Pro ASP.NET 3.5 in VB 2008

Includes Silverlight 2

Matthew MacDonald, Mario Szpuszta,
and Vidya Vrat Agarwal

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To my sweet little daughter, Vamika (Pearly),
and beloved wife, Rupali. You are both precious in my eyes and honored.
I love you.
—Vidya Vrat Agarwal

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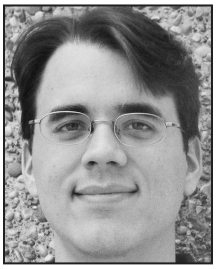

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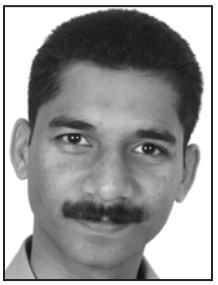

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If he could be consistent (or interesting), his blog might not be three months out of date. You never know—you may get lucky. See for yourself at `http://www.littlepond.co.uk`.

Introduction

As you no doubt already know, ASP.NET is Microsoft's next-generation technology for creating server-side web applications. It's built on the Microsoft .NET Framework, which is a cluster of closely related new technologies that revolutionize everything from database access to distributed applications. ASP.NET is one of the most important components of the .NET Framework—it's the part that enables you to develop high-performance web applications.

It's not hard to get developers interested in ASP.NET. Without exaggeration, ASP.NET is the most complete platform for web development that's ever been put together. It far outclasses its predecessor, ASP, which was designed as a quick-and-dirty set of tools for inserting dynamic content into ordinary web pages. By contrast, ASP.NET is a full-blown platform for developing comprehensive, blisteringly fast *web applications*.

In this book, you'll learn everything you need to master ASP.NET 3.5. If you've programmed with a previous version of ASP.NET, you can focus on new features such as LINQ (Chapter 13), ASP.NET AJAX (Chapter 32), and Silverlight (Chapter 33). If you've never programmed with ASP.NET, you'll find that this book provides a well-paced tour that leads you through all the fundamentals, along with a backstage pass that lets you see how the ASP.NET internals *really* work. The only requirement for this book is that you have a solid understanding of the VB language and the basics of .NET. If you're a seasoned Java or C++ developer but you're new to VB, you may find it easier to start with a book about .NET fundamentals, such as *Pro VB 2008 and the .NET 3.5 Platform* by Andrew Troelsen (Apress, 2008).

What Does This Book Cover?

Here is a quick breakdown of what you'll find in this book:

Part 1: Core Concepts: You'll begin in Chapter 1 with a look at the overall ASP.NET platform, the .NET Framework, and an overview of the changes that have taken place in ASP.NET 3.5. In Chapter 2 you'll branch out to learn the tools of the trade—namely, Visual Studio 2008. In Chapters 3, 4, 5, and 6 you'll learn the key parts of the ASP.NET infrastructure, such as the web-page model, application configuration, and state management. As you learn these core concepts, you'll also take a low-level look at how ASP.NET processes requests and manages the lifetime of your web applications. You'll even learn how to extend the ASP.NET architecture.

Part 2: Data Access: This part tackles one of the core problem domains for all software development—accessing and manipulating data. In Chapters 7 and 8 you'll consider the fundamentals of ADO.NET as they apply to web applications and learn how to design data access components. In Chapters 9 and 10 you'll learn about ASP.NET's set of innovative

data bound controls that let you format and present data without writing pages of code. Chapter 11 branches out into advanced caching strategies that ensure first-class performance. Finally, Chapters 12, 13, and 14 move beyond the world of ADO.NET to show you how to work with files, LINQ, and XML content.

Part 3: Building ASP.NET Websites: In this part you'll learn about essential techniques and features for managing groups of web pages. You'll start simply with user controls in Chapter 15, which allow you to reuse segments of the user interface. In Chapter 16 you'll consider two new ASP.NET innovations—themes (for styling controls automatically) and master pages (for reusing a layout template across multiple pages). Chapter 17 shows how you can use ASP.NET's navigation model to let visitors surf from one page to another. Finally, Chapter 18 describes deployment and the IIS web server software.

Part 4: Security: In this part, you'll look at ASP.NET's rich complement of security features. You'll start with a high-level overview of security concepts in Chapter 19 and then learn the ins and outs of forms authentication (Chapter 20) and the membership feature that works with it (Chapter 21). In Chapter 22 you'll tackle Windows authentication, and in Chapter 23 you'll learn how to restrict authenticated users with sophisticated authorization rules and use role-based security. In Chapter 24 you'll explore the profiles feature, which is a new, prebuilt solution for storing user-specific information, and in Chapter 25 you'll go one step further and learn how to protect the data you store in a database as well as the information you send in a URL with encryption. Finally, Chapter 26 shows how you can plug into the ASP.NET security model by designing a custom membership provider.

Part 5: Advanced User Interface: This part shows how you can extend web pages with advanced techniques. In Chapters 27 and 28 you'll tackle custom controls. In Chapter 29 you'll branch out to use GDI+ for handcrafted graphics. Finally, Chapter 30 explores ASP.NET's Web Parts Framework, which allows you to easily create web portals.

Part 6: Client-Side Programming: In this part, you'll consider some of the most exciting innovations in modern web development. First, in Chapters 31 and 32, you'll consider how to use JavaScript and Ajax techniques in your ASP.NET web pages. You'll learn how to make web pages more dynamic (by incorporating effects such as text autocompletion and drag-and-drop) and more responsive (by reacting to client-side events and seamlessly refreshing the web page). In Chapter 33, you'll dive into the world of Silverlight, a Microsoft-built browser plug-in that gives you the ability to bring rich graphics, animation, sound, and video to ordinary web pages on a variety of browsers and operating systems.

Who Is This Book For?

This book is intended as a primer for professional developers who have a reasonable knowledge of server-side web development. This book doesn't provide an exhaustive look at every ingredient in the .NET Framework—in fact, such a book would require twice as many pages. Instead, this book aims to provide an intelligent introduction to ASP.NET for professional programmers who don't want to rehash the basics. Along the way, you'll focus on other corners of the .NET Framework that you'll need in order to build professional web applications, including data access and XML. Using these features, you'll be able to create next-generation websites with the best tools on hand today.

This book is also relentlessly practical. You won't just learn about *features*—you'll also learn about the real-world *techniques* that can take your website to the next level. Later chapters are dedicated to cutting-edge topics such as custom controls, dynamic graphics, advanced security, and high-performance data access, all with the goal of giving you everything you need to build professional web applications.

To get the most from this book, you should be familiar with the syntax of the VB language and with object-oriented concepts. You don't need to have experience with a previous version of ASP.NET, as all the fundamentals are covered in this book. If you're an experienced VB developer with no .NET experience, you should consider supplementing this book with an introduction to .NET, such as *Pro VB 2008 and the .NET 3.5 Platform* by Andrew Troelsen (Apress, 2008).

What Do You Need to Use This Book?

To develop and test ASP.NET web applications, you need Visual Studio 2008. Although you could theoretically write code by hand, the sheer tedium and the likelihood of error mean this approach is never used in a professional environment.

Note You can use the scaled-down Visual Studio Web Developer 2008 Express Edition, but you'll run into significant limitations on some of the examples. Most important, you can't use Visual Studio Web Developer 2008 Express Edition to create class libraries, which are an essential part of modern component-oriented design (although you can work around this limitation by using *two* express editions—Visual Studio Web Developer Express Edition to create your websites and Visual Basic 2008 Express Edition to create your components).

Additionally, if you plan to host ASP.NET websites, you'll need to use Windows XP Professional or (ideally) a server-based version of Windows, such as Windows Server 2003 or Windows Server 2008. You'll also need to install IIS (Internet Information Services), the web hosting software that's part of the Windows operating system. IIS is described in Chapter 18.

This book includes several examples that use sample databases that are included with SQL Server to demonstrate data access code, security techniques, and other features. You can use any version of SQL Server to try these examples, including SQL Server 2005 Express Edition, which is included with some versions of Visual Studio (and freely downloadable at `http://www.microsoft.com/sqlserver/2005/`). If you use other relational database engines, the same concepts will apply, but you will need to modify the example code.

Finally, to use the Silverlight examples in Chapter 33, you'll want to have the Silverlight Tools for Visual Studio, which you can download from `http://silverlight.net/GetStarted`. The Silverlight Tools for Visual Studio include all the components you need to design, run, and debug Silverlight 2 applications, including the Silverlight runtime, the Silverlight SDK, and the Silverlight add-in for Visual Studio. Chapter 33 has more details.

Customer Support

We always value hearing from our readers, and we want to know what you think about this book—what you liked, what you didn't like, and what you think we can do better next time. You can send your comments by e-mail to `feedback@apress.com`. Please be sure to mention the book title in your message.

Sample Code

To download the sample code, visit the Apress website at `http://www.apress.com`, and search for this book. You can then download the sample code, which is compressed into a single ZIP file. Before you use the code, you'll need to uncompress it using a utility such as WinZip. Code is arranged into separate directories by chapter. Before using the code, refer to the accompanying readme.txt file for information about other prerequisites and considerations.

Bonus Chapters

The Apress website also includes several additional chapters that you can download as PDFs. These chapters include content that couldn't be included in this book (due to space requirements) and isn't considered as important to ASP.NET web development. Here's what you'll find:

Bonus Chapter 1: This chapter describes how to use resources and localization in ASP.NET websites. It's an essential chapter for developers who need to create websites that can be viewed in multiple languages.

Bonus Chapters 2, 3, and 4: These chapters tackle *web services*, a feature that allows you to create code routines that can be called by other applications over the Internet. Web services are most interesting when considering rich client development (because they allow you to give web features to ordinary desktop applications), and they're in the process of being replaced by a new technology known as WCF (Windows Communication Foundation). For those reasons, web services aren't covered in detail in this book. However, you *will* consider how to use web services to extend the reach of your web pages with ASP.NET AJAX in Chapter 32 and Silverlight in Chapter 33.

Note The online web service chapters come from the previous edition of this book. The information in these chapters still applies to ASP.NET 3.5, because the web service feature hasn't changed.

Errata

We've made every effort to make sure the text and the code contain no errors. However, no one is perfect, and mistakes do occur. If you find an error in the book, such as a spelling mistake or a faulty piece of code, we would be grateful to hear about it. By sending in errata, you may save another reader hours of frustration, and you'll be helping us provide higher-quality information. Simply e-mail the problem to `support@apress.com`, where your information will be checked and posted on the errata page or used in subsequent editions of the book. You can view errata from the book's detail page.