

HTML → HyperText Markup Language.

e.g. index.html  
my page.htm } usual extensions

### Basic Structure.

```

<!DOCTYPE html> ← tells document type
    → <html lang="en">
opening head { <head>
    head section { <title> My Page </title>
        </head>
body { <body>
    body section { <p> Visit my page </p>
        </body>
}
closing → </html>

```

In most cases, HTML follows a

<tag> ... </tag>

Structure → each opening "tag" is matched with a closing "tag".

Common body tags :

h1, h2, h3	Headers	h1 is largest
------------	---------	---------------

p	Paragraph
---	-----------

em, strong	Emphasis Strong emphasis
------------	-----------------------------

img *	Image
-------	-------

a	Link
---	------

\* no closing tag !!!

→ See example index.html in GitHub  
~ /cpsc216 / Chapter1 / index-basic.html

CSS → cascading Style Sheets

→ a "language" to control the look and feel of a webpage.

{ Analogy: HTML → structure → skeleton, organs, circulatory system, etc.

... hair color

CSS → eye color, hair color, font size, etc....)

→ code that goes into the <head> section of a webpage ... can be repeated in all html files of a website to give a consistent look and feel across a website.

Note: pages without CSS will use the default browser styles → white background, black standard-sized text.

CSS Rules → specify styling properties for specific HTML elements.

<style> .... </style>

Example:

<head>

<style>

h1 {

color: green;

background-color: lightgray;

}

p {

font-family: arial;

margin-left: 10px;

}

</style>

</head>

Example: See index-with-css.html  
(same location as above)

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Aside: HTML Editor with Preview and Local Server

For testing our codes, it is useful to have an html editor that can:

(a) preview html

(b) display pages on a "local" web server (because sometimes previewers don't work perfectly)

(I mentioned Atom before, but it is not being developed currently, and this makes installing extra features difficult.)

# PULSAR - pulsar-edit.dev

- ① easy to download and install for all platforms
- ② Based on Atom
- ③ Easy to install Extra features.

Step 1: Download and Install

Step 2: Start the APP

Step 3: Pulsar → Preferences → Install  
search: atom-live-server  
& install

Step 4: Packages → atom-live-server → Start Server

## Common CSS Properties

background-color	- background color of element
color	- font color of element
font-family	- text font of element
font-size	- font size of element
padding	- space between element & border
margin	- spacing around element

(margin-top  
margin-bottom  
margin-left  
margin-right)

## Colors:

There are quite a few pre-defined colors, e.g. red, green, blue, black, Light Sea Green, Dark Gray, ...

But: we can use pretty much any color, by specifying its rgb values.

rgb ( — , — , — )  
↑ ↑ ↑  
0-255 0-255 0-255  
red green blue

e.g. LightSeaGreen =  
rgb ( 32 , 178 , 170 )

Black = rgb ( 0 , 0 , 0 )

White = rgb ( 255 , 255 , 255 )

Factoids:  $rgb(x, x, x) = \text{grayish}$

*open parts*

$$\begin{aligned} \text{rgb}(x, x, 0) &= \text{yellow} \\ \text{rgb}(x, 0, x) &= \text{magenta} \\ \text{rgb}(0, x, x) &= \text{cyan} \end{aligned}$$

---

Example: Orange

① orange is a combination of red & yellow  
(in pigments)

② yellow is a combination of red & green  
(in light)

$\therefore \text{orange} = \text{red} + (\text{red} + \text{green})$   
 $= 2 \text{ parts red}, 1 \text{ part green},$   
 $\emptyset \text{ parts blue.}$

$\therefore \text{rgb}(255, 127, 0)$

---

## Java Script

→ invented in 1995 by Brendan Eich  
(Netscape 2 → Mozilla → Firefox)

→ 1997 became an ECMA standard  
↗  
European Computer Manufacturers Association

→ known as ECMAScript, officially  
→ ES6 (version 6) is now supported in all modern browsers.

JavaScript is a programming language that browsers interpret, compile, and run in real time.

It enables actions like button-click, slider bars, and other interactive features.

- JavaScript was invented in 1995, by Brendan Eich (Netscape → Mozilla → Firefox)  
- Handled over to ECMA in 1997  
↗  
European Competing Machinery Assoc.

- Rebranded as ECMAScript  
- ES6 is now supported by all major browsers.

Aside : Variables, Functions, Objects,  
and All that ...

① Variables → you saw this in CS140/150  
→ key idea → different types

(e.g. int, float, bool, string)

→ complex types → LISTS

[4, True, "dog", 3.14]

② Functions → also 140/150

def myfunc(a, b, c):  
 :

return x, y, z  
 ↑ ↑ ↑  
 float float list

Example:  
pi, bob, alice = myfunc(2, "dog")  
 ↗  
 ↗  
 ↗  
return values function name arguments

③ Libraries

→ one can import libraries  
from various sources, and get  
access to lots of new functions

e.g. import numpy as np

mylist = [1, 2, 3, 4]

myarray = np.array(mylist)  
 ↑  
 numpy array  
 ↑  
 list

④ Objects

→ just a name given to any  
complex data structure.

JavaScript :

let whiteButton = document.getElementById("white-btn");

(i) White Button is an object returned by

- (ii) the getElementById function  
 (iii) which is part of the document  
library, an
- (iv) takes the String "white-btn" as  
 an argument. <sup>↑ id of an</sup>  
<sup>html element</sup>

## ⑤ Methods / functions of complex objects

→ typically, complex objects have a number of functions that can be applied to them

oldList = [1, 2, 3, 4]  
 newList = oldList.append(7)

function which  
 can be used on lists

JavaScript :

function which  
 works on button objects

```
whiteButton.addEventListener("click",
  function() {
    changeTextColor(
      "white"
    );
  }
);
```

(if you click on the button, it executes the defined function)

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