

9th Edition

Web Development and Design Foundations with HTML5





(

A01_FELK1148_09_SE_FM.indd 2 1/8/18 12:24 PM



9th Edition

Web Development and Design Foundations with HTML5

Terry Ann Felke-Morris, Ed.D.

Professor Emerita Harper College



330 Hudson Street, NY NY 10013



Senior Vice President, Courseware Portfolio Management, Engineering and Computer Science:

Marcia J. Horton

Director, Portfolio Management: Julian Partridge Executive Portfolio Manager: Matt Goldstein Portfolio Management Assistant: Meghan Jacoby Field Marketing Manager: Demetrius Hall Product Marketing Manager: Yvonne Vannatta

Marketing Assistant: Jon Bryant Managing Producer: Scott Disanno Senior Content Producer: Erin Ault Content Producer: Lora Friedenthal

Manager, Rights and Permissions: Ben Ferinni Operations Specialist: Maura Zaldivar-Garcia

Cover Designer: Joyce Wells

Cover Photo: FrankRamspott/Getty Images **Composition/Full-Service Project Management:**

SPi Global

Full-Service Project Management: Kabilan Selvakumar Cover Printer: Lehigh-Phoenix Color/Hagerstown Printer/Binder: Lake Side Communications, Inc. Typeface: 10/12 Times Ten LT STD Roman

Credits and acknowledgments borrowed from other sources and reproduced, with permission, in this textbook appear on appropriate page within text.

Copyright © 2019, 2017, 2015, 2014 by Pearson Higher Education, Inc., Hoboken, NJ 07030. All rights reserved. Manufactured in the United States of America. This publication is protected by copyright and permissions should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permissions, request forms and the appropriate contacts within the Pearson Education Global Rights & Permissions department, please visit www.pearsoned.com/permissions/.

Many of the designations by manufacturers and seller to distinguish their products are claimed as trademarks. Where those designations appear in this book, and the publisher was aware of a trademark claim, the designations have been printed in initial caps or all caps.

Acknowledgements of third party content appear the same page as the content, which constitutes an extension of this copyright page. All other photos and figures copyright Terry Felke-Morris.

Icon credits: Focus on Accessibility, Checkpoint, and FAQ: FaysalFarhan/Shutterstock; Hands-on Practice: Alexwhite/123RF; Focus on Ethics: Alexwhite/Shutterstock; and Website Case Study: FaysalFarhan/123RF.

Microsoft® and Windows® are registered trademarks of the Microsoft Corporation in the U.S.A. and other countries. Screen shots and icons reprinted with permission from the Microsoft Corporation. This book is not sponsored or endorsed by or affiliated with the Microsoft Corporation.

The author and publisher of this book have used their best efforts in preparing this book. These efforts include the development, research, and testing of theories and programs to determine their effectiveness. The author and publisher make no warranty of any kind, expressed or implied, with regard to these programs or the documentation contained in this book. The author and publisher shall not be liable in any event for incidental or consequential damages with, or arising out of, the furnishing, performance, or use of these programs.

Library of Congress Cataloging-in-Publication Data

Names: Felke-Morris, Terry, author.

Title: Web development and design foundations with HTML5 / Felke-Morris,

Description: 9th edition. I Pearson Higher Education, Inc.,

[2019]

Identifiers: LCCN 2017053503 | ISBN 9780134801148 | ISBN 0134801148

Subjects: LCSH: XHTML (Document markup language) | Web site development—Computer programs. | Web sites—Design.

Classification: LCC QA76.76.H94 M655 2019 | DDC 006.7/4—dc23 LC record available at

https://lccn.loc.gov/2017053503



ISBN 10: 0-13-480114-8 ISBN 13: 978-0-13-480114-8



Preface

Web Development and Design Foundations with HTML5 is intended for use in a beginning web development course. This textbook introduces HTML and CSS topics such as text configuration, color configuration, and page layout, with an enhanced focus on the topics of design, accessibility, and Web standards. The text covers the basics that web developers need to build a foundation of skills:

- Internet concepts
- Creating web pages with HTML5
- · Configuring text, color, and page layout with Cascading Style Sheets (CSS)
- Web design best practices
- Accessibility standards
- The web development process
- Using media and interactivity on web pages
- New CSS3 properties
- · Website promotion and search engine optimization
- E-commerce and the Web
- JavaScript

A special feature of this text is the *Web Developer's Handbook*, which is a collection of appendixes that provide resources such as an HTML5 Reference, Comparison of XHTML and HTML5, Special Entity Character List, CSS Property Reference, WCAG 2.0 Quick Reference, FTP Tutorial, and web-safe color palette.

New to This Edition

Building on this textbook's successful eighth edition, new features for the ninth edition include the following:

- Updated coverage of HTML5 elements and attributes
- Expanded coverage of designing for mobile devices
- Updates for HTML5.1 elements and attributes
- Expanded coverage of responsive web design techniques and CSS media queries
- Updated code samples, case studies, and web resources
- · An introduction to CSS Grid Layout
- Updated reference sections for HTML5 and CSS
- Additional Hands-On Practice exercises



Student files are available for download from the companion website for this textbook at www.pearson.com/cs-resources. These files include solutions to the Hands-On Practice exercises, the Website Case Study starter files, and access to the book's companion VideoNotes. See the access card in the front of this textbook for further instructions.

Design for Today and Tomorrow

This textbook has a modern approach that prepares students to design web pages that work today, in addition to being ready to take advantage of the new HTML5 and CSS coding techniques of the future.

Organization of the Text

This textbook is designed to be used in a flexible manner; it can easily be adapted to suit a variety of course and student needs. Chapter 1 provides introductory material, which may be skipped or covered, depending on the background of the students. Chapters 2 through 4 introduce HTML and CSS coding. Chapter 5 discusses web design best practices and can be covered anytime after Chapter 3 (or even along with Chapter 3). Chapters 6 through 9 continue with HTML and CSS.

Any of the following chapters may be skipped or assigned as independent study, depending on time constraints and student needs: Chapter 7 (More on Links, Layout, and Mobile), Chapter 10 (Web Development), Chapter 11 (Web Multimedia and Interactivity), Chapter 12 (E-Commerce Overview), Chapter 13 (Web Promotion), and Chapter 14 (A Brief Look at JavaScript and jQuery). A chapter dependency chart is shown in Figure P.1.

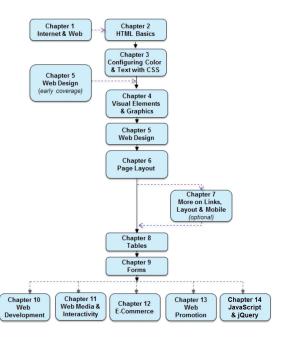


Figure P.1 This textbook is flexible and can be adapted to individual needs







Brief Overview of Each Chapter

Chapter 1: Introduction to the Internet and World Wide Web This brief introduction covers the terms and concepts related to the Internet and the Web with which Web developers need to be familiar. For many students, some of this will be a review. Chapter 1 provides the base of knowledge on which the rest of the textbook is built.

Chapter 2: HTML Basics As HTML5 is introduced, examples and exercises encourage students to create sample pages and gain useful experience. Solution pages for the Hands-On Practice are available in the student files.

Chapter 3: Configuring Color and Text with CSS The technique of using Cascading Style Sheets to configure the color and text on web pages is introduced. Students are encouraged to create sample pages as they read through the text. Solutions for the Hands-On Practice are available in the student files.

Chapter 4: Visual Elements and Graphics This chapter discusses the use of graphics and visual effects on web pages, including image optimization, CSS borders, CSS image backgrounds, new CSS3 visual effects, and new HTML5 elements. Students are encouraged to create web pages as they read through the text. Sample solutions for the Hands-On Practice are available in the student files.

Chapter 5: Web Design This chapter focuses on recommended web design practices and accessibility. Some of this is reinforcement because tips about recommended website design practices are incorporated into the other chapters.

Chapter 6: Page Layout This chapter continues the study of CSS begun earlier and introduces techniques for positioning and floating web page elements, including a two-column CSS page layout. New HTML5 semantic elements and techniques to provide HTML5 compatibility for older browsers are also introduced. Sample solutions for the Hands-On Practice are available in the student files.

Chapter 7: More on Links, Layout, and Mobile This chapter revisits earlier topics and introduces more advanced techniques related to hyperlinks, using CSS sprites, a three-column page layout, configuring CSS for print, designing pages for the mobile web, responsive web design with CSS media queries, responsive images, the new Flexible Box Layout Module, and the new CSS Grid Layout Module. Students are encouraged to create pages as they read through the text. Sample solutions for the Hands-On Practice are available in the student files.

Chapter 8: Tables This chapter focuses on the HTML elements used to create tables. Methods for configuring a table with CSS are introduced. Students are encouraged to create pages as they read through the text. Sample solutions for the Hands-On Practice are available in the student files.

Chapter 9: Forms This chapter focuses on the HTML elements used to create forms. Methods for configuring the form with CSS are introduced. New HTML5 form control elements and attribute values are introduced. Students are encouraged to create sample pages as they read through the text. Sample solutions for the Hands-On Practice are available in the student files.







Chapter 10: Web Development This chapter focuses on the process of website development, including the job roles needed for a large-scale project, the web development process, and web hosting. A web host checklist is included in this chapter.

Chapter 11: Web Multimedia and Interactivity This chapter offers an overview of topics related to adding media and interactivity to web pages. These topics include HTML5 video and audio, Flash[®], Java[™] applets, CSS3 transform and transition properties, interactive CSS menu, interactive image gallery, JavaScript, jQuery, Ajax, and HTML5 APIs. Students are encouraged to create pages as the topics are discussed. Sample solutions for the Hands-On Practice are available in the student files.

Chapter 12: E-Commerce Overview This chapter introduces e-commerce, security, and order processing on the Web.

Chapter 13: Web Promotion This chapter discusses site promotion from the web developer's point of view and introduces search engine optimization.

Chapter 14: A Brief Look at JavaScript and jQuery This chapter provides an introduction to client-side scripting using JavaScript and jQuery. Sample solutions for the Hands-On Practice are available in the student files.

Web Developer's Handbook Appendixes: This handbook contains appendixes that include resources and tutorials that are useful for students, such as an HTML5 Quick Reference, Special Entity Characters, a Comparison of XHTML and HTML5, a CSS Property Reference, a WCAG 2.0 Quick Reference, an FTP Tutorial, and a web-safe color palette.

Features of the Text

Well-Rounded Selection of Topics This text includes both "hard" skills such as HTML5, CSS, and JavaScript (Chapters 2, 3, 4, 6, 7, 8, 9, and 14) and "soft" skills such as web design (Chapter 5), website promotion (Chapter 13), and e-commerce (Chapter 12). This well-rounded foundation will help students as they pursue careers as web professionals. Students and instructors will find classes more interesting because they can discuss, integrate, and apply both hard and soft skills as students create web pages and websites.

Hands-On Practice Web development is a skill and skills are best learned by hands-on practice. This text emphasizes hands-on practice through exercises within the chapters, end-of-chapter exercises, and the development of websites through ongoing real-world case studies. The variety of exercises provides instructors with a choice of assignments for a particular course or semester.

Website Case Studies There are four case studies that continue throughout most of the text (starting with Chapter 2). An additional case study starts in Chapter 5. The case studies serve to reinforce the skills discussed in each chapter. Instructors can cycle assignments from semester to semester or allow students to choose the case study that most interests them. Sample solutions to the case studies are available for download from the Instructor Resource Center at www.pearson.com.







Web Research Each chapter offers web research activities that encourage students to further study the topics introduced in the chapter.

Focus on Web Design Most chapters offer additional activities that explore the web design topics related to the chapter. These activities can be used to reinforce, extend, and enhance the course topics.

FAQs In the author's web development courses, she is frequently asked similar questions by students. They are included in this textbook and are marked with the identifying FAQ logo.

Checkpoints Each chapter contains two or three Checkpoints, which are groups of questions to be used by students to self-assess their understanding of the material. A special Checkpoint icon appears with each group of questions.

Focus on Accessibility Developing accessible websites is more important than ever and this textbook is infused with accessibility techniques throughout. The special icon shown here makes accessibility information easy to find.

Focus on Ethics Ethics issues related to web development are highlighted throughout the textbook and are marked with the special ethics icon shown here.

Reference Materials The appendixes in the *Web Developer's Handbook* offer reference materials, including an HTML5 Quick Reference, Special Entity Characters, Comparison of XHTML and HTML5, a CSS Property Reference, a WCAG 2.0 Quick Reference, an FTP Tutorial, an introduction to ARIA Landmark Roles, and a Web-Safe Color Palette.

VideoNotes These short step-by-step videos demonstrate how to solve problems from design through coding. VideoNotes allow for self-placed instruction with easy navigation including the ability to select, play, rewind, fast-forward, and stop within each VideoNote exercise.

Margin icons in your textbook let you know when a VideoNote video is available for a particular concept or homework problem.

Supplemental Materials

Student Resources The student files for the web page exercises, Website Case Study assignments, and access to the book's VideoNotes are available to all readers of this textbook at its companion website www.pearson.com/cs-resources. A complimentary access code for the companion website is available with a new copy of this textbook. Subscriptions may also be purchased online.

Instructor Resources The following supplements are available to qualified instructors only. Visit the Pearson Instructor Resource Center (www.pearson.com) for information on how to access them:

- Solutions to the end-of-chapter exercises
- Solutions for the case study assignments















- · Test questions
- PowerPoint® presentations
- Sample syllabi

Author's Website In addition to the publisher's companion website for this textbook, the author maintains a website at http://www.webdevfoundations.net. This website contains additional resources, including review activities and a page for each chapter with examples, links, and updates. This website is not supported by the publisher.

Acknowledgments

Very special thanks go to all the folks at Pearson, especially Michael Hirsch, Matt Goldstein, Erin Ault, and Lora Friedenthal.

Thank you to the following people who provided comments and suggestions that were useful for this ninth edition and previous editions:

Carolyn Andres—Richland College

James Bell-Central Virginia Community College

Ross Beveridge—Colorado State University

Karmen Blake—Spokane Community College

Jim Buchan—College of the Ozarks

Dan Dao—Richland College

Joyce M. Dick-Northeast Iowa Community College

Elizabeth Drake—Santa Fe Community College

Mark DuBois—Illinois Central College

Genny Espinoza—Richland College

Carolyn Z. Gillay—Saddleback College

Sharon Gray—Augustana College

Tom Gutnick—Northern Virginia Community College

Jason Hebert—Pearl River Community College

Sadie Hébert—Mississippi Gulf Coast College

Lisa Hopkins—Tulsa Community College

Barbara James—Richland Community College

Nilofar Kadivi—Richland Community College

Jean Kent—Seattle Community College

Mary Keramidas—Sante Fe College

Karen Kowal Wiggins—Wisconsin Indianhead Technical College

Manasseh Lee—Richland Community College

Nancy Lee—College of Southern Nevada

Kyle Loewenhagen—Chippewa Valley Technical College

Michael J. Losacco—College of DuPage

Les Lusk—Seminole Community College

Mary A. McKenzie—Central New Mexico Community College

Bob McPherson—Surry Community College

Cindy Mortensen—Truckee Meadows Community College

John Nadzam—Community College of Allegheny County

Teresa Nickeson—University of Dubuque

Brita E. Penttila—Wake Technical Community College

Anita Philipp—Oklahoma City Community College







Jerry Ross—Lane Community College
Noah Singer—Tulsa Community College
Alan Strozer—Canyons College
Lo-An Tabar-Gaul—Mesa Community College
Jonathan S. Weissman—Finger Lakes Community College
Tebring Wrigley—Community College of Allegheny County
Michelle Youngblood-Petty—Richland College

A very special thank you also goes to Jean Kent, North Seattle Community College, and Teresa Nickeson, University of Dubuque, for taking time to provide additional feedback and sharing student comments about the book.

Thanks are in order to colleagues at William Rainey Harper College for their support and encouragement, especially Ken Perkins, Enrique D'Amico, and Dave Braunschweig.

Most of all, I would like to thank my family for their patience and encouragement. My wonderful husband, Greg Morris, has been a constant source of love, understanding, support, and encouragement. Thank you, Greg! A big shout-out to my children, James and Karen, who grew up thinking that everyone's Mom had their own website. Thank you both for your understanding, patience, and timely suggestions! And, finally, a very special dedication to the memory of my father who is greatly missed.

About the Author

Terry Ann Felke-Morris is a Professor Emerita of Computer Information Systems at William Rainey Harper College in Palatine, Illinois. She holds a Doctor of Education degree, a Master of Science degree in information systems, and numerous certifications, including Adobe Certified Dreamweaver 8 Developer, WOW Certified Associate Webmaster, Microsoft Certified Professional, Master CIW Designer, and CIW Certified Instructor.

Dr. Felke-Morris has been honored with Harper College's Glenn A. Reich Memorial Award for Instructional Technology in recognition of her work in designing the college's Web Development program and courses. In 2006, she received the Blackboard Greenhouse Exemplary Online Course Award for use of Internet technology in the academic environment. Dr. Felke-Morris received two international awards in 2008: the Instructional Technology Council's Outstanding e-Learning Faculty Award for Excellence and the MERLOT Award for Exemplary Online Learning Resources—MERLOT Business Classics.

With more than 25 years of information technology experience in business and industry, Dr. Felke-Morris published her first website in 1996 and has been working with the Web ever since. A long-time promoter of Web standards, she was a member of the Web Standards Project Education Task Force. Dr. Felke-Morris is the author of the popular textbook *Basics of Web Design: HTML5 & CSS3*, currently in its fourth edition. She was instrumental in developing the Web Development certificate and degree programs at William Rainey Harper College. For more information about Dr. Terry Ann Felke-Morris, visit http://terrymorris.net.







Contents

CHAPTER 1

Introduction to the Internet and World Wide Web 1

1.1 The Internet and the Web 2

The Internet 2

Birth of the Internet 2

Growth of the Internet 2

Birth of the Web 2

The First Graphical Browser 2

Convergence of Technologies 3

Who Runs the Internet? 3

Intranets and Extranets 4

1.2 Web Standards and Accessibility 4

W3C Recommendations 4

Web Standards and Accessibility 5

Accessibility and the Law 5

Universal Design for the Web 5

1.3 Information on the Web 6

Reliability and Information on the Web 6 Ethical Use of Information on the Web 7

1.4 Network Overview 8

1.5 The Client/Server Model 9

1.6 Internet Protocols 10

File Transfer Protocol (FTP) 10

E-mail Protocols 11

Hypertext Transfer Protocol (HTTP) 11

Transmission Control Protocol/Internet Protocol (TCP/IP) 11

xii

1.7 Uniform Resource Identifiers and Domain

Names 13

URIs and URLs 13

Domain Names 13

1.8 Markup Languages 16

Standard Generalized Markup Language

(SGML) 16

Hypertext Markup Language

(HTML) 16

Extensible Markup Language

(XML) 16

Extensible Hypertext Markup Language

(XHTML) 17

HTML5.1—the Newest Version

of HTML 17

1.9 Popular Uses of the Web 17

E-Commerce 17

Mobile Access 18

Blogs 18

Wikis 18

Social Networking 18

Cloud Computing 19

RSS 19

Podcasts 19

Web 2.0 19

Chapter Summary 21

Key Terms 21

Review Questions 21

Hands-On Exercise 22

Web Research 23

Focus on Web Design 24



CHAPTER 2

HTML Basics 25

2 1		Overview	26
-	H I IVIL	Overview	26

HTML 26 XML 26 XHTML 26 HTML5 27

- 2.2 Document Type Definition 27
- 2.3 Web Page Template 28
- 2.4 HTML Element 28
- 2.5 Head, Title, Meta, and Body Elements 28

The Head Section 29
The Body Section 29

- 2.6 Your First Web Page 29
- **2.7 Heading Element 33**Accessibility and Headings 35
- **2.8 Paragraph Element 35**Alignment 36
- 2.9 Line Break Element 37
- 2.10 Blockquote Element 38
- 2.11 Phrase Elements 39
- 2.12 Ordered List 40

The Type, Start, and Reversed Attributes 41

- 2.13 Unordered List 42
- 2.14 Description List 44
- 2.15 Special Characters 46
- 2.16 Structural Elements 47

Div Element 47

HTML5 Structural Elements 48

Header Element 48

Nav Element 48

Main Element 48

Footer Element 48

Practice with Structural Elements 50

2.17 Anchor Element 51

Absolute Hyperlinks 53 Relative Hyperlinks 53

Site Map 53

E-Mail Hyperlinks 57

Accessibility and Hyperlinks 58

2.18 HTML Validation 59

Chapter Summary 62

Key Terms 62
Review Questions 63
Apply Your Knowledge 64
Hands-On Exercises 65
Web Research 66
Focus on Web Design 66
Website Case Study 66

CHAPTER 3

Configuring Color and Text with CSS 81

3.1 Overview of Cascading Style Sheets 82

Advantages of Cascading Style Sheets 82
Configuring Cascading Style Sheets 83
CSS Selectors and Declarations 83
The background-color Property 83
The color Property 84
Configure Background and Text Color 84

3.2 Using Color on Web Pages 85

Hexadecimal Color Values 86 Web-Safe Colors 86 CSS Color Syntax 86

3.3 Inline CSS with the Style Attribute 87 The Style Attribute 87

3.4 Embedded CSS with the Style Element 89

Style Element 89

3.5 Configuring Text with CSS 92

The font-family Property 92 More CSS Text Properties 94 CSS3 text-shadow Property 97

3.6 CSS Class, Id, and Descendant Selectors 100

The Class Selector 100
The Id Selector 101
The Descendant Selector 102

- 3.7 Span Element 104
- 3.8 Using External Style Sheets 105
 Link Element 105
- 3.9 Center HTML Elements with CSS 110





 \bigoplus

3.10	The "Cascade"	112
3.11	CSS Validation	115

Chapter Summary 117

Key Terms 117
Review Questions 117
Apply Your Knowledge 118
Hands-On Exercises 120
Web Research 122
Focus on Web Design 122
Website Case Study 123

CHAPTER 4

Visual Elements and Graphics 135

4.1 Configuring Lines and Borders 136

Horizontal Rule Element 136
The border and padding Properties 136

4.2 Types of Graphics 142

Graphic Interchange Format (GIF) Images 142

Joint Photographic Experts Group (JPEG)
Images 143

Portable Network Graphic (PNG) Images 144

New WebP Image Format 144

4.3 Image Element 145

Accessibility and Images 146
Image Hyperlinks 147
Accessibility and Image Hyperlinks 149

4.4 HTML5 Visual Elements 150

Figure and Figcaption Elements 151 Meter Element 153 Progress Element 153

4.5 Background Images 154

The background-image Property 154
Browser Display of a Background Image 154
The background-repeat Property 155
The background-position Property 157
The background-attachment Property 158

4.6 More About Images 158

Image Maps 158
The Favorites Icon 160
Configuring a Favorites Icon 160
Image Slicing 162
CSS Sprites 162

4.7 Sources and Guidelines for Graphics 162

Sources of Graphics 162 Guidelines for Using Images 163 Accessibility and Visual Elements 164

4.8 CSS3 Visual Effects 165

The CSS3 background-clip
Property 165

The CSS3 background-origin
Property 166

The CSS3 background-size
Property 166

CSS3 Multiple Background Images 168

CSS3 Rounded Corners 169

The CSS3 box-shadow Property 171

The CSS3 opacity Property 175

CSS3 RGBA Color 176

CSS3 HSLA Color 178

CSS3 Gradients 181

Chapter Summary 183

Key Terms 183
Review Questions 183
Apply Your Knowledge 185
Hands-On Exercises 186
Web Research 187
Focus on Web Design 188
Website Case Study 188

CHAPTER 5

Web Design 203

5.1 Design for Your Target Audience 204

5.2 Website Organization 205

Hierarchical Organization 205 Linear Organization 206 Random Organization 206

5.3 Principles of Visual Design 207

Repetition: Repeat Visual Components
Throughout the Design 207
Contrast: Add Visual Excitement and Draw
Attention 207
Proximity: Group Related Items 208
Alignment: Align Elements to Create Visual
Unity 208

5.4 Design to Provide Accessibility 208

Who Benefits from Universal Design and Increased Accessibility? 209

Accessible Design Can Benefit Search Engine Listing 209

Accessibility is the Right Thing to Do 209

5.5 Writing for the Web 210

Organize Your Content 210 Choosing a Font 211





Font Size 211
Font Weight 211
Font Color Contrast 211
Line Length 212
Alignment 212
Text in Hyperlinks 212
Reading Level 212
Spelling and Grammar 212

5.6 Use of Color 212

Color Scheme Based on an Image 212
Color Wheel 213
Shades, Tints, Tones 213
Color Scheme Based on the
Color Wheel 214
Implementing a Color Scheme 215
Accessibility and Color 215
Colors and Your Target Audience 216

5.7 Use of Graphics and Multimedia 218

File Size and Image Dimensions
Matter 218

Antialiased/Aliased Text in Media 218
Use Only Necessary Multimedia 218

Provide Alternate Text 219

5.8 More Design Considerations 219

Load Time 219
Above the Fold 220
White Space 220
Avoid Horizontal Scrolling 221
Browsers 221
Screen Resolution 221

5.9 Navigation Design 221

Ease of Navigation 221
Navigation Bars 222
Breadcrumb Navigation 222
Using Graphics for Navigation 222
Skip Repetitive Navigation 223
Dynamic Navigation 223
Site Map 224
Site Search Feature 225

5.10 Page Layout Design 225

Wireframes and Page Layout 225
Page Layout Design Techniques 220

5.11 Design for the Mobile Web 229

Three Approaches 229

Mobile Device Design Considerations 229

Example Desktop Website and Mobile
Website 230

Mobile Design Quick Checklist 230

Responsive Web Design 230

5.12 Web Design Best Practices Checklist 232

Chapter Summary 236

Key Terms 236
Review Questions 236
Hands-On Exercises 237
Web Research 240
Focus on Web Design 240
Website Case Study 241

CHAPTER 6

Page Layout 245

6.1 The Box Model 246

Content 246
Padding 246
Border 246
Margin 246
The Box Model in Action 247

6.2 Normal Flow 248

6.3 CSS Float 250

6.4 CSS: Clearing a Float 252 The clear Property 252

The overflow Property 253

6.5 CSS Box Sizing 255

6.6 CSS Two-Column Layout 256

Your First Two-Column Layout 256 Two-Column Layout Example 259

6.7 Hyperlinks in an Unordered List 260

Configure List Markers with CSS 260
Vertical Navigation with an Unordered List 261
Horizontal Navigation with an Unordered List 262

6.8 CSS Interactivity with Pseudo-Classes 263

CSS Buttons 265

6.9 Practice with CSS Two-Column Layout 266

6.10 Header Text Image Replacement 269

Improved Header Text Image Replacement Technique 270

6.11 Practice with an Image Gallery 271

6.12 Positioning with CSS 274

Static Positioning 274
Fixed Positioning 274
Relative Positioning 274







Absolute Positioning 275	5
Practice with Positioning	276

6.13 CSS Debugging Techniques 278

Verify Correct HTML Syntax 278
Verify Correct CSS Syntax 278
Configure Temporary Background Colors 278
Configure Temporary Borders 278
Use Comments to Find the Unexpected
Cascade 279

6.14 More HTML5 Structural Elements 280

Section Element 280 Article Element 280 Aside Element 280 Time Element 280

6.15 HTML5 Compatibility with Older Browsers 282

Configure CSS Block Display 283

Chapter Summary 285

Key Terms 285
Review Questions 285
Apply Your Knowledge 286
Hands-On Exercises 289
Web Research 290
Focus on Web Design 290
Website Case Study 290

CHAPTER 7

More on Links, Layout, and Mobile 305

7.1 Another Look at Hyperlinks 306

More on Relative Linking 306
Relative Link Examples 306
Fragment Identifiers 308
The Target Attribute 310
Block Anchor 310
Telephone and Text Message Hyperlinks 310

7.2 ----

- **7.2** CSS Sprites 311
- 7.3 Three-Column CSS Page Layout 313
- 7.4 CSS Styling for Print 320Print Styling Best Practices 320
- 7.5 Designing for the Mobile Web 325Mobile Web Design Best Practices 326
- 7.6 Viewport Meta Tag 327
- **7.7 CSS Media Queries 328**What's a Media Query? 329

Media Query Example Using a Link Element 329 Media Query Example Using an @media Rule 330

7.8 Responsive Images 333

Flexible Images with CSS 334
HTML5.1 Picture Element 336
HTML5.1 Responsive Img Element
Attributes 337
Explore Responsive Images 339

7.9 Testing Mobile Display 339

Testing with a Desktop Browser 340 For Serious Developers Only 340 Mobile First 340

7.10 CSS Flexible Box Layout 341

Configure a Flexible Container 341 Configure the Flex Items 342

7.11 CSS Grid Layout 346

Configure a Grid Container 346 Configure Grid Columns and Rows 346 Configure Grid Items 347

Chapter Summary 353

Key Terms 353
Review Questions 353
Apply Your Knowledge 354
Hands-On Exercises 357
Web Research 358
Focus on Web Design 358
Website Case Study 359

CHAPTER 8

Tables 373

8.1 Table Overview 374

Table Element 374
The border Attribute 375
Table Captions 375

8.2 Table Rows, Cells, and Headers 376

Table Row Element 376
Table Data Element 376
Table Header Element 376

8.3 Span Rows and Columns 378

The colspan Attribute 378
The rowspan Attribute 378

- 8.4 Configure an Accessible Table 380
- 8.5 Style a Table with CSS 382
- 8.6 CSS3 Structural Pseudo-Classes 384



8.7 Configure Table Sections 386

Chapter Summary 389

Key Terms 389
Review Questions 389
Apply Your Knowledge 390
Hands-On Exercises 392
Web Research 393
Focus on Web Design 393
Website Case Study 393

CHAPTER 9

Forms 401

9.1 Overview of Forms 402

Form Element 402 Form Controls 403

9.2 Input Element Form Controls 403

Text Box 404
Submit Button 405
Reset Button 405
Check Box 407
Radio Button 408
Hidden Input Control 409
Password Box 410

9.3 Scrolling Text Box 410

Textarea Element 410

9.4 Select List 413

Select Element 413 Option Element 414

9.5 Image Buttons and the Button Element 415

Image Button 415 Button Element 415

9.6 Accessibility and Forms 416

Label Element 416
Fieldset and Legend Elements 418
The tabindex Attribute 420
The accesskey Attribute 420

9.7 Style a Form with CSS 421

9.8 Server-Side Processing 422

Privacy and Forms 425 Server-Side Processing Resources 425

9.9 HTML5 Form Controls 426

E-mail Address Input 426 URL Input 427 Telephone Number Input 427
Search Field Input 428
Datalist Form Control 428
Slider Form Control 429
Spinner Form Control 430
Calendar Form Control 431
Color-well Form Control 432
HTML5 and Progressive Enhancement 435

Chapter Summary 436

Key Terms 436
Review Questions 436
Apply Your Knowledge 437
Hands-On Exercises 439
Web Research 440
Focus on Web Design 441
Website Case Study 442

CHAPTER 10

Web Development 453

10.1 Successful Large-Scale Project Development 454

Project Job Roles 454
Project Staffing Criteria 455

10.2 The Development Process 455

Conceptualization 457
Analysis 458
Design 458
Production 460
Testing 460
Launch 463
Maintenance 464
Evaluation 464

10.3 Domain Name Overview 464

Choosing a Domain Name 464 Registering a Domain Name 465

10.4 Web Hosting 466

Web Hosting Providers 466

10.5 Choosing a Virtual Host 467

Chapter Summary 470

Key Terms 470
Review Questions 470
Hands-On Exercises 471
Web Research 473
Focus on Web Design 474
Website Case Study 474







CHAPTER 11

Web Multimedia and Interactivity 475

- 11.1 Plug-Ins, Containers, and Codecs 476
- 11.2 Getting Started with Audio and Video 478

Provide a Hyperlink 478
Working with Multimedia on the Web 479

11.3 Adobe Flash 481

HTML5 Embed Element 481 Flash Resources 483

11.4 HTML5 Audio and Video Elements 484

Audio Element 484

Source Element 485

HTML5 Audio on a Web Page 485

Video Element 486

Source Element 487

HTML5 Video on a Web Page 487

- 11.5 Multimedia Files and Copyright Law 489
- 11.6 CSS3 and Interactivity 489

CSS Drop Down Menu 489
CSS3 Transform Property 491
CSS3 Rotate Transform 492
CSS3 Scale Transform 492
CSS Transition Property 493
Practice with Transitions 495

11.7 HTML5 Details and Summary Elements 497

Details Element 497 Summary Element 498 Details & Summary Widget 498

11.8 Java 499

Adding a Java Applet to a Web Page 500 Java Applet Resources 501

- **11.9 JavaScript 502**JavaScript Resources 503
- 11.10 Ajax 504
- Ajax Resources 505

 11.11 jQuery 505

 ¡Query Resources 506
- 11.12 HTML5 APIs 506

Geolocation 506
Web Storage 506
Offline Web Applications 507
Drawing with the Canvas Element 507

11.13 Accessibility and Multimedia/ Interactivity 509

Chapter Summary 511

Key Terms 511
Review Questions 511
Apply Your Knowledge 513
Hands-On Exercises 514
Web Research 514
Focus on Web Design 515
Website Case Study 516

CHAPTER 12

E-Commerce Overview 521

- 12.1 What Is E-Commerce? 522

 Advantages of E-Commerce 522

 Risks of E-Commerce 523
- 12.2 E-Commerce Business Models 524
- 12.3 Electronic Data Interchange (EDI) 524
- 12.4 E-Commerce Statistics 524
- 12.5 E-Commerce Issues 525
- 12.6 E-Commerce Security 527

Encryption 527
Integrity 528
Secure Sockets Layer (SSL) 528
Digital Certificate 529
SSL and Digital Certificates 530

12.7 Order and Payment Processing 530

Credit Card 531 Stored-value Card 531 Digital Wallet 531 Digital Cash 531

12.8 E-Commerce Storefront Solutions 532

Instant Online Storefront 532
Off-the-Shelf Shopping Cart Software 532
Custom-Built Solutions 532
Semi-Custom-Built Solutions on
a Budget 533

Chapter Summary 534

Key Terms 534
Review Questions 534
Hands-On Exercises 535
Web Research 536
Focus on Web Design 537
Website Case Study 537



CHAPTER 13

Web Promotion 549

- 13.1 Search Engine Overview 550
- 13.2 Popular Search Engines 550
- 13.3 Components of a Search Engine 55
 Robot 550
 Database 551
 Search Form 551

13.4 Search Engine Optimization 551

Keywords 552
Page Titles 552
Heading Tags 552
Description 552
Description Meta Tag 552
Linking 553
Images and Multimedia 553
Valid Code 553
Content of Value 553

13.5 Listing in a Search Engine 554

Map Your Site 555 Alliances 556

- 13.6 Monitoring Search Listings 556
- 13.7 Link Popularity 558

13.8 Social Media Optimization 558

Blogs and RSS Feeds 558 Social Networking 559

13.9 Other Site Promotion Activities 559

Quick Response (QR) Codes 559 Affiliate Programs 559

Banner Ads 560

Darinoi 7103 000

Banner Exchange 560

Reciprocal Link Agreements 560

Newsletters 561

Sticky Site Features 561

Personal Recommendations 561

Website Forum Postings 561

Traditional Media Ads and Existing Marketing Materials 561

13.10 Serving Dynamic Content with Inline Frames 562

Iframe Element 562 Video in an Inline Frame 564

Chapter Summary 565

Key Terms 565

Review Questions 565
Hands-On Exercises 566
Web Research 567
Focus on Web Design 567
Website Case Study 568

CHAPTER 14

A Brief Look at JavaScript and iQuery 571

- 14.1 Overview of JavaScript 572
- 14.2 The Development of JavaScript 572
- 14.3 Popular Uses for JavaScript 573

Alert Message 573
Popup Windows 573
Jump Menus 574
Mouse Movement Techniques 574

14.4 Adding JavaScript to a Web Page 575

Script Element 575
Legacy JavaScript Statement Block
Template 575
Alert Message Box 576

- 14.5 Document Object Model Overview 578
- 14.6 Events and Event Handlers 581
- **14.7** Variables 584

Writing a Variable to a Web Page 584
Collecting Variable Values Using a Prompt 586

14.8 Introduction to Programming Concepts 588

Arithmetic Operators 588
Decision Making 588
Functions 591

- 14.9 Form Handling 594
- 14.10 Accessibility and JavaScript 600
- 14.11 JavaScript Resources 601
- 14.12 Overview of jQuery 601

14.13 Adding jQuery to a Web Page 601

Download jQuery 601

Access jQuery via a Content Delivery
Network 602

The Ready Event 602

- 14.14 jQuery Selectors 604
- 14.15 jQuery Methods 604
- 14.16 jQuery Image Gallery 607







14.17 jQuery Plugins 611

14.18 jQuery Resources 615

Chapter Summary 616

Key Terms 616 Review Questions 616 Apply Your Knowledge 617 Hands-On Exercises 619 Web Research 620 Website Case Study 620

Web Developer's Handbook 633 Appendix A HTML5 Quick Reference 635 Appendix B Special Entity Characters 639 Appendix C Comparison of XHTML and HTML5 641

Appendix D CSS Property Reference 649

Appendix E WCAG 2.0 Quick Reference 655

Appendix F Landmark Roles with ARIA 657

Appendix G FTP Tutorial 659

Appendix H Web-Safe Color Palette 663

Answers 665

Index 685

LOCATION OF VIDEONOTES IN THE TEXT



A series of videos have been developed as a companion for this textbook. VideoNote icons indicate the availability of a video on a specific topic.

100110 11101100110 1110 0110	maisinty of a ridge of a epochie topic.
Chapter 1	Evolution of the Web, p. 2
Chapter 2	Your First Web Page, p. 29 HTML Validation, p. 59
Chapter 3	External Style Sheets, p. 105 CSS Validation, p. 115
Chapter 4	CSS Background Images, p. 154 Rounded Corners with CSS, p. 169
Chapter 5	Principles of Visual Design, p. 207
Chapter 6	Interactivity with CSS pseudo-classes, p. 263
Chapter 7	Linking to a Named Fragment, p. 308
Chapter 8	Configure a Table, p. 374
Chapter 9	Connect a Form to Server-Side Processing, p. 423
Chapter 10	Choosing a Domain Name, p. 464
Chapter 11	HTML5 Video, p. 488
Chapter 12	E-Commerce Benefits and Risks, p. 522
Chapter 13	Configure an Inline Frame, p. 564
Chapter 14	JavaScript Message Box, p. 576



