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*HTML Utopia:*

# *Designing Without Tables* *Using CSS*



By Dan Shafer

A Practical Step-by-Step Guide

# **HTML Utopia: Designing Without Tables Using CSS (Chapters 1, 3, 4, and 5)**

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Thank you for downloading these four chapters of Dan Shafer's *HTML Utopia: Designing Without Tables Using CSS*.

This excerpt encapsulates the Summary of Contents, Information about the Author and SitePoint, Table of Contents, Preface, four chapters of the book, and a portion of Appendix C: *CSS Property Reference*.

We hope you find this information useful in evaluating the book.

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# **HTML Utopia: Designing Without Tables Using CSS**

**by Dan Shafer**

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by Dan Shafer

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## **About the Author**

Dan Shafer is a highly respected Web design consultant. He cut his teeth as the first Webmaster and Director of Technology at Salon.com, then spent almost five years as the Master Builder in CNET's Builder.com division.

Dan gained widespread recognition as a respected commentator on the Web design scene when he hosted the annual Builder.com Live! conference in New Orleans. He has designed and built more than 100 Websites and is regarded as an expert in Web user experience design and implementation.

The author of more than 50 previous titles on computers and technology, Dan lives in Monterey, California, with his wife of almost 25 years, Carolyn, and their Shiitzu dog, Albert Einstein.

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*This book is dedicated to One Mind,  
in the knowing that It is all there is.*

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# Preface

I was already in my 50s when the World Wide Web burst upon the scene. Having spent most of my life to that point as a writer and editor, I naturally gravitated to the publishing side of the coin, rather than remaining content to be an amazed consumer of all the wonderful information and connections that began to flow from it.

As I saw the first version of the first graphical Web browser before it was officially released, some might say I've been there from the beginning. And one thing that bothered me from that beginning, as an author and publisher, was the inability to disentangle content from presentation. The interconnectedness of it all meant that, to produce a Website, you needed not only something to say, and some graphical designs to make the site look good, but you also needed to be a bit of a programmer. Initially, this "programming" was a pretty lightweight task to someone like me who had a broad but thin programming background. HTML markup, when all was said and done, wasn't really programming. Still, it was more than just writing words. And it was more than using a word processor to format words.

Designers who had clear ideas of how they wanted their Web pages to look were frustrated and stymied by the need to create complex sets of deeply nested tables even to *approximate* their visions. And, as designers came up with increasingly complex ideas, and Web browsers diverged further and further from standards and compatibility, the Web threatened to collapse under its own weight. Serious designers began lobbying for a complete break from HTML to some new approach to the Web. Chaos reigned.

I was at CNET's Builder.com at the time, chronicling all of this, as well as participating in it both as a designer and as a pundit. I was one of the founding members of the Web Standards Project, or WaSP<sup>[1]</sup>, and I helped found the major conference where Web designers and creators gathered at *Builder.com Live!* in New Orleans. So I had a front-row seat as we gradually figured out the best way to deal with this problem.

The Holy Grail of the Web, then, was the notion that authors should write, designers should design (and code HTML) and programmers should... well... program. Those boundaries were not clean in the first few years of the Web.

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[1] <http://www.webstandards.org/>

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Then, along came Cascading Style Sheets (CSS), the subject of this book. The governing forces of the Web, through the World Wide Web Consortium, better known as the W3C<sup>[2]</sup>, addressed the problem and proposed that we divide presentation instructions, and structural markup with content, into two separate kinds of files.

Things haven't been the same since, thank goodness! Now we really can (mostly) separate what we say from how it gets presented to the user in a Web browser. I wager that most Web developers today are fairly comfortable with CSS and would no more think of embedding presentation instructions in their HTML than they'd consider mixing 23 fonts on the same Web or print page.

Since CSS emerged, there have been dozens of books written about it. So when SitePoint approached me about doing a CSS book, my first thought was, "Who needs another CSS book?" But as they began to reveal their vision to me, it made sense. It was indeed time for a book that took a different tack, based on the extensive experience of the Web design community.

So, this book is different in two primary ways.

First, it focuses on the question of how to accomplish with CSS some of the successes Web designers have spent significant time and energy to create using nested tables. Said another way, this book doesn't try to start from scratch and become a CSS tutorial. Instead, it's a sort of introductory CSS design guide.

Second, it starts at the outside and works its way in. Most, if not all, other CSS books, focus first on the little pieces: the attributes, values, and tags that comprise the syntax of CSS. They then explain how to put those pieces together into a Website.

This book begins by looking at how CSS should influence the entire design of a site, and how to put the CSS framework in place before you begin to deal with individual HTML elements and their styling.

## Who Should Read This Book?

As I wrote this book, I had in mind Web designers with at least a little experience building sites, who are curious about how CSS can help them become more effective designers. It is, then, aimed at a beginner to intermediate designer. I shall assume a strong grasp of HTML, but that's about it.

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[2] <http://www.w3.org/>

# The Book's Web Site

Located at <http://www.sitepoint.com/books/>, the Website supporting this book will give you access to the following facilities:

## The Code Archive

As you progress through the text, you'll note a number of references to the code archive. This is a downloadable ZIP archive that contains complete code for all the examples presented in the book. You'll also find a copy of the Footbag Freaks Website[4], which we use as an example throughout the book.

## Updates and Errata

No book is perfect, and I expect that watchful readers will be able to spot at least one or two mistakes before the end of this one. The Errata page on the book's Website will always have the latest information about known typographical and code errors, and necessary updates for new browser releases and versions of the CSS standard.

## The SitePoint Forums

If you'd like to communicate with me or anyone else on the SitePoint publishing team about this book, you should join SitePoint's online community[5]. In fact, you should join that community even if you *don't* want to talk to us, because there are a lot of fun and experienced Web designers and developers hanging out there. It's a good way to learn new stuff, get questions answered (unless you really enjoy being on the phone with some company's tech support line for a couple of hours at a time), and just have fun.

## The SitePoint Newsletters

In addition to books like this one, SitePoint publishes free email newsletters including *The SitePoint Tribune* and *The SitePoint Tech Times*. In them, you'll read about the latest news, product releases, trends, tips, and techniques for all aspects of Web development. If nothing else, you'll get the useful CSS articles and tips,

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[4] <http://www.footbagfreaks.com/>

[5] <http://www.sitepointforums.com/>

but if you're interested in learning other technologies, you'll find them especially useful. Sign up to one or more SitePoint newsletters at <http://www.sitepoint.com/newsletter/>.

## Your Feedback

If you can't find your answer through the forums, or if you wish to contact us for any other reason, the best place to write is [<books@sitepoint.com>](mailto:books@sitepoint.com). We have a well-manned email support system set up to track your inquiries, and if our support staff is unable to answer your question, they send it straight to me. Suggestions for improvements as well as notices of any mistakes you may find are especially welcome.

## Acknowledgements

A huge vote of thanks and appreciation goes to Kevin Yank, Technical Editor of this book. SitePoint as a publisher has a radically different approach than any other publisher I've dealt with. Kevin taught me a lot about CSS, argued with me about details when necessary, and generally made a major and measurable contribution to the technical quality of this book. In particular, he wrote the impressive Appendix C. Needless to say, errors remain my responsibility, but I can tell you that any errors that slipped through are my fault, and not due to a lack of understanding on Kevin's part. He must eat, sleep, and breathe W3C specs.

Also immensely influential on this book was Editor Georgina Laidlaw. She kept the project as on schedule as it could be, acted as a liaison between Kevin and I, and copy-edited the text to make sure my propensity to write incredibly long sentences was curbed. Plus, she was a joy to work with.

Julian Carroll, Designer, created the graphic design for the book, did almost all the graphics work, and designed the Footbag Freaks sample Website[7] to boot. He also wrote the article that was the original inspiration for this book: *HTML Utopia: Designing without Tables using CSS*[8].

Mark Harbottle, SitePoint's CEO, approached me with the concept, negotiated the deal, and remained flexible during sometimes difficult periods as the book

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[7] <http://www.footbagfreaks.com/>

[8] <http://www.sitepoint.com/article/379>

evolved and grew and shrank and missed deadlines. He was never anything less than a professional and a gentleman.

Jeff Soulé, a bright technology guy who also happens to be married to my lovely oldest daughter Sheila, read some of the chapters of the book as it was being written, learned some CSS in the process, and offered several helpful suggestions that led to clearer explanations of some points.

Two world-class Web designers, Eric Meyer and Jeffrey Zeldman, helped me through, with their writing, their examples, and their dogged determination that CSS be understandable to, and usable by, all Web designers.

Finally, my wife, Carolyn, continues to stand by her man despite long hours, blue air, bouts of self-doubt and depression, periods of inexplicable and incomprehensible joy, and reams of techno-speak. She is, as always, my primary inspiration and life teacher, without whom none of this would be possible or make sense.

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# Introduction to CSS

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# 1

## Getting the Lay of the Land

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We can look at Cascading Style Sheets (CSS) from a number of contextual perspectives. I prefer to view them as a correction to a fundamental mistake that was made at the beginning of Web Time, back in the old days of the early 1990s, when Tim Berners-Lee and the first pioneering Web builders first envisioned the beginnings of the Web.

What was that mistake?

To meet the requirements of the Web's initially limited purpose, it was not necessary to separate content from presentation. Even though some thought it was a good idea, there was no really compelling, practical reason to recognize this distinction. After all, the Web's early intent was simply to allow a small number of nuclear physicists using disparate systems at various locations to share vital experimental data.

Berners-Lee didn't envision the massively popular, wildly commercialized, extensively morphed Web that emerged from his core ideas in the early 1990s—I doubt that anyone could have.

So, the mistake was a lack of foresight, rather than an oversight. But it was a mistake nonetheless.

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## CSS in Context

Almost as soon as the Web became popularized by the emergence of the first graphical Web browser (the forerunner to Netscape Navigator), graphic designers became aware of a problem. The method by which the Web browser displayed information stored in HTML files was not within the designer's control. No, it was the users who were in primary charge of how the Web pages they visited would appear on their systems.

While there were many, including myself, who thought this was A Good Thing, professional designers were beside themselves with concern. From their perspective, this constituted a fundamental flaw. "Users don't know anything about good design", they argued. If the designers couldn't control with great accuracy things like colors, fonts, and the precise, pixel-level positioning of every design element on the Web page, their creations could easily end up as ugly travesties in the user's browser.

While a few decided to look upon this as a challenge posed by the new medium, most designers, accustomed to print and other fixed layouts that afforded them complete control over what the user saw, found ways to bend the Web to their will.

Lest I incur the ire of every designer reading this book, let me hasten to add that I don't think this was A Bad Thing. It is certainly the case that designers know more about how content should be displayed for users than do the users themselves. Things like spacing, color combinations, and other design elements affect readability and usability. My point has much less to do with who should have been in charge, than it does with the actions to which designers were more or less forced to resort, in order to achieve at least some measure of control.

Soon, expert designers discovered that they could use tables to gain significant control over the presentation of content to users. By carefully laying out tables within tables within tables, they could position quite precisely any design element that could be contained within a table cell. And that encompassed almost everything.

The first desktop publishing-style Web page design tool, NetObjects Fusion, enabled designers to lay out pages with a high degree of precision. It generated complex, table-based HTML, which resulted in Web pages that were as close as possible to the designer's original vision.

We never looked back.

But tables weren't intended to be used as layout tools, so while they were marginally effective, they were also horribly inefficient. We'll explore some of the shortcomings and disadvantages of using tables for layout tasks a little later in this chapter; for now, just know that everyone, including the designers who used the techniques, understood pretty well how clumsy a solution they really were.

## The Basic Purpose of CSS

CSS emerged as a standard for Web page design, in large part, as a reaction to the overuse of excessively complex tables to force precision layout upon a medium that was not originally intended for such a purpose. While this is a bit of an oversimplification of the facts, it's hardly an unfair one.

After a brief series of skirmishes at the beginning of the Web's development, the question of who should control the overall appearance of a page or site ended with the designers as victors. In fact, hardly a shot was fired. Users, after all, eventually care most about usability, accessibility and convenience, rather than the nitty-gritty details of design techniques.

Though flush with their victory, designers found themselves hard-pressed to identify very good, standards-compliant ways to provide their customers—and their customers' users—with great designs that were also effective and efficient. Thus, they were forced to rely largely on tables.

As the snarl of tables grew to resemble a giant thicket, even the design community became uneasy. Maintaining a Web page that consists of a half-dozen or more deeply intertwined tables is a nightmare. Most designers prefer not to deal with code—even simple HTML markup—at such a level of detail.

Into the breach stepped the World Wide Web Consortium, better known as the W3C<sup>[1]</sup>, a body founded by Tim Berners-Lee to oversee the technical growth of the Web. They saw that separating the content of a site from its form (or appearance) would be the most logical solution. This would enable content experts—writers, artists, photographers, and programmers—to provide the “stuff” that people come to a site to see, read, or experience. It would also free the design experts—artists, graphic designers, and typographers—to determine the site's aesthetics independently of its content.

The result was CSS.

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[1] <http://www.w3.org/>

# Why Most—But Not All—Tables Are Bad

Why are tables such a bad idea as a design mechanism? There are numerous reasons, but the ones we're most concerned with in this context are:

- ☐ They result in load times that are longer than necessary.
- ☐ They encourage the use of inefficient “placeholder graphics” that further slow performance.
- ☐ Their maintenance can be a nightmare in which even minor changes “break” the entire layout.

## Tables Mean Long Load Times

Most people don't know that Web browsers are deliberately designed to ensure that each table downloads as a single entity. So, none of the material that's contained in a table will be displayed until all the contents of that table are downloaded to the client machine, and available for display<sup>1</sup>.

When the original, intended purpose of tables is taken into account, this makes sense. Tables were designed to display... well... tables of data. Each cell contained a value that was being compared to, or related with, the values of other cells in the table. Isolated bits of data appearing quasi-randomly would not do; the table was a single, integrated entity.

When designers began to rely on tables to contain all or most of the content of a Web page, they were also saddled with the consequences of this design decision. In addition to the *apparent* delay that many users experience as a result of tables displaying all at once, the sheer volume of HTML code that is required to create today's Web page layouts with nested tables can also add *actual* load time due to increased page size. Table-based layouts almost certainly account for more user concern over long page load times than any other single factor.

Avoiding this significant load time would obviously be A Good Thing.

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<sup>1</sup>Cascading Style Sheets Level 2 (CSS2) includes a property called `table-layout` that alters this behavior, with several important caveats. Refer to Appendix C for details.

## Use of Transparent Images Slows Us Down

Even with the availability of tables as layout mechanisms, designers could not quite attain the detailed level of control over page design that they wanted. Sometimes, for instance, a designer might need a bit more breathing room around one part of a table cell (something for which table design does not allow). This kind of precision was unachievable.

Early on, some designer came up with the notion of creating a `transparent.gif` image file—a tiny GIF image that had no visible content. By creating table cells to contain these transparent images, we could force extra room both vertically and horizontally into tables whose cells were designed to remain in close proximity to one another.

The problem is, given a table with dozens (or even hundreds) of these images, and depending on a variety of other factors, the performance impact of transparent GIFs on a Web page can be significant. More importantly, however, this technique will often restrict the page to a fixed pixel size, and it clutters the page with images that have no actual meaning for the content of the page. As we'll see later, this severely impacts the ability for users with disabilities to make sense of your site.

## Maintaining Tables is a Nightmare

The third reason why most tables are bad is that maintaining a complex array of deeply nested tables is a nightmare. If you use tools such as Macromedia Dreamweaver or Adobe GoLive to manage your sites and their designs, you can generally ignore the messiness of the nested tables that make the design possible. But even these tools are not foolproof, and when they “mess up” (to use a highly technical term), amending the unsightly pages they create can be quite a challenge.

If you're like most designers, and you wouldn't be caught dead using an HTML-generating tool because you feel you gain more control and understanding if you hand-code everything, then you'll be familiar with this problem.

The difficulty arises because, by necessity, tables have a fairly complex set of tags, even if they aren't embedded within other tables. And when we have nested tables, well, we've got a clear case of the uglies alright.

The situation is further complicated by the fact that, unlike programming editors, HTML editors generally do not force or support the clean indentation of code. So, finding the start and end points for a given table, row, or even cell turns out

to be what software folks call a “non-trivial task.” While it’s true that a competent HTML coder or designer could make this problem more tractable, it’s never really solvable, no matter what we do.

## When it’s OK to Use a Table

There is one notable exception to the cardinal rule that Tables are A Bad Thing.

If you have tabular data, and the appearance of that data is less important than its appropriate display in connection with other portions of the same data set, then a table is in order.

In general (though there are undoubtedly some exceptions to this rule as well), this means that the use of tables should be confined to the presentation of numeric or textual data, not graphics, multimedia data types, forms, or any other interactive user interface components.

## What is CSS, Really?

OK, now that we’ve established that an important role of CSS in our lives as designers is to free us from the drudgery (and treachery) of using tables for page layout, let’s take a look at what CSS really is.

The most important word in the Cascading Style Sheets label is the middle one: **style**. The cascading issue becomes important only when we get into fairly complex style usage, while the word “sheet” is even a tad misleading at times. So, even though we mean Cascading Style Sheets in the broadest and most accurate sense, we’ll focus not on the cascading or sheet-like nature of these beasts, but on their role in determining the styles of our Web pages and sites. Styles are defined in the form of **rules**. These rules tell any Web browser that understands them (i.e. that supports CSS) how to display specific types of content structures when it encounters these structures in delivering a Web page to a user.

To understand how styles affect Web page appearance, we need to be sure we understand what happens to a Web page in the absence of any style rules.

Figure 1.1 shows the general process of interaction between a client (Web browser), and a server where a Web page or site is located. Note that the browser automatically determines how information provided by the server is displayed to the user, unless it is specifically told otherwise. In other words, each browser has a default way of displaying all HTML-tagged content. So, a first-level heading



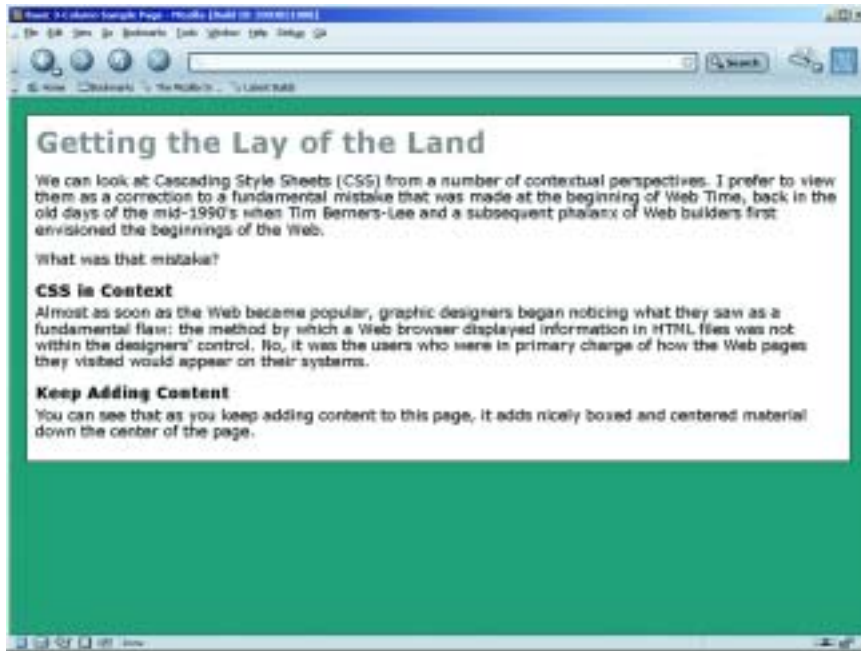
enclosed in the `<h1></h1>` tag set will always be displayed using a relatively large font in black. The “default” font that’s used may vary between browsers, and can be affected by user-defined settings as well.

### Figure 1.1. Normal Browser Page Display Behavior



Figure 1.2 depicts what happens when a style rule exists for a particular type of HTML structure. The rule overrides the browser’s default handling of that element, and the style takes over. Even if the user has defined his or her own settings for this element, those wishes will generally not be honored (though there are some intriguing exceptions to this, which we’ll discuss much later in this book).

**Figure 1.2. Browser Displaying Page With Style Rule in Effect**



## Parts of a CSS Rule

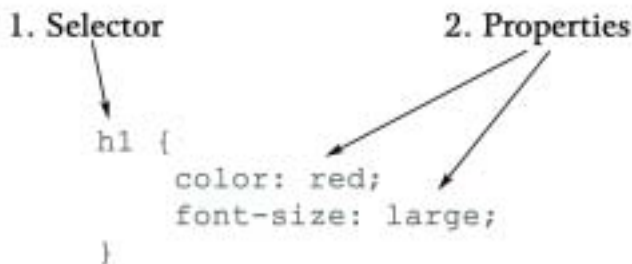
Every style, whether it's embedded in a separate style sheet or not, consists of one or more **rules**. Figure 1.3 shows a CSS rule with all the parts labeled.

Each rule has exactly two parts:

- ❶ a **selector** that defines the HTML element(s) to which the rule applies, and
- ❷ a collection of one or more **properties**<sup>2</sup>, which describes the appearance of all elements in the document that match the selector.

---

<sup>2</sup>Many books and articles about CSS call them “attributes,” or use the two terms interchangeably. In this book, I used the W3C endorsed terminology of “properties”, and reserve the name “attributes” for attributes of HTML tags.

**Figure 1.3. Parts of a CSS Rule**

Each property consists of a pair of values separated by a colon. The first item of the pair defines the specific property that's being modified. The second item describes the value that the property takes on. Each property-value pair must be followed by a semicolon, with one exception: The semicolon following the last property is optional and may be omitted. In this book, however, we will always add this optional semicolon. I encourage you to adopt this habit as well, as it's much easier to train yourself to always add that semicolon than it is to remember when it is required and when it isn't. It also makes it easier to add properties to an existing style rule.

Here are a few examples of increasingly complex CSS rules, with the parts identified so that you can fix this syntax clearly in your mind. Essentially, this is the only real syntax issue you must learn in order to master CSS, so it's important!

```
h1 {
  color: red;
}
```

The selector, `h1`, indicates that this rule applies to all `h1` headings in the document. The name of the property that's being modified is `color`, which applies to the font color. The value we want the `color` property to take on is `red`. Chapter 7 and Chapter 9 explore fonts and coloring in CSS in great detail.

```
p {
  font-size: 14px;
  color: green;
}
```

The selector, `p`, indicates the style rule should be applied to all paragraphs in the document. There are two property name-value pairs in the rule. The first, `font-size`, sets the size of the font in all paragraphs in the document to 14 pixels. A pixel is one dot on your screen, and is the most common measurement used in CSS. See Chapter 3, for an explanation of this and other measurement issues in CSS. The second property is `color` and is set to `green`. The result of this rule is that all paragraphs in the document will appear in a green, 14-pixel-high font.

```
p {  
  font-family: 'New York', Times, serif;  
}
```

Again, this rule deals with paragraphs, as is evidenced by the `p` selector. This time, the selector affects the font family that is used to display text. The new wrinkles in this example are that it includes a list of values for the `font-family` property, and one of those values is enclosed in quotation marks.

The `font-family` property is one of a handful of CSS properties to which you can assign a *list* of possible values, rather than a single, fixed value. When you use a list, commas must separate its individual members. In this case, the `font-family` property list tells the browser to use `New York` as the font if the user's machine has it installed. If not, it directs the browser to use `Times`. And if neither of these fonts is available on the user's system, then the browser is told to default to the font used for serif type. Again, this subject is covered in more depth in Chapter 7 and Chapter 9.

Whenever the name of a property value in a CSS rule includes spaces (as is the case with the font named “New York”), you must put that value into quotation marks. Many designers use single quotation marks for a number of reasons, not the least of which is that they're easier to type, but you can use either single or double quotation marks.

## Types of CSS Rules

There are several possible ways to categorize and think about CSS rules.

First, there is the question of what types of style properties the rules define. Second, there is the requirement of describing the type(s) of HTML elements that the rules affect. Finally, there is the issue of whether the styles are “inline”, “embedded” or “external.”

Let's take a brief look at each of these categorizations, so that you have a good overview of the organization of CSS rules before you embark on a detailed study of their actual use.

## What Properties Can CSS Rules Affect?

CSS rules can include properties that affect virtually every aspect of the presentation of information on a Website. A complete reference to these properties is presented in Appendix C.

## What Elements Can CSS Affect?

Stated another way, this question asks “How specifically can a CSS rule target a piece of information on a Web page for special presentation?” CSS allows the designer to affect all paragraphs, but how can you confine that impact to certain, specific paragraphs? Is this even possible?

The answer, unsurprisingly, is yes. Through various combinations of selector usage, the designer can become quite specific indeed about the circumstances under which a style rule is enforced. For example, you can assign rules so that they affect:

- ☐ all elements of a specific type
- ☐ all elements of a specific type that are assigned to a common group or class
- ☐ all elements of a specific type that are contained within other elements of a specific type
- ☐ all elements of a specific type that are both contained within another specific element type and assigned to a common group or class
- ☐ all elements of a specific type only when they come immediately after an element of some other type
- ☐ only a specific element of a specific type which is assigned a unique ID

Chapter 3, includes a detailed discussion of all the CSS selectors you can use to achieve this kind of precision targeting.

## Where Can CSS Styles Be Defined?

Finally, you can define CSS styles in any of three places, in conjunction with a Web page.

### Inline CSS

First, you can define a style entirely within an appropriate HTML tag. This type of style is referred to as an **inline style** because it is defined in line with the document's HTML code. You can assign a `style` attribute to almost all HTML elements. For example, to make a second-level heading in a document appear in red text and all capital letters, you could code a line like this:

```
<h2 style="color: red; text-transform: uppercase;">An Unusual  
Heading</h2>
```

If you follow the advice in this book, you won't use many inline styles. As you'll learn, separating content from presentation is one of the big advantages of CSS, and embedding styles directly in HTML tags defeats that purpose. Inline styles are mainly useful for rapid prototyping—quickly applying style properties to a particular element to experiment with an effect before giving the properties a more permanent place in an embedded or external style rule.

### Embedded CSS

Specifying style properties in an **embedded style** is probably the method that's most common today, particularly among beginning Web designers or those just learning the techniques involved in CSS design. It's not my favorite, but it does have the singular virtue of being easy to deal with, so you'll see it used from time to time in this book.

To embed a style sheet in a Web page, you place a `style` block in the head of the document's HTML, as shown here in bold:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
  "http://www.w3.org/TR/xhtml11/DTD/xhtml11-transitional.dtd">  
<html xmlns="http://www.w3.org/1999/xhtml">  
  <head>  
    <title>CSS Style Sheet Demo</title>  
    <meta http-equiv="Content-Type"  
      content="text/html; charset=iso-8859-1" />  
    <style type="text/css">  
  <!--
```

```
h1, h2 {  
  color: green;  
}  
h3 {  
  color: blue;  
}  
-->  
</style>  
</head>  
...
```

The CSS rules contained in the `style` block apply to all the designated parts of the current document. In this case, the first rule directs the browser to display all level 1 and 2 headings (`h1`, `h2`) in green. The second rule displays all level 3 headings (`h3`) in blue.

Notice the HTML comment delimiters (`<!-- -->`) just inside the `<style>` tags. These prevent ancient browsers that do not support CSS from interpreting the style rules as document content and displaying them in the browser window. All CSS capable browsers will ignore the comment delimiters. Even though it's probably safe (or nearly so) to omit these symbols today, as so few ancient browsers are still in use, it does no harm to include them. I recommend you do so, just because it's good form.

The second thing to notice about the `style` element's syntax is that each rule starts on a new line, and each property specified within the rule appears indented within braces on its own line. This is not, strictly speaking, required, but it's a good rule of thumb that improves the readability of your code, especially if you're used to the look of JavaScript code.

## External CSS

Finally, you can define CSS rules in a file that's completely separate from the Web page. You can then link to this file by including a `<link>` tag in the `head` portion of any Web page on which you want to implement the styles contained in that file.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
  "http://www.w3.org/TR/xhtml11/DTD/xhtml11-transitional.dtd">  
<html xmlns="http://www.w3.org/1999/xhtml">  
<head>  
<title>CSS Style Sheet Demo</title>  
<meta http-equiv="Content-Type"  
  content="text/html; charset=iso-8859-1" />
```

```
<link rel="stylesheet" type="text/css" href="corpstyle.css" />
</head>
...
```

In this example, the file `corpstyle.css` contains a set of **external styles** that have been linked to this page. Here's what the contents of this file might look like:

```
h1, h2 {
  color: green;
}
h3 {
  color: blue;
}
```

This is my personal preference for the way we should deal with *all* CSS usage, for a number of reasons.

First, this is the least “locked-in” of the three basic methods designers can use to insert styles into a Web page. If you define an external style sheet file, you can bring it to bear on as many pages on your site as you want, simply by linking to the style sheet from each page on which you want it used. Making a change to a style that appears on every page of your site becomes a simple matter of modifying the shared `.css` file. If you use embedded or, worse yet, inline styles, you’ll have to copy and paste them into other documents if you want to use them.

Second, and closely related to the first advantage, is that this method is the easiest way to ensure the maintainability of your CSS styles. If you define all your site’s styles in external files, implementing a site-wide style change is a simple matter of making one edit in a single file. All the pages that use that style sheet will display the new styles immediately, following this one change. With the other techniques, you have to either remember which styles are defined on which pages, or use search mechanisms to help you deal with the decentralized styling rules.

Third, external style sheets are treated as separate files by the browser. When the browser navigates to a new page, using the same style sheet, the external style sheet does not need to be downloaded again. Pages that use external styles are therefore quicker to load.

Last, but not least, external style sheets are simply more professional. By using them, you demonstrate an understanding of the importance of the first two issues I’ve just raised, and you make it much easier to discuss them, share them with



colleagues, analyze their effects, and, in general, to work with them as if they were a serious part of the site's design, rather than an afterthought.

## Why Bother?

Well, now that you have a basic overview of what CSS is all about, why we have it, and why I think it's an important technique for Web designers to adopt, where's the proof? Let's look at an example of a small, but not overly simplistic Web page (see Figure 1.4).

**Figure 1.4. Sample Web Page Demonstrating Embedded Styles**



Using embedded CSS, here's the HTML that will produce that page. Look ma, no tables! Don't let the complexity of the code intimidate you—by the end of Chapter 3, you should be able to infer the meaning of most of it without my help. For now, you can download the code archive from the book's Website[2] and marvel at the results in your browser. The file is called `ch1sample.html`.

[2] <http://www.sitepoint.com/books/>

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Basic 3-Column Sample Page</title>
<meta http-equiv="Content-Type"
  content="text/html; charset=iso-8859-1" />
<style type="text/css">
<!--
body {
  background-color: teal;
  margin: 20px;
  padding: 0;
  font-size: 1.1em;
  font-family: verdana, arial, helvetica, sans-serif;
}
h1 {
  font-family: verdana, arial, helvetica, sans-serif;
  margin: 0 0 15px 0;
  padding: 0;
  color: #888;
}
h2 {
  font-family: verdana, arial, helvetica, sans-serif;
  margin: 0 0 5px 0;
  padding: 0;
  font-size: 1.1em;
}
p {
  font-family: verdana, arial, helvetica, sans-serif;
  line-height: 1.1em;
  margin: 0 0 16px 0;
  padding: 0;
}
.content>p {
  margin: 0;
}
.content>p+p {
  text-indent: 30px;
}
a {
  color: teal;
  font-family: verdana, arial, helvetica, sans-serif;
  font-weight: 600;
  text-decoration: none;
}
```

```
a:link {
  color: teal;
}
a:visited {
  color: teal;
}
a:hover {
  background-color: #bbb;
}

/* All the content boxes belong to the content class. */
.content {
  position: relative;
  width: auto;
  min-width: 120px;
  margin: 0 210px 20px 170px;
  border: 1px solid black;
  background-color: white;
  padding: 10px;
  z-index: 3;
}

#navleft {
  position: absolute;
  width: 128px;
  top: 20px;
  left: 20px;
  font-size: 0.9em;
  border: 1px dashed black;
  background-color: white;
  padding: 10px;
  z-index: 2;
}

#navright {
  position: absolute;
  width: 168px;
  top: 20px;
  right: 20px;
  border: 1px dashed black;
  background-color: #eee;
  padding: 10px;
  z-index: 1;
}
-->
</style>
```

```
</head>
<body>

<div class="content">
  <h1>Getting the Lay of the Land</h1>
  <p>We can look at Cascading Style Sheets (CSS) from a number of
    contextual perspectives. I prefer to view them as a
    correction to a fundamental mistake that was made at the
    beginning of Web Time, back in the old days of the mid-1990's
    when Tim Berners-Lee and a subsequent phalanx of Web builders
    first envisioned the beginnings of the Web.</p>
  <p>What was that mistake?</p>
</div>

<div class="content">
  <h2>CSS in Context</h2>
  <p>Almost as soon as the Web became popular, graphic designers
    began noticing what they saw as a fundamental flaw: the
    method by which a Web browser displayed information in HTML
    files was not within the designers' control. No, it was the
    users who were in primary charge of how the Web pages they
    visited would appear on their systems.</p>
</div>

<div class="content">
  <h2>Keep Adding Content</h2>
  <p>You can see that as you keep adding content to this page, it
    adds nicely boxed and centered material down the center of
    the page.</p>
</div>

<div id="navleft">
  <h2>Some Links</h2>
  <p>
    <a href="http://www.danshafer.com/"
      title="Dan Shafer's Personal Web Site">Dan's Home
      Page</a><br/>
    <a href="http://www.sitepoint.com/"
      title="SitePoint Home Base">SitePoint Home</a><br/>
    <a href="http://www.sitepointforums.com/"
      title="Discussion Board for This Book">Discuss This
      Book</a><br/>
    <a href="" title="">Fake Link One</a><br/>
    <a href="" title="">Nothing Here</a><br/>
    <a href="" title="">Links Nowhere</a><br/>
    <a href="" title="">Fake Link Four</a><br/>
  </p>
</div>
```

```
<a href="" title="">Fifth Fake Link</a><br/>
</p>
</div>

<div id="navright">
  <h2>Why CSS is Better</h2>
  <p>Style sheets allow you to separate content from its
    presentation, which leads to pages that are more easily
    reproduced as templates for other pages and to vastly easier
    maintenance. Smaller file sizes, fewer place-holder graphics,
    and faster load times are some of the other benefits of
    CSS.</p>
  <p>If you have other ideas on this subject,
    <a href="mailto:dan@danshafer.com">drop me an email</a> and
    let's talk about it!</p>
</div>

</body>
</html>
```

## Summary

You should now understand the historical and technological contexts in which CSS has emerged, what major problems it is designed to solve, and how it works at a surface level. You should also know why tables are a bad idea as a Web page layout device, even though they have other, perfectly valid uses.

In addition, you can identify both the parts of a CSS rule and at least three ways of categorizing CSS style rules in general.

Chapter 2, drills more deeply into the prospective issues surrounding CSS. It clears up some of the misconceptions you may have about this technology, and describes some of the important issues you'll have to take into consideration because of the way Web browsers work (or don't) with CSS rules.

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# 3

## Digging Below The Surface

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This chapter completes our look at the “mechanics” of CSS: the background you need to have to work with the technology. It covers six major topics:

- ☐ quick review of the three methods for assigning CSS properties to HTML documents
  - ☐ use of shorthand properties to group values for a related set of properties in a single statement
  - ☐ workings of the inheritance mechanism in style sheets
  - ☐ structure of a style, including variations on the use of selectors for determining with great precision exactly what is affected by a style
  - ☐ units and values that can appear in styles to express sizes, locations, and other properties, and how they are used
  - ☐ CSS comments, which can be used to place human-readable notes in your CSS code
-

# Applying CSS to HTML Documents

In Chapter 1, I introduced the three methods for applying style sheet properties to HTML documents. I will briefly review them here to jog your memory.

- ❑ **Inline styles:** We can use the `style` attribute, which is available for the vast majority of HTML elements, to directly assign CSS properties to HTML elements.

```
<h1 style="font-family: 'Comic Sans'; color: blue;">
  Welcome</h1>
```

This method is best reserved for when you want to try out quickly one or more CSS properties to see how they affect an element. You should never use this method in a practical Web site, as it misses almost every advantage that CSS has to offer.

- ❑ **Embedded styles:** We can use the `<style>` tag in the head portion of any HTML document to declare CSS **rules** that apply to the elements of the page.

```
<style type="text/css">
<!--
h1, h2 {
  color: green;
}
h3 {
  color: blue;
}
-->
</style>
```

This form of CSS offers many advantages over inline styles, but is still not as flexible or powerful as external styles (see below). I recommend you only use embedded styles when you are certain the styles you are creating will only be useful in the current page. Even then, the separation of code offered by external styles can make them a preferable option, but embedded styles can often be more convenient for quick-and-dirty, single-page work.

- ❑ **External styles:** We can use a `<link>` tag in the head portion of any HTML document to apply a set of CSS rules in an external file to the elements of the page.

```
<link rel="stylesheet" type="text/css" href="mystyles.css" />
```



The recommended method for applying CSS to HTML, external styles offer the full range of performance and productivity advantages that CSS can provide.

## Using Shorthand Properties

Most property names take a single item as a value. When you define a property with a collection of related values (e.g. a list of fonts for the `font-family` property), the values are separated from one another by commas and, if any of the values include embedded white space or reserved characters such as colons, they may need to be enclosed in quotation marks.

In addition, there is a special set of properties called **shorthand properties**. Such properties let you use a single property declaration to assign values to a number of related properties. This sounds more complicated than it is.

The best-known shorthand property is `font`. CSS beginners are usually accustomed to defining font properties one by one:

```
h1 {  
  font-weight: bold;  
  font-size: 12pt;  
  line-height: 14pt;  
  font-family: Helvetica;  
}
```

But CSS provides a shorthand property, `font`, that allows this same rule to be defined much more succinctly:

```
h1 {  
  font: bold 12pt/14pt Helvetica;  
}
```

All shorthand properties are identified as such in Appendix C.

## How Inheritance Works in CSS

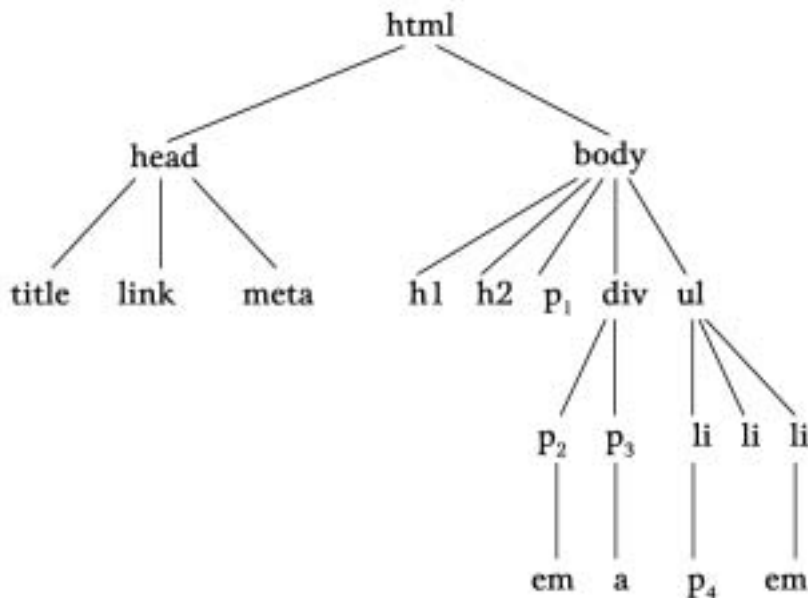
Before you can grasp some of the syntax and behavior of CSS rules, you need a basic understanding of the inheritance CSS uses.

Every element on an HTML page belongs to the document's inheritance tree. The root of that tree is *always* the `html` element, even in documents that fail to include the `html` tag explicitly.

Commonly, the `html` element has only two direct descendants in the inheritance tree: `head` and `body`.

Figure 3.1 shows a simple HTML inheritance tree for a small document.

**Figure 3.1. Sample HTML Inheritance Tree Diagram**



As you can see, the document has in its `head` the standard `title` and `link` elements, the latter of which probably links to an external style sheet. It also includes a `meta` element (most likely to set the document's character set).

The `body` consists of five elements: an `h1`, an `h2`, a `p` element (labeled `p1` so we can refer to it easily), a `div` and a list (`ul`) element. The `div` element, in turn, contains two paragraph elements, one of which has an emphasis (`em`) element, and the other of which contains an anchor (`a`) element. The `ul` element includes three list item (`li`) elements, one of which includes an emphasis (`em`) element, while another contains a paragraph element labeled `p4`.

Paragraph element `p1` is a direct descendant of the `body`.

Each element in an HTML document has a parent element (with the exception of the root `html` element), and is said to be a child of its parent element. In Figure 3.1, for example, `p2`'s parent is the `div`. `p2` would be described as a child of the `div`.

Some elements in an HTML document—and most of them in a complex document—are descendants of more than one element. For example, in Figure 3.1, the paragraph element `p1` is a descendant of `body` and `html`. Similarly, paragraph elements `p2` and `p3` are descendants of the `div` element, the `body` element, and the `html` element. Paragraph element `p4` is tied with several other elements in the document for the most ancestors: an `li`, the `ul`, the `body`, and the `html` elements. This notion of element hierarchy is important for two reasons.

First, the proper use of some of the CSS selectors you'll work with depends on your understanding of the document hierarchy. There is, for example, an important difference between a descendant selector and a parent-child selector. These are covered in detail in the section called "Selectors and Structure of CSS Rules".

Second, many properties for which you don't supply a specific value for a particular element will take on the value assigned to the parent element. This means, for example, that if you don't explicitly define a `font-family` property for the `h1` element in the document diagrammed in Figure 3.1, it will use the font defined in the `body` tag. If no explicit `font-family` is defined there either, then both `body` text and the `h1` heading use the font defined by the browser as the default. In contrast, setting the `width` property of an element will *not* directly affect the width of child elements. `font-family` is an **inherited property**, `width` is not.

Inherited properties, properties that are inherited from ancestors by default, are indicated in Appendix C. In addition, you can set any property to the special value `inherit`, to cause it to inherit the value assigned to the parent element.

This inheritance issue can be tricky to understand when you deal with fairly complex documents. It is particularly important when you're starting with a site that's been defined using the traditional table layout approach, in which style information is embedded in HTML tags. When a style sheet seems not to function properly, you'll frequently find the problem lies in one of those embedded styles from which another element is inheriting a value.

# Selectors and Structure of CSS Rules

Recall from Chapter 1, that every CSS style rule consists of two parts: a selector, which defines the type(s) of HTML element(s) to which the style rule applies, and a series of property declarations that define the style.

So far, we’ve seen only simplistic selectors. Typically, they’ve contained only one element:

```
h1 {
  font-size: 18px;
  text-transform: capitalize;
}
```

We have encountered one or two instances where a single rule is designed to apply to more than one *kind* of HTML element:

```
h1, h2, h3 {
  font-size: 18px;
  text-transform: capitalize;
}
```

These are the most basic selectors in CSS. There are many others. Table 3.1 summarizes all the selector types available in CSS, roughly from simplest to most complex. The remainder of this section describes each type of selector in detail, in the order in which they appear in Table 3.1. Selector types that are defined for the first time in the CSS2 specification or that have changed between CSS1 and CSS2 are marked with “(CSS2).”

**Table 3.1. Types of CSS Selectors**

Selector Type	Use or Meaning	Example(s)
universal selector (CSS2)	Apply rule to all elements in document.	* (no selector)
element type	Apply rule to all HTML elements of the selector’s type.	h1 p

Selector Type	Use or Meaning	Example(s)
class selector	Apply rule to all HTML elements of the type preceding the period (or all, if none is specified) whose definition makes them part of the class following the period of the selector.	.articletitle h1.important
ID selector	Apply rule to only one element in the entire document: the one whose id attribute matches the string following the pound sign (hash mark) in the selector.	#special3 p#special52
pseudo-element selector (CSS2)	Apply rule to occurrences of the pseudo-element.	p:first-letter p:first-line h1:first-child
pseudo-class selector (CSS2)	Apply rule to occurrences of the pseudo-class, whose appearance may change as the user interacts with the page.	a:hover a:active a:focus a:link a:visited body:lang(d)
descendant selector	Apply rule to elements of the right-most type in a space-separated list of element types only where that element type descends from (i.e., inherits) the type to its left.	p em p.wide em
parent-child selector (CSS2)	Apply rule to all elements of type specified to the right of the ">", which are <i>children</i> of the elements to the left of the ">" (stricter form of the descendant selector).	body > p

Selector Type	Use or Meaning	Example(s)
adjacent selectors (CSS2)	Apply rule to all elements of type specified to the right of the “+”, which are physically adjacent (in the HTML code, not necessarily on the visible page) to elements of the type to the left of the “+”.	<code>h1+h2</code> <code>p+h3</code>
attribute selectors (CSS2)	Apply rule to all elements with attributes matching the profile specified in square brackets.	<code>p[align]</code> <code>input[type="text"]</code> <code>img[alt~="none"]</code> <code>body[lang "en"]</code>

## Universal Selector

The universal selector has no real practical value by itself. A style rule with no selector applies to all elements of all types on a Web page, so the asterisk is superfluous.

However, the universal selector can come in handy in specific situations involving, for example, attribute selectors, which I explain later in this section.

In this example, all elements in the page are given a text color of red:

```
* {  
  color: red;  
}
```

## Element Type Selector

The single element selector is the most common selector. It specifies one HTML element type with no qualifiers or enhancements.

In the absence of other style rules applying to the element type provided in the selector, this rule applies to all such elements on the page.

In this example, we specify the text and background colors (black and white, respectively) for the document by assigning these properties to the `body` element:

```
body {  
  color: black;  
  background-color: white;  
}
```

## Class Selector

To apply a style rule to a potentially arbitrary group of elements in a Web page, you'll need to define a class in the style sheet, and then identify through their HTML tags the elements that belong to that class.

Defining a class in a style sheet requires that you precede the class name with a period. No space is permitted between the period and the name of the class. The following style sheet entry defines a class named `special`. Because there's no HTML element name associated with the class, any type of element on a page using this style sheet can be identified with the class, as you'll see in a moment.

```
.special {  
  font-family: verdana, arial, sans-serif;  
}
```

If you want to include only elements of a particular type in your class, you can use the more specific selector shown here:

```
p.special {  
  font-family: verdana, arial, sans-serif;  
}
```

The above style rule would apply only to paragraph elements that were identified as being members of the class called `special`.

Within the HTML markup, you can indicate that an element belongs to a class by using the element's `class` attribute:

```
<p class="special">Paragraph of stuff.</p>
```

An HTML element can belong to multiple classes if you wish, simply by listing the classes (separated by spaces) in the `class` attribute:

```
<p class="special exciting">Paragraph! Of! Stuff!</p>
```

If you define an element-specific class such as the `p.special` example above, and then associate that class (in this case, `special`) with an element of any other type, the style rule simply does not apply to that element.

## ID Selector

The ID selector permits you to identify single instances of HTML elements where you wish to override the style properties set in, for example, a class style rule. Like a class selector, an ID selector requires definition in the style sheet and explicit inclusion in the HTML tag. Use the “#” symbol to identify an ID selector<sup>1</sup>. IDs must be unique within a document; no two HTML tags in a single document should have the same ID.

This style sheet rule defines a rule for an element with the ID unique:

```
#unique {  
    font-size: 10px;  
}
```

The code below shows how to indicate the element to be affected by the above rule using the HTML id attribute:

```
<h4 id="unique">This will be a very tiny headline</h4>
```

For example, if you had five `<div class="sidebar">` items on your page, but you wanted to style differently the one responsible for displaying your site’s search box, you could do so like this:

```
div.sidebar  
{  
    ...  
}  
#searchbox  
{  
    ...  
}
```

Now, if both of these rules define a `background-color` property, and your search box tag was `<div id="searchbox" class="sidebar">`, then the search box would get all the `sidebar` properties assigned to it, but it would take its `background-color` from the `#searchbox` rule. The guidelines for cascading overlapping rules (discussed in Chapter 9), in combination with the ID selector, let you avoid having to redefine all the `sidebar` properties in a special `searchbox` class.

---

<sup>1</sup>You can optionally confine the ID’s use to an element of a specific type by preceding the # with the HTML element’s tag name (e.g. `div#searchbox`). But, as you can have only one element with the specific ID in your document, it seems silly to confine it to a specific element type.



However, you *could* just as easily define a class and apply it to the exceptional element (the search box, in this example). This is more flexible, although perhaps not as efficient in terms of code space. For example, after you've identified a class or other rule that applies to all level three headings except one, and if you've used an ID selector for the exception, what do you do when a redesign or content change requires even one more such exception? The ID selector solution breaks down immediately in that situation.

It appears from my testing that not all of the newer browsers enforce the rule that the ID be unique in the document. Instead, they apply the ID rule to *all* elements in the document that carry the ID. That makes the ID essentially equivalent to the class selector. This is clearly not what the CSS specification had in mind, but it is how many of the browsers I've tested behave.

## Pseudo-Element Selector

This and all the remaining selectors in this section require a browser that supports the CSS2 specification.

The pseudo-element and pseudo-class selectors are unique among the CSS selectors in that they have no equivalent HTML tag or attribute. That's why they use the prefix "pseudo", meaning "false."

So far, the CSS specification has defined only three pseudo-elements: **first-letter**, **first-line**, and **first-child**. While the first two of these phrases mean something to us humans, it's ultimately up to each browser to interpret them when rendering HTML pages using these pseudo-elements. For example, does **first-line** mean "first sentence" or does it mean first physical line displayed, a value that changes as the user resizes the browser? The **first-child** pseudo-element, on the other hand, is not browser-dependent. It refers to the first descendant of the element to which it is applied, in accordance with the HTML document hierarchy described in the section called "How Inheritance Works in CSS".

To define a pseudo-element selector for a style rule, precede the pseudo-element name with a colon. Here's an example:

```
p:first-letter {  
  font-face: Gothic, serif;  
  font-size: 250%;  
  float: left;  
}
```

This creates a drop-caps effect for the first letter in every paragraph on the page. The first letter in each paragraph will be a Gothic letter 2.5 times larger than the usual type used in paragraphs. The `float` style property, which we discuss in Chapter 6, ensures the remaining text in the paragraph wraps around the enlarged drop-cap correctly.

## Pseudo-Class Selector

The pseudo-class selector is exactly like the pseudo-element selector, with one exception. A pseudo-class selector applies to a whole element, but only under certain conditions.

The current release of CSS2 defines the following pseudo-classes:

- ☐ `:hover`
- ☐ `:active`
- ☐ `:focus`
- ☐ `:link`
- ☐ `:visited`
- ☐ `:lang()`

A style sheet, then, can define style rules for these pseudo-classes like this:

```
a:hover {  
    color:#ffcc00;  
}
```

All anchor tags will change their color when the user hovers over them with the cursor. As you can see, this means the pseudo-class selector comes into play only when the user interacts with the affected element.

The `:lang()` pseudo-class<sup>2</sup> refers to the setting of the `lang` attribute in an HTML element. For example, you can define a paragraph in a document as being written in German, with a tag like this:

```
<p lang="de">Deutsche Grammophone</p>
```

---

<sup>2</sup>Be aware that browser support for the `:lang()` pseudo-class is still very scarce. It is covered here mainly for the sake of completeness.

If you wanted, for example, to change the font family associated with all elements in the document written in German, you could write a style rule like this:

```
:lang(de) {  
    font-family: spezialitat;  
}
```

Don't confuse this `lang` attribute with the `language` attribute that applies to tags related to the *scripting* language being used in a script or on a page.

## Descendant Selector

Recall that all HTML elements (except the `html` element) are descendants of at least one other HTML element. To apply a CSS style rule to an element that's a descendant of another type of element, use the descendant selector.

A descendant selector, such as the one shown in the following style rule, restricts the applicability of the rule to elements that are descendants of other elements. The descendant selector is read from right to left to determine its scope. Spaces separate the element types.

```
li em {  
    font-size: 16px;  
    color: green;  
}
```

The style rule describes a 16-pixel-high font size and a color of green to be applied to any text contained in an `em` element (emphasis) *only* where the emphasized text is a descendant of a list item.

In the fragment below, the first `em` element will be displayed in green, 16-pixel characters, while the second will not, as it doesn't appear within a list item.

```
<ul>  
<li>Item one</li>  
<li>Item <em>two</em></li>  
</ul>  
<p>  
An <em>italicized</em> word.  
</p>
```

It's important to note that the descendant relationship need not be an immediate parent-child connection. In Figure 3.1, for example, the following style rule would apply to the anchor element (a) even though it explicitly focuses on a elements

that are descendants of `div` elements. This is because, in this case, the `a` element is the child of a paragraph that's contained in a `div` element.

```
div a {  
    font-style: italic;  
}
```

## Parent-Child Selector

The parent-child selector causes a style rule to apply to element patterns that match a specific sequence of parent and child elements. It is a special case of the descendant selector discussed in the preceding section. The key difference between the two is that the pair of elements in a parent-child selector must be directly related to one another in a strict inheritance sequence.

A parent-child relationship is specified in a selector with the “greater-than” sign (`>`).

The following style rule:

```
div > p {  
    font-weight: bold;  
}
```

will *not* apply to the `p1` or `p4` elements in Figure 3.1 because these paragraph elements aren't children of a `div` element. Similarly, `p5` won't be affected even though it's a *descendant* of a `div` element, because the intervening `u1` and `li` elements mean that it is not a *child* of that `div` element. Only `p2` and `p3` will be affected by the rule.

As of this writing, Internet Explorer for Windows (up to and including version 6) distinguishes itself by being the only major browser that does not support parent-child selectors in its latest version. Because of this, careful use of descendant selectors is far more common, and the parent-child selector is often abused to specifically create styles that do not apply to Internet Explorer for Windows.

## Adjacent Selector

Adjacency is unrelated to inheritance. Adjacency refers to the sequence in which elements appear in an HTML document. As it happens, adjacent elements are always siblings, but it's their placement in the document, rather than their inher-

itance relationship, that is the focus of this selector. This is demonstrated in this HTML fragment:

```
<h1>This is important stuff!</h1>
<h2>First important item</h2>
<h2>Second important item</h2>
```

The first h2 heading is *adjacent* to the h1 heading. The second h2 heading is not adjacent to the h1 heading. Neither h2 heading inherits from the h1 heading.

The adjacent selector uses the + sign as its connector, as shown here:

```
h1 + h2 {
  margin-top: 11px;
}
```

This style rule would put an extra 11 pixels of space between the bottom of an h1 heading and an immediately-following h2 heading. It's important to recognize that an h2 heading that follows a paragraph under an h1 heading would not be affected.

As of this writing, Internet Explorer for Windows (up to and including version 6) remains the only major browser that does not support adjacent selectors in its latest version. Because of this, the adjacent selector has not yet found widespread use in practical Web design.

## Attribute Selectors

The group of selectors I'm lumping together as "attribute selectors" are among the most interesting of all the CSS selectors, because they almost feel like programming techniques. Each attribute selector declares that the rule with which it is associated is applied only to elements that have a specific attribute defined, or have that attribute defined with a specific value.

There are four levels of attribute matching:

- ☐ [*attribute*] – matches if the attribute is defined at all for the element(s)
- ☐ [*attribute*="setting"] – matches only if the attribute is defined as having the value of *setting*
- ☐ [*attribute*~="setting"] – matches only if the attribute is defined with a space-separated list of values, one of which exactly matches "setting"

- ❑ `[attribute]="setting"` – matches only if the attribute is defined with a hyphen-separated list of “words” and the first of these words begins with *setting*

You might, for example, want to apply style properties to all single-line text input boxes (`<input type="text" />`) in your document. Perhaps you want to set their text and background colors to white and black, respectively. This style rule would have that effect:

```
input[type="text"] {  
    color: white;  
    background-color: black;  
}
```

The third variation of the attribute selector described above searches the values assigned to an attribute, to see whether it contains the word you’ve specified (i.e. a value in a space-separated list).

For example, during the development of a Website, various graphic designers may have inserted temporary placeholder `alt` text tags, with the idea of returning to them later to finish them. You could call attention to the existence of such tags with a style rule like this:

```
img[alt~="placeholder"] {  
    border: 8px solid red;  
}
```

This selector will find all `img` tags whose `alt` attributes contain the word “placeholder” and will put an 8-pixel red border around them. That ought to be hard to miss!

The fourth variation is really useful only when you’re dealing with the `lang` attribute. It enables you to isolate the first portion of the `lang` attribute, where the human language being used is defined. The other portions of the hyphen-separated value are ignored. It would be pretty rare to use this version, but it comes in handy when the language defined is `en-cockney` and you’re really only interested in whether the language is English.

As you would expect by now, attribute selectors are not supported by Internet Explorer for Windows. As with other advanced selector types, this has prevented widespread adoption of attribute selectors, despite their obvious usefulness.

## Selector Grouping

To apply a style rule to elements in an HTML document of several different types, use selector grouping. Separate with a comma each element type to which the rule is to be applied.

Here's a simple example of this type of selector:

```
h1, h2, h3 {  
  font-family: verdana, arial, sans-serif;  
  color: green;  
}
```

The elements in the selector list need not be all of the same type or even of the same level of specificity. For example, the following style rule is perfectly legal. It applies a specific style to level 2 headings (h2) and to paragraphs whose class is defined as `special`:

```
h2, p.special {  
  font-size: 22px;  
}
```

You may include a space between the comma-separated items or not.

## Expressing Measurements

Many of the properties you define in a CSS rule include measurements. These measurements tell the rule how tall or wide something is to be. Fonts, spacing, and positioning are the primary places you'll use such measurements.

There are two types of measurements: absolute and relative. An absolute measurement (e.g. setting a `font-size` to `18px`, or 18 pixels) tells the browser to render the affected content as 18 pixels in height<sup>3</sup>. Technically, it actually tells the browser to use the specified font and scale its character height, so that the font's overall height is 18 pixels. Chapter 8, includes an explanation of font height and width.

---

<sup>3</sup>Again, if I wanted to be terribly precise, I would say that a pixel is actually a relative measurement, because its meaning is relative to the display medium on which the page is produced. But, in this context, "relative" means "relative to some other value in the style rule or in the HTML" and in that sense, pixels are absolute.

Using relative measurements, on the other hand, instructs the browser to scale a value by some percentage or multiple, relative to the size of the object before the scaling takes place.

This example defines a style rule, in which all fonts in paragraphs on the page should be scaled to 150% of the size they would have been without this style:

```
p {  
  font-size: 150%;  
}
```

If you knew that, in the absence of such an instruction, all paragraphs on the page display their text at a size of 12 pixels, you could also accomplish the same thing this way:

```
p {  
  font-size: 18px;  
}
```

I recommend that you generally use the relative sizing values whenever you can. This technique works better when the user has set preferences for font sizes, and in situations where multiple style sheets could be applied. It's also more accessible, as visually impaired users can more easily increase the font size on the page by configuring their browsers' preferences.

All **length values** (the term CSS2 uses to describe any size measurement, whether horizontal or vertical) consist of an optional sign (“+” or “-”) followed by a number (which may be a decimal value) followed by a unit of measurement. No spaces are permitted between the number and the unit of measurement.

## Absolute Values

Table 3.2 shows the absolute values supported in CSS style sheets, and where it's not obvious, their meanings.

**Table 3.2. Absolute Values in Style Sheets**

Style Abbreviation	Style Meaning	Explanation
in	inch	Imperial unit of measure; 2.54cm
cm	centimeter	



mm	millimeter	
pt	point	1/72 inch
pc	pica	12 points (1/6 inch)
px	pixel	One dot on the screen

When a length of zero is used, no unit of measurement is needed. `0px` is the same as `0`. It doesn't make sense to give a unit of measurement when the length is zero units, for zero is the same distance in any unit of measurement.

Wherever you need to supply an absolute measurement for the size or position of an element in a style sheet rule, you can use any of the above abbreviations interchangeably. All of the following should produce precisely the same result:

```
font-size: 1in;  
font-size: 2.54cm;  
font-size: 25.4mm;  
font-size: 72pt;  
font-size: 6pc;
```

Pixels pose an entirely different set of issues. If you use the pixel as your unit of measurement (as we have, with few exceptions, so far), you'll find that your fonts maintain their size ratio with graphics on your page, as the page is displayed on different monitors, with varying resolutions and screen sizes.

In general, pixels are *not* the most appropriate measurement to use; nevertheless, they are the most common. Most designers probably prefer to work with pixels because they want maximum control over the user experience. And clients often insist on using pixel measurements, believing that this is the best way to replicate on-screen a design they've seen on a printed page.

A pixel is one point on a screen that can be on or off, blue or green (or whatever color combination is needed). For example, if you set your computer's display to a resolution of 800 pixels by 600 pixels—one of the most common screen resolution settings—then a pixel corresponds to 1/600 of the screen height. On a typical 15-inch display, the height is about 10.5 inches and the width is a little more than 13 inches<sup>4</sup>. A 12-pixel-high font display on that monitor would turn out to be about 1/50 of the 10.5-inch height of the display, or just a bit more than 1/5 inch.

---

<sup>4</sup>High school math would lead you to predict a 9- by 12-inch screen, but, unfortunately, 15 inch monitors don't normally have a full 15 inches of diagonal screen space. Perhaps computer manufacturers don't study Pythagoras.

If the user sets his or her resolution to 1024 pixels by 768 pixels, the same 16-pixel high font displays at 78% the height, or 0.16 inches. What if the user's on a 13-inch display instead of a 15-inch display? You begin to see the problem with using pixels.

So, if pixels are problematic, why have we used them so far? There are three reasons.

First, they are easily the most common absolute value measurements used on Web pages, despite the problems they seem to pose. Even though some Web purists argue against the use of pixels, there really is no perfect, absolute measurement that will work well in all circumstances. In such situations, people tend to stay with what they know and what works for them. In this case, that's pixels.

Second, pixels are the measurement used in virtually all computer software. This means users expect the text on their displays to get smaller if they increase the resolution and larger if they decrease it. Text that worked "better" and didn't undergo such transformation would jar the typical user.

Finally, whenever a measurement is being applied to something other than a font, pixel measurements are generally the best way to describe distance. Only fonts are measured in non-pixel units, primarily because they have lives of their own in print and other media. Everything else on a computer display is measured in pixels by default, so using pixels for positioning, and to describe the size of such elements as graphic images is appropriate.

## Relative Values

Because of the problems posed by the use of *any* absolute value, the most flexible and least controlling way to approach measurements for style rules is to use relative units of measurement. Principally, these are `em` and `%`, although some people prefer to use the more obscure `ex` measurement. The "em" measurement is so named because it refers to the height of a capital "M" character in the given font, but in practice it is equal to the `font-size` of the current font. The "ex" measurement is based on the height of the lower-case "x" character in a font (more commonly known as the **x-height** of the font) and is far less common than the `em`.

Both the `em` and the percentage generate font sizes based on the inherited or default size of the font for the object to which they're applied. In addition, `ems` and percentages are 1:100 equivalent. A size of `1em` is identical to a size of `100%`.

This description begs the question, “What’s the default or inherited font size for a particular HTML element?” The answer is: it depends.

Prior to the emergence of Opera 5 for Windows, browsers set the default values for all fonts as part of their startup process. Users had no control. The browser defined a default. The Web designer overrode defaults willy-nilly. The user took what was presented.

Then, along came the idea of user choice. Not surprisingly, this development was facilitated by the emergence of CSS. Essentially, what the developers of the Opera browser did was create a local style sheet that the user could modify, and set his or her defaults to use. They also defined a nice graphical user interface through which the user could set preferences for these styles.

This was great for users, but Web designers found themselves in a quandary. If, for example, you assumed that browsers were going to default body text to a 12 point font size<sup>5</sup> (which was the *de facto* standard before the user-controlled preferences era), you could set a style to apply a 1.25em scaling to the text and get a 15 point font size for the text in question. It was nice and predictable.

Now, however, a 1.25em scaling applied to a font tells the browser to increase the size of the font to 1.25 times (125% of) its default size. If the user has set up his or her browser to show standard text at a height of 16 points, your 1.25em transformation brings the size up to 20 points.

When you stop and think about it, though, that’s probably just fine. The user who chooses a larger base font size probably needs to see bigger type. If you want type that would otherwise be at 12 points to display at 14 for some good reason, then it’s not unreasonable to expect that this new user will benefit in the same way from seeing the font used in this particular situation increase from his or her standard 16 points to 20.<sup>6</sup>

Most of the time, there’s not really a reason to muck with the user’s settings for font sizes, so changing them arbitrarily isn’t a good idea. Before you apply this kind of transformation to a text segment on your Web design, ask yourself if it’s really necessary. My bet is that nine times out of ten, you’ll find it’s not.

---

<sup>5</sup>Just in case you were wondering, pixel sizes and point sizes are not equivalent, and the ratio between the two varies between browsers and operating systems. For example, the 12 point default font size used by most Windows browsers was rendered at 16 pixels on that platform. 12pt is equivalent to 16px on Windows browsers.

<sup>6</sup>If that’s not the case, you probably want to rethink your reason for boosting the font size in the first place.

I would be remiss if I didn't point out that there are some inherent pitfalls in using relative font sizes, of which you should beware. Under some circumstances, relative font values can combine and multiply, producing bizarre results indeed.

For example, if you define style rules so that all text that is bold is displayed at 1.5 ems and all text that is italic is displayed at 1.5 ems, text that is bold *and* italic will display at 2.25 ems (1.5 x 1.5). This problem arises with child elements, which inherit from their parent container elements the *computed* values for measured properties and not the *relative* values. This is relatively easy to avoid, but if you overlook it, the results can be quite startling.

## CSS Comments

More than likely, you are familiar with the concept of **comments** in HTML:

```
<!-- this is an HTML comment -->
```

Comments allow you to include explanations and reminders within your code. These are entirely ignored by the browser, and are normally included solely for the developer's convenience. If you've ever had to make changes to code that hasn't been touched in a few months, I'm sure you can appreciate the value of a few well-placed comments that remind you of how it all works.

CSS has its own syntax for comments. In HTML, a comment begins with `<!--` and ends with `-->`. In CSS, a comment begins with `/*` and ends with `*/`:

```
<style type="text/css">
/* This rule makes all text red by default.
   We include paragraphs and table cells for
   older browsers that don't inherit properly. */
body, p, td, th {
  color: red;
}
</style>
```

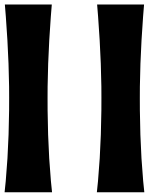
If you know much JavaScript, you'll recognize this syntax, which can be used to create multiline comments in that language as well. Unlike JavaScript, however, CSS does not support the single-line double-slash (`//`) comment style.

# Summary

This chapter ends our overview of CSS technology. This chapter covered more of the syntactical and structural rules of CSS styles. Along the way, it explained the basic ideas involved in HTML document inheritance.

In Part II, which starts with Chapter 4, we'll launch into a full-scale project. Beginning with a traditional table-based layout for a Website, we'll start to focus on how to lay out the page using CSS rather than tables.

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# Page Layout with CSS

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# 4

## CSS Web Site Design

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The development of any Website begins with its design. Typically, you'll have a statement from your client, or at least a rough idea in your head, of the intended capabilities of the site. If you're a by-the-book sort of developer, this may even take the form of a detailed specification document, which may describe the use cases (i.e. things that visitors can do) the site needs to support, the official specifications and recommendations the site must observe, and the list of browsers and platforms that must be able to access the site.

At this stage, it is customary for the designer to create a series of mock-ups, progressing from paper sketches, to prototype designs in a graphics application, to actual Web pages in HTML. If you have some experience in traditional site design, you probably produce even your very first paper sketches with a mind to the HTML code that will eventually replicate those layouts on screen.

As you move from tables to using CSS as your primary page layout tool, you'll have to learn a whole new set of design principles upon which to base your initial mock-ups. In this and the next few chapters of this book, I'll guide you through those principles so that you can come to grips with the new limitations, and let your imagination run wild with the new possibilities.

It is human nature to resist change. When you encounter things that CSS *can't* do, you'll be tempted to cling tightly to the heavy handed control offered by table-based design, rather than to brave the new world of CSS layout, where the

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layout of a hundred pages can hinge on a single rule. In this chapter, I'll endeavour to coax you out of your comfort zone by explaining some of the “big picture” advantages of CSS-based design, and present some success stories of Websites that have taken the plunge and are reaping the rewards of CSS layout.

## Advantages of CSS Design

In the past few chapters, I've touched on a number of the powerful features of, and reasons for, using CSS for site layout. In this section, I'll formalize those arguments and present them all in one place. Not only do I hope to convince *you* of the merits of CSS, but I hope to give you the tools to sell *others* on the technology.

In the cutthroat world of freelance Web development, you will often be called upon to explain why you will do a better job than other developers bidding on the same project. If CSS layout is one of the tools in your Web design arsenal, the sites you build will benefit from the advantages presented here. Many of these advantages go well beyond ease of development, and translate directly to extra value for your clients. Let them know about this—it just might make the difference between winning the contract and losing out to a designer who lives and breathes table-based design.

## Increased Stylistic Control

The *prima facie* selling point of CSS, and the reason most Web developers first choose to dabble in the technology, is that it lets you control many aspects of the appearance of your site that you simply cannot control with pure HTML. There is, for example, a waning fad of removing the underlines from hyperlinks and indicating them with some other style distinction (such as bold or colored text, or perhaps adding the underline when the mouse hovers over a link) that was sparked by the introduction of CSS. For a complete reference to the style properties that can be controlled with CSS, see Appendix C.

In addition to the sheer *number* of controllable style properties, CSS lets you apply them more uniformly to the range of HTML page elements that are available. With HTML, for instance, if you want to put a visible border around an area of the page, you need to use a table to do it, because you can add borders only to tables. CSS not only gives you greater control over the look of the border (solid, embossed, dotted, or dashed, thick or thin, red or green, etc.), but also lets you add a border to *any* page element—not just tables. The design rationale behind CSS is to give the designer as many options as possible, so any style property

that exists can usually be applied anywhere that it could potentially make sense to do so.

CSS simply has more style properties, that can be applied to more page elements, than HTML has ever offered. If you had to choose between CSS and HTML as a means for specifying the design of your site, based only on which would afford you the most visual control, CSS would win hands down. Despite this, common practice is to use HTML for design wherever possible, and to resort to CSS whenever an effect is needed that HTML cannot produce. While the visual appearance of sites designed with this rationale is just as good, you miss out on all the other advantages of CSS.

## Centralized Design Information

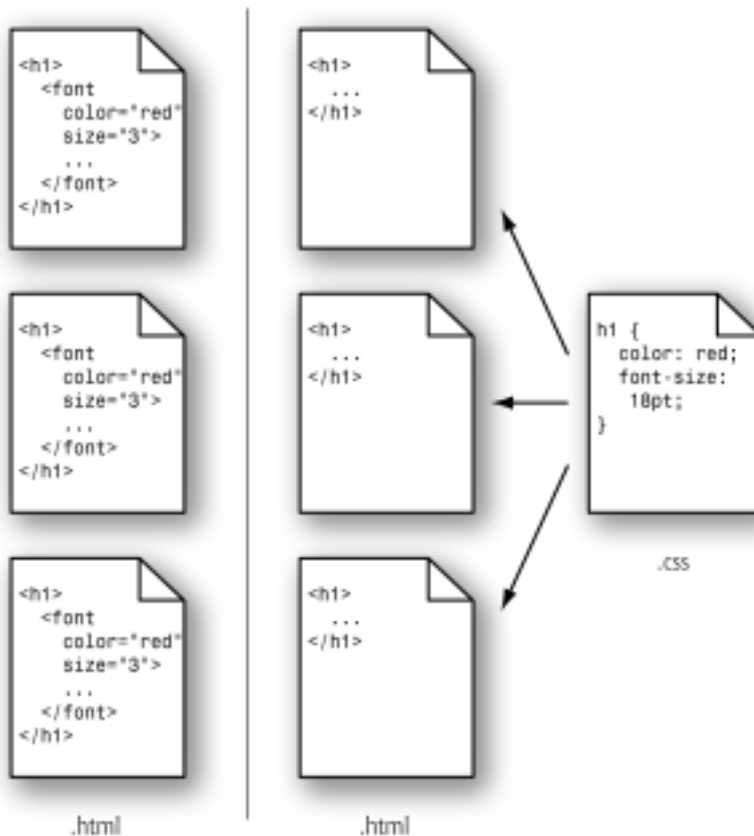
As I've already explained, the best way to use CSS in the design of a Website is to write one or more `.css` files to house all your style code, and then **link** it to the appropriate pages with the HTML `<link>` tag. With this approach, everything to do with the *look* of your site can be found in one place, and is not jumbled up with the *content* of your site.

The idea is that you should be able to change the content of your site without affecting its look, and vice versa. In traditional Web design, where HTML tags and attributes are used to specify how things look in the browser, the code for these two aspects of your site is mixed together, so anyone who wants to modify one of these must understand both, or risk breaking one while making changes to the other. The look and the content of the site are said to be **coupled**.

This principle of keeping code that serves different purposes in different places is known in the programming world as **decoupling**. If a site's style and content are decoupled, a Web designer can modify the look of the site by editing the `.css` file(s), while a content editor can add content to the site by editing the `.html` files.

Even more significant than facilitating organization and teamwork, this separation of code reduces **code duplication**. In HTML-based design, if you want the title at the top of every article on your site to be displayed in a large, red font, you have to put a `<font>` tag inside the relevant `<h1>` tag on every article page of your site. With CSS-based design, you can specify the font properties for the `<h1>` tags in one place, which saves you typing. And should you decide to change the appearance of these headings, you have only to modify the CSS file instead of each and every HTML file, which saves your *sanity*! These differences are illustrated in Figure 4.1.

**Figure 4.1. CSS Centralizes your Design Code**



If you look closely at Figure 4.1, you'll see that on top of the organizational advantages described above, the browser has less code to download. On heavily-designed sites, or sites with hundreds of pages or more, this reduced download time can have a significant impact both on the user experience, and on your bandwidth costs.

## Semantic Content Markup

When you use `.css` files to decouple the content and look of your site, as I've just described, a curious thing begins to happen to your HTML code. Because CSS affords you complete control over the appearance of page elements, you begin to choose tags because they describe the *structure* and *meaning* of elements

of the page, instead of how you want them to look. Stripped of most or all of the presentational information, your HTML code is free to capture the **semantics** of your site's content.

There are a number of reasons why this is a desirable state of affairs, not the least of which is how easily you can find things when you're making changes to the content of your site. The easiest way to spot a CSS site is to use the “View Source” feature in your browser—if you can make sense of the code there within 10 seconds, chances are that you're not dealing with a site that uses table-based layout and other non-semantic HTML.

Search engine optimization (SEO) is greatly assisted by semantic HTML, because the fewer presentational tags the search engine has to wade through in analyzing your site, the greater your site's **keyword density**—an important metric in determining your site's ranking. As we'll see, CSS lets you control the position of an element in the browser window, largely independent of its position in the HTML document. So, if you have a newsletter subscription form or some other lengthy chunk of HTML that won't mean a whole lot to a search engine, feel free to move its code to the end of your HTML document and use CSS to ensure that it is displayed near the top of the browser window.

Increasingly supported by modern browsers is a feature of the HTML `<link>` tag<sup>1</sup>, which lets you restrict a linked style sheet so that it affects only the page when it's displayed by a certain type of browser or display. For instance, you could link three `.css` files to a page: one that defined the appearance of the page on a desktop browser, another that dictates how the page will look when printed, and yet another that controls the display on mobile devices such as Internet-connected Personal Digital Assistants (PDAs). Only by using semantic markup, and allowing the CSS to take care of the display properties, is this sort of content repurposing possible.

Last, but certainly not least, are the vast improvements to accessibility that a site can garner by using semantic markup. We'll discuss these in detail in the next section.

## Accessibility

Should you ever have the opportunity to observe a visually impaired individual browsing the Web, I highly recommend the experience. Alternatively, get yourself

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<sup>1</sup>Specifically, the `media` attribute.

some screen reader software, switch off your monitor, and see for yourself what it's like.

Heavily-designed Websites that make use of tables, images, and other non-semantic HTML for layout are extremely difficult to use when the most natural way to experience a Website is to listen to it read aloud, from top to bottom. It's not uncommon for a modern Website to inflict 30 seconds or more of nested tables opening and closing, unidentified images for layout, and other nonsense, before the actual content begins. Now, if you think that sounds mildly annoying, imagine having to listen to it for each and every page of the sites that you visit!

Semantic HTML nearly eliminates this aural garbage, because it ensures that every tag in the document has a structural meaning that's significant to the viewer (or listener). An aural browser ignores the visual formatting properties defined in the CSS, so the user need not be bothered listening to them.

On a site that used semantic markup, for example, a visually impaired user would never have to wonder if a word was bold because it was more important, or just because it looked better that way. Elements that were displayed in bold for design reasons would have that property assigned using CSS, and the aural browser would never mention it. Elements that needed additional impact or emphasis would be marked up using the semantically meaningful `<strong>` and `<em>` tags, which are displayed by default as bold and italics in visual browsers.

A complete set of guidelines exists for developers who are interested in making their sites more accessible for users with disabilities. The Web Content Accessibility Guidelines 1.0[1] (WCAG) is recommended reading for all Web developers, with Guideline 3[2] treating the idea of avoiding presentational markup in favour of semantic markup.

## Standards Compliance

The WCAG is not the only specification that advocates the use of CSS for the presentation properties of HTML documents. In fact, the latest HTML standards[3] themselves are written with this in mind!

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[1] <http://www.w3.org/TR/WCAG10/>

[2] <http://www.w3.org/TR/WCAG10/#gl-structure-presentation>

[3] <http://www.w3.org/MarkUp/#recommendations>

The World Wide Web Consortium[4] (W3C) is the body responsible for publishing Recommendations (*de facto* standards) relating to the Web. Here are some of the W3C Recommendations that relate to using semantic markup and CSS:

#### **HTML 4 (<http://www.w3.org/TR/html4>)**

The latest (and last) major revision of the HTML Recommendation marks all non-semantic elements and attributes as **deprecated**<sup>2</sup>. The `<font>` tag[6], for example, is clearly marked as deprecated in this standard. Under the description of deprecated elements[7], the Recommendation has this to say:

In general, authors should use style sheets to achieve stylistic and formatting effects rather than HTML presentational attributes.

#### **XHTML 1.0 (<http://www.w3.org/TR/xhtml1/>)**

A reformulation of HTML 4 as an XML document type, XHTML lets you use HTML tags and attributes, while also benefiting from the features of XML (mixing tag languages, custom tags, etc.).

This Recommendation includes the same tags and deprecations as HTML 4.

#### **Web Content Accessibility Guidelines 1.0 (<http://www.w3.org/TR/WCAG10/>)**

As described in the section called “Accessibility”, the WCAG Recommendation strongly recommends using CSS and semantic markup in Web design to improve accessibility. I'll let the Recommendation speak for itself:

Misusing markup for a presentation effect (e.g., using a table for layout or a header to change the font size) makes it difficult for users with specialized software to understand the organization of the page or to navigate through it. Furthermore, using presentation markup, rather than structural markup, to convey structure (e.g., constructing what looks like a table of data with an HTML PRE element) makes it difficult to render a page intelligibly to other devices

According to many Web developers, strict standards compliance is an idealistic goal that is rarely practical. One of the primary goals of this book is to demonstrate that this is no longer true. Today's browsers provide strong support for CSS and

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[4] <http://www.w3.org/>

<sup>2</sup>A deprecated element or attribute is one that has been tagged for removal from the specification, and which therefore should not be used. For a document to strictly comply with the specification, it should not use any deprecated tags or attributes.

[6] <http://www.w3.org/TR/html4/present/graphics.html#h-15.2.2>

[7] <http://www.w3.org/TR/html4/conform.html#deprecated>

produce more consistent results when they are fed standards-compliant code. While bugs and compatibility issues still exist, they are no more insurmountable than the bugs that face designers who rely on noncompliant code.

## CSS Success Stories

The following sites serve as great examples of what can be accomplished with CSS page layout:

### SitePoint (<http://www.sitepoint.com/>)

I know, I know... it's unseemly to use my own publisher as an example of why CSS works, but you've got to hand it to these guys. They've not only taken a tired, table-laden layout and replaced it with a fresh, standards-compliant design, but they've also made the site vastly more usable in the process.

Though the flat colors in use on this site may look simplistic at first glance, this “low fat” approach to the design keeps the pages loading quickly, despite often lengthy content and a plethora of navigational options.

### A List Apart (<http://www.alistapart.com/>)

Since its inception in 1998, this site, and the associated mailing list, has become one of the leading sources of information and advocacy for CSS design and layout. The site itself is a model of simplicity, but it demonstrates that simple doesn't have to mean boring or ugly.

### Netscape DevEdge (<http://devedge.netscape.com/>)

*DevEdge* is Netscape's resource site for Web developers. With Netscape 6 and 7 having been based on a standards-compliant Web layout engine, it seemed only logical to redesign the site to take advantage of this technology. They've even published an article<sup>[13]</sup> that covers their approach to this redesign.

### ESPN (<http://www.espn.com/>)

The first mainstream, commercial Website to be built with CSS page layout techniques, ESPN.com is the ice breaker that the Web design community has been waiting for!

When pitching a site design idea—especially when you propose to use “new” technologies like CSS layout—clients will often ask if you can show them another site that has implemented a similar solution successfully. Until now,

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[13] <http://devedge.netscape.com/viewsource/2003/devedge-redesign/>



all the best examples of CSS site design were either sites written by Web developers, for Web developers, or personal sites that could afford to take risks because they weren't in it for the money.

For an in-depth interview with one of the designers behind this site, visit Netscape DevEdge[15].

**Fast Company Magazine (<http://www.fastcompany.com/>)**

The online presence for a popular business magazine, this site was redesigned to make use of CSS layout and semantic markup. The actual look and organization of the site hasn't changed drastically from its previous version, but thanks to CSS, its pages load much more quickly.

## Our Sample Site: Footbag Freaks

For the rest of this book, I will relate each of the techniques we discuss, wherever possible, to a sample site that has been developed especially for this book. Called *Footbag Freaks*, this fictitious site can be found online at <http://www.footbag-freaks.com/>. The source code is also available for download from this book's Website[18]. You can see the front page of the *Footbag Freaks* site in Figure 4.2.

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[15] <http://devedge.netscape.com/viewsource/2003/espn-interview/01/>

[18] <http://www.sitepoint.com/books/>

**Figure 4.2. The Footbag Freaks Home Page**



This site makes full use of CSS for both page layout, and the styling of text and other page elements. The HTML code is entirely semantic. The site has been designed and tested to work on the following browsers:

- ☐ Internet Explorer 5 or later for Macintosh and Windows
- ☐ Opera 6 or later
- ☐ Mozilla 1.0 or later and related browsers, including Netscape 6 or later and Camino

The site complies with the following W3C Recommendations:

- ☐ XHTML 1.0 (Strict)
- ☐ WCAG 1.0 (AAA Rating for Accessibility)
- ☐ CSS 2.0

## Summary

In this chapter, I provided the justification for all that is to follow. I explained in detail the most important advantages that CSS has to offer for your Web design work. These advantages fell under the headings of:

- ☐ increased stylistic control
- ☐ centralized design information
- ☐ semantic content markup
- ☐ accessibility
- ☐ standards compliance

After presenting a few success stories—sites that have used CSS design techniques to good effect—I introduced our own, admittedly fictional, success story: *Football Freaks*. Throughout the rest of this book, we'll explore the wide range of CSS features and techniques that go into making a site like this one.

Chapter 5, begins this process by looking at how to build the skeleton of a page layout, and flesh out major pieces of design using, pure CSS techniques.

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# 5

## Building the Skeleton

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Most books on CSS begin by teaching you how to deal with the bits and pieces of a Web page: fonts, colors, lists, and the like. Then, they move on to explaining the broader issues associated with CSS Positioning (CSS-P), which affect the *layout* of pages rather than the appearance of individual elements.

In this book, I take the opposite approach. I first look at the site-level and page-level issues involved with CSS design, so that we can understand the big picture perspective of page layout without tables (which is, after all, the primary thrust of this book). And later, in Part III, I'll discuss styling the content of the pages we'll be laying out in this and the next chapter.

This chapter focuses specifically on creating the basic structural layout of a Web page or site using CSS. In it, I'll discuss multi-column layouts—both in general and very specifically—as they relate to the Footbag Freaks site. I'll teach you about boxes, borders, and the famous Box Model of CSS design. I'll delve into the intricacies of creating and using two- and three-column page layouts, and into the mysteries of floating objects. I'll guide you through the process of creating dummy layouts for the pages you'll encounter in the Footbag Freaks project, and in other projects you may create.

I'll conclude with the usual tips on dealing with the layout issues presented in this chapter—the issues involved in converting pages to CSS from an existing table-centric design.

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# Enumerating Design Types

One of the first decisions you have to make when you create any Website, but particularly one where you intend to put CSS to its most effective use, is how many different types of pages and elements you're going to need.

## How Many Page Types?

Most sites use more than one basic page layout. The front, or index page, often has a different look and feel from the “inside” pages. In the Footbag Freaks site, for example, the specification tells us that bread-crumb navigation will appear on all but the front page. An inspection reveals that the large graphic that displays near the top of the front page does not appear on other pages of the site.

On a typically complex ecommerce site, you might run into far more page types. For example, such a site might include different layouts for its:

- ☐ front page (index)
- ☐ catalog pages
- ☐ secure ordering pages
- ☐ main content pages
- ☐ site map page

Some of these pages might display dynamic content that is stored in a database and generated in response to specific user requests. Others might be flat HTML pages that never change unless you redesign them.

The Footbag Freaks site appears to need only one *type* of page layout. The secondary page has fewer elements than the home page, but the relative positioning and layout of the common elements doesn't change from one page type to the other.

# How Many Design Elements?

Figure 5.1. The Footbag Freaks Home Page



Looking at the Footbag Freaks home page, we can easily identify the following seven design elements, indicated in Figure 5.1:

1. the top of the page where the Footbag Freaks logo appears against a colored background

2. the left-hand column where the site's navigation is located
3. inside the navigation area, the text field for newsletter sign-up and related text
4. the large image area where the sun, the sky, and the hacky sack appear
5. the news area
6. the sponsor area
7. the footer where the copyright information appears

The second page of the site eliminates the fourth design element from this list and adds a submenu navigation element inside the main navigation. So, each page type has seven design elements, six of which are common, and one of which is unique to each page.

## CSS Positioning and Multi-Column Page Layouts

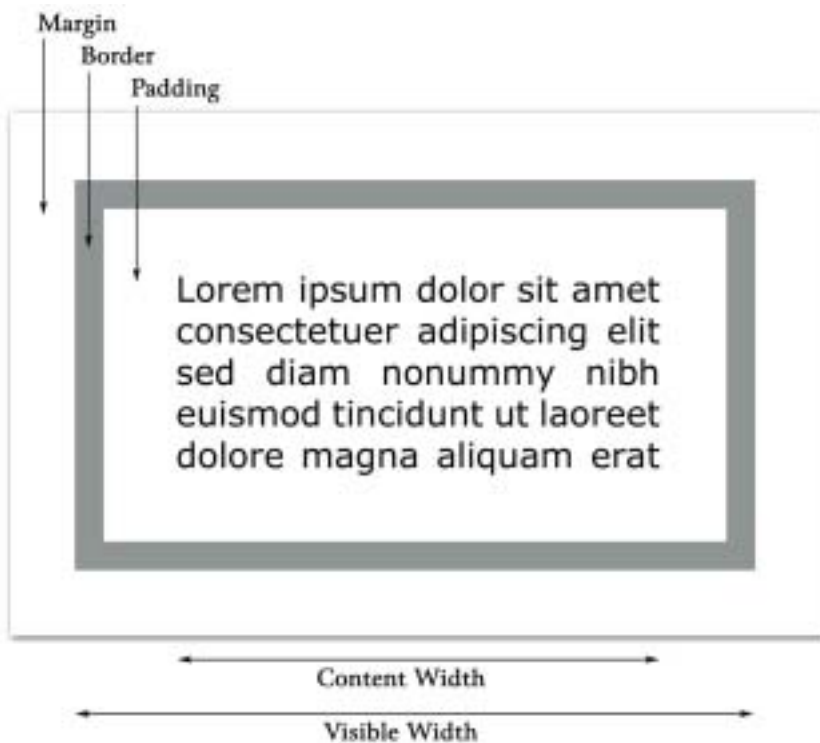
Now that you have an idea of the number of pieces of design for which you're going to define CSS rules, let's take a step back and get a basic grounding in how to use specific CSS rules to create these layouts and effects.

### The CSS Box Model

From the perspective of a style sheet, everything you deal with in HTML pages can be viewed as living inside a box. This fact is generally far more obvious when you're formatting large chunks of content, like the seven design elements in the Footbag Freaks Website. But it's true even when you're dealing with individual components of those elements, like headings, lists, list elements, and even segments of text.

The basic CSS box model is shown in Figure 5.2.



**Figure 5.2. Basic CSS Box Model**

At the center of the CSS box model is the content itself. Don't think of this "content" as being the same as words or pictures that comprise the content of a news story or a set of links. The content is anything contained within the area of the box.

Notice from Figure 5.2 that the **visible width** of the box is determined by adding together the **content width**, the padding and the border. The margin determines the distance on each side between the visible box and adjacent elements. Similarly, the **visible height** of the box is determined by adding the content's height to the padding and border settings. Once again, the margin determines how far the box will be separated from adjacent objects vertically.

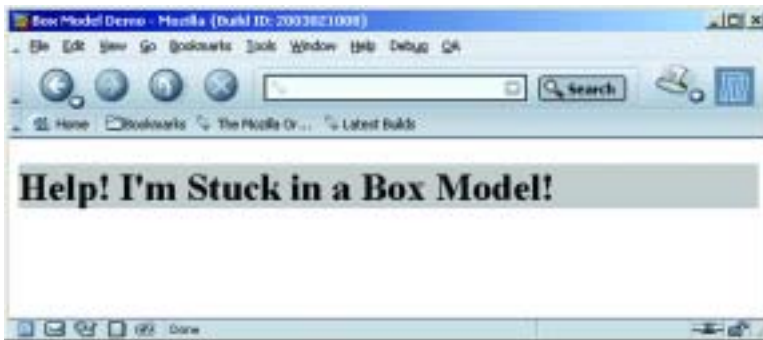
The width of each of these elements—margin, border, and padding—can be set using four CSS properties (one for each side of the box), or using a single **short-hand property**. Border behavior is slightly more complicated because a border

can have not only a width but also visible characteristics such as line style and color.

I'll begin by explaining and demonstrating the use of padding in some detail. Then, I'll move on to a discussion of margins, which will be briefer, as it's so similar to padding. Finally, I'll discuss the border property and its variations.

For the next several sections, I'll use a basic, single-box layout to demonstrate CSS rule techniques. It starts out as in Figure 5.3 with no padding, border, or margin properties defined, so that the content is the same size as the box.

**Figure 5.3. Starting Point for Box Model Demonstrations**



I've given the h1 element a gray background so you can see more easily the impact of the effects I'll be demonstrating. I'll describe the `background-color` property I've used here more fully in Chapter 7.

This HTML produces the page shown in Figure 5.3:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Box Model Demo</title>
<meta http-equiv="Content-Type"
    content="text/html; charset=iso-8859-1" />
<style type="text/css">
<!--
h1 {
    background-color: #c0c0c0;
}
-->
```

```
</style>
</head>
<body>
<h1>Help! I'm Stuck in a Box Model!</h1>
</body>
</html>
```

Throughout the rest of this discussion, I'll be modifying only the style sheet information, so I'll reproduce only that section of the code, indicating any changes in bold.

## Pixels Versus Percentages

Because the box model deals with the display of content on the screen, the pixel measurement (abbreviated px) is the most commonly used of the absolute measurement units in CSS. However, often we desire to create a “stretchy” layout, in which case it is necessary and appropriate to use the percentage model (with the % symbol), rather than pixels. I'll have more to say on this subject in Chapter 6.

## Setting the Padding Properties

There are four properties that together define the padding around an object in a CSS rule: `padding-left`, `padding-right`, `padding-top` and `padding-bottom`.

Let's change just one of the padding settings to get a feel for how this works. Modify the style sheet in the sample file, so that it looks like the following fragment (remember that the new material is bold):

```
h1 {
  background-color: #c0c0c0;
  padding-left: 25px;
}
```

The result of this change is shown in Figure 5.4. Notice that the text now begins 25 pixels from the left side of the box, resulting in 25 pixels of blank, gray space to the left of the text.

**Figure 5.4. padding-left Demonstration**

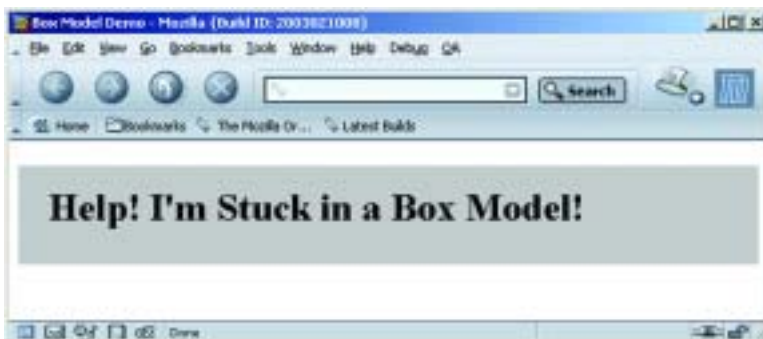


As you'd expect, you can set the other padding sizes the same way, as shown in this code fragment:

```
h1 {  
    background-color: #c0c0c0;  
    padding-left: 25px;  
    padding-top: 15px;  
    padding-bottom: 30px;  
    padding-right: 20px;  
}
```

You can see the effect of these changes in Figure 5.5.

**Figure 5.5. All Four Padding Properties Defined**

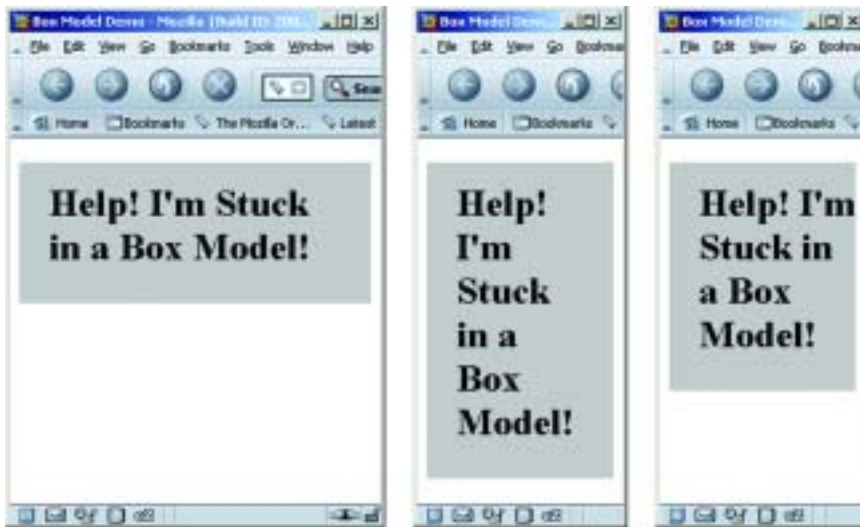


You may notice that the right side of the padding appears not to have worked. You asked for 20 pixels, but no matter how wide you stretch the window, the gray area defining the box that contains our h1 element just goes on and on.

This is because `padding-right` creates a space between the right edge of the text and the right edge of the heading, as represented by the gray box. This spacing is difficult to see in this case, because the heading automatically spans the width of the browser window, leaving plenty of room for the text to breathe on the right side. If you make the browser narrow enough, though, you can see the padding take effect.

Figure 5.6 demonstrates this principle. The first screenshot shows how the page in Figure 5.5 looks if you narrow the browser window so that there would be room on the first line for the word “in” if `padding-right` were not set as it is. The second screenshot reinforces this idea by showing the page resized so that one word only fits on each line. Notice that the right padding size looks, in several cases, large enough to accommodate the word on the next line. In fact, merely removing the `padding-right` property from the style sheet produces the result shown in the third screenshot.

**Figure 5.6. Demonstration of Effect of `padding-right`**



Because it's often necessary to adjust padding around objects in HTML, the CSS standards define a **shorthand property** simply called `padding`. You can give this property up to four values. Table 5.1 tells you how the properties will be assigned in each case.

**Table 5.1. Effect of Multiple Values on padding Shorthand Property**

No. of Values	Interpretation
1	Set all four padding values to this value.
2	Set the top and bottom padding to the first value, left and right padding to the second.
3	Set the top padding to the first value, right and left to the second value, bottom to the third value.
4	Set the top padding to the first value, right padding to the second, bottom padding to the third, and left padding to the fourth. <sup>1</sup>

<sup>1</sup>You can remember this as clockwise, starting from the top, or as TRBL (trouble), whichever you find easier to remember.

For example, the last code fragment above could be rewritten using the padding shorthand property as follows:

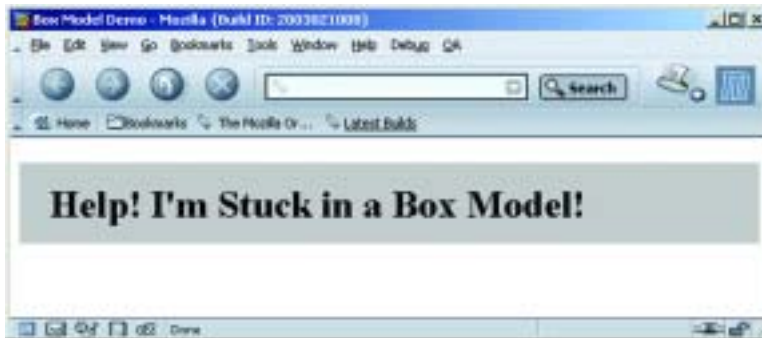
```
<style type="text/css">
<!--
h1 {
  background-color: #c0c0c0;
  padding: 15px 20px 30px 25px;
}
-->
</style>
```

To create equal top and bottom padding, and equal left and right padding, even though right padding is all but meaningless in this context, you could use:

```
<style type="text/css">
<!--
h1 {
  background-color: #c0c0c0;
  padding: 15px 25px;
}
-->
</style>
```

The result of this code fragment is shown in Figure 5.7.

**Figure 5.7. Equal Top-Bottom and Left-Right Padding Using padding Shorthand**

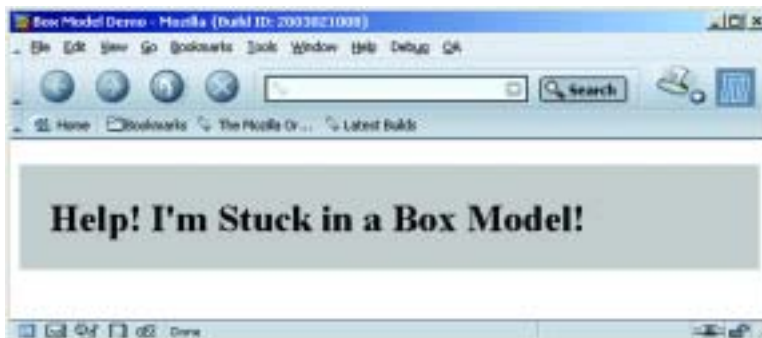


Finally, to create equal padding on all four sides of the h1 element, you could code this:

```
h1 {  
  background-color: #c0c0c0;  
  padding: 25px;  
}
```

This code produces the result shown in Figure 5.8.

**Figure 5.8. Equal Padding on All Sides Using padding Shorthand**



What if you use either ems or percentages for the padding values? The two have slightly different effects. The em unit scales the padding according to the size of the font of the content, while the percentage unit scales the padding according to the width of the block that contains the element. To demonstrate these effects,

we'll work with a new HTML page that displays two headings against colored backgrounds on a page of a contrasting color.

Here's the HTML for that demo page.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Box Model Demo</title>
<meta http-equiv="Content-Type"
    content="text/html; charset=iso-8859-1" />
<style type="text/css">
<!--
body {
    background-color: #808080;
}
h1, h4 {
    background-color: #c0c0c0;
}
-->
</style>
</head>
<body>
<h1>Help! I'm Stuck in a Box Model!</h1>
<h4>But it's not too crowded if you're just a little old h4
    heading like me! In fact, it's kind of cozy in here.</h4>
</body>
</html>
```

Notice that I've given the page a dark grey background and I've added an h4 element, which I've styled in the same CSS rule as the h1 element.

This HTML page displays as shown in Figure 5.9.



**Figure 5.9. Proportional padding Page Starting Point**

Now, let's change the style sheet in this page so that it uses the padding shorthand to create a 1em padding space around the objects. The code fragment below will do the trick:

```
body {  
    background-color: #808080;  
}  
h1, h4 {  
    background-color: #c0c0c0;  
    padding: 1em;  
}
```

As you can see in Figure 5.10, the amount of padding placed around the two heading elements is proportional to the size of the font in the elements themselves. Recall that 1em is equal to the height of the font in use. Consequently, much more space is placed around the h1 element than around the h4 element.

**Figure 5.10. Using ems for Proportional Padding**



Now, let's see what happens if we use a percentage rather than an em for the proportional padding value. Change the HTML, so the style sheet looks like this:

```
body {  
    background-color: #808080;  
}  
h1, h4 {  
    background-color: #c0c0c0;  
    padding: 10%;  
}
```

The result of this change can be seen in Figure 5.11. Wow! There's a huge amount of space around those elements. The browser has applied 10% of the width of the page (the body is the containing block for heading elements) as the padding on all four sides.

**Figure 5.11. Using Percentage for Proportional Spacing**

I've been using background color behind the text of the elements to make it easy for you to see the effect of these padding settings, but it's not necessary to have background colors behind those elements to position them. Figure 5.12 uses the same HTML code as Figure 5.11, the only difference being that I've removed the background colors of the body and the h1 and h4 elements. As you can see, they maintain their relative spacing.

**Figure 5.12. Demonstration of padding Without Color Backgrounds**



## Setting Margin Properties

The way we set margin properties is identical to the way we set padding properties. The property names substitute the word “margin” for the word “padding,” including the shorthand property.

The difference between margins and padding is that margins exist *outside* the boundaries of the object, while padding exists *inside* those boundaries. Figure 5.13 illustrates this difference, based on the style sheet rules in the following code fragment.

```
body {  
    background-color: #808080;  
}  
h1 {  
    background-color: #c0c0c0;  
}  
h2 {  
    background-color: #c0c0c0;  
    margin-left: 5%;  
}
```

```
}  
p {  
  background-color: #c0c0c0;  
  margin-left: 20%;  
}
```

**Figure 5.13. `margin-left` Settings Push Content and Background Over**



Notice that the second-level heading and the paragraph, for both of which we've set `margin-left` properties, are indented from the left edge of the browser. But here, unlike the example in which we set the `padding-left` property, the text *and* its background color block are indented. This is because the color block and the text are *inside* the content box and the margin is *outside* that box.

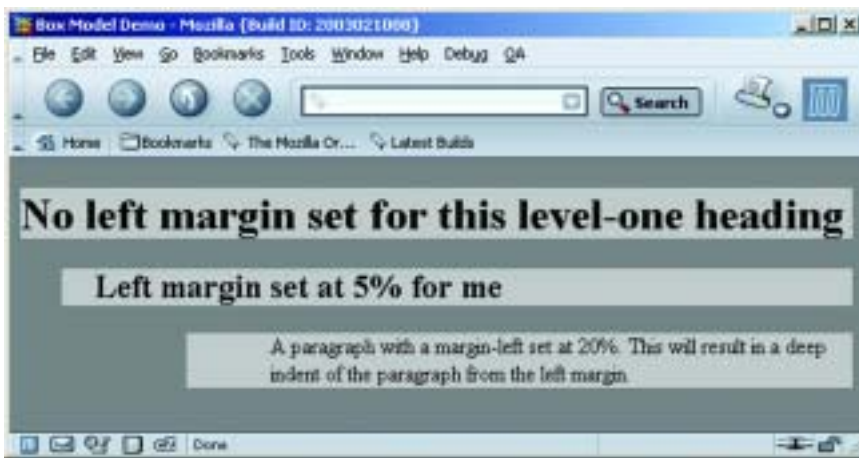
Let's next apply `padding-left` and `margin-left` settings to the code fragment.

```
body {  
  background-color: #808080;  
}  
h1 {  
  background-color: #c0c0c0;  
}  
h2 {  
  background-color: #c0c0c0;  
  margin-left: 5%;  
  padding-left: 1em;  
}
```

```
p {  
  background: #c0c0c0;  
  margin-left: 20%;  
  padding-left: 10%;  
}
```

As you can see in Figure 5.14, the margin has pushed the HTML elements and their surrounding background color blocks to the right, while the padding has moved the text to the right *within* the colored background blocks.

**Figure 5.14. margin-left Combined with padding-left Setting**



Horizontal margin effects are cumulative. Take a look at the following HTML code, and at Figure 5.15, which shows how it is rendered.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
<html xmlns="http://www.w3.org/1999/xhtml">  
<head>  
<title>Box Model Demo</title>  
<meta http-equiv="Content-Type"  
  content="text/html; charset=iso-8859-1" />  
<style type="text/css">  
<!--  
body {  
  background-color: #808080;  
}  
h1 {  
  background-color: #c0c0c0;
```

```
}
h2 {
  background-color: #c0c0c0;
  margin-left: 5%;
  padding-left: 1em;
}
p {
  background-color: #c0c0c0;
  margin-left: 20%;
  padding-left: 10%;
}
li {
  background-color: #ffffff;
}
li p {
  margin-left: 10%;
}
-->
</style>
</head>
<body>
<h1>No left margin set for this level-one heading</h1>
<h2>Left margin set at 5% for me</h2>
<p>A paragraph with a margin-left set at 20%. This will result in
  a deep indent of the paragraph from the left margin.</p>
<ul>
<li>Item one</li>
<li><p>Paragraph item</p></li>
</ul>
</body>
</html>
```

**Figure 5.15. Cumulative Effect of Horizontal Margin Settings**



The big difference here is in the bulleted list. Notice that the first item in the list displays with no extra indentation. This is not surprising, as the style rules do not define any extra margin settings for an `li` element. Look at the second list element, however, which is a paragraph. The last style rule in the HTML above assigns a paragraph that is the descendant of an `li` element a `margin-left` setting of 10%. As you can see, this margin applies to the existing left margin of the bulleted list, which results in the paragraph item being pushed further to the right. Note also that this same element is a paragraph, so it retains the styling of all `p` elements, including their `padding-left` setting of 10%. This produces the additional indentation of the paragraph text within the gray box in the list.

If you load the above HTML (from the file `boxmodel14.html` included in the code archive for this book) and resize it, you'll notice that the indentation of the paragraph element inside the list changes as the width of the window changes. That's because I used a relative value of 20% for the margin and 10% for the padding. Both of these values are therefore calculated relative to the width of the containing block (the list item), which in turn takes its width from the browser window. The bigger the browser window, the bigger the margin and padding on the nested paragraph.

You can set vertical margins with the `margin-top` and `margin-bottom` properties. Here's another HTML page that demonstrates vertical margins:



```

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Box Model Demo</title>
<meta http-equiv="Content-Type"
content="text/html; charset=iso-8859-1" />
<style type="text/css">
<!--
body {
background-color: #808080;
}
h1 {
background-color: #c0c0c0;
margin-bottom: 5%;
}
h2 {
background-color: #c0c0c0;
margin-left: 5%;
margin-top: 5%;
margin-bottom: 5%;
padding-left: 1em;
}
p {
background: #c0c0c0;
margin-left: 20%;
padding-left: 10%;
margin-top: 5%;
margin-bottom: 5%;
}
-->
</style>
</head>
<body>
<h1>No top margin but 5% bottom margin</h1>
<h2>Top and bottom margins set 5% for me</h2>
<p>A paragraph with top and bottom margins set at 5%</p>
</body>
</html>

```

This page renders as shown in Figure 5.16. If you load this document (boxmodel5.html) and resize the browser, you'll notice that vertical spacing increases and decreases accordingly, but stays proportional.

**Figure 5.16. Demonstration of Vertical Margins**

Vertical margins, unlike horizontal margins, are not cumulative. If you have two elements stacked on top of one another, like the `h1` and `h2` elements in Figure 5.16, the vertical spacing between them will be the greater of the `margin-bottom` setting of the top element, and the `margin-top` setting of the bottom element. In this case, they are both 5%, so the distance between the two elements is 5%, not 10% as you might have guessed. If I had defined the `margin-bottom` of the `h1` as 10%, then the vertical distance separating the two elements would have been 10% of the height of the containing block. The containing block in this case is the body, which is, for all practical purposes, the same as the browser window's client area.

It is possible to use negative values for margin property settings. This comes in handy when you've set a `margin-left` property for the body of an HTML page, but you want to move an element closer to the left margin of the page. The following HTML results in the display shown in Figure 5.17.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Box Model Demo</title>
<meta http-equiv="Content-Type"
  content="text/html; charset=iso-8859-1" />
<style type="text/css">
<!--
body {
```

```
background-color: #808080;
margin-left: 5%;
}
h1 {
background-color: #c0c0c0;
margin-left: -3%;
margin-bottom: 5%;
}
h2 {
background-color: #c0c0c0;
margin-top: 5%;
margin-bottom: 5%;
}
-->
</style>
</head>
<body>
<h1>Body margin is 5%, but I'm set to -3%</h1>
<h2>I have no margin-left setting, so I use the body 5%
    setting</h2>
</body>
</html>
```

**Figure 5.17. Usefulness of Negative Margin Setting**



As with the padding property, the margin shorthand property lets you set all four margins with a single property declaration, and interprets multiple values using the rules shown in Table 5.1.



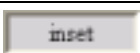






# Setting Border Properties

Border properties are more complex than padding and margin properties because they affect not only the spacing between objects, but also the *appearance* of that intervening space. A border can be, and usually is, visible. In most ways, managing border properties is similar to the process for managing margins and padding. But there are some key differences.


Borders have three types of properties: style, width, and color. By default, their style is set to `none`, their width to `medium`<sup>2</sup> and their color to the text color of the HTML element to which they are applied.

The `border-style` property can take any one of a range of constant values. The available values and the browsers that support them are shown in Table 5.2.

**Table 5.2. CSS Border Style Constants**

Constant	CSS Spec	Supporting Browsers	Sample
double	CSS1	All CSS Browsers	
groove			
inset			
none			
outset			
ridge			
solid			
dashed		Netscape 6, Mozilla, IE 5.5/Win, IE 4/Mac	
dotted			

<sup>2</sup>Netscape 4 sets a default border width of 0, so you can't rely on the default value if you wish to target that browser.

Constant	CSS Spec	Supporting Browsers	Sample
<code>hidden</code>	CSS2	Netscape 6, Mozilla, IE 5.5/Win, IE 4/Mac	

The `hidden` value has the same effect as `none`, except when applied to table layouts. Refer to the `border-style` property in Appendix C, for further details.

W3C specifications leave the issue of the precise appearance of these borders largely up to the browsers, so don't be surprised if the results of using these characteristics vary a bit from browser to browser, and platform to platform. But, as is the case with default behaviors for other border settings, the browsers largely treat this issue predictably and satisfactorily within reason.

The width of a border around an object can be set either with four individual property-value pairs, or with the `border-width` shorthand syntax. The four property-value pairs are `border-top-width`, `border-right-width`, `border-bottom-width`, and `border-left-width`. Each of these values can be set with a pixel or em value setting, or with one of three descriptive settings: `thin`, `medium`, or `thick`.

If you use the descriptive settings of `thin`, `medium`, and `thick`, the results are browser-dependent. They are, however, fairly predictable and consistent across browsers and operating systems, within a pixel or so for each of the three descriptive settings.

Note that if you wish to use specific measurements for border widths, you should use pixels. This is the most meaningful unit of measurement for screen layouts, which is where `border-width` is an important property.

You can control the colors associated with all four borders using the `border-color` shorthand property. Alternatively, you can create different colors for all four borders by using the `border-top-color`, `border-right-color`, `border-bottom-color`, and `border-left-color` properties.

As I'll explain in greater detail in Chapter 7, you can supply a color argument in any of the standard ways: using a full RGB code as in `#ff9900`, using a three-digit RGB shortcut as in `#f90`, with the `rgb` method as in `rgb(102,153,0)`, or using a standard color name as in `red`.

The shorthand properties `border-style`, `border-width`, and `border-color` all accept multiple values according to the rules in Table 5.1. Note, however, that

Netscape Navigator 4.x does not recognize multiple arguments to these properties, nor does it support the side-specific style and color properties.

There is one additional shorthand property that is probably the most widely used approach to defining border properties. Using the `border` property, you can specify the style, width, and color of all four borders of an object in a compact form. Since a uniform border surrounding an object is most often your desire, this is an efficient way to set border property values.

This property declaration will produce a uniform 3-pixel, solid, green border around any element to which it is legally applied:

```
border: 3px solid green;
```

## The `display` Property

Before we can move on to look at CSS positioning issues, there is one more CSS property we need to understand. It comes up infrequently, but when it does, it has a significant impact on page layout.

The `display` property determines how a browser displays an element—whether it treats it as a block, an inline text fragment, or something else. Although it can be assigned any of 17 legal values, browser support realities confine the list to six, only four of which are really important. For a full reference to `display`, see Appendix C.

The six possible values for the `display` property are:

- ☐ `block`
- ☐ `inline`
- ☐ `list-item`
- ☐ `none`
- ☐ `table-footer-group`
- ☐ `table-header-group`

The default value varies from element to element. Block elements such as `p`, `h1`, and `div` default to `block`, while inline elements such as `strong`, `code`, and `span` default to `inline`. List items, quite obviously, default to `list-item`. Assigning

non-default settings to elements (such as setting a `div` to `display: inline`) can produce some interesting effects (imagine a paragraph containing two `div`s and a list being displayed in the middle of a line of text).

If you supply a value of `none`, the element to which it applies is not shown and the space it would normally occupy is collapsed. This differentiates the `display: none` property-value pair from the `visibility: hidden` setting commonly used to hide the element but preserve the space it would occupy if it were visible.

## CSS Positioning and Multi-Column Layouts

The box model we've been examining so far in this chapter applies within groups of content. Generally, you use a `<div>` tag to group together collections of related content and to assign CSS styles to such a group.

But **CSS Positioning (CSS-P)** involves more than working with individual groups of related information. The connections *between* groups of content on an HTML page are equally important in determining the layout of the page. The primary CSS property involved in these connections is the `position` property.

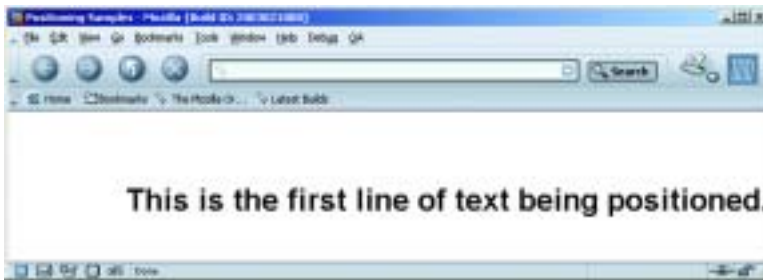
The `position` property takes a single constant value. The value determines how the block is positioned on the page. The two most frequently used values for the `position` property are `absolute` and `relative`. Another value, `static`, is the default value, and is seldom used in CSS rules. A fourth value, `fixed`, is not supported by IE on Windows at all, which unfortunately means it's almost unusable in practical sites. Refer to Appendix C, for complete details on these more esoteric settings.

### Absolute, Relative, and Positioning Contexts

Positioning can be confusing in CSS because the coordinate system within which a block is placed depends on the **positioning context** of the block. There's no universal set of coordinates to guide that placement, even when the `absolute` value is assigned to the `position` property. Each time a block is positioned on the page (with a `position` setting other than `static`), it creates a new positioning context for its descendants, in which the upper left corner of its content area has the coordinates (0,0). So, if you use CSS to position an element that is *within* the block, its position will be calculated relative to that new coordinate system—it's positioning context.

The best way to understand this concept is to look at a few simple, interrelated examples. I'll start with a blank page. In this context, the upper left corner of the client area (also referred to in modern Web design parlance as the “document”) is where the initial (0,0) coordinates are located. In that context, place a simple bit of text in a div (which uses a style sheet rule associated with the class `bigTitle`, to make it more readable) as shown in Figure 5.18.

**Figure 5.18. Initial Positioning of Element on Blank Page**



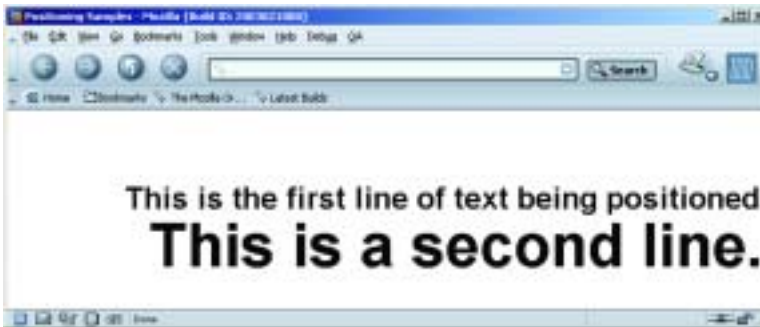
Here's the HTML fragment that produces the result shown in Figure 5.18. The CSS properties `top` and `left` are used to position the div on the page.

```
<div class="bigTitle"
  style="position:absolute; left:125px; top:75px;">
  This is the first line of text being positioned.
</div>
```

Now put a second div completely inside the first one, as shown here:

```
<div class="bigTitle"
  style="position:absolute; left:125px; top:75px;">
  This is the first line of text being positioned.
  <div class="bigTitle"
    style="position:absolute; left:25px; top:30px;">
    This is a second line.
  </div>
</div>
```



**Figure 5.19. Positioning an Element Within a Pre-Positioned Block**

The result is shown in Figure 5.19. Notice that the second line of text is indented 25 pixels from the left of the first line of text, because that first line sets the **positioning context** for the second. Notice, too, that its font size is huge. Why? Take a look at the style rule for the `bigTitle` class and you'll understand:

```
.bigTitle {
  font-family: Arial, Verdana, sans-serif;
  font-size: 2em;
  font-weight: bold;
}
```

As the second `div` is a child of the first, its font size is calculated relative to that of the first `div`. The style rule defines the font as being of size 2 ems, which instructs the browser to render the text at twice the size it would otherwise be. When that 2 em rule is applied to the first line, its size is doubled. But when it is applied to the second line, the font size of the first line is doubled to calculate that of the second.

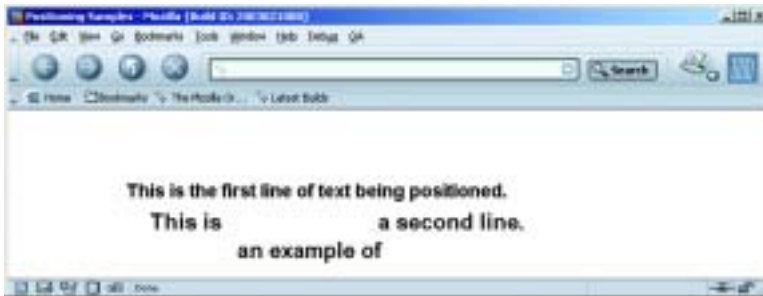
The page now has two `div` elements, one nested inside the other. Both use absolute positioning. Now I'll add a third element, this time a `span` element that will be contained in the second `div` block. Using relative positioning, the HTML turns out to look like this:

```
<div class="firstDiv"
  style="position:absolute; left:125px; top:75px;">
  This is the first line of text being positioned.
  <div class="firstDiv"
    style="position:absolute; left:25px; top:30px;">
    This is<span style="position:relative; left:10px;
top:30px;">an example of</span> a second line.
```

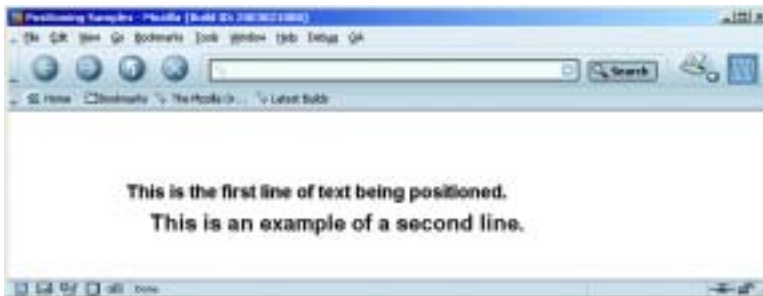
```
</div>  
</div>
```

The result of this bit of HTML can be seen in Figure 5.20. Notice that the words “an example of,” which are contained in the `span`, appear below, and slightly to the right of their original position. Relative positioning is always based on the positioned element’s *original* position on the page. In other words, the positioning context of an element that uses relative positioning is provided by its default position. In this example, the `span` is positioned below and to the right of where it would appear in the line if the positioning were removed, as it is in Figure 5.21.

**Figure 5.20. Relative Positioning an Element on a Page**



**Figure 5.21. Original Location of Relatively Positioned Content**



In summary, the basic rules that determine the positioning context for an element when we’re using the CSS position property are:

1. Absolutely positioned elements are positioned relative to the positioning context in which they are located.

2. Relatively positioned elements create their own positioning context based on their static (original) location.

## Basic Three-Column Layout

The sample site for this book, Footbag Freaks, uses a combination of a three-column layout with a header at the top and a footer at the bottom. This is a classic Web page design. Some have even called it “the Holy Grail” when it includes a fluid center column. The first place I saw this reference was on Eric Costello’s website, <http://www.glish.com/>.

To understand the CSS involved in creating this basic page layout, let’s start by looking at the core code for building a three-column layout with a fluid center column. Then, we’ll add the top-level header area. Finally, we’ll take apart the core of the Footbag Freaks home page to see how we built the site on the basis of those standards, but tweaked it a little to produce a more creative design.

A basic three-column layout involves a CSS style sheet with separate rules for the layout and positioning of the left-hand column, the center column, and the right-hand column. We’ll call these three sections **left**, **center**, and **right**. Later, we’ll mix in the top and bottom areas.

Here is the CSS rule that defines the block whose identifier is **left**:

```
#left {  
  position: absolute;  
  left: 10px;  
  top: 10px;  
  width: 200px;  
}
```

This is quite straightforward. Using absolute positioning, this column has its upper left corner placed 10 pixels down from the top of the document area of the browser and 10 pixels to the right of the left margin of that space. It sets a fixed width for the column, though as we’ll see, you could supply a relative value (such as a percentage) to create a stretchy layout that would keep the left column’s width proportional to the document area’s width.

The center column of the three-column layout uses the following CSS rule:

```
#center {  
  margin-left: 220px;
```

```
margin-right: 220px;
}
```

Note that this column is not positioned. Its position will thus retain its “natural” place based on its location in the HTML file that generates the page. Margin settings of 220px ensure that the left and right columns (which are set to 200 pixels in width and 10 pixels in from the document edge) will have room for their content without overlapping any of the adjoining columns.

Finally, a basic right-hand column looks much like the left:

```
#right {
  position: absolute;
  right: 10px;
  top: 10px;
  width: 200px;
}
```

Here, the `right: 10px` property is used to ensure that the this column is placed with its right hand side 10 pixels from the right hand side of the page. The impact of these style rules on a demonstration HTML page can be seen in Figure 5.22.

**Figure 5.22. Demonstration Basic Three-Column Layout**



Here's the HTML for the page in Figure 5.21. The `<link>` tag in the header points to the `threecoldemo.css` file, which contains the three CSS rules above.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>Three-Column Layout Demonstration</title>
<meta http-equiv="Content-Type"
content="text/html; charset=iso-8859-1" />
<link rel="stylesheet" href="threecoldemo.css" type="text/css" />
</head>
<body>
  <div id="left">
    <p>
      This is quite straight-forward. Using absolute positioning,
      this column has its upper left corner placed 10 pixels down
      from the top of the document area of the browser and 10
      pixels to the right of the left margin of that space. It
      sets a fixed width for the column, though as we will see,
      you could supply a relative value (such as a percentage) to
      create a stretchy layout that would keep the left column's
      width proportional to the document area's width.
    </p>
  </div>
  <div id="center">
    <p>
      Notice that this column is not able to be positioned. Its
      position will thus retain its "natural" place based on its
      location in the HTML file that generates the page. Margin
      settings ensure that the left and right columns (which are
      set to 200 pixels in width) will have room for their content
      without creating a visible space between any of the
      adjoining columns.
    </p>
  </div>
  <div id="right">
    <p>
      The right-hand column is so much like the left-hand column
      that it seems unworthy of comment.
    </p>
  </div>
</body>
</html>
```

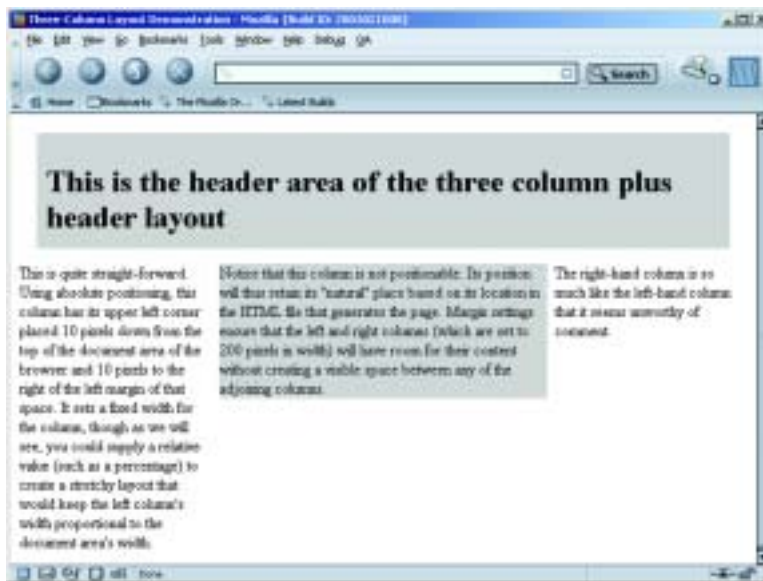
## Adding a Top Header Area

Another common page layout modifies the basic three-column design by adding a top-level header area. As you can imagine, this is not difficult to achieve. Here are the style rules for the four content `<div>` blocks on such a page. The three holdovers are nearly identical; I've added a gray background to the center block and given the top block a gray background as well, simply to make it easier to see where blocks start and end.

```
#top {
  margin: 20px;
  padding: 10px;
  background: #ccc;
  height: 100px;
}
#left {
  position: absolute;
  left: 10px;
  top: 160px;
  width: 200px;
}
#center {
  background: #ccc;
  margin-top: 0;
  margin-left: 220px;
  margin-right: 220px;
}
#right {
  position: absolute;
  right: 10px;
  top: 160px;
  width: 200px;
}
```

Figure 5.23 shows the result of applying those rules to a page that is nearly identical to the HTML that generated Figure 5.22. The only difference is that this HTML contains the following fragment, which defines the content of the top block on the page:

```
<div id="top">
  <h1>
    This is the header area of the three-column-plus-header
    layout
  </h1>
</div>
```

**Figure 5.23. Basic Three-Column Layout With Top Header Block**

There are numerous variations on these layout themes. One of the best places I know of to learn how to apply these variations effectively is at Owen Briggs' wonderful site, The Noodle Incident[2].

## Summary

This chapter presented the important concepts involved in CSS layout and positioning, beginning with the box model and continuing through the multiple variations of the `position` property. We then drove a number of these points home by assembling an example of the “classic” three-column layout.

You may have noticed that there is often more than one way to achieve a given effect in CSS. For example, if you want to place a block on the right-hand side of the browser window occupying 20% of its width, you can either give it a `margin-left` of 80%, use absolute positioning and set its `left` property to 80% and its `width` property to 20%, or use absolute positioning and set its `right` property to 0 and its `width` property to 20%.

---

[2] [http://www.thenoodleincident.com/tutorials/box\\_lesson/boxes.html](http://www.thenoodleincident.com/tutorials/box_lesson/boxes.html)

In Chapter 6, we'll see that not all of these options work quite the same in practice. We'll explore some of the non-ideal behaviors of current browsers that lead us to choose one option over the another. We'll also look at a few more advanced CSS properties that affect the layout relationships of elements on the page.



---

# Appendix C. CSS Property Reference

This appendix contains a complete reference to all CSS properties at the time of this writing. This includes properties defined in the CSS1[1] and CSS2[2] specifications, as well as browser-specific extensions to the CSS recommendations.

Where a browser-specific extension exposes the same functionality as a planned feature in CSS3, which is currently a working draft, this is indicated with a reference to the relevant draft.

## azimuth

**azimuth** sets the direction in horizontal space from which the sound comes when the content is presented aurally (e.g. in a speaking browser for the blind).

For full details on this property, see the CSS2 specification[3].

**Inherited:** Yes

**See also:** `elevation`

### Value

An angle ( `-360deg` to `360deg`, where `0deg` is in front of the listener), or a descriptive constant (e.g. `far-right` `behind`).

**Initial value:** `center`

### Compatibility

**CSS Version:** 2

Not yet supported by any browser.

---

[1] <http://www.w3.org/TR/REC-CSS1>

[2] <http://www.w3.org/TR/REC-CSS2/>

[3] <http://www.w3.org/TR/REC-CSS2/aural.html#spatial-props>

---

## Examples

This style rule will cause all headings to be heard from the front-left of the sound field:

```
h1, h2, h3, h4, h5, h6 {  
  azimuth: -45deg;  
}
```

# background

A shorthand property that allows you to set all the background properties of an element with a single property declaration.

**Inherited:** No

**See also:** background-attachment, background-color, background-image, background-position, and background-repeat

## Value

You can specify any of the values permitted by the five background- properties, in any order, separated by spaces. The properties you do not specify take on their initial value.

**Initial value:** none

## Compatibility

**CSS Version:** 1

Is supported by Internet Explorer 4 or later, Netscape 6 or later, Opera 5 or later, and all Mozilla browsers. Is partially supported by Netscape 4.x; however, this support is undocumented and unreliable.

## Examples

This rule gives the page a fixed (non-scrolling) background image, which will display over a solid white background:

```
body {  
  background: #fff url(/images/texture.gif) fixed;  
}
```

# background-attachment

This property determines whether the background image assigned to an element scrolls in sync with the element's content or remains fixed in relation to the browser window. For example, if you wanted the top-left corner of your page background image to remain in the top-left corner of the browser window, even as the page was scrolled, you would set `background-attachment` to `fixed`.

**Inherited:** No

**See also:** `background-image`

## Value

`fixed` or `scroll`

**Initial value:** `scroll`

## Compatibility

**CSS Version:** 1

Supported by Internet Explorer 4 or later, Netscape 6 or later, Opera 5 or later, and all Mozilla browsers.

Internet Explorer for Windows (at least up to version 6) and Opera browsers (up to version 6), do not correctly support `background-attachment: fixed` on elements besides `body`. Opera 7, Internet Explorer 5 for Macintosh, Netscape 6.2.1 or later, and Mozilla browsers all get this right.

## Examples

This style rule applies a background image to the page and specifies that the image should not scroll with the page content:

```
body {  
  background-image: url(/images/texture.gif);
```

```
background-attachment: fixed;  
}
```

## background-color

Sets the background color for an element.

Note that the default background color is **transparent**, so even though this property is not inherited, nested elements will allow the background to show through by default. The reason for this arrangement is to allow background images to be displayed behind nested elements.

It is considered good practice always to specify a foreground color (with the **color** property) whenever you specify a background color, and vice versa.

**Inherited:** No

**See also:** [color](#)

### Value

Any CSS color value (see [Appendix B](#)) or **transparent**.

**Initial value:** **transparent**

### Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later and Netscape 4 or later.

Netscape 4 does not correctly fill a block element with its assigned background color, unless it has a border assigned (even a zero-width border will do), and setting any visible border leaves a transparent gap between the padding area of the block and its border in that browser. The Netscape 4 specific **layer-background-color** property lets you fill that transparent gap.

## Example

This style rule fills `blockquote` tags of class `warning` with a tomato red background color. Note the zero-width border, which coerces Netscape 4 into filling the entire block with the color.

```
blockquote.warning {  
  background-color: #ff6347;  
  border: 0 solid #ff6347;  
}
```

# background-image

This property sets the background image for an element. By default, element backgrounds are transparent, so the background image will show through nested elements, unless they have been assigned background colors or images of their own.

The positioning and tiling of a background image may be customized with the `background-position` and `background-repeat` properties, respectively.

**Inherited:** No

**See also:** `background-attachment`, `background-color`, `background-position`, `background-repeat`

## Value

A URL or none. In CSS, URLs must be surrounded by the `url()` wrapper, not quotes. See the examples below.

**Initial value:** none

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later and Netscape 4 or later.

Netscape 4 does not correctly fill a block element with its assigned background image, unless it has a border assigned (even a zero-width border will do), and

setting any visible border leaves a transparent gap between the padding area of the block and its border in that browser. The Netscape 4 specific `layer-back-ground-image` property lets you fill that transparent gap.

## Example

These style rules demonstrate assigning background images with relative, absolute, and fully-qualified URLs, respectively:

```
body {  
  background-image: url(../images/texture.gif);  
}  
  
body {  
  background-image: url(/images/texture.gif);  
}  
  
body {  
  background-image: url(http://www.mysite.com/images/texture.gif);  
}
```

# background-position

By default, an element's background image (assigned with the `background-image` property) is aligned so that its top and left edges are flush with the top and left edges of the element (including any padding), respectively. With the `background-position` property, you can assign a different position for the image.

**Inherited:** No

**See also:** `background-image`

## Value

One position specifier, or two position specifiers separated by a space.

Each of the position specifiers may be a CSS length measurement (pixels, points, ems, etc.), a percentage, or one of the constants from Table C.1.

**Table C.1. background-position constants**

Vertical	Horizontal
----------	------------

top, center, bottom	left, center, right
---------------------	---------------------

If you specify only one measurement or percentage, it applies to the horizontal position; the vertical position of the image will default to 50%. If you specify two measurements or percentages, the first specifies the horizontal position, the second specifies the vertical. Negative measurements/percentages are allowed, but are rarely useful.

If you specify only one constant, the other dimension defaults to **center**. The order of constants is not significant.

You can mix length measurement types and percentages (i.e. specify vertical position in one format, horizontal in another). You cannot mix lengths/percentages with constants, however.

Percentages and constants differ from length measurements in the way they position the image. In an element 500 pixels wide, a horizontal position of **center** or 50% will center the image within the horizontal area of the element. A horizontal position of 250px, however (or any equivalent length measurement), positions the *left edge* of the image exactly 250 pixels from the left edge of the element.

**Initial value:** 0 0

## Compatibility

**CSS Version:** 2

Works in Internet Explorer 4 or later, Netscape 6 or later, Opera, and Mozilla browsers.

Setting a non-default value for this property in Internet Explorer 4 for Windows reveals a bug in that browser's support of **background-repeat**. See the compatibility section of **background-repeat** for details.

## Examples

In this style rule, the background image is centered in the element area:

```
body {  
    background-position: center;  
}
```

In both of these style rules, the background image is placed flush against the bottom-right corner of the element:

```
body {  
    background-position: 100% 100%;  
}  
  
body {  
    background-position: bottom right;  
}
```

In this style rule, the background image's left edge will be positioned 20 pixels from the left of the element, and the image will be centered vertically:

```
body {  
    background-position: 20px;  
}
```

In this style rule, the background image's top edge is 20 pixels from the top of the element, and the image will be centered horizontally across the element's width:

```
body {  
    background-position: 50% 20px;  
}
```

*The following style rule is illegal, as it mixes a length measurement with a constant:*

```
body {  
    background-position: 20px center; /* This is illegal! */  
}
```

## background-position-x, background-position-y

These nonstandard properties are supported only by Internet Explorer browsers, and let you individually specify the two components of the `background-position` property. These properties are most useful in Dynamic HTML scripting in an Internet Explorer only environment.

**Inherited:** No

**See also:** `background-position`



## Value

Both of these properties support values specified in CSS lengths and percentages. Additionally, `background-position-x` and `background-position-y` support the horizontal and vertical position constants listed in Table C.1. Important differences between positions specified with CSS length measurements, and positions specified with percentages or constants, are described under `background-position`.

**Initial value:** 0

## Compatibility

**CSS Version:** n/a

Supported by Internet Explorer 4 or later only.

## Example

This style rule places the background image 20 pixels from the top and centered horizontally on the page:

```
body {  
    background-position-x: center;  
    background-position-y: 20px;  
}
```

# background-repeat

By default, a background image, specified with the `background-image` property, will repeat horizontally and vertically to fill the element (this is often referred to as *tiling*). The `background-repeat` property lets you override that behavior with your own preferences.

**Inherited:** No

**See also:** `background-image`, `background-position`

## Value

`repeat`, `no-repeat`, `repeat-x`, or `repeat-y`

The first two options are self-explanatory. **repeat-x** causes the image to repeat only horizontally, effectively forming a horizontal band with the background image. **repeat-y** causes the image to repeat only vertically, forming a vertical band.

**Initial value:** repeat

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later and Netscape 4 or later.

Internet Explorer 4 for Windows, however, only tiles images down and to the right (not up or to the left), so if you specify a **background-position** other than the default, you may get incomplete tiling in that browser.

## Example

This style rule uses **background-repeat** and **background-position** to create a horizontal band 50 pixels down from the top of the page. We keep the left edge of the background image flush against the left margin to avoid the bug in Internet Explorer 4 for Windows.

```
body {  
    background-repeat: repeat-x;  
    background-position: 0 50px;  
}
```

# behavior

An Internet Explorer only property, **behavior** lets you assign packaged Dynamic HTML code to HTML elements in bulk. For a full description of the Behaviors feature in Internet Explorer, refer to the MSDN Web site[4].

**Inherited:** No

---

[4] <http://msdn.microsoft.com/workshop/author/behaviors/overview.asp>

## Value

A URL (specified with the CSS `url()` wrapper) or an object ID.

**Initial value:** none

## Compatibility

**CSS Version:** n/a

Attached behaviors are supported by Internet Explorer 5 for Windows or later. Other behavior types are supported by Internet Explorer 5.5 for Windows or later.

## Example

The following style rule applies the behavior defined in the `draganddrop.htc` file to any element of class `draganddrop`:

```
.draganddrop {  
    behavior: url(draganddrop.htc);  
}
```

# border

A shorthand property that lets you set the same width, color, and style for all four borders of an element with a single property declaration. This property sets up identical borders on all four sides, but can be followed by side-specific border properties that modify them.

**Inherited:** No

**See also:** `border-width`, `border-style`, and `border-color`

## Value

You can specify a `border-width` value, a `border-style` value, and a `border-color` value, or any combination of the three, in any order, separated by spaces.

**Initial value:** none

## Compatibility

**CSS Version:** 1

Works on all CSS-compatible browsers, with the same browser-specific limitations as the individual `border-` properties.

## Example

This style rule puts a dashed, yellow border 1 pixel wide around `div` tags of class `advertisement`:

```
div.advertisement {  
    border: dashed yellow 1px;  
}
```

# border-bottom, border-left, border-right, border-top

These four properties are shorthand properties that let you set the style, width, and color of the border on a particular side of an element with single property declaration.

**Inherited:** No

**See also:** `border-width`, `border-style`, and `border-color`

## Value

You can specify a `border-width` value, a `border-style` value, and a `border-color` value, or any combination of the three, in any order, separated by spaces.

**Initial value:** none

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, with exception of Netscape 4.

## Example

Applies a 1 pixel thick, dashed, blue border to the bottom of elements with a `title` attribute:

```
[title] {  
  border-bottom: dashed blue 1px;  
}
```

Note that attribute selectors are not yet supported by many browsers.

# border-bottom-color, border-left-color, border-right-color, border-top-color

Each of these properties sets the color of the border along one side of an element.

**Inherited:** No

**See also:** `border-color`

## Value

Any CSS color value (see Appendix B).

**Initial value:** none

## Compatibility

**CSS Version:** 2

Works in all CSS-compatible browsers, with exception of Netscape 4.

## Example

```
p.funky {  
  border-style: solid;  
  border-top-color: blue;  
  border-right-color: yellow;  
  border-bottom-color: #ff0000;  
  border-left-color: #0f0;  
}
```

## **border-bottom-style, border-left-style, border-right-style, border-top-style**

Each of these properties sets the style of the border along one side of an element.

**Inherited:** No

**See also:** `border-style`

### **Value**

Any of the constants allowed for `border-style`.

**Initial value:** none

### **Compatibility**

**CSS Version:** 2

Works in all CSS-compatible browsers, with exception of Netscape 4.

### **Example**

This style rule puts double lines along the left and right and single lines along the top and bottom of `blockquote` elements:

```
blockquote {  
  border-top-style: solid;  
  border-bottom-style: solid;  
  border-left-style: double;  
  border-right-style: double;  
}
```

## **border-bottom-width, border-left-width, border-right-width, border-top-width**

Each of these properties sets the width of the border along one side of an element.

**Inherited:** No

See also: `border-width`

## Value

thin, medium, thick, or any CSS length measurement.

**Initial value:** medium (0 in Netscape 4)

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later and Netscape 4 or later.

Note that Netscape 4's default value is 0, so you need to set the border width as well as the style for borders to appear in that browser.

## Example

This style rule puts 2-pixel borders along the left and right and 1-pixel borders along the top and bottom of `blockquote` elements:

```
blockquote {  
  border-style: solid;  
  border-top-width: 1px;  
  border-bottom-width: 1px;  
  border-left-width: 2px;  
  border-right-width: 2px;  
}
```

# border-collapse

This property lets you choose which of two systems for defining table borders you want the browser to use.

The default system, which you can select with the value `separate`, is the familiar “separate borders” system, where each table cell has its own borders separated by the cell spacing of the table. The new system, which you can select with the `collapse` value, gets rid of any cell spacing, combines the borders of adjacent

cells, and lets you assign borders to row and column groups. For full details, refer to the CSS2 specification[5].

**Inherited:** Yes

**See also:** `empty-cells`

### Value

`collapse` or `separate`

**Initial value:** `separate`<sup>1</sup>

### Compatibility

**CSS Version:** 2

Works in Internet Explorer 5 for Windows, Netscape 6, and Mozilla browsers.

### Example

This style rule sets tables of class `data` to use the collapsed border model:

```
table.data {  
    border-collapse: collapse;  
}
```

## border-color

The `border-color` property sets the color of the border surrounding the selected element(s).

The colors for each side may be set individually using the `border-bottom-color`, `border-left-color`, `border-right-color`, and `border-top-color` properties.

**Inherited:** No

---

[5] <http://www.w3.org/TR/REC-CSS2/tables.html#borders>

<sup>1</sup>The initial value prescribed by the CSS2 specification is actually `collapse`; however, all current browsers' default table rendering corresponds to `separate`. The CSS Working Group has therefore proposed changing the default value of this property to `separate` in a future version of the CSS specification. This proposal may be found in the Errata for the CSS2 specification.



## Value

You can specify from one to four different color values (see Appendix B) to specify different colors for each side of the element, as shown in Table C.2. Note that Netscape 4 supports only a single border color value.

**Table C.2. Effects of multiple values on border properties**

Number of values	Effect on borders
1	All four borders receive the value specified.
2	Top and bottom (horizontal) borders receive the first value, left and right (vertical) borders receive the second.
3	Top border receives the first value, vertical borders receive the second, bottom border receives the third.
4	Values are applied to top, right, bottom, and left borders, respectively.

**Initial value:** The color property of the element, which may be inherited if not explicitly specified.

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later and Netscape 4 or later. Netscape 4 supports only a single border color value.

## Example

This style rule puts blue borders on the top and bottom and red borders on the left and right sides of `blockquote` elements:

```
blockquote {  
  border-style: solid;  
  border-color: blue red;  
}
```

# border-spacing

This property is the CSS equivalent to the `cellspacing` attribute of the HTML `<table>` tag. It lets you specify the spacing that will appear between cells in a table. This property is ignored if `border-collapse` is set to `collapse` for the table.

**Inherited:** Yes

**See also:** `border-collapse`

## Value

A single CSS length measurement, or two lengths separated by a space. A single value will be applied as both the horizontal and vertical spacing between cells. Two values will be applied as horizontal and vertical spacing, respectively.

**Initial value:** 0

## Compatibility

**CSS Version:** 2

Supported by Netscape 6 and Mozilla browsers only at this time.

## Example

This style rule allows 5 pixels of spacing between all table cells in tables of class `spacious`.

```
table.spacious {  
    border-spacing: 5px;  
}
```

# border-style

The `border-style` property sets the style of the border surrounding the selected element(s).

The style for each side may be set individually, using the `border-bottom-style`, `border-left-style`, `border-right-style`, and `border-top-style` properties.

**Inherited:** No

## Value

The CSS specifications provide a set of constants for a range of border styles. Table C.3 shows the available constants and the browsers that support them.



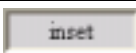


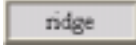
You can specify from one to four different style values to specify different styles for each side of the element, as shown in Table C.2. Note that Netscape 4 supports only a single border style value.

The difference between `none` and `hidden`, though not visible in Table C.3, arises in HTML tables where the `border-collapse` property is set to `collapse`. When two cells share a border and one of them specifies a style of `none` for the border, the other cell's border style takes precedence and the border is drawn.



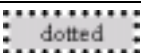

The `hidden` border style, however, takes precedence over all other border styles; therefore, if the first cell in the previous example specified a style of `hidden`, the other cell's border style would be ignored and no border would be drawn. See the CSS2 Specification[6] for a full discussion of table border conflict resolution.

**Initial value:** none

**Table C.3. CSS border style constants**

Constant	CSS Spec	Supporting Browsers	Sample
<code>double</code>	CSS1	All CSS Browsers	
<code>groove</code>	CSS1	All CSS Browsers	
<code>inset</code>	CSS1	All CSS Browsers	
<code>none</code>	CSS1	All CSS Browsers	
<code>outset</code>	CSS1	All CSS Browsers	
<code>ridge</code>	CSS1	All CSS Browsers	

[6] <http://www.w3.org/TR/REC-CSS2/tables.html#border-conflict-resolution>

Constant	CSS Spec	Supporting Browsers	Sample
<code>solid</code>	CSS1	All CSS Browsers	
<code>dashed</code>	CSS1	Netscape 6, Mozilla, IE 5.5/Win, IE 4/Mac	
<code>dotted</code>	CSS1	Netscape 6, Mozilla, IE 5.5/Win, IE 4/Mac	
<code>hidden</code>	CSS2	Netscape 6, Mozilla, IE 5.5/Win, IE 4/Mac	

## Compatibility

### CSS Version: 1

Works in all CSS-compatible browsers, including Internet Explorer 4 and Netscape 4. For specific compatibility information, see above.

Note that Netscape 4 defines a default border width of 0, so in addition to a `border-style`, you must also specify a `border-width` for the border to appear in that browser.

## Example

This style rule makes any element of class `fauxbutton` look like a button by giving it an outset border style, a light grey background, and black text:

```
.fauxbutton {  
  border-style: outset;  
  border-color: grey;  
  border-width: medium;  
  background: lightgrey;  
  color: black;  
}
```

## border-width

The `border-width` property sets the width of the border surrounding the selected element(s).

The widths for each side may be set individually using the `border-bottom-width`, `border-left-width`, `border-right-width`, and `border-top-width` properties.

**Inherited:** No

## Value

thin, medium, thick, or any CSS length measurement.

You can specify from one to four different values to specify different border widths for each side of the element, as shown in Table C.2.

**Initial value:** medium (0 in Netscape 4)

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 and Netscape 4.

Note that Netscape 4 defines a default border width of 0, so in addition to a `border-style`, you must also specify a `border-width` for the border to appear in that browser.

## Example

This style rule puts thick borders on the top and bottom and thin borders on the left and right sides of `blockquote` elements:

```
blockquote {  
  border-style: solid;  
  border-width: thick thin;  
}
```

# bottom

This property lets you set the distance between the bottom edge of an **absolute** positioned element (including its padding, border, and margin)<sup>2</sup> and the bottom

---

<sup>2</sup>The CSS2 specification contains an error that suggests that the padding, border, and margin of the positioned element should not be considered. This has been acknowledged as a mistake by the CSS Working Group in the Errata document for CSS2.

edge of the positioning context in which it resides. The positioning context is the content area of the element's nearest ancestor that has a `position` property value other than `static`, or the `body` element.

In Internet Explorer for Windows, Netscape 6, and Mozilla browsers, when the positioning context is the document body, the element is positioned relative to the bottom edge of the *browser window* (when no scrolling has yet occurred) instead of the document area, as the CSS Specification requires. Internet Explorer 5 for Macintosh follows the specification and positions the block relative to the bottom of the document area.

For `relative` positioned elements, this property sets a relative offset from the normal position of its bottom edge. So, a setting of `10px` will shift the bottom edge of the box up by 10 pixels, and a setting of `-10px` will shift it down by the same amount.

**Inherited:** No

**See also:** `position`, `left`, `top`, and `right`

## Value

A CSS length measurement, a percentage value, or the `auto` constant. Percentages are based on the height of the parent element. The `auto` constant tells the browser to determine the position of the bottom edge itself, based on whatever other constraints may exist on the size/position of the element.

**Initial value:** `auto`

## Compatibility

**CSS Version:** 2

Works in Internet Explorer 5 or later, Netscape 6 or later, and Mozilla browsers.

Often, the same effect can be achieved by setting the `top` property of a box. Since `top` is supported by more browsers than `bottom`, this should be done whenever possible.

## Example

This style rule positions the element with ID `menu` at the bottom of the window (or the bottom of the document in Internet Explorer for Macintosh):

```
#menu {  
  position: absolute;  
  bottom: 0;  
  width: 100px;  
  height: 200px;  
}
```

## caption-side

This property lets you specify the side of a table on which its caption (specified with the `<caption>` tag) should appear.

**Inherited:** Yes

## Value

Any of the following constants: `top`, `bottom`, `left`, or `right`.

**Initial value:** `top`

## Compatibility

**CSS Version:** 2

Works in Internet Explorer 5 for Macintosh, Netscape 6 or later, and Mozilla browsers. The values `left` and `right` do not yet work in most browsers.

## Example

This style rule places captions at the bottom of all tables that occur within other tables.

```
table table {  
  caption-side: bottom;  
}
```

# clear

Setting a `clear` property on an element lets you specify that it should appear below any floating elements that would normally cut into it. You can specify that the element should be clear of left-floated elements, right-floated elements, or both.

**Inherited:** No

**See also:** `float`

## Value

`left`, `right`, `none`, or `both`.

**Initial value:** `none`

## Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers, including Internet Explorer 4 or later, Netscape 4 or later, and Mozilla browsers.

## Example

This style rule ensures that the element with ID `footer` will be clear of any floating elements above it in the page:

```
#footer {  
    clear: both;  
}
```

# clip

This property clips the visible region of the absolute- or fixed-positioned element(s) to which it is applied. The element occupies the same amount of space on the page as usual, but only the area specified by this property is displayed.



In contrast to the `overflow` property, this property only affects the *visible* area of an element (including its padding, borders, etc.). The size and position of an element for layout purposes is not affected by this property.

**Inherited:** No

**See also:** `overflow`

## Value

The current CSS specification allows only for rectangular clipping regions. You specify such a region by wrapping four measurement values in the CSS `rect()` wrapper as follows:

```
clip: rect(top right bottom left);
```

For an element  $x$  pixels wide and  $y$  pixels high, the default clipping region (assuming it has no borders or padding to increase its rendered area) would be `rect(0px xpx ypx 0)`. To trim off 10 pixels from each side of the image, you'd change this to `rect(10px x-10px y-10px 10px)`, where you would calculate and substitute the actual values of  $x-10$  and  $y-10$ .

The default value, `auto`, lets the browser determine the area of the element to draw, as usual.

**Initial value:** `auto`

## Compatibility

**CSS Version:** 2

Works in all CSS-compatible browsers, including Internet Explorer 4 or later, Netscape 4 or later, and Mozilla browsers. This property is buggy in Internet Explorer 4 for Macintosh and can cause affected elements to be left out of scrollbar size calculations in Netscape 4.

## Example

This style rule will clip 10 pixels off the left and right sides of the element with ID `logo`, which is a 100 x 100 pixel image:

```
#logo {  
    position: absolute;
```

```
clip: rect(0px 90px 100px 10px);  
}
```

## color

This property sets the foreground (text) color of the element. This property also defines the default border color of the element.

In general, you should always specify a background color when you specify a foreground color, and vice versa.

**Inherited:** Yes

**See also:** background-color

### Value

Any CSS color value (see Appendix B).

**Initial value:** black

### Compatibility

**CSS Version:** 1

Works in all CSS-compatible browsers including Internet Explorer 4 or later, Netscape 4 or later, and Mozilla browsers.

### Example

This style rule sets paragraphs of class `warning` to have white text on a tomato red background.

```
p.warning {  
  color: white;  
  background-color: #ff6347;  
}
```

# content

Sometimes it makes sense to generate some text at the beginning or end of an element as part of that element's style. Termed **generated content**, this text is not part of the HTML document, but is generated purely by the style sheet. The CSS `content` property is intended for this purpose. You must apply it to the `:before` or `:after` pseudo-elements, as shown in the examples below.

**Inherited:** No

**See also:** `counter-increment`, `counter-reset`, `quotes`

## Value

The CSS2 specification mandates a number of different generated content formats, but several are not yet supported by current browsers (see the Compatibility section for details). You can use any combination of the following content formats by listing them one after the other, separated by spaces.

### **"arbitrary string"**

This format lets you place a string of text before or after the actual content of the element. You cannot format this text by placing HTML code in the string—the browser will display the tags as text. Instead, use CSS to style the string, as in the examples below. The special code `\A` in the string produces a line break (same effect as an HTML `<br>` tag).

### **`url(http://url.goes.here)`**

This format lets you place some external resource before or after the actual content of the element. For example, if you supply a URL to an image, the browser should place that image before/after the content of the element. If you supply a URL to an HTML document, the browser should display the contents of the document before/after the content of the element.

There are obvious complexities that come into play here, but since no browsers yet support this format, any further discussion would be purely academic.

**counter(name)**  
**counter(name, style)**  
**counters(name, string)**  
**counters(name, string, style)**

These formats let you generate numbered elements (for example, numbered section headings) without having to resort to an ordered list (<ol>) in the HTML document. You must define, increment, and reset your counters when appropriate using the `counter-increment` and `counter-reset` CSS properties, and then use one of the above formats to display the value of a counter where desired.

`counter(name)` will display the value of the named counter in decimal format, while `counter(name, style)` lets you specify the style in which to display the counter value (you can use any style allowed by the `list-style-type` CSS property). You can also define hierarchical counters to produce multiple-level numbering (e.g. “Section 5.2.3”), the values of which you can output with `counters(name, string)` or `counters(name, string, style)`. The `string` argument specifies the string that is used to separate the numbers, and is typically a period (“.”).

**attr(attribute)**

This format lets you output the value of an attribute of the element (e.g. the `title` attribute of an <a> tag) before or after the actual content of the element.

**open-quote**  
**close-quote**

These formats let you display opening or closing quotation marks, the exact appearance of which are dictated by the CSS `quotes` property.

**no-open-quote**  
**no-close-quote**

These formats let you put 'fake' opening or closing quotes that don't actually display anything, but which still jump in and out of nesting levels defined in the `quotes` property.

**Initial value:** "" (the empty string)

## Compatibility

**CSS Version:** 2

Netscape 6, Mozilla, and Opera browsers support a subset of the formats discussed above. Specifically, they support the *"arbitrary string"* and quote-related formats. Internet Explorer browsers do not support this property up to and including IE6 for Windows.

## Examples

This style rule puts the text “Note: ” in bold at the start of a paragraph of class `note`:

```
p.note:before {
  content: "Note: ";
  font-weight: bold;
}
```

These style rules puts angle brackets (< >) around `span` elements of class `tagname` by using generated content and the `quotes` property:

```
span.tagname {
  quotes: "<" ">";
}
span.tagname:before {
  content: open-quote;
}
span.tagname:after {
  content: close-quote;
}
```

These style rules put quotation marks around `<blockquote>` elements. The third style rule (which is not supported by current browsers because of the use of `attr(attribute)`) applies to `blockquote` elements that have a `cite` attribute, and modifies the `content` property to close the quotation marks and then display the source of the citation on a new line.

```
blockquote:before {
  content: open-quote;
}
blockquote:after {
  content: close-quote;
}
blockquote[cite]:after {
  content: close-quote "\Afrom " attr(cite);
}
```

Also unsupported by current browsers, these style rules should place a standard HTML header and footer on the current page:

```
body:before {  
  content: url(standardheader.html);  
}  
body:after {  
  content: url(standardfooter.html);  
}
```

## counter-increment

This property increments or decrements a named counter (for display with the content property) for each occurrence of the selected element(s).

On nested elements, a hierarchical counter is automatically created, so that you effectively have a separate counter at each level of the structure.

**Inherited:** No

**See also:** content, counter-reset

### Value

A counter name, optionally followed by a positive or negative integer to indicate how much to increment (positive) or decrement (negative) the counter. If you want to increment/decrement multiple counters for a single element, you can separate their names (and optional integers) by spaces.

The default value, none is also supported, but is of little practical use.

**Initial value:** none

### Compatibility

**CSS Version:** 2

Not supported by any currently-available browser.

## Examples

This simple example will keep track of the number of h1 tags in the document and will output a chapter number at the start of each:

```
h1 {  
  counter-increment: chapter;  
}  
h1:before {  
  content: "Chapter " counter(chapter) " - ";  
}
```

This example uses a counter to number div elements in the document, and then displays the counter value in h1 tags appearing within them. Because the `counters()` format is used to output the counter value, nested div elements will be numbered hierarchically (e.g. "Division 2.1.3").

```
div {  
  counter-increment: division;  
}  
div > h1:before {  
  content: "Division " counters(division, ".") ": ";  
}
```

## counter-reset

This property sets a named counter (for display with the `content` property), to a particular value, each time the enclosing style rule is matched.

By default, the counter is reset to zero, but you can specify any value you like.

**Inherited:** No

**See also:** `counter-increment`

## Value

A counter name, optionally followed by a positive or negative integer that specifies the new value for the counter (the default is 0). If you want to set multiple counters for a single element, you can separate their names (and optional integers) by spaces.

The default value, `none` is also supported, but is of little practical use.

**Initial value:** none

## Compatibility

**CSS Version:** 2

Not supported by any currently-available browser.

## Example

This example lets you use `h1` elements to mark chapters, `h2` elements to mark subsections, and have hierarchical numbering on section headings:

```
h1 {
  counter-increment: chapter;
  counter-reset: section;
}
h1:before {
  content: "Chapter " counter(chapter) " - ";
}
h2 {
  counter-increment: section;
}
h2:before {
  content: "Section " counter(chapter) "." counter(section) " - ";
}
```

## cue

Sound cues are used by aural (speaking) browsers for the visually impaired as “audio icons”. This is a shorthand property that lets you specify the `cue-before` and `cue-after` properties with a single property declaration.

**Inherited:** No

**See also:** `cue-before`, `cue-after`

## Value

One or two URLs (specified with CSS `url()` syntax) that point to sound files. If one URL is provided, it is assigned to `cue-before` and `cue-after`—the sound



is played before and after the element. If two URLs are provided, the first is assigned to `cue-before` and the second to `cue-after`.

**Initial value:** none

## Compatibility

**CSS Version:** 2

Not supported by any currently-available browser.

## Example

This example plays `ding.wav` before and after each `div` element:

```
div {  
  cue: url(/sounds/ding.wav);  
}
```

# cue-after, cue-before

Sound cues are used by aural (speaking) browsers for the visually impaired as “audio icons”. `cue-before` and `cue-after` let you set cues to be played before and after an element, respectively.

**Inherited:** No

**See also:** `cue`

## Value

A URL, specified with CSS `url()` syntax, that points to a sound file.

The default value, `none` is also supported, but is of little practical use.

**Initial value:** none

## Compatibility

**CSS Version:** 2

Not supported by any currently-available browser.

## Example

This example plays `ding.wav` before each `h1` element, with the exception of `h1` elements of class `silent`:

```
h1 {  
  cue-before: url(/sounds/ding.wav);  
}  
h1.silent {  
  cue-before: none;  
}
```

## cursor

This property lets you modify the appearance of the mouse cursor when the mouse is over a selected element.

**Inherited:** Yes

## Value





Table C.4 lists the different cursor values supported by the CSS2 standard and the major browsers that support them. The special value `auto` is the default, and lets the browser determine what the cursor should look like automatically. The value `default` sets the cursor to its default appearance, as dictated by the operating system.

The value `url(url)`, which is currently supported only in Internet Explorer 6 for Windows, lets you define your own cursor by pointing to a `.cur` (Windows static cursor) or `.ani` (Windows animated cursor) file on your site. Presumably, this property will support more standard image formats when it is implemented in other browsers.


Table C.5 lists additional, nonstandard cursors supported by various versions of Internet Explorer.








All of the cursors' exact appearances may vary between browsers and operating systems.

**Table C.4. CSS2 standard cursors**

<b>cursor value</b>	<b>Appearance (as in IE6)</b>	<b>IE (Win)</b>	<b>IE (Mac)</b>	<b>NS/Moz</b>
auto	n/a	4	4	6/1
crosshair	+	4	4	6/1
default		4	4	6/1
e-resize	↔	4	4	6/1
help		4	4	6/1
move	↕	4	4	6/1
n-resize	↑↓	4	4	6/1
ne-resize	↗	4	4	6/1
nw-resize	↖	4	4	6/1
pointer		4	4	6/1
s-resize	↑↓	4	4	6/1
se-resize	↘	4	4	6/1
sw-resize	↙	4	4	6/1
text	I	4	4	6/1
url( <i>url</i> )	n/a	6	–	–
w-resize	↔	4	4	6/1
wait		4	4	6/1

**Table C.5. Internet Explorer-only cursors**

<b>cursor value</b>	<b>Appearance (as in IE6)</b>	<b>IE (Win)</b>	<b>IE (Mac)</b>
all-scroll		6	–

cursor value	Appearance (as in IE6)	IE (Win)	IE (Mac)
col-resize		6	—
hand		4	4
no-drop		6	—
not-allowed		6	—
progress		6	—
row-resize		6	—
vertical-text		6	—

**Initial value:** auto

## Compatibility

**CSS Version:** 1

Supported by all CSS-compatible browsers, with the notable exception of Netscape 4.

Some values of this property are not be supported by all browsers—refer to Table C.4 and Table C.5.

## Example

This style rule (which doesn't work in browsers that don't support attribute selectors) displays the `pointer` cursor when the mouse is over any element with a `onclick` attribute.

```
[onclick] {
  cursor: pointer;
}
```

## direction

Most western languages are written left-to-right (LTR). As you probably know, many other languages (e.g. Hebrew) are written right-to-left (RTL). Documents

written with the Unicode character set[7] can contain text from both LTR and RTL languages. The Unicode standard includes a complicated algorithm that should be used for displaying such mixed text. It also defines special characters that let you “group” text.

For example, consider the following imaginary string of text, where the lowercase text represents LTR characters and the uppercase text represents RTL:

```
english1 HEBREW1 english2 HEBREW2 english3
```

Now, the obvious way to render this would be “english1 1WERBEH english2 2WERBEH english3”, but what if we add some HTML tags to the mix?

```
<p>english1 <q>HEBREW1 english2 HEBREW2</q> english3</p>
```

As you can see, the text beginning with HEBREW1 and ending with HEBREW2 is intended as an inline quotation in Hebrew, which just happens to contain an English word. Since HEBREW1 and HEBREW2 belong to the same block of Hebrew text, “2WERBEH” should be rendered to the left or “1WERBEH”. With this in mind, the complete paragraph should be rendered as “english1 2WERBEH english2 1WERBEH english3”.

The HTML 4.0 standard (along with XHTML 1.0) defines the `dir` attribute and the `bdo` element to handle these complexities. To obtain the desired rendering in an HTML4-compatible browser, the code should be:

```
<p>english1 <q lang="he" dir="rtl">HEBREW1 english2 HEBREW2</q>  
english3</p>
```

The `dir` attribute of the `q` tag is what specifies the rendering order; the `lang` attribute won't have any actual visible effect. For full details on language and bidirectional text rendering in HTML, refer to Section 8 of the HTML 4.0 standard[8].

So, where does CSS come into play, you ask? Well, the `direction` property, in combination with a `unicode-bidi` property setting of `embed`, performs the same role as the HTML `dir` attribute. In combination with a `unicode-bidi` property setting of `bidi-override`, `direction` has the same effect as the HTML `bdo` tag. It is still considered best practice, however, to include bidirectional text attributes as part of the HTML code. The `direction` and `unicode-bidi` properties are intended for use in styling XML documents that do not have the benefit of HTML4's

[7] <http://www.unicode.org/>

[8] <http://www.w3.org/TR/REC-html40/struct/dirlang.html>

bidirectional text features. Since the focus of this book is on Web development, I'll therefore refer you to the CSS2 standard[9] for full details on these properties.

**Inherited:** Yes

**See also:** `unicode-bidi`

## Value

`ltr` or `rtl`.

**Initial value:** `ltr`

## Compatibility

**CSS Version:** 2

Not supported by any currently-available browser.

## Example

This style rule sets the text direction of an imaginary XML element named `hebrew` to `rtl`. The `unicode-bidi` property is there to ensure that this setting will “group” any elements within it according to this direction, even if `hebrew` is rendered as an inline element.

```
hebrew {  
    direction: rtl;  
    unicode-bidi: embed;  
}
```

# display

In HTML, there are different *types* of elements. `div` and `blockquote`, for example, are both block elements, while `strong` and `em` are both inline elements. For each type of element, a browser supports a “display mode”. All block elements are essentially displayed the same way, just with varying margins, padding, borders, etc. by default.

---

[9] <http://www.w3.org/TR/REC-CSS2/visuren.html#direction>

The **display** property lets you set the “display mode” for an element. For example, you can set a hyperlink (**a**) to be displayed as a block instead of inline text.

The most common use for the **display** property is to show and hide portions of an HTML document. Setting **display** to **none** causes the element not only to be hidden (as with the **visibility** property), but not to occupy any space on the page either. Using Dynamic HTML to set this property in JavaScript event handlers lets you create, for instance, hierarchical menus that expand and collapse to display submenus on the fly.

**Inherited:** No

**See also:** [visibility](#)

## Value

### **block**

**CSS version:** 1

**Browser support:** All CSS-compatible, including Netscape 4.

The default display mode for **p**, **div**, **ul**, **blockquote**, and many others, **block** causes the element to occupy a rectangular area of the page, stacked vertically with its sibling elements, so that previous siblings are above it, and subsequent siblings are below it.

### **inline**

**CSS version:** 1

**Browser support:** All CSS-compatible, including Netscape 4.

The default display mode for **strong**, **u**, **a**, **code**, and many others, this causes the element to flow “inline” as a string of text within the parent block, possibly broken by word wrapping.

### **list-item**

**CSS version:** 1

**Browser support:** Netscape 4 or later, Internet Explorer 6 for Windows, Internet Explorer 5 for Mac.

The default display mode for `li` elements, `list-item` causes the element to be rendered as a list item. The `list-style` family of properties control the position and appearance of the list item marker (i.e. the bullet or number).

### **marker**

**CSS version:** 2

**Browser support:** No currently-available browsers.

This display mode can be applied only to `:before` and `:after` pseudo-elements, and tells the browser to treat generated content (created with the `content` property) as a “marker” to be displayed in its own box in the margin of the main content. The formatting is similar to, although somewhat more flexible than, the formatting applied to the bullets or numbers preceding list items. The `marker-offset` property is specifically provided to format generated content with this display mode.

### **none**

**CSS version:** 1

**Browser support:** All CSS-compatible, including Netscape 4.

This display mode causes the element not to be rendered at all. The element will not occupy any space on the page (unlike `visibility: hidden`, which hides the element but reserves space for it on the page).

### **compact**

**CSS version:** 2

**Browser support:** No currently-available browsers.

This display mode causes the element to appear in the left margin (or right margin in right-to-left languages) of the block immediately following it if it can fit all on one line. If the element is too big to fit in the next block's margin on one line, it is displayed as a normal block instead. The effect is illustrated in Figure C.1.



## Figure C.1. Effect of compact display mode

**Compact** This is a block of text with a sizeable margin. Notice that the "Compact" text appears to the left of it because it fits within the margin on a single line.

**A longer line of compact text**

This is a block of text with a sizeable margin. Notice that the "Compact" text appears above it because it does not fit on a single line within the margin.

### run-in

CSS version: 2

**Browser support:** No currently-available browsers.

This display mode causes the element to appear as an inline element at the start of the block immediately following it. If there is no block following a run-in element, it is displayed as a normal block instead. The effect is illustrated in Figure C.2.

## Figure C.2. Effect of run-in display mode

**Run-in Heading** This is a standard block of text; however, the element before it ("Run-in Heading") is displayed inline at the start of this block.

### table

#### inline-table

#### table-row

#### table-column

#### table-row-group

#### table-column-group

#### table-header-group

#### table-footer-group

#### table-cell

#### table-caption

CSS version: 2

**Browser support:** Fully supported by IE5 (Macintosh). IE5 (Win) supports only table-header-group, while IE5.5 (Win) adds support for table-footer-group. There is no additional support in IE6 (Win). NS6/Mozilla

supports all of these except `inline-table`, `table-caption`, `table-column`, and `table-column-group`.

These display modes let you display various elements as tables (or parts thereof). The practical utility of these display modes is questionable, which is why most browsers have yet to fully implement them. For full details, refer to the CSS2 Specification[10].

### **inline-block**

**CSS version:** 3 (according to early draft specification)

**Browser support:** Internet Explorer 5.5 or later for Windows only.

This display lets you place a block inline with the content of its parent element.

**Initial value:** `inline`<sup>3</sup>

## Compatibility

**CSS Version:** 1 (many display modes added in CSS2, with more coming in CSS3)

All CSS-compatible browsers support this property, but none yet supports the full range of CSS2 display modes. See above for full compatibility information.

## Example

This style rule hides unordered list (`ul`) elements nested within an unordered list of class `menu`. In a practical application, JavaScript code could be used to display these submenus, by changing the `display` property to `block`, when the user clicks one of the main menu items.

```
ul.menu ul {  
    display: none;  
}
```

---

[10] <http://www.w3.org/TR/REC-CSS2/tables.html>

<sup>3</sup>Elements like `p`, `div`, `blockquote`, etc. have a default `display` value of `block`, and other elements have their own default `display` values. These defaults come from the browser's built-in default style sheet, rather than from the CSS specification. If you were to create your own tag (which you can do with XHTML), its `display` property would be `inline` by default.

## What's Next?

If you've enjoyed these chapters from *HTML Utopia: Designing Without Tables Using CSS*, why not order yourself a copy?

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— Jeffrey Zeldman, Co-Founder of the Web Standards Project



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