

Lecture 3  
Cascading Style Sheets

Client/Server Programming  
for Internet Applications

TCSS460  
Summer 2020

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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.

**benefits of CSS**

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

**limitations**

- different browser implementation differences
- difficulty of dealing with floating elements and relative positions

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## CSS Syntax

- 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**)
    - each declaration must contain a property

**selector**   **declaration block**   **rule**   **syntax**

```
selector { property: value; property2: value2; }
```

**selector**   **property value**   **example**

```
p { margin: 5px 0 10px 0; font-weight: bold; font-family: Arial, Helvetica, sans-serif; }
```

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## CSS Syntax

### Properties

unit of any given value is dependent upon the property.

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 (cont'd)

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

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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## Types of Style Sheets

### 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

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## Types of Style Sheets (cont'd)

### Embedded Style Sheet

- internal style** sheets (also called **embedded 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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## Types of Style Sheets (cont'd)

### External Style Sheet

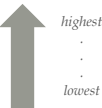
- external style** sheets are style rules placed within a external text file with the **.css** extension

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

```

- Style sheets by priority

1. inline has the highest priority
2. internal style sheet
3. external style sheet
4. browser style sheet

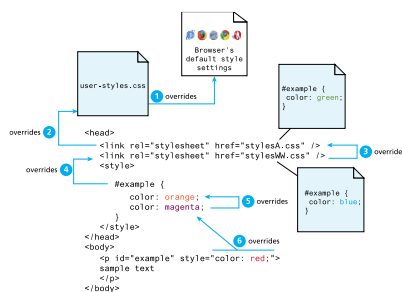


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## The Cascade: How Styles Interact

### Location



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## Selectors

### Element Selectors & Class Selector

- **element selectors** select all instances of a given HTML element

```
selector
↓
p { color: red; }
  ↑
  property value

p {
  margin: 5px 0 10px 0;
  font-weight: bold;
  font-family: Arial, Helvetica, sans-serif;
}
```

- 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

see an example of a class selector on the next slide →

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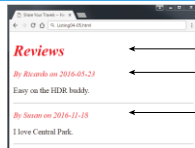
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## Selectors

### Class Selector

```
<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>
<div>
  <p class="first">By Susan on <time>2016-11-18</time></p>
  <p>I love Central Park.</p>
</div>
</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

```
<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>2020-05-23</time></p>
  <p>Easy on the HDR buddy.</p>
</div>
<div>
  <p class="first">By Susan on <time>2020-06-18</time></p>
  <p>I love Central Park.</p>
</div>
</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

```
<html>
<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="country.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>
</html>
```

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## Selectors

### Attribute Selectors (cont'd)

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.

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## Background

### Background

- background** (shorthand notation)

- background-attachment
- background-color
- background-image
- background-position
- background-repeat
- background-size



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## CSS Text Styling

### Font Family

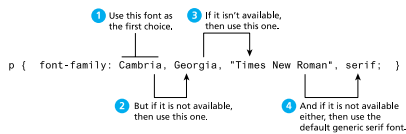
Property	Description
font	A combined shorthand property that allows you to set the family, style, size, variant, and weight in one property. <b>style weight variant size font-family</b>
font-family	Specifies the typeface/font to use. More than one can be specified.
font-size	The size of the font in one 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

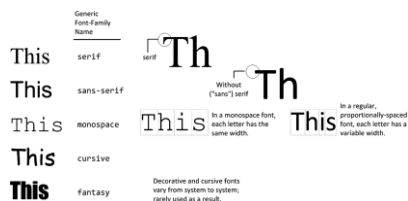


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## CSS Text Styling

### Different Font Families



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## CSS Text Styling

### Font Sizes

Browser's default text size is usually 16 pixels

100% or 1em is 16 pixels

125% or 1.125em is 18 pixels

150% or 1.5em is 24 pixels

200% or 2em is 32 pixels

```
/* using 16px scale */
body { font-size: 100%; } /* 1.0 x 16 = 16 */
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 */
```

Browser's default text size is usually 16 pixels

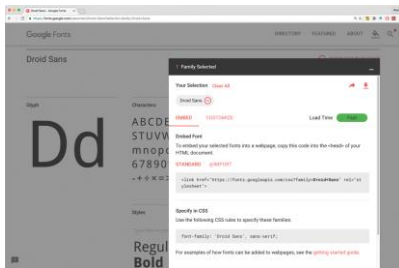
```
body { font-size: 100%; } /* 100% or 1em is 16 pixels */
h3 { font-size: 1.125em; } /* 1.125em is 18 pixels */
h2 { font-size: 1.5em; } /* 1.5em is 24 pixels */
h1 { font-size: 2em; } /* 2em is 32 pixels */
```

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## CSS Text Styling

### Font Face



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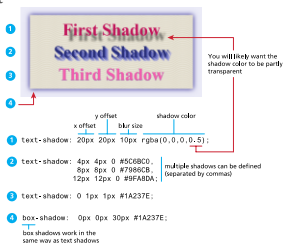
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## CSS Text Styling

### Paragraph Properties

- 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 Image Sprites

### CSS Sprites

- a styling technique that aims to reduce the number of HTTP requests made for image resources
- *how?*
  - combine all images into a single file
- what is a **sprite**?
  - it is a 2-dimensional image which is made from combining multiple (usually small) images into a larger image
  - you can retrieve images through defined x and y coordinates
    - use **background-position** property in CSS to define exact position of an image

<https://cssspritesetool.com>

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## CSS Front-End Frameworks

- **Bootstrap** is an open-source CSS framework
  - responsive
  - mobile-first web development
- contains CSS (and JavaScript) design templates
  - typography,
  - forms,
  - buttons,
  - navigation
  - and much more
- other frameworks
  - [Foundation](#), [Bulma](#), [Semantic UI](#), [Materialize](#), [Skeleton](#), [Milligram](#)



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## CSS Reference

<https://developer.mozilla.org/en-US/docs/Web/CSS/Reference>

### CSS reference

Web technologies for developers > CSS: Cascading Style Sheets > CSS reference

English

#### On this Page

Basic rule syntax  
Pseudo-class  
Pseudo-element  
Concepts  
DOM CSS / CSSOM  
See also

#### Related Topics

CSS  
CSS Reference

Use this **CSS reference** to browse an alphabetical index of all of the standard CSS properties, pseudo-classes, pseudo-elements, data types, and at-rules. You can also browse key CSS concepts and a list of selectors organized by type. Also included is a brief DOM CSS / CSSOM reference.

### Basic rule syntax

#### Style rule syntax

```
style-selector {
  property: value;
}
```

where

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## Goals of This Lecture

- You should be comfortable with the basic CSS elements
- You should be able to know the difference between the different types of stylesheets that exist (inline, internal and external)
- You should be comfortable with understanding the priorities associated with CSS types
- You should be able to know the types of selectors and when to use them
- You should be able to know the importance of CSS front-end frameworks (e.g. Bootstrap)
- You should know where you can find additional information on CSS on the web
- You should be able to know how to create CSS stylesheets

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## Module Topics



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