THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

HTML/CSS Lab

CSCI 2541 Database Systems & Team Projects

Teaching Assistants

Slides adapted from ones by Prof. Bhagi Narahari & Wood

General Format and Expectations

- Hands on practical experience on the techniques described in lecture.
  - Usually intro slides, guided coding, then a group lab activity
- Lab exercises are generally due 24 hours after lab
  - Extra time this week since you are figuring things out
- Queries and code submitted are expected to work. If it doesn’t run you will not get credit.

HTML & CSS

HTML

Hypertext

Hypertext

A document containing links to other locations or content in a page

Markup Language

Markup Language

A human readable language system that uses tags to write and format the elements in a document.

HTML =
Hypertext + Markup Language

HTML

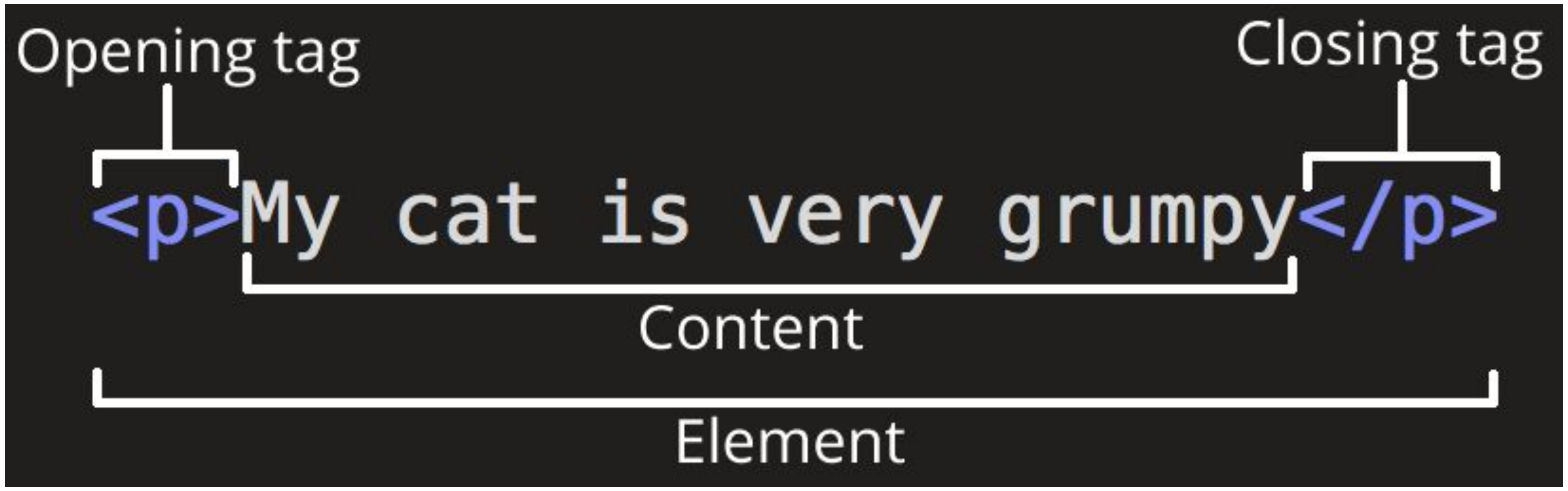
A language that uses tags and attributes to define the content (Links, Text, and images) of a webpage.

What does HTML actually do?

- Invented in 1989 as a way to create web pages for the internet.
- Uses HTML tags and attributes to define documents.
- **Tags** are used to create elements on a page and are signified by an opening tag <> and a closing tag </>. (Except the “void element” tags. See the next slide.)

  <p>Hello this is my paragraph </p>

- **Attributes** are used to describe the characteristics of an HTML element in greater detail.
  - <p align=“center”> Hello this is my paragraph. </p>



```
<p>My cat is very grumpy</p>
```

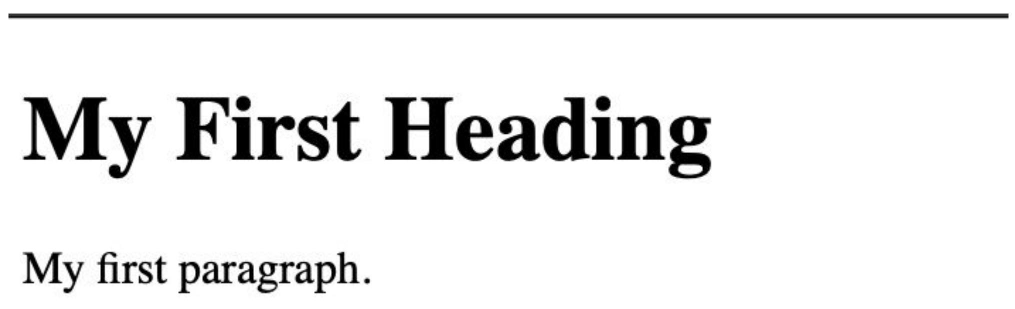
Exceptions*

Some tags are classified as a "void element," which means it cannot have any content and therefore must not necessarily have a separate closing tag, such as:

- <br>: New line
- <img>: Used to embed images.
- <hr>: Creates a thematic break (horizontal rule).
- <input>: Used to create interactive controls in forms.
- <link>: Links external resources like stylesheets.
- <meta>: Provides metadata about the document.

A basic html webpage

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```



My First Heading

My first paragraph.

But wait, how do we make it look good?

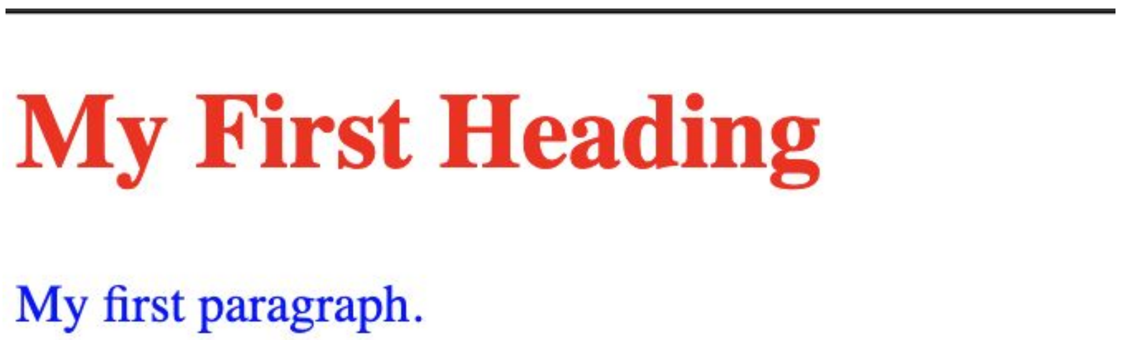
CSS: Cascading Style Sheets

CSS: Cascading Style Sheets

- CSS is the language of design.
- It’s what controls the color, textures, and layout of a web page
- Use it to control how elements are displayed on a page both in location and in how they look.

The old, awful way

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1><font color="red">My First Heading</font></h1>
<p><font color="red">My first paragraph.</font></p>
</body>
</html>
```



My First Heading

My first paragraph.

Abstraction: The Key Concept of CS

- Abstraction allows us to separate out components so they aren't tightly tied to each other
    - Java Virtual Machine separates code from underlying HW so you can run same program on any machine
    - DBMS separates physical implementation of data storage/indexing from the logical schema/query interface
    - HTML and CSS separates content and style
- Why is this so powerful and useful???

Separating Style from Content

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
<link rel=“stylesheet” type=“text/css” href=“styles.css” >
</head>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```

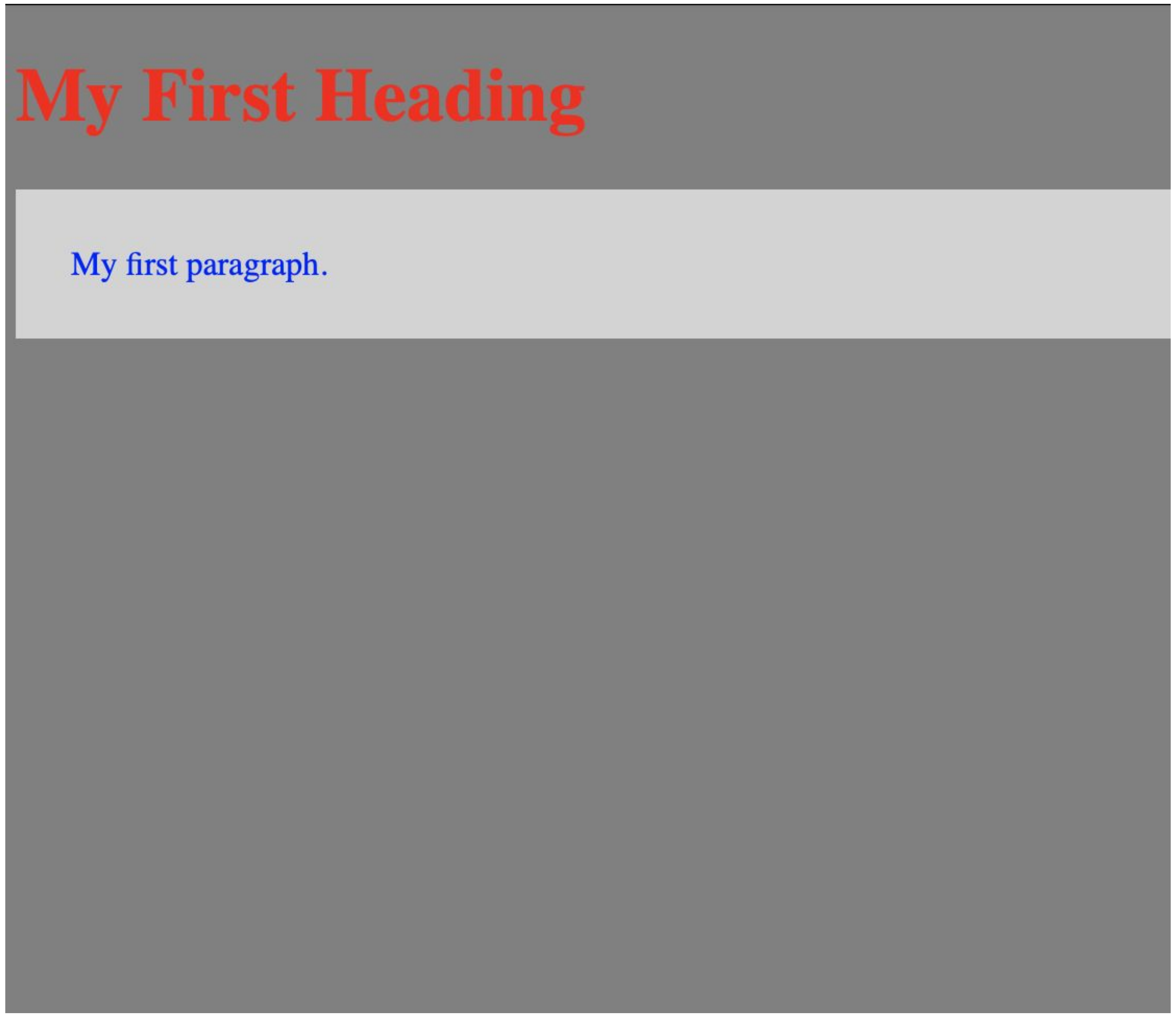
Styling an html page

```
body{
  background-color: grey;
  font-size: large;
  color: red;
}

p{
  background-color: lightgrey;
  font-size: medium;
  color: blue;
  padding: 20pt;
}
```

```
selector{
  property: prop-value; <— Declaration
}
```

Styling an html page

```
body{
  background-color: grey;
  font-size: large;
  color: red;
}

p{
  background-color: lightgrey;
  font-size: medium;
  color: blue;
  padding: 20pt;
}
```



My First Heading

My first paragraph.

Classes vs ID’s

- You can specify CSS styling based on tags, classes, and ids.
- Add an id to a tag if you want to be able to style that specific element only:
    - <p id=“style_only_this_one”> </p>
- Add a class to a tag if you want to style multiple elements on a page:
    - <p class=“style_all_paragraphs”></p>

Classes vs ID’s

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- Add a class to a tag if you want to style multiple elements on a page:
  - <p class=“style_all_paragraphs”></p>

Use id’s to style a specific element that appears only once and classes to style elements that appear repeatedly.

Styling Classes and Id’s

```
p{
  background-color: lightgrey;
  font-size: medium;
  color: blue;
  padding: 20pt;
}

#style_only_this_one{
  background-color: lightgrey;
  font-size: medium;
  color: blue;
  padding: 20pt;
}

.style_all_paragraphs{
  background-color: lightgrey;
  font-size: medium;
  color: blue;
  padding: 20pt;
}
```

CSS Inheritance

- CSS is called cascading because of inheritance.
- When multiple rules conflict with each other, styles cascade downwards thus applying only the last rule.

```
h1{

  color: red;

}


h1{

  color: blue;

}
```

What color will h1 elements be on the page?

CSS Inheritance

- CSS is called cascading because of inheritance.
- When multiple rules conflict with each other, styles cascade downwards thus applying only the last rule.

```
h1{
  color: red;
}


h1{
  color: blue;
}
```

Because of inheritance only the last rule is applied. The heading is blue.

CSS Specificity

- CSS rules with more specific selectors override CSS rules with less specific selectors regardless of order.

- The rules of specificity are as follows:

  - The least specific is an element tag: <p>

  - Using a class will override an element tag style: .myHeader

  - Using an id will override both a class and an element tag style: #myTitle

  - Using an in-line style on a tag will override anything else (generally should avoid this since it breaks abstraction)

Lab Activities

- **Pre-Lab1 Hello World Wide Web**: basics of HTML tags, nesting, validation and DOM
  - not graded, due today for participation point
- **Lab1 Practice Student Roster**: try to make a page with a list of student names
  - not graded, see what you can figure out!
- **Lab1 Practice Lots of Tags**: walk through of most common HTML tags and CSS
  - not graded, follow along as we discuss
- **Lab1 Student Bios**: work in a small group to make a website with CSS styling
  - Graded (see webpage)

Attributions

These slides are adapted from materials made by Prof. Bhagi Narahari

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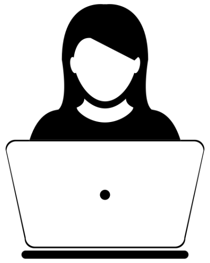

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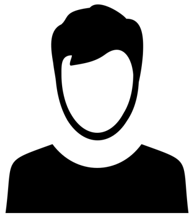

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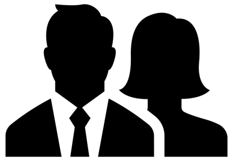

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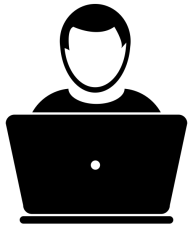

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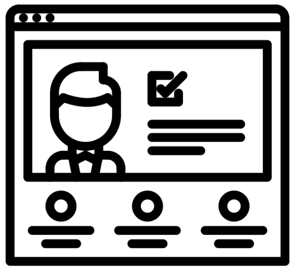

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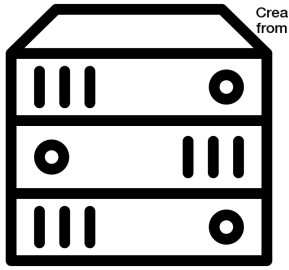

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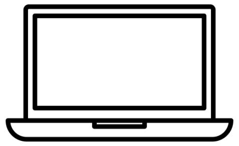

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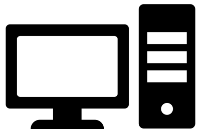

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