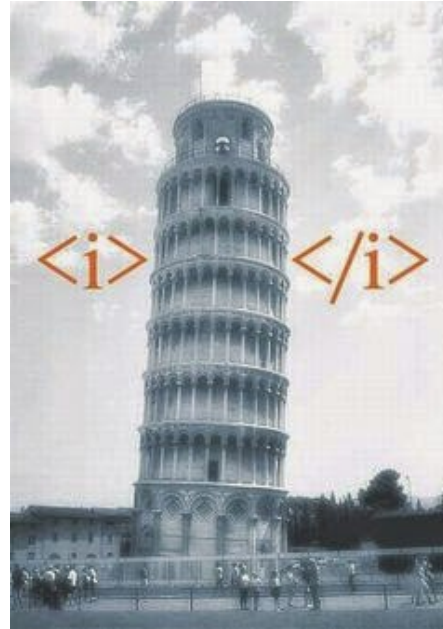


CSC 337



Hyper Text Markup Language (HTML)

Rick Mercer, Marty Stepp, William Mitchell

A history of hypertext and HTML

- 1941: Jorge Luis Borges The Garden of Forking Paths
- 1945: Vannevar Bush, Memex in As We May Think
- 1965: Ted Nelson introduces "hypertext"

50 years ago: <https://gigaom.com/2015/08/24/hypertext-50/>

- 1967: Brown U's Hypertext Editing System
- 1969: IBM creates Generalized Markup Language
- 1987: Apple creates HyperCard
- 1991: HTML Tags by Berners-Lee
- 1993: Marc Andreessen, Eric Bina: Mosaic



WEB BROWSER

MOSAIC, THE FIRST POPULAR GRAPHICAL BROWSER FOR THE WORLD WIDE WEB, WAS CREATED BY MARC L. ANDREESSEN AND ERIC J. BINA AT THE NATIONAL CENTER FOR SUPER-COMPUTING APPLICATIONS [NCSA]. UPON ITS 1993 RELEASE TO THE PUBLIC, MOSAIC GAVE INTERNET USERS EASY ACCESS TO MULTIMEDIA SOURCES OF INFORMATION. WEB BROWSERS HAVE TRANSFORMED THE EXCHANGE OF INFORMATION.

UNIVERSITY OF ILLINOIS

History of HTML

- 1994: World Wide Web Consortium founded.
- 1995: HTML 2.0 published by Internet Engineering Task Force (RFC 1866)
- 1995ish: Browser wars begin—Internet Explorer vs. Netscape Navigator (others, too)
- January 1997: HTML 3.2

History of HTML

- 1997: HTML 4.0 published by W3C
- 1998: XHTML Recommendation by W3C
- 2004: Web Hypertext Application Technology Working Group (WHATWG) begins work on HTML5
- 2008: First W3C Working Draft of HTML5
- October 2014: W3C sets HTML5 as Web standard
 - Conforming browsers can play movies
- We will be using HTML5
 - Many cool things like playing movies

HTML

- HyperText Markup Language (HTML) is the standard markup language to create web pages
- Web browsers (Chrome, Firefox, IE, Safari) read the DOM tree of HTML elements and render them into visible or audible web pages



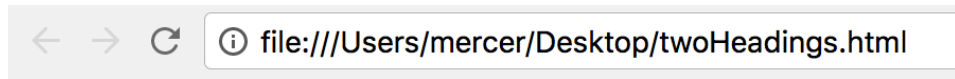
Basic HTML

Hypertext Markup Language (HTML)

- HTML describes the *content* and *structure* of information on a web page
- HTML surrounds text content with opening and closing **tags**
- Each tag's name is called an **element**
 - syntax: `<element> content </element>`
 - example: `<h1>`This is the largest header`</h1>`
- Most whitespace is insignificant in HTML (ignored or collapsed to a single space)

Boilerplate html file preview

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Two Headings</title>
</head>
<body>
  <h6>This is the smallest header</h6>
  <h1>This is the largest header</h1>
</body>
</html>
```



This is the smallest header

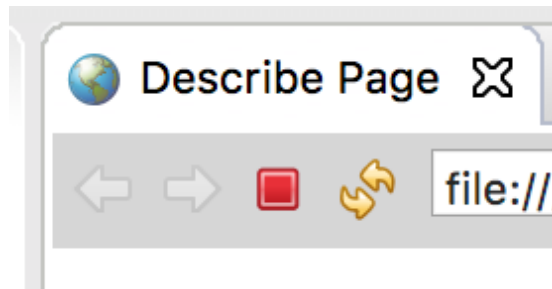
This is the largest header

- DOCTYPE tells browser to interpret the page's code as HTML5
- `<head>` contains meta-data, `<body>` contains the content
- An HTML page is saved into a file ending with extension .html

Title

```
<head>  
  <title>Describe Page</title>  
</head>
```

- title elements are placed within the head of the page
- The text is displayed in the web browser's title bar



Adding spaces

- Spaces are normally created by the spacebar
 - tab and return keys are ignored
- HTML just interprets them all as whitespace between words, and displays a single space
- Use a non-breaking space ` `

[illegible]

Add spaces

Add spaces

Headings

```
<body>
<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
<h4>This is heading 4</h4>
<h5>This is heading 5</h5>
<h6>This is heading 6</h6>
```

```
<p>Use h1 to h6 elements only for headings</p>
<p>Do not use to make text bold or big</p>
<p>There are other tags for that</p>
</body>
```

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

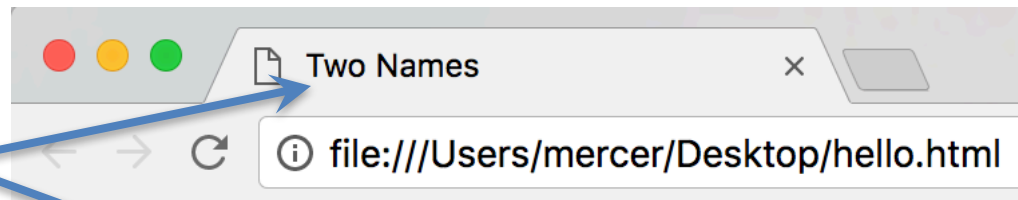
Use h1 to h6 elements only for headings

Do not use to make text bold or big

There are other tags for that

In-class Activity

- Form a team of 2 (may have to change tables)
- Using any editor **except** MS Word, write one web page `hello.html` with the title "Two Names" and both of your names in an `<h3>` element
- Copy and paste your code here to help spot errors
https://validator.w3.org/#validate_by_input
- Open that file with Chrome (or Safari or Firefox) and raise your hand
- Should look like



Jasmine Dhillon

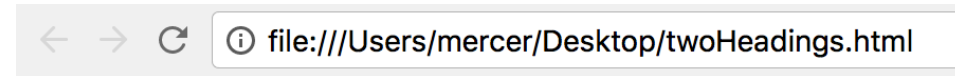
Ashwin Srinivasan



More HTML

Boilerplate html file review

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Two Headings</title>
</head>
<body>
  <h6>This is the smallest header</h6>
  <h1>This is the largest header</h1>
</body>
</html>
```



This is the smallest header

This is the largest header

- DOCTYPE tells browser to interpret the page's code as HTML5
- `<head>` contains meta-data, `<body>` contains the content
- An HTML page is saved into a file ending with extension .html

Paragraph

```
<body>  
  <p>Paragraphs are often</p>  
  <p>separated by</p>  
  <p>12 pixels</p>  
</body>
```

Paragraphs are often
separated by
12 pixels

- Paragraphs are rendered with a set number of pixels between each
- Paragraphs are often used to combine several other elements

Break:

- Use
 to get a new line in a web page

<body>

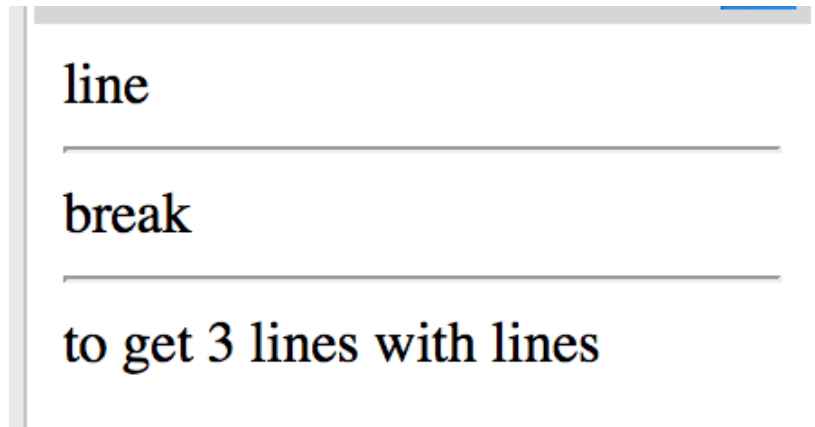
line
 break
 to get 3 lines

</body>

```
line  
break  
to get 3 lines
```

Horizontal Rule: <hr>

- Use <hr> to place a line across the web page
 <body>
 line <hr> break <hr> to get 3 lines with lines
 </body>
 - <hr> starts a new line like a
 and adds a line



Block versus inline elements

inline elements affect a small amount of content

- examples: `` `<i>` ``
- browsers allow many inline elements to appear on the same line

block elements contain a region of content

- examples: `<p>` `<table>` ``
- the browser places a margin of whitespace between block elements

A block with inline elements follows
inline bold
another inline italic element
3rd inline in code

```
<body>
A block with inline elements follows
<div>
  <b>inline bold</b>
  <br>
  <i>another inline italic element</i>
  <br>
  <code>3rd inline in code</code>
</div>
</body>
```

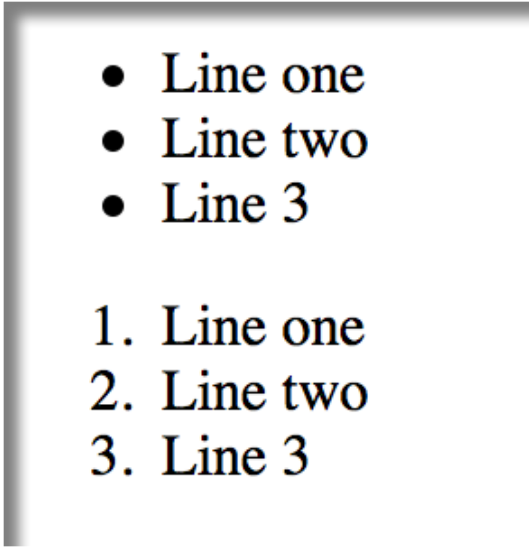
More block elements

- Unordered list, bullets

```
<ul>  
  <li>Line one</li>  
  <li>Line two</li>  
  <li>Line 3</li>  
</ul>
```

- Ordered list, numbers

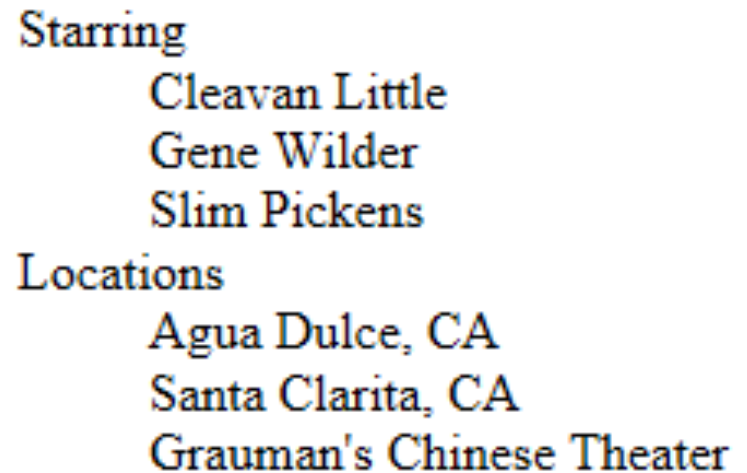
```
<ol>  
  <li>Line one</li>  
  <li>Line two</li>  
  <li>Line 3</li>  
</ol>
```

- 
- Line one
 - Line two
 - Line 3

1. Line one
2. Line two
3. Line 3

Definition Lists <dl> <dt> <dd>

```
<dl>
  <dt>
    Starring
  </dt>
  <dd>Cleavan Little</dd>
  <dd>Gene Wilder</dd>
  <dd>Slim Pickens</dd>
  <dt>
    Locations
  </dt>
  <dd>Agua Dulce, CA</dd>
  <dd>Santa Clarita, CA</dd>
  <dd>Grauman's Chinese Theater</dd>
</dl>
```



Starring
Cleavan Little
Gene Wilder
Slim Pickens

Locations
Agua Dulce, CA
Santa Clarita, CA
Grauman's Chinese Theater

Tables

- A table
 - styles needed for lines and padding (later)

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

One Two Three
Four Five Six

Attributes

- Attributes provide additional information about an element
- Attributes come in name/value pairs like:
name="value" or title="HINT"
`<p title="SOME HINT">Hover over, see HINT</p>`
`<p id="findMe">Can find this element by id</p>`
- Quotes can be either ' or "
 - this will become useful later

Images: ``

- Insert a graphical image into the page
 - The `src` attribute specifies the image URL
 - HTML5 also requires `alt` attribute describing the image
- ```

```





# width and height attributes

- All images are drawn in their original size
  - unless you override the **height** and **width** attributes

```
<body>

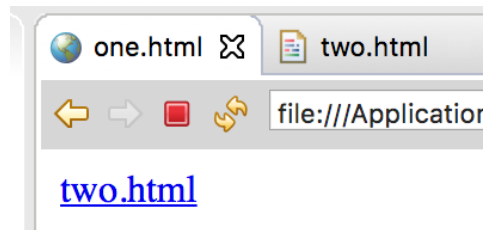
</body>
```



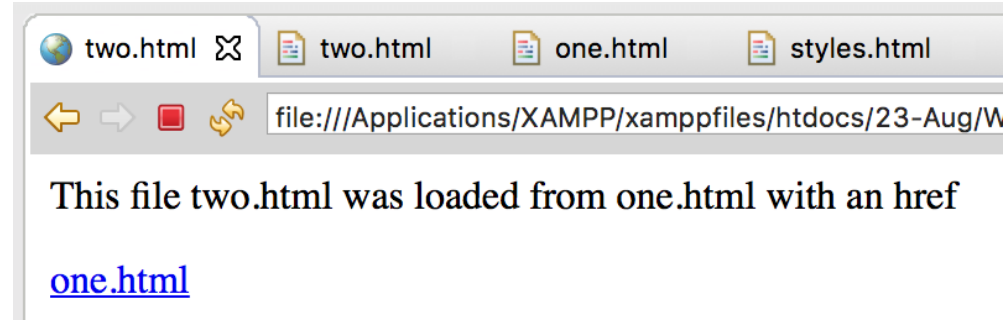
# Links with `<a>`

- `<a>` is a link or "anchor" to other pages
- `href="a string"`
- The `href` attribute such as `href="one.html"` specifies a destination URL
  - can be absolute (next slide) or relative (to a page on this site)

```
<title>one.html</title>
</head>
<body>
two.html
</body>
```



```
<body>
This file two.html was loaded
from one.html with an href
<p>
one.html
</p>
```



# Absolute link with `<a>` and `href`

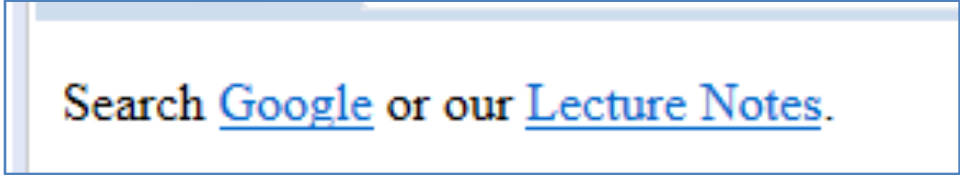
- anchors are `inline` elements
  - must be placed in a `block` element such as `<p>`, a `<div>` or a `<body>`

```
<body>
```

```
Search Google
```

```
or Our site
```

```
</body>
```



Search Google or our Lecture Notes.



`<head><style>?</style></head>`

# More Styling on Web Pages

- CSS (**C**ascading **S**tyle **S**heets) markup language describes how HTML elements will be rendered
- As shown in the tutorials, CSS can added to a <style> element inside the <head> section

```
<head>
<title>Add CSS Styling</title>
<style>
body {
 background-color: powderblue;
}
h3 {
 color: green;
}
</style>
</head>
<body>
<h3>h3 with a new color</h3>
</body>
```

**h3 with a new color**

# CSS Selectors

- CSS uses many selectors, one of the few we will use is to override a built in HTML element like <body> or <h3>

```
<head>
<style>
p {
 background-color: blue;
}
ol {
 color: green;
}
</style>
</head>
```

# CSS

- We will show more CSS in the CSS presentation

# Web Standards

- It is important to write proper HTML code and follow proper syntax
- Why use valid HTML?
  - more rigid and structured language
  - more interoperable across different web browsers
  - more likely that our pages will display correctly in the future
- Check your HTML code at <https://validator.w3.org/>