

# Introduction to HTML and CSS

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# Agenda

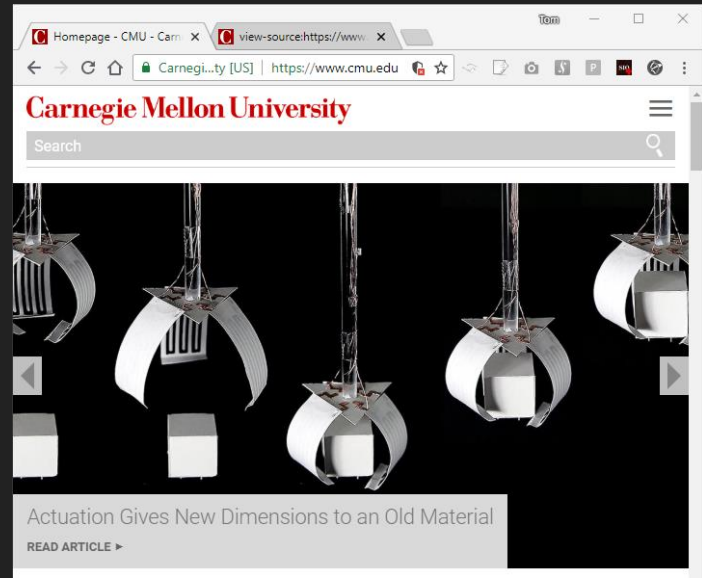
- 1:00 – 1:15 Overview of HTML
  - 1:15 – 1:30 Walk through creating an HTML page
  - 1:30 – 1:45 Using CMU hosting
  - 1:45 – 2:00 Overview of CSS
- 

# HTML Overview



# What is a web page made of?

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="utf-8"/>
5   <meta content="IE=edge" http-equiv="X-UA-Compatible"/>
6   <meta content="width=device-width, initial-scale=1.0" name="viewport"/>
7   <title>Homepage - CMU - Carnegie Mellon University - CMU - Carnegie Mellon
8   University</title>
9   <meta content="CMU is a global research university known for its world-class,
10  interdisciplinary programs: arts, business, computing, engineering, humanities, policy and
11  science." name="description"/>
12  <meta content="Carnegie Mellon University" name="author"/>
13  <meta content="Homepage - CMU - Carnegie Mellon University - CMU - Carnegie Mellon
14  University" property="og:title"/>
15  <meta content="CMU is a global research university known for its world-class,
16  interdisciplinary programs: arts, business, computing, engineering, humanities, policy and
17  science." property="og:description"/>
18  <meta content="website" property="og:type"/>
19  <meta content="http://www.cmu.edu/index.html" property="og:url"/>
20  <meta content="http://www.cmu.edu/assets/images/site/meta-image-cmu.jpg"
21  property="og:image"/>
22
23  <link href="//fonts.googleapis.com/css?
24  family=Open+Sans:400,400italic,300italic,300,700,700italic" rel="stylesheet"
25  type="text/css"/>
26  <link href="//www.cmu.edu/common/standard-v5.2/css/main.min.css" media="screen"
27  rel="stylesheet" type="text/css"/>
28  <link href="//www.cmu.edu/common/standard-v5.2/css/print.min.css" media="print"
29  rel="stylesheet" type="text/css"/>
30
31  <link href="//www.cmu.edu/favicon.ico" rel="icon"/>
32  <link href="//www.cmu.edu/favicon-152.png" rel="apple-touch-icon-precomposed"/>
33  <meta content="#9f0000" name="msapplication-TileColor"/>
34  <meta content="//www.cmu.edu/favicon-144.png" name="msapplication-TileImage"/>
35
36  <link href="https://www.cmu.edu/news/feeds/news.rss" rel="alternate" title="CMU News"
37  type="application/rss+xml"/>
38  <link href="https://www.cmu.edu/assets/css/custom.css" media="screen" rel="stylesheet"
```



# What is a web page made of?

- Website content is described using HTML (.html)
  - Stands for Hyper Text Markup Language
  - Can be edited in a text editor
  - Uses a tag hierarchy to describe document content
- Content is styled using CSS (.css)
  - Cascading Style Sheet
  - Can apply styles to elements of a certain type/class
- Interactive content uses JavaScript (.js)
  - Won't be covering this today

# Tags

```
<h1>Some Content</h1>
```

Opening tag

Content

Closing tag

```

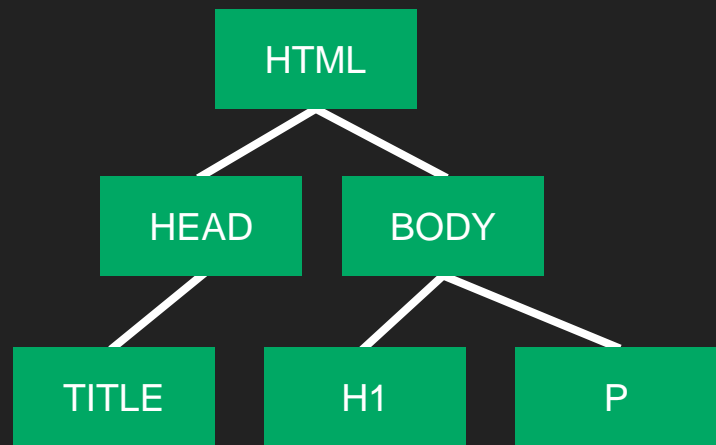
```

Attribute

# HTML Page structure

Tags are translated into a tree-like hierarchy

```
<html>
  <head>
    <title>Hello World!</title>
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p>I'm some content!</p>
  </body>
</html>
```

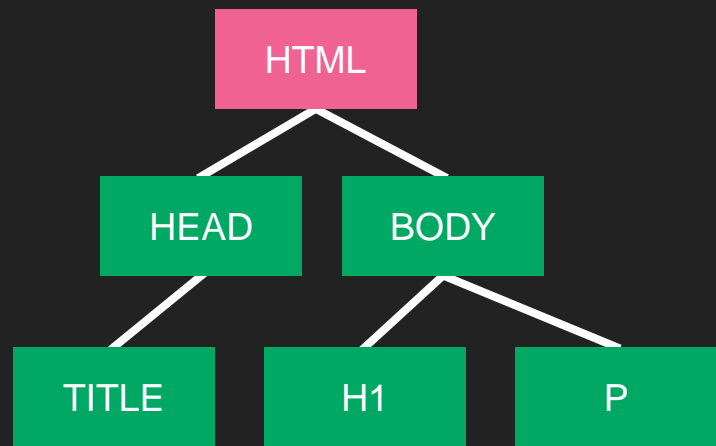




# HTML Page structure

The HTML tag contains all the other elements

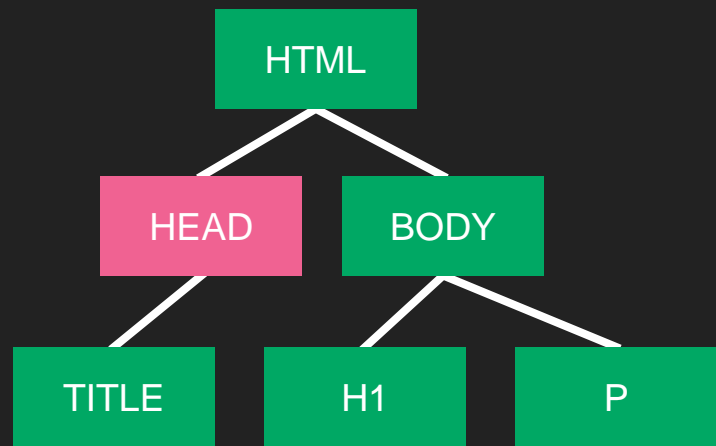
```
<html>  
  <head>  
    <title>Hello World!</title>  
  </head>  
  <body>  
    <h1>I'm a heading!</h1>  
    <p>I'm some content!</p>  
  </body>  
</html>
```



# HTML Page structure

The HEAD tag contains metadata about the page (and links to CSS/JS files)

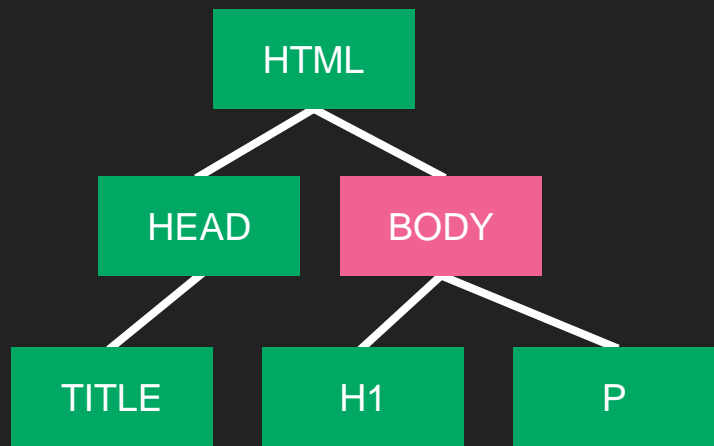
```
<html>
  <head>
    <title>Hello World!</title>
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p>I'm some content!</p>
  </body>
</html>
```



# HTML Page structure

The BODY tag contains the main content of the document

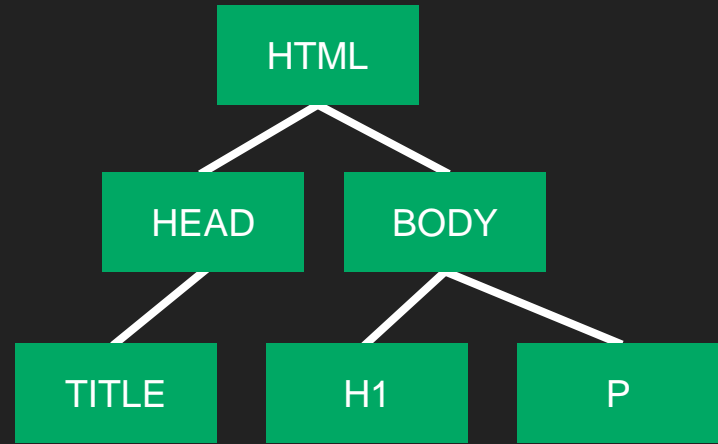
```
<html>
  <head>
    <title>Hello World!</title>
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p>I'm some content!</p>
  </body>
</html>
```



# HTML Page structure

The DOCTYPE declaration (not a tag) tells the browser this is an HTML file

```
<!DOCTYPE html>
<html>
  <head>
    <title>Hello World!</title>
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p>I'm some content!</p>
  </body>
</html>
```



# Common tags



# Headings

```
<h1>I'm a heading!</h1>  
<h2>I'm a subheading!</h2>  
<h3>I'm a subsubheading?</h3>
```



**I'm a heading!**  
I'm a subheading!  
I'm a subsubheading?

- Are declared using the H1, H2, ... H6 tags.
- H1 is the largest
- Are used by search engines to index content

# Paragraphs

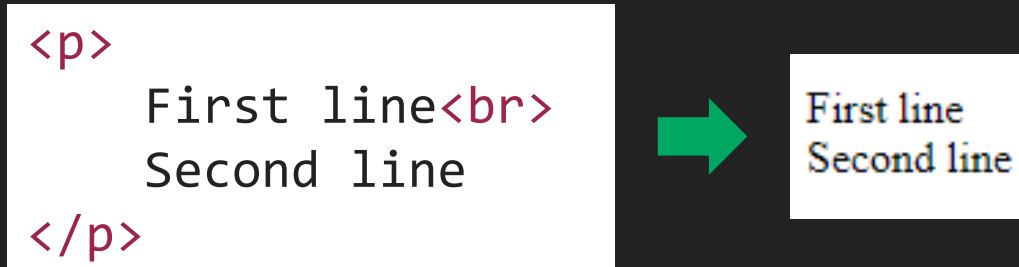
```
<p>First paragraph</p>  
<p>Second paragraph</p>
```



First paragraph  
Second paragraph

- Necessary since HTML ignores whitespace

# Line breaks



- Create a new line without adding space
- Interpreted differently by search engines/screen readers



# Links

```
<a href="page2.html">Click here!</a>
```



[Click here!](#)

- Links to another HTML file on your computer or the internet
- Created using anchor tags
- Destination page can be specified as a relative or absolute path

# Images

```

```



- Can point to any image the browser supports (.jpg, .png, .svg, etc.)
- Alt text is required
- Height/Width can be controlled with CSS

# Divs

```
<div>First div</div>  
<div>Second div</div>
```



First paragraph  
Second paragraph

- Used to split page into rectangular regions
- Can be positioned/styled independently using CSS

# Tag summary

`<h1>`, `<h2>`, ... - Headings

`<p>` - Paragraph

`<br>` - Line break

`<a href="url">content</a>` - Hyperlink

`` - Image

`<div>` - Div (rectangular portion of a page)

`<ul>`, `<ol>` - Unordered and ordered lists

`<li>` - List item

# Walkthrough



# Publishing using Andrew Hosting

- Name your home page `index.html`
- Copy files to your `www` directory
  - `scp index.html andrew:~/www/index.html`
- SSH into Andrew
- Update file permissions
  - Run this command from your home directory:
  - `fs sa www system:anyuser rl`
- Visit <http://www.andrew.cmu.edu/server/publish.html>
- Your website is at:  
<http://www.andrew.cmu.edu/user/ANDREWID/>

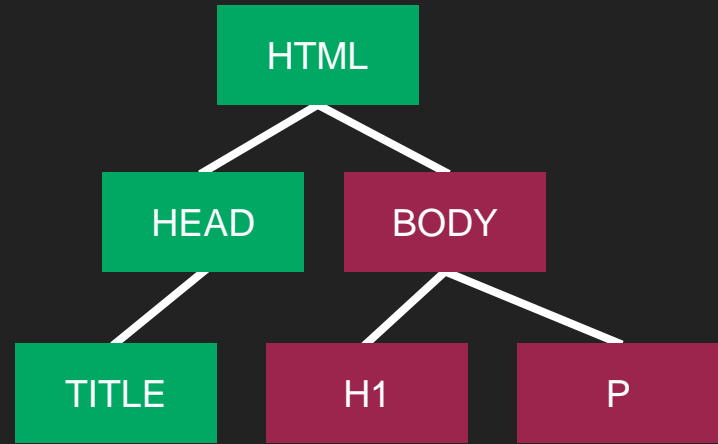
# CSS Overview

The top right corner of the slide features a decorative graphic composed of several overlapping, semi-transparent green squares and triangles, creating a stepped, geometric pattern.

# CSS

CSS applies styles to HTML elements. The styles *cascade* down the hierarchy.

```
body {  
  font-family: Arial, serif;  
  font-weight: bold;  
  font-size: 12px;  
  background-color: red;  
}
```





# CSS

CSS is referenced from an HTML file using the LINK tag.

```
<html>
  <head>
    <title>Hello World!</title>
    <link rel="stylesheet" type="text/css" href="style.css">
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p>I'm some content!</p>
  </body>
</html>
```

# CSS Structure

```
body {  
  font-family: Arial, sans-serif;  
  font-weight: bold;  
  font-size: 12px;  
}  
  
.colorful {  
  color: #ff0000;  
  background-color: blue;  
}
```

Diagram illustrating CSS structure with annotations:

- Tag name**: Points to the `body` selector.
- Property**: Points to the `font-family` property.
- Value**: Points to the `12px` value.
- Class name**: Points to the `.colorful` selector.

# CSS Structure

Element id

```
}
```

```
#mascotImage {  
  width: 10%;  
  float: right;  
  margin: 10px;  
}
```

# CSS

Classes and ids can determine where styles are applied

```
<html>
  <head>
    <title>Hello World!</title>
    <link rel="stylesheet" type="text/css" ...
  </head>
  <body>
    <h1>I'm a heading!</h1>
    <p class="colorful">I'm some content!</p>
    
</html>
```

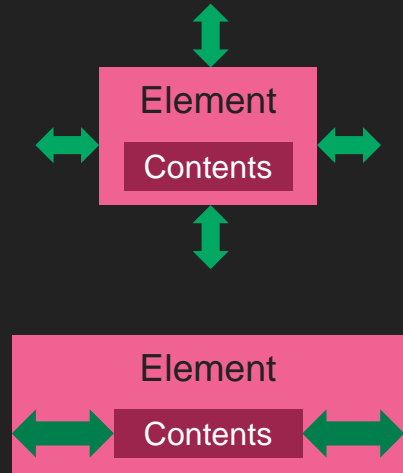
# Positioning elements

`margin` – Amount of space around element

`padding` – Space between element and contents

`width/height` – Uses units of `em`, `px`, or `%`

`float` – Place content off to the side



# Other resources

- Use a CSS template
  - <https://materializecss.com/>
- W3Schools has excellent documentation for HTML tags
  - <https://www.w3schools.com/>