



ASP.NET MVC 1.0

Website Programming

Problem - Design - Solution

Nick Berardi, Al Katawazi, Marco Bellinaso



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Al Katawazi
Marco Bellinaso



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To my wife, Melinda, for her love, patience, and support, in everything I do.

— Nick Berardi

To my wife Heather and loving family.

— Al Katawazi

About the Authors

Nick Berardi is the owner of Managed Fusion (www.managedfusion.com), a U.S.-based company that specializes in the fields of software architecture/development, usability engineering, and cloud-based computing initiatives with a strong focus on .NET, the Web, SEO, SEM, and Microsoft technologies.

In his spare time, of which there is very little, he writes on his blog, Coder Journal (www.coderjournal.com), about all things that interest him. Topics include, but are not limited to, ASP.NET MVC, cloud computing, social networking, scalable computing, software usability, and anything that may intrigue or pique his interest on any given day. He also does a lot of public speaking on and evangelizing of Microsoft software, specifically regarding ASP.NET and other .NET-based web technologies such as Silverlight and WCF. He has been working with the .NET Framework since the beta, creating and developing all types of applications including MVC, Silverlight, WCF, WPF, Web Forms, Windows Forms, Windows Services, and various types of back office applications.

He is also the sole developer of the Managed Fusion Rewriter and Reverse Proxy (<http://urlrewriter.codeplex.com>), which is a .NET-based URL rewriter and reverse proxy for IIS 6 and IIS 7 based off of the syntax made popular by the Apache `mod_rewrite` module. His rewriter is currently deployed on every-thing from small, home-based servers running Microsoft Home Server to very large government websites running high-access-high-availability applications.

If you want to contact Nick to talk about the book, about MVC, or any random questions you may have, please use the contact form on his site (www.managedfusion.com) or his blog (www.coderjournal.com).

Al Katawazi is owner of Blue Shift Technologies Inc. (www.blueshifttechnologies.com), a software consulting company based out of Upstate New York. He is very fortunate to have worked on a variety of different projects for many notable clients. Most recently his focus has been on creating SaaS-based solutions leveraging the MVC framework. Al is also the author of his own blog (www.codingsmarter.com), which he has tried to keep up to date even though writing a book is a great excuse not to. When Al is not programming he enjoys kayaking with his dog Scout and card sharking with his wife Heather.

If you want to contact Al to talk about the book, please use the contact form on his site (www.blueshifttechnologies.com) or his blog (www.codingsmarter.com).

Marco Bellinaso lives in Bologna, Italy, and works as a freelance consultant, developer, and trainer specialized in all “web-things” that run on the Microsoft platform, such as ASP.NET, AJAX, and SharePoint. He’s been working with the .NET Framework since the Beta 1 on applications of all types, including Web Services, Windows Forms, Windows Services, and mobile applications. He is also author or co-author of a number of commercial tools for developers, such as the VB Migration Partner (<http://www.vbmigration.com/>), the award-winning VBMaximizer add-in, CodeBox for .NET, and FormMaximizer for .NET.

Before the .NET era, Marco was a hardcore VB developer who specialized in Windows programming with advanced, low-level API techniques, as well as a COM and ASP developer.

Marco also frequently writes for programming magazines such as MSDN Magazine, MSDN Online, and Visual Studio Magazine, and other Italian magazines such as Computer Programming and Visual Basic & .NET Journal. Besides writing he has also done a lot of public speaking (both in English and Italian) at some of the most important Italian conferences organized by Microsoft Italy and other big companies.

About the Authors

In addition to his regular job, Marco runs a number of websites, projects, and services, such as www.pet-files.com and www.intellibits.com. In general, he has a lot of fun playing with the latest phones, gadgets, and technologies.

If you want to contact Marco to talk about anything related to the book, or maybe about other web/mobile projects, feel free to write to mbellinaso@gmail.com.

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Acknowledgments

Wow, I am writing the acknowledgments for this book; that means that...this book is finally complete. I am not going to lie, writing a book is a very time-consuming process, and for the past year there hasn't been a day that has passed where this book hasn't been in the forethought of my mind. Mostly because this book has been a constantly evolving concept. When Jim Minatel first called me a year ago to write an update to the popular *ASP.NET 2.0 Website Programming* book, it started out as a simple update with only a small amount of code changes. But we quickly realized that to really show the power and grace of ASP.NET MVC we had to do a total rewrite of *TheBeerHouse*, which was a pretty major undertaking considering that we also had to rewrite a majority of the book. Combine all this with holding down a full-time job, running a growing business, and trying to steal some time to spend with my family, I could have really used an extra hour in each day.

This seems like a good transition for my first acknowledgment, which of course goes to my loving wife, Melinda. She has been my constant supporter with her love and patience she has shown me throughout this entire process of writing this book. She also played a large role as my in-house editor who made sure everything I wrote made sense technically and grammatically to the reader. Amazingly she has put up with this entire process for the last year, and that is why I love her.

Secondly I would like to thank my parents, Anthony and Linda Berardi, who taught me that good things come from hard work and perseverance. Without either of these teachings I would have never been able to finish writing this book. So thank you for your love, guidance, and support over the years; it has helped shape who I am today.

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The next acknowledgment goes to Sam and Mary Bea Damico, who took a chance, in 2007, and hired me to start and build the technology division of Vové (www.voveo.com) and help make it a natural extension of their already successful marketing division. Without this necessary support and trust in my judgment, I wouldn't have had the chance to focus on ASP.NET MVC back in December 2007, and by proxy wouldn't be writing this book. So thank you Sam and Mary Bea and everybody at Vové, you guys played a pivotal role in this book.

My last acknowledgment goes to my best friend, my best man at my wedding, my sidekick since 1995, and now co-author Al Katawazi. If you weren't my co-author, this book would probably be about half the size it is now. You deserve a thank you, a good beer, and an even better cigar, for all the long nights you put in on this book. I wouldn't have been able to do it without you!

— Nick Berardi

Acknowledgments

This book was a monumental effort to complete, and I am very thankful for all the support everyone has given me in writing this book. Now that I think about it, writing this book while the MVC framework was still being developed was an insane task that led to many revisions. My co-author and I have worked very hard to ensure that this book is as up to date as reasonably possible. Now that I have patted my own back I think I will mention some of the real contributors, without whom this book would not have been possible. To my wife Heather, I thank you for allowing me the time to write this book, spending late nights reviewing what I had written, and being a great and supportive friend. I'd also like to thank Michael Staley; without his efforts you would have seen far more grammatical errors and typos in my writing. The man is a machine. To Nick Berardi, my best friend since 9th grade, who has been an absolutely critical resource on this project, who has kicked me when I was slacking, and who has been a lot of fun to work with.

On a more abstract level I would like to thank my parents Mohammad and Sarah Katawazi, who have always supported me (except that time I joined the army). I would also like to thank both my family and my wife's family for being so understanding these past 12 months while we were preoccupied with this book. And finally to my dog Scout, no matter how many walks or kayaking trips we miss you are always happy to see me. Thanks for being a great friend.

— *Al Katawazi*

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Introduction

Dear reader, thanks for picking up this book, and welcome to the new edition of *ASP.NET MVC 1.0 Website Programming: Problem – Design – Solution*, fully updated to ASP.NET MVC 1.0! The idea for this book was born in 2001, with ASP.NET 1.0, from the desire to have a book that teaches how to create real-world websites. The first edition was published in 2002, and fortunately it was a success. Because of the success of the first edition, the concept was updated to use the new features in ASP.NET 2.0. The second edition was published in 2006, and again had a style that resonated with developers and was a success. We believe that this was due to the fact that most ASP.NET books on the market were (and still are) reference-type books, which describe every single control of the framework, and all their methods and properties, but the examples they provide are single-page demos showing how to use a singular feature. However, typically these references don't show how to integrate all ASP.NET features and controls into a single site with rich functionality, which is what readers have to do at work or at home. Designing and implementing a real-world site is very different from creating simple examples, and that's why we think a book like this is helpful for developers facing real problems in their everyday lives.

This new edition of the book was rewritten completely from scratch, to use all the features of ASP.NET MVC 1.0 as much as possible, and it is hoped that it is better in a number of ways: The project developed is much more complete (there's an updated e-commerce module, and a Web 2.0–style forum module, for example) and professional (the site was entirely updated to use CSS and modern design techniques, for example), and each chapter provides enough background information on ASP.NET MVC 1.0 to comfortably read the chapter even if you haven't already had experience with ASP.NET MVC 1.0 (this is something the first edition didn't provide).

First of all, this book is aimed at describing, designing, and implementing a site much like the ones you're probably working on or will be soon, while taking the opportunity to introduce and explain many of the new features that the new great ASP.NET MVC 1.0 framework offers. We don't hide difficult problems so that the solution can be simpler and shorter to develop; rather, we try to explain most of the problems you'll typically face when writing a modern website, and provide one or more solutions for them.

Second of all, we have broken up each chapter into different sections based on problem, design, and solution, and then to keep with the notion of separation of concerns we have broken up each section into subsections based on model, view, and controller (MVC). We did this with a specific goal in mind—to purposely break from the traditional way of explaining code in ASP.NET, using the database-to-user-interface-way, where you got everything in one shot and then moved on to the next page and started all over again. This traditional way of explaining ASP.NET was a massive injustice to the concept of MVC, and we felt it was important to truly understand ASP.NET MVC in an MVC way instead of an ASP.NET Web Forms way. Our hopes are that this way of explaining MVC in this book will solidify the concepts behind MVC in your mind, and the benefits that come from having your code separated into logical blocks of functionality (or separation of concerns) so that when you go off to develop your own MVC applications, you will have a firm understanding of the principals behind MVC, and not try to develop an MVC application in a Web Forms way.

The result of all of this is a website that features a CSS-based layout, a membership system, a Content Management System for publishing and syndicating articles, polls, mailing lists, Web 2.0–style forums, an e-commerce store with support for real-time credit card processing through PayPal, and localization (refer to Chapter 1 for a more detailed list of features to be implemented). We hope you enjoy reading this book, and that it offers guidance that speeds up the development of your next project and makes it more solid, extensible, and well organized.

What This Book Covers

This book is basically a large case study that starts from the foundation and works its way through to completion with a series of designs and solutions for each incremental step along the way. What sets the *Problem – Design – Solution* series apart from other Wrox series is the structure of the book and the start-to-finish approach to one completed project. Specifically, this book leads the reader through the development of a complete ASP.NET MVC 1.0 website that has most of the features users expect to find in a modern content-related and e-commerce site:

- ☐ Account registration
- ☐ News and events, organized into categories
- ☐ Opinion polls
- ☐ Newsletter
- ☐ Forums
- ☐ E-commerce store with shopping cart and order management
- ☐ Localization

From an administrative point of view, the following features and problems are also covered:

- ☐ Full online back-end administrative section, to manage practically all data from an intuitive user interface
- ☐ Site deployment

The implementation of each of these features provides the opportunity to teach various new features and concepts introduced by ASP.NET MVC 1.0, such as the following:

- ☐ The concepts of models
- ☐ Views
- ☐ What role View Engines play
- ☐ The use of View Master Pages, View Pages, and View User Controls
- ☐ The use of View Data and Temp Data to transfer data between controller actions and views
- ☐ The use of HTML and AJAX Extension Methods
- ☐ How jQuery is used in conjunction with MVC
- ☐ Controllers
- ☐ What role Controller Factories play
- ☐ The use of Routes to create REST-like URLs
- ☐ Controller Actions
- ☐ The use of Action filters, Action results, and Action selectors to enhance your application

We also use the following .NET 3.5 features that were added in C# 3.0:

- ❑ LINQ
- ❑ LINQ-to-SQL
- ❑ Extension methods
- ❑ Anonymous methods

In addition you learn how these new features and concepts will integrate with standard ASP.NET 2.0 features, such as:

- ❑ Master pages
- ❑ Membership and profile modules

Not only does this book cover the new features of ASP.NET MVC 1.0, it also demonstrates how to integrate all of them together, for the development of a single full-featured site. All the design options are explained and discussed (including the database design, the model, view, and controller design, and the overall site architecture); at the end of the book you will have learned many of the best practices for web development, based on a solid, scalable, and extensible architecture.

How This Book Is Structured

The book builds a complete project from start to finish. All the chapters (other than the first two) are self-contained modules within the larger project, and are structured in three sections:

- ❑ **Problem:** This defines the problem or problems to be addressed in the chapter: What do you want to do in this chapter? What features do you want to add to the site and why are they important? What restrictions or other factors need to be taken into account?
- ❑ **Design:** After the problem is defined adequately, this section describes what features are needed to solve the problem. This will give you a broad idea of how the solution will work or what will be entailed in solving the problem.
- ❑ **Solution:** After setting up what you are going to accomplish and why (and how that solves the problem defined earlier), we produce and discuss the code and any other material that will realize the design and solve the problem laid out at the beginning of the chapter. Just as the coverage of the book as a whole is weighted toward solution, so is each chapter. This is where you will get hands-on practice and create the code.

In Chapters 5 through 11 the *Design* and *Solution* sections are further broken down into sub-sections as we talked about earlier:

- ❑ Model
- ❑ Controller
- ❑ View

Each of these sub-sections will help solidify the concepts of MVC in a way that makes sense in the context of the *Design* or *Solution* sections of the chapter.

The book is intended to be read from cover to cover, so that you start with nothing and finish with a complete and deployed website ready to be launched. However, the book follows a modular structure, so every chapter is quite self-contained and implements a module that, if necessary, can be taken out of the proposed sample project and re-used in some other website.

Who This Book Is For

Let us state up front that this isn't a book for completely novice programmers, or for experienced developers that have never touched ASP.NET and the .NET Framework in general. This book teaches how to write a real-world website from scratch to deployment, and as such it can't explain every single detail of the technology, but must concentrate on designing and writing actual solutions. To comfortably read this book, you should already have had some experience with ASP.NET 2.0, even if not advanced solutions. You're not required to know ASP.NET MVC, because each chapter introduces the new concepts and features that you'll use in that chapter, providing enough background information to implement the solution. If you then want to go deeper and learn everything you can about a feature, you can refer to the MSDN official documentation or to another reference-type book such as Wrox's *Professional ASP.NET MVC 1.0*.

What You Need to Use This Book

To follow the book by building the project on your own computer, or to run the downloadable and ready-to-use project, you'll need the following:

- ❑ Windows XP, Windows Server 2003, Windows Vista, Windows 7, or Windows Server 2008.
- ❑ Any edition of Visual Studio 2008 for the C# language, including the freely available Visual Web Developer 2008 Express edition. The book depicts pictures from Visual Studio 2008 Professional edition.

<http://www.microsoft.com/express/vwd/>
- ❑ Any edition of SQL Server 2008, including the freely available SQL Server 2008 Express edition. The book uses SQL Server 2008 Express edition for this project, but realistically any version of SQL Server 2008 will work just the same.

<http://www.microsoft.com/express/sql/download/>
- ❑ Any edition of SQL Server Management Studio 2008, including the freely available Basic version that is distributed with *SQL Server 2008 Express with Tools* edition. The book depicts pictures from SQL Server Management Studio 2008.

<http://www.microsoft.com/express/sql/download/>

The Companion Website

This book features a companion website that makes available to you the latest code, issue tracking, and discussions surrounding the TheBeerHouse application that you build in this book. To visit the companion website, please visit this address:

`http://thebeerhouse.codeplex.com`

You can visit as a guest and just browse our wiki, source code, and discussions, or you can get involved with the other active members of the TheBeerHouse community. New members are always welcome. And participation is always encouraged for members, who are using the TheBeerHouse application in their real-world scenarios, to share their knowledge with the rest of the community.

In addition to the companion website mentioned, there is a community supported demonstration site of TheBeerHouse. To visit the demonstration website, please visit this address:

`http://www.TheBeerHouseExample.com`

This demonstration website should act as an example of the final website that will be produced by this book, and can be used as a reference point as you are working through the code in the book.

Conventions

To help you get the most from the text and keep track of what's happening, we've used a number of conventions throughout the book.

Boxes like this one hold important, not-to-be-forgotten information that is directly relevant to the surrounding text.

Tips, hints, tricks, and asides to the current discussion are offset and placed in italics like this.

As for styles in the text:

- ❑ We *highlight* new terms and important words when we introduce them.
- ❑ We show keyboard strokes like this: *Ctrl+A*.
- ❑ We show filenames, URLs, and code within the text like so: `persistence.properties`.
- ❑ We present code in two different ways:

We use a monospace font type with no highlighting for code examples.

We use gray highlighting to emphasize code that's particularly important in the present context.

Source Code

As you work through the examples in this book, you may choose either to type in all the code manually or to use the source code files that accompany the book. All of the source code used in this book is available for download at www.wrox.com. Once at the site, simply locate the book's title (either by using the Search box or by using one of the title lists) and click the Download Code link on the book's details page to obtain all the source code for the book.

Because many books have similar titles, you may find it easiest to search by ISBN; this book's ISBN is 978-0-470-41095-0.

Alternatively, you can download the source code from the CodePlex site mentioned earlier or go to the main Wrox code download page at www.wrox.com/dynamic/books/download.aspx to see the code available for this book and all other Wrox books.

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Errata

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