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# Internet & World Wide Web

## HOW TO PROGRAM

FOURTH EDITION

**P. J. Deitel**

*Deitel & Associates, Inc.*

**H. M. Deitel**

*Deitel & Associates, Inc.*



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the annual Web 2.0 Summit conference  
and so much more.*

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# Preface

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*Science and technology and the various forms of art,  
all unite humanity in a single and interconnected system.*

—Zhores Aleksandrovich Medvede

Welcome to Internet and web programming and *Internet & World Wide Web How to Program, Fourth Edition*! At Deitel & Associates, we write programming language textbooks and professional books for Prentice Hall, deliver corporate training worldwide and develop Web 2.0 Internet businesses. The book has been substantially reworked to reflect today's Web 2.0 Rich Internet Application-development methodologies. We have significantly tuned each of the chapters and added new chapters on some of the latest technologies.

## New and Updated Features

Here's a list of updates we've made to the fourth edition of *Internet & World Wide Web How to Program*:

- Substantially reworked to reflect today's Web 2.0 Rich Internet Application-development methodologies.
- Coverage of the two leading web browsers—Internet Explorer 7 and Firefox 2. All client-side applications in the book run correctly on both browsers.
- New focus on Web 2.0 technologies and concepts.
- New chapter on Web 2.0 and Internet Business (reviewed by leaders in the Web 2.0 community).
- New focus on building Rich Internet Applications with the interactivity of desktop applications.
- New chapter on building Ajax-enabled web applications, with applications that demonstrate partial-page updates and type-ahead capabilities.
- New chapter on Adobe Flex—a Rich Internet Application framework for creating scalable, cross-platform, multimedia-rich applications for delivery within the enterprise or across the Internet.
- New chapter on Microsoft Silverlight (a competitor to Adobe Flash and Flex)—a cross-browser and cross-platform plug-in for delivering .NET-based Rich Internet Applications that include audio, video and animations over the web.
- New chapter on rapid applications development of database-driven web applications with Ruby on Rails; also, discusses developing Ajax applications with the included Prototype and Script.aculo.us libraries.
- Updated chapter on Adobe Dreamweaver CS3 (Creative Suite 3), including new sections on CSS integration and the Ajax-enabled Spry framework.

- Updated chapters on Adobe Flash CS3, including a chapter on building a computer game.
- Significantly enhanced treatments of XHTML DOM manipulation and JavaScript events.
- Significantly enhanced treatment of XML DOM manipulation with JavaScript.
- New chapter on building SOAP-based web services with Java and REST-based web services with ASP.NET (using Visual Basic).
- Upgraded and enhanced the PHP chapter to PHP 5.
- Updated ASP.NET 1.1 coverage to ASP.NET 2.0, featuring ASP.NET Ajax.
- New JavaServer Faces (JSF) coverage emphasizing building Ajax-enabled JSF applications (replaces Servlets and JavaServer Pages).
- Client-side case studies that enable students to interact with preimplemented server-side applications and web services that we host at `test.deitel.com`.
- Several new and updated case studies including Deitel Cover Viewer (JavaScript/DOM), Address Book (Ajax), Cannon Game (Flash), Weather/Yahoo! Maps Mashup (Flex), Movie Player (Silverlight), Mailing List (PHP/MySQL), Message Forum and Flickr Photo Viewer (Ruby on Rails), Guest Book and Secure Books Database (ASP.NET), Address Book with Google Maps (JavaServer Faces) and Blackjack (JAX-WS web services).
- The Perl 5 and Python chapters from the previous edition of this book are posted in PDF form at `www.deitel.com/books/iw3http4/`.

All of this has been carefully reviewed by distinguished academics and industry developers.

We believe that this book and its support materials will provide students and professionals with an informative, interesting, challenging and entertaining Internet and web programming educational experience. The book includes a suite of ancillary materials that help instructors maximize their students' learning experience.

If you have questions as you read this book, send an e-mail to `deitel@deitel.com`—we'll respond promptly. For updates on the book and the status of all supporting software, and for the latest news on Deitel publications and services, visit `www.deitel.com`. Sign up at `www.deitel.com/newsletter/subscribe.html` for the free *Deitel<sup>®</sup> Buzz Online* e-mail newsletter and check out `www.deitel.com/ResourceCenters.html` for our growing list of Internet and web programming, Internet business, Web 2.0 and related Resource Centers. Each week we announce our latest Resource Centers in the newsletter. Please let us know of other Resource Centers you'd like to see.

## Dependency Chart

Figure 1 illustrates the dependencies that exist between chapters in the book. An arrow pointing into a chapter indicates that the chapter depends on the content of the chapter from which the arrow points. For example, Chapter 28, Web Services, depends on both Chapters 25 and 27. We recommend that you study all of a given chapter's dependencies before studying that chapter, though other orders are certainly possible. Some of the dependencies apply only to sections of chapters, so we advise readers to browse the material before designing a course of study. We've also commented on some additional dependen-



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