



Introduction to HTML5



What This Course Will Cover

- The **BASICS**
 - **Syntax and Semantics**
 - **Accessibility**
 - **Getting Started**
 - *Right down to How to Create a File*

Week One

- Focus is on questions:
 - What happens when you type an address into a URL?
 - What types of tools you need to code (editors and browsers)?
 - What is HTML5?

Week Two

- A Little bit of theory and a lot of code
 - The DOM
 - Contextual tags and headings
 - Links, Images, and Lists
 - Tables
 - Multimedia

Week Three

- Putting it Together
 - Validating Your Code
 - *Syntax*
 - *Accessibility*
 - Domain name registration and web hosting



Final Project

- **Create a syntactically valid website**
- **Must pass W3C validation**
- **Must pass WAVE accessibility review**



Who is this class for?

- This class is for the complete beginner
- This class is for those who did NOT build a computer in their basement when they were 12 years old
- This class is for people with persistence



Who Am I?

- PhD in Computer Science
- Two decades of teaching experience
- Emphasis on education
- Famous for running around classrooms while helping students debug

Workload and Evaluation

- **Weekly videos**
 - Lecture format – watch anywhere
 - Demo format – best watched while you type along
- **Weekly readings**
 - Free online textbook
 - Other online articles
- **Weekly assessments**
 - Quizzes
- **Final project**
 - Warning – it will be ugly!



Succeeding in This Class

- **Create a community**
 - In a perfect world you would code with a friend...so use the message boards.
- **Work Smart!!**
 - Never spend more than 20 minutes on a problem
- **Look things up on your own!**
- **Practice, practice, practice!**

Review

- This class is for beginners
- You will leave with the ability to write and understand HTML5 code – not as a web developer
- You will understand the importance of accessibility in technology

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HTML5

**What it is...and why we aren't
starting at HTML 1.0**



What is HTML?

- HTML stands for Hypertext Markup Language
- Markup languages are not the same as programming languages, they use tags to annotate documents.
- In HTML the tags indicate where headings, images, lists, links, line breaks, and other components should go.



.html files

- When your computer opens a .html file, it knows to open it in an Internet browser (Chrome, Firefox, Safari, etc.)
- The browser can read this file and know how to display it on the screen.
- Screen readers and other assistive devices can also utilize the HTML tags to present the information in special ways.



HTML Files

- HTML is similar to English, so you can understand it even if you don't know much about it. (**sample.html**)



“Learning” HTML

- In the beginning you worry about *syntax*
 - What tags are there?
 - Did I remember to “end” my tag?
- Later, you will worry about *semantics*
 - Is there a tag that better conveys the meaning I am trying to get across?
 - If someone is searching my page can they find what they need and access it easily?



Early Years

- HTML (1) was created in 1990 as a way to electronically connect documents via hyperlinks (hence a “web” of connections)





Early Years

- HTML is a common language between all platforms. This implies no device-specific markup, or anything which requires control over fonts or colors, for example.





Mosaic

- In 1993, Mosaic emerged as the first graphical browser.
- WWW proliferates at a 341,634% annual growth rate of service traffic
- Mosaic had challengers though in the form of Netscape (1994), Internet Explorer (1995) and others.



- In 1993, Mosaic was released as a web browser. It was the first web browser to support images. “Images caused a lot of angst among the early web community because we just went and decided this was a cool thing and decided to put them in..... We’re humans. That’s more interesting to look at than a page of text. – Jon Mittelhauser,
- WWW services were provided by CERN.
- Mosaic had challengers though in the form of Netscape (1994), Internet Explorer (1995) and others.



The Browser Wars

- **Browsers had proprietary tags**
 - `<marquee>...</marquee>` (scrolling text)
 - `<blink>...</blink>` (blinking text).
- **Other tags that went against the spirit of the original tenets of HTML were added, e.g. ``, `<center>`, and `<bcolor>`**
- **Origination of “Best viewed on” messages.**



Web Standards

- **No one “runs” the Internet or the Web, some groups do take proactive roles:**
 - **Internet Engineering Task Force (IETF)**
 - **World Wide Web Consortium (W3C)**
 - **The Web Accessibility Initiative (WAI)**



Evolution of Browsers

1990 – 1994	HTML was simple, content was primarily text-based
1993	Mosaic enters the scene with images and ... BOOM!!!
1995 – 1999	Cross-browser compatibility falls apart
2000 – 2005	Browsers move toward separating content from style.
2005 – 2008	Using HTML files in coordination with CSS becomes new standard.



Evolution of HTML

1993	HTML 1.0 - Developed by Tim Berners-Lee to link document
1995	HTML 2.0 - Developed by Internet Engineering Task Force RFC to include stylized text and tables
1996	CSS 1
1997	HTML 3.2 – Developed by W3C and included browser specific features
1997	HTML 4.0 – A move back to normalizing the pages across platforms.
1998	CSS 2
1999	HTML 4.01 – Introduced different document types
2012	HTML 5 - Back to HTML plus multimedia and semantic tags



Where we are now

- **HTML5 is a cooperation between W3C and the Web Hypertext Application Technology Working Group(WWHATWG)**
- **Established Guidelines**
 - New features should be based on HTML, CSS, the DOM, and JavaScript
 - Reduce the need for external plugins (e.g. Flash)
 - More markup to replace scripting
 - HTML5 should be device independent



Review

- **Browsers translate HTML documents into viewable webpages**
- **HTML was intended to facilitate content types**
- **When designers want to do something new they write non-standard code to force browsers to do it**
- **New standards are written to handle new requirements and browsers adopt the new standards**



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The Request/Response Cycle

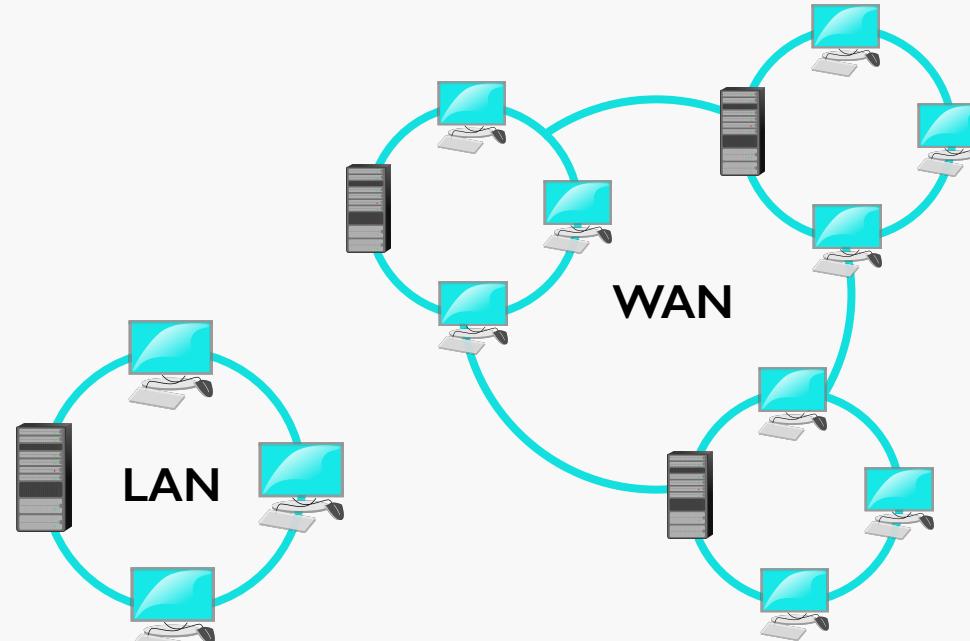
Or, what happens when you type something into the address bar

How Does This All Work?

- When you type an address into the URL bar, what happens?
- *Warning:* This lecture is heavy on the acronyms.

Networks

- The Internet
 - LAN
 - WAN



Client/Server Relationship

- **Servers**
 - Machines that hold shared resources
 - Always connected to the network
- **Clients**
 - Machines for personal use (laptops, phones, etc.)

Request/Response Cycle

- This is what happens when your computer (the client) **requests** a page and a server **responds** with the appropriate files.

Uniform Resource Locator

- URL – three parts:
 - protocol – how to connect
 - domain – where to find the document you want
 - document – what specific file is needed*
 - *Most pages are made up of multiple files*

Protocols

- **HTTP – Hypertext Transfer Protocol**
- **HTTPS – Secure Hypertext Transfer Protocol**
- **FTP – File Transfer Protocol**



Domain Names

- **Identifies the entity you want to connect to**
 - umich.edu, google.com, wikipedia.org
- **Each has different top-level domain**
 - Determined by Internet Corporation for Assigned Names and Numbers (ICANN)
 - <https://www.icann.org/resources/pages/tlds-2012-02-25-en>



IP Addresses and the Domain Name Server (DNS)

- Internet Protocol Version 4 (Ipv4) uses number format of `xxx.xxx.xxx.xxx` to identify each domain
 - can represent over 4 billion unique combinations (2^{32})!
- DNS looks up the domain and returns the IP address

Document

- URLs can specify a specific document
 - `http://www.intro-webdesign.com/contact.html`
 - `http://www.intro-webdesign.com/Ashtabula/harbor.html`
- If no document is specified, the default document is returned.
 - Convention is `index.html`

The Request

- Once the IP address is determined, the browser creates an HTTP request.
- Lots of hidden information in this request
 - header, cookies, form data, etc

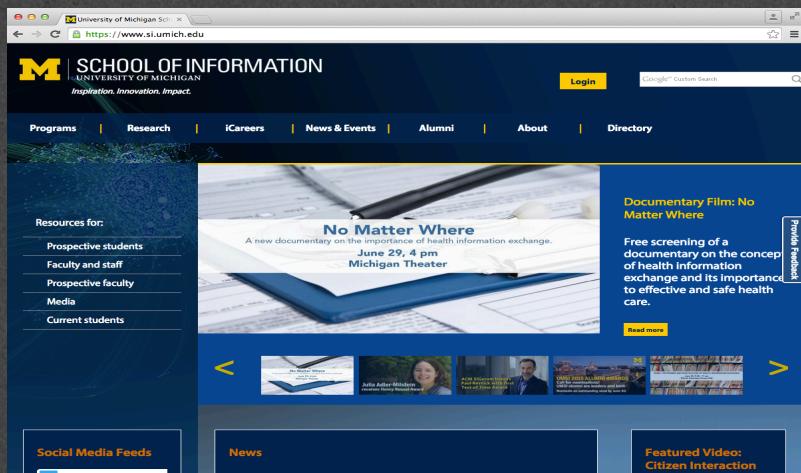
The Response

- The server returns files, not “web pages”
 - It is up to the browser to decide what to do with those files
- If the server can’t fulfill the request it will send back files with error codes: 404, 500, etc.



**What happens when you type
“<http://si.umich.edu/>”
into the address bar.**

1. The browser look up the domain in the DNS
2. The DNS returns the IP address: 54.88.175.189



3. The browser sends an HTTP request to the server located at that address.
4. The server finds the requested file and sends it back as a response.
5. The browser takes the response and renders the HTML code as a nice graphical presentation, often repeating steps 3 – 4 as needed to request images and other supporting files.

Additional Notes

- Live Example
- A new protocol IP Version 6 (Ipv6) will increase the number of combinations to 2^{128} .
- High-level domain name examples

Original	Country	Generic
.org	.au	.airforce
.net	.br	.biz
.int	.de	.community
.edu	.ie	.jobs
.gov	.uk	.travel
.arpa	.us	.wiki



Review

- A URL has three parts.
- Request/Response cycle typically requires multiple rounds of communication between the client and server.

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Browsers

Your options



Differing Browsers

- **Different browsers have their pros and cons**
- **Most people have a preferred browser**
- **You need to test your site on multiple browsers.**

Internet Explorer

- One of the most popular browsers
- Preinstalled on Microsoft Windows and free to download
- Not available on the Mac



Safari

- **Works on Mac and Windows operating systems**
- **Free to download**
- **Default browser on iPhones and iPads**



Google Chrome

- **Freeware browser developed by Google**
- **Fast browsing**
- **Greater security**



Firefox

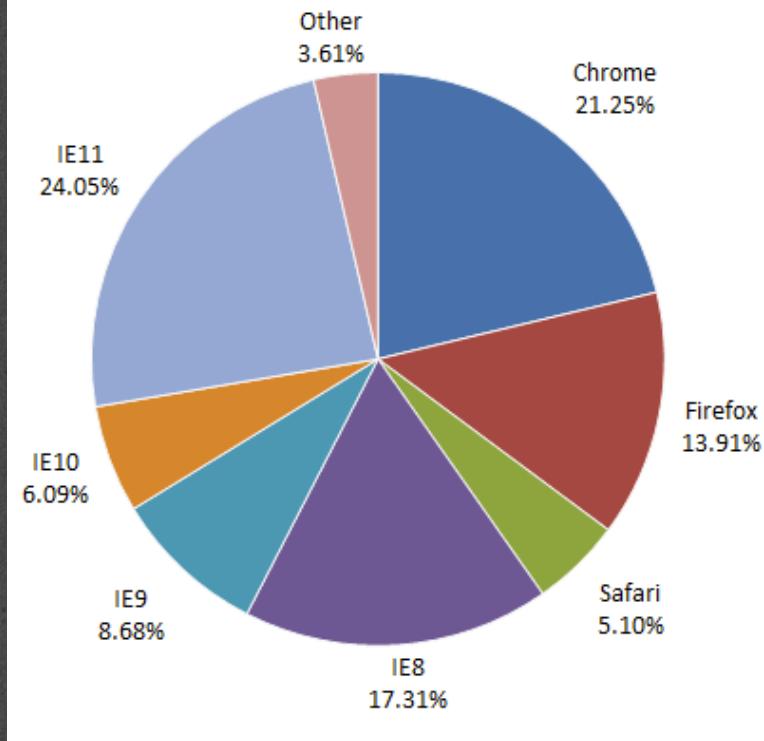
- **Free browser developed by Microsoft**
- **Works on Windows and Mac**
- **Secure and fast**
- **Resource heavy**



Worldwide Desktop Browser Market Share

By Version - October 2014

www.netmarketshare.com





Review

- **Browsers can vary in how well they adhere to HTML5 standards**
- **Different versions of browsers need to be considered as well**

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Using an Editor

Time to write some code



Creating and Editing Your Files

1. Decide how you will organize your files
2. Decide on a naming convention
 - dash-names, CamelCase
 - No spaces, Consistent capitalization
3. Decide on an editor
 - Windows (**NotePad**, Notepad++, **Sublime***)
 - Mac (**TextEdit**, TextWrangler, **Sublime***)



Getting Started

1. Open your editor
2. Select Save or Save As and name your file.
You may need to create a new folder first
3. Add Doctype, head, and body tags
4. Save File (Ctrl-S or Command-S)
5. Open in browser



Trouble-shooting

- My file opens in an editor instead of a browser.
 - Right click and select “Open With..”
- My browser shows my tags
 - Check that file extension is .html



Trouble-shooting

- I changed my code, but my page looks the same.
 - Refresh your browser
 - Verify file name
- I get “weird” characters.
 - Try typing code in by hand, not copy-and-paste



Examples

- **TextEdit**
- **Notepad**



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Document Object Model

Writing clean code

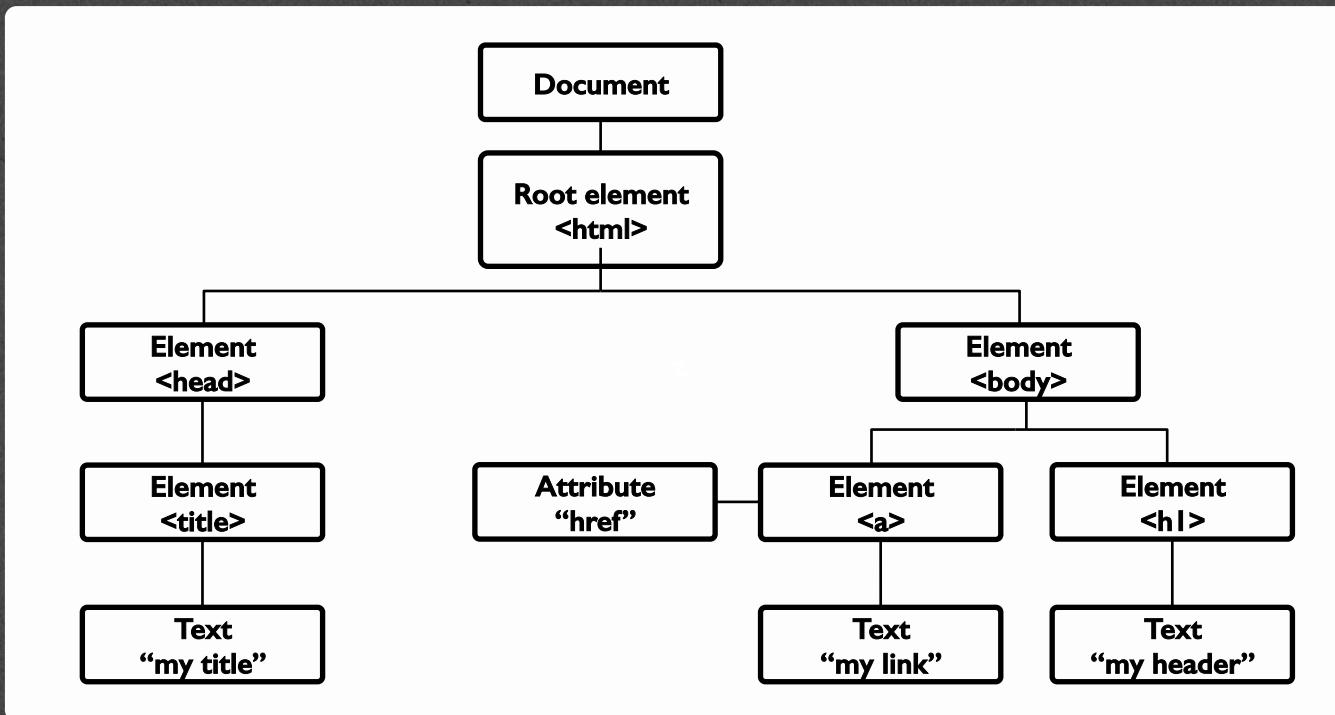


The Document Object Model (DOM)

- Basis of HTML5 is “*New features should be based on HTML, CSS, the DOM, and JavaScript...*”
- DOM provides common tree-like structure that all pages should follow
- Computer Scientists love trees (the mathematical kind) because you can test them.



HTML is built on the DOM



Adapted from w3Schools.com



Three parts of a well-formed document

- **Doctype**
 - Version of HTML that you will be using
- **Head**
 - Metadata
- **Body**
 - Displayable content



Doctype

- **HTML5**
 - `<!DOCTYPE html>`
- **Previous versions dictated backwards compatibility**
 - `<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">`
 - `<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">`



Head

- **Additional information used by the browser**
 - **Meta data – language, title**
 - **Supporting files – JavaScript, Styling, Add-ons**
- **Other than title, meta-data is not displayed**



Body

- Bulk of your page
- Important to write well-formatted (tree-like) code.
- Most of the content is displayed by the browser, but there may be some meta-data too



Example

- Example: template.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>My First Page</title>
</head>
<body>
    This should be displayed by the browser.
</body>
</html>
```



Validate the Code

The screenshot shows a web browser window with the title "W3C The W3C Markup Validation Service". The address bar shows the URL <https://validator.w3.org>. The main content area has a blue header bar with the W3C logo and the text "Markup Validation Service" and "Check the markup (HTML, XHTML, ...) of Web documents". Below this are three tabs: "Validate by URI" (selected), "Validate by File Upload", and "Validate by Direct Input". Under the "Validate by URI" tab, there is a section titled "Validate by URI" with the sub-instruction "Validate a document online:". A text input field contains the URL <http://www.intro-webdesign.com/HTML5/template.html>. Below the input field is a link "More Options". At the bottom is a large "Check" button. Below the form, a descriptive text explains the validator's capabilities and links to other tools. At the very bottom, there is a "W3C VALIDATOR Suite" logo and a call to action for the premium service.

This validator checks the [markup validity](#) of Web documents in HTML, XHTML, SMIL, MathML, etc. If you wish to validate specific content such as [RSS/Atom feeds](#) or [CSS stylesheets](#), [MobileOK content](#), or to [find broken links](#), there are [other validators and tools](#) available. As an alternative you can also try our [non-DTD-based validator](#).

Try now the W3C Validator Suite™ premium service that checks your entire website and evaluates its conformance with W3C open standards to quickly identify those portions of your website that need your attention.



Success!!

This document was successfully checked as HTML5!	
Result:	Passed, 2 warning(s)
Address :	<input type="text" value="http://www.intro-webdesign.com/HTML5/template.htm"/>
Encoding :	utf-8 <input type="button" value="(detect automatically)"/>
Doctype :	HTML5 <input type="button" value="(detect automatically)"/>
Root Element:	html



Review

- Well-formed pages use the DOM structure
 - Use beginning and end tags
 - Close inner tags before outer ones
 - Use valid attributes
- Browsers will “fix” bad code, but not always well. Use a validator to check your code



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HTML5 Tags and Syntax

My first big disappointment to you



HTML tags

- I can't teach you all of the tags
- I can't teach you all of the tags
- You don't want me to teach you all of the tags



Finally, some tags...

- Tags have a beginning and an end

```
<h1>Hello World</h1>
```

Start tag Closing tag

```

```

Self-closing tag

- Some tags have **attributes** (src, href, etc..)



Display

- One of the most important attributes of an element is its **display**. The two most common are **block** and **inline**
 - **block (can take width and height)**
 - *Newline is inserted before and after, e.g. it “Takes up” whole width*
 - **inline (can not take width and height)**
 - *Only uses as much space as needed to contain the element.*



Common Tags

- **Headings (block)**
 - <h1>, <h2>, <h3>, <h4>, <h5>, <h6>
 - These tags have **syntax** and **semantics**
- **Paragraphs (block)**
 - <p> </p>
 - **Should only contain inline elements**
- **Divs (block)**
 - <div>...</div>
 - **Generic section that is larger than a paragraph**



More tags

- Ordered lists

```
<ol>
  <li> Item One </li>
  <li> Item Two </li>
</ol>
```

- Unordered lists

```
<ul>
  <li> Item One </li>
  <li> Item Two </li>
</ul>
```

- Line breaks

```
<br>
```



Attributes

- Attributes provide additional information about an element
- Always specified in the start tag
- Attributes come in name/value pairs



Images

- **Images (inline)**

```
<img src = “myPicture.jpg” alt = “Image of Colleen”/>
```

- **Images rarely work the first time**
 - **Show a broken link, too big, too small, etc.**
 - **Save yourself heartache and size/carefully name your picture before you use it.**



Images

```

```

Extra formatting (height,
width, position, etc.)



More Attributes

- As you learn the tags, you learn their specific attributes. Some apply to any tag
 - class – applies special properties to groups of elements
 - id – specifies a unique id to one element on the page
 - style – specifies a certain visual style (avoid this one!!!)
 - accesskey – a shortcut key to activate an element
 - tabindex – the order elements will come into focus using the tab key.



Special Entities

- Tags always start with a bracket (<)
- What if you want the browser to display a bracket, not start a tag?



Special Entities

If you want....	Then use...
<	<
>	>
©	©
blank space	&nbsp
¢	¢
&	&



Review

- **How do you know the difference between a tag and an attribute?**
- **What two symbols end a self-closing tag?**

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Semantic HTML5 Tags

Making the most of the new tags



How to Design

- The most important step in web design is the *design*.
- You need a clear picture of what you want to create, before you can begin coding.

How to Design

<header>

<section>

<article>

<aside>

<footer>

Using Semantic Tags

- In the beginning (insert dramatic music of your choice...) there was div
- <div> was a way to group related content together
- Divs almost always had special classes/ids associated with them

```
<div class = “header”>...</div>
```

```
<div class = “section”>...</div>
```

```
<div class = “footer”>...</div>
```

<header>

- A group of introductory or navigational aids: title, navigation links, etc.

```
<header>
    <h1>This is the Title</h1>
    <h2>The author is Colleen</h2>
</header>
```

- Not to be confused with <head> or the different headings.

<nav>

- A section of the page that links to other pages or to parts within the page.

```
<nav>
  <ul>
    <li><a href="#overview">Overview</a></li>
    <li><a href="#history">History</a></li>
    <li><a href="#development">Development</a>
  <ul>
</nav>
```

- Often found in the <header> tag

<footer>

- A section that contains info such as copyright data, related documents, and links to social media

```
<footer>
    © 2015 by Colleen van Lent<br>
    <a href="http://www.intro-webdesign.com/HTML5">Introduction to
    HTML5</a>
</footer>
```

- Typically at the bottom of the page, but not required.

<figure>

- More semantics than . Can include:
 - caption
 - multiple multi-media resources

```
<figure>
  
  <figcaption> A sunset over Lake Erie. Taken in
    | Ashtabula Ohio</figcaption>
</figure>
```



Other New Tags

- **Structural Elements**
 - `article`, `aside`, `main`, `menuitem`, `summary`, `section`
- **Form Elements**
 - `datalist`, `keygen`, `output`
- **Input Types**
 - `color`, `date`, `email`, `list`
- **Graphics Elements**
 - `canvas`, `svg`
- **Media Elements**
 - `audio`, `embed`, `source`, `track`, `video`



Review

- The age of <div> is ending
- Semantic tags help guide users to information in your page

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Template Page

Create something!!

Minimum requirements

- Create a page called `index.html`
- Page should utilize header, main, and footer elements. These elements should NOT be empty
- Make sure the page validates!

Start with a Shell

- **Doctype**
- **Meta-Data**
- **Displayable content**

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Images

Best practices for adding images

Images – it's more than the tag

- Many file types are widely supported
 - JPEG (.jpg and .jpeg), GIF, and PNG
 - SVG and BMP are additional options
 - File extensions must be included
- Every image must be downloaded, so size can be a factor
- Every image requires an HTTP Request

Image Sizes

- When you link to an image the browser displays the image as big (or small) as the file.
 - This size is rarely optimal
 - “Quick” solutions – change file, use width/height attributes

Using an Editor

- Editors can be used to *permanently* change the size of the image
 - Only works on local files
- Built-in software for this includes Preview (Mac) and Paint (Windows)

Using Attributes

- Always strive to keep style out of your HTML files but...
- `` tag includes width and height attributes

Default Image size

```
<figure>
  <img src = "imgs/Ashtabula.jpg"
       alt = "My house">
  <figcaption>Default image size</figcaption>
</figure>
```

Using Width in Pixels

```
<figure>
  <img src = "imgs/Ashtabula.jpg"
       width = "500px" alt = "My house">
  <figcaption>Set image size</figcaption>
</figure>
```

Using Width and Height

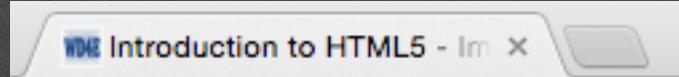
```
<figure>
  <img src = "imgs/Ashtabula.jpg"
        width = "500px" height = "100px"
        alt = "My house">
  <figcaption>Skewed image size</figcaption>
</figure>
```

Using Percentages

```
<figure>
  <img src = "imgs/Ashtabula.jpg"
       width = "50%" alt = "My house">
  <figcaption>Relative image size</figcaption>
</figure>
```

Favicons

- You can put image/logo/icon next to the title of your page (in the tab)
- Must go in <head> section



```
<link rel="icon" type="image/png" href="imgs/wd4elogo.png" />
```

Alternative Text Attribute

- Provides a textual alternative to non-text content
- Read by screen readers
- Displayed in place of images
- Provides semantic meaning for search engines

Creating Good alt text

- Be accurate
- Be succinct
- Don't be redundant
- Don't include “picture of..”, “graphic of ..”

Empty alt text

- **It is okay to leave alt text empty (null)**
 - Decorative images used for non-informative purpose
- **Do not skip the alt attribute though!**

Long alt text

- Some images (especially infographics) may require elaborate alt text
- Consider replacing alt text with link to separate page with full explanation

Review

- Misuse of file extensions, filename, and file paths are often a problem
- For now, style the height/width in the html code.

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Hyperlinks

Creating a linked document



Links

- **Links are what make the Web a web.**
- **The interlinked nature of the web leads to the “knowledge” that search engines appear to have.**



Anchor links

```
<a href="http://www.umich.edu">University of Michigan</a>
```

- The `<a>` tag stands for *anchor link*
- Needs a hyper-reference AND content
 - **href:** reference to location of new content
 - **content:** the “clickable” part (text or image)



Types of links

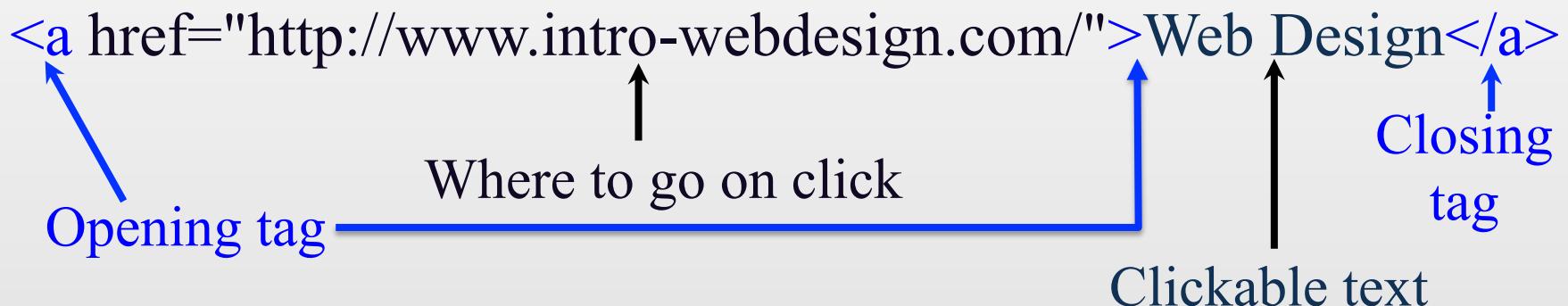
- Absolute
- Relative
- Internal
- Graphical

Absolute reference

```
<a href="http://www.intro-webdesign.com/">Web Design</a>
```

Opening tag Where to go on click Clickable text

Closing tag



The diagram illustrates the structure of an HTML anchor tag (<a>). It consists of three main parts: the opening tag (<a>), the clickable text ("Web Design"), and the closing tag (). Blue arrows point from labels to each component: "Opening tag" points to the start of the tag, "Where to go on click" points to the href attribute, and "Closing tag" points to the end of the tag.

Relative References

```
<a href="page2.html">Second Page</a>
```



Link to a local file in the same folder

```
<a href="docs/page2.html">Second Page</a>
```



Link to a local file in a different folder called “docs”

```
<a href="#history">History section</a>
```



Link to a different location in the same file



Absolute vs Relative

- When would you use absolute links?
- Are there any benefits to using local links?
- Your links should NEVER have folders that are specific to your computer

 C:\page2.html



Using Images as the Link

- The “clickable” component doesn’t have to be text.

```
<a href="http://www.redcross.org">  
  <img src = "imgs/redcross-logo.png"  
    alt = "Red Cross logo"/></a>
```

```
<a href="http://www.redcross.org">  
  <img src = "http://www.redcross.org/images/redcross-logo.png"  
    alt = "Red Cross logo"/>  
</a>
```

Usability Issues

- Make sure the clickable component has an informative name
- Information in the images should be available to those who can't see the image

Targets

- Anchors can take a target attribute
 - `_self` - default action
 - `_blank` – open in new tab or window
 - `_top` and `_parent`



Review

- A page without links is rare
- Links can be absolute, relative and internal
- Use caution when using images in links

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Multimedia

Adding video and audio materials

Objectives

- **Describe HTML5 audio and video elements**
- **Explain the purpose of plugins**
- **Reflect on Accessibility issues**

HTML5 Multimedia

- **Designed to avoid the use of extra software to play music/video**
- **Not fully implemented**



Video element <video>

- Video tag uses a **src** attribute or embedded <source>
- Common attributes
 - height, width
 - autoplay
 - loop
 - controls
- Text inside <video>..</video> is displayed if browser can not support tag

Audio element <audio>

- **Audio tag uses a src attribute to link to audio file, typically .mp3 or .wav**
- **Common attributes**
 - **autoplay, controls, loop**
 - **buffered**
 - **muted**
 - **volume**

Setting clips

- You can set both the video and audio elements to play clips by adding to the src attribute.
 - .ext#t=5, 25
 - .ext#t=, 39
 - .ext#t=, 1:38:45
 - .ext#t=42

Plugins

- Before HTML5 there was no standard for video display, plugins were required
- Since not all browsers support new tag some may require Flash

Accessibility Issues

- **Make sure to provide links to plugins**
- **Include text descriptions and closed captioning (or other equivalent content)**
- **Multimedia should enhance your content, not be a distraction**

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Tables

Displaying your Data

Tables Used to Be Evil

Tables are meant for
tabular data, not for layout

Design

- Make sure to sketch your layout *before* you code.
- Decide on the number of rows and columns
- Decide if any rows/columns will span multiple cells

The Tags

- **<table>** – the **container tag**
- **<tr>...</tr>** - the **rows**
- **<td>...</td>** - the **columns**



Simple Table

One	Two	Three
Four	Five	Six
Seven	Eight	Nine

```
<table>
  <tr><td>One</td><td>Two</td><td>Three</td></tr>
  <tr><td>Four</td><td>Five</td><td>Six</td></tr>
  <tr><td>Seven</td><td>Eight</td><td>Nine</td></tr>
</table>
```

Table Headings

- How would you add table headings? (The bold cells at the top that define the data.)
- Some people use bold font, we use *semantic tags*
- <th>..</th> -- table heading



Table Headings

Row One	Row Two	Row Three
One	Two	Three
Four	Five	Six
Seven	Eight	Nine

```
<table>
  <tr><th>Row One</th><th>Row Two</th><th>Row Three</th></tr>
  <tr><td>One</td><td>Two</td><td>Three</td></tr>
  <tr><td>Four</td><td>Five</td><td>Six</td></tr>
  <tr><td>Seven</td><td>Eight</td><td>Nine</td></tr>
</table>
```

Spanning Multiple Cells

- It may be the case that your table won't be a perfect grid.
- You can combine multiple rows and/or columns using the **rowspan** and **colspan** attributes.



```
<table border = "1">
  <tr>
    <th>Child's Name: </th><th>Parent's Name: </th>
  </tr>
  <tr>
    <td rowspan="2">Catherine</td><td>Michael McCarthy</td></tr>
  <tr>
    <td>Colleen McCarthy</td>
  </tr>
  <tr>
    <td>Maggie</td> <td>Sheila McGee</td>
  </tr>
  <tr>
    <td rowspan="2">Edward</td><td>Catherine Howard</td>
  </tr>
  <tr>
    <td>Jeff Howard</td>
  </tr>
</table>
```

Child's Name:	Parent's Name:
Catherine	Michael McCarthy
	Colleen McCarthy
Maggie	Sheila McGee
Edward	Catherine Howard
	Jeff Howard

The Border Attribute

- There are a number of attributes that tables can take, but in your HTML you should avoid styling.

Captions

- How do you link text to the table? A heading (h2, h3, etc.) will look good, but doesn't provide semantics.
- Use <caption>

Review

- **Tables should only be used for tabular data**
- **Draw your table before you code your table**
- **Check for unclosed tags**

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Useful Tags

Tags for blocks of code and
simple snippets

Choosing Your tags

- Generic: `<p>`, `<div>`
- Semantic: `<header>`, `<nav>`, `<footer>`,
`<figure>`

Block Tags

- Containers
 - <article>, <aside>, <section>, <main>, ...
- <hr>
- <address>
- <blockquote> - has cite attribute
- <details> with <summary>

Inline tags

- **** was the original inline tag for plain text
- **<cite>**
- **<abbr>**
- **<time>**
- **<code>**
- **<sub>** and **<sup>**

Tags that need “more”

- **<button>**
- **<meter>**
- **<progress>**
- **<iframe>** – often used to embed documents
- **<bdo>** attribute **dir** (**ltr** or **rtl**)
- **<map>** with **<area>** -- creates “clickable element in image” but needs JavaScript

Review

- **Use the most specific tag possible**
- **Sometimes tags “don’t work”**
 - **Run your code through a validator, you may have a syntax error**
 - **Run your code in multiple browsers (good idea even if your code looks good)**

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Accessible Web

**Thanks to Scott Williams at the UM Office for Institutional
Equity for his materials**
<http://umich.edu/webaccess/>



Goals

- Learn what a web accessibility professional does
- Understand how disabilities relate to the web
- Introduce the four principles of accessible interface design

What does a “web accessibility coordinator” do?

- Helps guide policy and purchasing decisions
- Evaluates web interfaces for accessibility
- Assists those with disabilities to access online infrastructure
- Keep pace with changing technology

1 in 5 People Have a Disability

- There are 60 million people with disabilities in the U.S.
 - Half are impeded using the internet
- Visual Issues
- Hearing Issues
- Motor Issues
- Cognitive Issues

Visual Disabilities

- **Blindness, low-vision, color-blindness**
- **8 million have difficulty reading ordinary newsprint (even with glasses)**
 - **1.8 million are completely blind**
- **How is your font-size, color-contrast, font-style?**

Hearing Disabilities

- Partial to total deafness
- 8 million have difficulty hearing a normal conversation
 - 1 million are completely deaf
- Do your videos include closed-captioning? Are you blaring music?



Motor Disabilities

- Inability to use a mouse or physical keyboard, slow response time, limited fine motor control
- Dexterity issues—8 million Americans have difficulty using their arms or hands
- What happens when someone tries to “tab” through your page? Do you require a steady hand?



Cognitive Disabilities

- Learning disabilities, distractibility, dyslexia, inability to remember or focus on large amounts of information
- Adults with ADD/ADHD: 16 million
- 38% of soldiers, 31% of Marines and 49% of National Guard members returning from combat report psychological conditions such as TBI and PTSD
- Cognitive disabilities number greater than physical and perceptual disabilities combined



More Stats

- **8.3% of the U.S. population have 2 or more disabilities**
- **40,000 people the in U.S are both deaf and blind**
- **41 percent of adults 65 and older have a disability**
- **8.7 million people with disabilities are poor**
- **70% of disabled are unemployed or underemployed**



The web offers unprecedented opportunities for disabled

- Education
- News
- Commerce
- Social
- Benefits of web are amplified for disabled!!
- Web is an enabling technology



Legal

- DOJ is in the process of revising Title II and III of the ADA to include online resources of state and local entities
- Case law—individuals or entities can file civil rights complaints, e.g., Penn State, NYU, Northwestern, FSU, Target, Southwest Airlines, Priceline.com, Ramada, Kindle, etc.

What is web accessibility?

- Making the web accessible for the widest possible audience
- This audience includes Temporarily Able-Bodied users (TABs)
- Currently, online infrastructure is *hostile to those with disabilities*
- Inseparable from SEO, mobile, and usability: improve one and you improve the others
- *Best way to accomplish accessibility? Adherence to standards.*

W3C WCAG 2.0

- W3C Web Content Accessibility Guidelines are principle-, not technology-based
- The four principles (POUR):
 - Perceivable
 - Operable
 - Understandable
 - Robust



Review

- Designing with accessibility in mind is the right thing to do for many reasons
- Adhering to standards (not flashy, cool effects) is key
- Pay special attention to the semantics behind the HTML5 tags

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Validating Your Site

Check your code!



Why validate?

- **Browsers are the helicopter parents of programming**
- **As your pages become more complex “hidden” areas can be devastating**

Three approaches

- Validate by URI
- Validate by Filename
- Validate by Direct Input



Don't freak out!

- Errors propagate, so always start at the top
- Search for solutions online and in forums



Accessibility Validation

- You can use `wave.webaim.org` to validate accessibility
- Only works on hosted pages



Review

- **Validated sites are more robust and more accessible**

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Hosting Your Site

How to get your site on the Web



Requirements

- Domain name
- Hosting company



Domain names

- Typically purchased for multiple years at cheap rate
- Most common is .com, but other extensions are gaining acceptance
- *Domain names are useless on their own*



Hosting

- **What is your URL right now?**
- **You need a registered IP address to connect with your domain name**
- **Hosting services vary**
 - Free
 - Mid-range
 - Full-service



Free services

- Little/no control of domain name
- Limited tools
- Advertising and redirects
- Familiar look and feel across them



Paid services

- Tend to have better tools
- Support is available
- But check for free services through work/school



Signing up for Byethost

- **<https://byethost.com>**
- **Remember your password!!**
- **Check your spam!**

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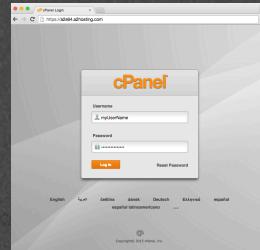


cPanel

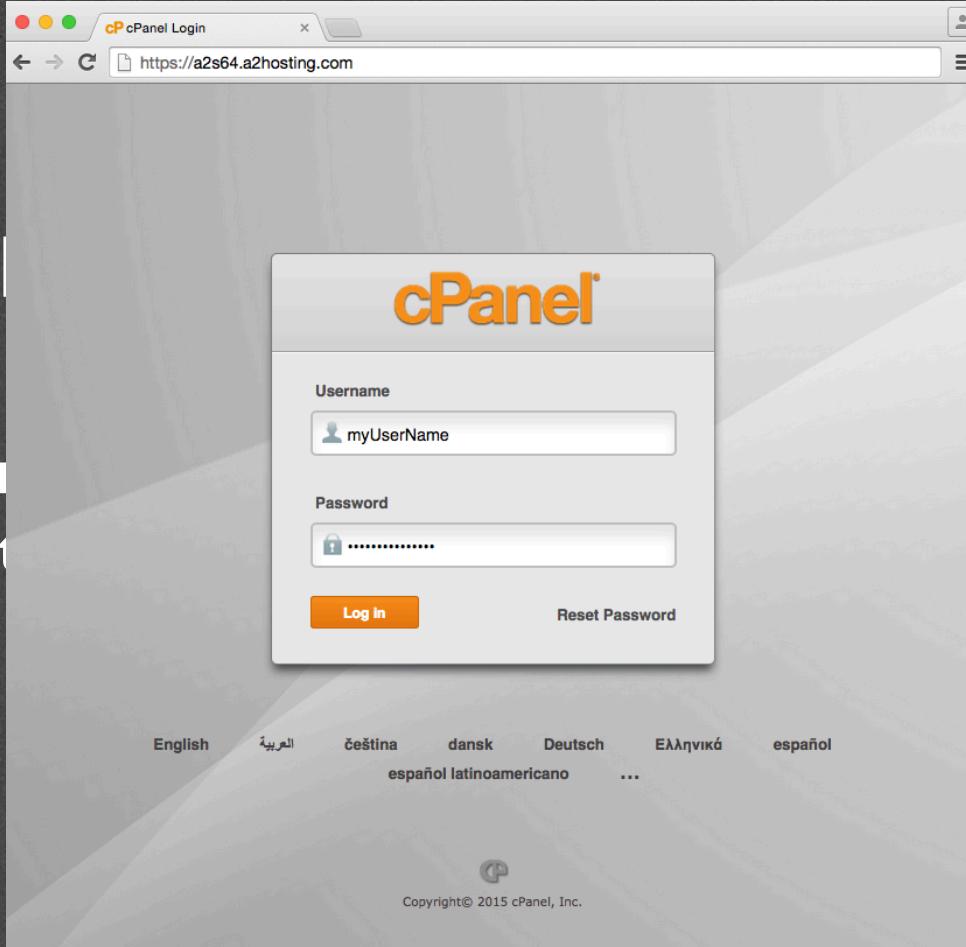
A common interface for managing your site

Connecting to CPanel

- You will need to have the URL for your cPanel account
 - Usually a version of your domain name or your hosting service domain name



- You will use cPanel
 - Usually your host



File Manager

- Regardless of the cPanel configuration, every system should have a File Manager.
- From the File Manager, search for the public_html (or in some cases, just public) folder.

public_html

- Your site will have a lot of files, some that you want people to see, some that you don't.
- Uploading files to the public_html folder should make them viewable to the public

Wait? Why can't I view my file?

- You typed in the wrong URL
- When you uploaded the file the transfer didn't work
- When you uploaded the file, it did not have “read access”

Changing Permissions

Files: /public_html/runathon2.html

Mode	User	Group	World
Read	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Write	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execute	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Permission	7	5	5

Working locally

- It is possible to edit your files via cPanel but I don't do that.
 - Changes are immediately public
 - Less opportunity to test and debug

Review

- **Versions of cPanel often differ depending on if you are using paid or free site**
- **Offers many administrative tools (email accounts, database management, cron jobs)**
- **An alternative is to use sftp to transfer files**

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Using Secure File Transfer Protocol

SFTP – A faster way to transfer files



Secure File Transfer

- A common way to transfer files is with FTP/SFTP
- Flashback, what is a protocol?
- Allows you to “drag and drop” as oppose to one-at-a-time file upload



What you need

- Find/install a FTP client
 - PC – WinSCP
 - Mac – Fugu/Cyberduck
- Find the ftp address for your host



Review

- You can upload your files many ways
- Make sure you know your login information

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Final Project

Create the Example Page

- Use the screenshot as a template
- No tricks, just testing for syntactic accuracy



Grading

- Code will be sent through a parser. Parsers look for specific expressions in your code
- Somewhat fragile – don't add anything extra to your code.
- Use the practice exam to test each section individually



Good luck!

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Closing

Wait? That's It?

- With the exception of forms and some graphics the lectures and reading have covered the bulk of the HTML5 tags.
- But what can I do???



Edit/View Files and Code

- You can use an editor to create or modify an html file
 - Creation – create shell for designers
 - Modify a page created by web-authoring software
- You know the different options for opening a file

Evaluate Accessibility

- Use “View Source” to look at code from any site
 - Did they use semantic tags?
- w3.validator.org checks for well-structured code
- wave.webaim.org checks for semantic structure

Publish Site

- You know the basic requirements (domain/host) for publishing
- Achieving even a small familiarity with as many systems as you can is beneficial.

What next?

- Continue to practice your skills
- Get comfortable with multiple editors
- Try uploading your code
- Begin to learn about Cascading Style Sheets!!



Thank you!

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The Secret Lecture



Separating Content From Style

- Separating content from style is basic tenet of HTML5
- Tags are meant to convey information
- But.....

Using the “style” attribute

- Every tag can utilize a **style** attribute.
 - Similar to **href**, **src**, **alt**, etc.
- Style can specify color, background-color,

```
<h1 style = "color:blue;">Colleen van Lent</h1>
```

Colleen van Lent



The screenshot shows a web browser window with a dark gray header bar. The title bar reads "Colleen". The main content area displays a personal profile page:

- Name:** Colleen van Lent
- Options:** One Two Three Your Choice
- Section:** Favorite Foods
 - Apples
 - Pizza
 - Crab
 - Chocolate Cake
- Section:** Achievements
 - Progress in this course (100%)
 - Progress in the Specialization (20%)
 - Progress in life goals (67%)
- Section:** More About Me
 - My Childhood** (selected tab)
I grew up in Ashtabula Ohio. I lived near Lake Erie and I really miss the sunsets over the water.
- Footer:** WD4E
This page was created by your name & Colleen van Lent. To learn more about web design, visit [Intro to Web Design](#).



The screenshot displays two side-by-side browser windows, both titled "Colleen". The left window shows a basic version of the site, while the right window shows an enhanced version with styling.

Left Window (Basic Version):

- Header:** Colleen van Lent
- Navigation Bar:** One Two Three Your Choice
- Section:** Favorite Foods
 - Apples
 - Pizza
 - Crab
 - Chocolate Cake
- Section:** Achievements
 - Progress in this course (100%)
 - Progress in the Specialization (20%)
 - Progress in life goals (67%)
- Section:** More About Me
 - ▼ My Childhood
 - I grew up in Ashtabula Ohio
- Footer:** WD4E more about web design, visit [Intro to Web Design](#).

Right Window (Stylized Version):

- Header:** Colleen van Lent
- Navigation Bar:** One Two Three Your Choice
- Section:** Favorite Foods
 - Apples
 - Pizza
 - Crab
 - Chocolate Cake
- Section:** Achievements
 - Progress in this course (100%)
 - Progress in the Specialization (20%)
 - Progress in life goals (67%)
- Section:** More About Me
 - ▼ My Childhood
 - I grew up in Ashtabula Ohio. I lived near Lake Erie and I really miss the sunsets over the water.
- Footer:** WD4E This page was created by your name & Colleen van Lent. To learn more about web design, visit [Intro to Web Design](#).

Why not use it?

- There are practical reasons for not using style attribute
 - Only applies to one element
 - Difficult to change later
 - Takes away from “reusability”

Cascading Style Sheets

- A better way to style your page is to use Cascading Style Sheets
- Styling is done in a separate file and the HTML file links to whichever style files work best for that site.

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