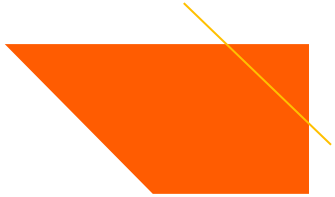
Web Application Development

COSI 152A



Overview of web development

Web development

Web development is the process of developing a website for the Internet (World Wide Web).

Can range from developing a simple single static page of plain text to complex web applications, electronic businesses, and social network services.

Who is a Web Developer?

An interactive artist who build and maintain websites.

Uses the basic building blocks of the web (HTML, CSS and JavaScript) to create something complex like a webpage.

Types of Web Developers

Front-end developers

Back-end developers

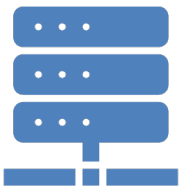
Full-stack developers

Front-end developers

The front-end is the stuff you see on your browser.

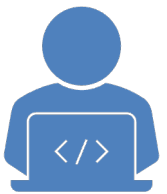
Front-end developers use HTML, CSS, JavaScript, and their relevant frameworks for content presentation and better user experience.

Back-end developers



The back-end refers to the guts of the application, which live on the server.

The back-end stores and serves program data to ensure that the front end has what it needs.



Back-end developers use programming languages like Python, Node.js, and PHP to work with data.

Full-stack developers

Full-stack development covers all aspects of web development.

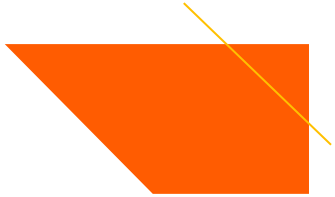
Full-stack developers are comfortable working with both the front-end and back-end.

Skills required as a web developer?

Just three things: HTML, CSS and JavaScript—the three pillars of the web.

Together, these three pillars make every website work

Defining the content to be displayed	Telling a browser how to display that content	Making the content interactive



HTML

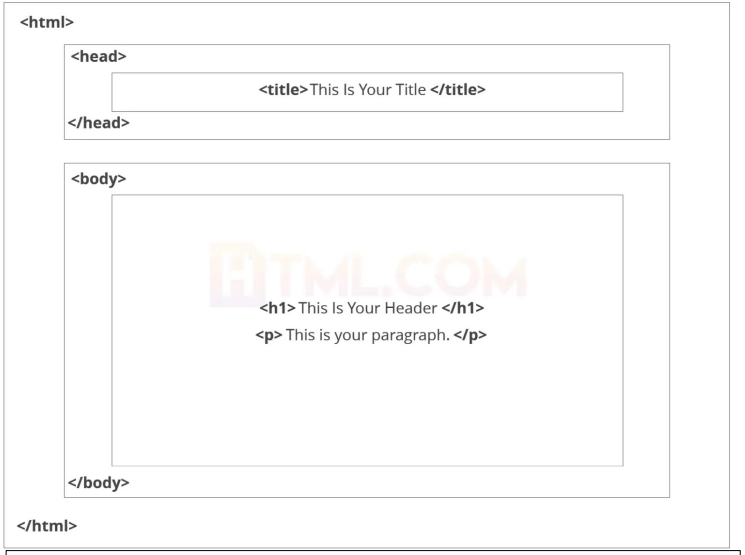
HTML

HTML is the standard markup language for building Web pages.

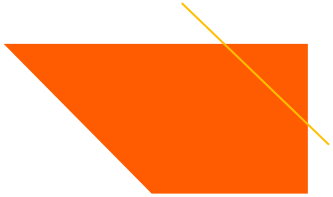
It describes the content and structure of information on a web page.

An HTML page always starts with a <html> tag, inside of which it has a <head> tag to describe the page, and a <body> tag that contain contents that will be displayed.

Uses tags to demarcate different sections of a text.




```
<html>
  <head>
      <title>Page title</title>
  </head>
  <body>
      Page contents
  </body>
</html>
```



HTML

Surrounds text content with opening and closing tags

Each tag and its content is called an **element**

- Syntax: **<tagname>**content **</tagname>**
- Example: ** **This is a paragraph** **

Most whitespace is insignificant in HTML

- Ignored or collapsed to a single space

The newest version is HTML5

Structure of an HTML5 page

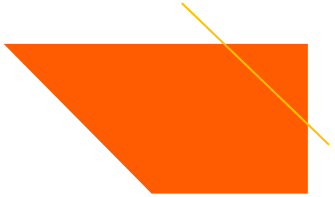
- An HTML page is saved into a file ending with extension “.html”
- DOCTYPE tag tells browser the HTML version.
  - In this case, HTML5
- The header contains meta information that describes the page, and the body contains the page's contents

```
<!DOCTYPE html>
<html lang=“en”>
  <head>
      <metacharset="utf-8"/>
      <title>Page title</title>
  </head>
  <body>
      Page contents
  </body>
</html>
```

Metadata

- Data about data - Information describes the page itself
  - Placed in the head section of your HTML page

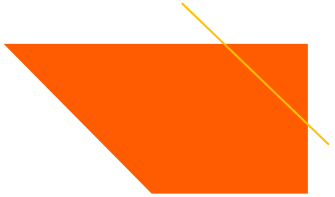
```
<title>Your Page Title</title>

<meta charset="UTF-8">
<meta name="keywords" content="HTML, CSS, JavaScript, Node.js">
<meta name="author" content=”XYZ">
<meta name="viewport" content="width=device-width, initial-scale=1.0">

<style>
  h1 {color: red;}
  p {color: blue;}
</style>

<link rel="stylesheet" href="mystyle.css">
```



Block Level Elements

- A block-level element always starts on a new line and takes up the full width available
  - Stretches out to the left and right as far as it can

- Examples:
  -
  - <h1> - <h6>
  - <p>
  - <form>



Paragraph <p>

- Creates a paragraph in a block of text
  - Placed in the body of the page
  - See examples at w3schools

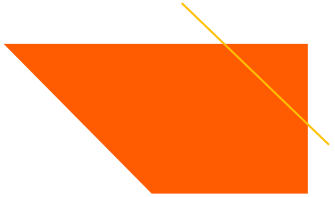
```
<p>
The number of lines in a paragraph depends on the
size of your browser window. If you resize the
browser window, the number of lines in this paragraph
will change.
</p>
```

Headings <h1>,<h2>, …, <h6>

- Headings are used to give a title (heading) to major areas of the page (block).

Note: only use one <h1> tag per page, as it describes "the page"

```
<h1>Brandeis University </h1>
<h2>Department of Computer Science</h2>
<h3>Web Application Course</h3>
```



Inline Elements

- An inline element does not start on a new line and only takes up as much width as necessary.

- Examples:
  - <img>
  - <a>

Images <img />

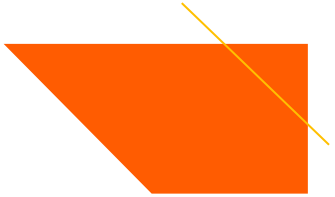
Inserts a graphical image into the page (inline)

- The src attribute specifies the image URL
- HTML5 also requires an alt attribute

alt specifies alternate text for an image.

- The title attribute is an optional tooltip (on ANY element)

```
<img src=”brandeis.jpg" alt=”Brandeis campus!">
```



Links <a>

- Links, or "anchors", to other pages
  - href can be absolute or relative URL
  - Anchors are inline elements

```
<p>
<a href="story.html"><img src="bruce.jpg" alt="full
story."/>Bruce Wayne, the richest man in Gotham City, is
the alter ego of Batman.Bam! </a>
</p>
```

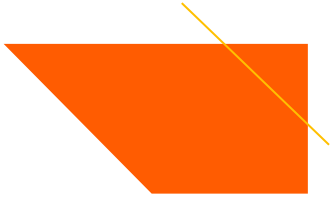
Line Break

- Forces a line break in the middle of a block element (inline)

```
<p>Teddy said it was a hat, <br /> So I put it on.</p>
<p>Now Daddy's saying, <br /> Where the heck's the toilet plunger
```

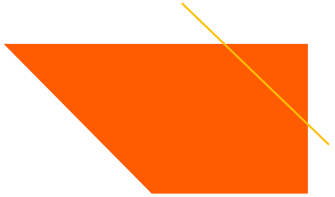

 should not be used to separate paragraphs or used multiple times in a row to create spacing

- Warning: Don't over-use br (guideline: >= 2 in a row is bad)



Block vs Inline Elements

- **Block elements** contain an entire large region of content
  - Examples: paragraphs, lists, table cells
  - The browser places a margin of whitespace between block elements for separation, normally a newline.
- **Inline elements** affect a small amount of content
  - Examples: bold text, code fragments, images
  - The browser allows many inline elements to appear on the same line
  - Must be nested inside a block element

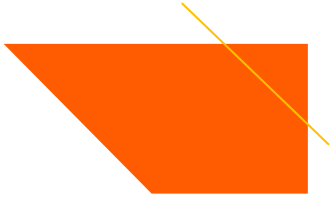


Nesting Tags

- Tags must be correctly nested
  - a closing tag must match the most recently opened tag

The browser may render it correctly anyway, but it is invalid HTML

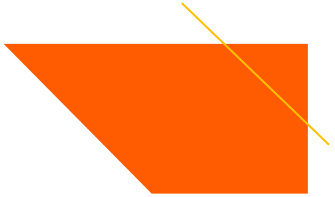
- **Bad nesting:**
  - What a lovely day
- **Good nesting:**
  - What a lovely day



Comments <!-- -->

- Comments to document your HTML file
  - or "comment out" text
- Useful at the top of page and for disabling code

```
<!- This is a comment -->
<p>
WD courses are <!-- NOT --> a lot of fun!
</p>
```



Thank You!