio
- Demo: My.Computer.Clipboard
- Demo: My.Computer.Clock
- Demo: My.Computer.FileSys
- My.Computer.Info
- My.Computer.Keyboard
- My.Computer.Network
- My.Computer.Registry
- Demo: My.Computer.Info
- Demo: My.Computer.Keyboard
- Demo: My.Computer.Network
- Demo: My.Computer.Registry
- Summary

## **Other Objects in My**

- Introduction
- My.User
- Demo: My.User
- My.Forms
- Demo: My.Forms
- Forms Properties
- My.Resources
- My.Settings
- Demo: My.Resources
- Demo: My.Settings
- My.WebServices
- Demo: My.WebServices
- Summary