

# Become a Full-Stack Web Developer: HTML

## HTML Essential Training

### 1.HTML

- HTML (HyperText Markup Language)
  - Defines the content of a site
- CSS (Cascading Style Sheets)
  - Defines the styling of a site
- JavaScript
  - Provides interactivity

### Chapter Quiz

Why is web or browser programming broken up into three parts?

**Answer:** to be resilient to changes in technology

Which is the most powerful and fragile of the browser programming languages?

**Answer:** JavaScript can perform complex logic, but this can get a user into trouble

What happens when HTML is broken because of a bug in the code?

**Answer:** The browser guesses what you meant, and does its best to fix the bug itself.

Browsers were built on the understanding that things can go wrong, and are extremely forgiving.

### 2.Formatting Text

#### The Syntax of HTML elements

`<p>` - tag

**Example:**

`<p> This is a paragraph. </p>`

**Reasoning:**

`<p>` is the **opening tag**

`</p>` is the **closing tag**

The whole example is called an **element**.

**Example:**

`<p> This paragraph has <em> text that's emphasized </em> for effect. </p>`

**Reasoning:**

You can have elements nested in another elements.

- **Document Object Model (DOM) Tree**
  - The hierarchy and structure of HTML elements, often used for targeting elements in CSS and JavaScript.

## Paragraphs

### Example:

<p>If you just put all the content in an HTML file with no markup, it just ends up as one big blob on the website. The browser assumes it's all one long string of text.</p>

<p>We can try to create separate paragraphs by leaving a bunch of space in our HTML file, but that space doesn't count. The browser ignores it. All these words simply add up to a bunch of words in a row.</p>

<p>The browser doesn't know what this is, because we haven't used any HTML yet to tell it what this is.</p>

## Headlines

<h1> to <h6>

### Code:

<h1>1st Level Headline</h1>

<h2>2nd Level Headline</h2>

<h3>3rd Level Headline</h3>

<h4>4th Level Headline</h4>

<h5>5th Level Headline</h5>

<h6>6th Level Headline</h6>

### Output:

# 1st Level Headline

## 2nd Level Headline

### 3rd Level Headline

## 4th Level Headline

#### 5th Level Headline

##### 6th Level Headline

### **When to use each headline:**

<h1>Title of this Article</h1>

<h2>Subtitle that's usually smaller and maybe longer</h2>

## Bold and Italics

## Italics

- Two Different Elements that can be used:
  - `<i>`: Visual-only italics
  - `<em>`: emphasis italics

## Bold

- Two Different Elements that can be used:
  - `<strong>`: importance, seriousness, urgency
  - `<b>`: Bold
  - Also, can use CSS to style the weight of the font for design not for importance or urgency.

## Lists

- Unordered lists
- Ordered lists
- Definition lists

### `<li>`: list item

#### Example:

```
<li>flour</li>
<li>sugar</li>
<li>salt</li>
```

#### Output:

- Flour
- Sugar
- Salt

### `<ul>`: unordered list

#### Example:

```
<ul>
  <li>flour</li>
  <li>sugar</li>
  <li>baking powder</li>
  <li>salt</li>
  <li>non-dairy milk</li>
  <li>apple cider vinegar</li>
  <li>vanilla</li>
</ul>
```

#### Output:

- flour
- sugar
- baking powder

- salt
- non-dairy milk
- apple cider vinegar
- vanilla

### **<ol>: ordered list**

#### **Example:**

<ol>

<li>In a bowl, mix all the dry ingredients.</li>

<li>In another bowl, mix together the rest.</li>

<li>Wisk together.</li>

<li>Wait 5 minutes.</li>

<li>Cook the pancakes.</li>

</ol>

#### **Output:**

1. In a bowl, mix all the dry ingredients.
2. In another bowl, mix together the rest.
3. Wisk together.
4. Wait 5 minutes.
5. Cook the pancakes.

### **Definition List**

- <dt>: definition term
- <dd>: definition description
- <dl> definition list </dl>

#### **Example:**

<dl>

<dt> term </dt>

<dd> definition </dd>

<dd> additional definition </dd>

<dt> 2<sup>nd</sup> term </dt>

<dd> definition </dd>

</dl>

## Quotes

### Example block context:

<blockquote>

<p>We've gone from having 21 elements in HTML tags, that first document, to having 100 more elements now, and yet it's still the same language. I find that amazing. It's still the same language that was created 25 years ago. It's grown an extra 100 elements in there, and yet it's still the same language.</p>

<cite>— Jeremy Keith</cite>

</blockquote>

### Example block context:

<blockquote>

<p>We've gone from having 21 elements in HTML tags, that first document, to having 100 more elements now, and yet it's still the same language. I find that amazing. It's still the same language that was created 25 years ago. It's grown an extra 100 elements in there, and yet it's still the same language.</p>

<p>If you're familiar at all with computer formats, this is very surprising. If you tried to open a Word processing document from the same time as when Tim Berners-Lee was creating the World Wide Web project, good luck. You'd probably have to run some emulation just to get the thing open. And yet you could open an HTML document from back then in a browser today.</p>

<cite>Jeremy Keith</cite>

</blockquote>

### Example inline phrases:

<p>Jeremy Keith said, <q>You could open an HTML document from back then in a browser today.</q></p>

<q>: stands for quote

## Inline Elements

- <q>
- <strong>
- <b>

- <i>
- <em>

## Block Level Elements

- <blockquote>
- <p>
- <ul>

## Dates and Times

<time>: Will format any date or time

### Example Date:

<time datetime="2025-05-08"> May 8, 2025 </time>

### Example Time:

<time datetime="14:15:28.5"> 14:15:28.5 </time>

**DATE:** YYYY-MM-DD

**TIME:** hh-mm-ss.dd

### Example Date and Time together:

<time datetime="2020-11-04 19:00-0500"> Wednesday, Nov 4<sup>th</sup> at 7p</time>

## Code, pre, and br

### HTML Entities

- &lt; = <
- &gt; = >
- <br>: line break

The <pre> element is used for listings where line breaks and other white space need to be preserved, while <code> is more for short snippets inside of other content.

## Superscripts, subscripts, and small text

- **Subscripts**
  - Characters that are set below the text baseline
- **Superscripts**
  - Characters that are set above the text baseline.

- `<sub>`
  - Subscripts
- `<sup>`
  - Superscripts

### Example:

```
<p>H<sub>2</sub>O</p>
```

```
<p>Something that has a footnote.<sup>2</sup></p>
```

### Output:

H<sub>2</sub>O

Something that has a footnote.<sup>2</sup>

## Chapter Quiz

1. How many elements are there in the following HTML code?

```
<h1> The End of the World is Nigh </h1> <article> Musings on our Current Social Predicament, by <em> Trans I. Tory
</em> <p> Random content....</p> </article>
```

**Answer: Four**

2. How do we use HTML elements in combination with each other?

**Answer:** `<p>`Here's some text that `<em>`should`</em>` be emphasized.`</p>`

3. Which two elements are used to mark-up subscript and superscript text?

**Answer:** `<sub>` and `<sup>`

4. When deciding which headline level to use (h1, h2, h3, h4, h5, h6) which of these statements is true?

**Answer:** We should use the level of headline that makes sense, based on the semantic meaning of content.

## 3. Understanding the Power of HTML

### Debugging HTML

- Use developer tool in Google Chrome to help you fix issues with the website.

### HTML attributes

#### Example attribute:

```
<time datetime = "">
```

## ○ Global Attributes

- Attributes that can be applied to any HTML element.

## ○ The class Attributes

- Most common global attribute
- Allow use to target all elements with that class in our CSS or JavaScript.

### Example:

```
<p class="intro">  
    This is the introduction.  
</p>
```

## ○ The id Attribute

- Allow us to target a unique element with that id in our CSS or JavaScript.

### Example:

```
<p class="intro" id="article-intro">  
    This is the introduction  
</p>
```

## ○ Contenteditable

- Allow user to edit content if set to true

### Example:

```
<blockquote contenteditable = "true">  
    Edit this content to add your own quote.  
</blockquote>
```

## ○ Lang and dir

- Attribute decides what language and direction of the text.

## ARIA roles

- HTML attributes that provide accessible information about that specific element.
- Provides the tool I need to make the site assessable.

### Example:

```
<h1 aria-label="Hello World">  
    <div class="grid" aria-hidden="true">  
        <span>H</span>  
        <span>e</span>  
        <span>l</span>  
        <span>l</span>  
        <span>o</span>  
  
        <span>w</span>  
        <span>o</span>  
        <span>r</span>  
        <span>l</span>  
        <span>d</span>  
    </div>  
</h1>
```



```
<!--  
<h1 aria-label="Hello World">  
  <div class="grid" aria-hidden="true">
```

## Formatting HTML

- Browser will ignore spaces in paragraph that you have types.

## Weird Characters

- < , > , and & used to write HTML.
- How do use these characters in your content.

### Example:

```
<p>  
< > &  
</p>  
<m  
<p>
```

&copy;                  becomes                  ©

```
</p>
```

<u>Entity</u>	<u>Character</u>
---------------	------------------

&copy;	©
&trade;	™
&star;	☆

&nbsp;      None breaking space

### Example:

```
<p>Here is a sentence that will break between every word, including between Jen&nbsp;Simmons.</p>
```

### Output:

Here is a sentence that will break between every word, including between Jen Simmons.

## Chapter Quiz

How does a user gain access to the debugging features of a browser?

Answer: by accessing developer tools

Which of these attributes is NOT a global attribute?

Answer: datetime

When should we use an ARIA attribute?

Answer: any time the existing markup makes things confusing in the accessibility tree

What sort of efforts require the use and understanding of ARIA attributes?

Answer: those involving accessibility issues

Which syntax can we use to add comments to our HTML?

Answer: `<!-- comment -->`

Which code should you use to guarantee that the words "Hocus Pocus" are not split by a line break after "Hocus"?

Answer: `Hocus&nbsp;Pocus`

How does the id attribute differ from the class attribute?

Answer: An id attribute name may only be used once in a document.

## 4. Links and Navigation

### Links

Example:

```
<a href="https://example.com">This is a link.</a>
```

```
<p>This is a sentence <a href="https://example.com">with a link</a> in the midst of the text.</p>
```

```
<p><a href="https://example.com"></a></p>
```

```
<article>
```

```
  <a href="https://example.com">
```

```
    
```

```
    <h2>Title of an article</h2>
```

```
    <p>Some teaser text that makes you want to click.</p>
```

```
  </a>
```

```
</article>
```

- HTTP (Hypertext Transport Protocol)

- HTTPS (Hypertext Transport Protocol Secure)

- Every website should use HTTPS because it is more secure.

### URL Paths

- Absolute URL

Example:

<https://awesomedogs.com/about>

- Relative URL

Example:

/about

- All these URLs go to the same place

- "/people/index.html"
- "/people/"

- “/people”

## Navigation

### Example:

```
<nav role="navigation" aria-label="main menu">
  <ul class="navbar">
    <li><a href="/">Home</a></li>
    <li><a href="/people">People</a></li>
    <li><a href="/prices">Prices</a></li>
    <li><a href="/contact">Contact</a></li>
  </ul>
</nav>
```

### Example:

```
<nav role="breadcrumb">
  <ol class="breadcrumbs">
    <li><a href="/">Home</a></li>
    <li><a href="/people">Blog</a></li>
    <li><a href="/contact">March</a></li>
    <li>March 9th Update</li>
  </ol>
</nav>
```

### Example:

```
<footer>
  <a href="/about/privacy">Privacy Policy</a>
  <a href="/about/legal">Terms of Service</a>
</footer>
```

## Chapter Quiz

Which HTML elements are commonly used in marking up navigation?

Answer: <nav>, <ul>, <li>, <a>

How do we make a basic link in HTML?

Answer: <a href="https://example.com">text to click</a>

When might we use a relative URL instead of an absolute URL?

Answer: when a website might be moved from a staging server to a production server

## 5. Image and Graphics

### Images

#### o <img> element

- o 4 Attributes to Include in the <img> element
  - src="image.jpg" (source)
  - alt=" black dog"
  - width="400"
  - height="300"
- o Every image should have all 4

#### Example:

<header>

```

```

```
<h1>Happy Dog Daycare</h1>
```

</header>

### Image Formats

#### o Goal of an Image is...

- High Quality + Small File Size

#### o 4 Main File Formats for Images

- GIF
  - One of the oldest
  - Does well compressing large areas of a single color
  - Limited color space of 256 colors.
  - Can do transparency, with jagged edges.
  - Can have multiple frames, make a little movie
- SVG (scalable vector graphic)
  - Great for logos, icons, etc.
  - Vector File
  - Contains instructions on how to create the image
  - File size very small because it does not contain pixels
- JPG
  - Image format for compression photos.
  - Can be compressed
  - Size vs quality
- PNG
  - Images that need transparency
  - Better than GIF at when it comes to compression

- Better than JPG when compressing photos and images. Depends on the case.

## Responsive Images

- Use the power of HTML to deliver different images file to different size screens
- The browser chooses which file will work for the device based on screen size, internet speed, and the type of device
- In HTML code will list different file images that can be used for the type of screen size.

### Example:

```

```

```

```

- List for the images that the browser decides to use based on what will work best

## Responsive Width

- Choose a file image based on the device screen size and density

### Example:

```

```

480w = 480 px wide

960w = 960 px wide

### ○ The srcset Attribute

- Allowed you to specify multiple files to be used based on either viewpoint of width of image pixel width.

## Responsive pictures

### Example:

```
<picture>
  <source media="(min-width:600px)"
    srcset="https://s3-us-west-2.amazonaws.com/s.cdpn.io/10558/dog2-720.jpg">
```

```
<source srcset="https://s3-us-west-2.amazonaws.com/s.cdpn.io/10558/dog2-cropped-320.jpg">

</picture>
```

## Figure and figcaption

### Example:

```
<figure>
  

  <figcaption>Maggie the dog enjoys resting in a field, after a long day of chasing squirrels.</figcaption>
</figure>
```

### Output:



*Maggie the dog enjoys resting in a field, after a long day of chasing squirrels.*

#### o <figure>

- For anything that appears as a figure illustrating something

#### o <figcaption>

- For demonstration of a concept which needs a caption

## Chapter Quiz

1. If you want to create a compact image that can display in large sizes without pixelation, which should you choose?

Answer: SVG

2. If you want to keep a caption with an image, which combination of elements lets you identify them as connected?

Answer: Surround the image with a figure element, and use the figcaption element inside of figure.

3. What is the most effective way to use bandwidth efficiently when sending images

Answer: Create a set of options the browser can choose from using the srcset attribute.

4. What do you need to change to move from a resolution-based srcset to a width-based srcset?  
Answer: Provide pixel measurements (w) instead of 1x, 2x, etc.
5. Why should you spend effort optimizing image sources and corresponding display attributes?  
Answer: to have the best compromise between image quality and download speed
6. How do you create an image that changes content depending on the surrounding layout?  
Answer: Nest img, source, and srcset information inside of a picture element.
7. Why would you want to use the w specification in srcset instead of the x specification?  
Answer: to consider both display density and window width when choosing the image source

## 6. Media

### Audio

**<audio>**: Element used to place audio

Example:

```
<audio controls>
  <source
    src="http://example.com/birds.ogg"
    type="audio/ogg; codec=opus">
  <source
    src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/birds.mp3"
    type="audio/mpeg">
  Sorry your browser doesn't not support audio.
</audio>
```

Types of Audio Files:

- Mp3
- opp

### Video

The H.264 codec currently has the widest support across browsers

#### Ultimate Codec Attempts

- Real Video
- Sorenson
- Windows Media
- FLV
- H.263

#### H.264

- From 2015-2022 most widely used
- Not open source
- Fees to use

AV1 is an open-source free codec that will replace H.264.

### Example:

```
<video controls>
  <source src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.480p.vp9.webm"
    type="video/webm">
  <source src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.480p.h264.mp4"
    type="video/mp4">
</video>
```

### Captions and subtitles

### Example:

```
<video controls>
  <source src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.480p.vp9.webm"
    type="video/webm">
  <source src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.480p.h264.mp4"
    type="video/mp4">

  <track src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.vtt"
    kind="captions"
    label="English"
    srclang="en"
    default>

  <track src="https://s3-us-west-2.amazonaws.com/s.cdn.io/10558/moonwalk.es-la.es.vtt"
    kind="subtitles"
    label="Español"
    srclang="es">

  <p>This would be a video of a moonwalk, if your device supported playing this video.</p>
</video>
```

### Embedding other media through iframes

### Embedding

- Placing content from one site into the body of a page on another site.

### Chapter Quiz

1. How do you create a video element that specifies different resolutions of video that browsers can choose from when loading the video?  
Answer: You can't do this. Instead, the browser adapts to circumstances as needed.
2. You can't do this. Instead, the browser adapts to circumstances as needed.



Answer: share button on YouTube

3. What should you do to create an audio player with controls?

Answer: Use the audio element with the controls attribute set to yes.

4. You can add chapter divisions to videos by \_\_\_\_.

Answer: referencing a VTT file listing chapters

5. Which tag must you use within a video element to tell the player where to look for captions?

Answer: <track>

6. What do embedded YouTube videos, maps, and CodePen demos have in common?

Answer: All are services you can include in your own pages and sites with embed code based on the iframe element.

## 7. More Ways to Identify Content

### Supporting Languages

lang = "es-US"

lang = "en-GB"

#### The lang Attribute

- Language
- Script
- Alphabet

The lang attribute is a universal attribute

#### The dir attribute

- Specifies the direction for text to be written

#### Unicode

- A universal encoding standard for characters encompassing many languages.

### Generic elements: div and span

#### <div>

- Block-level element

#### <span>

- Inline element

#### Example:

```
<article lang="en">
```

```
<h1>This is the headline</h1>
```

```
<div class="box">
```

```
<p>The first paragraph.</p>
<p>Some text in a second paragraph.</p>
<p>Third paragraph. <span lang="es" class="bilingual">Esta oración está en español.</span> Some of this text
is in another language.</p>
<p>Fourth paragraph.</p>
</div>
</article>
```

## Chapter Quiz

1. How can you mark a quotation as being in a different language from its surrounding text?

**Answer:** Create a `<blockquote>` element with a `lang` attribute indicating the language for its contents.

2. What is the difference between the usage of `<div>` and `<span>`?

**Answer:** `<div>` is used for blocks, and `<span>` is used for a part of a line.

3. Why do you need to specify the desired language for HTML content?

**Answer:** so correct dictionaries and pronunciations are used

4. What are the best uses for HTML's `div` and `span` elements?

**Answer:** To group elements, or mark text within an element.

## 8.Putting It All Together

### The HTML Page

#### HTML File

The first file that's returned in response to a request for a webpage.

#### The doctype Declaration

Declares which era this HTML file is from

#### The head Element

Contains information the browser needs to know, though it won't be displayed on the page

### Document Head

#### The meta Element

- Only used inside the head
- Conveys metadata about the page

#### The link Element

Links to range of other assets we want to load

#### The href Attribute

Provides the URL to the asset.

## The Script Element

Tells the browser to load a JavaScript file

## Structuring content

### The main Element

Wraps around the main content of the page

### The header and footer Elements

Used to mark places on the page where the content is a header or a footer.

- **Header:** Used to wrap headers in the content
- **Head:** Part of our HTML document that's never displayed to users.

### The article Element

Wrapped around any instance of an article

### The section Element

Wraps around sections of content

### The aside Element

Marks content that is off to the side or not the main attraction.

## Chapter Quiz

1. Which type of tag would you not find in the document head?

Answer: <p>

2. What are the six major sectioning elements that typically go directly in the <body> element?

Answer: <aside>, <main>, <article>, <header>, <footer>, <section>

3. What is the difference between a head element and a header element?

Answer: The head element contains document metadata, and a header element contains text to be displayed.

4. Which section of an HTML page should contain metadata?

Answer: the head

5. How does the browser know what information to present when it loads a web page?

Answer: The browser parses an HTML document, which may also include links to other resources, which the browser then downloads and presents.

6. Which element should you use inside of the <head> element to identify that page when it's bookmarked?

Answer: <title>

## 9.Forms and Interactive Element

### Chapter Quiz

1. How can you require a certain format for data entered into an input element?

Answer: by specifying the type attribute

2. How does a <label> element affect the type of the <input> element it contains?

Answer: It doesn't

3. Why should you use form elements instead of custom coding data inputs in JavaScript?

Answer: You can have maximum versatility and robustness with minimum effort.

4. What happens when you put a <label> element around an <input> element?

Answer: Clicking on the label activates that form field, and screen readers know that the label goes with the field.

5. When used with the <input> tag, how is a placeholder attribute different from a value attribute?

Answer: A placeholder is a temporary suggestion of form, while a value is an estimate of the correct response.

6. What's the difference between the value attribute and the placeholder attribute?

Answer: The value attribute fills the field with a value that will be submitted with the form. The placeholder shows a suggestion, but doesn't really enter it.

## 10.Structuring Tabular Data

### Building table rows

To build a table need:

- <table>: table
  - Wraps the whole table
- <tr>: table row
  - Wraps around a set of elements, defining them as belonging to the same row
  - Attributes: colspan, rowspan, and headers
- <th>: table header
  - Defines a header for a column
  - Attributes: colspan, rowspan, scope
- <td>: table data
  - Marks the actual bits of data

Example:

```
<table class="styled">
<tr>
<th>Bird</th>
<th>Color</th>
```

```

    <th>Diet</th>
    <th>Photo</th>
</tr>
<tr>
    <td>American Goldfinch</td>
    <td>yellow</td>
    <td>Mostly seeds.</td>
    <td></td>
</tr>
<tr>
    <td>Bluejay</td>
    <td>blue</td>
    <td>Omnivorous.</td>
    <td></td>
</tr>
<tr>
    <td>Indigo Bunting</td>
    <td>blue</td>
    <td>Mostly seeds and insects.</td>
    <td></td>
</tr>
<tr>
    <td>Northern Cardinal</td>
    <td>red</td>
    <td>Seeds, insects, berries.</td>
    <td></td>
</tr>
<tr>
    <td>Tufted Titmouse</td>
    <td>grey</td>
    <td>Mostly insects.</td>
    <td></td>
</tr>
</table>

```

## Chapter Quiz

1. Why are tables the preferred option for creating layouts in HTML email?

Answer: because the other better options are not supported

2. Which table-specific element typically is most deeply nested in table-specific parent elements?

Answer: <td>



