

15 Fun Coding Projects!

# JavaScript<sup>®</sup> FOR KIDS

- Build an Animated Robot App
- Create Cool Games
- Make a Web Page
- Learn Real Coding Skills

Chris Minnick  
Eva Holland  
*Cofounders of WatzThis?*



FOR  
**DUMMIES**  
A Wiley Brand



# ***JavaScript<sup>®</sup>*** ***For Kids***

FOR  
**DUMMIES<sup>®</sup>**  
A Wiley Brand

**by Chris Minnick and Eva Holland**

FOR  
**DUMMIES<sup>®</sup>**  
A Wiley Brand

**JavaScript® For Kids For Dummies®**

Published by: **John Wiley & Sons, Inc.**, 111 River Street, Hoboken, NJ 07030-5774, [www.wiley.com](http://www.wiley.com)

Copyright © 2015 by John Wiley & Sons, Inc., Hoboken, New Jersey

Published simultaneously in Canada

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 the prior written permission of the Publisher. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

**Trademarks:** Wiley, For Dummies, the Dummies Man logo, Dummies.com, Making Everything Easier, and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc., and may not be used without written permission. JavaScript is a registered trademark of Oracle, Inc. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc., is not associated with any product or vendor mentioned in this book.

**LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: WHILE THE PUBLISHER AND AUTHOR HAVE USED THEIR BEST EFFORTS IN PREPARING THIS BOOK, THEY MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS BOOK AND SPECIFICALLY DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES REPRESENTATIVES OR WRITTEN SALES MATERIALS. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR YOUR SITUATION. YOU SHOULD CONSULT WITH A PROFESSIONAL WHERE APPROPRIATE. NEITHER THE PUBLISHER NOR THE AUTHOR SHALL BE LIABLE FOR DAMAGES ARISING HEREFROM.**

For general information on our other products and services, please contact our Customer Care Department within the U.S. at 877-762-2974, outside the U.S. at 317-572-3993, or fax 317-572-4002. For technical support, please visit [www.wiley.com/techsupport](http://www.wiley.com/techsupport).

Wiley publishes in a variety of print and electronic formats and by print-on-demand. Some material included with standard print versions of this book may not be included in e-books or in print-on-demand. If this book refers to media such as a CD or DVD that is not included in the version you purchased, you may download this material at <http://booksupport.wiley.com>. For more information about Wiley products, visit [www.wiley.com](http://www.wiley.com).

Library of Congress Control Number: 2015945282

ISBN 978-1-119-11986-9 (pbk); ISBN 978-1-119-11989-0 (ebk); ISBN 978-1-119-11988-3

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

# Contents at a Glance

<b>Introduction .....</b>	<b>1</b>
---------------------------	----------

<b>Part I: What Is JavaScript? Alert! JavaScript Is Awesome! .....</b>	<b>5</b>
--	----------

Chapter 1: Programming the Web .....	7
Chapter 2: Understanding Syntax .....	22
Chapter 3: Giving and Receiving Data .....	33
Chapter 4: Fiddling with Web Applications .....	51

<b>Part II: Animating the Web .....</b>	<b>69</b>
---	-----------

Chapter 5: JavaScript and HTML .....	71
Chapter 6: JavaScript and CSS .....	89
Chapter 7: Building an Animated Robot .....	104

<b>Part III: Getting Operations .....</b>	<b>123</b>
---	------------

Chapter 8: Building Your Dream Car with Operands .....	125
Chapter 9: Putting It Together with Operators .....	136
Chapter 10: Creating Your Own JavaScript Word Game .....	153

<b>Part IV: Arrays and Functions .....</b>	<b>171</b>
--	------------

Chapter 11: Creating and Changing Arrays .....	173
Chapter 12: Making It Functional .....	190
Chapter 13: Creating a Wish List Program .....	206

<b>Part V: Freedom of Choice .....</b>	<b>231</b>
--	------------

Chapter 14: Making Decisions with the If...Else Statement .....	233
Chapter 15: Doing Different Things with Switch .....	252
Chapter 16: Choose Your Own Adventure .....	267

<b>Part VI: Loops</b>	<b>293</b>
Chapter 17: What's This Loop For?	295
Chapter 18: Using While Loops	309
Chapter 19: Building a Lemonade Stand	326
<b>Index</b>	<b>355</b>

# Table of Contents

## Introduction..... 1

About This Book .....	1
Foolish Assumptions.....	3
Icons Used In This Book .....	3
Beyond the Book .....	4
Where to Go from Here.....	4

## Part I: What Is JavaScript? Alert! JavaScript Is Awesome! ..... 5

### Chapter 1: Programming the Web ..... 7

What Is Programming? .....	8
Talking to Computers.....	9
Choosing a Language .....	11
What Is JavaScript? .....	12
Get Your Browser Ready .....	15
Opening the Web Developer Tools .....	16
Introducing the JavaScript Console .....	18
Running Your First JavaScript Commands.....	19
Having Fun with Math .....	21

### Chapter 2: Understanding Syntax ..... 22

Saying Precisely What You Mean .....	23
Making a Statement .....	24
Following the Rules .....	25

### Chapter 3: Giving and Receiving Data ..... 33

Mastering Variables .....	34
Understanding Data Types.....	38
Prompting the User for Input.....	42
Responding to Input.....	44
Combining Input and Output .....	48

### Chapter 4: Fiddling with Web Applications. .... 51

Introducing JSFiddle.....	52
Creating a JSFiddle Account.....	63
Sharing Your Fiddle.....	65
Saving Your App .....	67



## Part II: Animating the Web ..... 69

### Chapter 5: JavaScript and HTML ..... 71

Writing HTML.....	72
Knowing Your HTML Elements.....	78
Adding Attributes to Elements .....	81
Changing HTML with JavaScript.....	83

### Chapter 6: JavaScript and CSS. .... 89

Meet Douglas the JavaScript Robot .....	90
CSS Basics.....	90
CSS Properties Give You Style .....	93
Customize Your Own JavaScript Robot!.....	103

### Chapter 7: Building an Animated Robot ..... 104

Changing CSS with JavaScript.....	105
Make Douglas Dance! .....	109

## Part III: Getting Operations..... 123

### Chapter 8: Building Your Dream Car with Operands . . . 125

Knowing Your Operands .....	126
Working with Objects.....	130
Configuring Your Dream Car .....	132

### Chapter 9: Putting It Together with Operators. .... 136

Introducing the Super-Calculator .....	137
Super-Calculator Tricks .....	150

### Chapter 10: Creating Your Own JavaScript Word Game. .... 153

Creating a Variable Story.....	154
Creating the Word Replacement Game.....	154

## Part IV: Arrays and Functions..... 171

### Chapter 11: Creating and Changing Arrays. .... 173

What Are Arrays?.....	174
Creating and Accessing Arrays.....	175
Changing Array Element Values .....	176
Working with Array Methods.....	177
Learning the Ways of Arrays.....	178



<b>Chapter 12: Making It Functional . . . . .</b>	<b>190</b>
Understanding Functions .....	191
Knowing What Functions Are Made Of .....	193
Building Function Junction.....	196
<b>Chapter 13: Creating a Wish List Program . . . . .</b>	<b>206</b>
Introducing the Wish List Program .....	207
Forking the Code.....	208
Writing the HTML .....	210
Writing the JavaScript Code.....	212
 <b>Part V: Freedom of Choice.....</b>	 <b>231</b>
<b>Chapter 14: Making Decisions with the If...Else Statement . . . . .</b>	<b>233</b>
Boolean Logic.....	234
Introducing if...else Statements .....	236
Combining Comparisons with Logical Operators .....	238
Freshening Up the JavaScript Pizzeria.....	240
<b>Chapter 15: Doing Different Things with Switch . . . . .</b>	<b>252</b>
Writing a Switch.....	253
Building the Activity-of-the-Day Calendar .....	255
<b>Chapter 16: Choose Your Own Adventure . . . . .</b>	<b>267</b>
Planning the Story .....	268
Playing the Game .....	269
Forking the Code.....	271
Tiptoeing through the HTML and CSS .....	272
Writing the Martian Rescue! JavaScript.....	276
 <b>Part VI: Loops.....</b>	 <b>293</b>
<b>Chapter 17: What's This Loop For? . . . . .</b>	<b>295</b>
Introducing the for Loop .....	296
Random Weather Forecasting.....	299
<b>Chapter 18: Using While Loops . . . . .</b>	<b>309</b>
Writing a while Loop .....	310
Coding the Lunch Game.....	312
Moving to Your Own Website .....	318

**Chapter 19: Building a Lemonade Stand . . . . . 326**

    Playing the Game ..... 327

    A Lesson in Business ..... 329

    Building the Game ..... 334

    Improving the Lemonade Game..... 352

**Index..... 355**

# Introduction

***JavaScript For Kids For Dummies*** is an introduction to the basics of JavaScript coding. In each chapter, we walk you step-by-step through creating JavaScript programs for the web. Designed for kids of all ages, with no coding experience, we strive to introduce this technical topic in a fun, engaging, and interactive way.

JavaScript is the most widely used programming language in the world today. That's why we think you've made a great decision by beginning your journey into the world of coding by picking up this book.

JavaScript is fun and easy to learn! With some determination and imagination, you'll be on your way to creating your very own JavaScript programs in no time!

Just as the only way to Carnegie Hall is to practice, practice, practice, the only way to become a better programmer is to code, code, code!

## About This Book

We seek to “de-code” the language of JavaScript for you and give you an understanding of the concepts. With the ability to move at your own pace, *JavaScript For Kids For Dummies* will get you up to speed. In this book, you learn how to create fun games and programs. We even show you how to customize and build your own versions of the games that you can post to the web and share with your friends!

Whether you know a little JavaScript or you've never seen it before, this book shows you how to write JavaScript the right way.

Topics covered in this book include the following:

- ✓ The basic structures of JavaScript programs
- ✓ JavaScript expressions and operators
- ✓ Structuring your programs with functions
- ✓ Writing loops
- ✓ Working with JavaScript, HTML5, and CSS3
- ✓ Making choices with `if...else` statements

Learning JavaScript isn't only about learning how to write the language. It's also about accessing the tools and the community that has been built around the language. JavaScript programmers have refined the tools and techniques used to write JavaScript over the language's long and exciting history. Throughout this book, we mention important techniques and tools for testing, documenting, and writing better code!

To make this book easier to read, you'll want to keep in mind a few tips. First, all JavaScript code and all HTML and CSS markup appears in monospaced type like this:

```
document.write("Hi!");
```

The margins on a book page don't have the same room as your monitor likely does, so long lines of HTML, CSS, and JavaScript may break across multiple lines. Remember that your computer sees such lines as single lines of HTML, CSS, or JavaScript. We indicate that everything should be on one line by breaking it at a punctuation character or space and then indenting any overage, like so:

```
document.getElementById("thisIsAnElementInTheDocument").  
    addEventListener("click",doSomething,false);
```

HTML and CSS don't care very much about whether you use uppercase or lowercase letters or a combination of the two. But, JavaScript cares a lot! In order to make sure that you get the correct results from the code examples in the book, always stick to the same capitalizations that we use.

## Foolish Assumptions

You don't need to be a "programming ninja" or a "hacker" to understand programming. You don't need to understand how the guts of your computer work. You don't even need to know how to count in binary.

However, we do need to make a couple of assumptions about you. We assume that you can turn your computer on, that you know how to use a mouse *and* a keyboard, and that you have a working Internet connection and web browser. If you already know something about how to make web pages (it doesn't take much!), you'll have a jumpstart on the material.

The other things you need to know to write and run JavaScript code are details we cover in this book, and the one thing you'll find to be true is that programming requires attention to details.

## Icons Used In This Book

Here's a list of the icons we use in this book to flag text and information that's especially noteworthy.



This icon highlights technical details that you may or may not find interesting. Feel free to skip this information, but if you're the techie type, you might enjoy reading it.



This icon highlights helpful tips that show you easy ways or short-cuts that will save you time or effort.



Whenever you see this icon, pay close attention. You won't want to forget the information you're about to read — or, in some cases, we'll remind you about something that you've already learned that you may have forgotten.



Be careful. This icon warns you of pitfalls to avoid.

## Beyond the Book

We've put together a lot of extra content that you won't find in this book. Go online to find the following:

- ✔ **Cheat Sheet:** An online Cheat Sheet is available at [www.dummies.com/cheatsheet/javascriptforkids](http://www.dummies.com/cheatsheet/javascriptforkids). Here, you find information on converting CSS property names to JavaScript; a list of common web browser events that JavaScript can respond to; and a list of words that can't be used as JavaScript variables, functions, methods, loop labels, or object names.
- ✔ **Web Extras:** Online articles covering additional topics are available at [www.dummies.com/extras/javascriptforkids](http://www.dummies.com/extras/javascriptforkids). In these articles, we cover things like HTML5 form input tricks, how to name JavaScript variables, JavaScript troubleshooting tips, and more.

## Where to Go from Here

Coding with JavaScript is fun, and when you get a little knowledge under your belt, the world of interactive web applications is your oyster! So buckle up! We hope you enjoy the book and our occasional pearls of wisdom.

If you want to show us changes and improvements you make to our games, or programs you come up with on your own, you can do so on Facebook ([www.facebook.com/watzthisco](http://www.facebook.com/watzthisco)), Twitter ([www.twitter.com/watzthisco](http://www.twitter.com/watzthisco)), or via email at [info@watzthis.com](mailto:info@watzthis.com). We're excited to see what you come up with!

# Part I

## What Is JavaScript? Alert! JavaScript Is Awesome!

