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Professional

DevExpress™ ASP.NET Controls

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Paul Kimmel
with Julian Bucknall and Joe Kunk

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For Alex and Noah

About the Authors

Paul Kimmel is a technical Evangelist for DevExpress and loving every minute of it. Paul started programming in 1988 when Donald Gardener and Mike Groher let him write some Databus code and has been writing code ever since. Paul has twenty plus years of experience writing software, writing books on object-oriented languages and UML, presenting at national conferences and local user groups, and is the co-founder of two .NET User Groups (Greater Lansing Area .NET User Group in Flint and East Lansing, Michigan). Paul is a five-time Microsoft MVP and the VB Today columnist for codeguru .com and is frequent contributor to InformIT.com, developer.com, devsource.com, and *Dr. Dobbs Journal.*

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Thank you to Alex and Noah Kimmel. They are teenagers now and need less of my time, but every moment with them has been my greatest blessing.

As always I am the first beneficiary of this work. It has been an insightful education, and I am fortunate to have had the opportunity.

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Introduction

I like writing because every book is a birth. Books are neat little packages that contain information that has been pulled out of mind stuff, written down, edited and re-edited, printed, and glued together. When I get my author copies there is always a sense of satisfaction at having been part of creating something. Then, I take a deep breath and wait to see what the readers think.

Components and controls are always just one part of application development. Developers have to get requirements, design solutions and databases, and assemble all of the various pieces and then refine the total effort. Writing books and software follow some of the same practices: define, design, implement, debug/edit, ship, and support. In either kind of implementation, whether book or software, sometimes requirements and features make it in and sometimes they don't.

This book was originally slated at 400 pages. There were so many more features that I wanted to cover that almost 200 additional pages were added. In truth, there were discussions we had internally about how we could have provided more samples and probably produced 1,000 more pages. DevExpress offers many rich products and this book really just focuses on the ASP.NET controls. (A WinForms book could easily cover its own 1,000 pages.)

Although many people participate in the process of a book, writing a book for the most part is about telling a story from one person's perspective. For this book I looked at all of the products DevExpress offers in the ASP.NET space and tried to cover every single one of them. The ASPxGridView is a widely used product and it got a lot of coverage, but the juicy products like ASPxScheduler, ASPxTreeList, ASPxHTMLEditor, ASPxPivotGrid, XtraCharts, XtraReports, and many more products got extensive coverage. Some of these products even got their own chapters. If you glance at the table of contents you will see that XPO, the ASPxCloudControl, and client-side controls are all covered. There are even sections on general ASP.NET topics like JavaScript, Themes and Skins, and cascading style sheets. Unfortunately, in 600 pages I couldn't cover everything and some samples that would have been good samples didn't make it. To that end this book will have a product support page where I (and others I suspect) will be adding updated information for new releases, additional samples, and samples based on your inquiries. As I am sure you have challenges I didn't think of, if you send inquiries to me at `paulk@devexpress.com` I will work out a sample, and write a blog or an article as a supplement.

The real purpose of this book is to provide our very important customers with another resource that will help them build great software. Every effort is made to make your development experience intuitive, productive, and fun. However, our products are feature rich and we understand that sometimes it helps to have someone point you in the right direction or provide you with a little guidance. This book is one additional bit of that guidance. If you need more than what is between these pages, just ask.

The first beneficiary of a book is the author. Even authors gain tremendous insight as part of the process of writing. One not so obvious insight is that our dozens of developers can turn out dot releases faster than I can write about all of them. This book was produced against versions 8.3 to 9.1. Just as I finished writing, 9.2 was released and 9.3 will be done by the time you are holding this finished book. As soon as I finish my final edits to the draft, I will be working diligently to create new examples, write about what is new, and updating material in the form of blogs and articles so that information — on 9.2 and 9.3 — will be available in conjunction with this book.

Many people helped this book get published, and I couldn't have done it without their help. Ownership of the story is mine, and any mistakes are my responsibility. The objective was and is to provide more support and a better customer experience. The real heroes are our developers, and I hope I did some justice to their great efforts.

Part I: Grids, Editors, Navigation, and Controls

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Chapter 6: Managing Scheduled Items and Using Gauges

1

Programming with the ASPxGridView

This year is the tenth anniversary of my *VB Today* column for Codeguru.com and Developer.com. (My first article was published in *PC World* in 1992.) In that time, during which I've written hundreds of articles, readers have written to me more about two subjects than any other: keyboard hooking and grid controls.

Low-level keyboard hooks are cool. I started using them with DOS interrupts and C++ in the early 1990s. Grids of data, however, have the more practical and compelling everyday usefulness.

For years now, customers have asked me to make grids do things that they originally did not seem designed to do, including doing complex relationship modeling with grid nesting and performing real-time calculations with solutions that are more like Rube Goldberg machines than algorithms. Although crafting these solutions — sometimes against my better judgment — with nested user controls and hand-written asynchronous callbacks from scratch has been fun, I'm pleased to pass the baton off to the `ASPxGridView`.

The `ASPxGridView` is designed to support nesting, the power of Ajax callbacks, tuned performance for small and huge data sets, sorting, grouping, creating summaries, working with themes and skins, and much more. This chapter and the next chapter explore the `ASPxGridView`. I created the TotalFlight database for the samples used in these chapters because I wanted large amounts of data, but you can easily use Northwind or any other database that has a great deal of data to run the samples. (I used Red Gate Software's SQL Data Generator 1 to populate the TotalFlight database.)

Understanding How Ajax Delivers Real Performance to the ASPxGridView

A lot of conventional wisdom floats around, including the idea that to get high performance from your Web applications, you need to limit the amount of data you return to the client. Generally, limiting returned data required that each programmer limit possible query results or invent some mechanism for micromanaging high-data-prone controls such as grids. Then, things changed — and they seemed to change pretty quickly even for Internet time. Ajax had arrived.

Now called Ajax (in mixed case), the term *AJAX* (all uppercase) was coined in 2005. Originally, AJAX was an acronym for Asynchronous JavaScript and XML. AJAX was a derivative of capabilities created in the 1990s, including Internet Explorer's IFrame and Java Applets, and is based on the ActiveX object `XMLHttpRequest`, or remote scripting for browsers that don't support `XMLHttpRequest`. The term AJAX brought asynchronous callbacks to the general programming community's attention, and AJAX made controls such as the `UpdatePanel` accessible to all developers. (These later developments actually happened in 2005 and 2006.) Originally dubbed AJAX for JavaScript, XML, or asynchronous calls, it is now simply referred to as Ajax.

What Does Ajax Do for Web Developers?

Web forms have a life cycle. (Refer to "Appendix A: Understanding How Web Applications Differ from Windows Applications" for more on page life cycles.) When a page is posted back from the client to the server, it goes through the entire life cycle. This life cycle includes rerendering the page, which in turn causes the very visible page flicker users experience. Many times, much of what the user experiences is the result of static content and minor changes based on their interactions with the page; what they pay for with a postback is the re-creation of everything.

Ajax uses callbacks. A callback sends data back to the server, but only the relevant response is returned through the browser. Ajax plumbing literally used to require — as late as 2005 — programmers to inject dynamic JavaScript, wire up event handlers, and manually parse and stuff text returned into the client Web page with more JavaScript. (There are dozens of JavaScript examples throughout the book.) The benefit of employing all this specialized knowledge is that users had a better experience because they paid for data refreshes only when something actually changed on a page. Also, pages seemed to update magically.

You can still use wired-up Ajax with injected script if you want, but it is more error prone and requires great JavaScript authoring and debugging skills. With DevExpress controls and the `ASPxGridView`, you get the benefit of Ajax without the hassle.

ASPxGridView and Ajax

On top of all the features in the `ASPxGridView`, including sorting, grouping, filtering, and summaries, the `ASPxGridView` does three very important things that help you get the highest performance: It uses the database server instead of client-side script to manage data; it manages the client `VIEWSTATE` block