HTML is the standard markup language for Web pages.

What is HTML?

* 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.

### **Example Explained**

* 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

## What is an HTML Element?

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

<tagname> Content goes here... </tagname>

The HTML **element** is everything from the start tag to the end tag:

<h1>My First Heading</h1>

<p>My first paragraph.</p>

|  |  |  |
| --- | --- | --- |
| **Start tag** | **Element content** | **End tag** |
| <h1> | My First Heading | </h1> |
| <p> | My first paragraph. | </p> |
| <br> | *none* | *none* |

**Note:** Some HTML elements have no content (like the <br> element). These elements are called empty elements. Empty elements do not have an end tag!

## Web Browsers

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:



**Note:** The content inside the <body> section will be displayed in a browser. The content inside the <title> element will be shown in the browser's title bar or in the page's tab.

## HTML History

Since the early days of the World Wide Web, there have been many versions of HTML:

|  |  |
| --- | --- |
| **Year** | **Version** |
| 1989 | Tim Berners-Lee invented www |
| 1991 | Tim Berners-Lee invented HTML |
| 1993 | Dave Raggett drafted HTML+ |
| 1995 | HTML Working Group defined HTML 2.0 |
| 1997 | W3C Recommendation: HTML 3.2 |
| 1999 | W3C Recommendation: HTML 4.01 |
| 2000 | W3C Recommendation: XHTML 1.0 |
| 2008 | WHATWG HTML5 First Public Draft |
| 2012 | [WHATWG HTML5 Living Standard](http://whatwg.org/html/) |
| 2014 | [W3C Recommendation: HTML5](http://www.w3.org/TR/html5/) |
| 2016 | W3C Candidate Recommendation: HTML 5.1 |
| 2017 | [W3C Recommendation: HTML5.1 2nd Edition](http://www.w3.org/TR/html51/) |
| 2017 | [W3C Recommendation: HTML5.2](http://www.w3.org/TR/html52/) |

This tutorial follows the latest HTML5 standard.

## HTML Documents

All HTML documents must start with a document type declaration: <!DOCTYPE html>.

The HTML document itself begins with <html> and ends with </html>.

The visible part of the HTML document is between <body> and </body>.

## The <!DOCTYPE> Declaration

The <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly.

It must only appear once, at the top of the page (before any HTML tags).

The <!DOCTYPE> declaration is not case sensitive.

The <!DOCTYPE> declaration for HTML5 is:

## HTML Headings

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

<h1> defines the most important heading. <h6> defines the least important heading:

## HTML Paragraphs

HTML paragraphs are defined with the <p> tag:

## HTML Links

HTML links are defined with the <a> tag:

The link's destination is specified in the href attribute.

Attributes are used to provide additional information about HTML elements.

You will learn more about attributes in a later chapter.

## HTML Images

HTML images are defined with the <img> tag.

The source file (src), alternative text (alt), width, and height are provided as attributes:

## How to View HTML Source

Have you ever seen a Web page and wondered "Hey! How did they do that?"

### **View HTML Source Code:**

Click CTRL + U in an HTML page, or right-click on the page and select "View Page Source". This will open a new tab containing the HTML source code of the page.

### **Inspect an HTML Element:**

Right-click on an element (or a blank area), and choose "Inspect" to see what elements are made up of (you will see both the HTML and the CSS). You can also edit the HTML or CSS on-the-fly in the Elements or Styles panel that opens.

# **HTML Elements**

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

## HTML Elements

The HTML **element** is everything from the start tag to the end tag:

<tagname>Content goes here...</tagname>

Examples of some HTML elements:

<h1>My First Heading</h1>

<p>My first paragraph.</p>

|  |  |  |
| --- | --- | --- |
| **Start tag** | **Element content** | **End tag** |
| <h1> | My First Heading | </h1> |
| <p> | My first paragraph. | </p> |
| <br> | none | none |

**Note:** Some HTML elements have no content (like the <br> element). These elements are called empty elements. Empty elements do not have 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 following example contains four HTML elements (<html>, <body>, <h1> and <p>):

### **Example Explained**

The <html> element is the root element and it defines the whole HTML document.

It has a start tag <html> and an end tag </html>.

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 <h1> element defines a heading.

It has a start tag <h1> and an end tag </h1>:

The <p> element defines a paragraph.

It has a start tag <p> and an end tag </p>:

## Never Skip the End Tag

Some HTML elements will display correctly, even if you forget the end tag:

**However, never rely on this! Unexpected results and errors may occur if you forget the end tag!**

## Empty HTML Elements

HTML elements with no content are called empty elements.

The <br> tag defines a line break, and is an empty element without a closing tag:

## HTML is Not Case Sensitive

HTML tags are not case sensitive: <P> means the same as <p>.

The HTML standard does not require lowercase tags, but W3C **recommends** lowercase in HTML, and **demands** lowercase for stricter document types like XHTML.

At W3Schools we always use lowercase tag names.

# **HTML Attributes**

HTML attributes provide additional information about HTML elements.

## 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 src Attribute

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:

There are two ways to specify the URL in the src attribute:

**1. Absolute URL** - Links to an external image that is hosted on another website. Example: src="https://www.w3schools.com/images/img\_girl.jpg".

**Notes:** External images might be under copyright. If you do not get permission to use it, you may be in violation of copyright laws. In addition, you cannot control external images; it can suddenly be removed or changed.

**2. Relative URL** - Links to an image that is hosted within the website. Here, the URL does not include the domain name. If the URL begins without a slash, it will be relative to the current page. Example: src="img\_girl.jpg". If the URL begins with a slash, it will be relative to the domain. Example: src="/images/img\_girl.jpg".

**Tip:** It is almost always best to use relative URLs. They will not break if you change domain.

## The width and height Attributes

The <img> tag should also contain the width and height attributes, which specify the width and height of the image (in pixels):

## The alt Attribute

The required alt attribute for the <img> tag specifies an alternate text for an image, if the image for some reason cannot be displayed. This can be due to a slow connection, or an error in the src attribute, or if the user uses a screen reader.

## The style Attribute

The style attribute is used to add styles to an element, such as color, font, size, and more.

## 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.

Country codes can also be added to the language code in the lang attribute. So, the first two characters define the language of the HTML page, and the last two characters define the country.

The following example specifies English as the language and United States as the country:

<!DOCTYPE html>  
<html lang="en-US">  
<body>  
...  
</body>  
</html>

## The title Attribute

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:

## We Suggest: Always Use Lowercase Attributes

The HTML standard does not require lowercase attribute names.

The title attribute (and all other attributes) can be written with uppercase or lowercase like **title** or **TITLE**.

## We Suggest: Always Quote Attribute Values

The HTML standard does not require quotes around attribute values.

However, W3C **recommends** quotes in HTML, and **demands** quotes for stricter document types like XHTML.

### **Good:**

<a href="https://www.w3schools.com/html/">Visit our HTML tutorial</a>

### **Bad:**

<a href=https://www.w3schools.com/html/>Visit our HTML tutorial</a>

## Single or Double Quotes?

Double quotes around attribute values are the most common in HTML, but single quotes can also be used.

In some situations, when the attribute value itself contains double quotes, it is necessary to use single quotes:

<p title='John "ShotGun" Nelson'>

Or vice versa:

<p title="John 'ShotGun' Nelson">

Chapter Summary

* All HTML elements can have **attributes**
* The href attribute of <a> specifies the URL of the page the link goes to
* The src attribute of <img> specifies the path to the image to be displayed
* The width and height attributes of <img> provide size information for images
* The alt attribute of <img> provides an alternate text for an image
* The style attribute is used to add styles to an element, such as color, font, size, and more
* The lang attribute of the <html> tag declares the language of the Web page
* The title attribute defines some extra information about an element

## HTML Headings

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

<h1> defines the most important heading. <h6> defines the least important heading.

### **Example**

<h1>Heading 1</h1>  
<h2>Heading 2</h2>  
<h3>Heading 3</h3>  
<h4>Heading 4</h4>  
<h5>Heading 5</h5>  
<h6>Heading 6</h6>

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

## Headings Are Important

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

Users often skim a page by its headings. It is important to use headings to show the document structure.

<h1> headings should be used for main headings, followed by <h2> headings, then the less important <h3>, and so on.

**Note:** Use HTML headings for headings only. Don't use headings to make text **BIG** or **bold**.

## Bigger Headings

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:

### **Example**

<h1 style="font-size:60px;">Heading 1</h1>

# **HTML Paragraphs**

A paragraph always starts on a new line, and is usually a block of text.

## HTML Paragraphs

The HTML <p> element defines a paragraph.

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.

With HTML, you cannot change the display by adding extra spaces or extra lines in your HTML code.

The browser will automatically remove any extra spaces and lines when the page is displayed:

## 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 paragraph:

The <br> tag is an empty tag, which means that it has no end 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:

## HTML Tag Reference

W3Schools' tag reference contains additional information about HTML elements and their attributes.

|  |  |
| --- | --- |
| **Tag** | **Description** |
| [<p>](https://www.w3schools.com/tags/tag_p.asp) | Defines a paragraph |
| [<hr>](https://www.w3schools.com/tags/tag_hr.asp) | Defines a thematic change in the content |
| [<br>](https://www.w3schools.com/tags/tag_br.asp) | Inserts a single line break |
| [<pre>](https://www.w3schools.com/tags/tag_pre.asp) | Defines pre-formatted text |

# **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:

The ***property*** is a CSS property. The ***value*** is a CSS value.

You will learn more about CSS later in this tutorial.

## Background Color

The CSS background-color property defines the background color for an HTML element.

## Text Color

The CSS color property defines the text color for an HTML element:

## Fonts

The CSS font-family property defines the font to be used for an HTML element:

## Text Size

The CSS font-size property defines the text size for an HTML element:

## Text Alignment

The CSS text-align property defines the horizontal text alignment for an HTML element:

Chapter Summary

* Use the style attribute for styling HTML elements
* Use background-color for background color
* Use color for text colors
* Use font-family for text fonts
* Use font-size for text sizes
* Use text-align for text alignment

# **HTML Text Formatting**

HTML contains several elements for defining text with a special meaning.

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

# **HTML Quotation and Citation Elements**

In this chapter we will go through the <blockquote>,<q>, <abbr>, <address>, <cite>, and <bdo> HTML elements.

## 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.

Browsers normally insert quotation marks around the quotation.

## HTML <abbr> for Abbreviations

The HTML <abbr> tag defines an abbreviation or an acronym, like "HTML", "CSS", "Mr.", "Dr.", "ASAP", "ATM".

Marking abbreviations can give useful information to browsers, translation systems and search-engines.

**Tip:** Use the global title attribute to show the description for the abbreviation/acronym when you mouse over the element.

## HTML <address> for Contact Information

The HTML <address> tag defines the contact information for the author/owner of a document or an article.

The contact information can be an email address, URL, physical address, phone number, social media handle, etc.

The text in the <address> element usually renders in *italic,* and browsers will always add a line break before and after the <address> element.

## HTML <cite> for Work Title

The HTML <cite> tag defines the title of a creative work (e.g. a book, a poem, a song, a movie, a painting, a sculpture, etc.).

**Note:** A person's name is not the title of a work.

The text in the <cite> element usually renders in *italic*.

## HTML <bdo> for Bi-Directional Override

BDO stands for Bi-Directional Override.

The HTML <bdo> tag is used to override the current text direction:

# **HTML Comments**

HTML comments are not displayed in the browser, but they can help document your HTML source code.

## HTML Comment Tag

You can add comments to your HTML source by using the following syntax:

<!—comment-- >

Notice that there is an exclamation point (!) in the start tag, but not in the end tag.

**Note:** Comments are not displayed by the browser, but they can help document your HTML source code.

## Add Comments

With comments you can place notifications and reminders in your HTML code:

## Hide Content

Comments can be used to hide content.

This can be helpful if you hide content temporarily:

You can also hide more than one line. Everything between the <!-- and the --> will be hidden from the display.

# **HTML Colors**

HTML colors are specified with predefined color names, or with RGB, HEX, HSL, RGBA, or HSLA values.

## Border Color

## Text Color

## Background Color

# **HTML Styles - CSS**

CSS stands for Cascading Style Sheets.

CSS saves a lot of work. It can control the layout of multiple web pages all at once.

## What is CSS?

Cascading Style Sheets (CSS) is used to format the layout of a webpage.

With CSS, you can control the color, font, the size of text, the spacing between elements, how elements are positioned and laid out, what background images or background colors are to be used, different displays for different devices and screen sizes, and much more!

**Tip:** The word **cascading** means that a style applied to a parent element will also apply to all children elements within the parent. So, if you set the color of the body text to "blue", all headings, paragraphs, and other text elements within the body will also get the same color (unless you specify something else)!

Using CSS

CSS can be added to HTML documents in 3 ways:

* **Inline** - by using the style attribute inside HTML elements
* **Internal** - by using a <style> element in the <head> section
* **External** - by using a <link> element to link to an external CSS file

The most common way to add CSS, is to keep the styles in external CSS files. However, in this tutorial we will use inline and internal styles, because this is easier to demonstrate, and easier for you to try it yourself.

## Inline CSS

An inline CSS is used to apply a unique style to a single HTML element.

An inline CSS uses the style attribute of an HTML element.

The following example sets the text color of the <h1> element to blue, and the text color of the <p> element to red:

## Internal CSS

An internal CSS is used to define a style for a single HTML page.

An internal CSS is defined in the <head> section of an HTML page, within a <style> element.

The following example sets the text color of ALL the <h1> elements (on that page) to blue, and the text color of ALL the <p> elements to red. In addition, the page will be displayed with a "powderblue" background color:

## 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:

## **Tip:** With an external style sheet, you can change the look of an entire web site, by changing one file!

## CSS Colors, Fonts and Sizes

Here, we will demonstrate some commonly used CSS properties. You will learn more about them later.

The CSS color property defines the text color to be used.

The CSS font-family property defines the font to be used.

The CSS font-size property defines the text size to be used.

## CSS Border

The CSS border property defines a border around an HTML element.

**Tip:** You can define a border for nearly all HTML elements.

## CSS Padding

The CSS padding property defines a padding (space) between the text and the border.

## CSS Margin

The CSS margin property defines a margin (space) outside the border.

Chapter Summary

* Use the HTML style attribute for inline styling
* Use the HTML <style> element to define internal CSS
* Use the HTML <link> element to refer to an external CSS file
* Use the HTML <head> element to store <style> and <link> elements
* Use the CSS color property for text colors
* Use the CSS font-family property for text fonts
* Use the CSS font-size property for text sizes
* Use the CSS border property for borders
* Use the CSS padding property for space inside the border
* Use the CSS margin property for space outside the border

## HTML Links - Syntax

The HTML <a> tag defines a hyperlink. It has the following syntax:

<a href="*url*">*link text*</a>

The most important attribute of the <a> element is the href attribute, which indicates the link's destination.

The link text is the part that will be visible to the reader.

Clicking on the link text, will send the reader to the specified URL address.

By default, links will appear as follows in all browsers:

* An unvisited link is underlined and blue
* A visited link is underlined and purple
* An active link is underlined and red

**Tip:** Links can of course be styled with CSS, to get another look!

HTML Links - The target Attribute

By default, the linked page will be displayed in the current browser window. To change this, you must specify another target for the link.

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
* \_parent - Opens the document in the parent frame
* \_top - Opens the document in the full body of the window

## Absolute URLs vs. Relative URLs

Both examples above are using an **absolute URL** (a full web address) in the href attribute.

A local link (a link to a page within the same website) is specified with a **relative URL** (without the "https://www" part):

### **Example**

<h2>Absolute URLs</h2>  
<p><a href="https://www.w3.org/">W3C</a></p>  
<p><a href="https://www.google.com/">Google</a></p>  
  
<h2>Relative URLs</h2>  
<p><a href="html\_images.asp">HTML Images</a></p>  
<p><a href="/css/default.asp">CSS Tutorial</a></p>

## HTML Links - Use an Image as a Link

To use an image as a link, just put the <img> tag inside the <a> tag:

### **Example**

<a href="default.asp">  
<img src="smiley.gif" alt="HTML tutorial" style="width:42px;height:42px;">  
</a>

## Link to an Email Address

Use mailto: inside the href attribute to create a link that opens the user's email program (to let them send a new email):

### **Example**

<a href="mailto:someone@example.com">Send email</a>

hapter Summary

* Use the <a> element to define a link
* Use the href attribute to define the link address
* Use the target attribute to define where to open the linked document
* Use the <img> element (inside <a>) to use an image as a link
* Use the mailto: scheme inside the href attribute to create a link that opens the user's email program

# **HTML Images**

Images can improve the design and the appearance of a web page.

HTML Images Syntax

The HTML <img> tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages. The <img> tag creates a holding space for the referenced image.

The <img> tag is empty, it contains attributes only, and does not have a closing tag.

The <img> tag has two required attributes:

* src - Specifies the path to the image
* alt - Specifies an alternate text for the image

## The src Attribute

The required src attribute specifies the path (URL) to the image.

**Note:** When a web page loads, it is the browser, at that moment, that gets the image from a web server and inserts it into the page. Therefore, make sure that the image actually stays in the same spot in relation to the web page, otherwise your visitors will get a broken link icon. The broken link icon and the alt text are shown if the browser cannot find 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 (because of slow connection, an error in the src attribute, or if the user uses a screen reader).

The value of the alt attribute should describe the image:

**Tip:** A screen reader is a software program that reads the HTML code, and allows the user to "listen" to the content. Screen readers are useful for people who are visually impaired or learning disabled.

## mage Size - Width and Height

You can use the style attribute to specify the width and height of an image.

The width and height attributes always define the width and height of the image in pixels.

**Note:** Always specify the width and height of an image. If width and height are not specified, the web page might flicker while the image loads.

## Width and Height, or Style?

The width, height, and style attributes are all valid in HTML.

However, we suggest using the style attribute. It prevents styles sheets from changing the size of images:

# **HTML Favicon**

A favicon is a small image displayed next to the page title in the browser tab.

## How To Add a Favicon in HTML

You can use any image you like as your favicon. You can also create your own favicon on sites like [https://www.favicon.cc](https://www.favicon.cc/).

**Tip:** A favicon is a small image, so it should be a simple image with high contrast.

To add a favicon to your website, either save your favicon image to the root directory of your webserver, or create a folder in the root directory called images, and save your favicon image in this folder. A common name for a favicon image is "favicon.ico".

Next, add a <link> element to your "index.html" file, after the <title> element, like this:

### **Example**

<!DOCTYPE html>  
<html>  
<head>  
  <title>My Page Title</title>  
  <link rel="icon" type="image/x-icon" href="/images/favicon.ico">  
</head>  
<body>  
  
<h1>This is a Heading</h1>  
<p>This is a paragraph.</p>  
  
</body>  
</html>

## Favicon File Format Support

The following table shows the file format support for a favicon image:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Browser** | **ICO** | **PNG** | **GIF** | **JPEG** | **SVG** |
| Edge | Yes | Yes | Yes | Yes | Yes |
| Chrome | Yes | Yes | Yes | Yes | Yes |
| Firefox | Yes | Yes | Yes | Yes | Yes |
| Opera | Yes | Yes | Yes | Yes | Yes |
| Safari | Yes | Yes | Yes | Yes | Yes |