

ASP.NET AJAX

Programmer's Reference

Dr. Shahram Khosravi



- Written and tested with both ASP.NET 2.0 and ASP.NET 3.5
- Updates, source code, and Wrox technical support at www.wrox.com



Wrox Programmer to Programmer™

BROWSE BOOKS

P2P FORUM

FREE NEWSLETTER

ABOUT WROX

Get more Wrox at **Wrox.com!**

Special Deals

Take advantage of special offers every month

Unlimited Access. . .

. . . to over 70 of our books in the Wrox Reference Library (see more details online)

Meet Wrox Authors!

Read running commentaries from authors on their programming experiences and whatever else they want to talk about



GIFT OF THE ASIA FOUNDATION
NOT FOR RE-SALE

QUÀ TẶNG CỦA QUỸ CHÂU Á
KHÔNG ĐƯỢC BÁN LẠI

Free Chapter Excerpts

Be the first to preview chapters from the latest Wrox publications

Forums, Forums, Forums

Take an active role in online discussions with fellow programmers

Browse Books

.NET
SQL Server
Java

XML
Visual Basic
C#/C++

Join the community!

Sign-up for our free monthly newsletter at
newsletter.wrox.com

ASP.NET AJAX Programmer's Reference

with ASP.NET 2.0 or ASP.NET 3.5

Acknowledgments	xi
Introduction	xxix
Chapter 1: AJAX Technologies	1
Chapter 2: JavaScript Base Type Extensions	27
Chapter 3: Built-In and Custom Exception Types	53
Chapter 4: JavaScript Object-Oriented Programming and Type Reflection Extensions	77
Chapter 5: Event Programming Extensions	131
Chapter 6: DOM Extensions	161
Chapter 7: Component Development Infrastructure	219
Chapter 8: Developing Client Controls	281
Chapter 9: Event Bubbling and Button Client Control	323
Chapter 10: Type Description Extensions	349
Chapter 11: Data Classes	407
Chapter 12: Client-Server Communications	457
Chapter 13: Consuming Web Services Via Soap Messages	511
Chapter 14: Consuming Web Services Via JSON Messages	535
Chapter 15: Proxy Classes	597
Chapter 16: Behaviors	659
Chapter 17: Script and Extender Server Controls	707
Chapter 18: Web Services Bridges and Transformers	773
Chapter 19: UpdatePanel and ScriptManager	857
Chapter 20: Using UpdatePanel in User Controls and Custom Controls ...	911
Chapter 21: Page Life Cycle and Asynchronous Partial Page Rendering ...	965
Chapter 22: ASP.NET AJAX Client-Side PageRequestManager	1033

Continues

Chapter 23: Asynchronous Partial Page Rendering:	
Server Side Processing	1105
Chapter 24: Asynchronous Partial Page Rendering:	
Client-Side Processing	1179
Appendix A: XML Script	1275
Appendix B: Binding	1325
Appendix C: Actions	1341
Appendix D: Data Control.	1357
Appendix E: Templated Controls.	1381
Appendix F: ListView	1409
Index	1481

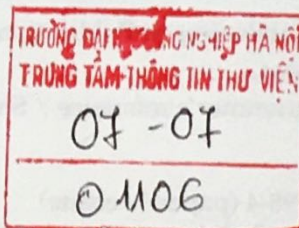
ASP.NET AJAX Programmer's Reference with ASP.NET 2.0 or ASP.NET 3.5

Dr. Shahram Khosravi



**GIFT OF THE ASIA FOUNDATION
NOT FOR RE-SALE**

**QUÀ TẶNG CỦA QUỸ CHÂU Á
KHÔNG ĐƯỢC BÁN LẠI**



Wiley Publishing, Inc.

ASP.NET AJAX Programmer's Reference with ASP.NET 2.0 or ASP.NET 3.5

Published by
Wiley Publishing, Inc.
10475 Crosspoint Boulevard
Indianapolis, IN 46256
www.wiley.com

Copyright © 2007 by Wiley Publishing, Inc., Indianapolis, Indiana

Published simultaneously in Canada

ISBN: 978-0-470-10998-4

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600. Requests to the Publisher for permission should be addressed to the Legal Department, Wiley Publishing, Inc., 10475 Crosspoint Blvd., Indianapolis, IN 46256, (317) 572-3447, fax (317) 572-4355, or online at <http://www.wiley.com/go/permissions>.

Limit of Liability/Disclaimer of Warranty: The publisher and the author make no representations or warranties with respect to the accuracy or completeness of the contents of this work and specifically disclaim all warranties, including without limitation warranties of fitness for a particular purpose. No warranty may be created or extended by sales or promotional materials. The advice and strategies contained herein may not be suitable for every situation. This work is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional services. If professional assistance is required, the services of a competent professional person should be sought. Neither the publisher nor the author shall be liable for damages arising herefrom. The fact that an organization or Website is referred to in this work as a citation and/or a potential source of further information does not mean that the author or the publisher endorses the information the organization or Website may provide or recommendations it may make. Further, readers should be aware that Internet Websites listed in this work may have changed or disappeared between when this work was written and when it is read.

For general information on our other products and services or to obtain technical support, please contact our Customer Care Department within the U.S. at (800) 762-2974, outside the U.S. at (317) 572-3993 or fax (317) 572-4002.

Library of Congress Cataloging-in-Publication Data:

Khosravi, Shahram, 1963-
ASP.NET Ajax programmer's reference / Shahram Khosravi.

p. cm.

Includes index.

ISBN 978-0-470-10998-4 (paper/website)

1. Active server pages.
2. Internet programming.
3. Web site development.
4. Ajax (Web site development technology)
5. Microsoft .NET.

TK5105.8885.A26K538 2007

005.2'76--dc22

2007024239

Trademarks: Wiley, the Wiley logo, Wrox, the Wrox logo, Wrox Programmer to Programmer, and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates, in the United States and other countries, and may not be used without written permission. All other trademarks are the property of their respective owners. Wiley Publishing, Inc., is not associated with any product or vendor mentioned in this book.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

About the Author

Shahram Khosravi, Ph.D., is a senior software engineer, consultant, author, and instructor specializing in ASP.NET, Windows Communications Foundation (WCF), ASP.NET AJAX, Windows Workflow Foundation (WF), IIS7 and ASP.NET Integrated Programming, ADO.NET, Web services, .NET, and XML technologies such as XSD, XSLT, XPath, SOAP, and WSDL. He also has years of experience in object-oriented analysis, design, and programming, architectural and design patterns, service-oriented analysis, design, and programming, 3D computer graphics programming, user interface design, and usability.

Shahram is the author of the following four books: *Professional ASP.NET 3.5 and .NET 3.5 Programming (ASP.NET Internals plus ASP.NET AJAX, IIS 7.0, Enterprise Library Application Blocks, Windows Workflow Foundation, and Windows Communication Foundation)*, *ASP.NET AJAX Programmer's Reference with ASP.NET 2.0 or ASP.NET 3.5*, *Professional IIS7 and ASP.NET Integrated Programming*, and *Professional ASP.NET Server Control and Component Development*. He has written articles on the ASP.NET, ADO.NET, .NET, and XML technologies for the industry's leading magazines, such as *Dr. Dobbs' Journal*, *asp.netPRO* magazine, and *Microsoft MSDN Online*.

Credits

Senior Acquisitions Editor

Jim Minatel

Development Editor

Brian MacDonald

Technical Editors

Alexei Gorkov

Darren J. Kindberg

Sam Judson

Dan Maharry

Cody Reichenau

Production Editor

Eric Charbonneau

Copy Editors

Kathryn Duggan

S. B. Kleinman

Editorial Manager

Mary Beth Wakefield

Production Manager

Tim Tate

Vice President and Executive Group Publisher

Richard Swadley

Vice President and Executive Publisher

Joseph B. Wikert

Project Coordinator, Cover

Adrienne Martinez

Proofreader

Ian Golder

Indexer

Jack Lewis

Anniversary Logo Design

Richard Pacifico

Acknowledgments

First and foremost, I would like to greatly thank Jim Minatel, the senior acquisitions editor on the book, for giving me the opportunity to work on this exciting project and for all his support and guidance throughout the process. Huge thanks go to Brian MacDonald, the book's development editor. I greatly appreciate all your input, comments, and advice. Thanks, Brian, for everything! Special thanks go to the book's technical editors; Alexei Gorkov, Darren J. Kindberg, Sam Judson, Dan Maharry and Cody Reichenau. Thank you gentlemen, for all your input and comments.

Additional thanks go to Eric Charbonneau, the book's production editor. Thanks also go to Kathi Duggan and S.B. Kleinman, the copy editors; as well as Ian Golder, the proofreader.

Contents

Acknowledgments

xi

Introduction

xxix

Chapter 1: AJAX Technologies

1

Google Suggest

1

XMLHttpRequest

4

XML

16

JSON

20

object

20

array

20

string

20

number

21

null, true, and false

21

ASP.NET AJAX

24

Installing the ASP.NET AJAX Extensions and ASP.NET Futures

25

Summary

25

Chapter 2: JavaScript Base Type Extensions

27

ASP.NET AJAX Array Type Extensions

28

add

28

addRange

29

clear

29

clone

30

contains

30

enqueue and dequeue

31

forEach

33

indexOf

34

insert

35

parse

36

remove

36

removeAt

37

ASP.NET AJAX Boolean Type Extensions

37

ASP.NET AJAX Date Type Extensions

38

ASP.NET AJAX Object Type Extensions

38

Contents

ASP.NET AJAX String Type Extensions	39
endsWith	39
startsWith	40
trim	40
Formatting	41
ASP.NET AJAX Error Type Extensions	41
create	41
popStackFrame	45
Under the Hood of popStackFrame	48
Summary	52
 Chapter 3: Built-In and Custom Exception Types	 53
ASP.NET AJAX Built-In Exception Types	53
ArgumentException	53
ArgumentNullException	56
ArgumentOutOfRangeException	58
ArgumentTypeException	60
ArgumentUndefinedException	64
InvalidOperationException	66
NotImplementedException	66
ParameterCountException	68
Implementing Custom Exception Types	70
Recipe for Implementing Custom Exception Types	70
Using the Recipe	71
Summary	76
 Chapter 4: JavaScript Object-Oriented Programming and Type Reflection Extensions	 77
JavaScript Functions	78
JavaScript Classes	79
Type	80
registerClass	81
getName	83
isClass	84
registerNamespace	85
isNamespace	88
registerInterface	89
getInterfaces	92
isInterface	95
Inheritance	96

getBaseType	100
initializeBase	102
resolveInheritance	103
callBaseMethod	104
getBaseMethod	110
implementsInterface	113
inheritsFrom	118
isImplementedBy	121
getRootNamespaces	123
parse	125
registerEnum	127
isEnum	129
isFlags	129
Summary	130
 Chapter 5: Event Programming Extensions	 131
 Event Programming	 131
Sys.EventArgs	132
Sys.CancelEventArgs	132
EventHandlerList	133
Using Event Programming	138
Base Classes	138
Events	144
Summary	159
 Chapter 6: DOM Extensions	 161
 DomElement	 161
getElementById	161
addCssClass	166
containsCssClass	167
removeCssClass	167
toggleCssClass	169
getLocation	171
setLocation	172
getBounds	175
MouseButton	176
Key	176
Delegates	177
Namespace	183
Mover	184