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This slide deck consists of slides used in 3 lecture videos in Week 4. Below is a list of shortcut hyperlinks for you to jump into specific sections.

- (page 2) [Week 4: WA4E/CSS - Cascading Style Sheets \(Part 1\)](#)
- (page 13) [Week 4: WA4E/CSS - Cascading Style Sheets \(Part 2\)](#)
- (page 24) [Week 4: WA4E/CSS - Cascading Style Sheets \(Part 3\)](#)

Cascading Style Sheets

- Charles Severance
- www.dj4e.com

<https://www.dj4e.com/code/css.zip>



Time



Browser

D
O
M

Parse
Response

JavaScript

Web Server

Django

Parse
Request

Views

static
files

django
code

Database Server

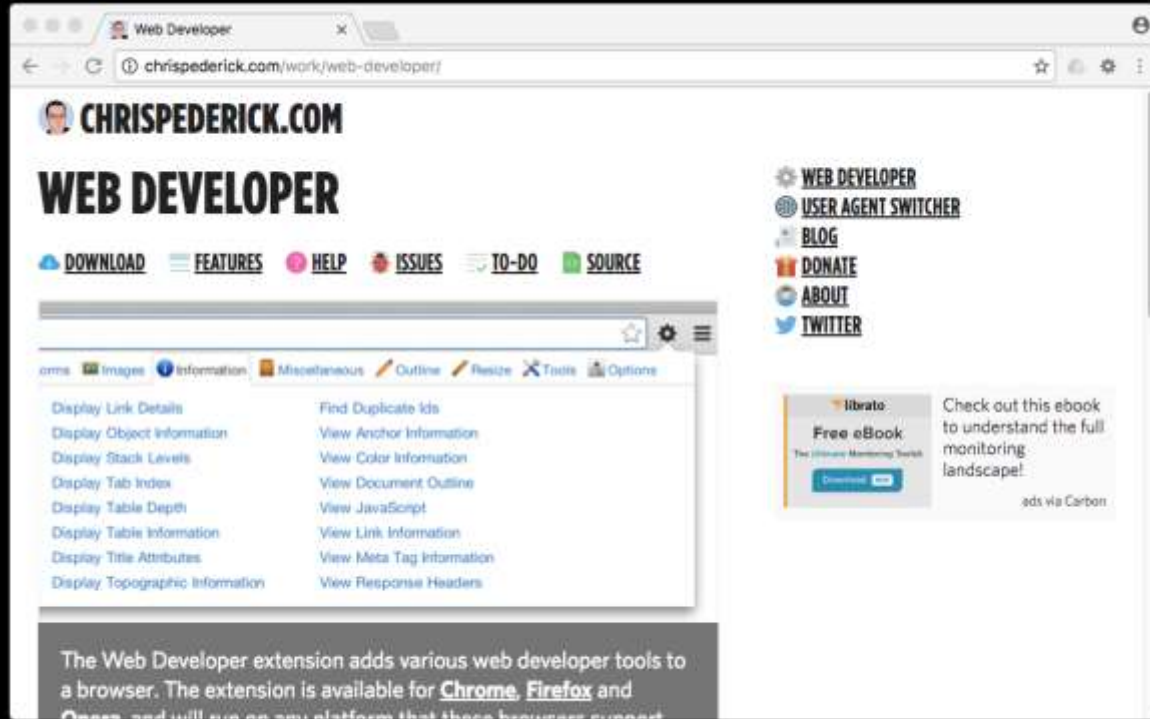
Sqlite or
PostgreSQL



RRC/HTTP

SQL

More than Developer Console



<http://chrispederick.com/work/web-developer/>



- **Arts and Humanities** - Architecture, Photography, Literature...
- **Business and Economy [Xtra!]** - Companies, Investments, Classifieds...
- **Computers and Internet [Xtra!]** - Internet, WWW, Software, Multimedia...
- **Education** - Universities, K-12, College Entrance...
- **Entertainment [Xtra!]** - Cool Links, Movies, Music, Humor...
- **Government** - Politics [Xtra!], Agencies, Law, Military...
- **Health [Xtra!]** - Medicine, Drugs, Diseases, Fitness...
- **News and Media [Xtra!]** - Current Events, Magazines, TV, Newspapers...
- **Recreation and Sports [Xtra!]** - Sports, Games, Travel, Autos, Outdoors...
- **Reference** - Libraries, Dictionaries, Phone Numbers...

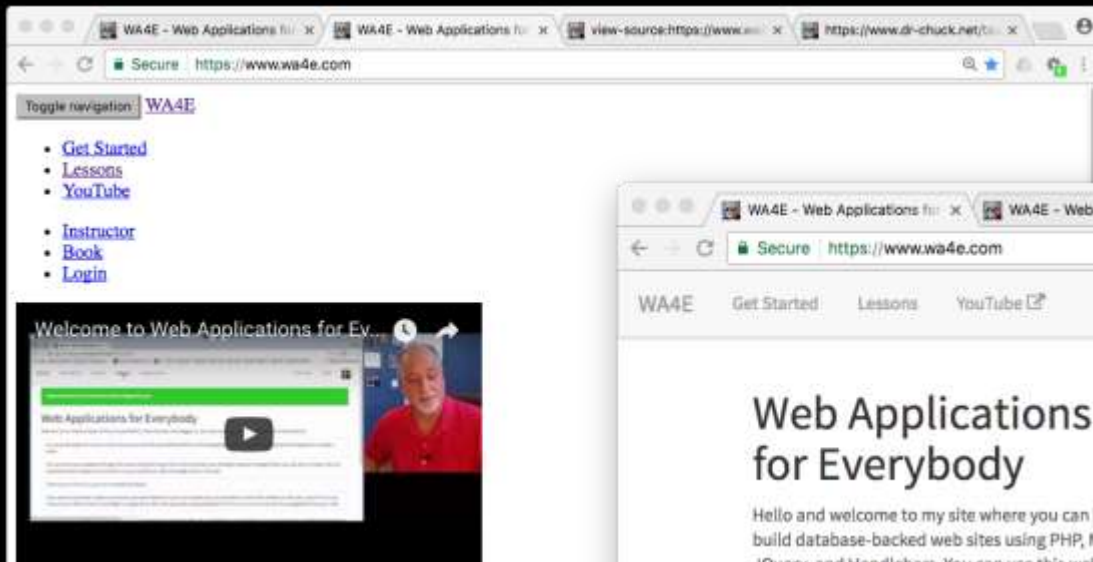
1996

HTML has evolved a **lot** over the years - as computers and networks have gotten faster



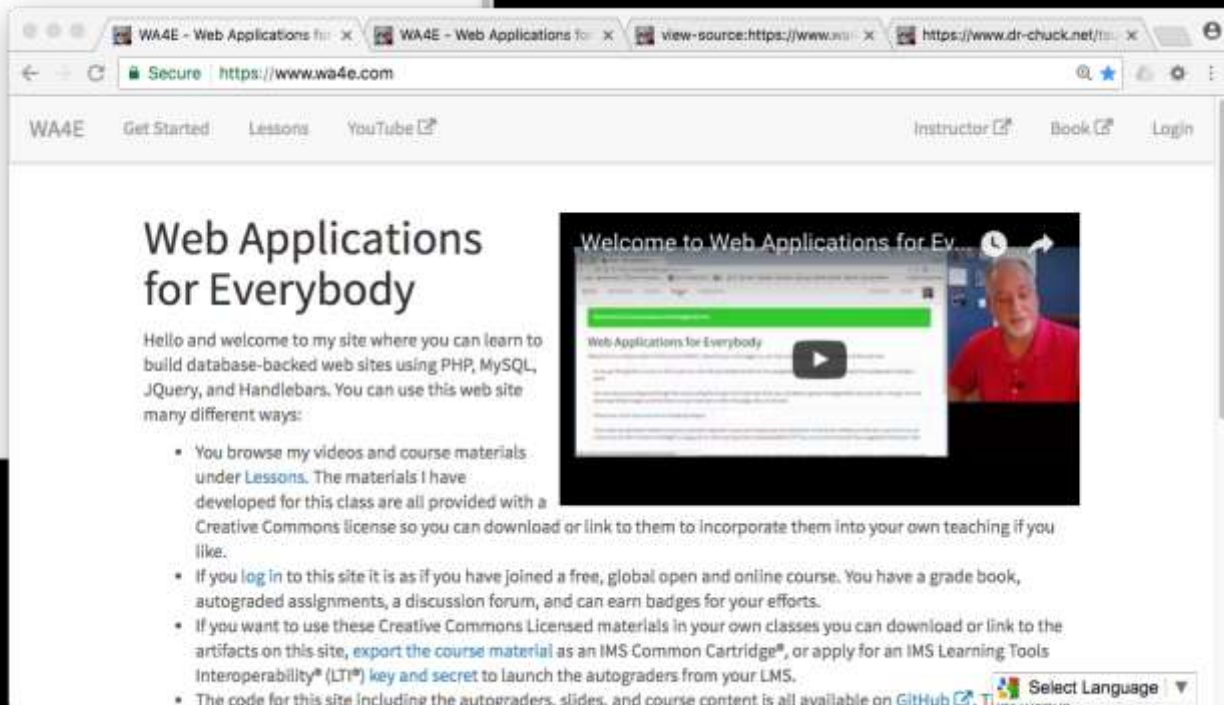
2007

Without CSS



Web Applications for Everybody

With CSS





Separation of Concerns / Specialization

Developer

Designer

```
<html>
<head>
  <title>Including CSS From a File</title>
  <link type="text/css" rel="stylesheet" href="rules.css">
</head>
<body>
<h1>A Header</h1>
<p>
  By putting the CSS rules into a separate file,
  it can be included in many different web pages
  with a single "link" tag, usually in the
  "head" of the document.
</p>
```

```
body {
  font-family: arial, sans-serif;
}
h1 {
  color: blue;
}
p {
  border-style: solid;
  border-color: red;
  border-width: 5px;
}
a {
  color: green;
  background-color: lightgray;
  text-decoration: none;
}
```


CSS Syntax

- CSS Syntax is very different than HTML.
- CSS is a set of “rules” which include a “selector” and one or more “properties” and “values” as well as some punctuation...

```
body {  
    font-family: arial, sans-serif;  
}
```

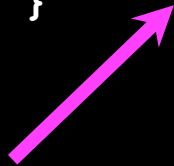
Anatomy of a CSS Rule

selector - which part of the document this rule applies to

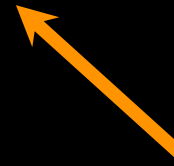


```
body {  
    font-family: arial, sans-serif;  
    font-size: 100%;  
}
```

property - which aspect of CSS we are changing



value – what we are setting the property to



CSS CHEAT SHEET

Shorthand*

background
border
border-bottom
border-left
border-right
border-top
font
list-style
margin
padding

Comments

/* Comment */

Pseudo Selectors

:hover
:active
:focus
:link
:visited
:first-line
:first-letter

Media Types

all
braille
embossed
handheld
print
projection
screen
speech
tty
tv

Units

Length %
em
pt

SYNTAX

Syntax

selector {property: value;}

External Style Sheet

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

Internal Style

<style type="text/css">
selector {property: value;}
</style>

Inline Style

<tag style="property: value">

GENERAL

Class	String preceded by a period
ID	String preceded by a hash mark
div	Formats structure or block of text
span	Inline formatting
color	Foreground color
cursor	Appearance of the cursor
display	block; inline; list-item; none
overflow	How content overflowing its box is handled
	visible, hidden, scroll, auto
visibility	visible, hidden

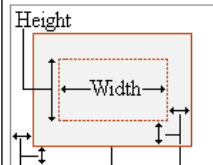
FONT

font-style	Italic, normal
font-variant	normal, small-caps
font-weight	bold, normal, lighter, bolder, integer (100-900)
font-size	Size of the font
font-family	Specific font(s) to be used

TEXT

letter-spacing	Space between letters
line-height	Vertical distance between baselines

BOX MODEL



height; width; margin-top; margin-right; margin-bottom; margin-left; padding-top; padding-right; padding-bottom; padding-left;

BORDER

border-width	Width of the border
border-style	dashed; dotted; double; groove; inset; outset; ridge; solid; none
border-color	Color of the border

POSITION

clear	Any floating elements around the element? both, left, right, none
float	Floats to a specified side left, right, none
left	The left position of an element auto, length values (pt, in, cm, px)
top	The top position of an element auto, length values (pt, in, cm, px)
position	static, relative, absolute
z-index	Element above or below overlapping elements? auto, integer (higher numbers on top)

BACKGROUND

background-color	Background color
background-image	Background image
background-repeat	

Partial List of CSS Properties

color	text-decoration
background-color	border-width
visibility (visible/hidden)	border-style
font-family (arial, sans-serif)	border-color
font-size	margin
font-style (italic, normal)	border
font-weight (bold, normal)	padding
text-align	float (left, right, none)
vertical-align	left / top
text-transform (lowercase, etc)	position (static, relative, absolute)
	z-index

<http://www.lesliefranke.com/files/reference/csscheatsheet.html>

Using CSS in HTML

Applying CSS to our HTML

- **Inline** - right on an HTML tag, using the style= attribute
- An **embedded style sheet** in the <head> of the document
- As an **external style sheet** in a separate file

An Overview of CSS

These pages are intended to be explored in the developer console of your browser.

We can use the **style=** attribute on HTML tags to apply various styles to text and blocks of text.

The "Cascading" in CSS means that the closest style setting (monospace) "wins" over a style setting (arial) that is "further away".

We can put a border around a block of text. You probably want a CSS cheat sheet handy or use Google to search to find CSS values.

While the **style** attribute works, it leads to overly verbose HTML so it is more typical to write CSS [→ style rules](#) to apply styles to many tags at once. Go to the [very last page](#).

The screenshot shows a web browser window with the address bar displaying `www.wa4e.com/code/css/`. The page title is "An Overview of CSS". The main content area contains several paragraphs. One paragraph, "We can put a border around a block of text. You probably want a CSS cheat sheet handy or use Google to search to find CSS values.", is highlighted with a red border. The browser's developer console is open at the bottom, showing the "Elements" panel on the left and the "Styles" panel on the right. The "Elements" panel shows the HTML structure, with the selected paragraph element highlighted. The "Styles" panel shows the styles applied to the selected element, including a border with a solid red color and a width of 5px. The "Styles" panel also shows the user agent styles for the `p` element, such as `display: block;` and `margin: 1em;`.

```
<html>
  <head>...</head>
  <body style="font-family: arial, sans-serif">
    <h1 style="color: blue;">An Overview of CSS</h1>
    <p>...</p>
    <p>...</p>
    <p style="font-family: monospace;">...</p>
    <p style="border-style: solid; border-color: red; border-width: 5px;">
      We can put a border around a block of text.
      You probably want a CSS cheat sheet handy
      or use Google to search to find CSS values.
    </p>
    <p>...</p>
    <p style="margin-top: 5em;">...</p>
  </body>
</html>
```

Styles

element.style {

```
border-style: solid;
border-color: red;
border-width: 5px;
}
```

p { user agent stylesheet

```
display: block;
-webkit-margin-before: 1em;
-webkit-margin-after: 1em;
-webkit-margin-start: 0px;
-webkit-margin-end: 0px;
}
```

Inherited from: body

Style Attribute: {

A Header

You put a set of rules in a `<style>` tag, and they are applied to parts of the documents that match the selectors.

After a while we end up with far too many CSS rules to put in the `<head>` area of each document. A simpler way to include a large number of CSS rules is to put them in a separate file and `⇒ include that file` in each of the pages.

Go back to the [Starting page](#).

The screenshot shows a web browser window with the address bar displaying `www.wa4e.com/code/css/rules.htm`. The page title is "CSS Rules". Below the title, there are two paragraphs of text explaining CSS rules. The first paragraph states that CSS rules are placed in a `<style>` tag and applied to matching document parts. The second paragraph explains that for many rules, it's better to use a separate file and include it. A link "Go back to the Starting page." is provided.

Below the text, a browser's developer tools are open, showing the "Elements" panel. The `<head>` section is expanded, showing a `<title>` tag with the text "CSS Rules" and a `<style>` tag containing the following CSS rules:

```
body {
  font-family: arial, sans-serif;
}
h1 {
  color: blue;
}
p {
  border-style: solid;
  border-color: red;
  border-width: 5px;
}
a {
  color: green;
  text-decoration: none;
  background-color: lightgray;
}
```

The `</style>` and `</head>` tags are also visible. The `<body>` section is expanded, showing a single `<h1>A Header</h1>` tag.

On the right side of the developer tools, the "Styles" panel is open, showing the "user agent stylesheet" for the `title` element, with the rule `display: none;`. Below the styles panel, there is a diagram of the box model. The diagram shows a central blue box labeled "auto x auto". This box is surrounded by a green area labeled "padding", which is in turn surrounded by a yellow area labeled "border". The entire box model is enclosed in an orange dashed-line area labeled "margin".


```
<html>
<head>
  <title>Including CSS From a File</title>
  <link type="text/css" rel="stylesheet" href="rules.css">
</head>
<body>
<h1>A Header</h1>
```

```
csev $ ls -l
total 32
-rw-r--r-- 1 csev staff 44 Dec 19 06:06 rules.css
-rw-r--r-- 1 csev staff 679 Dec 19 06:07 index.htm
-rw-r--r-- 1 csev staff 883 Dec 19 05:59 include.htm
-rw-r--r-- 1 csev staff 679 Dec 19 05:59 colors.htm
csev $
```

A Header

By putting the CSS rules into a separate file, it can be included many different web pages with a single "link" tag, usually in the "head" of the document.

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

Now that we have seen the three ways to indicate CSS styles in your HTML, we will look some HTML tags whose sole purpose is to **mark text** so we can apply styling to the text or block.

Go back to the [Starting page](#).

The screenshot shows a web browser window with the address bar displaying `www.wa4e.com/code/css/include.htm`. The page content includes a blue header "A Header" and a paragraph explaining how to include CSS rules in a separate file. A code snippet shows the `<link type="text/css" rel="stylesheet" href="rules.css">` tag. Below this, another paragraph explains that some HTML tags are used to "mark text" for styling. A link "Go back to the Starting page" is provided.

The browser's developer tools are open, showing the "Elements" panel on the left and the "Styles" panel on the right. The "Elements" panel shows the HTML structure of the page, with the `<h1>A Header</h1>` tag selected. The "Styles" panel shows the CSS rules applied to the `h1` element, including the `color: blue;` rule from `rules.css:4` and the default `display: block;` rule from the `user agent stylesheet`.

```
<html>
  <head>
    <title>Including CSS From a File</title>
    <link type="text/css" rel="stylesheet" href="rules.css">
  </head>
  <body>
    <h1>A Header</h1>
    <p></p>
    <pre> <link type="text/css" rel="stylesheet" href="rules.css">
    </pre>
    <p></p>
    <!-- Ignore this for now ! -->
    <p style="border-style: none; position: fixed; bottom: 10px; right: 10px;"></p>
  </body>
</html>
```

Styles

Filter: :hov .cls +

element.style {

h1 {

color: blue;

h1 {

display: block;

font-size: 2em;

-webkit-margin-before: 0.67em;

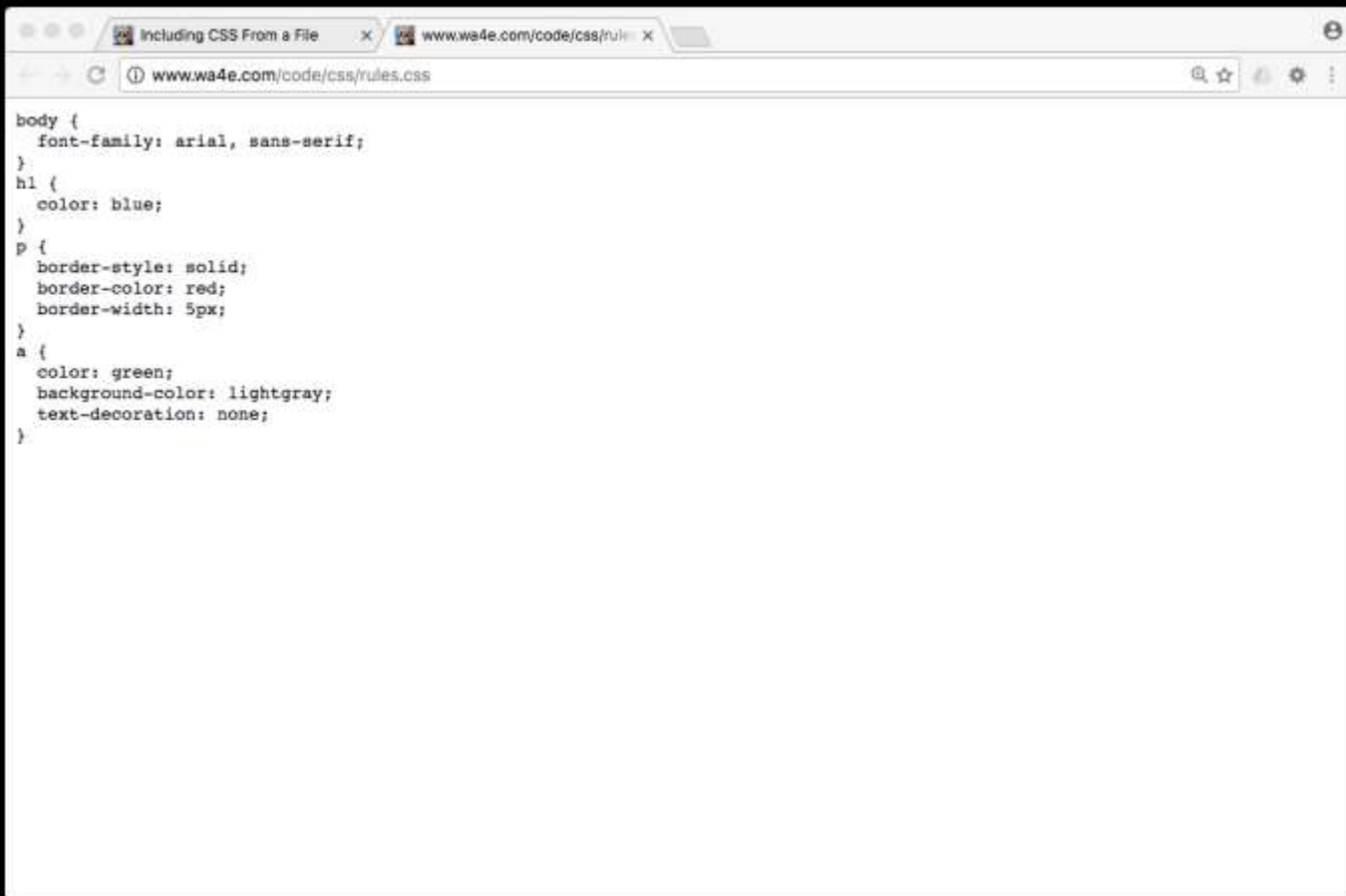
-webkit-margin-after: 0.67em;

-webkit-margin-start: 0px;

-webkit-margin-end: 0px;

font-weight: bold;

Inherited from: body



span and div Tags

```
<p style="border: 1px green solid;">
```

With CSS we wanted some tags that had no pre-existing **style**. So the **span** tag was invented as the new "inline" tag with no styling.

```
</p>
```

```
<div style="border: 1px blue solid;">
```

And the **div** tag is a new unstyled block tag with no padding, margin, background-color, or anything else. So you could **mark** blocks with the **div** tag and not inherit any default **style**.

```
<div style="border: 1px orange solid;">
```

And the **div** tags can be nested as well. Adding the 1-pixel borders does take up a pixel of space.

```
</div>
```

You can add some **text** in the outer **div**.

```
</div>
```

```
<p style="border: 1px green solid;">
```

With CSS we wanted some tags that had no pre-existing **Style**. So the `span` tag was invented as the new "inline" tag with no styling.

```
</p>  
<div style="border: 1px blue solid;">
```

And the `div` tag is a new unstyled block tag with no padding, margin, background-color, or anything else. So you could **mark** blocks with the **div** tag and not inherit any default **style**.

```
<div style="border: 1px orange solid;">
```

And the `div` tags can be nested as well. Adding the 1-pixel borders does take up a pixel of space.

```
</div>  
You can add some text in the outer div.  
</div>
```

With CSS we wanted some tags that had no pre-existing style. So the **span** tag was invented as the new "inline" tag with no styling.

And the **div** tag is a new unstyled block tag with no padding, margin, background-color, or anything else. So you could mark blocks with the div tag and not inherit any default style.

And the **div** tags can be nested as well. Adding the 1 pixel borders does take up a pixel of space.

You can add some text in the outer div.

Wow - there really is no margin or padding on an unstyled **div** tag.

```
view-source:www.wa4e.com X view-source:www.wa4e.com X
view-source:www.wa4e.com/code/css/classid.htm

1 <html>
2 <head>
3   <title>Gettin' Classy</title>
4   <style>
5     /* I wish this were the default */
6     body {
7       font-family: arial, sans-serif;
8     }
9     #first {
10      font-family: monospace;
11    }
12    #second {
13      color: green;
14    }
15    .morespace {
16      margin-left: 20px;
17      margin-right: 20px;
18    }
19    .shout {
20      text-transform: uppercase;
21    }
22    .loud {
23      color: red;
24    }
25    /* Paragraph tags within a tag with id */
26    #third p {
27      background-color: yellow;
28    }
29  </style>
30 </head>
31 <body>
32 <h1>Selecting and Styling Tags</h1>
33 <div id="first">
34 <p>
35 To avoid putting too much into the
36 <strong>style</strong> attribute,
37 we can use the <strong>class</strong> and
```

```
view-source:www.wa4e.com X view-source:www.wa4e.com X
view-source:www.wa4e.com/code/css/classid.htm

31 <body>
32 <h1>Selecting and Styling Tags</h1>
33 <div id="first">
34 <p>
35 To avoid putting too much into the
36 <strong>style</strong> attribute,
37 we can use the <strong>class</strong> and
38 <strong>id</strong> attributes to style
39 a subset of the tags.
40 </p>
41 <p class="morespace">
42 An <strong>id</strong> tag must be unique
43 through the document while the
44 <strong>class</strong> tag can be used on
45 many tags throughout the document.
46 </div>
47 <div id="second">
48 <p>
49 We can use the <strong>class</strong>
50 <span class="shout">all</span> throughout
51 the <span class="shout">entire</span>
52 document.
53 </p>
54 <p class="morespace">
55 It is <strong class="shout">very cool</strong>
56 to use classes. The can be used on any tag.
57 </p>
58 <p class="shout loud">
59 A tag can have more than one class!.
60 </p>
61 </div>
62 <div id="third">
63 <p>
64 You can even use a hierarchical selection string
65 to style tags.
66 </p>
67 <p>
```

```
1 <html>
2 <head>
3   <title>Gettin' Classy</title>
4   <style>
5     /* I wish this were the default */
6     body {
7       font-family: arial, sans-serif;
8     }
9     #first {
10      font-family: monospace;
11    }
12    #second {
13      color: green;
14    }
15    .morespace {
16      margin-left: 20px;
17      margin-right: 20px;
18    }
19    .shout {
20      text-transform: uppercase;
21    }
22    .loud {
23      color: red;
24    }
25    /* Paragraph tags within a tag with id */
26    #third p {
27      background-color: yellow;
28    }
29  </style>
30 </head>
31 <body>
32 <h1>Selecting and Styling Tags</h1>
33 <div id="first">
```

Selecting and Styling Tags

To avoid putting too much into the `style` attribute, we can use the `class` and `id` attributes to style a subset of the tags.

An `id` tag must be unique through the document while the `class` tag can be used on many tags throughout the document.

We can use the `class` ALL throughout the ENTIRE document.

It is **VERY COOL** to use classes. The can be used on any tag.

A TAG CAN HAVE MORE THAN ONE CLASS!

You can even use a hierarchical selection string to style tags.

In general it is nice to keep your HTML as clean and easily understood as possible as in this [simple navigation bar example](#).

Go back to the [Starting page](#).

```
40 </p>
41 <p class="morespace">
42   An <strong>id</strong> tag must be unique
43   through the document while the
44   <strong>class</strong> tag can be used on
45   many tags throughout the document.
46 </div>
47 <div id="second">
48 <p>
49   We can use the <strong>class</strong>
50   <span class="shout">all</span> throughout
51   the <span class="shout">entire</span>
52   document.
53 </p>
54 <p class="morespace">
55   It is <strong class="shout">very cool</strong>
56   to use classes. The can be used on any tag.
57 </p>
58 <p class="shout loud">
59   A tag can have more than one class!.
60 </p>
61 </div>
62 <div id="third">
63 <p>
64   You can even use a hierarchical selection string
65   to style tags.
66 </p>
67 <p>
68   In general it is nice to keep your HTML as clean
69   and easily understood as possible as in this
70   <a href="navbar.htm">
71   &RArr; simple navigation bar
72   </a> example.
73 </p>
```

Images, Colors, and Fonts

Images Page

view-source:www.wa4e.com/c


www.wa4e.com/code/css/images.htm

⇒ Styled Nav Bar



Cascading Styles ⇒

CSS and Images

It is fun to float an image to the left or right and watch the text wrap around it. You might want to add a bit of margin so the text does not crowd it. An **em** is the "height of the current font" so it scales when the size of the font is changed.



Sometimes we need to clear the "hanging wrap" when we want the next paragraph to go all the way to the margin - in effect "clearing the float".

Images can be  right in the middle of text like a character. And we can even make an image a clickable  link to the starting page.

Images Page

view-source:www.wa4e.com/c

view-source:www.wa4e.com/code/css/images.htm

```
10 </a></li>
11 </ul>
12 </nav>
13 
14 <h1>CSS and Images</h2>
15 <p>
16 It is fun to float an image to the left or
17 right and watch the text wrap around it.
18 You might want to add a bit of margin so the text
19 does not crowd it. An <strong>em</strong> is the
20 "height of the current font" so it scales when the size
21 of the font is changed.
22 </p>
23 <br clear="all" />
24 <p>
25 Sometimes we need to clear the "hanging wrap"
26 when we want the next paragraph to go all the way
27 to the margin - in effect "clearing the float".
28 </p>
29 <p>
30 Images can be  right
31 in the middle of text like a character.
32 And we can even make an image a clickable
33 <a href="index.htm"></a>
34 link to the starting page.
35 </p>
36 </body>
37
```

Color Names

- W3C has listed 16 official color names that will validate with an HTML validator.
- The color names are: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white, and yellow.

Color Values

HTML colors can be defined as a hexadecimal notation for the combination of Red, Green, and Blue color values (RGB).

The lowest value that can be given to one light source is 0 (hex #00) and the highest value is 255 (hex #FF).

The table below shows the result of combining Red, Green, and Blue light sources:.

Color	Color HEX	Color RGB
	#000000	rgb(0,0,0)
	#FF0000	rgb(255,0,0)
	#00FF00	rgb(0,255,0)
	#0000FF	rgb(0,0,255)
	#FFFF00	rgb(255,255,0)
	#00FFFF	rgb(0,255,255)
	#FF00FF	rgb(255,0,255)
	#C0C0C0	rgb(192,192,192)
	#FFFFFF	rgb(255,255,255)

W3C Standard Color Names

W3C has listed 16 color names that will validate with an HTML validator.

The color names are: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white, and yellow.

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

Advanced Colors...

Three numbers,
Red, Green, and
Blue - each from
00 - FF
(Hexidecimal)

#e2edff

#ffffff = white
#000000 = black
#ff0000 = red
#00ff00 = green
#0000ff = blue

Color Name	Color HEX	Color
AliceBlue	#F0F8FF	
AntiqueWhite	#FAEBD7	
Aqua	#00FFFF	
Aquamarine	#7FFFD4	
Azure	#F0FFFF	
Beige	#F5F5DC	
Bisque	#FFE4C4	
Black	#000000	
BlanchedAlmond	#FFEBCD	
Blue	#0000FF	
BlueViolet	#8A2BE2	
Brown	#A52A2A	



Web-safe
colors

http://www.w3schools.com/css/css_colornames.asp

Fonts

- Default fonts are ugly and they have serifs - which make them harder to read on a screen
- So the first thing I usually want to do is override the fonts in my document
- And I want to do this everywhere

Header One

Paragraph about ugly default fonts.

Figure 3.5. Highlighting the serifs of a serif font (Georgia)




Fonts

Most Favorite

Least Favorite

```
body {  
  font-family: "Trebuchet MS", Helvetica, Arial, sans-serif;  
  font-size: x-large;  
}
```



Fallback fonts: serif, sans-serif, monospace, cursive, and fantasy

Font Factors

font-size:

xx-small

x-small

small

medium

large

x-large

xx-large

14px

font-weight: bold or normal

font-style: normal or italic

text-decoration: none, underline, overline, or
line-through

Styling for Links



Post-Click:

Hello there my name is Chuck.

Go ahead and click on here.

Browser default styling for links is downright ugly!

```
a {  
  font-weight: bold;  
}  
a:link {  
  color: black;  
}  
a:visited {  
  color: gray;  
}  
a:hover {  
  text-decoration: none;  
  color: white;  
  background-color: navy;  
}  
a:active {  
  color: aqua;  
  background-color: navy;  
}
```

Styling Links

link - before a visit

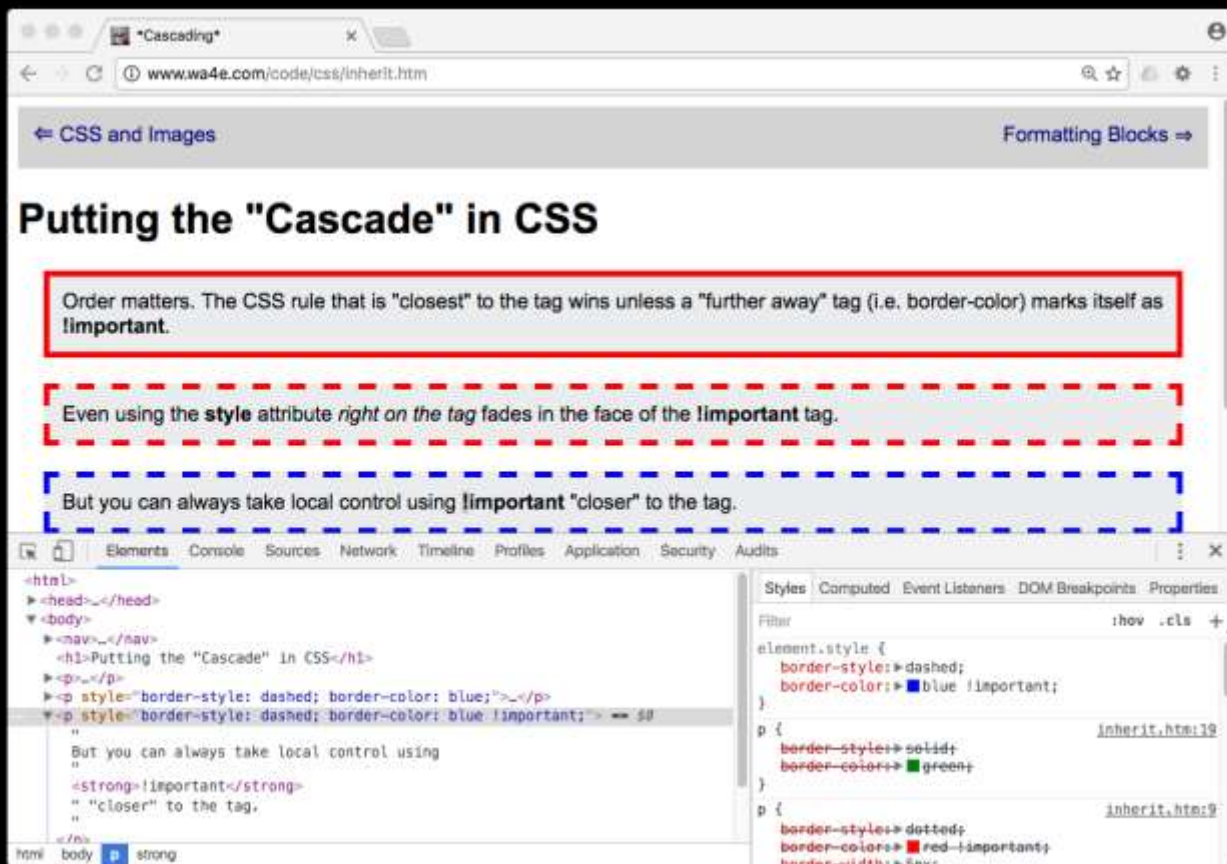
visited - after it has been visited

hover - when your mouse is over it
but you have not clicked

active - you have clicked it and you
have not yet seen the new page

Many More Samples

dj4e.com



CSS Summary

- CSS layout is its own art and science.
- CSS basics are well established and well supported in all modern browsers.
- Site layout and markup is further evolving - mostly to make it increasingly possible to support desktop-like experiences on the web and mobile.
- These innovations will naturally cause incompatibilities - which make things interesting and frustrating at times.

Acknowledgements / Contributions



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