

| A BEGINNER'S GUIDE

Microsoft®

Visual Studio® 2010

- Learn to use C#, VB.NET, ASP.NET, and Silverlight
- Build applications from the ground up
- Customize the Integrated Development Environment

Joe Mayo

Microsoft[®]
Visual Studio[®] 2010
A Beginner's Guide

About the Author

Joe Mayo started his software development career in 1986, working on an RCA Spectrum 70 mainframe computer, programming in assembly language where input was via Hollerith card, output was a line printer, and the debugging experience was a light panel where you had to push buttons to load registers and step through commands. Since then, Joe has worked with various mini-computers, workstations, and PCs. The operating systems he's worked on include proprietary, UNIX-based, MS-DOS, and Windows. Besides assembly and dozens of scripting languages, Joe has worked professionally with C, C++, VBA, Visual C++, Forte Tool, Java, VB.NET, and C#. In addition to software engineering, he has worked in many positions, including team lead, supervisor, manager (even running a 24x7 computer operations center with over 50 people). Today, Joe runs his own company, Mayo Software, providing custom software development services and specializing in Microsoft .NET technology. He is the author of *LINQ Programming* (McGraw-Hill Professional, 2008) and other books. Joe is also the recipient of multiple Microsoft MVP awards. You can follow Joe on Twitter: @JoeMayo.

About the Technical Editor

Roy Ogborn has worn almost every hat one time or another during his interesting and continuing career in the Information Technology field. He was systems manager and developer for Texaco Europe Research, Inc., in Moscow, USSR, during the attempted coup. Back in the United States, he has designed and implemented a GIS system for managing oil and gas wells and leases, and has architected and implemented an enterprise workflow system that managed the business process of taking wells from conception to completion. He architected a system for Forest Oil in Denver that linked disparate accounting, lease management, and production tracking systems for business intelligence for senior executives' daily and strategic decisions. Recently he architected and designed a SharePoint-, Silverlight-, and CSLA-based greenhouse gas emissions evaluation, prediction, and decision tool for a multinational environmental engineering firm using the new Visual Studio 2010 Architecture Edition tools. Roy is an independent software architect consultant in the Denver Metro Area specializing in custom solutions that leverage SharePoint. In January 2010 he presented SharePoint 2010 for Developers at the Denver Visual Studio .NET User Group.

Microsoft® Visual Studio® 2010

A Beginner's Guide

Joe Mayo



New York Chicago San Francisco
Lisbon London Madrid Mexico City
Milan New Delhi San Juan
Seoul Singapore Sydney Toronto

Copyright © 2010 by The McGraw-Hill Companies. All rights reserved. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

ISBN: 978-0-07-166896-5

MHID: 0-07-166896-9

The material in this eBook also appears in the print version of this title: ISBN: 978-0-07-166895-8, MHID: 0-07-166895-0.

All trademarks are trademarks of their respective owners. Rather than put a trademark symbol after every occurrence of a trademarked name, we use names in an editorial fashion only, and to the benefit of the trademark owner, with no intention of infringement of the trademark. Where such designations appear in this book, they have been printed with initial caps.

McGraw-Hill eBooks are available at special quantity discounts to use as premiums and sales promotions, or for use in corporate training programs. To contact a representative please e-mail us at bulksales@mcgraw-hill.com.

Information has been obtained by McGraw-Hill from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, McGraw-Hill, or others, McGraw-Hill does not guarantee the accuracy, adequacy, or completeness of any information and is not responsible for any errors or omissions or the results obtained from the use of such information.

TERMS OF USE

This is a copyrighted work and The McGraw-Hill Companies, Inc. ("McGrawHill") and its licensors reserve all rights in and to the work. Use of this work is subject to these terms. Except as permitted under the Copyright Act of 1976 and the right to store and retrieve one copy of the work, you may not decompile, disassemble, reverse engineer, reproduce, modify, create derivative works based upon, transmit, distribute, disseminate, sell, publish or sublicense the work or any part of it without McGraw-Hill's prior consent. You may use the work for your own noncommercial and personal use; any other use of the work is strictly prohibited. Your right to use the work may be terminated if you fail to comply with these terms.

THE WORK IS PROVIDED "AS IS." MCGRAW-HILL AND ITS LICENSORS MAKE NO GUARANTEES OR WARRANTIES AS TO THE ACCURACY, ADEQUACY OR COMPLETENESS OF OR RESULTS TO BE OBTAINED FROM USING THE WORK, INCLUDING ANY INFORMATION THAT CAN BE ACCESSED THROUGH THE WORK VIA HYPERLINK OR OTHERWISE, AND EXPRESSLY DISCLAIM ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. McGraw-Hill and its licensors do not warrant or guarantee that the functions contained in the work will meet your requirements or that its operation will be uninterrupted or error free. Neither McGraw-Hill nor its licensors shall be liable to you or anyone else for any inaccuracy, error or omission, regardless of cause, in the work or for any damages resulting therefrom. McGraw-Hill has no responsibility for the content of any information accessed through the work. Under no circumstances shall McGraw-Hill and/or its licensors be liable for any indirect, incidental, special, punitive, consequential or similar damages that result from the use of or inability to use the work, even if any of them has been advised of the possibility of such damages. This limitation of liability shall apply to any claim or cause whatsoever whether such claim or cause arises in contract, tort or otherwise.

To my son, Kamo.

This page intentionally left blank

Contents at a Glance

PART I Understanding Visual Studio 2010 Essentials

1	Introducing Visual Studio 2010	3
2	Learning Just Enough C# or VB.NET: Basic Syntax	35
3	Learning Just Enough C# and VB.NET: Types and Members	67
4	Learning Just Enough C# and VB.NET: Intermediate Syntax	89

PART II Learning the VS 2010 Environment

5	Creating and Building Projects	113
6	Debugging with Visual Studio	143
7	Working with Data	181

PART III Building Programs with VS 2010

8	Building Desktop Applications with WPF	217
9	Creating Web Applications with ASP.NET MVC	249

10 Designing Silverlight Applications	285
11 Deploying Web Services with WCF	299
PART IV Enhancing the VS 2010 Experience	
12 Customizing the Development Environment	341
13 Extending Visual Studio 2010	371
PART V Appendixes	
A Introduction to XML	403
B Introduction to XAML	409
Index	417

Contents

ACKNOWLEDGMENTS	xvii
INTRODUCTION	xix

PART I Understanding Visual Studio 2010 Essentials

1 Introducing Visual Studio 2010	3
What Is Visual Studio 2010 About?	4
Automatically Generated Code	4
Rapid Coding Experience	5
Everything at Your Fingertips	5
Customizability and Extensibility	5
Installing Visual Studio 2010	6
Navigating the Visual Studio 2010 Environment	13
The Menu	14
Toolbar	15
Work Area	15
Toolbox	16
Solution Explorer	16
Status Bar	16
Managing VS Windows	16
Expanding and Collapsing Windows	17
Docking Windows	18

Floating Windows	19
Tabbed Windows	20
Closing and Opening Windows	21
Modifying Environment Settings after Setup	22
Exporting Selected Environment Settings	23
Importing Selected Environment Settings	24
Resetting All Settings	28
Familiarization with Visual Studio Project Types	30
Windows Projects	32
Web Projects	33
Office Projects	34
SharePoint Projects	34
Database Projects	34
Summary	34
2 Learning Just Enough C# or VB.NET: Basic Syntax	35
Starting a Bare-Bones Project	36
Examining the Code Skeleton	39
The Main Method	40
The Program Class	41
The FirstProgram Namespace	42
An Overview of the VS Code Editor	43
Class and Member Locators	44
Bookmarks	44
Setting Editor Options	45
Saving Time with Snippets	47
Coding Expressions and Statements	49
Making Intellisense Work for You	49
Running Programs	51
Primitive Types and Expressions	52
Enums	55
Branching Statements	57
Loops	61
Summary	66
3 Learning Just Enough C# and VB.NET: Types and Members	67
Creating Classes	68
Class Syntax	68
Class Inheritance	70
The class Snippet	71
Writing Methods	72
Declaring and Using a Method	72
Declaring Parameters and Passing Arguments	75

Returning Data and Using Method Results	78
Method Snippets	80
Coding Fields and Properties	81
Declaring and Using Fields	81
Declaring and Using Properties	83
The Property Snippet	86
Summary	87
4 Learning Just Enough C# and VB.NET: Intermediate Syntax	89
Understanding Delegates and Events	90
Events	91
Delegates	94
Event, Delegate, and Handler Code Completion	95
Implementing Interfaces	96
Creating an Interface	97
Making Classes Implement the Interface	98
Writing Code That Uses an Interface	101
The interface Snippet	106
Applying Arrays and Generics	107
Coding Arrays	107
Coding Generics	109
Summary	110
 PART II Learning the VS 2010 Environment	
5 Creating and Building Projects	113
Constructing Solutions and Projects	114
Creating a New Project	115
Navigating the Solution Explorer	116
Examining Property Settings	118
Assembly Name	119
Default Namespace	119
Target Framework	119
Output Type	119
Startup Object	120
Icon and Manifest	120
Assembly Information	121
Referencing Assemblies	122
Adding a .NET Assembly Reference	123
Managing Assembly References	124
Referencing Your Own Class Libraries	125
Using Code in Class Libraries	126

Compiling Applications	129
Building Solutions/Projects	129
Rebuilding Solutions/Projects	130
Cleaning Solutions/Projects	130
Managing Dependencies and Build Order	131
Managing Compilation Settings	133
Navigating a Project with Class View	136
Using the Class Designer	137
Class Designer Visualization	137
Class Designer Code Generation	138
Summary	141
6 Debugging with Visual Studio	143
Example Code for This Chapter	144
Development-Time Code Tools	148
Configuring Debug Mode	150
Setting Breakpoints	155
Creating a Breakpoint	156
Customizing a Breakpoint	157
Managing Breakpoints	158
Stepping Through Code	158
Inspecting Application State	160
Locals and Autos Windows	160
Watch Windows	161
The Immediate Window	162
The Call Stack Window	163
The Quick Watch Window	163
Watching Variables with Pin To Source	164
Working with IntelliTrace	165
Solving Problems with VS Debugger	166
A Program with Bugs	167
Finding the Bug	171
Fixing the First Bug	174
Debugging and Resolving NullReferenceException Problems	175
Summary	180
7 Working with Data	181
Working with Databases	182
Introduction to Server Explorer	182
Creating a Database	183
Adding Tables	185
Relating Tables with Foreign Keys	187
Adding Stored Procedures	192
Configuring Database Options	193

Learning Language Integrated Query (LINQ)	194
Querying Object Collections with LINQ	194
Creating a LINQ Projection with Anonymous Types	198
Using LINQ to Sort Collection Results	199
Handling Data with LINQ to SQL	200
Setting Up LINQ to SQL	200
Working with the LINQ to SQL Designer	201
Introduction to Querying LINQ to SQL	203
Performing Queries on Multiple Tables	205
Inserting Data with LINQ to SQL	210
Updating Data with LINQ to SQL	211
Deleting Data with LINQ to SQL	212
Summary	214

PART III Building Programs with VS 2010

8 Building Desktop Applications with WPF	217
Starting a WPF Project	218
Understanding Layout	220
Grid Layout	220
StackPanel Layout	222
DockPanel Layout	223
WrapPanel Layout	224
Canvas Layout	225
Using WPF Controls	226
Managing Windows for Controls	226
Setting Properties	228
Handling Events	228
Coding Event Handlers	233
Working with Data in WPF	234
Setting Up a Data Source	235
Configuring a ComboBox	241
Reading and Saving Data	243
Using the DataGrid	244
Summary	247
9 Creating Web Applications with ASP.NET MVC	249
Understanding ASP.NET MVC	250
Starting an ASP.NET MVC Project	251
Creating the Models	254
Building Controllers	254
Displaying Views	256
Looking Inside a View	256
Organizing View Files	258

Assigning MasterPage Files	258
Partial Views (a.k.a. User Controls)	260
Managing Routing	262
Building a Customer Management Application	264
Creating a Repository	265
Creating a Customer Controller	268
Displaying a Customer List	269
Adding a New Customer	274
Updating Existing Customers	279
Deleting a Customer	281
Summary	284
10 Designing Silverlight Applications	285
Starting a Silverlight Project	286
Navigating the Silverlight Designer	290
Using Silverlight Controls	290
Running Silverlight Out-of-Browser (OOB)	294
Deploying Silverlight Applications	297
Summary	298
11 Deploying Web Services with WCF	299
Starting a WCF Project	301
Specifying a Contract with WCF Interfaces	302
Implementing Logic with WCF Classes	308
Hosting a WCF Service	314
Following General Hosting Procedures	315
Installing IIS 7 on Windows 7	315
Creating a Web Site on IIS 7 on Windows 7	317
Deploying the WCF Service to IIS	321
Communicating with a WCF Service	326
Creating a Service Reference	326
Coding Web Service Calls	329
Deploying a Client That Consumes a Web Service	336
Creating a Web Service in a Web Site	337
Summary	338
 PART IV Enhancing the VS 2010 Experience	
12 Customizing the Development Environment	341
Implementing Custom Templates	342
Creating New Project Templates	343
Creating New Item Templates	347
Creating Custom Snippets	353
Creating a New Snippet	353
Managing the Snippet Library	358

Writing Macros	360
Recording a Macro	360
Saving a Macro	364
Editing Macros	365
Summary	370
13 Extending Visual Studio 2010	371
Creating a Visual Studio Add-In	372
Running the Add-In Project Wizard	372
Examining an Add-In Wizard Solution	377
Drilling into the <i>Connect</i> Class	378
Adding Functionality to an Add-In	383
Reviewing the <i>OnConnection</i> Method	384
Implementing the <i>Exec</i> Method	391
Setting Status with <i>QueryStatus</i>	395
Deploying an Add-In	397
Where to Go Next	399
Summary	400

PART V Appendixes

A Introduction to XML	403
VS 2010 XML Editor	404
XML Prefixes	404
XML Elements	405
Attributes	405
Namespaces	406
The XML Menu	407
Configuring XML Options	407
Summary	407
B Introduction to XAML	409
Starting a WPF Project	410
Elements as Classes	411
Attributes as Properties	411
Executing the XAML Document	411
Property Elements	412
Markup Extensions	414
Summary	416
Index	417

This page intentionally left blank

Acknowledgments

A work of this magnitude is never the ramblings of a single author, but a successful combination of dedication from a team of highly skilled professionals. I would like to personally thank several people who helped make this book possible.

Jane Brownlow, Executive Editor, helped kick off the book and got it started on the right path. Megg Morin, Acquisitions Editor, took the reins from Jane and led the rest of the way. Joya Anthony, Acquisitions Coordinator, helped keep the flow of chapters moving. Madhu Bhardwaj, Project Manager, and Patty Mon, Editorial Supervisor, helped coordinate copy edits and final layout. I would really like to thank you all for your patience and assistance. There are many more people at McGraw-Hill who helped put this book together, and I am appreciative of their contributions and professionalism.

Roy Ogborn was the technical editor for this book. I've known Roy for several years and was delighted when he agreed to tech edit the book. Besides catching many of my errors, Roy provided valuable insight that made a difference in several areas, continuously asking the question of whether a beginner would understand a concept, what is the proper application of the language to accomplish a goal, and perspective on what parts of a technology needed emphasis. Thanks to Roy for outstanding technical editing and advice.

This page intentionally left blank

Introduction

Visual Studio has been the primary integrated development environment (IDE) for Microsoft software development for several years. Visual Studio 2010 (VS), the subject of this book, is therefore a mature evolution, building upon the success of its predecessors. This book will show you how to leverage Visual Studio 2010 to your advantage, increasing your skill set, and helping you become more productive in building software. The software you will learn to write will be for .NET (pronounced “Dot Net”), which is a Microsoft platform for writing different types of applications.

As the title suggests, this is a book for beginners. However, there are many opinions about who a beginner is, so let’s discuss what beginner means in the context of this book. You should probably have some understanding of what programming is from a general perspective. It would help to have at least written a batch file, macro, or script that instructed the computer to perform some task. A beginner could also be someone who has written software with technology, such as Cobol, Dreamweaver, or Java, but who is unfamiliar with Visual Studio. Whatever your background, this book provides a gradual on-ramp to developing applications with Visual Studio 2010.

This book has 13 chapters and is divided into four parts and a couple of appendixes as reference material. The following provides an overview of each section:

- **Part I: Understanding Visual Studio 2010 Essentials** Chapter 1 begins with an explanation of what VS is, its benefits to you, and what type of applications VS will help you build. Hands-on guidance starts at the point of installation, giving you tips as to what is being installed and where it goes on your computer. Chapters 2 through 4 are an introduction to C# and VB, two of the most widely used programming languages supported in VS. Notice that the titles of these chapters include “Just Enough,” indicating that you will learn the language features you need throughout this book. As you progress through the book, you’ll be exposed to all of the language features discussed and see how they are used. Even if you already know how to program, you might want to peruse the programming language chapters anyway because I’ve sprinkled in dozens of valuable tips that will make your coding experience in VS much more pleasurable.
- **Part II: Learning the VS 2010 Environment** There are a few universal tasks most developers perform every day, which include working with projects, debugging code, and manipulating data. While Chapter 5 is titled “Creating and Building Projects,” there is much involved when working with projects. Pay particular attention to the guidance on assemblies and class libraries, as they tend to become more prominent as your development activities progress beyond simple programs. Regardless of your development philosophy, the need to fix bugs has always existed and will continue to be important in the future. Chapter 6 is designed to help you use the many tools of VS to find and fix bugs. Another common task you’ll have is working with data. VS allows you to create databases, add tables, and much more. When the database is ready to use, you’ll learn how to write code that works with the database. I chose to cover LINQ to SQL because it’s one of the simpler database technologies, yet powerful enough for professional application development.
- **Part III: Building Programs with VS 2010** With the foundations of programming languages and a feel for the VS environment, you’ll be ready to use VS to build applications. The .NET platform supports various technologies, and this book takes a forward-looking approach, choosing technologies that were the most recently introduced. The focus in these chapters is not to teach you everything about these technologies, which can fill entire books themselves, but rather to show you how to leverage VS in building applications. You’ll get the foundations that will give you a head start in building your own applications. Both Chapters 8 and 10 use a form of

Extensible Markup Language (XML) called XML Application Markup Language (XAML). Considering that this is a beginner's book, I added a couple of appendixes that cover XML and XAML. I recommend that you read the appendixes before reading Chapters 8 and 10. Additionally, you should read Chapter 8 before reading Chapter 10, because many of the same concepts used to work with Windows Presentation Foundation (WPF), a technology for building desktop applications, are applicable to Silverlight, a technology to build Web applications. The other two chapters in this part will show you how to build Web applications with ASP.NET MVC and how to create Web services with Windows Communications Foundation.

- **Part IV: Enhancing the VS 2010 Experience** In addition to all of the wizards, tools, and editing help that VS offers, you can extend VS to make it work even better. Chapter 12 shows you how to create your own project and project item wizards, how to create code snippets that automatically generate code, and how to create macros that automate the VS environment. If the macro capability you learn about in VS isn't powerful enough, read Chapter 13, which shows you how to build an Add-In, a program that you can install to add new features to VS.

From installation to customization of the IDE, VS is a helpful and powerful tool. I hope you enjoy this book and that it helps you learn how to make VS work for you.

This page intentionally left blank

Part

I

Understanding Visual
Studio 2010 Essentials

An abstract, grayscale graphic consisting of overlapping, curved, ribbon-like shapes that create a sense of depth and movement. The shapes are layered, with some appearing more prominent than others, and they radiate from a central point towards the bottom corners of the page.

- [read online On The Case: Approaches To Language And Literacy Research \(Language and Literacy Series\)](#)
- [read online In the Shadow of Blackbirds](#)
- [click The Portable Emerson](#)
- **[download Hidden Teachings of Tibet: An Explanation of the Terma Tradition of Tibetan Buddhism book](#)**
- [World Atlas of Natural Disaster Risk online](#)
- [read online The Bluffer's Guide to Food pdf](#)

- <http://patrickvincitore.com/?ebooks/The-Sokal-Hoax--The-Sham-That-Shook-the-Academy.pdf>
- <http://ramazotti.ru/library/The-Burnt-House--Peter-Decker---Rina-Lazarus--Book-16-.pdf>
- <http://www.experienceolvera.co.uk/library/The-Portable-Emerson.pdf>
- <http://musor.ruspb.info/?library/Hidden-Teachings-of-Tibet--An-Explanation-of-the-Terma-Tradition-of-Tibetan-Buddhism.pdf>
- <http://weddingcellist.com/lib/World-Atlas-of-Natural-Disaster-Risk.pdf>
- <http://musor.ruspb.info/?library/Graph-Partitioning--ISTE-.pdf>