

# Introduction to CSS

## Chapter 4

Randy Connolly and Ricardo Hoar

Fundamentals of Web Development

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## Chapter 4

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**2**

CSS Syntax

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Location of  
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## What Is CSS?

Cascading Style Sheets (CSS)

- CSS is a W3C standard for **describing the appearance of HTML elements**
- With CSS, we can assign **font properties, colors, sizes, borders, background images**, and even **position** elements on the page
- CSS can be added directly to any HTML element (via the **style attribute**), within the **<head>** element, **or**, most commonly, in a separate **text file** that **contains only CSS**.

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# What Is CSS?

## Benefits of CSS

- Improved control over **formatting**.
- Improved **site maintainability**.
- Improved **accessibility**.
- Improved **page-download speed**.
- Improved **output flexibility** (responsive design)



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# What Is CSS?

## CSS Versions

- **1996 the CSS Level 1** Recommendation was published
- **June 2011 - CSS2.1** becomes an official W3C Recommendation
- A different group at the W3C was working on a **CSS3** draft. So far the following CSS3 modules have made it to **official W3C Recommendations**:
  - CSS **Selectors**,
  - CSS **Namespaces**,
  - CSS **Media Queries**,
  - CSS **Color**, and
  - CSS **Style** Attributes

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# What Is CSS?

## Browser Adoption

- Historically implementation of CSS was not consistent across major browsers.
- CSS has a reputation for being a somewhat frustrating language due to browser implementation differences
- CSS was not really designed to be a layout language, so authors often find it tricky dealing with floating elements, relative positions, inconsistent height handling, overlapping margins, and non-intuitive naming

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# CSS Syntax

## Overview

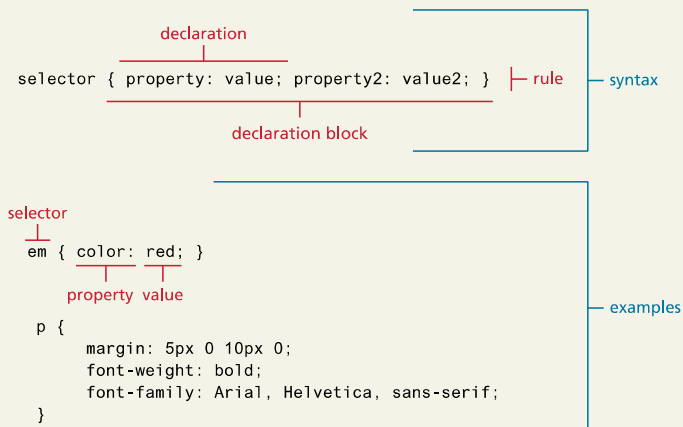
- A CSS document consists of one or more style rules
- A rule consists of a selector that identifies the HTML element or elements that will be affected, followed by a series of property:value pairs (each pair is also called a declaration)
- The series of declarations is also called the declaration block .

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# CSS Syntax

## Overview



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# CSS Syntax

## Selectors

- Every CSS rule begins with a selector .
- The selector identifies which element or elements in the HTML document will be affected by the declarations in the rule
- Many ways to write selectors (stay tuned...)

# CSS Syntax

## Properties

- Each individual CSS declaration must contain a property.
- The CSS2.1 recommendation defines over a hundred different property names

# CSS Syntax

## Properties

Property Type	Property
Fonts	font font-family font-size font-style font-weight @font-face
Text	letter-spacing line-height text-align text-decoration* text-indent
Color and Background	background background-color background-image background-position background-repeat box-shadow color opacity
Borders	border* border-color border-width border-style border-top, border-left, ...* border-image* border-radius

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# CSS Syntax

## Properties

Property Type	Property
Spacing	padding padding-bottom, padding-left, ... margin margin-bottom, margin-left, ...
Sizing	height max-height max-width min-height min-width width
Layout	bottom, left, right, top clear display float overflow position visibility z-index
Lists	list-style* list-style-image list-style-type
Effects	animation* filter perspective transform* transition*

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# CSS Syntax

## Values

The unit of any given value is dependent upon the property.

Some **property values** are from a predefined list of **keywords**. Others are values such as length measurements, percentages, numbers without units, color values, and URLs.

# CSS Syntax

## Colors

- Name
- RGB
- Hexadecimal
- RGBa
- HSL



# CSS Syntax

Relative and absolute Units (page 123)

- Relative
  - px
  - em
  - %
  - vw, vh /\*View port Width, View port Height \*/
- Absolute
  - in /\* Inches \*/
  - cm /\* Centimeters \*/
  - pt /\* Points \*/

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# Location of Styles

Inline Styles (page 125)

**Inline styles** are style rules placed within an HTML element via the style attribute

```
<h1>Share Your Travels</h1>

<h2 style="font-size: 24pt">Description</h2>

...

<h2 style="font-size: 24pt; font-weight:bold;">
Reviews</h2>
```

Using inline styles is generally discouraged

Handy for quickly testing out a style change

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# Location of Styles

Embedded Style Sheet

**Embedded style** sheets (also called **internal styles**) are style rules placed within the **<style>** element (inside the **<head>** element of an HTML document).

```
<head>
  <meta charset="utf-8">
  <title>Share Your Travels -- New York - Central Park</title>
  <style>
    h1 { font-size: 24pt; }
    h2 {
      font-size: 18pt;
      font-weight: bold;
    }
  </style>
</head>
<body>
...
```

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# Location of Styles

External Style Sheet

**External style** sheets are style rules placed within a external text file with the .css extension, inside **<link>** element.

```
<head>
  <meta charset="utf-8">
  <title>Share Your Travels -- New York - Central
    Park</title>
  <link rel="stylesheet" href="styles.css" />
</head>
```

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# Location of Styles

External Style Sheet

There are in fact three different types of style sheet:

1. **Author-created style** sheets (what you are learning in this chapter)
2. **User style** sheets
3. **Browser style** sheets

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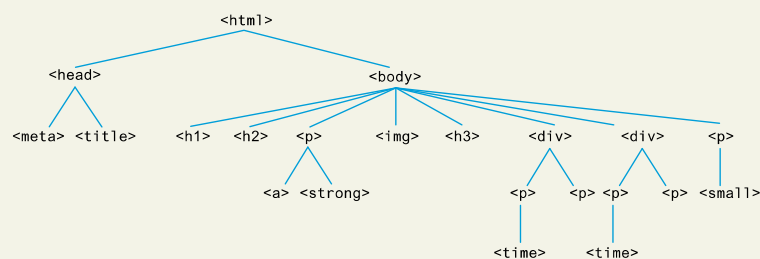
**8**

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## Selectors

Remember the **DOM tree** (Document Object Model)

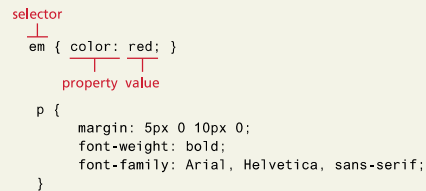
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# Selectors

## Element Selectors

**Element selectors** select all instances of a given HTML element.



```

selector
├── em { color: red; }
│   ├── color: red;
│   │   ├── color: property
│   │   └── red: value
│   └── {
│       ├── margin: 5px 0 10px 0;
│       ├── font-weight: bold;
│       └── font-family: Arial, Helvetica, sans-serif;
│   }
└── p {
    ├── margin: 5px 0 10px 0;
    ├── font-weight: bold;
    └── font-family: Arial, Helvetica, sans-serif;
  }
  
```

# Selectors

## Class Selectors

A **class selector** allows you to simultaneously target different HTML elements regardless of their position in the document tree using the same class attribute value.

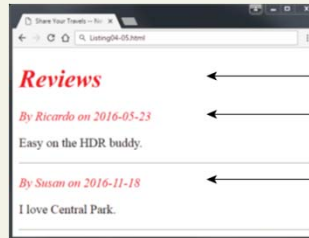
# Selectors

## Class Selectors

```

<head>
  <title>Share Your Travels </title>
  <style>
    .first {
      font-style: italic;
      color: red;
    }
  </style>
</head>
<body>
  <h1 class="first">Reviews</h1>
  <div>
    <p class="first">By Ricardo on <time>2016-05-23</time></p>
    <p>Easy on the HDR buddy.</p>
  </div>
  <hr/>
  <div>
    <p class="first">By Susan on <time>2016-11-18</time></p>
    <p>I love Central Park.</p>
  </div>
  <hr/>
</body>

```



```

.first {
  font-style: italic;
  color: red;
}

```

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# Selectors

## id Selectors

An **id selector** allows you to target a specific element by its id attribute regardless of its type or position

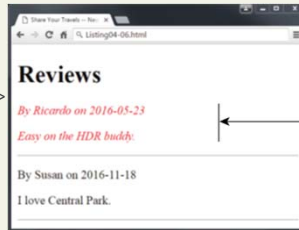
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# Selectors

## Id Selectors

```
<head>
  <title>Share Your Travels </title>
  <style>
    #latestComment {
      font-style: italic;
      color: red;
    }
  </style>
</head>
<body>
  <h1 class="first">Reviews</h1>
  <div id="latestComment">
    <p class="first">By Ricardo on <time>2016-05-23</time></p>
    <p>Easy on the HDR buddy.</p>
  </div>
  <hr/>
  <div>
    <p class="first">By Susan on <time>2016-11-18</time></p>
    <p>I love Central Park.</p>
  </div>
  <hr/>
</body>
```



```
#latestComment {
  font-style: italic;
  color: red;
}
```

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# Selectors

## Attribute Selectors

An **attribute selector** provides a way to select HTML elements either by the presence of an element attribute or by the value of an attribute

```
[title] { ... }
```

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# Selectors

## Attribute Selectors (not supported by some browsers)

```
<head>
<meta charset="utf-8">
<title>Share Your Travels</title>
<style>
```

```
[title] {
  cursor: help;
  padding-bottom: 3px;
  border-bottom: 2px dotted blue;
  text-decoration: none;
}
```

```
</style>
```

```
</head>
```

```
<body>
```

```
<div>
```

```

```

```
<h2><a href="countries.php?id=CA" title="see posts from Canada">
```

```
Canada</a></h2>
```

```
<p>Canada is a North American country consisting of ... </p>
```

```
<div>
```

```

```

```

```

```

```

```
</div>
```

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```
[title] {
  cursor: help;
  padding-bottom: 3px;
  border-bottom: 2px dotted blue;
  text-decoration: none;
}
```



# Selectors

## Attribute Selectors

Selector	Matches
[ ]	A specific attribute.
[=]	A specific attribute with a specific value.
[~=]	A specific attribute whose value matches at least one of the words in a space delimited list of words.
[^=]	A specific attribute whose value <b>begins</b> with a specified value.
[*=]	A specific attribute whose value <b>contains</b> a substring.
[\$=]	A specific attribute whose value ends with a specified value.

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# Selectors

Pseudo-Element and Pseudo-Class Selectors (**pp. 134-136**)

A **pseudo-element selector** is a way to select something that does not exist explicitly as an element in the HTML document tree but which is still a recognizable selectable object.

A **pseudo-class selector** does apply to an HTML element, but targets either a particular state or, in CSS3, a variety of family relationships.

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# Selectors

Pseudo-Element and Pseudo-Class Selectors (**Table 4-3, page 134**)

- a:link
- a:visited
- :focus
- :hover
- :active
- :checked
- :first-child
- :first-letter
- :first-line

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# Selectors

Pseudo-Element and Pseudo-Class Selectors

```
<style>
  a:link {
    text-decoration: underline;
    color: blue;
  }
  a:visited {
    text-decoration: underline;
    color: purple;
  }
  a:hover {
    text-decoration: none;
    font-weight: bold;
  }
  a:active {
    background-color: yellow;
  }
</style>
```

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# Selectors

Contextual Selectors (Combinators)

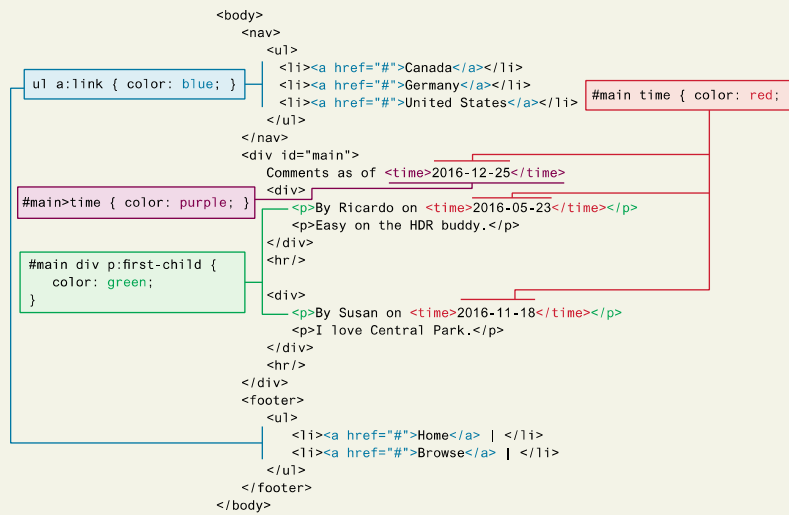
Selector	Matches	Example
Descendant	A specified element that is contained somewhere within another specified element.	<b>div p</b> Selects a <p> element that is contained somewhere within a <div> element.
Child	A specified element that is a direct child of the specified element.	<b>div&gt;h2</b> Selects an <h2> element that is a child of a <div> element.
Adjacent Sibling	A specified element that is the next sibling (i.e., comes directly after) of the specified element	<b>h3+p</b> Selects the first <p> after any <h3>.
General Sibling	A specified element that shares the same parent as the specified element.	<b>h3~p</b> Selects all the <p> elements that share the same parent as the <h3>.

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# Selectors

## Contextual Selectors



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## The Cascade: How Styles Interact

CSS

The “**Cascade**” in CSS refers to how conflicting rules are handled.

The downward movement of water down a cascade is meant to be analogous to how a given style rule will continue to take precedence with child elements

CSS uses the following **cascade principles** to help it deal with conflicts:

- inheritance,
- specificity, and
- location

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## The Cascade: How Styles Interact

Inheritance

Many (but not all) CSS properties affect not only themselves but their descendants as well.

**Inheritable:**

Font, color, list, and text properties

**Not Inheritable:**

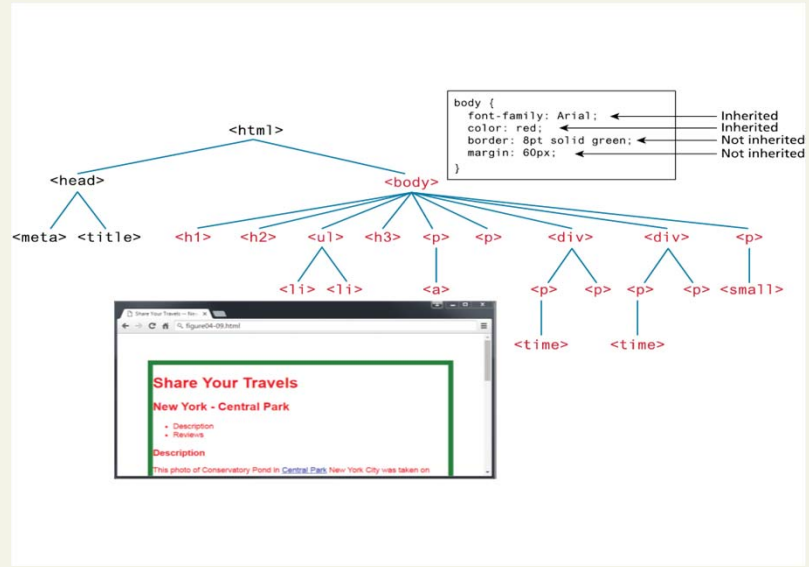
layout, sizing, border, background, and spacing properties

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# The Cascade: How Styles Interact

Inheritance (Figure 4-9)

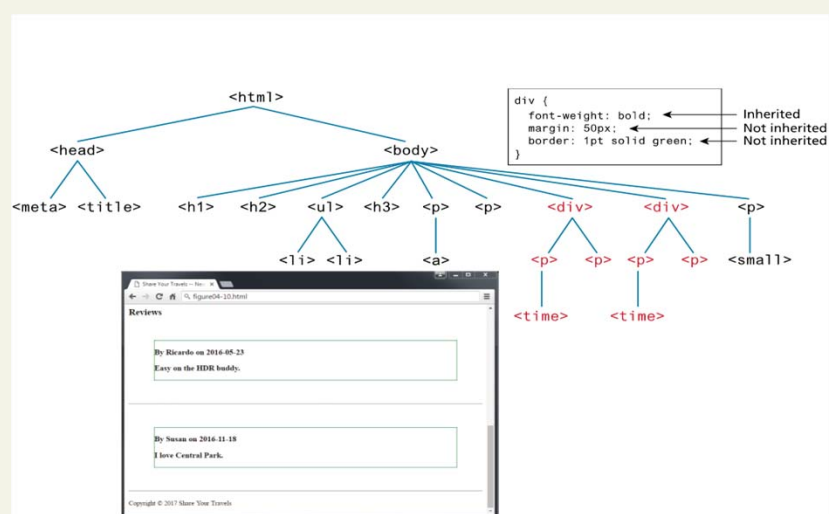


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# The Cascade: How Styles Interact

Inheritance (Figure 4-10)



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# The Cascade: How Styles Interact

## Specificity

The diagram illustrates how CSS specificity is calculated and applied. It shows a set of CSS rules on the left, an HTML document in the middle, and a browser preview on the right. Arrows indicate which rule applies to which part of the HTML.

```

body {
  font-weight: bold;
  color: red;
}

div {
  font-weight: normal;
  color: magenta;
}

p {
  color: green;
}

.last {
  color: blue;
}

#verylast {
  color: orange;
  font-size: 16pt;
}

```

HTML Document:

```

<body>
  This text is not within a p element.
  <p>Reviews</p>
  <div>
    <p>By Ricardo on <time>2016-05-23</time></p>
    <p>Easy on the HDR buddy.</p>
    This text is not within a p element.
  </div>
  <div>
    <p>By Susan on <time>2016-11-18</time></p>
    <p>I love Central Park.</p>
  </div>
  <div>
    <p class="last">By Dave on <time>2016-11-24</time></p>
    <p class="last" id="verylast">Thanks for posting.</p>
  </div>
</body>

```

Browser Preview:

- Body text: **This text is not within a p element.** (Red, Bold)
- Section Header: **Reviews** (Red, Bold)
- Review 1: By Ricardo on 2016-05-23 (Green)
- Review 2: Easy on the HDR buddy. (Magenta)
- Text: This text is not within a p element. (Magenta)
- Review 3: By Susan on 2016-11-18 (Green)
- Review 4: I love Central Park. (Green)
- Review 5: By Dave on 2016-11-24 (Blue)
- Review 6: Thanks for posting. (Orange, 16pt)

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# The Cascade: How Styles Interact

## Specificity

The diagram illustrates how CSS specificity is calculated and applied. It shows a set of CSS rules on the left, an HTML document in the middle, and a browser preview on the right. Arrows indicate which rule applies to which part of the HTML.

```

body {
  font-weight: bold;
  color: red;
}

div {
  font-weight: normal;
  color: magenta;
}

p {
  color: green;
}

.last {
  color: blue;
}

#verylast {
  color: orange;
  font-size: 16pt;
}

```

HTML Document:

```

<body>
  This text is not within a p element.
  <p>Reviews</p>
  <div>
    <p>By Ricardo on <time>2016-05-23</time></p>
    <p>Easy on the HDR buddy.</p>
    This text is not within a p element.
  </div>
  <div>
    <p>By Susan on <time>2016-11-18</time></p>
    <p>I love Central Park.</p>
  </div>
  <div>
    <p class="last">By Dave on <time>2016-11-24</time></p>
    <p class="last" id="verylast">Thanks for posting.</p>
  </div>
</body>

```

Browser Preview:

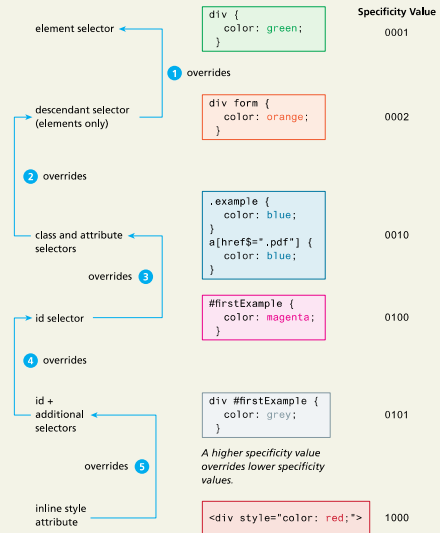
- Body text: **This text is not within a p element.** (Red, Bold)
- Section Header: **Reviews** (Red, Bold)
- Review 1: By Ricardo on 2016-05-23 (Green)
- Review 2: Easy on the HDR buddy. (Magenta)
- Text: This text is not within a p element. (Magenta)
- Review 3: By Susan on 2016-11-18 (Green)
- Review 4: I love Central Park. (Green)
- Review 5: By Dave on 2016-11-24 (Blue)
- Review 6: Thanks for posting. (Orange, 16pt)

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# The Cascade: How Styles Interact

## Specificity Algorithm

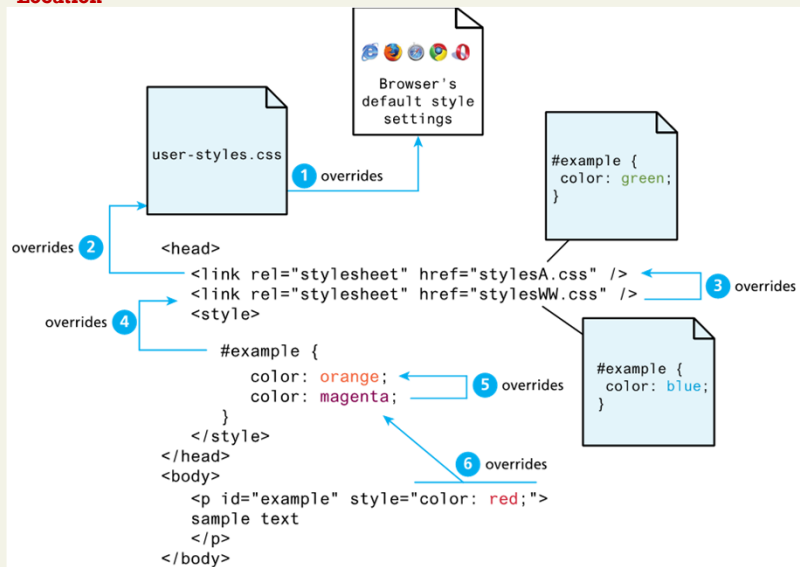


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# The Cascade: How Styles Interact

## Location



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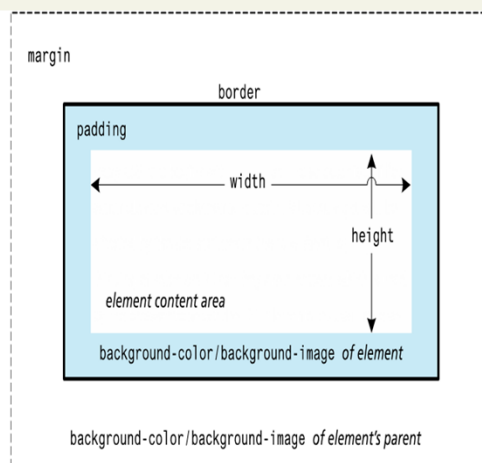
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## The Box Model

Overview



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# The Box Model

## Background

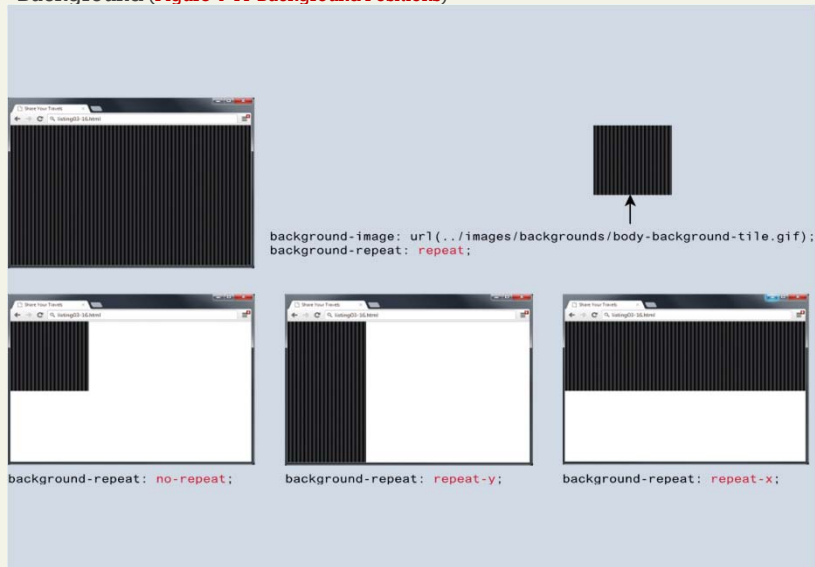
- Background
- Background-attachment
- Background-color
- Background-image
- Background-position
- Background-repeat
- Background-size

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# The Box Model

## Background (Figure 4-17 Background Positions)

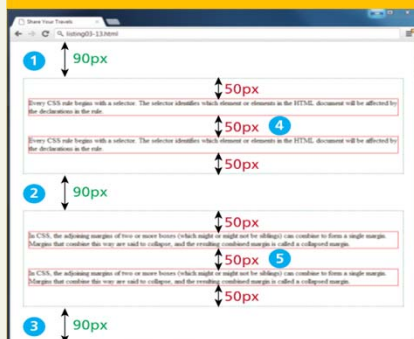


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# The Box Model

## Collapsing Margins



```
<div>
  <p>Every CSS rule ...</p>
  <p>Every CSS rule ...</p>
</div>
<div>
  <p>In CSS, the adjoining ... </p>
  <p>In CSS, the adjoining ... </p>
</div>
```

```
div {
  border: dotted 1pt green;
  padding: 0;
  margin: 90px 20px;
}
```

```
p {
  border: solid 1pt red;
  padding: 0;
  margin: 50px 20px;
}
```

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# The Box Model

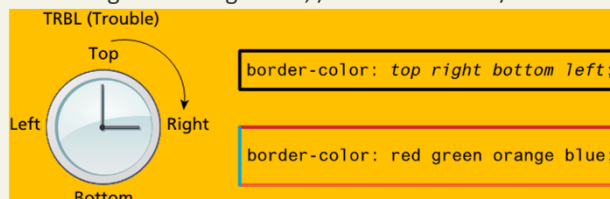
## CSS TRBL (Trouble) Shortcut

```
border-top-color: red; /* sets just the top side */
border-right-color: green; /* sets just the right side */
border-bottom-color: yellow; /* sets just the bottom side */
border-left-color: blue; /* sets just the left side */
```

Alternately, we can set all four sides at once:

```
border-color: red; /* sets all four sides to red */
```

```
border-color: red green orange blue; /* sets 4 colors */
```

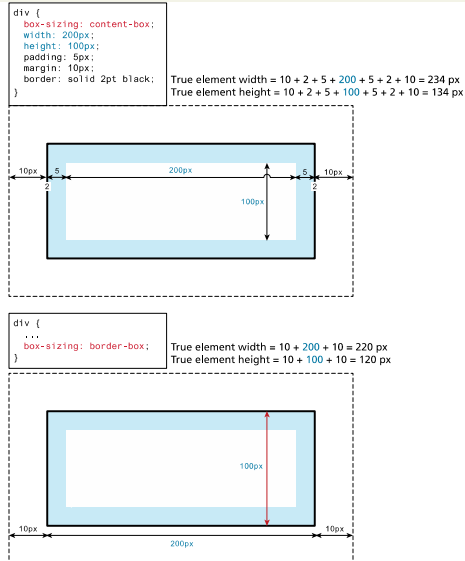


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# The Box Model

Box Dimensions (Figure 4-21 Calculating an element's true size)

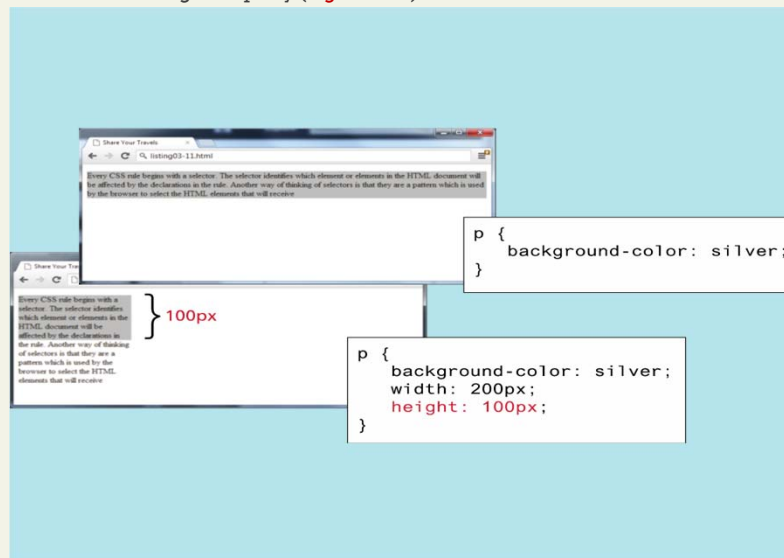


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# The Box Model

Limitations of Height Property (Figure 4-22)

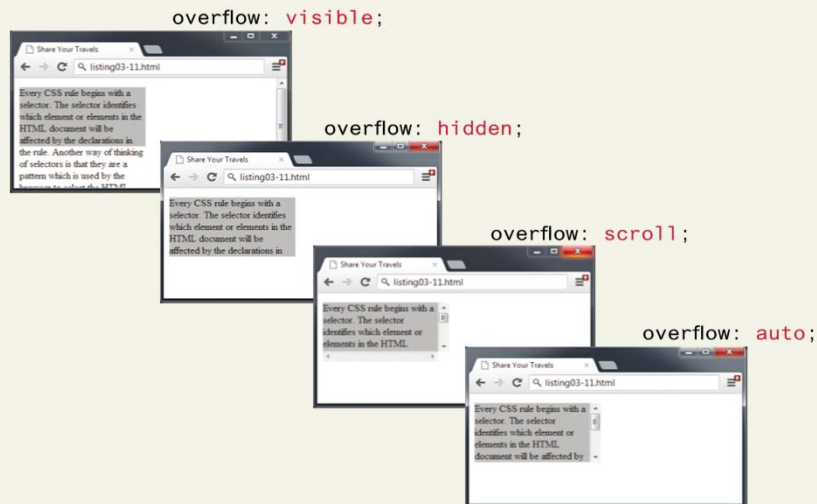


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# The Box Model

Overflow Property (Figure 4-23)

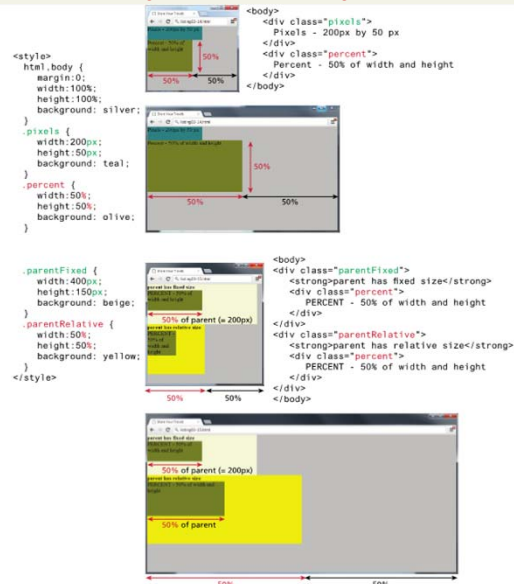


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# The Box Model

Box Sizing Using Percents (Figure 4-24 Box sizing via percents)

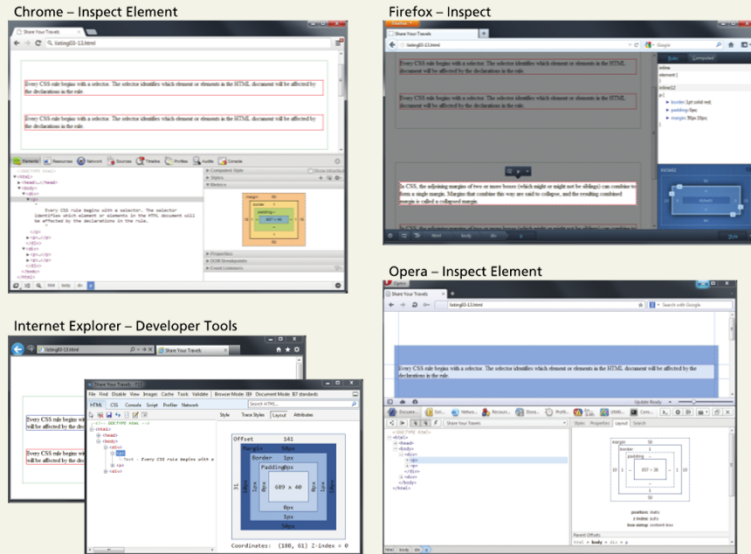


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# The Box Model

Inspecting CSS using modern browsers (Figure 4-25)



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## Chapter 4

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## CSS Text Styling

Font Family (**Table 4-9 Font Properties**)

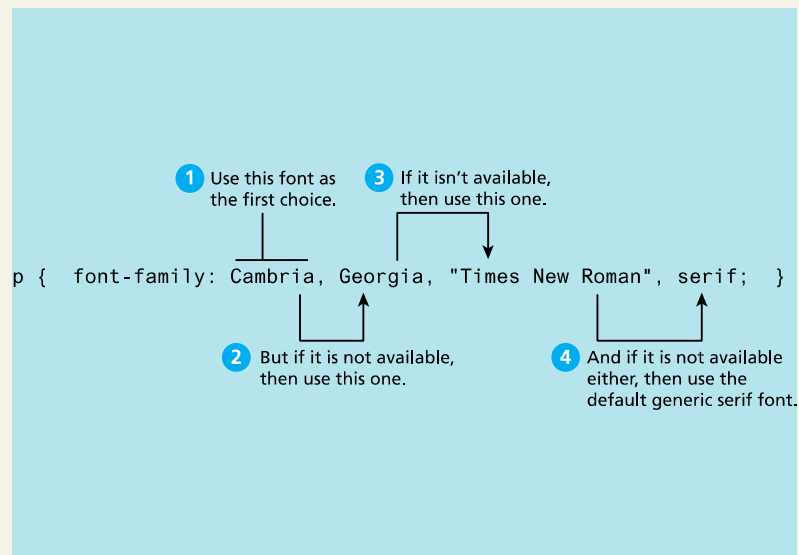
Property	Description
font	A combined shorthand property that allows you to set the family, style, size, variant, and weight in one property. <b>style weight variant size font-family</b>
font-family	Specifies the typeface/font to use. More than one can be specified.
font-size	The size of the font in one of the measurement units
font-style	Specifies whether italic, oblique, or normal
font-variant	Specifies either small-caps text or none
font-weight	Specifies either normal, bold, bolder, lighter, or a value between 100 and 900 in multiples of 100, where larger number represents weightier (i.e., bolder) text.

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## CSS Text Styling

Specifying the Font Family (**Figure 4-26 Specifying the font family**)



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# CSS Text Styling

## Different Font Families

	Generic Font-Family Name	
This	serif	Th
This	sans-serif	Th
This	monospace	This
This	cursive	
This	fantasy	

In a monospace font, each letter has the same width.

In a regular, proportionally-spaced font, each letter has a variable width.

Decorative and cursive fonts vary from system to system; rarely used as a result.

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# CSS Text Styling

## Font Sizes

<body>	Browser's default text size is usually 16 pixels
<p>	100% or 1em is 16 pixels
<h3>	125% or 1.125em is 18 pixels
<h2>	150% or 1.5em is 24 pixels
<h1>	200% or 2em is 32 pixels

/\* using 16px scale \*/

```
body { font-size: 100%; }
p { font-size: 1em; }
h3 { font-size: 1.125em; }
h2 { font-size: 1.5em; }
h1 { font-size: 2em; }
```

```
/* 1.0 x 16 = 16 */
/* 1.25 x 16 = 18 */
/* 1.5 x 16 = 24 */
/* 2 x 16 = 32 */
```

&lt;body&gt;

Browser's default text size is usually 16 pixels

```
<p>100% or 1em is 16 pixels</p>
<h3>125% or 1.125em is 18 pixels</h3>
<h2>150% or 1.5em is 24 pixels</h2>
<h1>200% or 2em is 32 pixels</h1>
```

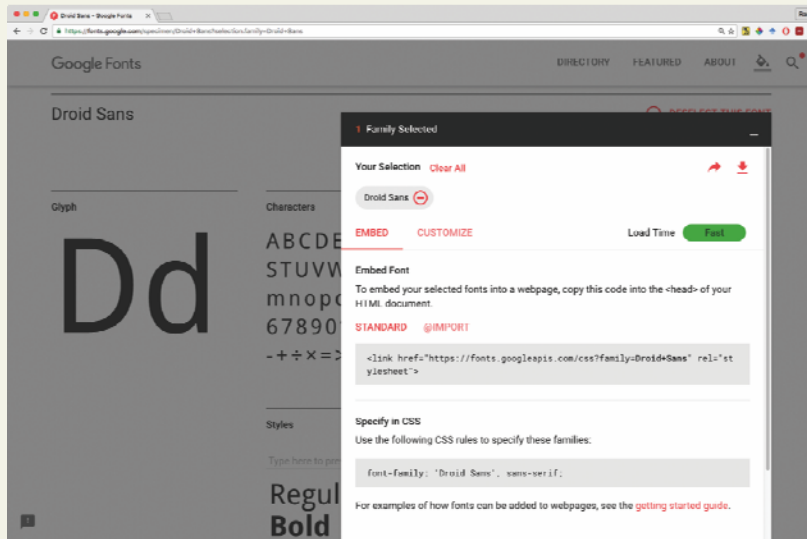
&lt;/body&gt;

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# CSS Text Styling

## Font Face



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# CSS Text Styling

## Paragraph Properties (Table 4-10 Table Spacing)

Just as there are properties that affect the font in CSS, there are also a range of CSS properties that affect text independently of the font.

- **letter-spacing**
- **line-height**
- **text-align**
- **text-decoration**
- **text-direction**
- **text-shadow**
- ...

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# CSS Text Styling

Just look at text-shadow

1 First Shadow  
2 Second Shadow  
3 Third Shadow  
4

You will likely want the shadow color to be partly transparent

1 text-shadow: x offset 20px y offset 20px blur size 10px shadow color rgba(0,0,0,0.5);

2 text-shadow: 4px 4px 0 #5C6BC0, 8px 8px 0 #7986CB, 12px 12px 0 #9FA8DA; multiple shadows can be defined (separated by commas)

3 text-shadow: 0 1px 1px #1A237E;

4 box-shadow: 0px 0px 30px #1A237E;  
box shadows work in the same way as text shadows

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# Summary

## Key Terms

absolute units	collapsing margins	element box
attribute selector	combinators	element selectors
author-created style sheets	contextual selector	em units
CSS		embedded style sheets
box model	CSS3 modules	
browser style sheets	declaration	external style sheets
cascade	declaration block	
class selector	descendant selector	

# Summary

## Key Terms

generic font	percentages	specificity
grouped selector	presentation	style rules
id selector	property:value pair	TRouBLE
inheritance	pseudo-class selector	universal element selector
inline styles	pseudo-element selector	user style sheets
internal styles		
location	relative units	vendor prefixes
margin	rem units	web font stack
padding	responsive design	x-height
	selector	

# Questions