HTML Fundamentals

.NET

HTML is not a programming language. HTML is a markup language that defines the structure of a webpage. HTML consists of elements which are used to enclose different parts of the page content to make it appear or act a certain way.

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics

Preparation

- Create a directory, HtmlAndCssPractice, in your personal repo.
- Right-Click the directory to open it in VS Code.
- Create a file, HtmlPractice.html.
- In VS Code, download the extension ‘Live Server’ by Ritwick Dey
- Reload your VS Code window with:
  1. CTRL + Shift + P (open Command Palette)
  2. Type ‘reload window’.
- Type ‘doc’ to auto-fill the .html page template.

HTML and CSS

https://en.wikipedia.org/wiki/Cascading_Style_Sheets
https://www.w3schools.com/html/html_intro.asp
https://www.w3schools.com/css/css_intro.asp
https://en.wikipedia.org/wiki/HTML

HTML (Hyper Text Markup Language)	CSS (Cascading Style Sheets)
In 1989, Tim Berners-Lee invented the Web with HTML as its publishing language. HTML (Hyper Text Markup Language) was created to allow programmers to structure the content on a website. HTML uses ***tags*** to add paragraphs, headers, footers, pictures, bullets, and many other structural components.	CSS was proposed by Hakom Lie and co-created by Bert Bos in 1996 to compliment HTML. It is what gives a website color and styling. CSS is used to change the style of a website rather than providing its content. Changing the font size and color or positioning text and images on a HTML page are examples of styling.

HTML4 vs HTML5: A History

https://html.spec.whatwg.org/multipage/introduction.html#is-this-html5?

HTML5 is the result of a collaboration between the ***World Wide Web Consortium (W3C)***, and the ***Web Hypertext Application Technology Working Group (WHATWG)***.

These organizations partnered in 2006 with the goal of reducing HTML4's reliance on plugins, improve error handling, and replace scripting with more markups.

In 2011 the groups concluded that they had different goals. The W3C wanted to publish a "finished" version of "HTML5", while the ***WHATWG*** wanted to work on a ***Living Standard*** for HTML, continuously maintaining the specification rather than freezing it in a state (potentially with problems) and adding new features as needed to evolve the platform.

In 2019, the ***WHATWG*** and ***W3C*** signed an agreement to collaborate on a single version of HTML going forward.

The result is HTML5. HTML5 greatly simplifies the process of creating web applications. In ***HTML5***, the different browsers work together with an emphasis on accessibility and support for multimedia(without plugins). This results in a more straight-forward process of creating web applications and a more secure, stable user experience.

HTML5 – New Features

https://www.w3schools.com/html/html5_intro.asp

New element	Use
<audio> </audio>	Used to imbed audio and video in multiple formats. The browser chooses the format it knows best. Flash is no longer needed.
<video> </video>	
<canvas> </canvas>	The canvas scripting API or the WebGL API to draw graphics and animations.
<nav></nav>	Represents a section of a page whose purpose is to provide navigation links.
<header></header>	A container for introductory content or a set of navigational links.
<footer></footer>	Defines a footer for a document or section.
<article></article>	Specifies independent, self-contained content.
<section></section>	Defines sections in a document like chapters, headers, and footers.

HTML – Anatomy of a Web Page

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics

```
1  <!DOCTYPE html>                    <!--The required HTML5 document type declaration. -->
2  <html>                             <!-- <html> wraps all the content on the page. Known as the root element. -->
3    <head>                           <!-- <head> is a container for (undisplayed) metadata, or data about the data. -->
4      <meta charset="utf-8">         <!-- Unicode Transformation Format-8. A large set of all the characters
                                      needed for text. -->
5      <title>My test page</title>    <!-- <title> text appears in the browser tab
                                      when a page is loaded and in bookmarks. -->
6    </head>
7    <body>                           <!-- <body> contains all the content that you want to show web users. (text, images, videos, games, etc) -->
8      <img src="images/firefox-icon.png" alt="My test image">
9    </body>
10 </html>
```

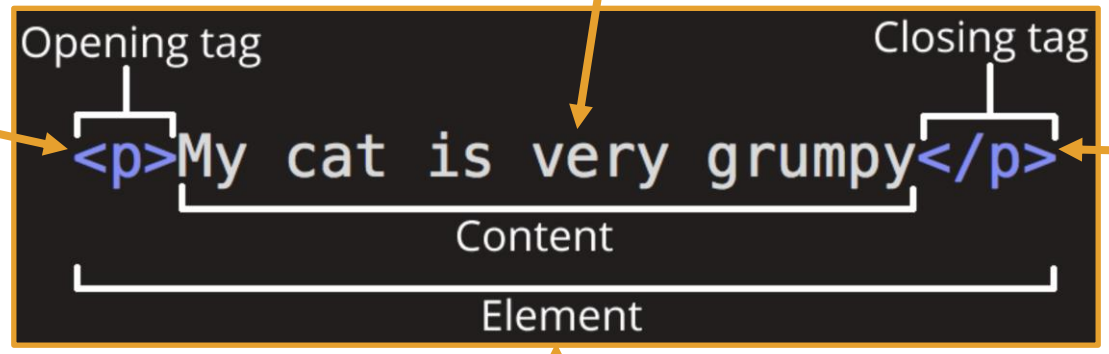
HTML - Anatomy of an Element

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics
https://devdocs.io/html/

- An ***Element*** designates a section of ***HTML*** for a specific purpose according to the ***tags*** on the ***element***. <html> is known as the ***Root Element***.
- Text without any ***tag*** just prints on the webpage. Text inside element ***tags*** will have a purpose and can be given styling.

Between the opening and closing tags is the ***content***. The ***content*** is printed to the webpage.

<p> means paragraph. All ***tags*** have angle brackets on each side.



The closing ***tag*** has a '/' before the closing ***tag*** type.

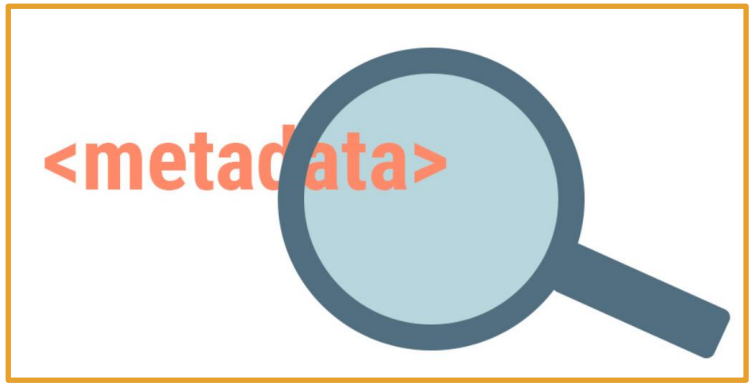
The opening and closing ***tags***, along with everything between them, is the ***element***.

* Some elements don't have contents or a closing tag. (<img>, <br>, <input>)

HTML – Metadata

https://itseeze.com/blog/seo-101-everything-you-need-to-know-about-metadata/

- Located in the *<head>* of an HTML page
- *<meta>* elements provide search engines with information about the content and purpose of pages of a website.
- ***Metadata*** is data that describes other data.
- In webpages, ***metadata*** is used for Search Engine Optimization (SEO).
- Webpage ***metadata*** consists of a page *<title>* and *<meta>* description on each .html page.



HTML – Metadata inside <head>

https://itseeze.com/blog/seo-101-everything-you-need-to-know-about-metadata/

<meta name="viewport" content="width=device-width, initial-scale=1.0">	Controls how the browser displays a page.
<meta http-equiv="X-UA-Compatible" content="ie=edge">	Switches off Microsoft Edge's old-IE-compatibility behaviors.
<meta name="Tech Lead" content="Nick">	Gives a name to the web page.
<meta name="description" content="description of this page"> <meta name="keywords" content="search engine keywords">	These were important for S.E.O., but no longer.

HTML - Nested Elements

https://www.w3schools.com/html/html_elements.asp

You can nest elements inside other elements.

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

A nested element must be closed before its enclosing element is closed. The below text will display but the styling will not be applied.

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

HTML - and Elements

https://www.w3schools.com/tags/tag_span.asp
https://www.w3schools.com/html/html_blocks.asp

Some of the most used and important elements are and .

• An inline element. • used to group inline elements in a document. • provides no styling change by itself. • CSS can hook onto a part of the HTML doc using the class or id of a .	• A block-level element. • defines a division or a section in an HTML document. • often used as a container for other HTML elements to style them with CSS or to perform certain tasks with JavaScript.

```
<p>
Mom has <span
style="color:blue">blue</span> eyes.
</p>
```

```
<div style="background-color:blue">
  <h3>This is a heading</h3>
  <p>This is a paragraph.</p>
</div>
```

HTML – Basic Text Element Formatting

https://www.w3schools.com/html/html_formatting.asp

Elements can be formatted '***inline***'. These tags have default styles that can be manually changed with the style attribute

use <br> to create a line break.

```
<b>Bold text </b>
<strong>Important text </strong>
<i>italic text</i>
<em> Emphasized text </em>
<mark>Marked text </mark>
<small>Small text</small>
<del>Deleted text </del>
<ins>Inserted text </ins>
<sub>Subscript text</sub>
<sup>Superscript text</sup>
```

Bold text
Important text
italic text
Emphasized text
Marked text
Small text
~~Deleted text~~
Inserted text
Subscript text
Superscript text

HTML – Attributes

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics
https://en.wikipedia.org/wiki/HTML_attribute

Attributes are modifiers placed inside the opening ***tag*** of the ***element***. An ***Attribute*** is a key-value pair. Some HTML Tags have specific ***Attributes*** but most share from the four main attributes: id, class, style, and title.

See the complete list of html attributes.

Global Attributes (available on all Tags)

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics
https://en.wikipedia.org/wiki/HTML_attribute

Attribute	Meaning and usage
id	Provides a document-wide (not application-wide) unique id for an element. This is an example of an id
class	Provides a way of classifying similar elements. A class is NOT unique and can be shared with other elements in the same document and in other files. This is an example of the 'class' attribute
style	Adds ***styling*** directly to the element. It is recommended to use an external CSS file for all styling. This is an example of a 'style' attribute
title	Used to attach subtextual explanation to an element. This is the text popup when you hover over something or the default name of a saved tab. This is an example of the 'title="Hypertext Markup Language"' attribute

HTML – Elements

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics

Element	Description
<p>	The ***Paragraph*** element. Used for text.
<h1>, <h2>, <h3>, <h4>, <h5>, <h6>	***Heading*** Element. Controls text size. Largest to smallest
Revature	Link to a web page with the ***Anchor*** tag.
<img src="routeToImage" width="100px" alt="My Revature image">	Link to an ***Image*** on your computer or online. 'alt' text will display when the image is not found.
	This is an alternate XML-style syntax for elements with no closing tag.

HTML – Elements / List

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics

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HTML has special elements for lists. The most common list types are ***ordered*** and ***unordered*** lists. Items inside the lists are put inside ***<li>*** elements.

Unordered Lists are wrapped in a tag and display as bullet points	***Ordered Lists*** display numbered. These are wrapped in an tag.
  - bullet 1 - bullet 2 	 - number 1 - number 2

HTML – Table (with comment examples)

https://www.w3schools.com/html/html_tables.asp

```
<table style="width:100%">
  <thead> <!--table header section/row -->
    <th>City</th> <!--table header cell-->
    <th>State</th>
  </thead>
  <tbody> <!--table body-->
    <tr>
      <td>Seattle</td> <!--table data cell-->
      <td>WA</td>
    </tr>
    <tr>
      <td>Arlington</td>
      <td>TX</td>
    </tr>
  <tbody>
</table>
```

City	State
Seattle	WA
Arlington	TX

HTML <Form> (1/4)

https://developer.mozilla.org/en-US/docs/Learn/Forms
https://developer.mozilla.org/en-US/docs/Learn/Forms/Your_first_form

Forms allow users to enter data. The data is sent to a web server for processing or used on the client-side to update the interface.

A ***form's*** HTML is made up of one or more ***form controls*** and some elements to give structure to the ***form***.

User input is captured using the ***<input>*** element, although there are some other elements, too.

Form controls can be used to enforce a specific format and value type (***form validation***). They have labels that describe their purpose.

```
<form action="/my-handling-form-page" method="post">
 <ul>
  <li>
    <label for="name">Name:</label>
    <input type="text" id="name" name="user_name">
  </li>
  <li>
    <label for="mail">E-mail:</label>
    <input type="email" id="mail" name="user_mail">
  </li>
  <li>
    <label for="msg">Message:</label>
    <textarea id="msg" name="user_message"></textarea>
  </li>
 </ul>
</form>
```

Controls can be:

Single text fields	multi-line text fields	dropdown boxes	buttons	checkboxes	radio buttons

HTML <Form> (2/4) – Method Attribute

https://www.w3schools.com/tags/att_form_method.asp

Form data can be sent as URL variables (with ***method***="GET") or as an HTTP POST transaction (with ***method***="POST").

The ***action*** attribute specifies where the form data is sent.

method specifies how the form data is sent.

*Only GET and POST are valid for forms.

```
<form action="/action_page.php" method="get">
  <label for="fname">First name:</label>
  <input type="text" id="fname" name="fname"><br><br>
  <label for="lname">Last name:</label>
  <input type="text" id="lname" name="lname"><br><br>
  <input type="submit" value="Submit">
</form>
```

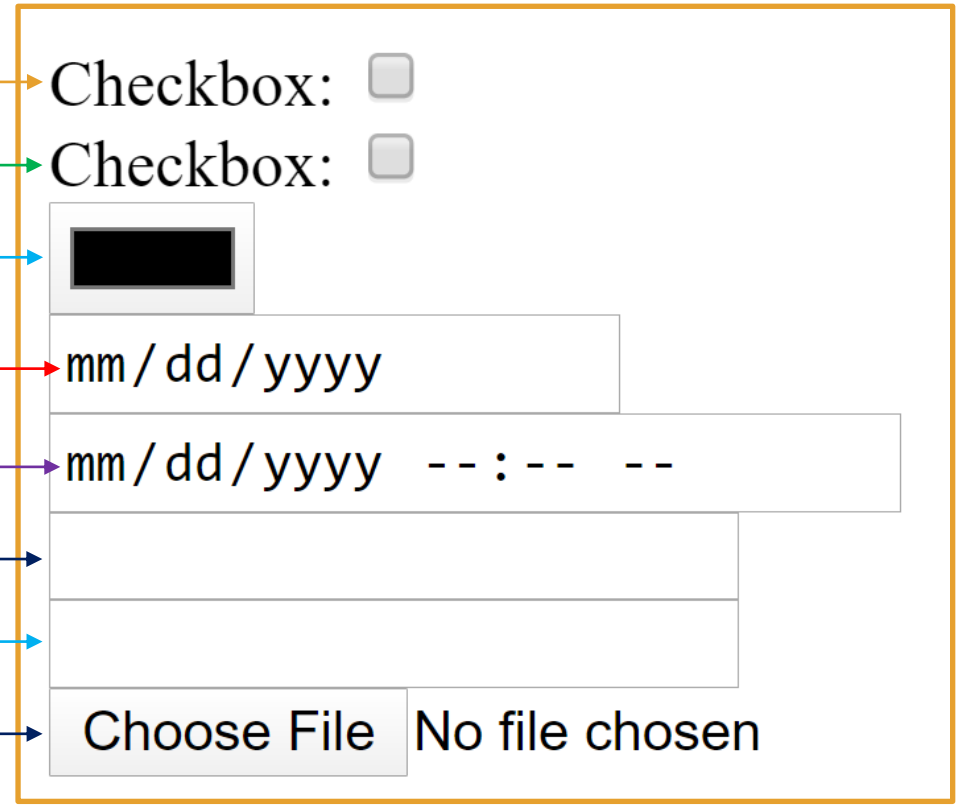
HTML <Form> (3/4) - Input Attribute Types

https://www.w3schools.com/html/html_form_input_types.asp

```
<label>
    Checkbox:
    <input type="checkbox" name="checkbox1">
</label><br>

<label for="box2">Checkbox:</label>
<input type="checkbox" id="box2" name="checkbox2"><br>

<input type="color" name="color"><br>
<input type="date"><br>
<input type="datetime-local"><br>
<input type="email"><br>
<input type="password"><br>
<input type="file"><br>
<input type="hidden" name="hiddenthing" value="data">
```



A **hidden** field lets web devs include data that is not displayed.

*the 'name' ***attribute*** can be used to access the value.

HTML <Form> (4/4) - Input Attribute Types

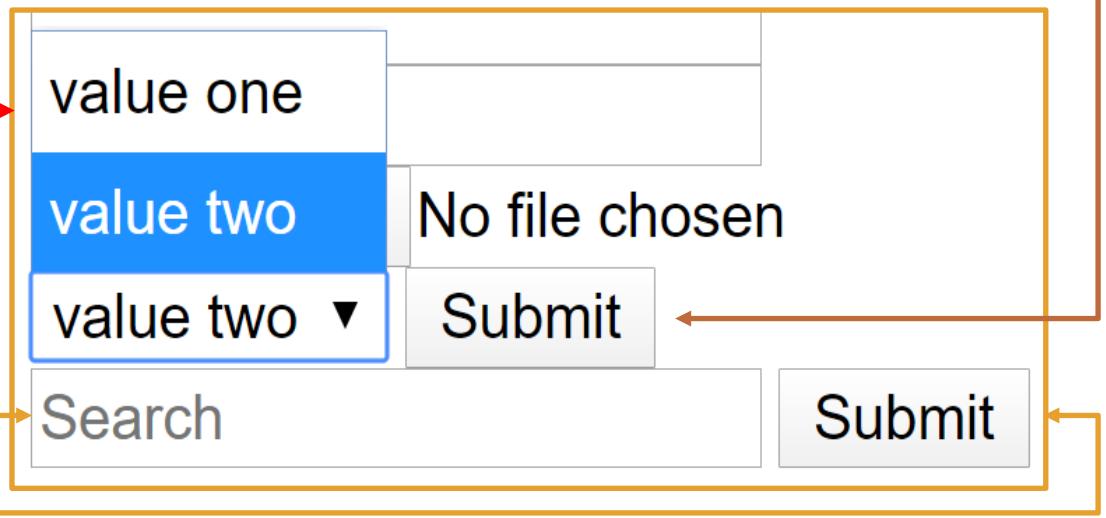
https://www.w3schools.com/html/html_form_input_types.asp

```
    <select name="whichvalue">
        <option value="value1"> value one</option>
        <option value="value2" selected> value two</option>
    </select>

    <input type="submit">
</form>

<!-- form for google search -->
<form method="GET" action="https://google.com/search">
    <!-- <label> -->
        <!-- Search: -->
        <input type="text" name="q" placeholder="Search">
    <!-- </label> -->
    <input type="submit">
```

A Boolean Attribute. Shorthand for **selected = "selected".** It creates a default choice.



<input> Attribute Purposes (1/3)

https://www.w3schools.com/html/html_form_attributes.asp

Input Attribute	Purpose and Usage
id= “”	Specifies a unique ***id*** within the .html file. Ex. Very
type=“”	Specifies the type of the <input> element to display to the user. The default type is text. Other types are password, button, checkbox, etc. Ex. <input type="text" id="fname" name="fname">
name=“”	Specifies a name for the element in the DOM. Can be used to reference the element in the .js file. Also used as a reference when the data is submitted. Ex. <form action="" name="formA">...form contents...</form>

<input> Attribute Purposes (2/3)

https://www.w3schools.com/html/html_form_attributes.asp

Input Attribute	Purpose and Usage
for=“”	Specifies to which ***id*** attribute a <label> is bound. When paired with the <output> tag, it defines the relationship between the result of the calculation, and the ***elements*** used in the calculation. Ex. <label for="male">Male</label> <input type="radio" name="gender" id="male" value="male">
placeholder=“”	Gives a sample value or description of the expected input. The value is displayed in the input field before the user enters a value. Works with ***text***, ***search***, ***url***, ***tel***, ***email***, and ***password***. Ex. <input type="tel" id="phone" name="phone" placeholder="123-45-678“>
target=“_blank”	Automatically opens the link in a new tab.

<input> Attribute Purposes (3/3)

https://www.w3schools.com/html/html_form_attributes.asp

Input Attribute	Purpose and Usage
value=""	Specifies an initial value for an input field. <input type="text" id="fname" name="fname" value="John">
readonly	The field cannot be modified. A user can tab to, highlight, and copy text from the field. It's sent when submitting a form. <input type="textbox" value="Some value" readonly="readonly"/>
disabled	The input field is unusable and un-clickable. The value of the field will not be sent when submitting a form. <input type="checkbox" value="disabled" disabled> disabled </label></p>
Autofocus	Focuses on the field on page load <select id="mySelect" autofocus>

HTML – Entities/Character Codes

https://www.toptal.com/designers/htmlarrows/arrows/

- Character ***entities*** are used to display reserved characters in HTML.
- HTML entities have a
  - Numerical reference,
  - a Hexadecimal reference, and
  - an ***Entity Code*** for reserved characters.

HTML Entity Code	Numeric Code	Hex Code	Symbol
&lt;	&#60;	&#x3c;	<
&gt;	&#62;	&#x3e;	>
			Non-breaking space
	&#65504;	&#xFFE0;	₵
&trade;	&#8482;	&#x2122;	™
	&#8508;	&#x213C	ℼ (pi)
&rarr;	&#8594;	&#x2192;	→
&commat;	&#64;	&#x40;	@

*there are many more

Assignment and Resources

Create a .html file that implements the following html structures.

The two blocks should be on top of each other (one column) with one orange border around the whole.

https://docs.emmet.io/cheat-sheet/

https://code.visualstudio.com/docs/editor/emmet