

Web Programming Summer 2019

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Who am I?



COLORADO SCHOOL OF MINES.
EARTH • ENERGY • ENVIRONMENT



Chaffee Green
*Sustainability
Program of*



GARNA
*greater arkansas river
nature association*
GARNA.org/Chaffee-Green





Who Are You?

- ▶ Name and School
 - ▶ What CS-related course(s) you have taught
 - ▶ What CS-related course(s) you would like to teach
- 

Getting Ready

- ▶ We have a lot to cover!
- ▶ Course structure
 - ▶ Brief lectures
 - ▶ Exercises
 - ▶ Often done with a partner
 - ▶ It's likely you won't finish every exercise, but solutions will be provided so you can review later at your own pace
 - ▶ Philosophy: need to accommodate different experience levels. Workshop will provide lots of examples.
 - ▶ Pedagogy sidebars.
 - ▶ Limited time for discussion



Right now:

Download the course zip

Get to know your neighbors





Goals for Today

- ▶ Review HTML
 - ▶ Learn basic CSS
 - ▶ Learn JavaScript events and how to connect HTML and JS
-
- ▶ Pedagogy discussions
 - ▶ Be sure everyone is comfortable editing files/executing in browser



Pre-Work

Intro to HTML

Quick Review

- ▶ HTML uses tags to identify sections
- ▶ Our example page has:
 - ▶ Headers (h1 and h2)
 - ▶ Text (p)
 - ▶ Picture (img)
 - ▶ Link (href)
 - ▶ Lists (ul and ol)
 - ▶ Text with set spacing (pre)
 - ▶ Line to separate sections (hr)
 - ▶ Bold (strong) and italic (em) text
 - ▶ Button (with no action yet)

Pedagogy sidebar: HTML/web pages may be engaging for students because they can immediately see the result (and have probably used web pages). Need an engaging context – google, CSTA topic. Pet Adoption has been popular with college students.

<https://learning.mozilla.org/en-US/activities/make-your-first-webpage/>
<https://code.org/educate/weblab>



INTRO TO CSS

Web Programming Workshop

Summer 2019



Get Stylin'

- ▶ CSS can be used to:
 - Add color to your website
 - Background
 - Text
 - Modify the font (text appearance)
 - Modify spacing
 - Add a border

And also (we won't cover)

- Control layout
- Make your page responsive



CSS can have a dramatic impact

- ▶ https://www.w3schools.com/css/css_intro.asp
- ▶ <http://www.mezzoblue.com/zengarden/alldesigns/>

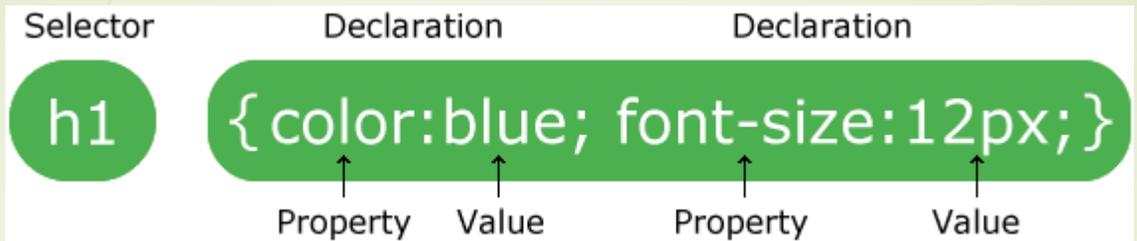
Syntax

► What is **SYNTAX**??

- Rules for how to “talk” to computer so it understands
- English: <subject><verb>.
 - She ran.
 - NOT Ran she.
 - NOT She ran He jumped They laughed
 - BUT we would still understand the other sentences. What about computers?
- Source of great irritation for novice programmers



CSS Syntax



```
h1 {  
  color: blue;  
  font-size: 12px;  
}
```

1. First, tell the computer what element(s) you want to style
2. Each "style" has a **PROPERTY** and a **VALUE**.
3. A style may have multiple properties, so put them all within parentheses (even if only 1)
4. Tell the computer each *property* and what *value* you want for that property
5. Each property/value pair must end with ;

What is a *font*? A particular size, weight and typeface (**Serif**, **sans serif**, **monospace**)

Where do I specify all this styling?

1. Inline
 - Examples shown in HTML tutorial
 - Use very sparingly
2. Internal style sheet
 - Places styles within html file
 - Easy to edit (only one file needed)
 - OK if entire site is one page
3. External style sheet
 - Allows styles to be consistent across all pages in website
 - Can have multiple style sheets
 - .css extension
 - Generally considered best practice

Pedagogy sidebar: bad habits are hard to break. Inline may be simplest, but has real drawbacks. External is best for professionals, but may be confusing at first for students to create from scratch. Choose the middle path – inline is easy to do, also to transition to better practice.

Styling our "About" page

<Day1/CyndiExamplePageWStyle.html>

```
body {  
  background-color: Bisque;  
}
```

```
p {  
  font-family: "Times New Roman", Times, serif;  
  font-size: 0.75em;  
  font-style: italic;  
}
```

Will you memorize all these options? NO!!

Look up as needed. Many text editors have auto complete.

Font size

CSS has several units for expressing size (length)

- **PIXELS** are relative to viewing device. For low dots per inch (dpi), 1 pixel (px) is one dot. Used extensively in early days of the web.
- For high resolution, 1 px may be multiple device pixels.
- Pixel is an absolute length (so doesn't scale well)
- **EM** is *relative* to current font size. So 2em is twice the size of current font.
- User can adjust their browser font size, all sizes will scale.
- EM is now considered better practice.

More Stylin'

```
h1 {  
  color: #0080FF;  
  text-align: center;  
  background-color: rgb(240, 255, 255);  
}
```

```
h2 {  
  border-style: dashed;  
  border-width: 2px 10px 4px 20px;  
  border-color: blue;  
  
  padding: 10px;  
  padding-left: 40px;  
}
```

You read about colors in pre-work

https://www.w3schools.com/html/html_colors.asp

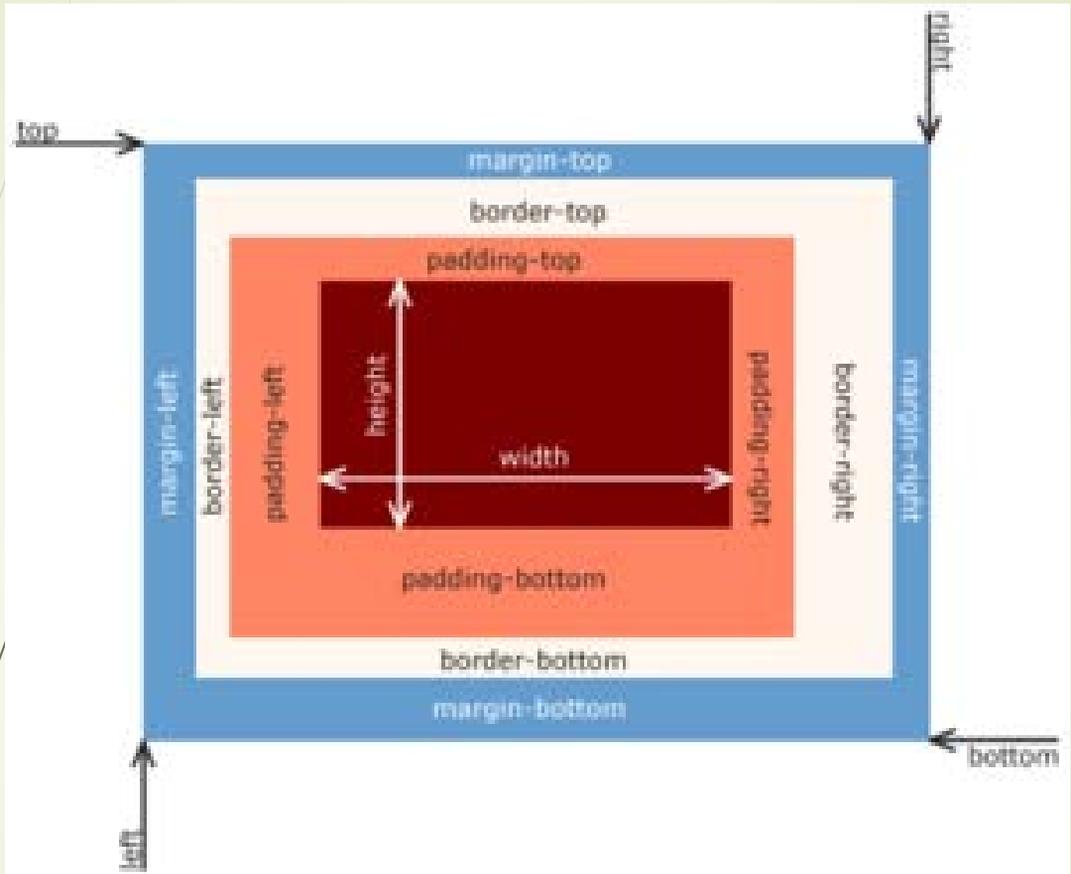
Text alignment is done with CSS options

https://www.w3schools.com/css/css_text.asp

Border and padding on next slide

Borders and Padding

Box Model



Borders can be added to any element

https://www.w3schools.com/css/css_border.asp

Margin controls spacing between elements

Padding controls spacing within border

https://www.w3schools.com/css/css_padding.asp

Lists and Links

```
ol {
  font-weight: bold;
  font-variant: small-caps;
}
a:link {
  color: red;
}
/* visited link */
a:visited {
  color: green;
}
/* mouse over link */
a:hover {
  color: hotpink;
}
/* selected link */
a:active {
  color: blue;
}
```

Your Turn

- ▶ Copy your pre-work into the same folder you extracted (your file and webpgm.css must be in same folder)
- ▶ Add this line to your HTML:

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

- ▶ Play with the styles
 - CSS comments include links to w3schools pages that list options
 - No one memorizes all these options – the goal is to have an idea what's possible
 - First modify existing values
 - Then add properties
 - Try to style the unordered list
 - Clearly our result will not be pretty
 - Many books resources dedicated to good web design (outside our scope)

You may work alone or with a partner.



Pedagogy

- ▶ Some students will naturally want to explore features
- ▶ Other students need a reason

In small groups, discuss how you would structure this intro to HTML/CSS for *your* students



So why is this called “Cascading”

- All three ways of specifying style can be used within one web page
- The styles “cascade” into one effective style sheet, based on this process:
 1. Browser defaults applied if no style specified
 2. External and internal styles applied next (in the order specified in the <head> section)
 3. Inline overrides all other styles

We are limiting to one stylesheet, so no worries about cascading.



What's the browser doing???

- ▶ Try right-click, Inspect element
- ▶ Notice that you can change things (but not saved unless Ctrl-S)
- ▶ Web Development tools are your friend. Spend some time now exploring.
- ▶ Most (all) browsers have tools, but interface will differ. Be sure to practice with the browser you have at school.



Time for Lunch!

Relax and enjoy....



Back from lunch

- ▶ Continue working on your file
- 

More Advanced CSS

Apply styles to only *some* of the items

- ▶ Class – applies to multiple, similar items
- ▶ Id – applies to one unique item

Apply styles to whole or part

- ▶ Block level element. Begins a new line, extends full width. Most elements are block level (e.g., paragraphs, page divisions)
- ▶ Inline element. Width is defined by tags.

block



Example inline + class

CyndiExamplePageCSSAdv.html

```
<h1>Welcome to Cyndi's
```

```
<span class="myHighlight">ugly</span>  
page</h1>
```

```
.myHighlight {  
  color: purple;  
  font-style: italic;  
  font-weight: bold;  
}
```

How would you describe the CSS syntax?

What other elements on this page has the same styling?

Apply class to h2, li and another span

```
<h2 class="myHighlight">My Favorites</h2>
```

```
<li class="myHighlight">Hiking</li>
```

```
<li>
```

```
  <span class="myHighlight">Skiing</span>
```

```
</li>
```

Note: CSS selectors can be even more specific, but that's beyond our scope.

id = unique element

```
<p id="firstIntro">I live in Buena Vista,  
CO and I'm crazy about cats. </p>
```

```
#firstIntro {  
  background-color: cyan;  
}
```

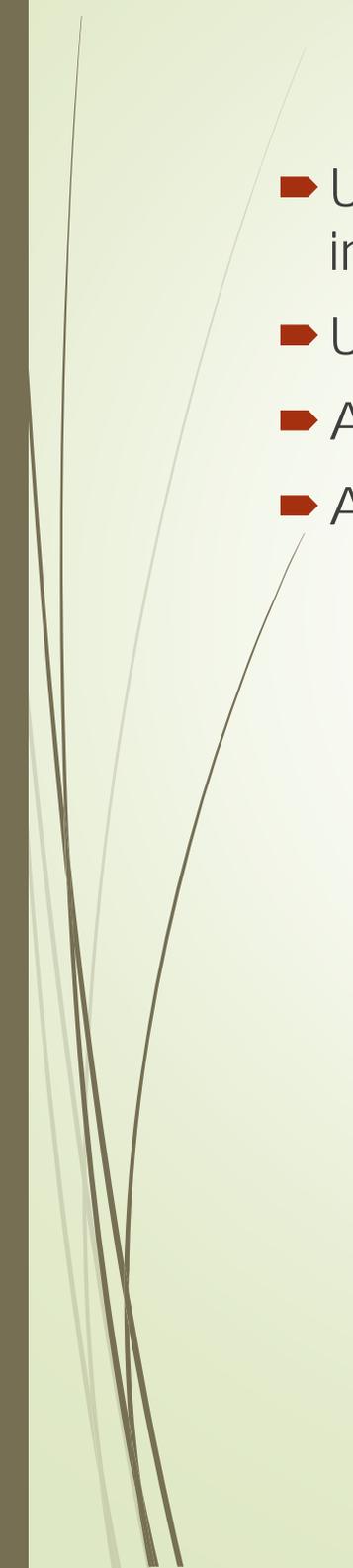
How would you describe this CSS syntax?

Are there more on the page?

Pedagogy sidebar: ids are often used with buttons, form fields, etc. id and class may or may not be of interest for HS class. Better to introduce if/when useful for an assignment.



Your Turn Again

- Update your HTML to use `.myHighlight` in several places
 - Update your HTML to have a `firstIntro`
 - Add another class
 - Add another id
- 

Pedagogy discussion

Example rubric from my course at CSM:

Part I is worth 16 points. You must include at least the following:

- ▶ (1) Correct html structure including doctype
- ▶ (1) Include a title for your document
- ▶ (2) At least two levels of headers
- ▶ (1) At least one paragraph (probably more)
- ▶ (1) A list (ordered or unordered)
- ▶ (1) At least one code snippet
- ▶ (1) At least one hyperlink to an external site
- ▶ (1) At least one html link to an anchor within the same document
- ▶ (1) A mailto
- ▶ (1) At least one line break or horizontal rule
- ▶ (1) At least one abbreviation
- ▶ (1) At least one text format other than `` or `<i>`
- ▶ (1) Include an html comment
- ▶ (1) Include at least one meta tag
- ▶ (1) At least one special entity (e.g., copyright symbol)

**This level of detail takes awhile to grade.
What works at the HS level?**