

Terry Felke-Morris



Basics of
WEB DESIGN
HTML5 & CSS3

SECOND EDITION

Basics of

Web Design

HTML5 & CSS3

Second Edition

Terry Ann Felke-Morris, Ed.D.

Harper College

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Preface

Basics of Web Design: HTML5 & CSS3 is intended for use in a beginning web design or web development course. Topics are introduced in two-page sections that focus on key points and often include a hands-on practice exercise. The text covers the basics that web designers need to develop their skills:

- ▮ Introductory Internet and World Wide Web concepts
- ▮ Creating web pages with HTML5
- ▮ Configuring text, color, and page layout with Cascading Style Sheets
- ▮ Configuring images and multimedia on web pages
- ▮ Exploring new CSS3 properties
- ▮ Web design best practices
- ▮ Accessibility, usability, and search engine optimization considerations
- ▮ Obtaining a domain name and a web host
- ▮ Publishing to the web

Student files are available for download from the companion website for this book at <http://www.pearsonhighered.com/felke-morris>. These files include solutions to the Hands-On Practice exercises, starter files for the Hands-On Practice exercises, and the starter files for the Case Study. See the access information on the inside front cover of this book for further instructions.

Building on this textbook's successful first edition, the second edition features a focus on HTML5 instead of introducing both XHTML and HTML5 syntax together. This singular focus is beneficial to individuals new to web design. Also new for the second edition:

- ▮ Additional Hands-On Practice exercises
- ▮ New and updated case studies
- ▮ Expanded treatment of page layout design
- ▮ Expanded treatment of mobile web design
- ▮ New sections on responsive web design techniques
- ▮ New sections on CSS media queries

Features of the Text

Design for Today and Tomorrow. The textbook prepares students to design web pages that work today in addition to being ready to take advantage of new HTML5 coding techniques of the future.

Well-Rounded Selection of Topics. This text includes both “hard” skills such as HTML5 and Cascading Style Sheets (Chapters 1–2 and 4–11) and “soft” skills such as web design (Chapter 3) and publishing to the Web (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. The topics in each chapter are introduced on concise two-page sections that are intended to provide quick overviews and timely practice with the topic.

Two-Page Topic Sections. Most topics are introduced in a concise, two-page section. Many sections also include immediate hands-on practice of the new skill or concept. This approach is intended to appeal to your busy students—especially the millennial multi-taskers—who need to drill down to the important concepts right away.



Hands-On Practice. Web design is a skill, and skills are best learned by hands-on practice. This text emphasizes hands-on practice through practice exercises within the chapters, end-of-chapter exercises, and the development of a website 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 Study. There are case studies that continue throughout most of the text (beginning at Chapter 2). The case studies serve to reinforce skills discussed in each chapter. Sample solutions to the case study exercises are available on the Instructor Resource Center at <http://www.pearsonhighered.com/irc>.

Focus on Web Design. Every chapter offers an additional activity that explores web design topics related to the chapter. These activities can be used to reinforce, extend, and enhance the course topics.



FAQs. In her web design courses, the author is frequently asked similar questions by students. They are included in the book and are marked with the identifying FAQ icon.



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



Focus on Ethics. Ethics issues as related to web development are highlighted throughout the text with the special ethics icon shown here.



Quick Tips. Quick tips, which provide useful background information, or help with productivity, are indicated with this Quick Tip icon.



Explore Further. The special icon identifies enrichment topics along with web resources useful for delving deeper into a concept introduced in book.

Reference Materials. The appendixes offer reference material, including an HTML5 reference, a Cascading Style Sheets reference, an XHTML reference, a Comparison of HTML5 and XHTML, and a WCAG 2.0 Quick Reference.



VideoNote

VideoNotes. VideoNotes are Pearson's new visual tool designed for teaching students key programming concepts and techniques. 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 hands-on-practice.

Supplemental Materials

Student Resources. Student files for web page hands-on practice exercises and the case study are available to all readers of this book at its companion website <http://www.pearsonhighered.com/felke-morris>. A complimentary access code for the companion website is available with a new copy of this book. Subscriptions may also be purchased online.

Instructor Resources. The following supplements are available to qualified instructors only. Visit the Pearson Instructor Resource Center (<http://www.pearsonhighered.com/irc>) or send an e-mail to computing@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 book, the author maintains a website at <http://www.webdevbasics.net>. This website contains additional resources, including a color chart, learning/review games, Adobe Flash® Tutorial, Adobe Fireworks® Tutorial, Adobe Photoshop® Tutorial, and a page for each chapter with examples, links, and updates. This website is not supported by the publisher.

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With more than 20 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 has been a member of the Web Standards Project Education Task Force. Dr. Felke-Morris is the author of the popular textbook *Web Development and Design Foundations with XHTML*, currently in its sixth edition. She was instrumental in developing the Web Development degree and certificate programs at Harper College and currently is the senior faculty member in that area. For more information about Dr. Terry Ann Felke-Morris, visit <http://terrymorris.net>.

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VideoNotes



VideoNote

Locations of **VideoNotes**

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CHAPTER 1

Internet and Web Basics

The Internet and the Web are parts of our daily lives. How did they begin? What networking protocols and programming languages work behind the scenes to display a web page? This chapter provides an introduction to some of these topics and is a foundation for the information that web developers need to know. This chapter also gets you started with your very first web page. You'll be introduced to Hypertext Markup Language (HTML), the language used to create web pages, eXtensible Hypertext Markup Language (XHTML), the most recent standardized version of HTML, and HTML5—the newest draft version of HTML.

You'll learn how to...

- ▮ Describe the evolution of the Internet and the Web
- ▮ Explain the need for web standards
- ▮ Describe universal design
- ▮ Identify benefits of accessible web design
- ▮ Identify reliable resources of information on the Web
- ▮ Identify ethical uses of the Web
- ▮ Describe the purpose of web browsers and web servers
- ▮ Identify Internet protocols
- ▮ Define URIs and domain names
- ▮ Describe HTML, XHTML, and HTML5
- ▮ Create your first web page
- ▮ Use the body, head, title, and meta elements
- ▮ Name, save, and test a web page

The Internet and the Web

The Internet

The **Internet**, the interconnected network of computer networks, seems to be everywhere today. It has become part of our lives. You can't watch television or listen to the radio without being urged to visit a website. Even newspapers and magazines have their place on the Internet.

The Birth of the Internet

The Internet began as a network to connect computers at research facilities and universities. Messages in this network would travel to their destinations by multiple routes or paths, allowing the network to function even if parts of it were broken or destroyed. The message would be rerouted through a functioning portion of the network while traveling to its destination. This network was developed by the Advanced Research Projects Agency (ARPA)—and the ARPAnet was born. Four computers (located at UCLA, Stanford Research Institute, University of California Santa Barbara, and the University of Utah) were connected by the end of 1969.

Growth of the Internet

As time went on, other networks, such as the National Science Foundation's NSFnet, were created and connected with the ARPAnet. Use of this interconnected network, or Internet, was originally limited to government, research, and educational purposes. The ban on commercial use of the Internet was lifted in 1991. The growth of the Internet continues—Internet World Stats reported that over 2.3 billion users, about 33% of the world's population, were using the Internet in 2011. Figure 1.1 shows the growth of Internet use by geographic area between 2000 and 2011.

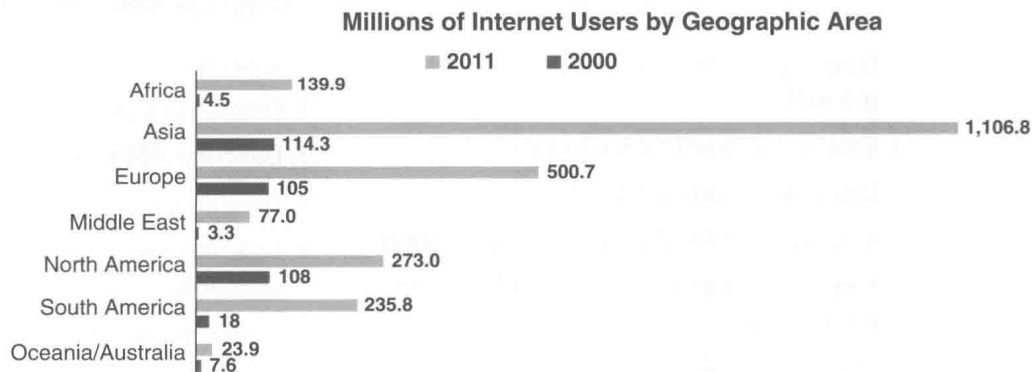


FIGURE 1.1 Growth of Internet use.

Statistics from <http://www.internetworldstats.com>. Copyright © 2001–2012, Miniwatts Marketing Group. All rights reserved worldwide.

When the restriction on commercial use of the Internet was lifted, the stage was set for future electronic commerce: businesses were now welcome on the Internet. However, while businesses were no longer banned, the Internet was still text based and not easy to use. The next developments addressed this issue.

The Birth of the Web

While working at CERN, a research facility in Switzerland, Tim Berners-Lee envisioned a means of communication for scientists by which they could easily “hyperlink” to another research paper or article and immediately view it. Berners-Lee created the **World Wide Web** to fulfill this need. In 1991 Berners-Lee posted the code in a newsgroup and made it freely available. This version of the World Wide Web used **Hypertext Transfer Protocol (HTTP)** to communicate between the client computer and the web server, and it was text based, employing **Hypertext Markup Language (HTML)** to format the documents.



The First Graphical Browser

In 1993, Mosaic, the first graphical web browser (shown in Figure 1.2), became available.

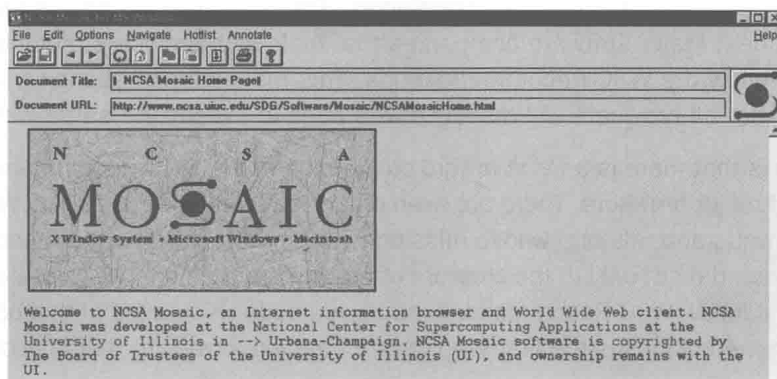


FIGURE 1.2 Mosaic: The first graphical browser (NCSA/University of Illinois).

Marc Andreessen and graduate students working at the National Center for Supercomputing Applications (NCSA) at the University of Illinois Urbana-Champaign developed Mosaic. Some individuals in this group later created another well-known web browser, Netscape Navigator, which is an ancestor of today's Mozilla Firefox browser.

Convergence of Technologies

By the early 1990s, personal computers with easy-to-use graphical operating systems (such as Microsoft's Windows, IBM's OS/2, and Apple's Macintosh OS) were increasingly available and affordable. Online service providers such as CompuServe, AOL, and Prodigy offered low-cost connections to the Internet. The convergence of available computer hardware, easy-to-use operating systems, low-cost Internet connectivity, the HTTP protocol and HTML language, and a graphical browser made information on the Internet much easier to access. The **World Wide Web**—the graphical user interface providing access to information stored on web servers connected to the Internet—had arrived!

Web Standards and Accessibility



FIGURE 1.3

The W3C logo.

You are probably aware that no single person or group runs the World Wide Web. However, the **World Wide Web Consortium** (<http://www.w3.org>), commonly referred to as the **W3C**, takes a proactive role in developing recommendations and prototype technologies related to the Web. Topics that the W3C addresses include web architecture, standards for web design, and accessibility. In an effort to standardize web technologies, the W3C (logo shown in Figure 1.3) produces guidelines called recommendations.

W3C Recommendations

The W3C Recommendations are created in working groups with input from many major corporations involved in building web technologies. These recommendations are not rules; they are guidelines. Major software companies that build web browsers, such as Microsoft, do not always follow the W3C Recommendations. This makes life challenging for web developers because not all browsers will display a web page in exactly the same way.

The good news is that there is a trend toward conforming to the W3C Recommendations in new versions of major browsers. There are even organized groups, such as The Web Standards Project (<http://webstandards.org>) whose mission is to promote W3C Recommendations (often called Web standards) not only to the creators of browsers but also to web developers and designers. You'll follow W3C Recommendations as you code web pages in this book. Following the W3C Recommendations is the first step toward creating a website that is accessible.

Web Standards and Accessibility

The Web Accessibility Initiative (<http://www.w3.org/WAI>), referred to as the WAI, is a major area of work by the W3C. Since the Web has become an integral part of daily life, there is a need for all individuals to be able to access it.

The Web can present barriers to individuals with visual, auditory, physical, and neurological disabilities. An **accessible** website provides accommodations that help individuals overcome these barriers. The WAI has developed recommendations for web content developers, web authoring tool developers, and web browser developers to facilitate use of the Web by those with special needs. See the WAI's Web Content Accessibility Guidelines (WCAG) at <http://www.w3.org/WAI/WCAG20/glance/WCAG2-at-a-Glance.pdf> for a quick overview.

Accessibility and the Law

The **Americans with Disabilities Act (ADA)** of 1990 is a federal civil rights law that prohibits discrimination against people with disabilities. The ADA requires that business, federal, and