HTML Introduction

* a markup language is a system for annotating a document in a way that is syntactically distinguishable from the text, meaning when the document is processed for display, the markup language is not shown, and is only used to format the text.
* A markup language is a computer language that uses tags to define elements within a document. It is human-readable, meaning markup files contain standard words, rather than typical programming syntax
* HTML stands for Hyper Text Markup Language
* HTML is the standard markup language for creating Web pages
* HTML describes the structure of a Web page
* HTML consists of a series of elements
* HTML elements tell the browser how to display the content
* HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.
* The <!DOCTYPE html> declaration defines that this document is an HTML5 document
* The <html> element is the root element of an HTML page
* The <head> element contains meta information about the HTML page
* The <title> element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
* The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.
* The <h1> element defines a large heading
* The <p> element defines a paragraph
* The purpose of a web browser (Chrome, Edge, Firefox, Safari) is to read HTML documents and display them correctly.
* A browser does not display the HTML tags, but uses them to determine how to display the document: A browser does not display the HTML tags, but uses them to determine how to display the document:
* tags
* the <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly.
* HTML Headings
* <h1> defines the most important heading. <h6> defines the least important heading:

## HTML Paragraphs

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

## HTML Links

* <a href="https://www.w3schools.com">This is a link</a>
* The link's destination is specified in the href attribute.
* Attributes are used to provide additional information about HTML elements.

## HTML Images

* <img src="w3schools.jpg" alt="W3Schools.com" width="104" height="142">

# HTML Elements

* An HTML element is defined by a start tag, some content, and an end tag.

## Nested HTML Elements

HTML elements can be nested (this means that elements can contain other elements).

All HTML documents consist of nested HTML elements

* The <html> element is the root element and it defines the whole HTML document.
* Then, inside the <html> element there is a <body> element:
* The <body> element defines the document's body.
* It has a start tag <body> and an end tag </body>.
* Then, inside the <body> element there are two other elements: <h1> and <p>:
* The <br> tag defines a line break
* HTML tags are not case sensitive: <P> means the same as <p>.

# HTML Attributes

* All HTML elements can have **attributes**
* Attributes provide **additional information** about elements
* Attributes are always specified in **the start tag**
* Attributes usually come in name/value pairs like: **name="value"**

## The href Attribute

The <a> tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:

* The <img> tag is used to embed an image in an HTML page. The src attribute specifies the path to the image to be displayed:

## The style Attribute

* The style attribute is used to add styles to an element, such as color, font, size, and more.
* <p style="color:red;">This is a red paragraph.</p>

## The lang Attribute

You should always include the lang attribute inside the <html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers.

The title attribute defines some extra information about an element.

The value of the title attribute will be displayed as a tooltip when you mouse over the element:

***HTML Headings***

Search engines use the headings to index the structure and content of your web pages.

HTML headings are defined with the <h1> to <h6> tags.

Note: Browsers automatically add some white space (a margin) before and after a heading.

* Each HTML heading has a default size. However, you can specify the size for any heading with the style attribute, using the CSS font-size property:
* <h1 style="font-size:60px;">Heading 1</h1>
* [Try it Yourself »](https://www.w3schools.com/html/tryit.asp?filename=tryhtml_headings_size)
* A paragraph always starts on a new line, and is usually a block of text.
* HTML Paragraphs

A paragraph always starts on a new line, and browsers automatically add some white space (a margin) before and after a paragraph

HTML Display

You cannot be sure how HTML will be displayed.

Large or small screens, and resized windows will create different results.

**HTML Horizontal Rules**

The <hr> tag defines a thematic break in an HTML page, and is most often displayed as a horizontal rule.

The <hr> element is used to separate content (or define a change) in an HTML page:

* The <hr> tag is an empty tag, which means that it has no end tag.
* HTML Line Breaks
* The HTML <br> element defines a line break.
* Use <br> if you want a line break (a new line) without starting a new paragrap
* The <br> tag is an empty tag, which means that it has no end tag.
* The Poem Problem by p tag
* Solution - The HTML <pre> Element
* The HTML <pre> element defines preformatted text.
* The text inside a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks:
* <pre>
* My Bonnie lies over the ocean.
* My Bonnie lies over the sea.
* My Bonnie lies over the ocean.
* Oh, bring back my Bonnie to me.
* </pre>

# HTML Styles

* The HTML style attribute is used to add styles to an element, such as color, font, size, and more.
* The HTML Style Attribute
* Setting the style of an HTML element, can be done with the style attribute.
* The HTML style attribute has the following syntax
* <*tagname* style="*property*:*value;*">
* <body style="background-color:powderblue;">
* Text Color

<h1 style="color:blue;">

* Fonts
* <h1 style="font-family:verdana;">
* Text Size
* <h1 style="font-size:300%;">
* Text Alignment
* <h1 style="text-align:center;">
* HTML Formatting Elements
* Formatting elements were designed to display special types of text:
* <b> - Bold text
* <strong> - Important text
* <i> - Italic text
* <em> - Emphasized text
* <mark> - Marked text
* <small> - Smaller text
* <del> - Deleted text
* <ins> - Inserted text
* <sub> - Subscript text
* <sup> - Superscript text
* The HTML <em> element defines emphasized text. The content inside is typically displayed in italic.
* **Tip:** A screen reader will pronounce the words in <em> with an emphasis, using verbal stress.
* The HTML <small> element defines smaller text:
* The HTML <mark> element defines text that should be marked or highlighted:
* Ins is underlined and del is striken

# HTML Quotation and Citation Elements

* A "citation" is the way you tell your readers that certain material in your work came from another source.
* HTML <blockquote> for Quotations
* The HTML <blockquote> element defines a section that is quoted from another source.
* Browsers usually indent blockquote elements.
* HTML <q> for Short Quotations
* The HTML <q> tag defines a short quotation.
* HTML <abbr> for Abbreviations
* The HTML <abbr> tag defines an abbreviation or an acronym, like "HTML", "CSS", "Mr.", "Dr.", "ASAP", "ATM"
* <abbr title="World Health Organization">WHO</abbr>
* The HTML <address> tag defines the contact information for the author/owner of a document or an article.
* The text in the <address> element usually renders in italic, and browsers will always add a line break before and after the <address> element.
* <p><cite>The Scream</cite> by Edvard Munch
* The HTML <cite> tag defines the title of a creative work
* <!-- Write your comments here -->
* Border Color
* <h1 style="border:2px solid Tomato;">Hello World</h1>
* RGB Color Values
* External CSS
* An external style sheet is used to define the style for many HTML pages.
* To use an external style sheet, add a link to it in the <head> section of each HTML page:
* <link rel="stylesheet" href="styles.css">
* CSS Border
* The CSS border property defines a border around an HTML element.
* p {
* border: 2px solid powderblue;
* }
* CSS Padding
* The CSS padding property defines a padding (space) between the text and the border.
* p {
* border: 2px solid powderblue;
* padding: 30px;
* }

# HTML Links

Links are found in nearly all web pages. Links allow users to click their way from page to page.

* Clicking on the link text, will send the reader to the specified URL address.
* HTML Links - The target Attribute
* The target attribute specifies where to open the linked document.
* The target attribute can have one of the following values:
* \_self - Default. Opens the document in the same window/tab as it was clicked
* \_blank - Opens the document in a new window or tab
* <a href="https://www.w3schools.com/" target="\_blank">Visit W3Schools!</a>
* HTML Links - Use an Image as a Link
* <a href="default.asp">
* <img src="smiley.gif" alt="HTML tutorial" style="width:42px;height:42px;">
* </a>

# HTML Images

* The src Attribute
* The required src attribute specifies the path (URL) to the image.
* The alt Attribute
* The required alt attribute provides an alternate text for an image, if the user for some reason cannot view it
* <style>
* body {
* background-image: url('img\_girl.jpg');
* background-repeat: no-repeat;
* background-attachment: fixed;
* background-size: cover;
* }
* </style>

# HTML Tables

* <table style="width:100%">
* <tr>
* <th>Firstname</th>
* <th>Lastname</th>
* <th>Age</th>
* </tr>
* <tr>
* <td>Jill</td>
* <td>Smith</td>
* <td>50</td>
* </tr>
* </table>

# HTML Lists

HTML lists allow web developers to group a set of related items in lists.

* Unordered HTML List
* <ul>
* <li>Coffee</li>
* <li>Tea</li>
* <li>Milk</li>
* </ul>
* Ordered HTML List

<ol>

<li>Coffee</li>

<li>Tea</li>

<li>Milk</li>

</ol>

HTML Block and Inline Elements

* 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).
* Inline Elements
* An inline element does not start on a new line and it only takes up as much width as necessary.

# HTML class Attribute

The HTML class attribute is used to specify a class for an HTML element.

Multiple HTML elements can share the same class.

* The class attribute is often used to point to a class name in a style sheet. It can also be used by a JavaScript to access and manipulate elements with the specific class name.
* .city {
* background-color: tomato;
* color: white;
* padding: 10px;
* }

# HTML id Attribute

The HTML id attribute is used to specify a unique id for an HTML element.

You cannot have more than one element with the same id in an HTML document.

The id attribute is used to point to a specific style declaration in a style sheet. It is also used by JavaScript to access and manipulate the element with the specific id.

The syntax for id is: write a hash character (#), followed by an id name. Then, define the CSS properties within curly braces {}.

* HTML Iframes

An HTML iframe is used to display a web page within a web page.

<iframe src="demo\_iframe.htm" height="200" width="300" title="Iframe Example"></iframe>

JavaScript makes HTML pages more dynamic and interactive.

The HTML <script> tag is used to define a client-side script (JavaScript).

The <script> element either contains script statements, or it points to an external script file through the src attribute.

HTML File Paths

<img src="picture.jpg"> The "picture.jpg" file is located in the same folder as the current page

<img src="images/picture.jpg"> The "picture.jpg" file is located in the images folder in the current folder

Relative File Paths

A relative file path points to a file relative to the current page.

HTML - The Head Element

The HTML <head> element is a container for the following elements: <title>, <style>, <meta>, <link>, <script>, and <base>.

The <meta> element is typically used to specify the character set, page description, keywords, author of the document, and viewport settings.

Define the character set used:

<meta charset="UTF-8">

Define keywords for search engines:

<meta name="keywords" content="HTML, CSS, JavaScript">

The HTML <base> Element

The <base> element specifies the base URL and/or target for all relative URLs in a page.

HTML Layout Elements and Techniques

* Websites often display content in multiple columns (like a magazine or a newspaper).

# HTML Responsive Web Design

A responsive web design will automatically adjust for different screen sizes and viewports.

What is Responsive Web Design?

Responsive Web Design is about using HTML and CSS to automatically resize, hide, shrink, or enlarge, a website, to make it look good on all devices (desktops, tablets, and phones):

Responsive Images

Responsive images are images that scale nicely to fit any browser size.

Using the width Property

If the CSS width property is set to 100%, the image will be responsive and scale up and down:

If the max-width property is set to 100%, the image will scale down if it has to, but never scale up to be larger than its original size:

Responsive Text Size

The text size can be set with a "vw" unit, which means the "viewport width".

That way the text size will follow the size of the browser window:

Viewport is the browser window size. 1vw = 1% of viewport width. If the viewport is 50cm wide, 1vw is 0.5cm

Media Queries

In addition to resize text and images, it is also common to use media queries in responsive web pages.

With media queries you can define completely different styles for different browser sizes.

Example: resize the browser window to see that the three div elements below will display horizontally on large screens and stacked vertically on small screens:

HTML Semantic Elements

A semantic element clearly describes its meaning to both the browser and the developer.

HTML <section> Element

A web page could normally be split into sections for introduction, content, and contact information.

HTML <nav> Element

The <nav> element defines a set of navigation links.

HTML <figure> and <figcaption> Elements

The <figure> tag specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.

The <figcaption> tag defines a caption for a <figure> element. The <figcaption> element can be placed as the first or as the last child of a <figure> element.

<figure>

<img src="pic\_trulli.jpg" alt="Trulli">

<figcaption>Fig1. - Trulli, Puglia, Italy.</figcaption>

</figure>

HTML Entities

Reserved characters in HTML must be replaced with character entities.

If you use the less than (<) or greater than (>) signs in your text, the browser might mix them with tags.

Character entities are used to display reserved characters in HTML.

A character entity looks like this:

&entity\_name;

OR

&#entity\_number;

**Non-breaking Space**

**A commonly used entity in HTML is the non-breaking space: &nbsp;**

**A non-breaking space is a space that will not break into a new line.**

**Two words separated by a non-breaking space will stick together (not break into a new line). This is handy when breaking the words might be disruptive.**

**< less than &lt; &#60;**

**> greater than &gt; &#62;**

**& ampersand &amp; &#38;**

**HTML Symbol EntitiesMany mathematical, technical, and currency symbols, are not present on a normal keyboard.**

**To add such symbols to an HTML page, you can use the entity name or the entity number (a decimal or a hexadecimal reference) for the symbol.**

**<p>I will display &euro;</p>**

**I will display €**

**Using Emojis in HTML**

**Emojis are characters from the UTF-8 character set: 😄 😍 💗**

**What are Emojis?**

**Emojis look like images, or icons, but they are not.**

**They are letters (characters) from the UTF-8 (Unicode) character set**

**UTF-8 covers almost all of the characters and symbols in the world.**

**The HTML charset Attribute**

**To display an HTML page correctly, a web browser must know the character set used in the page.**

**This is specified in the <meta> tag:**

**<meta charset="UTF-8">**

**moji Characters**

**Emojis are also characters from the UTF-8 alphabet:**

**😄 is 128516**

**😍 is 128525**

**💗 is 128151**

**HTML Encoding (Character Sets)**

**From ASCII to UTF-8**

**ASCII was the first character encoding standard. ASCII defined 128 different characters that could be used on the internet: numbers (0-9), English letters (A-Z), and some special characters like ! $ + - ( ) @ < > .**

**The default character set for HTML5 is UTF-8, which covers almost all of the characters and symbols in the world!**

**HTML Uniform Resource Locators**

**A URL is another word for a web address.**

**A URL can be composed of words (e.g. w3schools.com), or an Internet Protocol (IP) address (e.g. 192.68.20.50).**

**Most people enter the name when surfing, because names are easier to remember than numbers.**

**URL - Uniform Resource Locator**

**Web browsers request pages from web servers by using a URL.**

**A Uniform Resource Locator (URL) is used to address a document (or other data) on the web.**

**A web address like https://www.w3schools.com/html/default.asp follows these syntax rules:**

**scheme://prefix.domain:port/path/filename**

**scheme - defines the type of Internet service (most common is http or https)**

**prefix - defines a domain prefix (default for http is www)**

**domain - defines the Internet domain name (like w3schools.com)**

**port - defines the port number at the host (default for http is 80)**

**path - defines a path at the server (If omitted: the root directory of the site)**

**filename - defines the name of a document or resource**

**HTML Versus XHTML**

**What is XHTML?**

**XHTML stands for EXtensible HyperText Markup Language**

**XHTML is a stricter, more XML-based version of HTML**

**XHTML is HTML defined as an XML application**

**XHTML is supported by all major browsers**

* **An HTML form is used to collect user input. The user input is most often sent to a server for processing.**
* **<form>**
* **.**
* **form elements**
* **.**
* **</form>**
* **The <form> element is a container for different types of input elements, such as: text fields, checkboxes, radio buttons, submit buttons, etc.**

|  |  |
| --- | --- |
| **Type** | **Description** |
| <input type="text"> | Displays a single-line text input field |
| <input type="radio"> | Displays a radio button (for selecting one of many choices) |
| <input type="checkbox"> | Displays a checkbox (for selecting zero or more of many choices) |
| <input type="submit"> | Displays a submit button (for submitting the form) |
| <input type="button"> | Displays a clickable button |

* The <label> Element
* The for attribute of the <label> tag should be equal to the id attribute of the <input> element to bind them together.
* **<form>**
* **<label for="fname">First name:</label><br>**
* **<input type="text" id="fname" name="fname"><br>**
* **</form>**
* **<input type="radio" id="male" name="gender" value="male">**
* **<label for="male">Male</label><br>**
* **<input type="checkbox" id="vehicle1" name="vehicle1" value="Bike">**
* **<label for="vehicle1"> I have a bike</label><br>**
* The Submit Button
* The <input type="submit"> defines a button for submitting the form data to a form-handler.
* The form-handler is typically a file on the server with a script for processing input data.
* The <input type="submit"> defines a button for submitting the form data to a form-handler.
* The form-handler is typically a file on the server with a script for processing input data.
* The form-handler is specified in the form's action attribute.
* The Name Attribute for <input>
* Notice that each input field must have a name attribute to be submitted.
* If the name attribute is omitted, the value of the input field will not be sent at all.
* The Action Attribute
* The action attribute defines the action to be performed when the form is submitted.
* The action attribute defines the action to be performed when the form is submitted.
* Usually, the form data is sent to a file on the server when the user clicks on the submit button.
* In the example below, the form data is sent to a file called "action\_page.php". This file contains a server-side script that handles the form data:
* On submit, send form data to "action\_page.php":
* <form action="/action\_page.php" target="\_blank">
* The Method Attribute
* The method attribute specifies the HTTP method to be used when submitting the form data.
* The form-data can be sent as URL variables (with method="get") or as HTTP post transaction (with method="post").
* The default HTTP method when submitting form data is GET.
* <form action="/action\_page.php" method="get">
* <form action="/action\_page.php" method="post">
* Notes on GET:
* Appends the form data to the URL, in name/value pairs
* NEVER use GET to send sensitive data! (the submitted form data is visible in the URL!)
* The length of a URL is limited (2048 characters)
* Useful for form submissions where a user wants to bookmark the result
* GET is good for non-secure data, like query strings in Google
* Notes on POST:
* Appends the form data inside the body of the HTTP request (the submitted form data is not shown in the URL)
* POST has no size limitations, and can be used to send large amounts of data.
* Form submissions with POST cannot be bookmarked
* The Autocomplete Attribute
* The autocomplete attribute specifies whether a form should have autocomplete on or off.
* When autocomplete is on, the browser automatically complete values based on values that the user has entered before.
* The <select> Element
* The <select> element defines a drop-down list:
* <label for="cars">Choose a car:</label>
* <select id="cars" name="cars">
* <option value="volvo">Volvo</option>
* <option value="saab">Saab</option>
* <option value="fiat">Fiat</option>
* <option value="audi">Audi</option>
* </select>
* The <option> elements defines an option that can be selected.
* By default, the first item in the drop-down list is selected.
* To define a pre-selected option, add the selected attribute to the option:
* <button type="button" onclick="alert('Hello World!')">Click Me!</button>
* the <fieldset> and <legend> Elements
* The <fieldset> element is used to group related data in a form.
* The <legend> element defines a caption for the <fieldset> element.
* Input Type Password
* <input type="password"> defines a **password field**:
* The value Attribute
* The input value attribute specifies an initial value for an input field:
* The input size attribute specifies the visible width, in characters, of an input field.
* The default value for size is 20.
* **Note:** The size attribute works with the following input types: text, search, tel, url, email, and password.
* The maxlength Attribute
* The input maxlength attribute specifies the maximum number of characters allowed in an input field.
* **Note:** When a maxlength is set, the input field will not accept more than the specified number of characters. However, this attribute does not provide any feedback. So, if you want to alert the user, you must write JavaScript code.
* <label for="datemin">Enter a date after 2000-01-01:</label>
* <input type="date" id="datemin" name="datemin" min="2000-01-02"><br>
* The pattern Attribute
* The input pattern attribute specifies a regular expression that the input field's value is checked against, when the form is submitted.
* placeholder="123-45-678"
* <form>
* <label for="phone">Enter a phone number:</label>
* <input type="tel" id="phone" name="phone"
* placeholder="123-45-678"
* pattern="[0-9]{3}-[0-9]{2}-[0-9]{3}">
* </form>
* The required Attribute
* The input required attribute specifies that an input field must be filled out before submitting the form.
* The required attribute works with the following input types: text, search, url, tel, email, password, date pickers, number, checkbox, radio, and file.
* The form Attribute

The input form attribute specifies the form the <input> element belongs to.

The value of this attribute must be equal to the id attribute of the <form> element it belongs to.