

Introduction to CSS

Chapter 4

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What Is CSS?

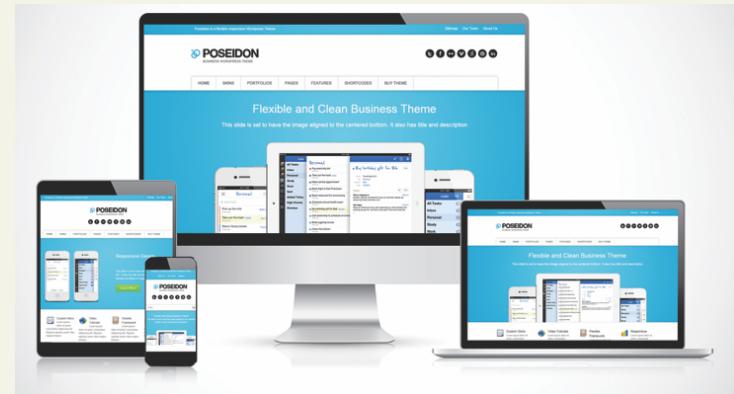
Cascading Style Sheets (CSS)

- 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.

What Is CSS?

Benefits of CSS

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



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

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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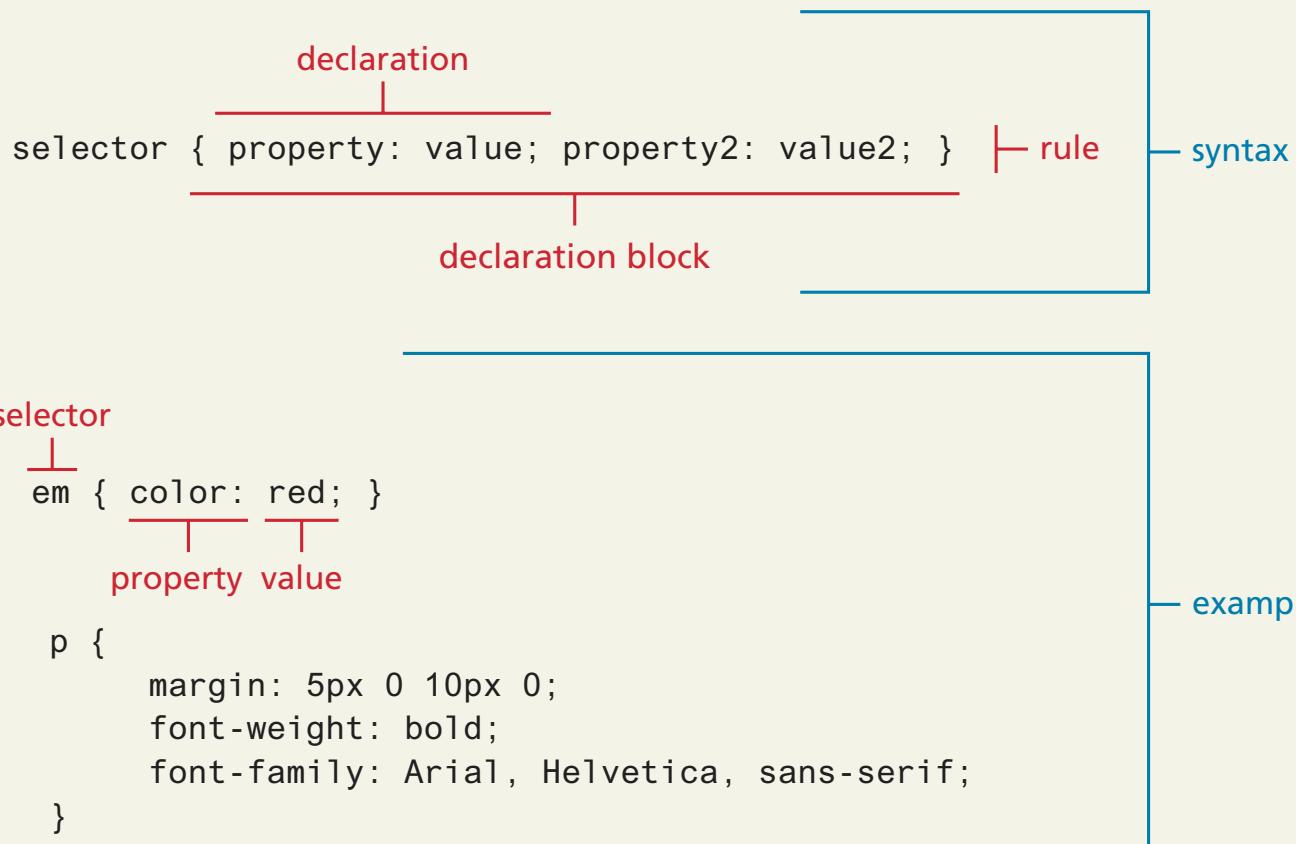
CSS Syntax

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 .

CSS Syntax

Overview



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

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*

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

- Relative
 - px
 - em
 - %
 - vw,vh
- Absolute
 - In
 - cm
 - Pt

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Location of Styles

Inline Styles

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

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>
    ...

```

Location of Styles

External Style Sheet

External style sheets are style rules placed within a external text file with the .css extension.

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

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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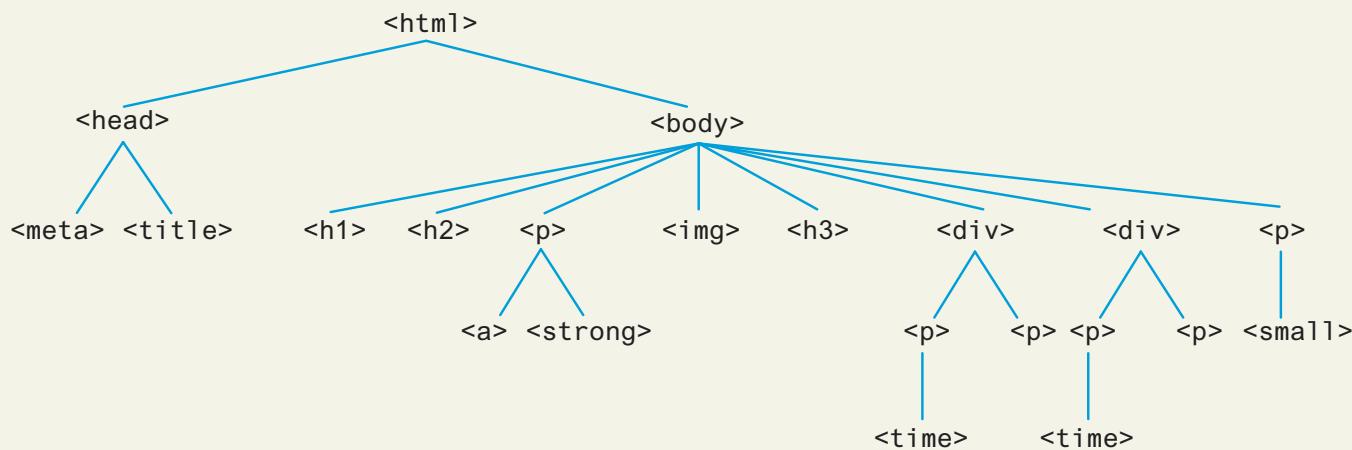
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Summary

Selectors

Remember the DOM tree



Selectors

Element Selectors

Element selectors select all instances of a given HTML element.

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

Selectors

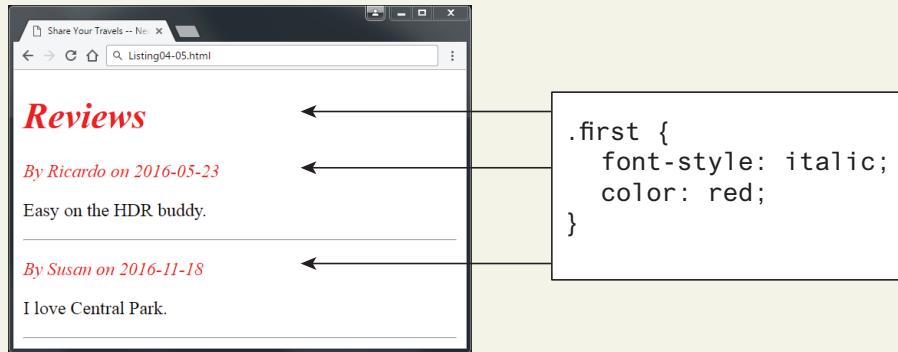
Class Selectors

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>
```



Selectors

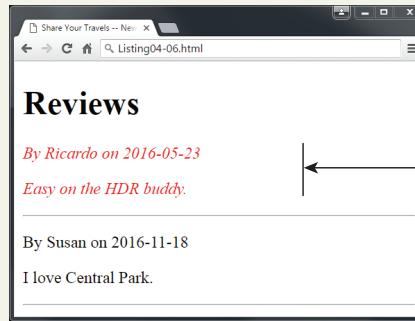
Id Selectors

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

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;
}
```

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] { ... }
```

Selectors

Attribute Selectors

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

```
[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 begins with a specified value.
[*=]	A specific attribute whose value contains a substring.
[\${=]}	A specific attribute whose value ends with a specified value.

Selectors

Pseudo-Element and Pseudo-Class Selectors

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.

Selectors

Pseudo-Element and Pseudo-Class Selectors

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

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>
```

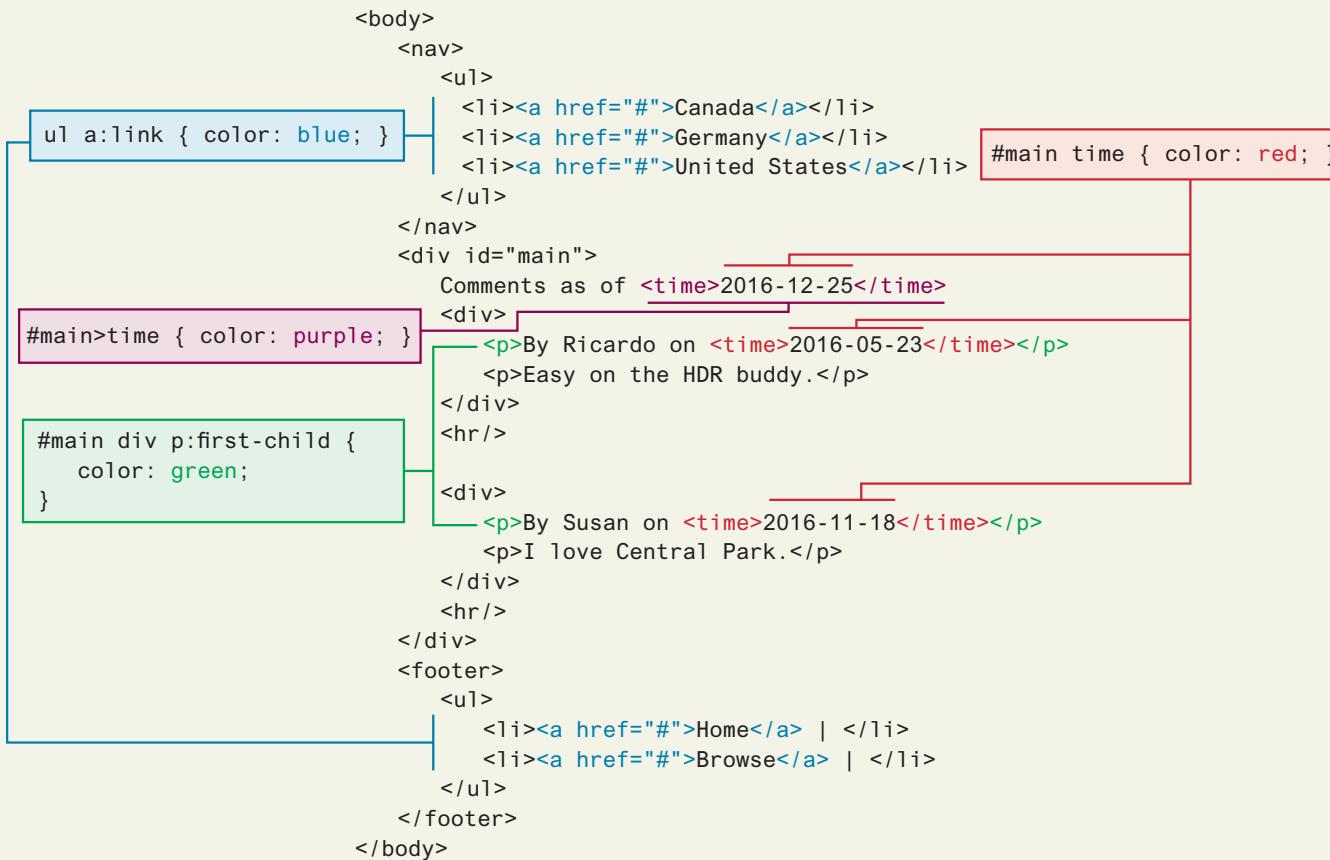
Selectors

Contextual Selectors

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

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

The Cascade: How Styles Interact

Inheritance

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

Are inheritable:

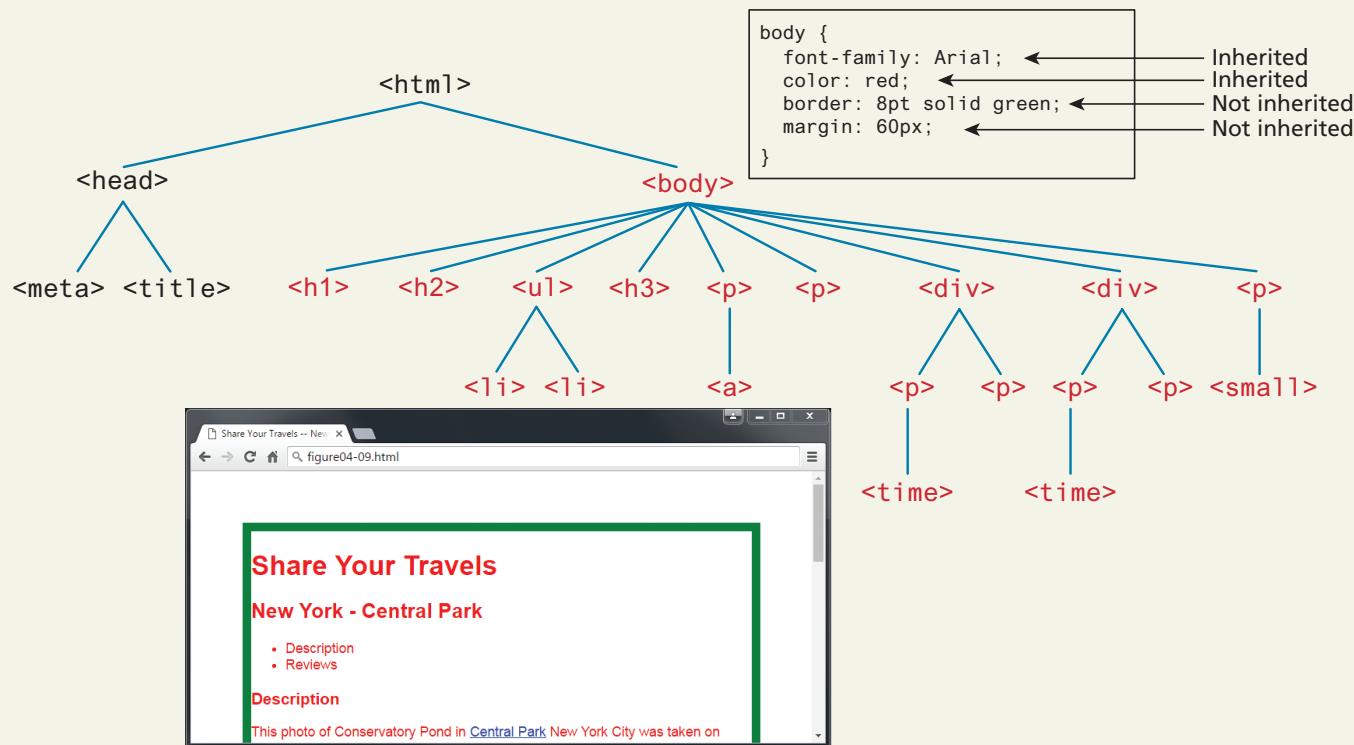
- Font,
- color,
- list, and
- text properties

Not inheritable:

- layout,
- sizing,
- border,
- background, and
- spacing properties

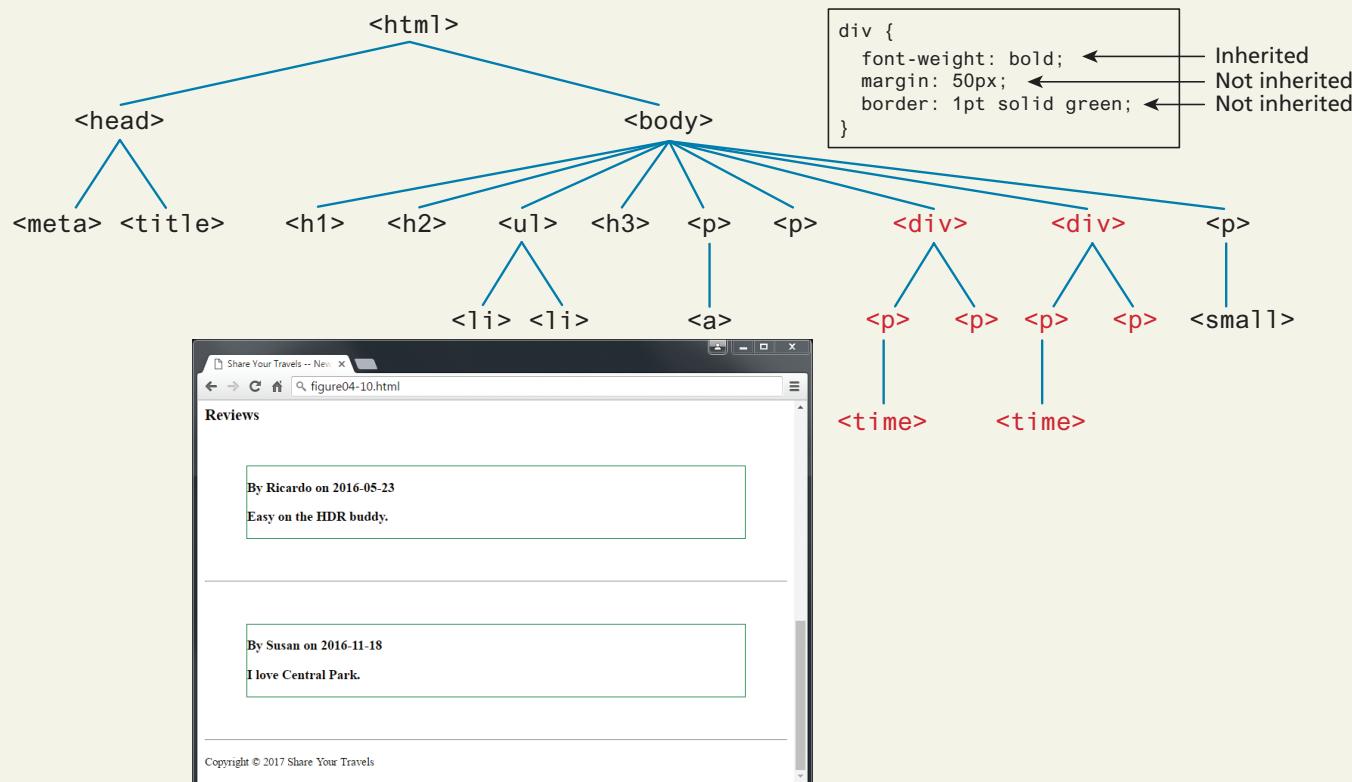
The Cascade: How Styles Interact

Inheritance



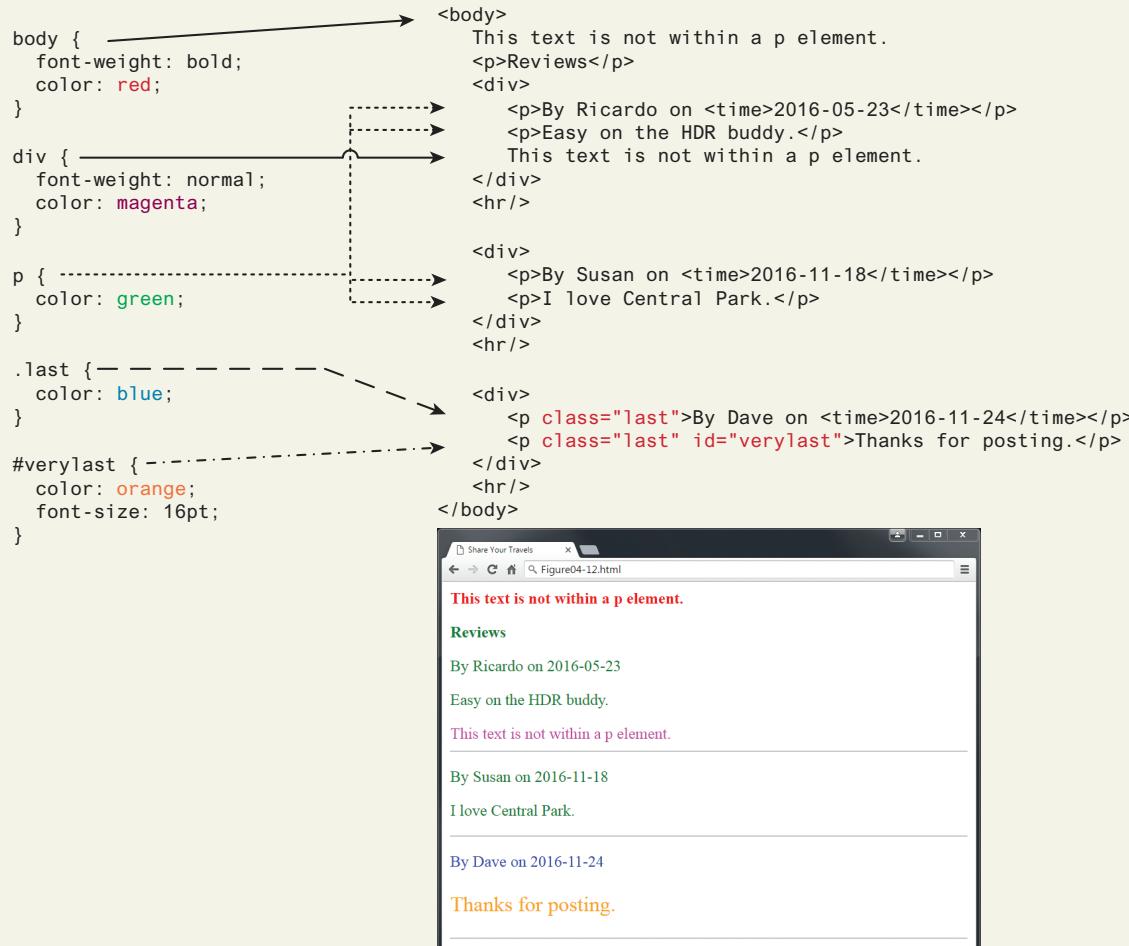
The Cascade: How Styles Interact

Inheritance



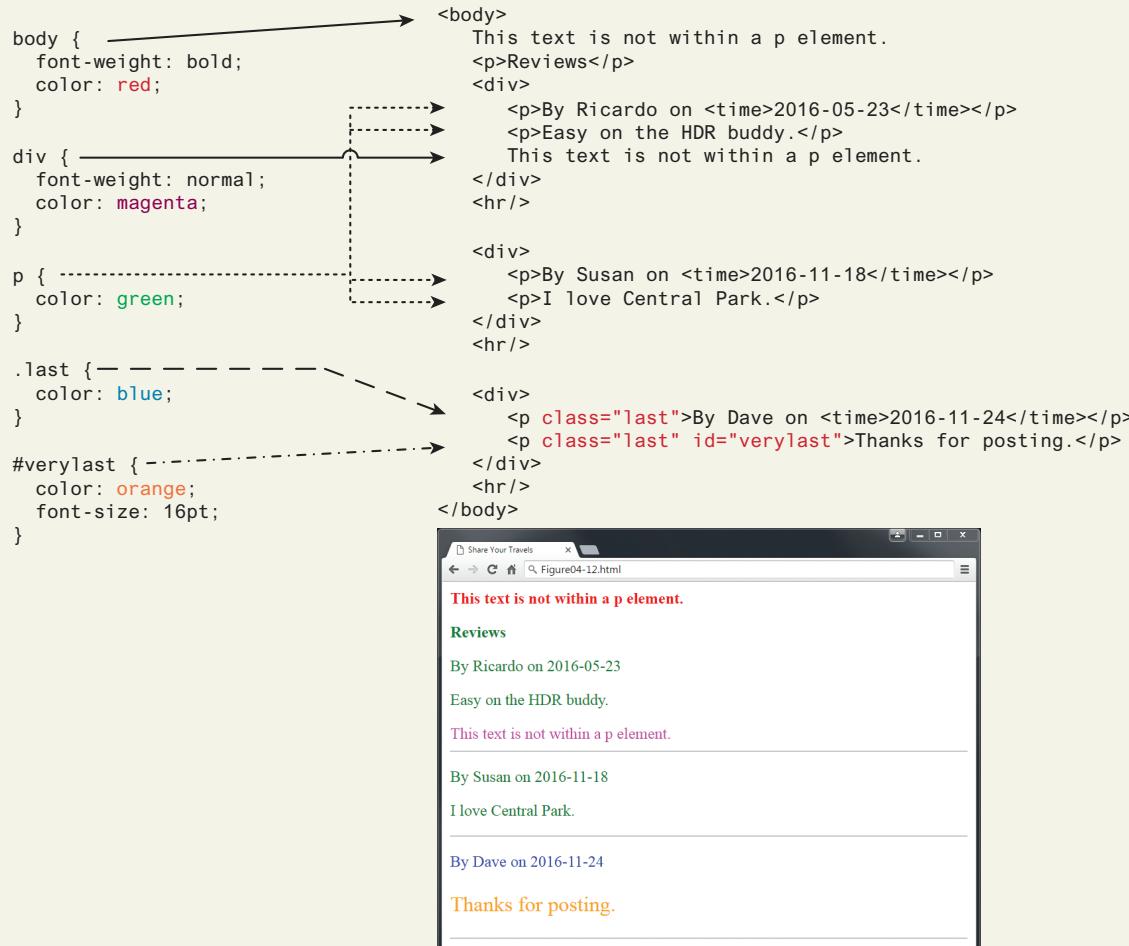
The Cascade: How Styles Interact

Specificity



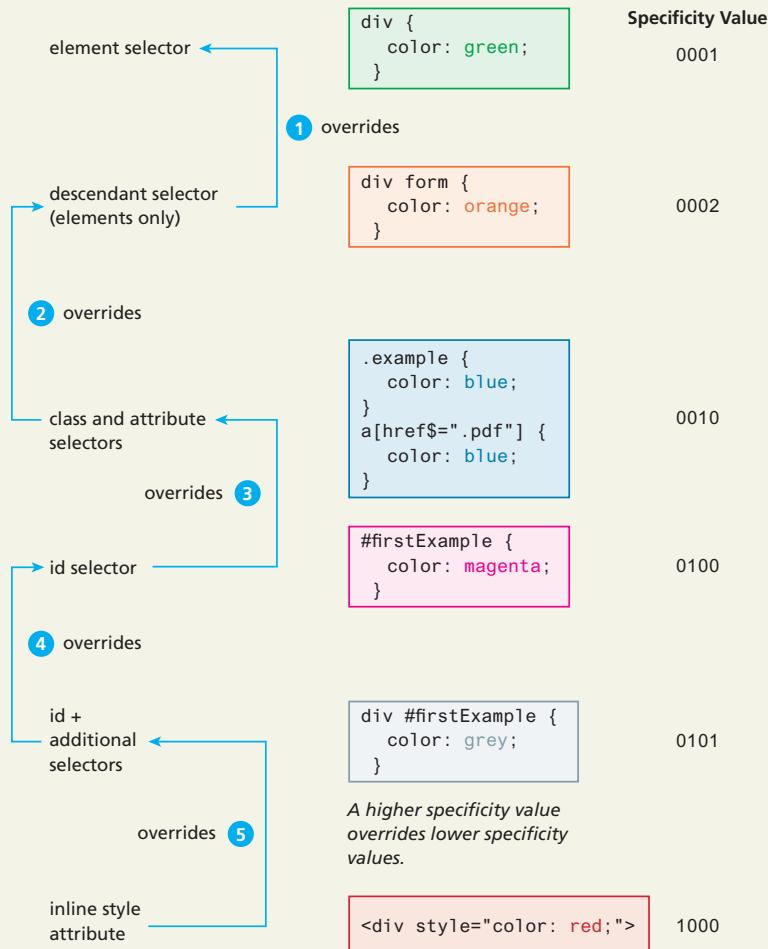
The Cascade: How Styles Interact

Specificity



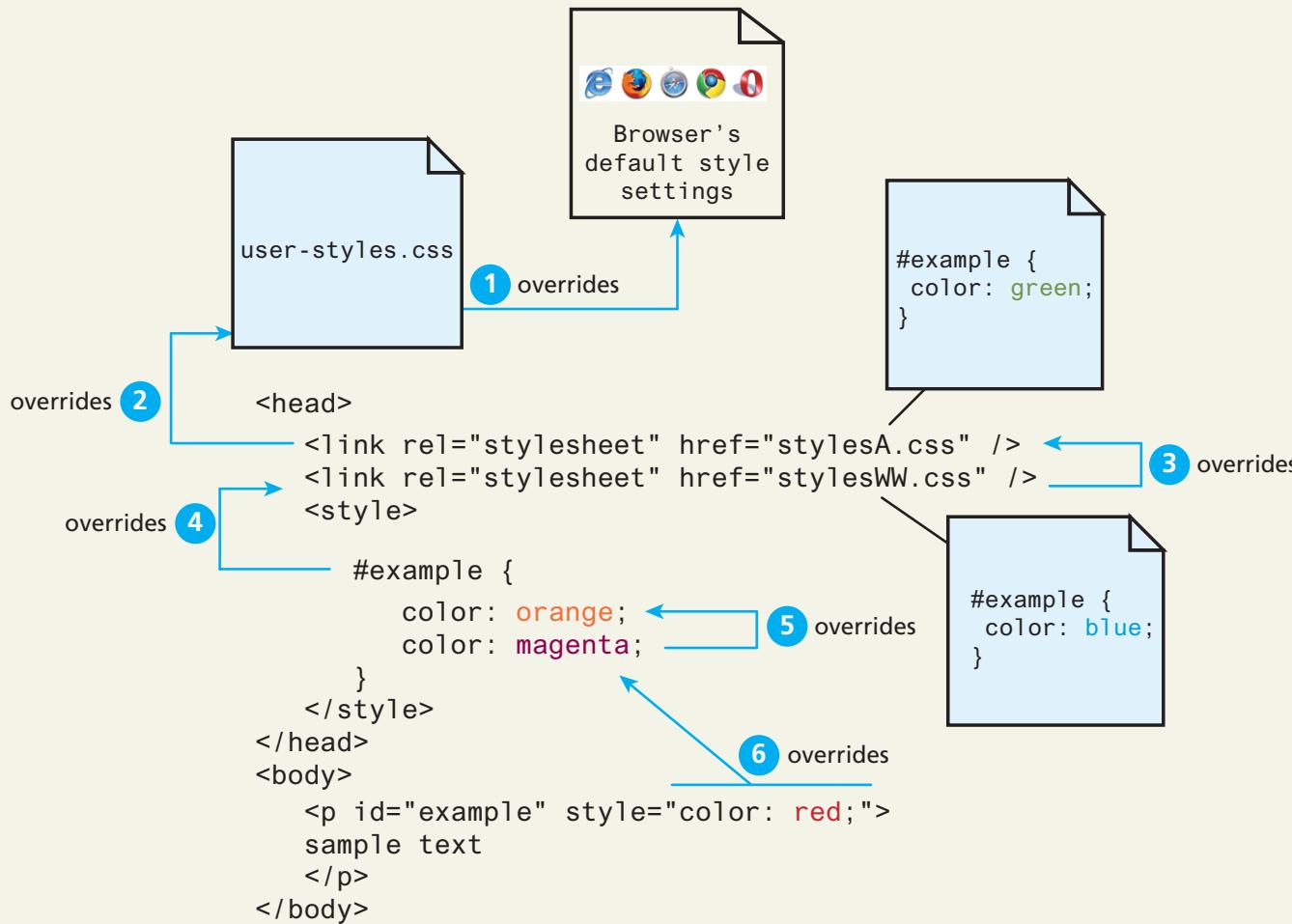
The Cascade: How Styles Interact

Specificity Algorithm



The Cascade: How Styles Interact

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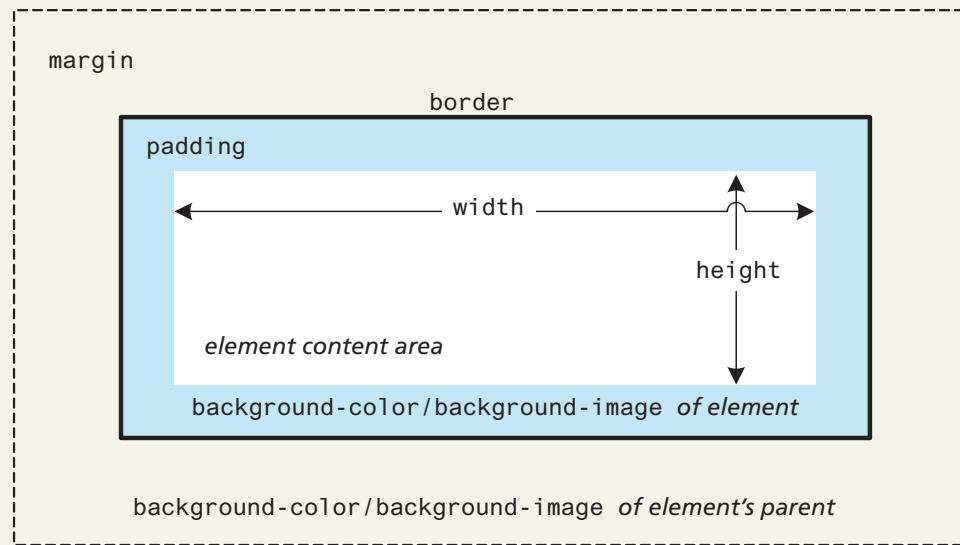
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The Box Model

Overview



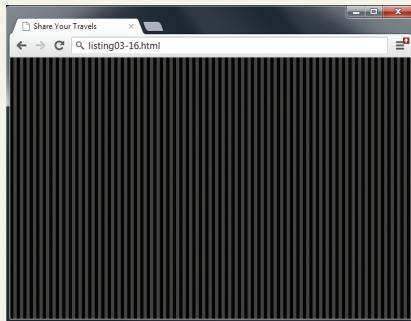
The Box Model

Background

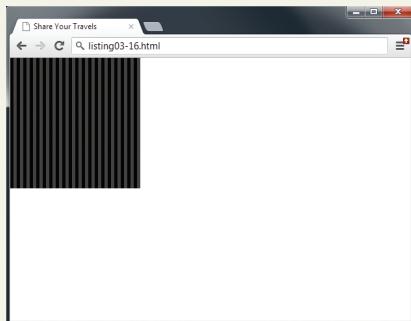
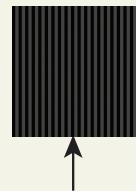
- Background
- Background-attachment
- Background-color
- Background-image
- Background-position
- Background-repeat
- Background-size

The Box Model

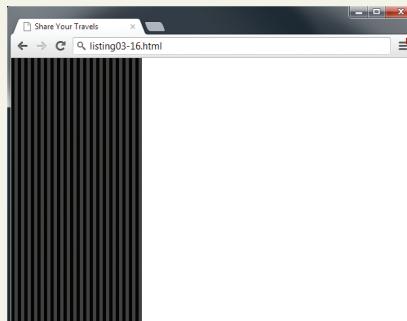
Background



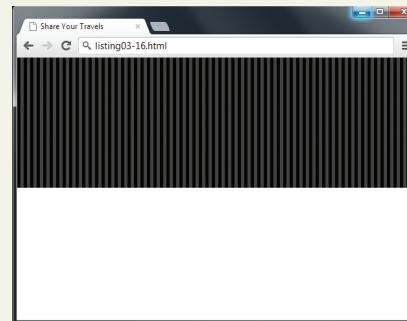
```
background-image: url(..../images/backgrounds/body-background-tile.gif);  
background-repeat: repeat;
```



```
background-repeat: no-repeat;
```



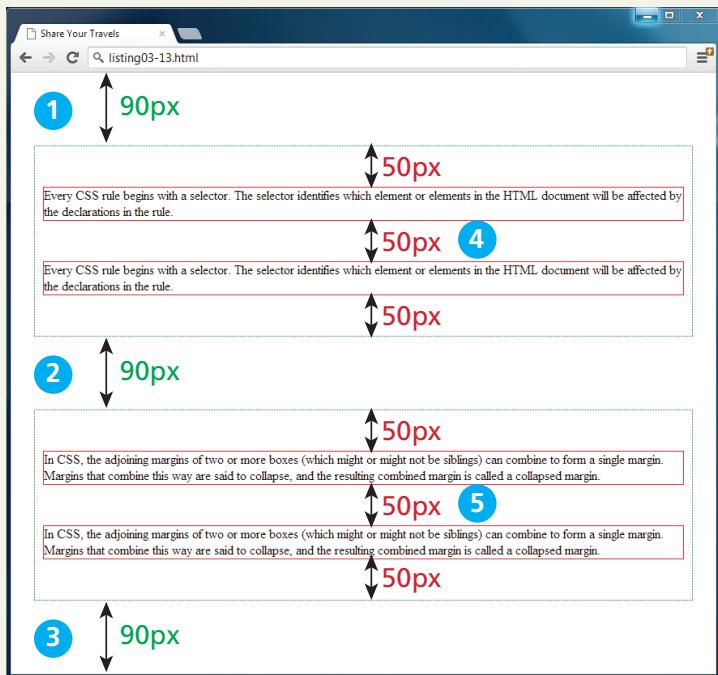
```
background-repeat: repeat-y;
```



```
background-repeat: repeat-x;
```

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;
}
```

The Box Model

CSS TRBL 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 */
```

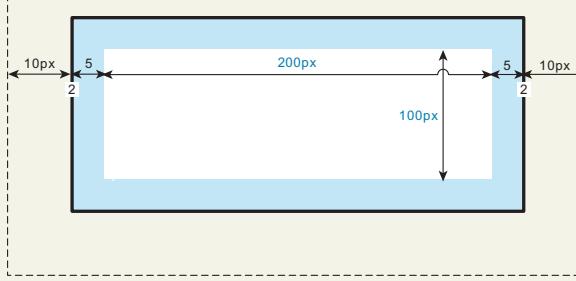


The Box Model

Box Dimensions

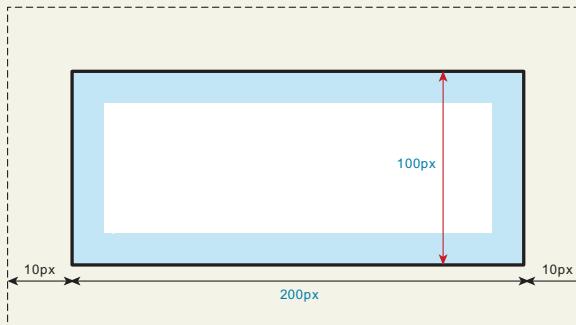
```
div {  
  box-sizing: content-box;  
  width: 200px;  
  height: 100px;  
  padding: 5px;  
  margin: 10px;  
  border: solid 2px black;  
}
```

True element width = $10 + 2 + 5 + 200 + 5 + 2 + 10 = 234$ px
True element height = $10 + 2 + 5 + 100 + 5 + 2 + 10 = 134$ px



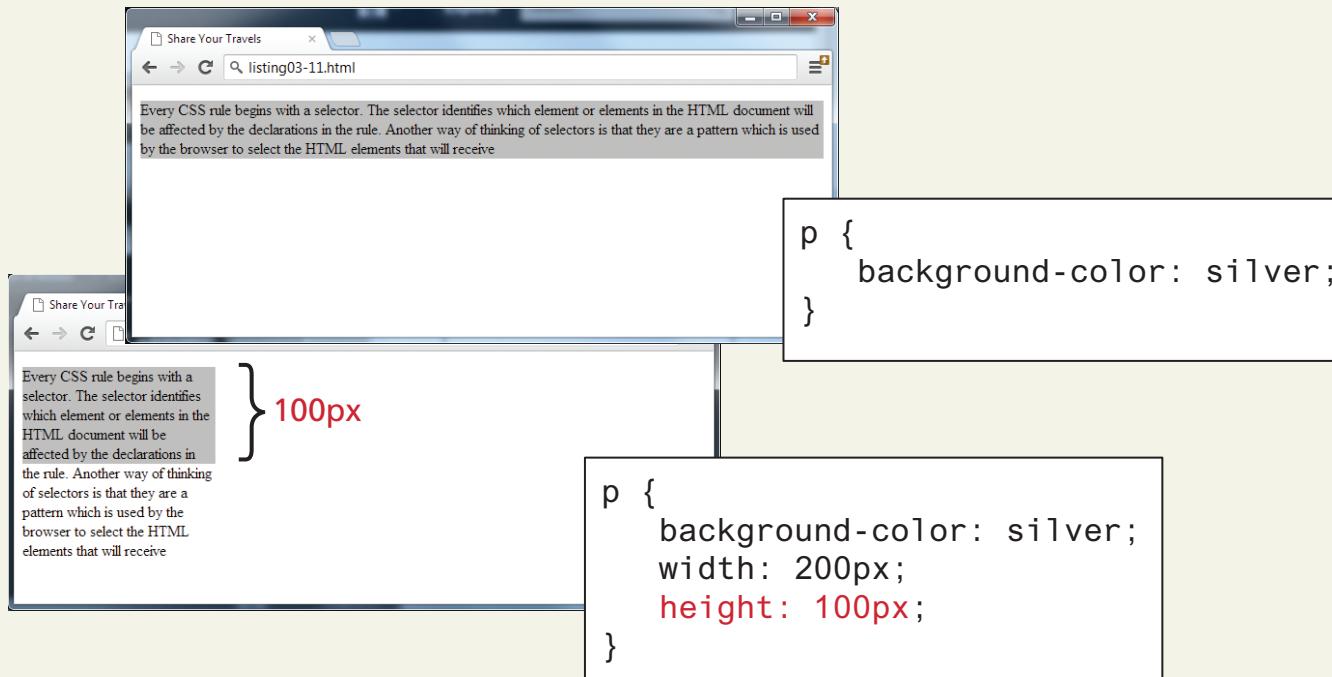
```
div {  
  ...  
  box-sizing: border-box;  
}
```

True element width = $10 + 200 + 10 = 220$ px
True element height = $10 + 100 + 10 = 120$ px



The Box Model

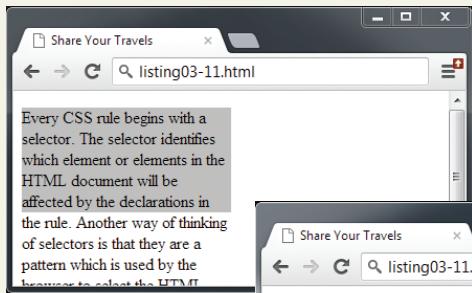
Limitations of Height Property



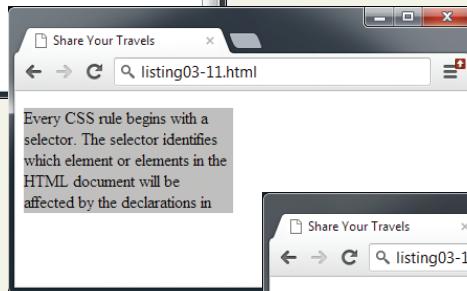
The Box Model

Overflow Property

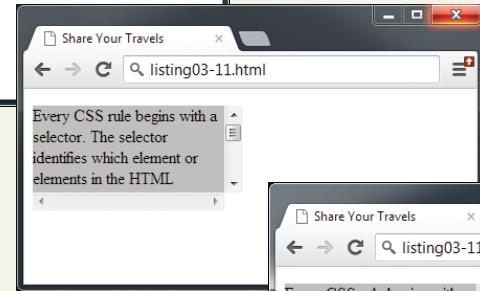
`overflow: visible;`



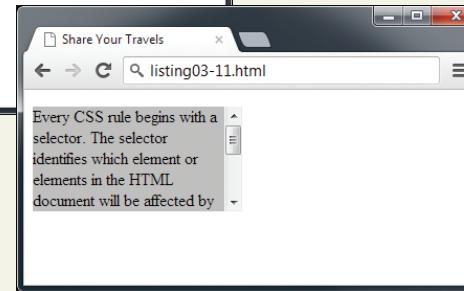
`overflow: hidden;`



`overflow: scroll;`



`overflow: auto;`

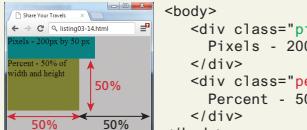


The Box Model

Box Sizing Using Percents

```
<style>
  html, body {
    margin:0;
    width:100%;
    height:100%;
    background: silver;
  }
  .pixels {
    width:200px;
    height:50px;
    background: teal;
  }
  .percent {
    width:50%;
    height:50%;
    background: olive;
  }
</style>
```

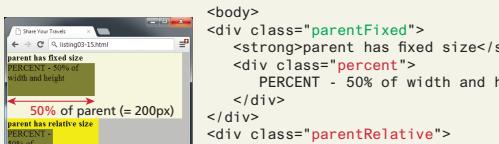
```
<body>
  <div class="pixels">
    Pixels - 200px by 50 px
  </div>
  <div class="percent">
    Percent - 50% of width and height
  </div>
</body>
```



```
<body>
  <div class="parentFixed">
    <strong>parent has fixed size</strong>
    <div class="percent">
      PERCENT - 50% of width and height
    </div>
  </div>
  <div class="parentRelative">
    <strong>parent has relative size</strong>
    <div class="percent">
      PERCENT - 50% of parent (= 200px)
      of width and height
    </div>
  </div>
</body>
```



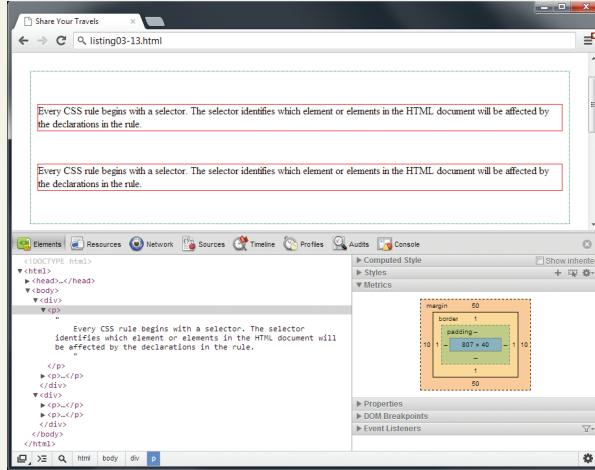
```
<body>
  <div class="parentFixed">
    <strong>parent has fixed size</strong>
    <div class="percent">
      PERCENT - 50% of width and height
    </div>
  </div>
  <div class="parentRelative">
    <strong>parent has relative size</strong>
    <div class="percent">
      PERCENT - 50% of parent (= 200px)
      of width and height
    </div>
  </div>
</body>
```



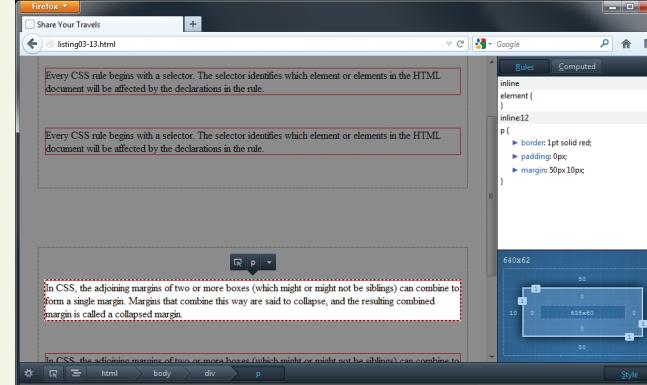
The Box Model

Inspecting CSS using modern browsers

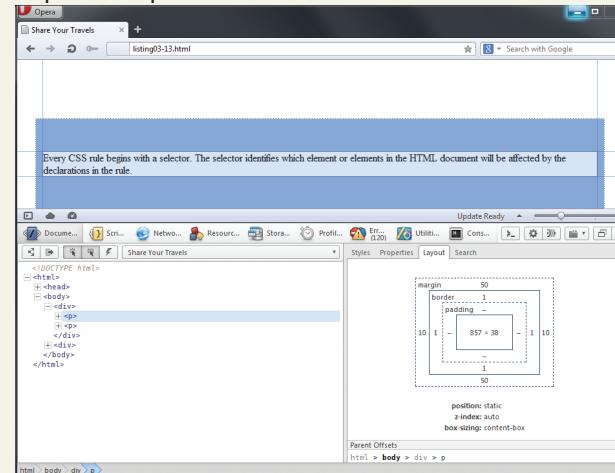
Chrome – Inspect Element



Firefox – Inspect



Opera – Inspect Element



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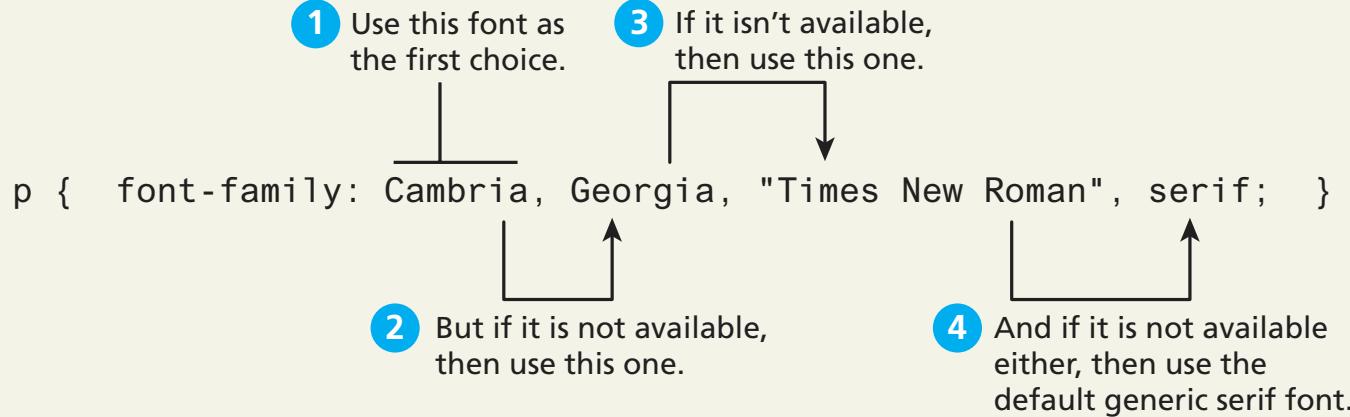
CSS Text Styling

Font Family

Property	Description
font	A combined shorthand property that allows you to set the family, style, size, variant, and weight in one property. style weight variant size font-family
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.

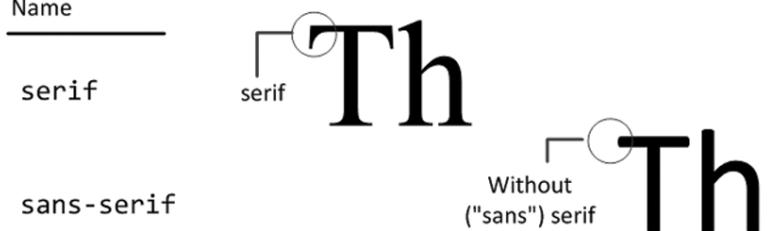
CSS Text Styling

Specifying the Font Family



CSS Text Styling

Different Font Families

Generic Font-Family Name	
This	serif
This	sans-serif
This	monospace
This	cursive
This	fantasy
	
<p>Without ("sans") serif</p> <p>In a monospace font, each letter has the same width.</p> <p>In a regular, proportionally-spaced font, each letter has a variable width.</p>	

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

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

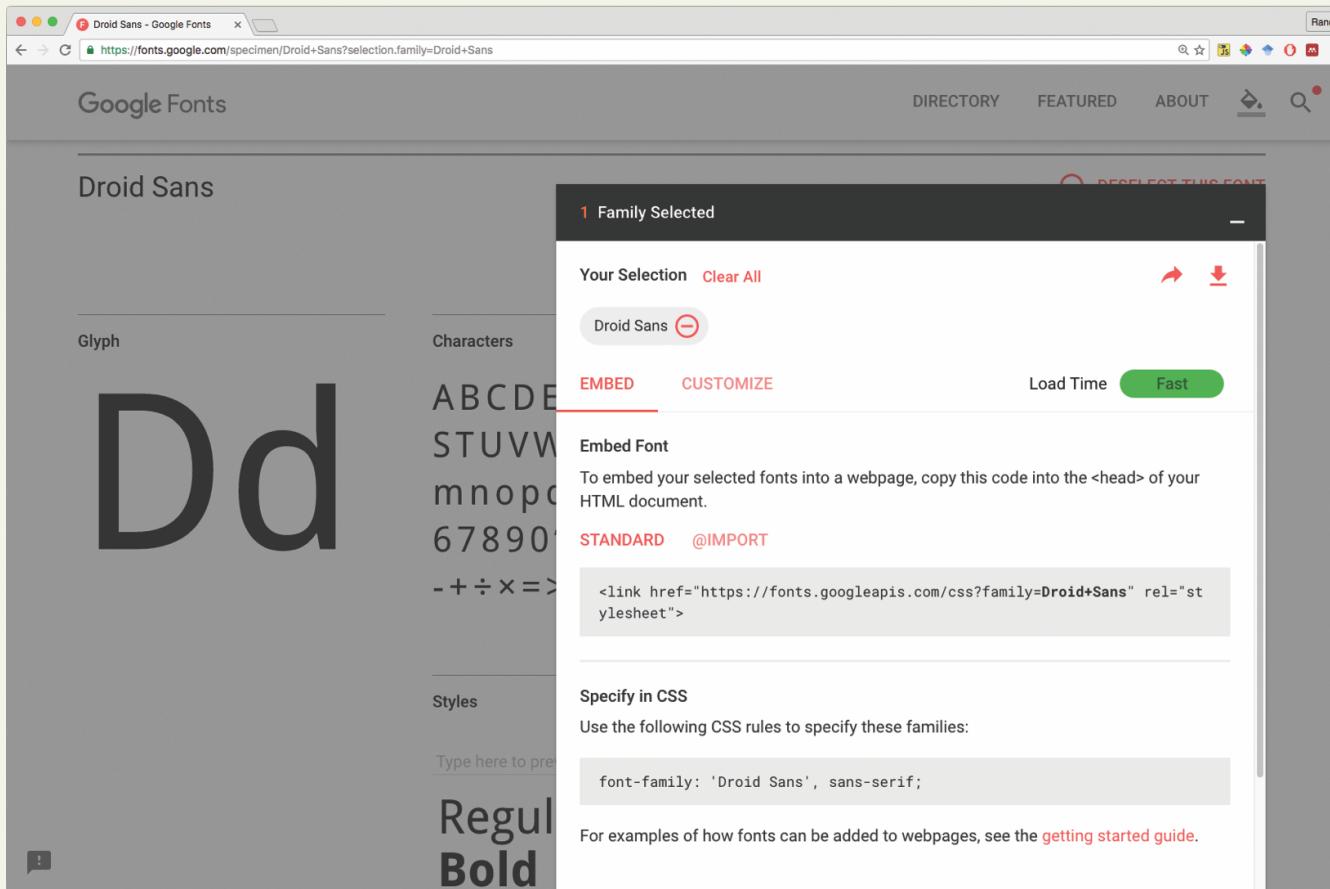
/ using 16px scale */*

```
body { font-size: 100%; }  
p { font-size: 1em; }      /* 1.0 x 16 = 16 */  
h3 { font-size: 1.125em; } /* 1.25 x 16 = 18 */  
h2 { font-size: 1.5em; }   /* 1.5 x 16 = 24 */  
h1 { font-size: 2em; }    /* 2 x 16 = 32 */
```

```
<body>  
  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>  
</body>
```

CSS Text Styling

Font Face



CSS Text Styling

Paragraph Properties

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
- ...

CSS Text Styling

Just look at text-shadow

The diagram illustrates three text shadows and one box shadow. The first shadow is a red text shadow with a blue outline, labeled 'First Shadow'. The second shadow is a blue text shadow with a purple outline, labeled 'Second Shadow'. The third shadow is a pink text shadow with a light blue outline, labeled 'Third Shadow'. A fourth number '4' points to a box shadow with a light blue outline and a white center, labeled 'box-shadow: 0px 0px 30px #1A237E;'. A red bracket on the right side of the diagram groups the text shadows and includes the note: 'You will likely want the shadow color to be partly transparent'.

1 First Shadow
2 Second Shadow
3 Third Shadow
4 box-shadow: 0px 0px 30px #1A237E;

Y offset
x offset blur size shadow color

1 text-shadow: 20px 20px 10px 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

Chapter 4

1

What Is CSS?

2

CSS Syntax

3

Location of
Styles

4

Selectors

5

The Cascade: How
Styles Interact

6

The Box Model

7

CSS Text Styling

8

Summary

Summary

Key Terms

absolute units	collapsing margins	element box
attribute selector	combinators	element selectors
author-created style	contextual selector	em units
sheets	CSS	embedded style sheets
box model	CSS3 modules	external style sheets
browser style	sheets	declaration
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	relative units	vendor prefixes
location	rem units	web font stack
margin	responsive design	x-height
padding	selector	

Questions
