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Beginning

ASP.NET 2.0 Databases Beta Preview

Written and tested for **ASP.NET 2.0 Beta 2**

John Kauffman with Thiru Thangarathinam



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John Kauffman
with Thiru Thangarathinam



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John Kauffman has written numerous books about ASP and the incorporation of data into ASP pages. Born in Philadelphia and educated at Penn State, he has lived, taught, and programmed on three continents as he follows his wife's diplomatic assignments.

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This book is dedicated to my wife's extended family in appreciation for all they have done for me over the last twenty years. Aunt Ethel has been a gracious and generous hostess on so many occasions. Glenn has provided hours of intellectual stimulation in his quest to understand the grandest questions of the universe. Angela provided an open heart and wonderful meals on many extended stays at her home. Stephanie, Diego, Linda, and Dae Gwon have been wonderful hosts during visits to Pittsburgh, Venice, and Sunnyvale, especially when they tolerated our jet-lagged children running around their homes at two in the morning. My thanks to Leigh for his encouragement to our children and patient explanations of his research in the function of the human brain. Tam has generously provided her organizational skills on numerous occasions with travel plans and accommodations, while her daughters have given us another look at the world through children's eyes. And Dave has been so much fun for all of us and is now an inspiration and role model for my son. My thanks to all of you for your generosity, love, and acceptance over the last two decades.

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Foreword

It's hard to imagine a Web site on the Internet today that is without some form of data access. Whether you are building an e-commerce site, a business portal application, a news and information server, a family photo album, or even a personal Web log, all of these sites require some form of data to provide a rich, dynamic experience to viewers and customers. A static Web site simply is no longer an option for most real-world applications. Inevitably, all Web developers from hobbyists to professionals will need to learn dynamic Web programming to stay competitive in today's environment.

Web developers are faced with a wide variety of tools and technologies to choose from when deciding to build dynamic Web sites. Some of the factors to consider when choosing a development framework include ease-of-use, power and flexibility, designer support, maintainability, performance, and security. Of particular importance to building data-driven Web applications is how well the framework integrates with the variety of existing data stores you currently use or intend to use.

Since its introduction in February 2002, ASP.NET, part of Microsoft's .NET Framework technologies, has been adopted by developers everywhere as the platform of choice for building dynamic Web sites. ASP.NET introduced the Web development community to unprecedented simplicity for building dynamic applications, relying on reusable components called server controls to provide rich rendering and behaviors, without requiring developers to manually code complex logic for common scenarios. ASP.NET 1.0 also provided a flexible code separation and event model for programmability, which enabled Web application code to be factored cleanly and maintained easily. The net result was that sites that often required hundreds of lines of code and several weeks of development could be built in ASP.NET with minimal effort.

Of course, it is not in the nature of the ASP.NET team (currently named "Web Platform and Tools" within Microsoft) to rest on its laurels. Since the release of ASP.NET 1.0 (and the subsequent release of 1.1 in 2003), we have been hard at work thinking about how to make the next version even easier and more powerful, to meet the needs and demands of you, our developers. Looking back to ASP.NET 1.0 and 1.1, there were several challenges for developers who wanted to incorporate data into their applications. Specifically, the ASP.NET 1.x data access model required the developer to write code to retrieve the data from an underlying store (such as a database) and then manually bind server controls (like grids) to that data. Often, developers found that they were writing similar code in many different pages in their application, which resulted in a certain amount of "busy work" just to add data to a Web site. In thinking about ASP.NET 2.0, we recognized that these common code patterns could be encapsulated into the framework itself. In ASP.NET 2.0, we designed a data access solution with the following high-level goals in mind:

- ❑ **No code required**—Enable a completely declarative (no code) solution for adding data to a Web site and allow all the common data operations such as selecting, filtering, updating, inserting, and deleting data without code.
- ❑ **Consistency across different data types**—Allow controls to be bound to different types of data, including SQL databases, XML, and custom objects, in a consistent and transparent way, so that any control can be matched to any data type with no significant difference in the programming experience.

- ❑ **Rich designer support**—Provide a design-time tool experience in Visual Studio that enables developers to rapidly add data to their applications without having to manually edit the source code.
- ❑ **Flexibility and customizability**—Allow developers to easily add custom code to the processing of data within their application, while still taking advantage of the declarative (no code) model for common operations.
- ❑ **Extensibility to other data stores**—Enable a model that third-party developers can extend to support new types of data stores, without requiring changes to existing data-bound controls and application code.
- ❑ **Compatibility with version 1.x**—Ensure that applications built using the first version of ASP.NET continue to work without changes.

To achieve those goals, ASP.NET 2.0 introduces a control-based approach to data access that allows developers to add data to a Web site in much the same way as they would add any other server control. Reusable user interface (UI) components such as grids, trees, and lists can easily bind to data through a data source control, which takes care of exposing data from the underlying data store without requiring developers to manually handle the code to retrieve the data. Using controls has the additional advantage of allowing design tools such as Visual Studio to enable a simple drag-and-drop experience for adding data to a Web site. The result of the data control model is that building data-driven Web sites has never been easier. The ASP.NET data controls are a significant leap forward in terms of combining ease-of-use with the power and flexibility required to build real-world applications.

In addition to the new data controls in ASP.NET, Visual Studio 2005 adds a tremendous number of features to enhance developer productivity for common data development tasks. Visual Web Developer, a new member of the Visual Studio 2005 developer suite, is specifically targeted at Web developers and provides the best possible designer experience over ASP.NET. For example, the data controls automatically lead you through configuration wizards that make adding data to your Web site a snap. Visual Studio also comes with SQL Server Express, a lightweight database engine.

Praise for This Book

The book you are holding in your hands provides you with all you need to get started building data-driven Web sites with ASP.NET 2.0, Visual Web Developer Express, and SQL Server Express. Even if you have never built a dynamic Web site or used ASP.NET before, there is no better time to learn. The examples in each chapter guide you through the process of building data-enabled pages step by step, while the surrounding text breaks down the theory to help you understand the fundamental concepts. Simple, straightforward tutorials and a conversational style make this book approachable to the novice developer, while also demonstrating several real-world scenarios and tips that will be appreciated by those already familiar with the basics.

This book covers the data features in ASP.NET in great breadth. You'll learn how to generate rich dynamic data grids that can automatically perform updates, inserts, and deletes against the data. You'll also learn to build dynamic master-details data reports that allow your customers to filter and navigate through related data in your site. A variety of different data sources are considered, from SQL and Access databases to XML and custom business objects. Each topic is covered with an emphasis on the practical applications that you'll use again and again in future projects.

In summary, there is no better time to be a Web developer than right now. The amazing set of features in ASP.NET 2.0 adds a level of productivity and simplicity that no other framework can match. Whether you are a corporate developer, a small business owner, or hobbyist Web site designer, you will appreciate what ASP.NET and this book can do to enhance your development experience. If you are a beginning ASP.NET developer who wants to get started creating data-driven Web applications, this book is for you. I sincerely hope you enjoy it.

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