

HTML Tutorial

HTML

HTML is the standard markup language for Web pages.

With HTML you can create your own Website.

HTML is easy to learn - You will enjoy it!

Easy Learning with HTML "Try it Yourself"

With our "Try it Yourself" editor, you can edit the HTML code and view the result:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

Click on the "Try it Yourself" button to see how it works.

HTML Examples

In this HTML tutorial, you will find more than 200 examples. With our online "Try it Yourself" editor, you can edit and test each example yourself!

[Go to HTML Examples!](#)

HTML Exercises

This HTML tutorial also contains nearly 100 HTML exercises.

HTML Quiz Test

Test your HTML skills with our HTML Quiz!

HTML References

At W3Schools you will find complete references about HTML elements, attributes, events, color names, entities, character-sets, URL encoding, language codes, HTTP messages, browser support, and more:

[HTML Elements](#)

[Browser Support](#)

[Attributes](#)

[Global Attributes](#)

[Event Attributes](#)

[Color Names](#)

[Canvas](#)

[Audio/Video DOM](#)

[Character Sets](#)

HTML Introduction

HTML is the standard markup language for creating 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.
-

A Simple HTML Document

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

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> |
| | none | none |

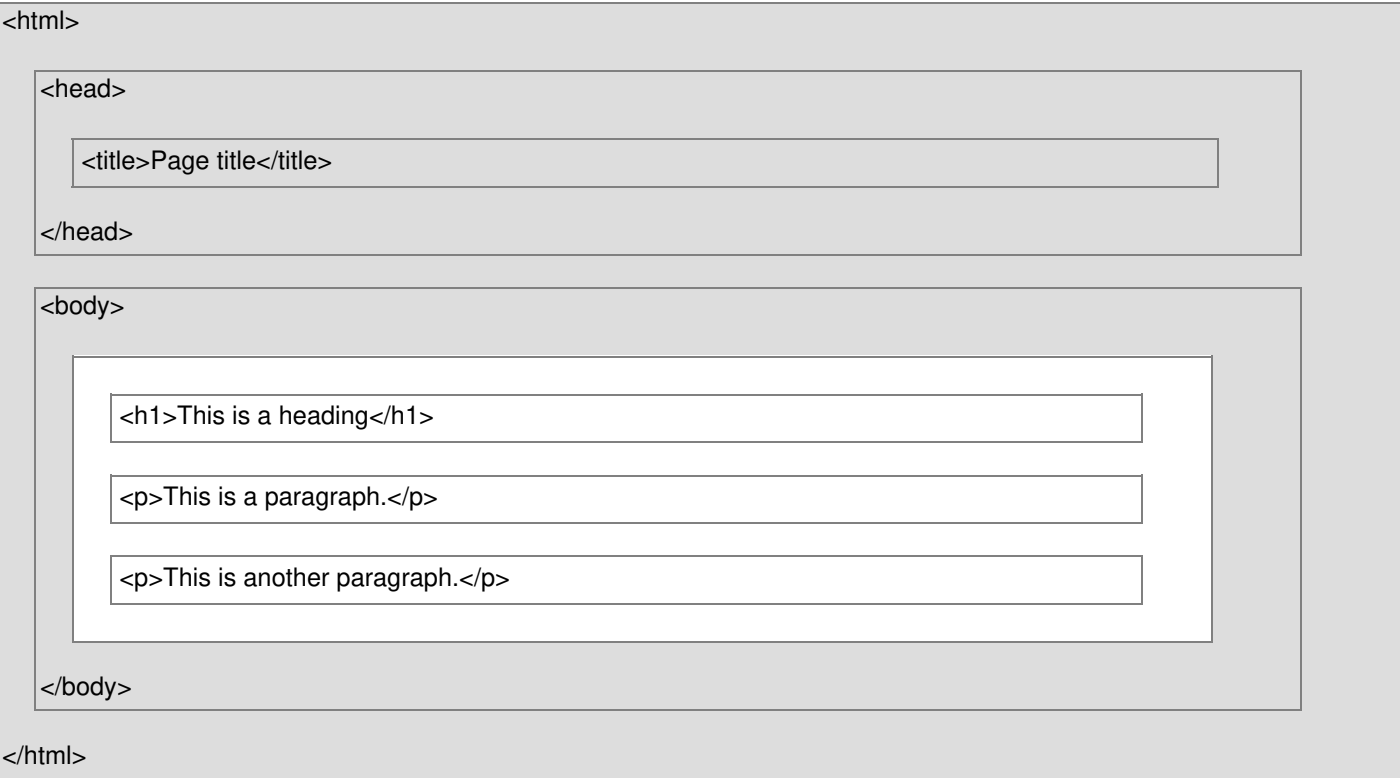
Note: Some HTML elements have no content (like the
 element). These elements are called empty elements. Empty elements do not have an end tag!

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:

HTML Page Structure

Below is a visualization of an HTML page structure:



Note: The content inside the <body> section (the white area above) 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](#)
2014 [W3C Recommendation: HTML5](#)
2016 W3C Candidate Recommendation: HTML 5.1
2017 [W3C Recommendation: HTML5.1 2nd Edition](#)
2017 [W3C Recommendation: HTML5.2](#)

This tutorial follows the latest HTML5 standard.

HTML Editors

A simple text editor is all you need to learn HTML.

Learn HTML Using Notepad or TextEdit

Web pages can be created and modified by using professional HTML editors.

However, for learning HTML we recommend a simple text editor like Notepad (PC) or TextEdit (Mac).

We believe in that using a simple text editor is a good way to learn HTML.

Follow the steps below to create your first web page with Notepad or TextEdit.

Step 1: Open Notepad (PC)

Windows 8 or later:

Open the **Start Screen** (the window symbol at the bottom left on your screen). Type **Notepad**.

Windows 7 or earlier:

Open **Start > Programs > Accessories > Notepad**

Step 1: Open TextEdit (Mac)

Open **Finder > Applications > TextEdit**

Also change some preferences to get the application to save files correctly. In **Preferences > Format >** choose **"Plain Text"**

Then under "Open and Save", check the box that says "Display HTML files as HTML code instead of formatted text".

Then open a new document to place the code.

Step 2: Write Some HTML

Write or copy the following HTML code into Notepad:

```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>
```

```
</body>
</html>
```

Step 3: Save the HTML Page

Save the file on your computer. Select **File > Save as** in the Notepad menu.

Name the file **"index.htm"** and set the encoding to **UTF-8** (which is the preferred encoding for HTML files).

View in Browser

Tip: You can use either .htm or .html as file extension. There is no difference, it is up to you.

Step 4: View the HTML Page in Your Browser

Open the saved HTML file in your favorite browser (double click on the file, or right-click - and choose "Open with").

The result will look much like this:

W3Schools Online Editor - "Try it Yourself"

With our free online editor, you can edit the HTML code and view the result in your browser.

It is the perfect tool when you want to **test** code fast. It also has color coding and the ability to save and share code with others:

Example

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

Click on the **"Try it Yourself"** button to see how it works.

HTML Basic Examples

In this chapter we will show some basic HTML examples.

Don't worry if we use tags you have not learned about yet.

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>`.

Example

```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

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:

```
<!DOCTYPE html>
```

HTML Headings

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

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

Example

```
<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
```

HTML Paragraphs

HTML paragraphs are defined with the <p> tag:

Example

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

HTML Links

HTML links are defined with the <a> tag:

Example

```
<a href="https://www.w3schools.com">This is a link</a>
```

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

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 tag.

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

Example

```

```

How to View HTML Source?

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

View HTML Source Code:

Right-click in an HTML page and select "View Page Source" (in Chrome) or "View Source" (in Edge), or similar in other browsers. This will open a window containing the HTML source code of the page.

Inspect an HTML Element:

Right-click on an element (or a blank area), and choose "Inspect" or "Inspect Element" 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> |
| | none | none |

Note: Some HTML elements have no content (like the
 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

```
<!DOCTYPE html>
<html>
<body>
```

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

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:

```
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
```

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>`:

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>
```

The `<h1>` element defines a heading.

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

```
<h1>My First Heading</h1>
```

The `<p>` element defines a paragraph.

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

```
<p>My first paragraph.</p>
```

Never Skip the End Tag

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

Example

```
<html>
<body>

<p>This is a paragraph
<p>This is a paragraph

</body>
</html>
```

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 `
` tag defines a line break, and is an empty element without a closing tag:

Example

<p>This is a
 paragraph with a line break.</p>

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 **demand**s lowercase for stricter document types like XHTML.

At W3Schools we always use lowercase tag names.

HTML Tag Reference

W3Schools' tag reference contains additional information about these tags and their attributes.

| Tag | Description |
|------------------------------------------|--------------------------------------|
| <html> | Defines the root of an HTML document |
| <body> | Defines the document's body |
| <h1> to <h6> | Defines HTML headings |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

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:

Example

```
<a href="https://www.w3schools.com">Visit W3Schools</a>
```

You will learn more about links in our [HTML Links chapter](#).

The src Attribute

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

Example

```

```

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 `` tag should also contain the `width` and `height` attributes, which specifies the width and height of the image (in pixels):

Example

```

```

The alt Attribute

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

Example

```

```

Example

See what happens if we try to display an image that does not exist:

```

```

You will learn more about images in our [HTML Images chapter](#).

The style Attribute

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

Example

```
<p style="color:red;">This is a red paragraph.</p>
```

You will learn more about styles in our [HTML Styles chapter](#).

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 following example specifies English as the language:

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

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>
```

You can see all the language codes in our [HTML Language Code Reference](#).

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:

Example

```
<p title="I'm a tooltip">This is a paragraph.</p>
```

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**.

However, W3C **recommends** lowercase attributes in HTML, and **demand**s lowercase attributes for stricter document types like XHTML.

At W3Schools we always use lowercase attribute names.

We Suggest: Always Quote Attribute Values

The HTML standard does not require quotes around attribute values.

However, W3C **recommends** quotes in HTML, and **demand**s 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>
```

Sometimes you have to use quotes. This example will not display the title attribute correctly, because it contains a space:

Example

```
<p title=About W3Schools>
```

Â At W3Schools we always use quotes around attribute values.

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 specifies the path to the image to be displayed
 - The width and height attributes of provide size information for images
 - The alt attribute of 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 Exercises

HTML Attribute Reference

A complete list of all attributes for each HTML element, is listed in our:[HTML Attribute Reference](#).

HTML Headings

HTML headings are titles or subtitles that you want to display on a webpage.

Example

Heading 1

Heading 2

Heading 3

Heading 4

Heading 5

Heading 6

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 Exercises

HTML Tag Reference

W3Schools' tag reference contains additional information about these tags and their attributes.

| Tag | Description |
|------------------------------------------|--------------------------------------|
| <html> | Defines the root of an HTML document |
| <body> | Defines the document's body |
| <h1> to <h6> | Defines HTML headings |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

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.

Example

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

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:

Example

```
<p>
```

This paragraph
contains a lot of lines
in the source code,
but the browser
ignores it.
</p>

<p>
This paragraph
containsÂ Â Â Â Â Â Â Â a lot of spaces
in the sourceÂ Â Â Â Â Â Â Â code,
but theÂ Â Â Â Â Â Â browser
ignores it.
</p>

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:

Example

```
<h1>This is heading 1</h1>
<p>This is some text.</p>
<hr>
<h2>This is heading 2</h2>
<p>This is some other text.</p>
<hr>
```

The <hr> tag is an empty tag, which means that it has no end tag.

HTML Line Breaks

The HTML
 element defines a line break.

Use
 if you want a line break (a new line) without starting a new paragraph:

Example

```
<p>This is<br>a paragraph<br>with line breaks.</p>
```

The
 tag is an empty tag, which means that it has no end tag.

The Poem Problem

This poem will display on a single line:

Example

```
<p>
Â My Bonnie lies over the ocean.

Â My Bonnie lies over the sea.

Â My Bonnie lies over the ocean.

Â Oh, bring back my Bonnie to me.
</p>
```

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:

Example

```
<pre>
Â My Bonnie lies over the ocean.

Â My Bonnie lies over the sea.

Â My Bonnie lies over the ocean.

Â Oh, bring back my Bonnie to me.
</pre>
```

HTML Exercises

HTML Tag Reference

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

| Tag | Description |
|-----------------------------|------------------------------------------|
| <p> | Defines a paragraph |
| <hr> | Defines a thematic change in the content |
| | Inserts a single line break |
| <pre> | Defines pre-formatted text |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Styles

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

Example

I am Red

I am Blue

I am Big

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;">
```

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.

Example

Set the background color for a page to powderblue:

```
<body style="background-color:powderblue;">

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
```

Example

Set background color for two different elements:

```
<body>

<h1 style="background-color:powderblue;">This is a heading</h1>
<p style="background-color:tomato;">This is a paragraph.</p>

</body>
```

Text Color

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

Example

```
<h1 style="color:blue;">This is a heading</h1>
<p style="color:red;">This is a paragraph.</p>
```

Fonts

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

Example

```
<h1 style="font-family:verdana;">This is a heading</h1>
<p style="font-family:courier;">This is a paragraph.</p>
```

Text Size

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

Example

```
<h1 style="font-size:300%;">This is a heading</h1>
<p style="font-size:160%;">This is a paragraph.</p>
```

Text Alignment

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

Example

```
<h1 style="text-align:center;">Centered Heading</h1>
<p style="text-align:center;">Centered paragraph.</p>
```

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 Exercises

HTML Text Formatting

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

Example

This text is bold

This text is italic

This is _{subscript} and ^{superscript}

HTML Formatting Elements

Formatting elements were designed to display special types of text:

- `` - Bold text
 - `` - Important text
 - `<i>` - Italic text
 - `` - Emphasized text
 - `<mark>` - Marked text
 - `<small>` - Smaller text
 - `` - Deleted text
 - `<ins>` - Inserted text
 - `<sub>` - Subscript text
 - `<sup>` - Superscript text
-

HTML `` and `` Elements

The HTML `` element defines bold text, without any extra importance.

Example

``This text is bold``

The HTML `` element defines text with strong importance. The content inside is typically displayed in bold.

Example

``This text is important!``

HTML `<i>` and `` Elements

The HTML `<i>` element defines a part of text in an alternate voice or mood. The content inside is typically displayed in italic.

Tip: The `<i>` tag is often used to indicate a technical term, a phrase from another language, a thought, a ship name, etc.

Example

<i>This text is italic</i>

The HTML element defines emphasized text. The content inside is typically displayed in italic.

Tip: A screen reader will pronounce the words in with an emphasis, using verbal stress.

Example

This text is emphasized

HTML <small> Element

The HTML <small> element defines smaller text:

Example

<small>This is some smaller text.</small>

HTML <mark> Element

The HTML <mark> element defines text that should be marked or highlighted:

Example

<p>Do not forget to buy <mark>milk</mark> today.</p>

HTML Element

The HTML element defines text that has been deleted from a document. Browsers will usually strike a line through deleted text:

Example

<p>My favorite color is blue red.</p>

HTML <ins> Element

The HTML <ins> element defines a text that has been inserted into a document. Browsers will usually underline inserted text:

Example

<p>My favorite color is blue <ins>red</ins>.</p>

HTML <sub> Element

The HTML <sub> element defines subscript text. Subscript text appears half a character below the normal line, and is sometimes rendered in a smaller font. Subscript text can be used for chemical formulas, like H₂O:

Example

<p>This is _{subscripted} text.</p>

HTML <sup> Element

The HTML <sup> element defines superscript text. Superscript text appears half a character above the normal line, and is sometimes rendered in a smaller font. Superscript text can be used for footnotes, like WWW^[1]:

Example

<p>This is ^{superscripted} text.</p>

HTML Exercises

HTML Text Formatting Elements

| Tag | Description |
|--------------------------------|------------------------------------------------------|
| | Defines bold text |
| | Defines emphasized text |
| <i> | Defines a part of text in an alternate voice or mood |
| <small> | Defines smaller text |
| | Defines important text |
| <sub> | Defines subscripted text |
| <sup> | Defines superscripted text |
| <ins> | Defines inserted text |
| | Defines deleted text |
| <mark> | Defines marked/highlighted text |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Quotation and Citation Elements

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

Example

Here is a quote from WWF's website:

For nearly 60 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by more than one million members in the United States and close to five million globally.

HTML `<blockquote>` for Quotations

The HTML `<blockquote>` element defines a section that is quoted from another source.

Browsers usually indent `<blockquote>` elements.

Example

```
<p>Here is a quote from WWF's website:</p>
<blockquote cite="http://www.worldwildlife.org/who/index.html">
For 50 years, WWF has been protecting the future of nature.
The world's leading conservation organization,
WWF works in 100 countries and is supported by
1.2 million members in the United States and
close to 5 million globally.
</blockquote>
```

HTML `<q>` for Short Quotations

The HTML `<q>` tag defines a short quotation.

Browsers normally insert quotation marks around the quotation.

Example

<p>WWF's goal is to: <q>Build a future where people live in harmony with nature.</q></p>

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.Â

Example

<p>The <abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>

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.

Example

```
<address>
Written by John Doe.<br>
Visit us at:<br>
Example.com<br>
Box 564, Disneyland<br>
USA
</address>
```

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*.

Example

<p><cite>The Scream</cite> by Edvard Munch. Painted in 1893.</p>

HTML <bdo> for Bi-Directional Override

BDO stands for Bi-Directional Override.

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

Example

<bdo dir="rtl">This text will be written from right to left</bdo>

HTML Exercises

HTML Quotation and Citation Elements

| Tag | Description |
|------------------------------|------------------------------------|
| <abbr> | Defines an abbreviation or acronym |

| | |
|-------------------------------------------------|----------------------------------------------------------------|
| <code><address></code> | Defines contact information for the author/owner of a document |
| <code><bdo></code> | Defines the text direction |
| <code><blockquote></code> | Defines a section that is quoted from another source |
| <code><cite></code> | Defines the title of a work |
| <code><q></code> | Defines a short inline quotation |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Comments

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

HTML Comment Tags

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

```
<!-- Write your comments here -->
```

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.

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

Example

```
<!-- This is a comment -->
```

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

```
<!-- Remember to add more information here -->
```

Comments are also great for debugging HTML, because you can comment out HTML lines of code, one at a time, to search for errors:

Example

```
<!-- Do not display this image at the moment

-->
```

HTML Exercises

HTML Colors

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

Color Names

In HTML, a color can be specified by using a color name:

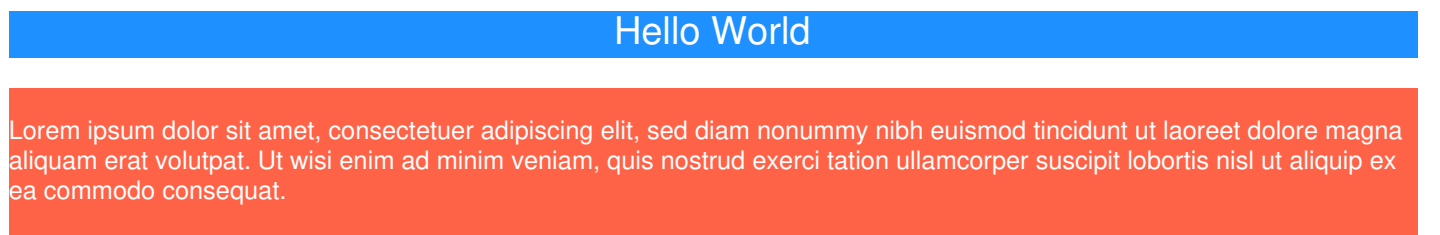


[Try it Yourself Â»](#)

HTML supports [140 standard color names](#).

Background Color

You can set the background color for HTML elements:



Example

```
<h1 style="background-color:DodgerBlue;">Hello World</h1>
<p style="background-color:Tomato;">Lorem ipsum...</p>
```

Text Color

You can set the color of text:

Hello World

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Example

```
<h1 style="color:Tomato;">Hello World</h1>
<p style="color:DodgerBlue;">Lorem ipsum...</p>
<p style="color:MediumSeaGreen;">Ut wisi enim...</p>
```

Border Color

You can set the color of borders:

Hello World

Hello World

Hello World

Example

```
<h1 style="border:2px solid Tomato;">Hello World</h1>
<h1 style="border:2px solid DodgerBlue;">Hello World</h1>
<h1 style="border:2px solid Violet;">Hello World</h1>
```

Color Values

In HTML, colors can also be specified using RGB values, HEX values, HSL values, RGBA values, and HSLA values.

The following three <div> elements have their background color set with RGB, HEX, and HSL values:

rgb(255, 99, 71)

#ff6347

hsl(9, 100%, 64%)

The following two <div> elements have their background color set with RGBA and HSLA values, which adds an Alpha channel to the color (here we have 50% transparency):

rgba(255, 99, 71, 0.5)

hsla(9, 100%, 64%, 0.5)

Example

```
<h1 style="background-color:rgb(255, 99, 71);">...</h1>
<h1 style="background-color:#ff6347;">...</h1>
<h1 style="background-color:hsl(9, 100%, 64%;">...</h1>

<h1 style="background-color:rgba(255, 99, 71, 0.5);">...</h1>
<h1 style="background-color:hsla(9, 100%, 64%, 0.5);">...</h1>
```

Learn more about Color Values

You will learn more about [RGB](#), [HEX](#) and [HSL](#) in the next chapters.

HTML Colors

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

Color Names

In HTML, a color can be specified by using a color name:

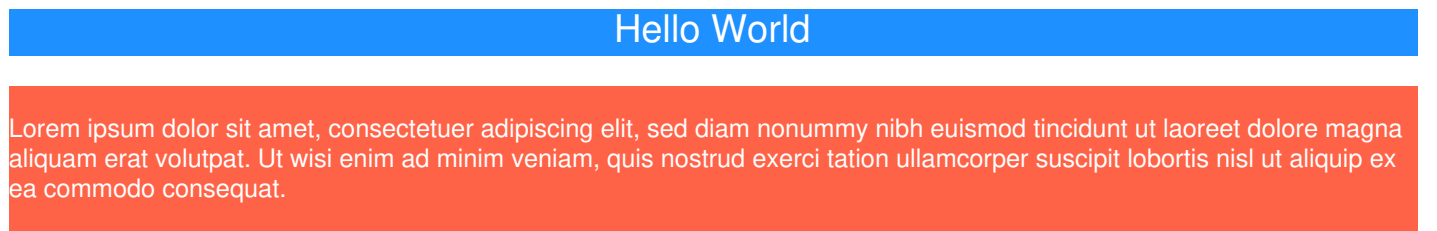


[Try it Yourself Å»](#)

HTML supports [140 standard color names](#).

Background Color

You can set the background color for HTML elements:



Example

```
<h1 style="background-color:DodgerBlue;">Hello World</h1>
<p style="background-color:Tomato;">Lorem ipsum...</p>
```

Text Color

You can set the color of text:

Hello World

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Example

```
<h1 style="color:Tomato;">Hello World</h1>
<p style="color:DodgerBlue;">Lorem ipsum...</p>
<p style="color:MediumSeaGreen;">Ut wisi enim...</p>
```

Border Color

You can set the color of borders:

Hello World

Hello World

Hello World

Example

```
<h1 style="border:2px solid Tomato;">Hello World</h1>
<h1 style="border:2px solid DodgerBlue;">Hello World</h1>
<h1 style="border:2px solid Violet;">Hello World</h1>
```

Color Values

In HTML, colors can also be specified using RGB values, HEX values, HSL values, RGBA values, and HSLA values.

The following three <div> elements have their background color set with RGB, HEX, and HSL values:

rgb(255, 99, 71)

#ff6347

hsl(9, 100%, 64%)

The following two <div> elements have their background color set with RGBA and HSLA values, which adds an Alpha channel to the color (here we have 50% transparency):

rgba(255, 99, 71, 0.5)

hsla(9, 100%, 64%, 0.5)

Example

```
<h1 style="background-color:rgb(255, 99, 71);">...</h1>
<h1 style="background-color:#ff6347;">...</h1>
<h1 style="background-color:hsl(9, 100%, 64%);">...</h1>

<h1 style="background-color:rgba(255, 99, 71, 0.5);">...</h1>
<h1 style="background-color:hsla(9, 100%, 64%, 0.5);">...</h1>
```

Learn more about Color Values

You will learn more about [RGB](#), [HEX](#) and [HSL](#) in the next chapters.

HTML RGB and RGBA Colors

An RGB color value represents RED, GREEN, and BLUE light sources.

An RGBA color value is an extension of RGB with an Alpha channel (opacity).

RGB Color Values

In HTML, a color can be specified as an RGB value, using this formula:

rgb(*red*, *green*, *blue*)

Each parameter (red, green, and blue) defines the intensity of the color with a value between 0 and 255.

This means that there are $256 \times 256 \times 256 = 16777216$ possible colors!

For example, rgb(255, 0, 0) is displayed as red, because red is set to its highest value (255), and the other two (green and blue) are set to 0.

Another example, rgb(0, 255, 0) is displayed as green, because green is set to its highest value (255), and the other two (red and blue) are set to 0.

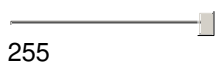
To display black, set all color parameters to 0, like this: rgb(0, 0, 0).

To display white, set all color parameters to 255, like this: rgb(255, 255, 255).

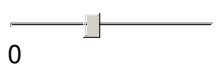
Experiment by mixing the RGB values below:

Â

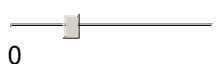
RED



GREEN



BLUE



Example

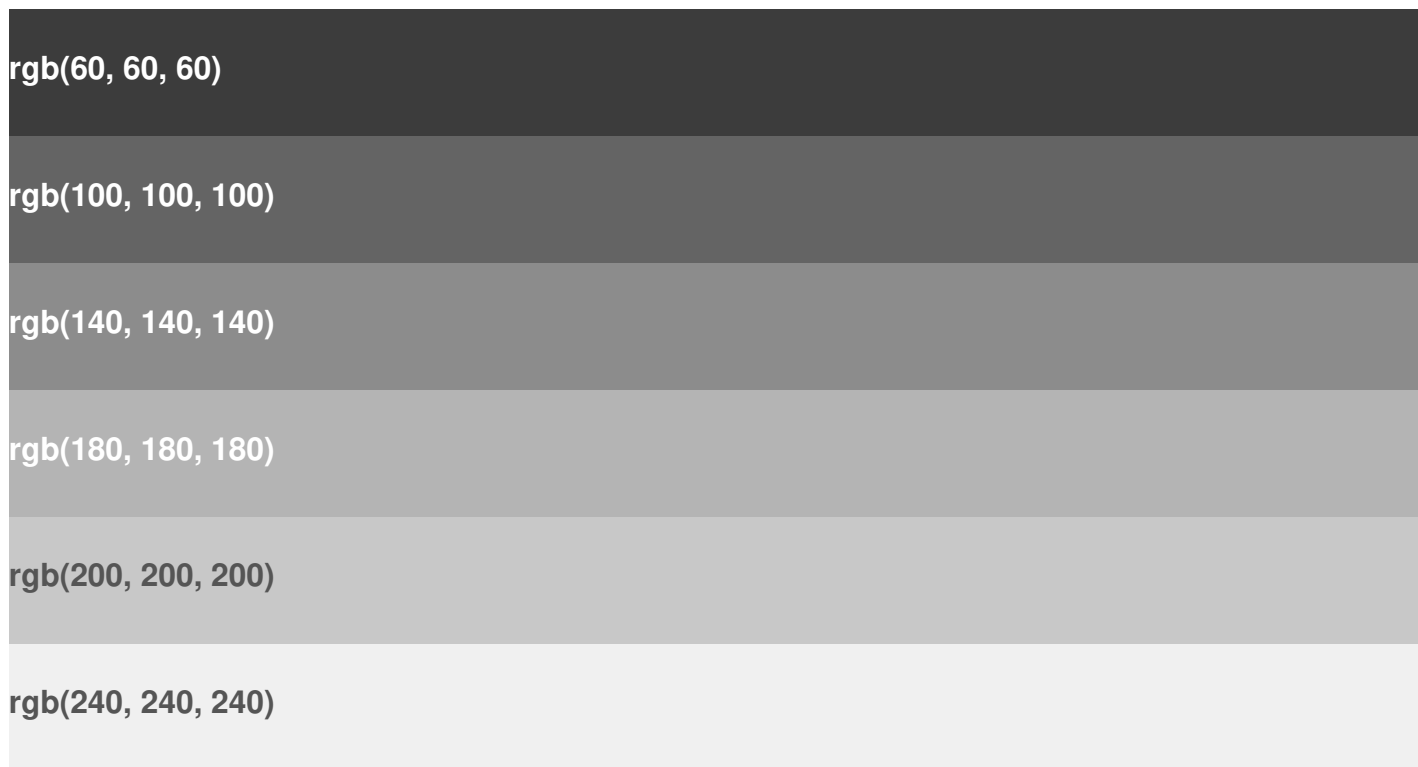
rgb(255, 0, 0)



Shades of Gray

Shades of gray are often defined using equal values for all three parameters:

Example



RGBA Color Values

RGBA color values are an extension of RGB color values with an Alpha channel - which specifies the opacity for a color.

An RGBA color value is specified with:

rgba(*red*, *green*, *blue*, *alpha*)

The alpha parameter is a number between 0.0 (fully transparent) and 1.0 (not transparent at all):

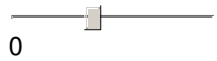
Experiment by mixing the RGBA values below:

A

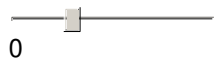
RED



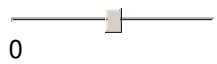
GREEN



BLUE



ALPHA



Example

`rgba(255, 99, 71, 0)`

`rgba(255, 99, 71, 0.2)`

`rgba(255, 99, 71, 0.4)`

`rgba(255, 99, 71, 0.6)`

`rgba(255, 99, 71, 0.8)`

`rgba(255, 99, 71, 1)`

HTML HEX Colors

A hexadecimal color is specified with: #RRGGBB, where the RR (red), GG (green) and BB (blue) hexadecimal integers specify the components of the color.

HEX Color Values

In HTML, a color can be specified using a hexadecimal value in the form:

#rrggbb

Where rr (red), gg (green) and bb (blue) are hexadecimal values between 00 and ff (same as decimal 0-255).

For example, #ff0000 is displayed as red, because red is set to its highest value (ff), and the other two (green and blue) are set to 00.

Another example, #00ff00 is displayed as green, because green is set to its highest value (ff), and the other two (red and blue) are set to 00.

To display black, set all color parameters to 00, like this: #000000.

To display white, set all color parameters to ff, like this: #ffffff.

Experiment by mixing the HEX values below:

Ⓐ

RED



ff

GREEN



0

BLUE



0

Example



Shades of Gray

Shades of gray are often defined using equal values for all three parameters:

Example

#404040

#686868

#a0a0a0

#bebebe

#dcdcdc

#f8f8f8

HTML HSL and HSLA Colors

HSL stands for hue, saturation, and lightness.

HSLA color values are an extension of HSL with an Alpha channel (opacity).

HSL Color Values

In HTML, a color can be specified using hue, saturation, and lightness (HSL) in the form:

hsl(*hue*, *saturation*, *lightness*)

Hue is a degree on the color wheel from 0 to 360. 0 is red, 120 is green, and 240 is blue.

Saturation is a percentage value, 0% means a shade of gray, and 100% is the full color.

Lightness is also a percentage value, 0% is black, and 100% is white.

Experiment by mixing the HSL values below:

Â

HUE



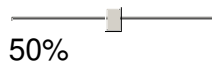
0

SATURATION



100%

LIGHTNESS



Example



Saturation

Saturation can be described as the intensity of a color.

100% is pure color, no shades of gray

50% is 50% gray, but you can still see the color.

0% is completely gray, you can no longer see the color.

Example



hsl(0, 0%, 50%)

Lightness

The lightness of a color can be described as how much light you want to give the color, where 0% means no light (black), 50% means 50% light (neither dark nor light) 100% means full lightness (white).

Example

hsl(0, 100%, 0%)

hsl(0, 100%, 25%)

hsl(0, 100%, 50%)

hsl(0, 100%, 75%)

hsl(0, 100%, 90%)

hsl(0, 100%, 100%)

Shades of Gray

Shades of gray are often defined by setting the hue and saturation to 0, and adjust the lightness from 0% to 100% to get darker/lighter shades:

Example

hsl(0, 0%, 20%)

hsl(0, 0%, 30%)

hsl(0, 0%, 40%)

hsl(0, 0%, 60%)

hsl(0, 0%, 70%)

hsl(0, 0%, 90%)

HSLA Color Values

HSLA color values are an extension of HSL color values with an Alpha channel - which specifies the opacity for a color.

An HSLA color value is specified with:

hsla(*hue*, *saturation*, *lightness*, *alpha*)

The alpha parameter is a number between 0.0 (fully transparent) and 1.0 (not transparent at all):

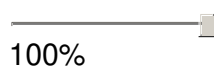
Experiment by mixing the HSLA values below:

Â

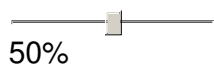
HUE



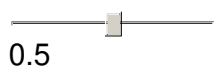
SATURATION



LIGHTNESS



ALPHA



Example

hsla(9, 100%, 64%, 0)

hsla(9, 100%, 64%, 0.2)

hsla(9, 100%, 64%, 0.4)

hsla(9, 100%, 64%, 0.6)

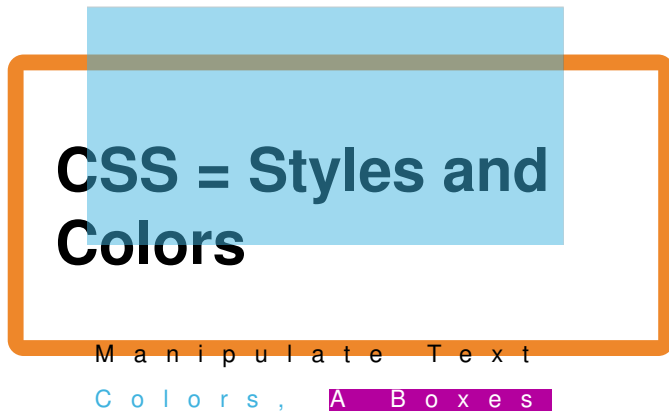
hsla(9, 100%, 64%, 0.8)

hsla(9, 100%, 64%, 1)

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:

Example

```
<h1 style="color:blue;">A Blue Heading</h1>
```

<p style="color:red;">A red paragraph.</p>

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:Â

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: powderblue;}
h1Â Â {color: blue;}
pÂ Â Â {color: red;}
</style>
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

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:

Example

```
<!DOCTYPE html>
<html>
<head>
Â <link rel="stylesheet" href="styles.css">
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

The external style sheet can be written in any text editor. The file must not contain any HTML code, and must be saved with a .css extension.

Here is what the "styles.css" file looks like:

"styles.css":

```
body {
Â Â background-color: powderblue;
}
h1 {
Â color: blue;
}
p {
Â Â color: red;
```

```
}
```

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.

Example

Use of CSS `color`, `font-family` and `font-size` properties:

```
<!DOCTYPE html>
<html>
<head>
<style>
h1 {
  color: blue;
  font-family: verdana;
  font-size: 300%;
}
p {
  color: red;
  font-family: courier;
  font-size: 160%;
}
</style>
</head>
<body>

<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

CSS Border

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

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

Example

Use of CSS `border` property:

```
p {
  border: 2px solid powderblue;
}
```

CSS Padding

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

Example

Use of CSS `border` and `padding` properties:

```
p {
  border: 2px solid powderblue;
```

```
A padding: 30px;
}
```

CSS Margin

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

Example

Use of CSS border and margin properties:

```
p {
  border: 2px solid powderblue;
  margin: 50px;
}
```

Link to External CSS

External style sheets can be referenced with a full URL or with a path relative to the current web page.

Example

This example uses a full URL to link to a style sheet:

```
<link rel="stylesheet" href="https://www.w3schools.com/html/styles.css">
```

Example

This example links to a style sheet located in the html folder on the current web site:

```
<link rel="stylesheet" href="/html/styles.css">
```

Example

This example links to a style sheet located in the same folder as the current page:

```
<link rel="stylesheet" href="styles.css">
```

You can read more about file paths in the chapter [HTML File Paths](#).

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

Tip: You can learn much more about CSS in our [CSS Tutorial](#).

HTML Exercises

HTML Style Tags

| Tag | Description |
|-------------------------------|------------------------------------------------|
| <style> | Defines style information for an HTML document |

[<link>](#) Defines a link between a document and an external resource

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Links

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

HTML Links - Hyperlinks

HTML links are hyperlinks.

You can click on a link and jump to another document.

When you move the mouse over a link, the mouse arrow will turn into a little hand.

Note: A link does not have to be text. A link can be an image or any other HTML element!

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.

Example

This example shows how to create a link to W3Schools.com:

```
<a href="https://www.w3schools.com/">Visit W3Schools.com!</a>
```

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

Example

Use `target="_blank"` to open the linked document in a new browser window or tab:

`Visit W3Schools!`

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 `` tag inside the `<a>` tag:

Example

```
<a href="default.asp">

</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>
```

Button as a Link

To use an HTML button as a link, you have to add some JavaScript code.

JavaScript allows you to specify what happens at certain events, such as a click of a button:

Example

```
<button onclick="document.location='default.asp'">HTML Tutorial</button>
```

Tip: Learn more about JavaScript in our [JavaScript Tutorial](#).

Link Titles

The title attribute specifies extra information about an element. The information is most often shown as a tooltip text when the mouse moves over the element.

Example

```
<a href="https://www.w3schools.com/html/" title="Go to W3Schools HTML section">Visit our HTML Tutorial</a>
```

More on Absolute URLs and Relative URLs

Example

Use a full URL to link to a web page:Â

`HTML tutorial`

Example

Link to a page located in the html folder on the current web site:Â

`HTML tutorial`

Example

Link to a page located in the same folder as the current page:Â

`HTML tutorial`

You can read more about file paths in the chapter [HTML File Paths](#).

Chapter 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 `` 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 Link Tags

| Tag | Description |
|------------------------|---------------------|
| <code><a></code> | Defines a hyperlink |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Links

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

HTML Links - Hyperlinks

HTML links are hyperlinks.

You can click on a link and jump to another document.

When you move the mouse over a link, the mouse arrow will turn into a little hand.

Note: A link does not have to be text. A link can be an image or any other HTML element!

HTML Links - Syntax

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

`link text`

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.

Example

This example shows how to create a link to W3Schools.com:

```
<a href="https://www.w3schools.com/">Visit W3Schools.com!</a>
```

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

Example

Use `target="_blank"` to open the linked document in a new browser window or tab:

```
<a href="https://www.w3schools.com/" target="_blank">Visit W3Schools!</a>
```

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 `` tag inside the `<a>` tag:

Example

```
<a href="default.asp">

</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>
```

Button as a Link

To use an HTML button as a link, you have to add some JavaScript code.

JavaScript allows you to specify what happens at certain events, such as a click of a button:

Example

```
<button onclick="document.location='default.asp'">HTML Tutorial</button>
```

Tip: Learn more about JavaScript in our [JavaScript Tutorial](#).

Link Titles

The `title` attribute specifies extra information about an element. The information is most often shown as a tooltip text when the mouse moves over the element.

Example

```
<a href="https://www.w3schools.com/html/" title="Go to W3Schools HTML section">Visit our HTML Tutorial</a>
```

More on Absolute URLs and Relative URLs

Example

Use a full URL to link to a web page:Â

```
<a href="https://www.w3schools.com/html/default.asp">HTML tutorial</a>
```

Example

Link to a page located in the `html` folder on the current web site:Â

```
<a href="/html/default.asp">HTML tutorial</a>
```

Example

Link to a page located in the same folder as the current page:Â

```
<a href="default.asp">HTML tutorial</a>
```

You can read more about file paths in the chapter [HTML File Paths](#).

Chapter 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 `` 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 Link Tags

| Tag | Description |
|---------------------------|---------------------|
| <a> | Defines a hyperlink |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Links - Different Colors

An HTML link is displayed in a different color depending on whether it has been visited, is unvisited, or is active.

HTML Link Colors

By default, a link will appear like this (in all browsers):

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

You can change the link state colors, by using CSS:

Example

Here, an unvisited link will be green with no underline. A visited link will be pink with no underline. An active link will be yellow and underlined. In addition, when mousing over a link (a:hover) it will become red and underlined:

```
<style>
a:link {
  Â Â color: green;
  Â Â background-color: transparent;
  Â Â text-decoration: none;
}

a:visited {
  Â Â color: pink;
  Â Â background-color: transparent;
  Â Â text-decoration: none;
}

a:hover {
  Â Â color: red;
  Â Â background-color: transparent;
  Â Â text-decoration: underline;
}

a:active {
  Â Â color: yellow;
  Â Â background-color: transparent;
  Â Â text-decoration: underline;
}
</style>
```

Link Buttons

A link can also be styled as a button, by using CSS:

[This is a link](#)

Example

```
<style>
a:link, a:visited {
  Â Â background-color: #f44336;
  Â Â color: white;
  Â Â padding: 15px 25px;
  Â Â text-align: center;
  Â Â text-decoration: none;
  Â Â display: inline-block;
}

a:hover, a:active {
  Â Â background-color: red;
}
```

```
}  
</style>
```

To learn more about CSS, go to our [CSS Tutorial](#).

HTML Link Tags

| Tag | Description |
|---------------------------|---------------------|
| <a> | Defines a hyperlink |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Links - Create Bookmarks

HTML links can be used to create bookmarks, so that readers can jump to specific parts of a web page.

Create a Bookmark in HTML

Bookmarks can be useful if a web page is very long.

To create a bookmark - first create the bookmark, then add a link to it.

When the link is clicked, the page will scroll down or up to the location with the bookmark.

Example

First, use the `id` attribute to create a bookmark:

```
<h2 id="C4">Chapter 4</h2>
```

Then, add a link to the bookmark ("Jump to Chapter 4"), from within the same page:

Example

```
<a href="#C4">Jump to Chapter 4</a>
```

You can also add a link to a bookmark on another page:

```
<a href="html_demo.html#C4">Jump to Chapter 4</a>
```

Chapter Summary

- Use the `id` attribute (`id="value"`) to define bookmarks in a page
 - Use the `href` attribute (`href="#value"`) to link to the bookmark
-

HTML Exercises

HTML Link Tags

| Tag | Description |
|---------------------------|---------------------|
| <a> | Defines a hyperlink |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Images

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

Example

```

```

Example

```

```

Example

```

```

HTML Images Syntax

The HTML `` 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 `` tag creates a holding space for the referenced image.

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

The `` tag has two required attributes:

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

Syntax

```

```

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.

Example

```

```

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:

Example

```

```

If a browser cannot find an image, it will display the value of the `alt` attribute:

Example

```

```

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.

Image Size - Width and Height

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

Example

```

```

Alternatively, you can use the `width` and `height` attributes:

Example

```

```

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:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
img {
  width: 100%;
}
</style>
</head>
<body>





</body>
</html>
```

Images in Another Folder

If you have your images in a sub-folder, you must include the folder name in the `src` attribute:

Example

```

```

Images on Another Server/Website

Some web sites point to an image on another server.

To point to an image on another server, you must specify an absolute (full) URL in the `src` attribute:

Example

```

```

Notes on external images: 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.

Animated Images

HTML allows animated GIFs:

Example

```

```

Image as a Link

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

Example

```
<a href="default.asp">
  &#xA0; 
```

Image Floating

Use the CSS `float` property to let the image float to the right or to the left of a text:

Example

`<p>`
The image will float to the right of the text.</p>

`<p>`
The image will float to the left of the text.</p>

Tip: To learn more about CSS Float, read our [CSS Float Tutorial](#).

Common Image Formats

Here are the most common image file types, which are supported in all browsers (Chrome, Edge, Firefox, Safari, Opera):

| Abbreviation | File Format | File Extension |
|--------------|---------------------------------------|--------------------------------|
| APNG | Animated Portable Network Graphics | .apng |
| GIF | Graphics Interchange Format | .gif |
| ICO | Microsoft Icon | .ico, .cur |
| JPEG | Joint Photographic Expert Group image | .jpg, .jpeg, .jif, .jpeg, .pjp |
| PNG | Portable Network Graphics | .png |
| SVG | Scalable Vector Graphics | .svg |

Chapter Summary

- Use the HTML `` element to define an image
- Use the HTML `src` attribute to define the URL of the image
- Use the HTML `alt` attribute to define an alternate text for an image, if it cannot be displayed
- Use the HTML `width` and `height` attributes or the CSS `width` and `height` properties to define the size of the image
- Use the CSS `float` property to let the image float to the left or to the right

Note: Loading large images takes time, and can slow down your web page. Use images carefully.

HTML Exercises

HTML Image Tags

| Tag | Description |
|---------------------------------|--------------------------------------------------|
| | Defines an image |
| <map> | Defines an image map |
| <area> | Defines a clickable area inside an image map |
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Example

```

```

Example

```

```

Example

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Example

```

```

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```

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

Example

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<head>
<style>
img {
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}
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</head>
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</html>
```

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```

```

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Notes on external images: 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.

Animated Images

HTML allows animated GIFs:

Example

```

```

Image as a Link

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

Example

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

Image Floating

Use the CSS `float` property to let the image float to the right or to the left of a text:

Example

`<p>`
The image will float to the right of the text.`</p>`

`<p>`
The image will float to the left of the text.`</p>`

Tip: To learn more about CSS Float, read our [CSS Float Tutorial](#).

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Chapter Summary

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- Use the HTML `alt` attribute to define an alternate text for an image, if it cannot be displayed
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| <picture> | Defines a container for multiple image resources |

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HTML Image Maps

With HTML image maps, you can create clickable areas on an image.

Image Maps

The HTML `<map>` tag defines an image map. An image map is an image with clickable areas. The areas are defined with one or more `<area>` tags.

Try to click on the computer, phone, or the cup of coffee in the image below:



Example

Here is the HTML source code for the image map above:

```


<map name="workmap">
  &Amp; <area shape="rect" coords="34,44,270,350" alt="Computer" href="computer.htm">
  &Amp; <area shape="rect" coords="290,172,333,250" alt="Phone" href="phone.htm">
  &Amp; <area shape="circle" coords="337,300,44" alt="Coffee" href="coffee.htm">
</map>
```

How Does it Work?

The idea behind an image map is that you should be able to perform different actions depending on where in the image you click.

To create an image map you need an image, and some HTML code that describes the clickable areas.

The Image

The image is inserted using the `` tag. The only difference from other images is that you must add a `usemap` attribute:

```

```

The `usemap` value starts with a hash tag `#` followed by the name of the image map, and is used to create a relationship between the image and the image map.

Tip: You can use any image as an image map!

Create Image Map

Then, add a `<map>` element.

The `<map>` element is used to create an image map, and is linked to the image by using the required `name` attribute:

```
<map name="workmap">
```

The `name` attribute must have the same value as the ``'s `usemap` attribute .

The Areas

Then, add the clickable areas.

A clickable area is defined using an `<area>` element.

Shape

You must define the shape of the clickable area, and you can choose one of these values:

- `rect` - defines a rectangular region
- `circle` - defines a circular region
- `poly` - defines a polygonal region
- `default` - defines the entire region

You must also define some coordinates to be able to place the clickable area onto the image.Ä

Shape="rect"

The coordinates for shape="rect" come in pairs, one for the x-axis and one for the y-axis.

So, the coordinates 34,44 is located 34 pixels from the left margin and 44 pixels from the top:

The coordinates 270,350 is located 270 pixels from the left margin and 350 pixels from the top:

Now we have enough data to create a clickable rectangular area:

Example

```
<area shape="rect" coords="34, 44, 270, 350" href="computer.htm">
```

This is the area that becomes clickable and will send the user to the page "computer.htm":

Shape="circle"

To add a circle area, first locate the coordinates of the center of the circle:

337,300

Then specify the radius of the circle:

44 pixels

Now you have enough data to create a clickable circular area:

Example

```
<area shape="circle" coords="337, 300, 44" href="coffee.htm">
```

This is the area that becomes clickable and will send the user to the page "coffee.htm":

Shape="poly"

The shape="poly" contains several coordinate points, which creates a shape formed with straight lines (a polygon).

This can be used to create any shape.

Like maybe a croissant shape!

How can we make the croissant in the image below become a clickable link?

We have to find the x and y coordinates for all edges of the croissant:

The coordinates come in pairs, one for the x-axis and one for the y-axis:

Example

```
<area shape="poly"
coords="140,121,181,116,204,160,204,222,191,270,140,329,85,355,58,352,37,322,40,259,103,161,128,147"
href="croissant.htm">
```

This is the area that becomes clickable and will send the user to the page "croissant.htm":



Image Map and JavaScript

A clickable area can also trigger a JavaScript function.

Add a click event to the <area> element to execute a JavaScript function:

Example

Here, we use the onclick attribute to execute a JavaScript function when the area is clicked:

```
<map name="workmap">
  <area shape="circle" coords="337,300,44" href="coffee.htm" onclick="myFunction()">
</map>
```

```
<script>
function myFunction() {
  alert("You clicked the coffee cup!");
}
</script>
```

Chapter Summary

- Use the HTML <map> element to define an image map
- Use the HTML <area> element to define the clickable areas in the image map
- Use the HTML usemap attribute of the element to point to an image map

HTML Image Tags

| Tag | Description |
|---------------------------------|--------------------------------------------------|
| | Defines an image |
| <map> | Defines an image map |
| <area> | Defines a clickable area inside an image map |
| <picture> | Defines a container for multiple image resources |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Background Images

A background image can be specified for almost any HTML element.

Background Image on a HTML element

To add a background image on an HTML element, use the HTML style attribute and the CSS background-image property:

Example

Add a background image on a HTML element:

```
<div style="background-image: url('img_girl.jpg');">
```

You can also specify the background image in the <style> element, in the <head> section:

Example

Specify the background image in the `<style>` element:

```
<style>
div {
  background-image: url('img_girl.jpg');
}
</style>
```

Background Image on a Page

If you want the entire page to have a background image, you must specify the background image on the `<body>` element:

Example

Add a background image for the entire page:

```
<style>
body {
  background-image: url('img_girl.jpg');
}
</style>
```

Background Repeat

If the background image is smaller than the element, the image will repeat itself, horizontally and vertically, until it reaches the end of the element:

Example

```
<style>
body {
  background-image: url('example_img_girl.jpg');
}
</style>
```

To avoid the background image from repeating itself, set the `background-repeat` property to `no-repeat`.

Example

```
<style>
body {
  background-image: url('example_img_girl.jpg');
  background-repeat: no-repeat;
}
</style>
```

Background Cover

If you want the background image to cover the entire element, you can set the `background-size` property to `cover`.

Also, to make sure the entire element is always covered, set the `background-attachment` property to `fixed`:

This way, the background image will cover the entire element, with no stretching (the image will keep its original proportions):

Example

```
<style>
body {
  background-image: url('img_girl.jpg');
  background-repeat: no-repeat;
  background-attachment: fixed;
  background-size: cover;
}
</style>
```

Background Stretch

If you want the background image to stretch to fit the entire element, you can set the `background-size` property to `100% 100%`:

Try resizing the browser window, and you will see that the image will stretch, but always cover the entire element.

Example

```
<style>
body {
  background-image: url('img_girl.jpg');
  background-repeat: no-repeat;
  background-attachment: fixed;
  background-size: 100% 100%;
}
</style>
```

Learn More CSS

From the examples above you have learned that background images can be styled by using the CSS background properties.

To learn more about CSS background properties, study our [CSS Background Tutorial](#).

HTML <picture> Element

The HTML `<picture>` element allows you to display different pictures for different devices or screen sizes.

□

The HTML <picture> Element

The HTML `<picture>` element gives web developers more flexibility in specifying image resources.

The `<picture>` element contains one or more `<source>` elements, each referring to different images through the `srcset` attribute. This way the browser can choose the image that best fits the current view and/or device.

Each `<source>` element has a `media` attribute that defines when the image is the most suitable.

Example

Show different images for different screen sizes:

```
<picture>
  &#xA0;<source media="(min-width: 650px)" srcset="img_food.jpg">
  &#xA0;<source media="(min-width: 465px)" srcset="img_car.jpg">
  &#xA0;
</picture>
```

Note: Always specify an `` element as the last child element of the `<picture>` element. The `` element is used by browsers that do not support the `<picture>` element, or if none of the `<source>` tags match.

When to use the Picture Element

There are two main purposes for the `<picture>` element:

1. Bandwidth

If you have a small screen or device, it is not necessary to load a large image file. The browser will use the first `<source>` element with matching attribute values, and ignore any of the following elements.

2. Format Support

Some browsers or devices may not support all image formats. By using the `<picture>` element, you can add images of all formats, and the browser will use the first format it recognizes, and ignore any of the following elements.

Example

The browser will use the first image format it recognizes:

```
<picture>
  &#xA0;<source srcset="img_avatar.png">
  &#xA0;<source srcset="img_girl.jpg">
  &#xA0;
</picture>
```

Note: The browser will use the first `<source>` element with matching attribute values, and ignore any following `<source>` elements.

HTML Image Tags

| Tag | Description |
|---------------------------------|--------------------------------------------------|
| | Defines an image |
| <map> | Defines an image map |
| <area> | Defines a clickable area inside an image map |
| <picture> | Defines a container for multiple image resources |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Tables

HTML tables allow web developers to arrange data into rows and columns.

Example

| Company | Contact | Country |
|------------------------------|------------------|---------|
| Alfreds Futterkiste | Maria Anders | Germany |
| Centro comercial Moctezuma | Francisco Chang | Mexico |
| Ernst Handel | Roland Mendel | Austria |
| Island Trading | Helen Bennett | UK |
| Laughing Bacchus Winecellars | Yoshi Tannamuri | Canada |
| Magazzini Alimentari Riuniti | Giovanni Rovelli | Italy |

Define an HTML Table

The `<table>` tag defines an HTML table.

Each table row is defined with a `<tr>` tag. Each table header is defined with a `<th>` tag. Each table data/cell is defined with a `<td>` tag.

By default, the text in `<th>` elements are bold and centered.

By default, the text in `<td>` elements are regular and left-aligned.

Example

A simple HTML table:

```
<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>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
```

Note: The `<td>` elements are the data containers of the table. They can contain all sorts of HTML elements; text, images, lists, other tables, etc.

HTML Table - Add a Border

To add a border to a table, use the CSS `border` property:

Example

```
table, th, td {
  border: 1px solid black;
}
```

Remember to define borders for both the table and the table cells.

HTML Table - Collapsed Borders

To let the borders collapse into one border, add the CSS `border-collapse` property:

Example

```
table, th, td {  
  border: 1px solid black;  
  border-collapse: collapse;  
}
```

HTML Table - Add Cell Padding

Cell padding specifies the space between the cell content and its borders.

If you do not specify a padding, the table cells will be displayed without padding.

To set the padding, use the CSS `padding` property:

Example

```
th, td {  
  padding: 15px;  
}
```

HTML Table - Left-align Headings

By default, table headings are bold and centered.

To left-align the table headings, use the CSS `text-align` property:

Example

```
th {  
  text-align: left;  
}
```

HTML Table - Add Border Spacing

Border spacing specifies the space between the cells.

To set the border spacing for a table, use the CSS `border-spacing` property:

Example

```
table {  
  border-spacing: 5px;  
}
```

Note: If the table has collapsed borders, border-spacing has no effect.

HTML Table - Cell that Spans Many Columns

To make a cell span more than one column, use the `colspan` attribute:

Example

```
<table style="width:100%">  
  <tr>  
    <th>Name</th>  
    <th colspan="2">Telephone</th>  
  </tr>  
  <tr>  
    <td>Bill Gates</td>  
    <td>55577854</td>  
    <td>55577855</td>  
  </tr>
```

</table>

HTML Table - Cell that Spans Many Rows

To make a cell span more than one row, use the `rowspan` attribute:

Example

```
<table style="width:100%">
  <tr>
    <th>Name:</th>
    <td>Bill Gates</td>
  </tr>
  <tr>
    <th rowspan="2">Telephone:</th>
    <td>55577854</td>
  </tr>
  <tr>
    <td>55577855</td>
  </tr>
</table>
```

HTML Table - Add a Caption

To add a caption to a table, use the `<caption>` tag:

Example

```
<table style="width:100%">
  <caption>Monthly savings</caption>
  <tr>
    <th>Month</th>
    <th>Savings</th>
  </tr>
  <tr>
    <td>January</td>
    <td>$100</td>
  </tr>
  <tr>
    <td>February</td>
    <td>$50</td>
  </tr>
</table>
```

Note: The `<caption>` tag must be inserted immediately after the `<table>` tag.

A Special Style for One Table

To define a special style for one particular table, add an `id` attribute to the table:

Example

```
<table id="t01">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
```

Now you can define a special style for this table:

```
#t01 {  
  width: 100%;  
  background-color: #f1f1c1;  
}
```

And add more styles:

```
#t01 tr:nth-child(even) {  
  background-color: #eee;  
}  
#t01 tr:nth-child(odd) {  
  background-color: #fff;  
}  
#t01 th {  
  color: white;  
  background-color: black;  
}
```

Chapter Summary

- Use the HTML `<table>` element to define a table
 - Use the HTML `<tr>` element to define a table row
 - Use the HTML `<td>` element to define a table data
 - Use the HTML `<th>` element to define a table heading
 - Use the HTML `<caption>` element to define a table caption
 - Use the CSS `border` property to define a border
 - Use the CSS `border-collapse` property to collapse cell borders
 - Use the CSS `padding` property to add padding to cells
 - Use the CSS `text-align` property to align cell text
 - Use the CSS `border-spacing` property to set the spacing between cells
 - Use the `colspan` attribute to make a cell span many columns
 - Use the `rowspan` attribute to make a cell span many rows
 - Use the `id` attribute to uniquely define one table
-

HTML Exercises

HTML Table Tags

| Tag | Description |
|----------------------------------|--------------------------------------------------------------------------------------------|
| <table> | Defines a table |
| <th> | Defines a header cell in a table |
| <tr> | Defines a row in a table |
| <td> | Defines a cell in a table |
| <caption> | Defines a table caption |
| <colgroup> | Specifies a group of one or more columns in a table for formatting |
| <col> | Specifies column properties for each column within a <code><colgroup></code> element |
| <thead> | Groups the header content in a table |
| <tbody> | Groups the body content in a table |
| <tfoot> | Groups the footer content in a table |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Lists

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

Example

An unordered HTML list:

- Item
- Item
- Item
- Item

An ordered HTML list:

1. First item
2. Second item
3. Third item
4. Fourth item

Unordered HTML List

An unordered list starts with the `` tag. Each list item starts with the `` tag.

The list items will be marked with bullets (small black circles) by default:

Example

```
<ul>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ul>
```

Ordered HTML List

An ordered list starts with the `` tag. Each list item starts with the `` tag.

The list items will be marked with numbers by default:

Example

```
<ol>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

HTML Description Lists

HTML also supports description lists.

A description list is a list of terms, with a description of each term.

The `<dl>` tag defines the description list, the `<dt>` tag defines the term (name), and the `<dd>` tag describes each term:

Example

```
<dl>
  &#xA0; <dt>Coffee</dt>
  &#xA0; <dd>- black hot drink</dd>
  &#xA0; <dt>Milk</dt>
  &#xA0; <dd>- white cold drink</dd>
</dl>
```

HTML List Tags

| Tag | Description |
|----------------------------|------------------------------------------|
| | Defines an unordered list |
| | Defines an ordered list |
| | Defines a list item |
| <dl> | Defines a description list |
| <dt> | Defines a term in a description list |
| <dd> | Describes the term in a description list |

For a complete list of all available HTML tags, visit our[HTML Tag Reference](#).

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Example

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<ul>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ul>
```

Ordered HTML List

An ordered list starts with the `` tag. Each list item starts with the `` tag.

The list items will be marked with numbers by default:

Example

```
<ol>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```


HTML Description Lists

HTML also supports description lists.

A description list is a list of terms, with a description of each term.

The `<dl>` tag defines the description list, the `<dt>` tag defines the term (name), and the `<dd>` tag describes each term:

Example

```
<dl>
  &#xA0; <dt>Coffee</dt>
  &#xA0; <dd>- black hot drink</dd>
  &#xA0; <dt>Milk</dt>
  &#xA0; <dd>- white cold drink</dd>
</dl>
```

HTML List Tags

| Tag | Description |
|----------------------------|------------------------------------------|
| | Defines an unordered list |
| | Defines an ordered list |
| | Defines a list item |
| <dl> | Defines a description list |
| <dt> | Defines a term in a description list |
| <dd> | Describes the term in a description list |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Unordered Lists

The HTML `` tag defines an unordered (bulleted) list.

Unordered HTML List

An unordered list starts with the `` tag. Each list item starts with the `` tag.

The list items will be marked with bullets (small black circles) by default:

Example

```
<ul>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ul>
```

Unordered HTML List - Choose List Item Marker

The CSS `list-style-type` property is used to define the style of the list item marker. It can have one of the following values:

| Value | Description |
|--------|-------------------------------------------------|
| disc | Sets the list item marker to a bullet (default) |
| circle | Sets the list item marker to a circle |
| square | Sets the list item marker to a square |

none The list items will not be marked

Example - Disc

```
<ul style="list-style-type:disc;">
  & <li>Coffee</li>
  & <li>Tea</li>
  & <li>Milk</li>
</ul>
```

Example - Circle

```
<ul style="list-style-type:circle;">
  & <li>Coffee</li>
  & <li>Tea</li>
  & <li>Milk</li>
</ul>
```

Example - Square

```
<ul style="list-style-type:square;">
  & <li>Coffee</li>
  & <li>Tea</li>
  & <li>Milk</li>
</ul>
```

Example - None

```
<ul style="list-style-type:none;">
  & <li>Coffee</li>
  & <li>Tea</li>
  & <li>Milk</li>
</ul>
```

Nested HTML Lists

Lists can be nested (list inside list):

Example

```
<ul>
  & <li>Coffee</li>
  & <li>Tea
    & & <ul>
      & & & & <li>Black tea</li>
      & & & & <li>Green tea</li>
      & & & </ul>
    & </li>
  & <li>Milk</li>
</ul>
```

Note: A list item () can contain a new list, and other HTML elements, like images and links, etc.

Horizontal List with CSS

HTML lists can be styled in many different ways with CSS.

One popular way is to style a list horizontally, to create a navigation menu:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
```

```

ul {
  list-style-type: none;
  margin: 0;
  padding: 0;
  overflow: hidden;
  background-color: #333333;
}

li {
  float: left;
}

li a {
  display: block;
  color: white;
  text-align: center;
  padding: 16px;
  text-decoration: none;
}

li a:hover {
  background-color: #111111;
}
</style>
</head>
<body>

<ul>
  <li><a href="#home">Home</a></li>
  <li><a href="#news">News</a></li>
  <li><a href="#contact">Contact</a></li>
  <li><a href="#about">About</a></li>
</ul>

</body>
</html>

```

Tip: You can learn much more about CSS in our [CSS Tutorial](#).

Chapter Summary

- Use the HTML `` element to define an unordered list
 - Use the CSS `list-style-type` property to define the list item marker
 - Use the HTML `` element to define a list item
 - Lists can be nested
 - List items can contain other HTML elements
 - Use the CSS property `float:left` to display a list horizontally
-

HTML List Tags

| Tag | Description |
|----------------------------|------------------------------------------|
| | Defines an unordered list |
| | Defines an ordered list |
| | Defines a list item |
| <dl> | Defines a description list |
| <dt> | Defines a term in a description list |
| <dd> | Describes the term in a description list |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Ordered Lists

The HTML `` tag defines an ordered list. An ordered list can be numerical or alphabetical.

Ordered HTML List

An ordered list starts with the `` tag. Each list item starts with the `` tag.

The list items will be marked with numbers by default:

Example

```
<ol>
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

Ordered HTML List - The Type Attribute

The `type` attribute of the `` tag, defines the type of the list item marker:

| Type | Description |
|-----------------------|--------------------------------------------------------------|
| <code>type="1"</code> | The list items will be numbered with numbers (default) |
| <code>type="A"</code> | The list items will be numbered with uppercase letters |
| <code>type="a"</code> | The list items will be numbered with lowercase letters |
| <code>type="I"</code> | The list items will be numbered with uppercase roman numbers |
| <code>type="i"</code> | The list items will be numbered with lowercase roman numbers |

Numbers:

```
<ol type="1">
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

Uppercase Letters:

```
<ol type="A">
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

Lowercase Letters:

```
<ol type="a">
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

Uppercase Roman Numbers:

```
<ol type="I">
  &#xA0; <li>Coffee</li>
  &#xA0; <li>Tea</li>
  &#xA0; <li>Milk</li>
</ol>
```

Lowercase Roman Numbers:

```
<ol type="i">
  &Amp; <li>Coffee</li>
  &Amp; <li>Tea</li>
  &Amp; <li>Milk</li>
</ol>
```

Control List Counting

By default, an ordered list will start counting from 1. If you want to start counting from a specified number, you can use the start attribute:

Example

```
<ol start="50">
  &Amp; <li>Coffee</li>
  &Amp; <li>Tea</li>
  &Amp; <li>Milk</li>
</ol>
```

Nested HTML Lists

Lists can be nested (list inside list):

Example

```
<ol>
  &Amp; <li>Coffee</li>
  &Amp; <li>Tea
    &Amp; <ol>
      &Amp; &Amp; &Amp; &Amp; <li>Black tea</li>
      &Amp; &Amp; &Amp; &Amp; <li>Green tea</li>
    &Amp; </ol>
  &Amp; </li>
  &Amp; <li>Milk</li>
</ol>
```

Note: A list item () can contain a new list, and other HTML elements, like images and links, etc.

Chapter Summary

- Use the HTML element to define an ordered list
 - Use the HTML type attribute to define the numbering type
 - Use the HTML element to define a list item
 - Lists can be nested
 - List items can contain other HTML elements
-

HTML List Tags

| Tag | Description |
|----------------------------|------------------------------------------|
| | Defines an unordered list |
| | Defines an ordered list |
| | Defines a list item |
| <dl> | Defines a description list |
| <dt> | Defines a term in a description list |
| <dd> | Describes the term in a description list |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Other Lists

HTML also supports description lists.

HTML Description Lists

A description list is a list of terms, with a description of each term.

The [<dl>](#) tag defines the description list, the [<dt>](#) tag defines the term (name), and the [<dd>](#) tag describes each term:

Example

```
<dl>
  &#xA0; <dt>Coffee</dt>
  &#xA0; <dd>- black hot drink</dd>
  &#xA0; <dt>Milk</dt>
  &#xA0; <dd>- white cold drink</dd>
</dl>
```

Chapter Summary

- Use the HTML `<dl>` element to define a description list
 - Use the HTML `<dt>` element to define the description term
 - Use the HTML `<dd>` element to describe the term in a description list
-

HTML Exercises

HTML List Tags

| Tag | Description |
|----------------------------|------------------------------------------|
| | Defines an unordered list |
| | Defines an ordered list |
| | Defines a list item |
| <dl> | Defines a description list |
| <dt> | Defines a term in a description list |
| <dd> | Describes the term in a description list |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Block and Inline Elements

Every HTML element has a default display value, depending on what type of element it is.

There are two display values: block and inline.

Block-level Elements

A block-level element always starts on a new line.

A block-level element always takes up the full width available (stretches out to the left and right as far as it can).

A block level element has a top and a bottom margin, whereas an inline element does not.

The <div> element is a block-level element.

Example

```
<div>Hello World</div>
```

Here are the block-level elements in HTML:

[<address>](#)
[<article>](#)
[<aside>](#)
[<blockquote>](#)
[<canvas>](#)
[<dd>](#)
[<div>](#)
[<dl>](#)
[<dt>](#)
[<fieldset>](#)
[<figcaption>](#)
[<figure>](#)
[<footer>](#)
[<form>](#)
[<h1>-<h6>](#)
[<header>](#)
[<hr>](#)
[](#)
[<main>](#)
[<nav>](#)
[<noscript>](#)
[](#)
[<p>](#)
[<pre>](#)
[<section>](#)
[<table>](#)
[<tfoot>](#)
[](#)
[<video>](#)

Inline Elements

An inline element does not start on a new line.

An inline element only takes up as much width as necessary.

This is

a element inside

 a paragraph.

Example

```
<span>Hello World</span>
```

Here are the inline elements in HTML:

[<a>](#)
[<abbr>](#)
[<acronym>](#)
[](#)

[`<bdo>`](#)
[`<big>`](#)
[`
`](#)
[`<button>`](#)
[`<cite>`](#)
[`<code>`](#)
[`<dfn>`](#)
[``](#)
[`<i>`](#)
[``](#)
[`<input>`](#)
[`<kbd>`](#)
[`<label>`](#)
[`<map>`](#)
[`<object>`](#)
[`<output>`](#)
[`<q>`](#)
[`<samp>`](#)
[`<script>`](#)
[`<select>`](#)
[`<small>`](#)
[``](#)
[``](#)
[`<sub>`](#)
[`<sup>`](#)
[`<textarea>`](#)
[`<time>`](#)
[`<tt>`](#)
[`<var>`](#)

Note: An inline element cannot contain a block-level element!

The `<div>` Element

The `<div>` element is often used as a container for other HTML elements.

The `<div>` element has no required attributes, but `style`, `class` and `id` are common.

When used together with CSS, the `<div>` element can be used to style blocks of content:

Example

```
<div style="background-color:black;color:white;padding:20px;">
  <h2>London</h2>
  <p>London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.</p>
</div>
```

The `` Element

The `` element is an inline container used to mark up a part of a text, or a part of a document.

The `` element has no required attributes, but `style`, `class` and `id` are common.

When used together with CSS, the `` element can be used to style parts of the text:

Example

<p>My mother has blue eyes and my father has dark green eyes.</p>

Chapter Summary

- There are two display values: block and inline
 - A block-level element always starts on a new line and takes up the full width available
 - An inline element does not start on a new line and it only takes up as much width as necessary
 - The <div> element is a block-level and is often used as a container for other HTML elements
 - The element is an inline container used to mark up a part of a text, or a part of a document
-

HTML Tags

| Tag | Description |
|------------------------------|-----------------------------------------------|
| <div> | Defines a section in a document (block-level) |
| | Defines a section in a document (inline) |

For a complete list of all available HTML tags, visit our[HTML Tag Reference](#).

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.

Using The class Attribute

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.

In the following example we have three<div> elements with a class attribute with the value of "city". All of the three <div> elements will be styled equally according to the .city style definition in the head section:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
.city {
  background-color: tomato;
  color: white;
  border: 2px solid black;
  margin: 20px;
  padding: 20px;
}
</style>
</head>
<body>

<div class="city">
  <h2>London</h2>
  <p>London is the capital of England.</p>
</div>

<div class="city">
  <h2>Paris</h2>
  <p>Paris is the capital of France.</p>
</div>
```

```
<div class="city">
  &#xA0; <h2>Tokyo</h2>
  &#xA0; <p>Tokyo is the capital of Japan.</p>
</div>

</body>
</html>
```

In the following example we have two elements with a class attribute with the value of "note". Both elements will be styled equally according to the .note style definition in the head section:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
.note {
&#xA0; font-size: 120%;
&#xA0; &#xA0; color: red;
}
</style>
</head>
<body>

<h1>My <span class="note">Important</span> Heading</h1>
<p>This is some <span class="note">important</span> text.</p>

</body>
</html>
```

Tip: The class attribute can be used on **any** HTML element.

Note: The class name is case sensitive!

Tip: You can learn much more about CSS in our[CSS Tutorial](#).

The Syntax For Class

To create a class; write a period (.) character, followed by a class name. Then, define the CSS properties within curly braces {}:

Example

Create a class named "city":

```
<!DOCTYPE html>
<html>
<head>
<style>
.city {
&#xA0; background-color: tomato;
&#xA0; color: white;
&#xA0; padding: 10px;
}
</style>
</head>
<body>

<h2 class="city">London</h2>
<p>London is the capital of England.</p>

<h2 class="city">Paris</h2>
<p>Paris is the capital of France.</p>

<h2 class="city">Tokyo</h2>
<p>Tokyo is the capital of Japan.</p>
```

```
</body>
</html>
```

Multiple Classes

HTML elements can belong to more than one class.

To define multiple classes, separate the class names with a space, e.g. `<div class="city main">`. The element will be styled according to all the classes specified.

In the following example, the first `<h2>` element belongs to both the `city` class and also to the `main` class, and will get the CSS styles from both of the classes:

Example

```
<h2 class="city main">London</h2>
<h2 class="city">Paris</h2>
<h2 class="city">Tokyo</h2>
```

Different Elements Can Share Same Class

Different HTML elements can point to the same class name.

In the following example, both `<h2>` and `<p>` points to the `"city"` class and will share the same style:

Example

```
<h2 class="city">Paris</h2>
<p class="city">Paris is the capital of France</p>
```

Use of The class Attribute in JavaScript

The class name can also be used by JavaScript to perform certain tasks for specific elements.

JavaScript can access elements with a specific class name with the `getElementsByClassName()` method:

Example

Click on a button to hide all elements with the class name `"city"`:

```
<script>
function myFunction() {
  Â var x = document.getElementsByClassName("city");
  Â for (var i = 0; i < x.length; i++) {
  Â Â Â x[i].style.display = "none";
  Â }
  }
</script>
```

Don't worry if you don't understand the code in the example above.

You will learn more about JavaScript in our [HTML JavaScript](#) chapter, or you can study our [JavaScript Tutorial](#).

Chapter Summary

- The HTML `class` attribute specifies one or more class names for an element
 - Classes are used by CSS and JavaScript to select and access specific elements
 - The `class` attribute can be used on any HTML element
 - The class name is case sensitive
 - Different HTML elements can point to the same class name
 - JavaScript can access elements with a specific class name with the `getElementsByClassName()` method
-

HTML Exercises

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.

Using The id Attribute

The id attribute specifies a unique id for an HTML element. The value of the id attribute must be unique within the 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 {}.

In the following example we have an `<h1>` element that points to the id name "myHeader". This `<h1>` element will be styled according to the `#myHeader` style definition in the head section:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
#myHeader {
  background-color: lightblue;
  color: black;
  padding: 40px;
  text-align: center;
}
</style>
</head>
<body>

<h1 id="myHeader">My Header</h1>

</body>
</html>
```

Note: The id name is case sensitive!

Note: The id name must contain at least one character, cannot start with a number, and must not contain whitespaces (spaces, tabs, etc.).

Difference Between Class and ID

A class name can be used by multiple HTML elements, while an id name must only be used by one HTML element within the page:

Example

```
<style>
/* Style the element with the id "myHeader" */
#myHeader {
  background-color: lightblue;
  color: black;
  padding: 40px;
  text-align: center;
}

/* Style all elements with the class name "city" */
```

```
.city {
  background-color: tomato;
  color: white;
  padding: 10px;
}
</style>

<!-- An element with a unique id -->
<h1 id="myHeader">My Cities</h1>

<!-- Multiple elements with same class -->
<h2 class="city">London</h2>
<p>London is the capital of England.</p>

<h2 class="city">Paris</h2>
<p>Paris is the capital of France.</p>

<h2 class="city">Tokyo</h2>
<p>Tokyo is the capital of Japan.</p>
```

Tip: You can learn much more about CSS in our [CSS Tutorial](#).

HTML Bookmarks with ID and Links

HTML bookmarks are used to allow readers to jump to specific parts of a webpage.

Bookmarks can be useful if your page is very long.

To use a bookmark, you must first create it, and then add a link to it.

Then, when the link is clicked, the page will scroll to the location with the bookmark.

Example

First, create a bookmark with the `id` attribute:

```
<h2 id="C4">Chapter 4</h2>
```

Then, add a link to the bookmark ("Jump to Chapter 4"), from within the same page:

Example

```
<a href="#C4">Jump to Chapter 4</a>
```

Or, add a link to the bookmark ("Jump to Chapter 4"), from another page:

```
<a href="html_demo.html#C4">Jump to Chapter 4</a>
```

Using The `id` Attribute in JavaScript

The `id` attribute can also be used by JavaScript to perform some tasks for that specific element.

JavaScript can access an element with a specific `id` with the `getElementById()` method:

Example

Use the `id` attribute to manipulate text with JavaScript:

```
<script>
function displayResult() {
  document.getElementById("myHeader").innerHTML = "Have a nice day!";
}
</script>
```

Tip: Study JavaScript in the [HTML JavaScript](#) chapter, or in our [JavaScript Tutorial](#).

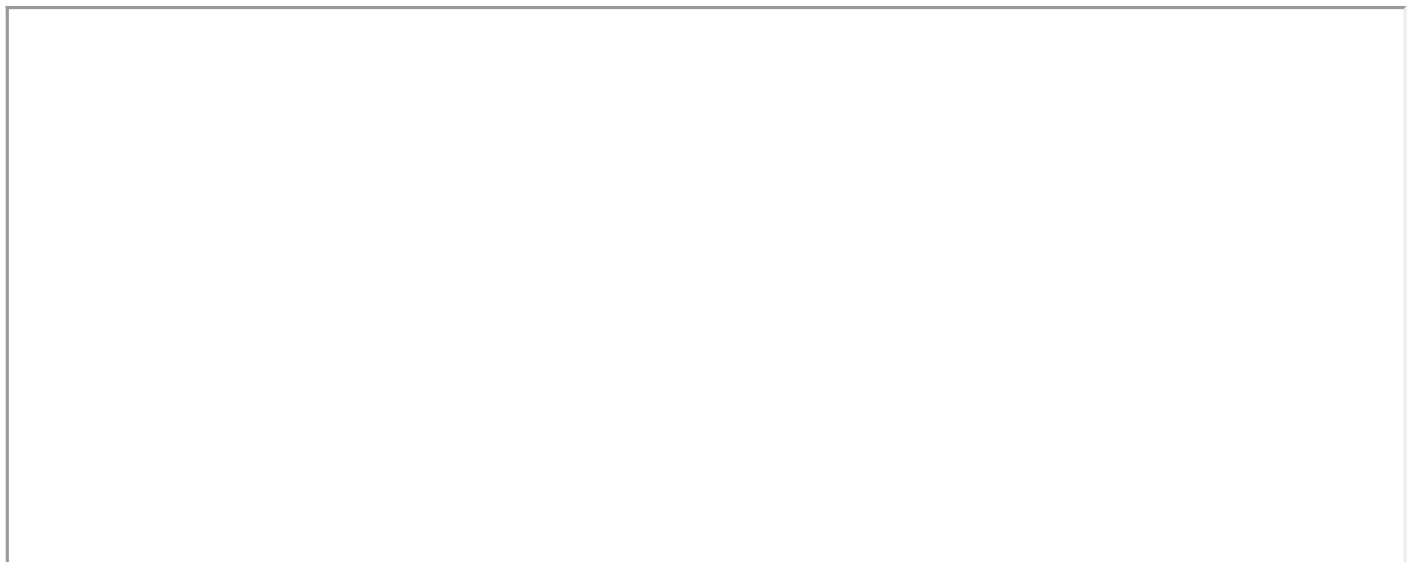
Chapter Summary

- The id attribute is used to specify a unique id for an HTML element
- The value of the id attribute must be unique within the HTML document
- The id attribute is used by CSS and JavaScript to style/select a specific element
- The value of the id attribute is case sensitive
- The id attribute is also used to create HTML bookmarks
- JavaScript can access an element with a specific id with the `getElementById()` method

HTML Exercises

HTML Iframes

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



HTML Iframe Syntax

The HTML `<iframe>` tag specifies an inline frame.

An inline frame is used to embed another document within the current HTML document.

Syntax

```
<iframe src="url" title="description"></iframe>
```

Tip: It is a good practice to always include a `title` attribute for the `<iframe>`. This is used by screen readers to read out what the content of the iframe is.

Iframe - Set Height and Width

Use the `height` and `width` attributes to specify the size of the iframe.

The height and width are specified in pixels by default:

Example

```
<iframe src="demo_iframe.htm" height="200" width="300" title="Iframe Example"></iframe>
```

Or you can add the `style` attribute and use the CSS `height` and `width` properties:

Example

```
<iframe src="demo_iframe.htm" style="height:200px;width:300px;" title="Iframe Example"></iframe>
```

Iframe - Remove the Border

By default, an iframe has a border around it.

To remove the border, add the `style` attribute and use the CSS `border` property:

Example

```
<iframe src="demo_iframe.htm" style="border:none;" title="Iframe Example"></iframe>
```

With CSS, you can also change the size, style and color of the iframe's border:

Example

```
<iframe src="demo_iframe.htm" style="border:2px solid red;" title="Iframe Example"></iframe>
```

Iframe - Target for a Link

An iframe can be used as the target frame for a link.

The `target` attribute of the link must refer to the `name` attribute of the iframe:

Example

```
<iframe src="demo_iframe.htm" name="iframe_a" title="Iframe Example"></iframe>
```

```
<p><a href="https://www.w3schools.com" target="iframe_a">W3Schools.com</a></p>
```

Chapter Summary

- The HTML `<iframe>` tag specifies an inline frame
 - The `src` attribute defines the URL of the page to embed
 - Always include a `title` attribute (for screen readers)
 - The `height` and `width` attributes specifies the size of the iframe
 - Use `border:none;` to remove the border around the iframe
-

HTML Exercises

HTML iframe Tag

| Tag | Description |
|--------------------------------|-------------------------|
| <iframe> | Defines an inline frame |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML JavaScript

JavaScript makes HTML pages more dynamic and interactive.

Example

My First JavaScript

Click me to display Date and Time

| px | em | percent |
|------|----------|---------|
| 5px | 0.3125em | 31.25% |
| 6px | 0.3750em | 37.50% |
| 7px | 0.4375em | 43.75% |
| 8px | 0.5000em | 50.00% |
| 9px | 0.5625em | 56.25% |
| 10px | 0.6250em | 62.50% |
| 11px | 0.6875em | 68.75% |
| 12px | 0.7500em | 75.00% |
| 13px | 0.8125em | 81.25% |
| 14px | 0.8750em | 87.50% |
| 15px | 0.9375em | 93.75% |
| 16px | 1.0000em | 100.00% |
| 17px | 1.0625em | 106.25% |
| 18px | 1.1250em | 112.50% |
| 19px | 1.1875em | 118.75% |
| 20px | 1.2500em | 125.00% |
| 21px | 1.3125em | 131.25% |
| 22px | 1.3750em | 137.50% |
| 23px | 1.4375em | 143.75% |
| 24px | 1.5000em | 150.00% |
| 25px | 1.5625em | 156.25% |

The HTML <script> Tag

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.

Common uses for JavaScript are image manipulation, form validation, and dynamic changes of content.

To select an HTML element, JavaScript most often uses the document.getElementById() method.

This JavaScript example writes "Hello JavaScript!" into an HTML element with id="demo":

Example

```
<script>
document.getElementById("demo").innerHTML = "Hello JavaScript!";
</script>
```

Tip: You can learn much more about JavaScript in our [JavaScript Tutorial](#).

A Taste of JavaScript

Here are some examples of what JavaScript can do:

Example

JavaScript can change content:

```
document.getElementById("demo").innerHTML = "Hello JavaScript!";
```

Example

JavaScript can change styles:

```
document.getElementById("demo").style.fontSize = "25px";
document.getElementById("demo").style.color = "red";
document.getElementById("demo").style.backgroundColor = "yellow";
```

Example

JavaScript can change attributes:

```
document.getElementById("image").src = "picture.gif";
```

The HTML <noscript> Tag

The HTML <noscript> tag defines an alternate content to be displayed to users that have disabled scripts in their browser or have a browser that doesn't support scripts:

Example

```
<script>
document.getElementById("demo").innerHTML = "Hello JavaScript!";
</script>
<noscript>Sorry, your browser does not support JavaScript!</noscript>
```

HTML Exercises

HTML Script Tags

| Tag | Description |
|----------------------------------|--------------------------------------------------------------------------------|
| <script> | Defines a client-side script |
| <noscript> | Defines an alternate content for users that do not support client-side scripts |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML File Paths

A file path describes the location of a file in a web site's folder structure.

File Path Examples

| Path | Description |
|----------------------------------------------------|---------------------------------------------------------------------------------------|
| <code></code> | The "picture.jpg" file is located in the same folder as the current page |
| <code></code> | The "picture.jpg" file is located in the images folder in the current folder |
| <code></code> | The "picture.jpg" file is located in the images folder at the root of the current web |
| <code></code> | The "picture.jpg" file is located in the folder one level up from the current folder |

HTML File Paths

A file path describes the location of a file in a web site's folder structure.

File paths are used when linking to external files, like:

- Web pages
- Images

- Style sheets
 - JavaScripts
-

Absolute File Paths

An absolute file path is the full URL to a file:

Example

```

```

The `` tag is explained in the chapter: [HTML Images](#).

Relative File Paths

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

In the following example, the file path points to a file in the images folder located at the root of the current web:

Example

```

```

In the following example, the file path points to a file in the images folder located in the current folder:

Example

```

```

In the following example, the file path points to a file in the images folder located in the folder one level up from the current folder:

Example

```

```

Best Practice

It is best practice to use relative file paths (if possible).

When using relative file paths, your web pages will not be bound to your current base URL. All links will work on your own computer (localhost) as well as on your current public domain and your future public domains.

HTML - The Head Element

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

The HTML `<head>` Element

The `<head>` element is a container for metadata (data about data) and is placed between the `<html>` tag and the `<body>` tag.

HTML metadata is data about the HTML document. Metadata is not displayed.

Metadata typically define the document title, character set, styles, scripts, and other meta information.

The HTML `<title>` Element

The <title> element defines the title of the document. The title must be text-only, and it is shown in the browser's title bar or in the page's tab.

The <title> element is required in HTML documents!

The contents of a page title is very important for search engine optimization (SEO)! The page title is used by search engine algorithms to decide the order when listing pages in search results.

The <title> element:

- defines a title in the browser toolbar
- provides a title for the page when it is added to favorites
- displays a title for the page in search engine-results

So, try to make the title as accurate and meaningful as possible!

A simple HTML document:

Example

```
<!DOCTYPE html>
<html>
<head>
  &#xA0; <title>A Meaningful Page Title</title>
</head>
<body>
```

The content of the document.....

```
</body>
</html>
```

The HTML <style> Element

The <style> element is used to define style information for a single HTML page:

Example

```
<style>
&#xA0; body {background-color: powderblue;}
&#xA0; h1 {color: red;}
&#xA0; p {color: blue;}
</style>
```

The HTML <link> Element

The <link> element defines the relationship between the current document and an external resource.

The <link> tag is most often used to link to external style sheets:

Example

```
<link rel="stylesheet" href="mystyle.css">
```

Tip: To learn all about CSS, visit our [CSS Tutorial](#).

The HTML <meta> Element

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

The metadata will not be displayed on the page, but are used by browsers (how to display content or reload page), by search engines (keywords), and other web services.

Examples

Define the character set used:

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

Define keywords for search engines:

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

Define a description of your web page:

```
<meta name="description" content="Free Web tutorials">
```

Define the author of a page:

```
<meta name="author" content="John Doe">
```

Refresh document every 30 seconds:

```
<meta http-equiv="refresh" content="30">
```

Setting the viewport to make your website look good on all devices:

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

Example of `<meta>` tags:

Example

```
<meta charset="UTF-8">
<meta name="description" content="Free Web tutorials">
<meta name="keywords" content="HTML, CSS, JavaScript">
<meta name="author" content="John Doe">
```

Setting The Viewport

The viewport is the user's visible area of a web page. It varies with the device - it will be smaller on a mobile phone than on a computer screen.

You should include the following `<meta>` element in all your web pages:

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

This gives the browser instructions on how to control the page's dimensions and scaling.

The `width=device-width` part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).

The `initial-scale=1.0` part sets the initial zoom level when the page is first loaded by the browser.

Here is an example of a web page *without* the viewport meta tag, and the same web page *with* the viewport meta tag:

Tip: If you are browsing this page with a phone or a tablet, you can click on the two links below to see the difference.

□

[Without the viewport meta tag](#)

□

[With the viewport meta tag](#)

The HTML `<script>` Element

The `<script>` element is used to define client-side JavaScripts.

The following JavaScript writes "Hello JavaScript!" into an HTML element with `id="demo"`:

Example

```
<script>
```

```
function myFunction() {  
  document.getElementById("demo").innerHTML = "Hello JavaScript!";  
}  
</script>
```

Tip: To learn all about JavaScript, visit our [JavaScript Tutorial](#).

The HTML <base> Element

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

The <base> tag must have either an href or a target attribute present, or both.

There can only be one single <base> element in a document!

Example

Specify a default URL and a default target for all links on a page:

```
<head>  
<base href="https://www.w3schools.com/" target="_blank">  
</head>  
  
<body>  
  
<a href="tags/tag_base.asp">HTML base Tag</a>  
</body>
```

Chapter Summary

- The <head> element is a container for metadata (data about data)
 - The <head> element is placed between the <html> tag and the <body> tag
 - The <title> element is required and it defines the title of the document
 - The <style> element is used to define style information for a single document
 - The <link> tag is most often used to link to external style sheets
 - The <meta> element is typically used to specify the character set, page description, keywords, author of the document, and viewport settings
 - The <script> element is used to define client-side JavaScripts
 - The <base> element specifies the base URL and/or target for all relative URLs in a page
-

HTML head Elements

| Tag | Description |
|--------------------------------|-----------------------------------------------------------------------|
| <head> | Defines information about the document |
| <title> | Defines the title of a document |
| <base> | Defines a default address or a default target for all links on a page |
| <link> | Defines the relationship between a document and an external resource |
| <meta> | Defines metadata about an HTML document |
| <script> | Defines a client-side script |
| <style> | Defines style information for a document |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Layout Elements and Techniques

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

Example

Cities

- [London](#)
- [Paris](#)
- [Tokyo](#)

London

London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.

Footer

HTML Layout Elements

HTML has several semantic elements that define the different parts of a web page:

HTML5 Semantic Elements

- `<header>` - Defines a header for a document or a section
- `<nav>` - Defines a set of navigation links
- `<section>` - Defines a section in a document
- `<article>` - Defines an independent, self-contained content
- `<aside>` - Defines content aside from the content (like a sidebar)
- `<footer>` - Defines a footer for a document or a section
- `<details>` - Defines additional details that the user can open and close on demand
- `<summary>` - Defines a heading for the `<details>` element

HTML5 Semantic Elements

- `<header>` - Defines a header for a document or a section
- `<nav>` - Defines a set of navigation links
- `<section>` - Defines a section in a document
- `<article>` - Defines an independent, self-contained content
- `<aside>` - Defines content aside from the content (like a sidebar)
- `<footer>` - Defines a footer for a document or a section
- `<details>` - Defines additional details that the user can open and close on demand
- `<summary>` - Defines a heading for the `<details>` element

You can read more about semantic elements in our [HTML Semantics](#) chapter.

HTML Layout Techniques

There are four different techniques to create multicolumn layouts. Each technique has its pros and cons:

- CSS framework
 - CSS float property
 - CSS flexbox
 - CSS grid
-

CSS Frameworks

If you want to create your layout fast, you can use a CSS framework, like [W3.CSS](#) or [Bootstrap](#).

CSS Float Layout

It is common to do entire web layouts using the CSS`float` property. Float is easy to learn - you just need to remember how the `float` and `clear` properties work. **Disadvantages:** Floating elements are tied to the document flow, which may harm the flexibility. Learn more about float in our [CSS Float and Clear](#) chapter.

Example

Cities

- [London](#)
- [Paris](#)
- [Tokyo](#)

London

London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.

Footer

CSS Flexbox Layout

Use of flexbox ensures that elements behave predictably when the page layout must accommodate different screen sizes and different display devices.

Learn more about flexbox in our [CSS Flexbox](#) chapter.

Example

Cities

- [London](#)
- [Paris](#)
- [Tokyo](#)

London

London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.

Footer

CSS Grid Layout

The CSS Grid Layout Module offers a grid-based layout system, with rows and columns, making it easier to design web pages without having to use floats and positioning.

Learn more about CSS grids in our [CSS Grid View](#) chapter.

HTML Responsive Web Design

Responsive web design is about creating web pages that look good on all devices!

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):

[Try it Yourself Å»](#)

Setting The Viewport

To create a responsive website, add the following `<meta>` tag to all your web pages:

Example

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

This will set the viewport of your page, which will give the browser instructions on how to control the page's dimensions and scaling.

Here is an example of a web page *without* the viewport meta tag, and the same web page *with* the viewport meta tag:

Without the viewport meta tag:

With the viewport meta tag:

Tip: If you are browsing this page on a phone or a tablet, you can click on the two links above to see the difference.

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:

Example

```

```

Notice that in the example above, the image can be scaled up to be larger than its original size. A better solution, in many cases, will be to use the `max-width` property instead.

Using the max-width Property

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:

Example

```

```

Show Different Images Depending on Browser Width

The HTML `<picture>` element allows you to define different images for different browser window sizes.

Resize the browser window to see how the image below change depending on the width:



Example

```
<picture>
Å <source srcset="img_smallflower.jpg" media="(max-width: 600px)">
```



```
A <source srcset="img_flowers.jpg" media="(max-width: 1500px)">
Â <source srcset="flowers.jpg">
Â 
</picture>
```

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:

Hello World

Resize the browser window to see how the text size scales.

Example

```
<h1 style="font-size:10vw">Hello World</h1>
```

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:

Left Menu

Main Content

Right Content

Example

```
<style>
.left, .right {
Â float: left;
Â width: 20%; /* The width is 20%, by default */
}

.main {
Â float: left;
Â width: 60%; /* The width is 60%, by default */
}

/* Use a media query to add a breakpoint at 800px: */
@media screen and (max-width: 800px) {
Â .left, .main, .right {
Â Â Â width: 100%; /* The width is 100%, when the viewport is 800px or smaller */
Â }
}
</style>
```

Tip: To learn more about Media Queries and Responsive Web Design, read our [RWD Tutorial](#).

Responsive Web Page - Full Example

A responsive web page should look good on large desktop screens and on small mobile phones.

[Try it Yourself Â»](#)

Responsive Web Design - Frameworks

All popular CSS Frameworks offer responsive design.

They are free, and easy to use.

W3.CSS

W3.CSS is a modern CSS framework with support for desktop, tablet, and mobile design by default.

W3.CSS is smaller and faster than similar CSS frameworks.

W3.CSS is designed to be a high quality alternative to Bootstrap.

W3.CSS is designed to be independent of jQuery or any other JavaScript library.

W3.CSS Demo

Resize the page to see the responsiveness!

London

London is the capital city of England.

It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Paris

Paris is the capital of France.

The Paris area is one of the largest population centers in Europe, with more than 12 million inhabitants.

Tokyo

Tokyo is the capital of Japan.

It is the center of the Greater Tokyo Area, and the most populous metropolitan area in the world.

Example

```
<!DOCTYPE html>
<html>
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<body>

<div class="w3-container w3-green">
  &#xA0; <h1>W3Schools Demo</h1>
  &#xA0; <p>Resize this responsive page!</p>
</div>

<div class="w3-row-padding">
  &#xA0; <div class="w3-third">
    &#xA0; &#xA0; <h2>London</h2>
    &#xA0; &#xA0; <p>London is the capital city of England.</p>
    &#xA0; &#xA0; <p>It is the most populous city in the United Kingdom,
    &#xA0; &#xA0; with a metropolitan area of over 13 million inhabitants.</p>
  &#xA0; </div>

  &#xA0; <div class="w3-third">
    &#xA0; &#xA0; <h2>Paris</h2>
    &#xA0; &#xA0; <p>Paris is the capital of France.</p>
    &#xA0; &#xA0; <p>The Paris area is one of the largest population centers in Europe,
    &#xA0; &#xA0; with more than 12 million inhabitants.</p>
  &#xA0; </div>

  &#xA0; <div class="w3-third">
    &#xA0; &#xA0; <h2>Tokyo</h2>
    &#xA0; &#xA0; <p>Tokyo is the capital of Japan.</p>
    &#xA0; &#xA0; <p>It is the center of the Greater Tokyo Area,
    &#xA0; &#xA0; and the most populous metropolitan area in the world.</p>
  &#xA0; </div>
</div>

</body>
</html>
```

To learn more about W3.CSS, read our [W3.CSS Tutorial](#).

Bootstrap

Another popular CSS framework is Bootstrap. Bootstrap uses HTML, CSS and jQuery to make responsive web pages.

Example

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Bootstrap Example</title>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
```

```
<div class="container">
  <div class="jumbotron">
    <h1>My First Bootstrap Page</h1>
  </div>
  <div class="row">
    <div class="col-sm-4">
      ...
    </div>
    <div class="col-sm-4">
      ...
    </div>
    <div class="col-sm-4">
      ...
    </div>
  </div>
</div>

</body>
</html>
```

To learn more about Bootstrap, go to our [Bootstrap Tutorial](#).

HTML Computer Code Elements

HTML contains several elements for defining user input and computer code.

Example

```
<code>
x = 5;
y = 6;
z = x + y;
</code>
```

HTML <kbd> For Keyboard Input

The HTML <kbd> element is used to define keyboard input. The content inside is displayed in the browser's default monospace font.

Example

Define some text as keyboard input in a document:

```
<p>Save the document by pressing <kbd>Ctrl + S</kbd></p>
```

Result:

Save the document by pressing Ctrl + S

HTML <samp> For Program Output

The HTML <samp> element is used to define sample output from a computer program. The content inside is displayed in the browser's default monospace font.

Example

Define some text as sample output from a computer program in a document:

```
<p>Message from my computer:</p>
<p><samp>File not found.<br>Press F1 to continue</samp></p>
```

Result:

Message from my computer:

File not found.
Press F1 to continue

HTML `<code>` For Computer Code

The HTML `<code>` element is used to define a piece of computer code. The content inside is displayed in the browser's default monospace font.

Example

Define some text as computer code in a document:

```
<code>
x = 5;
y = 6;
z = x + y;
</code>
```

Result:

x = 5; y = 6; z = x + y;

Notice that the `<code>` element does not preserve extra whitespace and line-breaks.

To fix this, you can put the `<code>` element inside a `<pre>` element:

Example

```
<pre>
<code>
x = 5;
y = 6;
z = x + y;
</code>
</pre>
```

Result:

```
x = 5;
y = 6;
z = x + y;
```

HTML `<var>` For Variables

The HTML `<var>` element is used to define a variable in programming or in a mathematical expression. The content inside is typically displayed in italic.

Example

Define some text as variables in a document:

`<p>`The area of a triangle is: $1/2 \times \textit{b} \times \textit{h}$, where *b* is the base, and *h* is the vertical height.`</p>`

Result:

The area of a triangle is: $1/2 \times b \times h$, where *b* is the base, and *h* is the vertical height.

Chapter Summary

- The `<kbd>` element defines keyboard input
- The `<samp>` element defines sample output from a computer program
- The `<code>` element defines a piece of computer code
- The `<var>` element defines a variable in programming or in a mathematical expression
- The `<pre>` element defines preformatted text

HTML Exercises

HTML Computer Code Elements

| Tag | Description |
|-------------------------------------------|---------------------------|
| <code><code></code> | Defines programming code |
| <code><kbd></code> | Defines keyboard input |
| <code><samp></code> | Defines computer output |
| <code><var></code> | Defines a variable |
| <code><pre></code> | Defines preformatted text |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Semantic Elements

Semantic elements = elements with a meaning.

What are Semantic Elements?

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

Examples of **non-semantic** elements: `<div>` and `` - Tells nothing about its content.

Examples of **semantic** elements: `<form>`, `<table>`, and `<article>` - Clearly defines its content.

Semantic Elements in HTML

Many web sites contain HTML code like: `<div id="nav">` `<div class="header">` `<div id="footer">` to indicate navigation, header, and footer.

In HTML there are some semantic elements that can be used to define different parts of a web page:

- `<article>`
- `<aside>`
- `<details>`
- `<figcaption>`
- `<figure>`
- `<footer>`
- `<header>`
- `<main>`
- `<mark>`
- `<nav>`
- `<section>`
- `<summary>`
- `<time>`

HTML Semantic Elements



HTML `<section>` Element

The `<section>` element defines a section in a document.

According to W3C's HTML documentation: "A section is a thematic grouping of content, typically with a heading."

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

Example

Two sections in a document:

```
<section>
<h1>WWF</h1>
<p>The World Wide Fund for Nature (WWF) is an international organization working on issues regarding the conservation,
research and restoration of the environment, formerly named the World Wildlife Fund. WWF was founded in 1961.</p>
</section>
```

```
<section>
<h1>WWF's Panda symbol</h1>
<p>The Panda has become the symbol of WWF. The well-known panda logo of WWF originated from a panda named Chi
Chi that was transferred from the Beijing Zoo to the London Zoo in the same year of the establishment of WWF.</p>
</section>
```

HTML `<article>` Element

The `<article>` element specifies independent, self-contained content.

An article should make sense on its own, and it should be possible to distribute it independently from the rest of the web site.

Examples of where an `<article>` element can be used:

- Forum post
- Blog post
- Newspaper article

Example

Three articles with independent, self-contained content:

```
<article>
<h2>Google Chrome</h2>
<p>Google Chrome is a web browser developed by Google, released in 2008. Chrome is the world's most popular web
browser today!</p>
</article>

<article>
<h2>Mozilla Firefox</h2>
<p>Mozilla Firefox is an open-source web browser developed by Mozilla. Firefox has been the second most popular web
browser since January, 2018.</p>
</article>

<article>
<h2>Microsoft Edge</h2>
<p>Microsoft Edge is a web browser developed by Microsoft, released in 2015. Microsoft Edge replaced Internet Explorer.
</p>
</article>
```

Example 2

Use CSS to style the `<article>` element:

```
<html>
<head>
<style>
.all-browsers {
  margin: 0;
  padding: 5px;
  background-color: lightgray;
}

.all-browsers > h1, .browser {
  margin: 10px;
  padding: 5px;
}

.browser {
  background: white;
```

```

}

.browser > h2, p {
  margin: 4px;
  font-size: 90%;
}
</style>
</head>
<body>

<article class="all-browsers">
  &lt;h1>Most Popular Browsers</h1>
  &lt;article class="browser">
    &lt;h2>Google Chrome</h2>
    &lt;p>Google Chrome is a web browser developed by Google, released in 2008. Chrome is the world's most popular web browser today!</p>
  </article>
  &lt;article class="browser">
    &lt;h2>Mozilla Firefox</h2>
    &lt;p>Mozilla Firefox is an open-source web browser developed by Mozilla. Firefox has been the second most popular web browser since January, 2018.</p>
  </article>
  &lt;article class="browser">
    &lt;h2>Microsoft Edge</h2>
    &lt;p>Microsoft Edge is a web browser developed by Microsoft, released in 2015. Microsoft Edge replaced Internet Explorer.</p>
  </article>
</article>

</body>
</html>

```

Nesting <article> in <section> or Vice Versa?

The <article> element specifies independent, self-contained content.

The <section> element defines section in a document.

Can we use the definitions to decide how to nest those elements? No, we cannot!

So, you will find HTML pages with <section> elements containing <article> elements, and <article> elements containing <section> elements.

HTML <header> Element

The <header> element represents a container for introductory content or a set of navigational links.

A <header> element typically contains:

- one or more heading elements (<h1> - <h6>)
- logo or icon
- authorship information

Note: You can have several <header> elements in one HTML document. However, <header> cannot be placed within a <footer>, <address> or another <header> element.

Example

A header for an <article>:<

```

<article>
  &lt;header>
    &lt;h1>What Does WWF Do?</h1>
    &lt;p>WWF's mission:</p>
  </header>
  &lt;p>WWF's mission is to stop the degradation of our planet's natural environment,
  and build a future in which humans live in harmony with nature.</p>
</article>

```

HTML <footer> Element

The <footer> element defines a footer for a document or section.

A <footer> element typically contains:

- authorship information
- copyright information
- contact information
- sitemap
- back to top links
- related documents

You can have several <footer> elements in one document.

Example

A footer section in a document:

```
<footer>
  &#xA0; <p>Author: Hege Refsnes</p>
  &#xA0; <p><a href="mailto:hege@example.com">hege@example.com</a></p>
</footer>
```

HTML <nav> Element

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

Notice that NOT all links of a document should be inside a <nav> element. The <nav> element is intended only for major block of navigation links.

Browsers, such as screen readers for disabled users, can use this element to determine whether to omit the initial rendering of this content.

Example

A set of navigation links:

```
<nav>
&#xA0; <a href="/html/">HTML</a> |
&#xA0; <a href="/css/">CSS</a> |
&#xA0; <a href="/js/">JavaScript</a> |
&#xA0; <a href="/jquery/">jQuery</a>
</nav>
```

HTML <aside> Element

The <aside> element defines some content aside from the content it is placed in (like a sidebar).

The <aside> content should be indirectly related to the surrounding content.

Example

Display some content aside from the content it is placed in:

```
<p>My family and I visited The Epcot center this summer. The weather was nice, and Epcot was amazing! I had a great summer together with my family!</p>
```

```
<aside>
&#xA0; <h4>Epcot Center</h4>
&#xA0; <p>Epcot is a theme park at Walt Disney World Resort featuring exciting attractions, international pavilions, award-winning fireworks and seasonal special events.</p>
</aside>
```

Example 2

Use CSS to style the <aside> element:

```
<html>
<head>
<style>
aside {
  width: 30%;
  padding-left: 15px;
  margin-left: 15px;
  float: right;
  font-style: italic;
  background-color: lightgray;
}
</style>
</head>
<body>
```

```
<p>My family and I visited The Epcot center this summer. The weather was nice, and Epcot was amazing! I had a great summer together with my family!</p>
```

```
<aside>
```

```
<p>The Epcot center is a theme park at Walt Disney World Resort featuring exciting attractions, international pavilions, award-winning fireworks and seasonal special events.</p>
```

```
</aside>
```

```
<p>My family and I visited The Epcot center this summer. The weather was nice, and Epcot was amazing! I had a great summer together with my family!</p>
```

```
<p>My family and I visited The Epcot center this summer. The weather was nice, and Epcot was amazing! I had a great summer together with my family!</p>
```

```
</body>
```

```
</html>
```

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.

The element defines the actual image/illustration.

Example

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

Why Semantic Elements?

According to the W3C: "A semantic Web allows data to be shared and reused across applications, enterprises, and communities."

Semantic Elements in HTML

Below is a list of some of the semantic elements in HTML.

| Tag | Description |
|-------------------------------------------|---------------------------------------------------------------------------------------------|
| <u><article></u> | Defines independent, self-contained content |
| <u><aside></u> | Defines content aside from the page content |
| <u><details></u> | Defines additional details that the user can view or hide |
| <u><figcaption></u> | Defines a caption for a <figure> element |
| <u><figure></u> | Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc. |

| | |
|----------------------------------------------|----------------------------------------------------------------------|
| <code><footer></code> | Defines a footer for a document or section |
| <code><header></code> | Specifies a header for a document or section |
| <code><main></code> | Specifies the main content of a document |
| <code><mark></code> | Defines marked/highlighted text |
| <code><nav></code> | Defines navigation links |
| <code><section></code> | Defines a section in a document |
| <code><summary></code> | Defines a visible heading for a <code><details></code> element |
| <code><time></code> | Defines a date/time |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Style Guide and Coding Conventions

A consistent, clean, and tidy HTML code makes it easier for others to read and understand your code.

Here are some guidelines and tips for creating good HTML code.

Always Declare Document Type

Always declare the document type as the first line in your document.

The correct document type for HTML is:

```
<!DOCTYPE html>
```

Use Lowercase Element Names

HTML allows mixing uppercase and lowercase letters in element names.

However, we recommend using lowercase element names, because:

- Mixing uppercase and lowercase names looks bad
- Developers normally use lowercase names
- Lowercase looks cleaner
- Lowercase is easier to write

Good:

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

Bad:

```
<BODY>
<P>This is a paragraph.</P>
</BODY>
```

Close All HTML Elements

In HTML, you do not have to close all elements (for example the `<p>` element).

However, we strongly recommend closing all HTML elements, like this:

Good:

```
<section>
  &#xA0; <p>This is a paragraph.</p>
  &#xA0; <p>This is a paragraph.</p>
```

</section>

Bad:

<section>

Â <p>This is a paragraph.

Â <p>This is a paragraph.

</section>

Use Lowercase Attribute Names

HTML allows mixing uppercase and lowercase letters in attribute names.

However, we recommend using lowercase attribute names, because:

- Mixing uppercase and lowercase names looks bad
- Developers normally use lowercase names
- Lowercase look cleaner
- Lowercase are easier to write

Good:

Visit our HTML tutorial

Bad:

Visit our HTML tutorial

Always Quote Attribute Values

HTML allows attribute values without quotes.

However, we recommend quoting attribute values, because:

- Developers normally quote attribute values
- Quoted values are easier to read
- You MUST use quotes if the value contains spaces

Good:

<table class="striped">

Bad:

<table class=striped>

Very bad:

This will not work, because the value contains spaces:

<table class=table striped>

Always Specify alt, width, and height for Images

Always specify the alt attribute for images. This attribute is important if the image for some reason cannot be displayed.

Also, always define the width and height of images. This reduces flickering, because the browser can reserve space for the image before loading.

Good:

Bad:

Spaces and Equal Signs

HTML allows spaces around equal signs. But space-less is easier to read and groups entities better together.

Good:

```
<link rel="stylesheet" href="styles.css">
```

Bad:

```
<link rel = "stylesheet" href = "styles.css">
```

Avoid Long Code Lines

When using an HTML editor, it is NOT convenient to scroll right and left to read the HTML code.

Try to avoid too long code lines.

Blank Lines and Indentation

Do not add blank lines, spaces, or indentations without a reason.

For readability, add blank lines to separate large or logical code blocks.

For readability, add two spaces of indentation. Do not use the tab key.

Good:

```
<body>

<h1>Famous Cities</h1>

<h2>Tokyo</h2>
<p>Tokyo is the capital of Japan, the center of the Greater Tokyo Area,
and the most populous metropolitan area in the world.
It is the seat of the Japanese government and the Imperial Palace,
and the home of the Japanese Imperial Family.</p>

</body>
```

Bad:

```
<body>

  <h1>Famous Cities</h1>

  <h2>Tokyo</h2>

  <p>
    Tokyo is the capital of Japan, the center of the Greater Tokyo Area,
    and the most populous metropolitan area in the world.
    It is the seat of the Japanese government and the Imperial Palace,
    and the home of the Japanese Imperial Family.
  </p>

</body>
```

Good Table Example:

```
<table>
  <tr>
    <th>Name</th>
    <th>Description</th>
  </tr>
  <tr>
```

```
A A A <td>A</td>
Â Â Â <td>Description of A</td>
Â </tr>
Â <tr>
Â Â Â <td>B</td>
Â Â Â <td>Description of B</td>
Â </tr>
</table>
```

Good List Example:

```
<ul>
Â <li>London</li>
Â <li>Paris</li>
Â <li>Tokyo</li>
</ul>
```

Never Skip the <title> Element

The <title> element is required in HTML.

The contents of a page title is very important for search engine optimization (SEO)! The page title is used by search engine algorithms to decide the order when listing pages in search results.

The <title> element:

- defines a title in the browser toolbar
- provides a title for the page when it is added to favorites
- displays a title for the page in search-engine results

So, try to make the title as accurate and meaningful as possible:Â

```
<title>HTML Style Guide and Coding Conventions</title>
```

Omitting <html> and <body>?

An HTML page will validate without the <html> and <body> tags:

Example

```
<!DOCTYPE html>
<head>
Â <title>Page Title</title>
</head>

<h1>This is a heading</h1>
<p>This is a paragraph.</p>
```

However, we strongly recommend to always add the <html> and <body> tags!

Omitting <body> can produce errors in older browsers.

Omitting <html> and <body> can also crash DOM and XML software.

Omitting <head>?

The HTML <head> tag can also be omitted.

Browsers will add all elements before <body>, to a default <head> element.

Example

```
<!DOCTYPE html>
<html>
<title>Page Title</title>
<body>
```

```
<h1>This is a heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```

However, we recommend using the `<head>` tag.

Close Empty HTML Elements?

In HTML, it is optional to close empty elements.

Allowed:

```
<meta charset="utf-8">
```

Also Allowed:

```
<meta charset="utf-8" />
```

If you expect XML/XHTML software to access your page, keep the closing slash (/), because it is required in XML and XHTML.

Add 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.

Example

```
<!DOCTYPE html>
<html lang="en-us">
<head>
  &#xA0; <title>Page Title</title>
</head>
<body>

  <h1>This is a heading</h1>
  <p>This is a paragraph.</p>

</body>
</html>
```

Meta Data

To ensure proper interpretation and correct search engine indexing, both the language and the character encoding `<meta charset="charset">` should be defined as early as possible in an HTML document:

```
<!DOCTYPE html>
<html lang="en-us">
<head>
  &#xA0; <meta charset="UTF-8">
  &#xA0; <title>Page Title</title>
</head>
```

Setting The Viewport

The viewport is the user's visible area of a web page. It varies with the device - it will be smaller on a mobile phone than on a computer screen.

You should include the following `<meta>` element in all your web pages:

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

This gives the browser instructions on how to control the page's dimensions and scaling.

The `width=device-width` part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).

The `initial-scale=1.0` part sets the initial zoom level when the page is first loaded by the browser.

Here is an example of a web page *without* the viewport meta tag, and the same web page *with* the viewport meta tag:

Tip: If you are browsing this page with a phone or a tablet, you can click on the two links below to see the difference.

□

[Without the viewport meta tag](#)

□

[With the viewport meta tag](#)

HTML Comments

Short comments should be written on one line, like this:

```
<!-- This is a comment -->
```

Comments that spans more than one line, should be written like this:

```
<!--  
  Â This is a long comment example. This is a long comment example.  
  Â This is a long comment example. This is a long comment example.  
-->
```

Long comments are easier to observe if they are indented with two spaces.

Using Style Sheets

Use simple syntax for linking to style sheets (the `type` attribute is not necessary):

```
<link rel="stylesheet" href="styles.css">
```

Short CSS rules can be written compressed, like this:

```
p.intro {font-family:Verdana;font-size:16em;}
```

Long CSS rules should be written over multiple lines:

```
body {  
  Â background-color: lightgrey;  
  Â font-family: "Arial Black", Helvetica, sans-serif;  
  Â font-size: 16em;  
  Â color: black;  
}
```

- Place the opening bracket on the same line as the selector
- Use one space before the opening bracket
- Use two spaces of indentation
- Use semicolon after each property-value pair, including the last
- Only use quotes around values if the value contains spaces
- Place the closing bracket on a new line, without leading spaces

Loading JavaScript in HTML

Use simple syntax for loading external scripts (the `type` attribute is not necessary):

```
<script src="myscript.js">
```

Accessing HTML Elements with JavaScript

Using "untidy" HTML code can result in JavaScript errors.

These two JavaScript statements will produce different results:

Example

```
getElementById("Demo").innerHTML = "Hello";
```

```
getElementById("demo").innerHTML = "Hello";
```

[Visit the JavaScript Style Guide.](#)

Use Lower Case File Names

Some web servers (Apache, Unix) are case sensitive about file names: "london.jpg" cannot be accessed as "London.jpg".

Other web servers (Microsoft, IIS) are not case sensitive: "london.jpg" can be accessed as "London.jpg".

If you use a mix of uppercase and lowercase, you have to be aware of this.

If you move from a case-insensitive to a case-sensitive server, even small errors will break your web!

To avoid these problems, always use lowercase file names!

File Extensions

HTML files should have a **.html** extension (**.htm** is allowed).

CSS files should have a **.css** extension.

JavaScript files should have a **.js** extension.

Differences Between .htm and .html?

There is no difference between the .htm and .html file extensions!

Both will be treated as HTML by any web browser and web server.

Default Filenames

When a URL does not specify a filename at the end (like "https://www.w3schools.com/"), the server just adds a default filename, such as "index.html", "index.htm", "default.html", or "default.htm".

If your server is configured only with "index.html" as the default filename, your file must be named "index.html", and not "default.html".

However, servers can be configured with more than one default filename; usually you can set up as many default filenames as you want.

HTML Entities

Reserved characters in HTML must be replaced with character entities.

HTML Entities

Some characters are reserved in HTML.

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;`

To display a less than sign (<) we must write: **<** or **<**;

Advantage of using an entity name: An entity name is easy to remember.

Disadvantage of using an entity name: Browsers may not support all entity names, but the support for entity numbers is good.

Non-breaking Space

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

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.

Examples:

- Å§ 10
- 10 km/h
- 10 PM

Another common use of the non-breaking space is to prevent browsers from truncating spaces in HTML pages.

If you write 10 spaces in your text, the browser will remove 9 of them. To add real spaces to your text, you can use the ** ** character entity.

Tip: The non-breaking hyphen ([‑](#)) is used to define a hyphen character (â€‘) that does not break into a new line.

Some Useful HTML Character Entities

| Result | Description | Entity Name | Entity Number |
|--------|------------------------------------|-------------|---------------|
| | non-breaking space | | |
| < | less than | < | < |
| > | greater than | > | > |
| & | ampersand | & | & |
| " | double quotation mark | " | " |
| ' | single quotation mark (apostrophe) | ' | ' |
| Â¢ | cent | ¢ | ¢ |
| Â£ | pound | £ | £ |
| Â¥ | yen | ¥ | ¥ |
| â‚¬ | euro | € | € |
| Â© | copyright | © | © |
| Â® | registered trademark | ® | ® |

Note: Entity names are case sensitive.

Combining Diacritical Marks

A diacritical mark is a "glyph" added to a letter.

Some diacritical marks, like grave (Â `) and acute (Â ´) are called accents.

Diacritical marks can appear both above and below a letter, inside a letter, and between two letters.

Diacritical marks can be used in combination with alphanumeric characters to produce a character that is not present in the character set (encoding) used in the page.

Here are some examples:

Mark Character Construct Result

| | | | |
|------|---|---------|-----|
| Â ì€ | a | à | aì€ |
| Â ì | a | á | aì |
| ì, | a | â | aì, |
| Â ìf | a | ã | aìf |
| Â ì€ | O | Ò | Oì€ |
| Â ì | O | Ó | Oì |
| ì, | O | Ô | Oì, |
| Â ìf | O | Õ | Oìf |

You will see more HTML symbols in the next chapter of this tutorial.

HTML Symbols

Symbols that are not present on your keyboard can also be added by using entities.

HTML Symbol Entities

HTML entities were described in the previous chapter.

Many 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.

Example

Display the euro sign, â,¬, with an entity name, a decimal, and a hexadecimal value:

```
<p>I will display &euro;</p>
<p>I will display &#8364;</p>
<p>I will display &#x20AC;</p>
```

Will display as:

I will display â,¬
I will display â,¬
I will display â,¬

Some Mathematical Symbols Supported by HTML

| Char | Number | Entity | Description |
|-------|---------|----------|----------------------|
| â^€ | ∀ | ∀ | FOR ALL |
| â^, | ∂ | ∂ | PARTIAL DIFFERENTIAL |
| â^f | ∃ | ∃ | THERE EXISTS |
| â^... | ∅ | ∅ | EMPTY SETS |
| â^‡ | ∇ | ∇ | NABLA |
| â^^ | ∈ | ∈ | ELEMENT OF |
| â^‰ | ∉ | ∉ | NOT AN ELEMENT OF |
| â^ˆ | ∋ | ∋ | CONTAINS AS MEMBER |
| â^ | ∏ | ∏ | N-ARY PRODUCT |

Some Greek Letters Supported by HTML

| Char | Number | Entity | Description |
|------|--------|-----------|------------------------------|
| Î´ | Α | Α | GREEK CAPITAL LETTER ALPHA |
| Î² | Β | Β | GREEK CAPITAL LETTER BETA |
| Î³ | Γ | Γ | GREEK CAPITAL LETTER GAMMA |
| Î´ | Δ | Δ | GREEK CAPITAL LETTER DELTA |
| Îµ | Ε | Ε | GREEK CAPITAL LETTER EPSILON |
| Î± | Ζ | Ζ | GREEK CAPITAL LETTER ZETA |

Some Other Entities Supported by HTML

| Char | Number | Entity | Description |
|------|---------|----------|--------------------|
| Â© | © | © | COPYRIGHT SIGN |
| Â® | ® | ® | REGISTERED SIGN |
| â‚¬ | € | € | EURO SIGN |
| â„¢ | ™ | ™ | TRADEMARK |
| â†ª | ← | ← | LEFTWARDS ARROW |
| â†ª | ↑ | ↑ | UPWARDS ARROW |
| â†ª | → | → | RIGHTWARDS ARROW |
| â†ª | ↓ | ↓ | DOWNWARDS ARROW |
| â™ª | ♠ | ♠ | BLACK SPADE SUIT |
| â™ª | ♣ | ♣ | BLACK CLUB SUIT |
| â™ª | ♥ | ♥ | BLACK HEART SUIT |
| â™ª | ♦ | ♦ | BLACK DIAMOND SUIT |

Using Emojis in HTML

Emojis are characters from the UTF-8 character set: ðŸ˜„ ðŸ˜˜ ðŸ˜˜—

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">
```

If not specified, UTF-8 is the default character set in HTML.

UTF-8 Characters

Many UTF-8 characters cannot be typed on a keyboard, but they can always be displayed using numbers (called entity numbers):

- A is 65
- B is 66
- C is 67

Example

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
</head>
<body>

<p>I will display A B C</p>
<p>I will display &#65; &#66; &#67;</p>

</body>
</html>
```

Example Explained

The <meta charset="UTF-8"> element defines the character set.

The characters A, B, and C, are displayed by the numbers 65, 66, and 67.

To let the browser understand that you are displaying a character, you must start the entity number with &# and end it with ; (semicolon).

Emoji Characters

Emojis are also characters from the UTF-8 alphabet:

- 🍌 is 128516
- 🍍 is 128525
- 🍎 is 128151

Example

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
</head>
<body>

<h1>My First Emoji</h1>

<p>&#128512;</p>

</body>
</html>
```

Since Emojis are characters, they can be copied, displayed, and sized just like any other character in HTML.

Example

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
</head>
<body>

<h1>Sized Emojis</h1>

<p style="font-size:48px">
&#128512; &#128516; &#128525; &#128151;
</p>

</body>
</html>
```

Some Emoji Symbols in UTF-8

| Emoji | Value |
|-------|-----------|
| ðŸ—» | 🗻 |
| ðŸ—¼ | 🗼 |
| ðŸ—½ | 🗽 |
| ðŸ—¾ | 🗾 |
| ðŸ—¿ | 🗿 |
| ðŸ€ | 😀 |
| ðŸ˜ | 😁 |
| ðŸ˜, | 😂 |
| ðŸ˜f | 😃 |
| ðŸ˜„ | 😄 |
| ðŸ˜… | 😅 |

For a full list, please go to our[HTML Emoji Reference](#).

HTML Encoding (Character Sets)

To display an HTML page correctly, a web browser must know which character set to use.

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 ! \$ + - () @ < > .

ISO-8859-1 was the default character set for HTML 4. This character set supported 256 different character codes. HTML 4 also supported UTF-8.

ANSI (Windows-1252) was the original Windows character set. ANSI is identical to ISO-8859-1, except that ANSI has 32 extra characters.

The HTML5 specification encourages web developers to use the UTF-8 character set, which 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">
```

Differences Between Character Sets

The following table displays the differences between the character sets described above:

| Numb | ASCII | ANSI | 8859 | UTF-8 | Description |
|------|-------|------|------|-------|------------------------|
| 32 | | | | | space |
| 33 | ! | ! | ! | ! | exclamation mark |
| 34 | " | " | " | " | quotation mark |
| 35 | # | # | # | # | number sign |
| 36 | \$ | \$ | \$ | \$ | dollar sign |
| 37 | % | % | % | % | percent sign |
| 38 | & | & | & | & | ampersand |
| 39 | ' | ' | ' | ' | apostrophe |
| 40 | (| (| (| (| left parenthesis |
| 41 |) |) |) |) | right parenthesis |
| 42 | * | * | * | * | asterisk |
| 43 | + | + | + | + | plus sign |
| 44 | , | , | , | , | comma |
| 45 | - | - | - | - | hyphen-minus |
| 46 | . | . | . | . | full stop |
| 47 | / | / | / | / | solidus |
| 48 | 0 | 0 | 0 | 0 | digit zero |
| 49 | 1 | 1 | 1 | 1 | digit one |
| 50 | 2 | 2 | 2 | 2 | digit two |
| 51 | 3 | 3 | 3 | 3 | digit three |
| 52 | 4 | 4 | 4 | 4 | digit four |
| 53 | 5 | 5 | 5 | 5 | digit five |
| 54 | 6 | 6 | 6 | 6 | digit six |
| 55 | 7 | 7 | 7 | 7 | digit seven |
| 56 | 8 | 8 | 8 | 8 | digit eight |
| 57 | 9 | 9 | 9 | 9 | digit nine |
| 58 | : | : | : | : | colon |
| 59 | ; | ; | ; | ; | semicolon |
| 60 | < | < | < | < | less-than sign |
| 61 | = | = | = | = | equals sign |
| 62 | > | > | > | > | greater-than sign |
| 63 | ? | ? | ? | ? | question mark |
| 64 | @ | @ | @ | @ | commercial at |
| 65 | A | A | A | A | Latin capital letter A |
| 66 | B | B | B | B | Latin capital letter B |
| 67 | C | C | C | C | Latin capital letter C |
| 68 | D | D | D | D | Latin capital letter D |
| 69 | E | E | E | E | Latin capital letter E |
| 70 | F | F | F | F | Latin capital letter F |
| 71 | G | G | G | G | Latin capital letter G |
| 72 | H | H | H | H | Latin capital letter H |
| 73 | I | I | I | I | Latin capital letter I |
| 74 | J | J | J | J | Latin capital letter J |
| 75 | K | K | K | K | Latin capital letter K |
| 76 | L | L | L | L | Latin capital letter L |
| 77 | M | M | M | M | Latin capital letter M |
| 78 | N | N | N | N | Latin capital letter N |
| 79 | O | O | O | O | Latin capital letter O |
| 80 | P | P | P | P | Latin capital letter P |
| 81 | Q | Q | Q | Q | Latin capital letter Q |

| | | | | | |
|-----|-----|-----|---|---|-----------------------------------|
| 82 | R | R | R | R | Latin capital letter R |
| 83 | S | S | S | S | Latin capital letter S |
| 84 | T | T | T | T | Latin capital letter T |
| 85 | U | U | U | U | Latin capital letter U |
| 86 | V | V | V | V | Latin capital letter V |
| 87 | W | W | W | W | Latin capital letter W |
| 88 | X | X | X | X | Latin capital letter X |
| 89 | Y | Y | Y | Y | Latin capital letter Y |
| 90 | Z | Z | Z | Z | Latin capital letter Z |
| 91 | [| [| [| [| left square bracket |
| 92 | \ | \ | \ | \ | reverse solidus |
| 93 |] |] |] |] | right square bracket |
| 94 | ^ | ^ | ^ | ^ | circumflex accent |
| 95 | — | — | — | — | low line |
| 96 | ` | ` | ` | ` | grave accent |
| 97 | a | a | a | a | Latin small letter a |
| 98 | b | b | b | b | Latin small letter b |
| 99 | c | c | c | c | Latin small letter c |
| 100 | d | d | d | d | Latin small letter d |
| 101 | e | e | e | e | Latin small letter e |
| 102 | f | f | f | f | Latin small letter f |
| 103 | g | g | g | g | Latin small letter g |
| 104 | h | h | h | h | Latin small letter h |
| 105 | i | i | i | i | Latin small letter i |
| 106 | j | j | j | j | Latin small letter j |
| 107 | k | k | k | k | Latin small letter k |
| 108 | l | l | l | l | Latin small letter l |
| 109 | m | m | m | m | Latin small letter m |
| 110 | n | n | n | n | Latin small letter n |
| 111 | o | o | o | o | Latin small letter o |
| 112 | p | p | p | p | Latin small letter p |
| 113 | q | q | q | q | Latin small letter q |
| 114 | r | r | r | r | Latin small letter r |
| 115 | s | s | s | s | Latin small letter s |
| 116 | t | t | t | t | Latin small letter t |
| 117 | u | u | u | u | Latin small letter u |
| 118 | v | v | v | v | Latin small letter v |
| 119 | w | w | w | w | Latin small letter w |
| 120 | x | x | x | x | Latin small letter x |
| 121 | y | y | y | y | Latin small letter y |
| 122 | z | z | z | z | Latin small letter z |
| 123 | { | { | { | { | left curly bracket |
| 124 | | | | | vertical line |
| 125 | } | } | } | } | right curly bracket |
| 126 | ~ | ~ | ~ | ~ | tilde |
| 127 | DEL | Â | Â | Â | Â |
| 128 | Â | â,¬ | Â | Â | euro sign |
| 129 | Â | Â | Â | Â | NOT USED |
| 130 | Â | â€š | Â | Â | single low-9 quotation mark |
| 131 | Â | Æ' | Â | Â | Latin small letter f with hook |
| 132 | Â | â€ž | Â | Â | double low-9 quotation mark |
| 133 | Â | â€ | Â | Â | horizontal ellipsis |
| 134 | Â | â€ | Â | Â | dagger |
| 135 | Â | â€ | Â | Â | double dagger |
| 136 | Â | Ë† | Â | Â | modifier letter circumflex accent |
| 137 | Â | â€° | Â | Â | per mille sign |
| 138 | Â | Š | Â | Â | Latin capital letter S with caron |

| | | | | | |
|-----|---|------|----|----|--------------------------------------------|
| 139 | À | â€¹ | Ä | Ä | single left-pointing angle quotation mark |
| 140 | Â | Â´ | Â | Â | Latin capital ligature OE |
| 141 | Â | Â | Â | Â | NOT USED |
| 142 | Â | Â½ | Â | Â | Latin capital letter Z with caron |
| 143 | Â | Â | Â | Â | NOT USED |
| 144 | Â | Â | Â | Â | NOT USED |
| 145 | Â | â€˜ | Â | Â | left single quotation mark |
| 146 | Â | â€™™ | Â | Â | right single quotation mark |
| 147 | Â | â€œ | Â | Â | left double quotation mark |
| 148 | Â | â€ | Â | Â | right double quotation mark |
| 149 | Â | â€¢ | Â | Â | bullet |
| 150 | Â | â€“ | Â | Â | en dash |
| 151 | Â | â€” | Â | Â | em dash |
| 152 | Â | Ëœ | Â | Â | small tilde |
| 153 | Â | â„¢ | Â | Â | trade mark sign |
| 154 | Â | Â¸ | Â | Â | Latin small letter s with caron |
| 155 | Â | â€² | Â | Â | single right-pointing angle quotation mark |
| 156 | Â | Â“ | Â | Â | Latin small ligature oe |
| 157 | Â | Â | Â | Â | NOT USED |
| 158 | Â | Â¾ | Â | Â | Latin small letter z with caron |
| 159 | Â | Â¸ | Â | Â | Latin capital letter Y with diaeresis |
| 160 | Â | Â | Â | Â | no-break space |
| 161 | Â | Â¡ | Â¡ | Â¡ | inverted exclamation mark |
| 162 | Â | Â¢ | Â¢ | Â¢ | cent sign |
| 163 | Â | Â£ | Â£ | Â£ | pound sign |
| 164 | Â | Â¤ | Â¤ | Â¤ | currency sign |
| 165 | Â | Â¥ | Â¥ | Â¥ | yen sign |
| 166 | Â | Â¸ | Â¸ | Â¸ | broken bar |
| 167 | Â | Â§ | Â§ | Â§ | section sign |
| 168 | Â | Â¨ | Â¨ | Â¨ | diaeresis |
| 169 | Â | Â© | Â© | Â© | copyright sign |
| 170 | Â | Âª | Âª | Âª | feminine ordinal indicator |
| 171 | Â | Â« | Â« | Â« | left-pointing double angle quotation mark |
| 172 | Â | Â¬ | Â¬ | Â¬ | not sign |
| 173 | Â | Â | Â | Â | soft hyphen |
| 174 | Â | Â® | Â® | Â® | registered sign |
| 175 | Â | Â¯ | Â¯ | Â¯ | macron |
| 176 | Â | Â° | Â° | Â° | degree sign |
| 177 | Â | Â± | Â± | Â± | plus-minus sign |
| 178 | Â | Â² | Â² | Â² | superscript two |
| 179 | Â | Â³ | Â³ | Â³ | superscript three |
| 180 | Â | Â´ | Â´ | Â´ | acute accent |
| 181 | Â | Âµ | Âµ | Âµ | micro sign |
| 182 | Â | Â¶ | Â¶ | Â¶ | pilcrow sign |
| 183 | Â | Â· | Â· | Â· | middle dot |
| 184 | Â | Â¸ | Â¸ | Â¸ | cedilla |
| 185 | Â | Â¹ | Â¹ | Â¹ | superscript one |
| 186 | Â | Âº | Âº | Âº | masculine ordinal indicator |
| 187 | Â | Â» | Â» | Â» | right-pointing double angle quotation mark |
| 188 | Â | Â¼ | Â¼ | Â¼ | vulgar fraction one quarter |
| 189 | Â | Â½ | Â½ | Â½ | vulgar fraction one half |
| 190 | Â | Â¾ | Â¾ | Â¾ | vulgar fraction three quarters |
| 191 | Â | Â¿ | Â¿ | Â¿ | inverted question mark |
| 192 | Â | Ã€ | Ã€ | Ã€ | Latin capital letter A with grave |
| 193 | Â | Ã | Ã | Ã | Latin capital letter A with acute |
| 194 | Â | Ã, | Ã, | Ã, | Latin capital letter A with circumflex |

| | | | | | |
|-----|---|------|------|------|----------------------------------------|
| 195 | Ã | Āf | Āf | Āf | Latin capital letter A with tilde |
| 196 | Â | Ă„ | Ă„ | Ă„ | Latin capital letter A with diaeresis |
| 197 | Â | Ă... | Ă... | Ă... | Latin capital letter A with ring above |
| 198 | Â | Ă† | Ă† | Ă† | Latin capital letter AE |
| 199 | Â | Ă‡ | Ă‡ | Ă‡ | Latin capital letter C with cedilla |
| 200 | Â | Ă^ | Ă^ | Ă^ | Latin capital letter E with grave |
| 201 | Â | Ă% | Ă% | Ă% | Latin capital letter E with acute |
| 202 | Â | ĂŠ | ĂŠ | ĂŠ | Latin capital letter E with circumflex |
| 203 | Â | Ăˆ | Ăˆ | Ăˆ | Latin capital letter E with diaeresis |
| 204 | Â | Ăœ | Ăœ | Ăœ | Latin capital letter I with grave |
| 205 | Â | Ă | Ă | Ă | Latin capital letter I with acute |
| 206 | Â | ĂŽ | ĂŽ | ĂŽ | Latin capital letter I with circumflex |
| 207 | Â | Ă | Ă | Ă | Latin capital letter I with diaeresis |
| 208 | Â | Ă | Ă | Ă | Latin capital letter Eth |
| 209 | Â | Ăˆ | Ăˆ | Ăˆ | Latin capital letter N with tilde |
| 210 | Â | Ăˆ | Ăˆ | Ăˆ | Latin capital letter O with grave |
| 211 | Â | Ă“ | Ă“ | Ă“ | Latin capital letter O with acute |
| 212 | Â | Ă” | Ă” | Ă” | Latin capital letter O with circumflex |
| 213 | Â | Ă• | Ă• | Ă• | Latin capital letter O with tilde |
| 214 | Â | Ă– | Ă– | Ă– | Latin capital letter O with diaeresis |
| 215 | Â | Ă— | Ă— | Ă— | multiplication sign |
| 216 | Â | Ă~ | Ă~ | Ă~ | Latin capital letter O with stroke |
| 217 | Â | Ă™ | Ă™ | Ă™ | Latin capital letter U with grave |
| 218 | Â | Ăš | Ăš | Ăš | Latin capital letter U with acute |
| 219 | Â | Ăˆ | Ăˆ | Ăˆ | Latin capital letter U with circumflex |
| 220 | Â | Ăœ | Ăœ | Ăœ | Latin capital letter U with diaeresis |
| 221 | Â | Ă | Ă | Ă | Latin capital letter Y with acute |
| 222 | Â | Ăž | Ăž | Ăž | Latin capital letter Thorn |
| 223 | Â | ĂŸ | ĂŸ | ĂŸ | Latin small letter sharp s |
| 224 | Â | Ă | Ă | Ă | Latin small letter a with grave |
| 225 | Â | Ăı | Ăı | Ăı | Latin small letter a with acute |
| 226 | Â | Ăç | Ăç | Ăç | Latin small letter a with circumflex |
| 227 | Â | Ă£ | Ă£ | Ă£ | Latin small letter a with tilde |
| 228 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter a with diaeresis |
| 229 | Â | Ă¥ | Ă¥ | Ă¥ | Latin small letter a with ring above |
| 230 | Â | Ăı | Ăı | Ăı | Latin small letter ae |
| 231 | Â | Ă§ | Ă§ | Ă§ | Latin small letter c with cedilla |
| 232 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter e with grave |
| 233 | Â | Ă© | Ă© | Ă© | Latin small letter e with acute |
| 234 | Â | Ăª | Ăª | Ăª | Latin small letter e with circumflex |
| 235 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter e with diaeresis |
| 236 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter i with grave |
| 237 | Â | Ă | Ă | Ă | Latin small letter i with acute |
| 238 | Â | Ă® | Ă® | Ă® | Latin small letter i with circumflex |
| 239 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter i with diaeresis |
| 240 | Â | Ă° | Ă° | Ă° | Latin small letter eth |
| 241 | Â | Ă± | Ă± | Ă± | Latin small letter n with tilde |
| 242 | Â | Ă² | Ă² | Ă² | Latin small letter o with grave |
| 243 | Â | Ă³ | Ă³ | Ă³ | Latin small letter o with acute |
| 244 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter o with circumflex |
| 245 | Â | Ăµ | Ăµ | Ăµ | Latin small letter o with tilde |
| 246 | Â | Ă¶ | Ă¶ | Ă¶ | Latin small letter o with diaeresis |
| 247 | Â | Ă· | Ă· | Ă· | division sign |
| 248 | Â | Ăˆ | Ăˆ | Ăˆ | Latin small letter o with stroke |
| 249 | Â | Ă¹ | Ă¹ | Ă¹ | Latin small letter u with grave |
| 250 | Â | Ă² | Ă² | Ă² | Latin small letter u with acute |
| 251 | Â | Ă» | Ă» | Ă» | Latin small letter with circumflex |

| | | | | | |
|-----|---|----|----|----|-------------------------------------|
| 252 | Ä | Ä¼ | Ä¼ | Ä¼ | Latin small letter u with diaeresis |
| 253 | Â | Â½ | Â½ | Â½ | Latin small letter y with acute |
| 254 | Â | Â¾ | Â¾ | Â¾ | Latin small letter thorn |
| 255 | Ä | Ä¸ | Ä¸ | Ä¸ | Latin small letter y with diaeresis |

The ASCII Character Set

ASCII uses the values from 0 to 31 (and 127) for control characters.

ASCII uses the values from 32 to 126 for letters, digits, and symbols.

ASCII does not use the values from 128 to 255.

The ANSI Character Set (Windows-1252)

ANSI is identical to ASCII for the values from 0 to 127.

ANSI has a proprietary set of characters for the values from 128 to 159.

ANSI is identical to UTF-8 for the values from 160 to 255.

The ISO-8859-1 Character Set

ISO-8859-1 is identical to ASCII for the values from 0 to 127.

ISO-8859-1 does not use the values from 128 to 159.

ISO-8859-1 is identical to UTF-8 for the values from 160 to 255.

The UTF-8 Character Set

UTF-8 is identical to ASCII for the values from 0 to 127.

UTF-8 does not use the values from 128 to 159.Â

UTF-8 is identical to both ANSI and 8859-1 for the values from 160 to 255.

UTF-8 continues from the value 256 with more than 10 000 different characters.

For a closer look, study our [Complete HTML Character Set Reference](#).

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

Explanation:

- **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

Common URL Schemes

The table below lists some common schemes:

| Scheme | Short for | Used for |
|--------|------------------------------------|---------------------------------|
| http | HyperText Transfer Protocol | Common web pages. Not encrypted |
| https | Secure HyperText Transfer Protocol | Secure web pages. Encrypted |
| ftp | File Transfer Protocol | Downloading or uploading files |
| file | Â | A file on your computer |

URL Encoding

URLs can only be sent over the Internet using the [ASCII character-set](#). If a URL contains characters outside the ASCII set, the URL has to be converted.

URL encoding converts non-ASCII characters into a format that can be transmitted over the Internet.

URL encoding replaces non-ASCII characters with a "%" followed by hexadecimal digits.

URLs cannot contain spaces. URL encoding normally replaces a space with a plus (+) sign, or %20.

Try It Yourself

| | |
|----------------------------------------------|---------------------------------------|
| <input type="text" value="Hello GAfÂ¼nter"/> | <input type="button" value="Submit"/> |
|----------------------------------------------|---------------------------------------|

If you click "Submit", the browser will URL encode the input before it is sent to the server.

A page at the server will display the received input.

Try some other input and click Submit again.

ASCII Encoding Examples

Your browser will encode input, according to the character-set used in your page.

The default character-set in HTML5 is UTF-8.

| Character | From Windows-1252 | From UTF-8 |
|-----------|-------------------|------------|
| Ã¢ÂÂ¬ | %80 | %E2%82%AC |
| ÃÂ | %A3 | %C2%A3 |
| ÃÂ | %A9 | %C2%A9 |
| ÃÂ | %AE | %C2%AE |
| ÃÂ | %C0 | %C3%80 |
| ÃÂ | %C1 | %C3%81 |
| ÃÂ | %C2 | %C3%82 |
| ÃÂ | %C3 | %C3%83 |
| ÃÂ | %C4 | %C3%84 |
| ÃÂ | %C5 | %C3%85 |

For a complete reference of all URL encodings, visit our [URL Encoding Reference](#).

HTML Versus XHTML

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

What is XHTML?

- XHTML stands for **EX**tensible **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
-

Why XHTML?

XML is a markup language where all documents must be marked up correctly (be "well-formed").

XHTML was developed to make HTML more extensible and flexible to work with other data formats (such as XML). In addition, browsers ignore errors in HTML pages, and try to display the website even if it has some errors in the markup. So XHTML comes with a much stricter error handling.

If you want to study XML, please read our [XML Tutorial](#).

The Most Important Differences from HTML

- `<!DOCTYPE>` is **mandatory**
 - The `xmlns` attribute in `<html>` is **mandatory**
 - `<html>`, `<head>`, `<title>`, and `<body>` are **mandatory**
 - Elements must always be **properly nested**
 - Elements must always be **closed**
 - Elements must always be in **lowercase**
 - Attribute names must always be in **lowercase**
 - Attribute values must always be **quoted**
 - Attribute minimization is **forbidden**
-

XHTML - `<!DOCTYPE>` Is Mandatory

An XHTML document must have an XHTML `<!DOCTYPE>` declaration.

The `<html>`, `<head>`, `<title>`, and `<body>` elements must also be present, and the `xmlns` attribute in `<html>` must specify the xml namespace for the document.

Example

Here is an XHTML document with a minimum of required tags:Â

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  Â <title>Title of document</title>
</head>
<body>

  Â some content here...

</body>
</html>
```

XHTML Elements Must be Properly Nested

In XHTML, elements must always be properly nested within each other, like this:

Correct:

```
<b><i>Some text</i></b>
```

Wrong:

```
<b><i>Some text</b></i>
```

XHTML Elements Must Always be Closed

In XHTML, elements must always be closed, like this:

Correct:

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

Wrong:

```
<p>This is a paragraph
<p>This is another paragraph
```

XHTML Empty Elements Must Always be Closed

In XHTML, empty elements must always be closed, like this:

Correct:

A break: `
`
A horizontal rule: `<hr />`
An image: ``

Wrong:

A break: `
`
A horizontal rule: `<hr>`
An image: ``

XHTML Elements Must be in Lowercase

In XHTML, element names must always be in lowercase, like this:

Correct:

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

Wrong:

```
<BODY>
<P>This is a paragraph</P>
</BODY>
```

XHTML Attribute Names Must be in Lowercase

In XHTML, attribute names must always be in lowercase, like this:

Correct:

`Visit our HTML tutorial`

Wrong:

`Visit our HTML tutorial`

XHTML Attribute Values Must be Quoted

In XHTML, attribute values must always be quoted, like this:

Correct:

`Visit our HTML tutorial`

Wrong:

`Visit our HTML tutorial`

XHTML Attribute Minimization is Forbidden

In XHTML, attribute minimization is forbidden:

Correct:

`<input type="checkbox" name="vehicle" value="car" checked="checked" />
<input type="text" name="lastname" disabled="disabled" />`

Wrong:

`<input type="checkbox" name="vehicle" value="car" checked />
<input type="text" name="lastname" disabled />`

Validate HTML With The W3C Validator

Put your web address in the box below:

HTML Forms

An HTML form is used to collect user input. The user input is most often sent to a server for processing.

Example

First name:

Last name:

The <form> Element

The HTML `<form>` element is used to create an HTML form for user input:

```
<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.

All the different form elements are covered in this chapter: [HTML Form Elements](#).

The `<input>` Element

The HTML `<input>` element is the most used form element.

An `<input>` element can be displayed in many ways, depending on the `type` attribute.

Here are some examples:

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

All the different input types are covered in this chapter: [HTML Input Types](#).

Text Fields

The `<input type="text">` defines a single-line input field for text input.

Example

A form with input fields for text:

```
<form>
&#xA0; <label for="fname">First name:</label><br>
&#xA0; <input type="text" id="fname" name="fname"><br>
&#xA0; <label for="lname">Last name:</label><br>
&#xA0; <input type="text" id="lname" name="lname">
</form>
```

This is how the HTML code above will be displayed in a browser:

First name:

Last name:

Note: The form itself is not visible. Also note that the default width of an input field is 20 characters.

The `<label>` Element

Notice the use of the `<label>` element in the example above.

The `<label>` tag defines a label for many form elements.

The `<label>` element is useful for screen-reader users, because the screen-reader will read out loud the label when the user focus on the input element.

The `<label>` element also help users who have difficulty clicking on very small regions (such as radio buttons or checkboxes) - because when the user clicks the text within the `<label>` element, it toggles the radio button/checkbox.

The `for` attribute of the `<label>` tag should be equal to the `id` attribute of the `<input>` element to bind them together.

Radio Buttons

The `<input type="radio">` defines a radio button.

Radio buttons let a user select ONE of a limited number of choices.

Example

A form with radio buttons:

```
<form>
  <input type="radio" id="male" name="gender" value="male">
  <label for="male">Male</label><br>
  <input type="radio" id="female" name="gender" value="female">
  <label for="female">Female</label><br>
  <input type="radio" id="other" name="gender" value="other">
  <label for="other">Other</label>
</form>
```

This is how the HTML code above will be displayed in a browser:

- ☐ Male
 - ☐ Female
 - ☐ Other
-

Checkboxes

The `<input type="checkbox">` defines a **checkbox**.

Checkboxes let a user select ZERO or MORE options of a limited number of choices.

Example

A form with checkboxes:

```
<form>
  <input type="checkbox" id="vehicle1" name="vehicle1" value="Bike">
  <label for="vehicle1"> I have a bike</label><br>
  <input type="checkbox" id="vehicle2" name="vehicle2" value="Car">
  <label for="vehicle2"> I have a car</label><br>
  <input type="checkbox" id="vehicle3" name="vehicle3" value="Boat">
  <label for="vehicle3"> I have a boat</label>
</form>
```

This is how the HTML code above will be displayed in a browser:

- ☐ I have a bike
 - ☐ I have a car
 - ☐ I have a boat
-

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 form-handler is specified in the form's `action` attribute.

Example

A form with a submit button:

```
<form action="/action_page.php">
  &lt;label for="fname">First name:</label><br>
  &lt;input type="text" id="fname" name="fname" value="John"><br>
  &lt;label for="lname">Last name:</label><br>
  &lt;input type="text" id="lname" name="lname" value="Doe"><br><br>
  &lt;input type="submit" value="Submit">
</form>
```

This is how the HTML code above will be displayed in a browser:

First name:

Last name:

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.

Example

This example will not submit the value of the "First name" input field: &

```
<form action="/action_page.php">
  &lt;label for="fname">First name:</label><br>
  &lt;input type="text" id="fname" value="John"><br><br>
  &lt;input type="submit" value="Submit">
</form>
```

HTML Exercises

HTML Form Attributes

This chapter describes the different attributes for the HTML <form> element.

The Action Attribute

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:

Example

On submit, send form data to "action_page.php":

```
<form action="/action_page.php">
  &lt;label for="fname">First name:</label><br>
  &lt;input type="text" id="fname" name="fname" value="John"><br>
  &lt;label for="lname">Last name:</label><br>
  &lt;input type="text" id="lname" name="lname" value="Doe"><br><br>
  &lt;input type="submit" value="Submit">
</form>
```

Tip: If the `action` attribute is omitted, the action is set to the current page.

The Target Attribute

The `target` attribute specifies where to display the response that is received after submitting the form.

The `target` attribute can have one of the following values:

| Value | Description |
|------------------------|----------------------------------------------------------|
| <code>_blank</code> | The response is displayed in a new window or tab |
| <code>_self</code> | The response is displayed in the current window |
| <code>_parent</code> | The response is displayed in the parent frame |
| <code>_top</code> | The response is displayed in the full body of the window |
| <code>framename</code> | The response is displayed in a named iframe |

The default value is `_self` which means that the response will open in the current window.

Example

Here, the submitted result will open in a new browser tab:

```
<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.

Example

This example uses the GET method when submitting the form data:

```
<form action="/action_page.php" method="get">
```

Example

This example uses the POST method when submitting the form data:

```
<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

Tip: Always use POST if the form data contains sensitive or personal information!

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.

Example

A form with autocomplete on:

```
<form action="/action_page.php" autocomplete="on">
```

The Novalidate Attribute

The novalidate attribute is a boolean attribute.

When present, it specifies that the form-data (input) should not be validated when submitted.

Example

A form with a novalidate attribute:

```
<form action="/action_page.php" novalidate>
```

HTML Exercises

List of All <form> Attributes

| Attribute | Description |
|--------------------------------|---------------------------------------------------------------------------------------------------------|
| accept-charset | Specifies the character encodings used for form submission |
| action | Specifies where to send the form-data when a form is submitted |
| autocomplete | Specifies whether a form should have autocomplete on or off |
| enctype | Specifies how the form-data should be encoded when submitting it to the server (only for method="post") |
| method | Specifies the HTTP method to use when sending form-data |
| name | Specifies the name of the form |
| novalidate | Specifies that the form should not be validated when submitted |
| rel | Specifies the relationship between a linked resource and the current document |
| target | Specifies where to display the response that is received after submitting the form |

HTML Form Elements

This chapter describes all the different HTML form elements.

The HTML <form> Elements

The HTML <form> element can contain one or more of the following form elements:

- <input>
 - <label>
 - <select>
 - <textarea>
 - <button>
 - <fieldset>
 - <legend>
 - <datalist>
 - <output>
 - <option>
 - <optgroup>
-

The <input> Element

One of the most used form element is the `<input>` element.

The `<input>` element can be displayed in several ways, depending on the `type` attribute.

Example

```
<label for="fname">First name:</label>
<input type="text" id="fname" name="fname">
```

All the different values of the `type` attribute are covered in the next chapter: [HTML Input Types](#).

The `<label>` Element

The `<label>` element defines a label for several form elements.

The `<label>` element is useful for screen-reader users, because the screen-reader will read out loud the label when the user focus on the input element.

The `<label>` element also help users who have difficulty clicking on very small regions (such as radio buttons or checkboxes) - because when the user clicks the text within the `<label>` element, it toggles the radio button/checkbox.

The `for` attribute of the `<label>` tag should be equal to the `id` attribute of the `<input>` element to bind them together.

The `<select>` Element

The `<select>` element defines a drop-down list:

Example

```
<label for="cars">Choose a car:</label>
<select id="cars" name="cars">
  &#xA0; <option value="volvo">Volvo</option>
  &#xA0; <option value="saab">Saab</option>
  &#xA0; <option value="fiat">Fiat</option>
  &#xA0; <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:

Example

```
<option value="fiat" selected>Fiat</option>
```

Visible Values:

Use the `size` attribute to specify the number of visible values:

Example

```
<label for="cars">Choose a car:</label>
<select id="cars" name="cars" size="3">
  &#xA0; <option value="volvo">Volvo</option>
  &#xA0; <option value="saab">Saab</option>
  &#xA0; <option value="fiat">Fiat</option>
  &#xA0; <option value="audi">Audi</option>
</select>
```

Allow Multiple Selections:

Use the `multiple` attribute to allow the user to select more than one value:

Example

```
<label for="cars">Choose a car:</label>
<select id="cars" name="cars" size="4" multiple>
  Å <option value="volvo">Volvo</option>
  Å <option value="saab">Saab</option>
  Å <option value="fiat">Fiat</option>
  Å <option value="audi">Audi</option>
</select>
```

The <textarea> Element

The <textarea> element defines a multi-line input field (a text area):

Example

```
<textarea name="message" rows="10" cols="30">
The cat was playing in the garden.
</textarea>
```

The rows attribute specifies the visible number of lines in a text area.

The cols attribute specifies the visible width of a text area.

This is how the HTML code above will be displayed in a browser:

The cat was playing in the garden.

You can also define the size of the text area by using CSS:

Example

```
<textarea name="message" style="width:200px; height:600px;">
The cat was playing in the garden.
</textarea>
```

The <button> Element

The <button> element defines a clickable button:

Example

```
<button type="button" onclick="alert('Hello World!')">Click Me!</button>
```

This is how the HTML code above will be displayed in a browser:

Click Me!

Note: Always specify the type attribute for the button element. Different browsers may use different default types for the button element.

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.

Example

```

<form action="/action_page.php">
  &#xA0; <fieldset>
  &#xA0; &#xA0; <legend>Personalia:</legend>
  &#xA0; &#xA0; <label for="fname">First name:</label><br>
  &#xA0; &#xA0; <input type="text" id="fname" name="fname" value="John"><br>
  &#xA0; &#xA0; <label for="lname">Last name:</label><br>
  &#xA0; &#xA0; <input type="text" id="lname" name="lname" value="Doe"><br><br>
  &#xA0; &#xA0; <input type="submit" value="Submit">
  &#xA0; </fieldset>
</form>

```

This is how the HTML code above will be displayed in a browser:

Personalia:

First name:

Last name:

The <datalist> Element

The <datalist> element specifies a list of pre-defined options for an<input> element.

Users will see a drop-down list of the pre-defined options as they input data.

The list attribute of the <input> element, must refer to the id attribute of the <datalist> element.

Example

```

<form action="/action_page.php">
  &#xA0; <input list="browsers">
  &#xA0; <datalist id="browsers">
  &#xA0; &#xA0; <option value="Internet Explorer">
  &#xA0; &#xA0; <option value="Firefox">
  &#xA0; &#xA0; <option value="Chrome">
  &#xA0; &#xA0; <option value="Opera">
  &#xA0; &#xA0; <option value="Safari">
  &#xA0; </datalist>
</form>

```

The <output> Element

The <output> element represents the result of a calculation (like one performed by a script).

Example

Perform a calculation and show the result in an<output> element:

```

<form action="/action_page.php"
  oninput="x.value=parseInt(a.value)+parseInt(b.value)">
  &#xA0; 0
  &#xA0; <input type="range" id="a" name="a" value="50">
  &#xA0; 100 +
  &#xA0; <input type="number" id="b" name="b" value="50">
  &#xA0; =
  &#xA0; <output name="x" for="a b"></output>
  &#xA0; <br><br>
  &#xA0; <input type="submit">
</form>

```

HTML Exercises

HTML Form Elements

| Tag | Description |
|-----------------------------------------------|---------------------------------------------------------------|
| <code><form></code> | Defines an HTML form for user input |
| <code><input></code> | Defines an input control |
| <code><textarea></code> | Defines a multiline input control (text area) |
| <code><label></code> | Defines a label for an <code><input></code> element |
| <code><fieldset></code> | Groups related elements in a form |
| <code><legend></code> | Defines a caption for a <code><fieldset></code> element |
| <code><select></code> | Defines a drop-down list |
| <code><optgroup></code> | Defines a group of related options in a drop-down list |
| <code><option></code> | Defines an option in a drop-down list |
| <code><button></code> | Defines a clickable button |
| <code><datalist></code> | Specifies a list of pre-defined options for input controls |
| <code><output></code> | Defines the result of a calculation |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Input Types

This chapter describes the different types for the HTML `<input>` element.

HTML Input Types

Here are the different input types you can use in HTML:

- `<input type="button">`
- `<input type="checkbox">`
- `<input type="color">`
- `<input type="date">`
- `<input type="datetime-local">`
- `<input type="email">`
- `<input type="file">`
- `<input type="hidden">`
- `<input type="image">`
- `<input type="month">`
- `<input type="number">`
- `<input type="password">`
- `<input type="radio">`
- `<input type="range">`
- `<input type="reset">`
- `<input type="search">`
- `<input type="submit">`
- `<input type="tel">`
- `<input type="text">`
- `<input type="time">`
- `<input type="url">`
- `<input type="week">`

Tip: The default value of the `type` attribute is "text".

Input Type Text

`<input type="text">` defines a **single-line text input field**:

Example


```
<form>
  &#xA0; <label for="fname">First name:</label><br>
  &#xA0; <input type="text" id="fname" name="fname"><br>
  &#xA0; <label for="lname">Last name:</label><br>
  &#xA0; <input type="text" id="lname" name="lname">
</form>
```

This is how the HTML code above will be displayed in a browser:

First name:

Last name:

Input Type Password

`<input type="password">` defines a **password field**:

Example

```
<form>
  &#xA0; <label for="username">Username:</label><br>
  &#xA0; <input type="text" id="username" name="username"><br>
  &#xA0; <label for="pwd">Password:</label><br>
  &#xA0; <input type="password" id="pwd" name="pwd">
</form>
```

This is how the HTML code above will be displayed in a browser:

Username:

Password:

The characters in a password field are masked (shown as asterisks or circles).

Input Type Submit

`<input type="submit">` defines a button for **submitting** form data to a **form-handler**.

The form-handler is typically a server page with a script for processing input data.

The form-handler is specified in the form's `action` attribute:

Example

```
<form action="/action_page.php">
  &#xA0; <label for="fname">First name:</label><br>
  &#xA0; <input type="text" id="fname" name="fname" value="John"><br>
  &#xA0; <label for="lname">Last name:</label><br>
  &#xA0; <input type="text" id="lname" name="lname" value="Doe"><br><br>
  &#xA0; <input type="submit" value="Submit">
</form>
```

This is how the HTML code above will be displayed in a browser:

First name:

Last name:

If you omit the submit button's `value` attribute, the button will get a default text:

Example

```
<form action="/action_page.php">
  &lt;label for="fname">First name:</label><br>
  &lt;input type="text" id="fname" name="fname" value="John"><br>
  &lt;label for="lname">Last name:</label><br>
  &lt;input type="text" id="lname" name="lname" value="Doe"><br><br>
  &lt;input type="submit">
</form>
```

Input Type Reset

`<input type="reset">` defines a **reset button** that will reset all form values to their default values:

Example

```
<form action="/action_page.php">
  &lt;label for="fname">First name:</label><br>
  &lt;input type="text" id="fname" name="fname" value="John"><br>
  &lt;label for="lname">Last name:</label><br>
  &lt;input type="text" id="lname" name="lname" value="Doe"><br><br>
  &lt;input type="submit" value="Submit">
  &lt;input type="reset">
</form>
```

This is how the HTML code above will be displayed in a browser:

First name:

Last name:

If you change the input values and then click the "Reset" button, the form-data will be reset to the default values.

Input Type Radio

`<input type="radio">` defines a **radio button**.

Radio buttons let a user select **ONLY ONE** of a limited number of choices:

Example

```
<form>
  &lt;input type="radio" id="male" name="gender" value="male">
  &lt;label for="male">Male</label><br>
  &lt;input type="radio" id="female" name="gender" value="female">
  &lt;label for="female">Female</label><br>
  &lt;input type="radio" id="other" name="gender" value="other">
  &lt;label for="other">Other</label>
</form>
```

This is how the HTML code above will be displayed in a browser:

- ☐ Male
 - ☐ Female
 - ☐ Other
-

Input Type Checkbox

`<input type="checkbox">` defines a **checkbox**.

Checkboxes let a user select **ZERO** or **MORE** options of a limited number of choices.

Example

```
<form>
  &#xA0; <input type="checkbox" id="vehicle1" name="vehicle1" value="Bike">
  &#xA0; <label for="vehicle1"> I have a bike</label><br>
  &#xA0; <input type="checkbox" id="vehicle2" name="vehicle2" value="Car">
  &#xA0; <label for="vehicle2"> I have a car</label><br>
  &#xA0; <input type="checkbox" id="vehicle3" name="vehicle3" value="Boat">
  &#xA0; <label for="vehicle3"> I have a boat</label>
</form>
```

This is how the HTML code above will be displayed in a browser:

- ☐ I have a bike
 - ☐ I have a car
 - ☐ I have a boat
-

Input Type Button

`<input type="button">` defines a **button**:

Example

```
<input type="button" onclick="alert('Hello World!')" value="Click Me!">
```

This is how the HTML code above will be displayed in a browser:

Click Me!

Input Type Color

The `<input type="color">` is used for input fields that should contain a color.

Depending on browser support, a color picker can show up in the input field.

Example

```
<form>
  &#xA0; <label for="favcolor">Select your favorite color:</label>
  &#xA0; <input type="color" id="favcolor" name="favcolor">
</form>
```

Input Type Date

The `<input type="date">` is used for input fields that should contain a date.

Depending on browser support, a date picker can show up in the input field.

Example

```
<form>
  &#xA0; <label for="birthday">Birthday:</label>
  &#xA0; <input type="date" id="birthday" name="birthday">
</form>
```

You can also use the `min` and `max` attributes to add restrictions to dates:

Example

```
<form>
  &#xA0; <label for="datemax">Enter a date before 1980-01-01:</label>
  &#xA0; <input type="date" id="datemax" name="datemax" max="1979-12-31"><br><br>
  &#xA0; <label for="datemin">Enter a date after 2000-01-01:</label>
  &#xA0; <input type="date" id="datemin" name="datemin" min="2000-01-02">
</form>
```

Input Type Datetime-local

The `<input type="datetime-local">` specifies a date and time input field, with no time zone.

Depending on browser support, a date picker can show up in the input field.

Example

```
<form>
  Å <label for="birthdaytime">Birthday (date and time):</label>
  Å <input type="datetime-local" id="birthdaytime" name="birthdaytime">
</form>
```

Input Type Email

The `<input type="email">` is used for input fields that should contain an e-mail address.

Depending on browser support, the e-mail address can be automatically validated when submitted.

Some smartphones recognize the email type, and add ".com" to the keyboard to match email input.

Example

```
<form>
  Å <label for="email">Enter your email:</label>
  Å <input type="email" id="email" name="email">
</form>
```

Input Type File

The `<input type="file">` defines a file-select field and a "Browse" button for file uploads.

Example

```
<form>
  Å <label for="myfile">Select a file:</label>
  Å <input type="file" id="myfile" name="myfile">
</form>
```

Input Type Hidden

The `<input type="hidden">` defines a hidden input field (not visible to a user).

A hidden field let web developers include data that cannot be seen or modified by users when a form is submitted.

A hidden field often stores what database record that needs to be updated when the form is submitted.

Note: While the value is not displayed to the user in the page's content, it is visible (and can be edited) using any browser's developer tools or "View Source" functionality. Do not use hidden inputs as a form of security!

Example

```
<form>
  Å <label for="fname">First name:</label>
  Å <input type="text" id="fname" name="fname"><br><br>
  Å <input type="hidden" id="custId" name="custId" value="3487">
  Å <input type="submit" value="Submit">
</form>
```

Input Type Month

The `<input type="month">` allows the user to select a month and year.

Depending on browser support, a date picker can show up in the input field.

Example

```
<form>
  &#xA0; <label for="bdaymonth">Birthday (month and year):</label>
  &#xA0; <input type="month" id="bdaymonth" name="bdaymonth">
</form>
```

Input Type Number

The `<input type="number">` defines a **numeric** input field.

You can also set restrictions on what numbers are accepted.

The following example displays a numeric input field, where you can enter a value from 1 to 5:

Example

```
<form>
  &#xA0; <label for="quantity">Quantity (between 1 and 5):</label>
  &#xA0; <input type="number" id="quantity" name="quantity" min="1" max="5">
</form>
```

Input Restrictions

Here is a list of some common input restrictions:

| Attribute | Description |
|-----------|----------------------------------------------------------------------------------------------------------------|
| checked | Specifies that an input field should be pre-selected when the page loads (for type="checkbox" or type="radio") |
| disabled | Specifies that an input field should be disabled |
| max | Specifies the maximum value for an input field |
| maxlength | Specifies the maximum number of character for an input field |
| min | Specifies the minimum value for an input field |
| pattern | Specifies a regular expression to check the input value against |
| readonly | Specifies that an input field is read only (cannot be changed) |
| required | Specifies that an input field is required (must be filled out) |
| size | Specifies the width (in characters) of an input field |
| step | Specifies the legal number intervals for an input field |
| value | Specifies the default value for an input field |

You will learn more about input restrictions in the next chapter.

The following example displays a numeric input field, where you can enter a value from 0 to 100, in steps of 10. The default value is 30:

Example

```
<form>
  &#xA0; <label for="quantity">Quantity:</label>
  &#xA0; <input type="number" id="quantity" name="quantity" min="0" max="100" step="10" value="30">
</form>
```

Input Type Range

The `<input type="range">` defines a control for entering a number whose exact value is not important (like a slider control). Default range is 0 to 100. However, you can set restrictions on what numbers are accepted with the min, max, and step attributes:

Example

```
<form>
  &#xA0; <label for="vol">Volume (between 0 and 50):</label>
  &#xA0; <input type="range" id="vol" name="vol" min="0" max="50">
</form>
```

Input Type Search

The `<input type="search">` is used for search fields (a search field behaves like a regular text field).

Example

```
<form>
  Å <label for="gsearch">Search Google:</label>
  Å <input type="search" id="gsearch" name="gsearch">
</form>
```

Input Type Tel

The `<input type="tel">` is used for input fields that should contain a telephone number.

Example

```
<form>
  Å <label for="phone">Enter your phone number:</label>
  Å <input type="tel" id="phone" name="phone" pattern="[0-9]{3}-[0-9]{2}-[0-9]{3}">
</form>
```

Input Type Time

The `<input type="time">` allows the user to select a time (no time zone).

Depending on browser support, a time picker can show up in the input field.

Example

```
<form>
  Å <label for="appt">Select a time:</label>
  Å <input type="time" id="appt" name="appt">
</form>
```

Input Type Url

The `<input type="url">` is used for input fields that should contain a URL address.

Depending on browser support, the url field can be automatically validated when submitted.

Some smartphones recognize the url type, and adds ".com" to the keyboard to match url input.

Example

```
<form>
  Å <label for="homepage">Add your homepage:</label>
  Å <input type="url" id="homepage" name="homepage">
</form>
```

Input Type Week

The `<input type="week">` allows the user to select a week and year.

Depending on browser support, a date picker can show up in the input field.

Example

```
<form>
  Å <label for="week">Select a week:</label>
  Å <input type="week" id="week" name="week">
</form>
```

HTML Exercises

HTML Input Type Attribute

| Tag | Description |
|------------------------------------|-------------------------------------|
| <code><input type=""></code> | Specifies the input type to display |

HTML Input Attributes

This chapter describes the different attributes for the HTML `<input>` element.

The value Attribute

The input value attribute specifies an initial value for an input field:

Example

Input fields with initial (default) values:

```
<form>
  &#xA0; <label for="fname">First name:</label><br>
  &#xA0; <input type="text" id="fname" name="fname" value="John"><br>
  &#xA0; <label for="lname">Last name:</label><br>
  &#xA0; <input type="text" id="lname" name="lname" value="Doe">
</form>
```

The readonly Attribute

The input readonly attribute specifies that an input field is read-only.

A read-only input field cannot be modified (however, a user can tab to it, highlight it, and copy the text from it).

The value of a read-only input field will be sent when submitting the form!

Example

A read-only input field:

```
<form>
  &#xA0; <label for="fname">First name:</label><br>
  &#xA0; <input type="text" id="fname" name="fname" value="John" readonly><br>
  &#xA0; <label for="lname">Last name:</label><br>
  &#xA0; <input type="text" id="lname" name="lname" value="Doe">
</form>
```

The disabled Attribute

The input disabled attribute specifies that an input field should be disabled.

A disabled input field is unusable and un-clickable.

The value of a disabled input field will not be sent when submitting the form!

Example

A disabled input field:

```
<form>
```

```
A <label for="fname">First name:</label><br>
Â <input type="text" id="fname" name="fname" value="John" disabled><br>
Â <label for="lname">Last name:</label><br>
Â <input type="text" id="lname" name="lname" value="Doe">
</form>
```

The size Attribute

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`.

Example

Set a width for an input field:

```
<form>
Â <label for="fname">First name:</label><br>
Â <input type="text" id="fname" name="fname" size="50"><br>
Â <label for="pin">PIN:</label><br>
Â <input type="text" id="pin" name="pin" size="4">
</form>
```

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.

Example

Set a maximum length for an input field:

```
<form>
Â <label for="fname">First name:</label><br>
Â <input type="text" id="fname" name="fname" size="50"><br>
Â <label for="pin">PIN:</label><br>
Â <input type="text" id="pin" name="pin" maxlength="4" size="4">
</form>
```

The min and max Attributes

The input `min` and `max` attributes specify the minimum and maximum values for an input field.

The `min` and `max` attributes work with the following input types: `number`, `range`, `date`, `datetime-local`, `month`, `time` and `week`.

Tip: Use the `max` and `min` attributes together to create a range of legal values.

Example

Set a max date, a min date, and a range of legal values:

```
<form>
Â <label for="datemax">Enter a date before 1980-01-01:</label>
Â <input type="date" id="datemax" name="datemax" max="1979-12-31"><br><br>

Â <label for="datemin">Enter a date after 2000-01-01:</label>
Â <input type="date" id="datemin" name="datemin" min="2000-01-02"><br><br>

Â <label for="quantity">Quantity (between 1 and 5):</label>
Â <input type="number" id="quantity" name="quantity" min="1" max="5">
</form>
```

The multiple Attribute

The input `multiple` attribute specifies that the user is allowed to enter more than one value in an input field.

The `multiple` attribute works with the following input types: email, and file.

Example

A file upload field that accepts multiple values:

```
<form>
  &lt;label for="files">Select files:</label>
  &lt;input type="file" id="files" name="files" multiple>
</form>
```

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.

The `pattern` attribute works with the following input types: text, date, search, url, tel, email, and password.

Tip: Use the global [title](#) attribute to describe the pattern to help the user.

Tip: Learn more about [regular expressions](#) in our JavaScript tutorial.

Example

An input field that can contain only three letters (no numbers or special characters):

```
<form>
  &lt;label for="country_code">Country code:</label>
  &lt;input type="text" id="country_code" name="country_code"
  &lt; pattern="[A-Za-z]{3}" title="Three letter country code">
</form>
```

The placeholder Attribute

The input `placeholder` attribute specifies a short hint that describes the expected value of an input field (a sample value or a short description of the expected format).

The short hint is displayed in the input field before the user enters a value.

The `placeholder` attribute works with the following input types: text, search, url, tel, email, and password.

Example

An input field with a placeholder text:

```
<form>
  &lt;label for="phone">Enter a phone number:</label>
  &lt;input type="tel" id="phone" name="phone"
  &lt; placeholder="123-45-678"
  &lt; 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.

Example

A required input field:

```
<form>
  Â <label for="username">Username:</label>
  Â <input type="text" id="username" name="username" required>
</form>
```

The step Attribute

The input `step` attribute specifies the legal number intervals for an input field.

Example: if `step="3"`, legal numbers could be -3, 0, 3, 6, etc.

Tip: This attribute can be used together with the `max` and `min` attributes to create a range of legal values.

The `step` attribute works with the following input types: `number`, `range`, `date`, `datetime-local`, `month`, `time` and `week`.

Example

An input field with a specified legal number intervals:

```
<form>
  Â <label for="points">Points:</label>
  Â <input type="number" id="points" name="points" step="3">
</form>
```

Note: Input restrictions are not foolproof, and JavaScript provides many ways to add illegal input. To safely restrict input, it must also be checked by the receiver (the server)!

The autofocus Attribute

The input `autofocus` attribute specifies that an input field should automatically get focus when the page loads.

Example

Let the "First name" input field automatically get focus when the page loads:

```
<form>
  Â <label for="fname">First name:</label><br>
  Â <input type="text" id="fname" name="fname" autofocus><br>
  Â <label for="lname">Last name:</label><br>
  Â <input type="text" id="lname" name="lname">
</form>
```

The height and width Attributes

The input `height` and `width` attributes specify the height and width of an `<input type="image">` element.

Tip: Always specify both the `height` and `width` attributes for images. If `height` and `width` are set, the space required for the image is reserved when the page is loaded. Without these attributes, the browser does not know the size of the image, and cannot reserve the appropriate space to it. The effect will be that the page layout will change during loading (while the images load).

Example

Define an image as the submit button, with `height` and `width` attributes:

```
<form>
  Â <label for="fname">First name:</label>
  Â <input type="text" id="fname" name="fname"><br><br>
  Â <label for="lname">Last name:</label>
  Â <input type="text" id="lname" name="lname"><br><br>
  Â <input type="image" src="img_submit.gif" alt="Submit" width="48" height="48">
</form>
```

The list Attribute

The input list attribute refers to a <datalist> element that contains pre-defined options for an <input> element.

Example

An <input> element with pre-defined values in a <datalist>:

```
<form>
  & <input list="browsers">
  & <datalist id="browsers">
  & & <option value="Internet Explorer">
  & & <option value="Firefox">
  & & <option value="Chrome">
  & & <option value="Opera">
  & & <option value="Safari">
  & </datalist>
</form>
```

The autocomplete Attribute

The input autocomplete attribute specifies whether a form or an input field should have autocomplete on or off.

Autocomplete allows the browser to predict the value. When a user starts to type in a field, the browser should display options to fill in the field, based on earlier typed values.

The autocomplete attribute works with <form> and the following <input> types: text, search, url, tel, email, password, datepickers, range, and color.

Example

An HTML form with autocomplete on, and off for one input field:

```
<form action="/action_page.php" autocomplete="on">
  & <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>
  & <label for="email">Email:</label>
  & <input type="email" id="email" name="email" autocomplete="off"><br><br>
  & <input type="submit" value="Submit">
</form>
```

Tip: In some browsers you may need to activate an autocomplete function for this to work (Look under "Preferences" in the browser's menu).

HTML Exercises

HTML Form and Input Elements

| Tag | Description |
|-------------------------------|-------------------------------------|
| <form> | Defines an HTML form for user input |
| <input> | Defines an input control |

For a complete list of all available HTML tags, visit our [HTML Tag Reference](#).

HTML Input form* Attributes

This chapter describes the different form* attributes for the HTML <input> element.

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.

Example

An input field located outside of the HTML form (but still a part of the form):

```
<form action="/action_page.php" id="form1">
  & #038; <label for="fname">First name:</label>
  & #038; <input type="text" id="fname" name="fname"><br><br>
  & #038; <input type="submit" value="Submit">
</form>

<label for="lname">Last name:</label>
<input type="text" id="lname" name="lname" form="form1">
```

The formaction Attribute

The input formaction attribute specifies the URL of the file that will process the input when the form is submitted.

Note: This attribute overrides the action attribute of the <form> element.

The formaction attribute works with the following input types: submit and image.

Example

An HTML form with two submit buttons, with different actions:

```
<form action="/action_page.php">
  & #038; <label for="fname">First name:</label>
  & #038; <input type="text" id="fname" name="fname"><br><br>
  & #038; <label for="lname">Last name:</label>
  & #038; <input type="text" id="lname" name="lname"><br><br>
  & #038; <input type="submit" value="Submit">
  & #038; <input type="submit" formaction="/action_page2.php" value="Submit as Admin">
</form>
```

The formenctype Attribute

The input formenctype attribute specifies how the form-data should be encoded when submitted (only for forms with method="post").

Note: This attribute overrides the enctype attribute of the <form> element.

The formenctype attribute works with the following input types: submit and image.

Example

A form with two submit buttons. The first sends the form-data with default encoding, the second sends the form-data encoded as "multipart/form-data":

```
<form action="/action_page_binary.asp" method="post">
  & #038; <label for="fname">First name:</label>
  & #038; <input type="text" id="fname" name="fname"><br><br>
  & #038; <input type="submit" value="Submit">
  & #038; <input type="submit" formenctype="multipart/form-data"
  & #038; value="Submit as Multipart/form-data">
</form>
```

The formmethod Attribute

The input formmethod attribute defines the HTTP method for sending form-data to the action URL.

Note: This attribute overrides the method attribute of the `<form>` element.

The `formmethod` attribute works with the following input types: submit and image.

The form-data can be sent as URL variables (method="get") or as an HTTP post transaction (method="post").

Notes on the "get" method:

- This method appends the form-data to the URL in name/value pairs
- This method is useful for form submissions where a user want to bookmark the result
- There is a limit to how much data you can place in a URL (varies between browsers), therefore, you cannot be sure that all of the form-data will be correctly transferred
- Never use the "get" method to pass sensitive information! (password or other sensitive information will be visible in the browser's address bar)

Notes on the "post" method:

- This method sends the form-data as an HTTP post transaction
- Form submissions with the "post" method cannot be bookmarked
- The "post" method is more robust and secure than "get", and "post" does not have size limitations

Example

A form with two submit buttons. The first sends the form-data with method="get". The second sends the form-data with method="post":

```
<form action="/action_page.php" method="get">
  &#xA0; <label for="fname">First name:</label>
  &#xA0; <input type="text" id="fname" name="fname"><br><br>
  &#xA0; <label for="lname">Last name:</label>
  &#xA0; <input type="text" id="lname" name="lname"><br><br>
  &#xA0; <input type="submit" value="Submit using GET">
  &#xA0; <input type="submit" formmethod="post" value="Submit using POST">
</form>
```

The formtarget Attribute

The input `formtarget` attribute specifies a name or a keyword that indicates where to display the response that is received after submitting the form.

Note: This attribute overrides the target attribute of the `<form>` element.

The `formtarget` attribute works with the following input types: submit and image.

Example

A form with two submit buttons, with different target windows:

```
<form action="/action_page.php">
  &#xA0; <label for="fname">First name:</label>
  &#xA0; <input type="text" id="fname" name="fname"><br><br>
  &#xA0; <label for="lname">Last name:</label>
  &#xA0; <input type="text" id="lname" name="lname"><br><br>
  &#xA0; <input type="submit" value="Submit">
  &#xA0; <input type="submit" formtarget="_blank" value="Submit to a new window/tab">
</form>
```

The formnovalidate Attribute

The input `formnovalidate` attribute specifies that an `<input>` element should not be validated when submitted.

Note: This attribute overrides the novalidate attribute of the `<form>` element.

The `formnovalidate` attribute works with the following input types: submit.

Example

A form with two submit buttons (with and without validation):

```
<form action="/action_page.php">
  &lt;label for="email">Enter your email:</label>
  &lt;input type="email" id="email" name="email"><br><br>
  &lt;input type="submit" value="Submit">
  &lt;input type="submit" formnovalidate="formnovalidate"
  &lt;input type="submit" value="Submit without validation">
</form>
```

The novalidate Attribute

The novalidate attribute is a <form> attribute.

When present, novalidate specifies that all of the form-data should not be validated when submitted.

Example

Specify that no form-data should be validated on submit:

```
<form action="/action_page.php" novalidate>
  &lt;label for="email">Enter your email:</label>
  &lt;input type="email" id="email" name="email"><br><br>
  &lt;input type="submit" value="Submit">
</form>
```

HTML Form and Input Elements

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|-------------------------------|-------------------------------------|
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HTML Canvas Graphics



The HTML <canvas> element is used to draw graphics on a web page.

The graphic to the left is created with <canvas>. It shows four elements: a red rectangle, a gradient rectangle, a multicolor rectangle, and a multicolor text.

What is HTML Canvas?

The HTML <canvas> element is used to draw graphics, on the fly, via JavaScript.

The <canvas> element is only a container for graphics. You must use JavaScript to actually draw the graphics.

Canvas has several methods for drawing paths, boxes, circles, text, and adding images.

Browser Support

The numbers in the table specify the first browser version that fully supports the <canvas> element.

| Element | | | | | |
|----------|-----|-----|-----|-----|-----|
| <canvas> | 4.0 | 9.0 | 2.0 | 3.1 | 9.0 |

Canvas Examples

A canvas is a rectangular area on an HTML page. By default, a canvas has no border and no content.

The markup looks like this:

```
<canvas id="myCanvas" width="200" height="100"></canvas>
```

Note: Always specify an id attribute (to be referred to in a script), and a width and height attribute to define the size of the canvas. To add a border, use the `style` attribute.

Here is an example of a basic, empty canvas:



Example

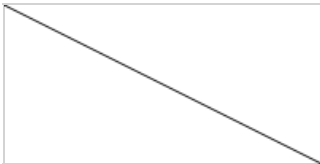
```
<canvas id="myCanvas" width="200" height="100" style="border:1px solid #000000;"></canvas>
```

Add a JavaScript

After creating the rectangular canvas area, you must add a JavaScript to do the drawing.

Here are some examples:

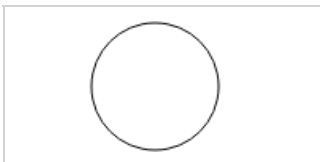
Draw a Line



Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
ctx.moveTo(0, 0);
ctx.lineTo(200, 100);
ctx.stroke();
</script>
```

Draw a Circle



Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
ctx.beginPath();
ctx.arc(95, 50, 40, 0, 2 * Math.PI);
ctx.stroke();
</script>
```

Draw a Text



Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
ctx.font = "30px Arial";
ctx.fillText("Hello World", 10, 50);
</script>
```

Stroke Text



Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
ctx.font = "30px Arial";
ctx.strokeText("Hello World", 10, 50);
</script>
```

Draw Linear Gradient



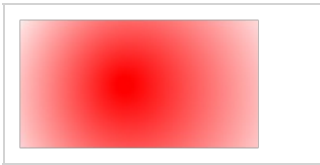
Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");

// Create gradient
var grd = ctx.createLinearGradient(0, 0, 200, 0);
grd.addColorStop(0, "red");
grd.addColorStop(1, "white");

// Fill with gradient
ctx.fillStyle = grd;
ctx.fillRect(10, 10, 150, 80);
</script>
```

Draw Circular Gradient



Example

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");

// Create gradient
var grd = ctx.createRadialGradient(75, 50, 5, 90, 60, 100);
grd.addColorStop(0, "red");
grd.addColorStop(1, "white");

// Fill with gradient
ctx.fillStyle = grd;
ctx.fillRect(10, 10, 150, 80);
</script>
```

Draw Image

```
<script>
var c = document.getElementById("myCanvas");
var ctx = c.getContext("2d");
var img = document.getElementById("scream");
ctx.drawImage(img, 10, 10);
</script>
```

HTML Canvas Tutorial

To learn more about <canvas>, please read our [HTML Canvas Tutorial](#).

HTML SVG Graphics

SVG defines vector-based graphics in XML format.

What is SVG?

- SVG stands for Scalable Vector Graphics
 - SVG is used to define graphics for the Web
 - SVG is a W3C recommendation
-

The HTML <svg> Element

The HTML <svg> element is a container for SVG graphics.

SVG has several methods for drawing paths, boxes, circles, text, and graphic images.

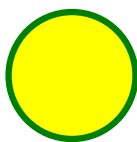
Browser Support

The numbers in the table specify the first browser version that fully supports the <svg> element.

Element

| | | | | | |
|-------|-----|-----|-----|-----|------|
| <svg> | 4.0 | 9.0 | 3.0 | 3.2 | 10.1 |
|-------|-----|-----|-----|-----|------|

SVG Circle



Example

```
<!DOCTYPE html>
<html>
<body>

<svg width="100" height="100">
  &lt;circle cx="50" cy="50" r="40" stroke="green" stroke-width="4" fill="yellow" />
</svg>

</body>
</html>
```

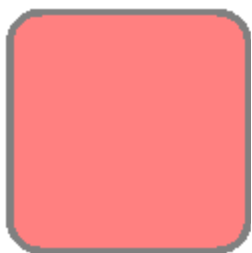
SVG Rectangle



Example

```
<svg width="400" height="100">
  &lt;rect width="400" height="100" style="fill:rgb(0,0,255);stroke-width:10;stroke:rgb(0,0,0)" />
</svg>
```

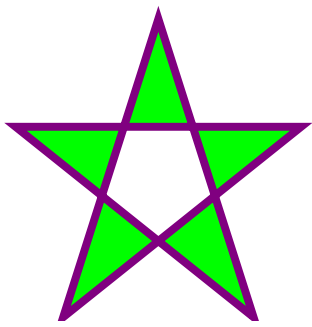
SVG Rounded Rectangle



Example

```
<svg width="400" height="180">
  &lt;rect x="50" y="20" rx="20" ry="20" width="150" height="150"
  &lt; style="fill:red;stroke:black;stroke-width:5;opacity:0.5" />
</svg>
```

SVG Star



Example

```
<svg width="300" height="200">
  &lt; polygon points="100,10 40,198 190,78 10,78 160,198"
  &lt; style="fill:lime;stroke:purple;stroke-width:5;fill-rule:evenodd;" />
&lt;/svg>
```

SVG Logo



Example

```
<svg height="130" width="500">
  &lt; &lt; defs>
  &lt; &lt; &lt; <linearGradient id="grad1" x1="0%" y1="0%" x2="100%" y2="0%">
  &lt; &lt; &lt; &lt; &lt; <stop offset="0%" style="stop-color:rgb(255,255,0);stop-opacity:1" />
  &lt; &lt; &lt; &lt; &lt; <stop offset="100%" style="stop-color:rgb(255,0,0);stop-opacity:1" />
  &lt; &lt; &lt; &lt; </linearGradient>
  &lt; &lt; </defs>
  &lt; &lt; <ellipse cx="100" cy="70" rx="85" ry="55" fill="url(#grad1)" />
  &lt; &lt; <text fill="ffffff" font-size="45" font-family="Verdana" x="50" y="86">SVG</text>
  &lt; &lt; <Sorry, your browser does not support inline SVG.
&lt;/svg>
```

Differences Between SVG and Canvas

SVG is a language for describing 2D graphics in XML.

Canvas draws 2D graphics, on the fly (with a JavaScript).

SVG is XML based, which means that every element is available within the SVG DOM. You can attach JavaScript event handlers for an element.

In SVG, each drawn shape is remembered as an object. If attributes of an SVG object are changed, the browser can automatically re-render the shape.

Canvas is rendered pixel by pixel. In canvas, once the graphic is drawn, it is forgotten by the browser. If its position should be changed, the entire scene needs to be redrawn, including any objects that might have been covered by the graphic.

Comparison of Canvas and SVG

The table below shows some important differences between Canvas and SVG:

Canvas

SVG

- Resolution dependent
- No support for event handlers
- Poor text rendering capabilities
- You can save the resulting image as .png or .jpg
- Well suited for graphic-intensive games

- Resolution independent
- Support for event handlers
- Best suited for applications with large rendering areas (Google Maps)
- Slow rendering if complex (anything that uses the DOM a lot will be slow)
- Not suited for game applications

SVG Tutorial

To learn more about SVG, please read our [SVG Tutorial](#).

HTML Multimedia

Multimedia on the web is sound, music, videos, movies, and animations.

What is Multimedia?

Multimedia comes in many different formats. It can be almost anything you can hear or see, like images, music, sound, videos, records, films, animations, and more.

Web pages often contain multimedia elements of different types and formats.

Browser Support

The first web browsers had support for text only, limited to a single font in a single color.

Later came browsers with support for colors, fonts, images, and multimedia!

Multimedia Formats

Multimedia elements (like audio or video) are stored in media files.

The most common way to discover the type of a file, is to look at the file extension.

Multimedia files have formats and different extensions like: .wav, .mp3, .mp4, .mpg, .wmv, and .avi.

Common Video Formats

Videoformats

There are many video formats out there.

The MP4, WebM, and Ogg formats are supported by HTML.

The MP4 format is recommended by YouTube.

| Format | File | Description |
|--------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MPEG | .mpg .mpeg | MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Not supported anymore in HTML. |
| AVI | .avi | AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers. |
| WMV | .wmv | WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers. |

| | | |
|---------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| QuickTime | .mov | QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers. |
| RealVideo | .rm .ram | RealVideo. Developed by Real Media to allow video streaming with low bandwidths. Does not play in web browsers. |
| Flash | .swf .flv | Flash. Developed by Macromedia. Often requires an extra component (plug-in) to play in web browsers. |
| Ogg | .ogg | Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML. |
| WebM | .webm | WebM. Developed by Mozilla, Opera, Adobe, and Google. Supported by HTML. |
| MPEG-4 or MP4 | .mp4 | MP4. Developed by the Moving Pictures Expert Group. Commonly used in video cameras and TV hardware. Supported by all browsers and recommended by YouTube. |

Note: Only MP4, WebM, and Ogg video are supported by the HTML standard.

Common Audio Formats

MP3 is the best format for compressed recorded music. The term MP3 has become synonymous with digital music.

If your website is about recorded music, MP3 is the choice.

| Format | File | Description |
|-----------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MIDI | .mid .midi | MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards. MIDI files do not contain sound, but digital notes that can be played by electronics. Plays well on all computers and music hardware, but not in web browsers. |
| RealAudio | .rm .ram | RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths. Does not play in web browsers. |
| WMA | .wma | WMA (Windows Media Audio). Developed by Microsoft. Plays well on Windows computers, but not in web browsers. |
| AAC | .aac | AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers. |
| WAV | .wav | WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML. |
| Ogg | .ogg | Ogg. Developed by the Xiph.Org Foundation. Supported by HTML. |
| MP3 | .mp3 | MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music players. Combines good compression (small files) with high quality. Supported by all browsers. |
| MP4 | .mp4 | MP4 is a video format, but can also be used for audio. Supported by all browsers. |

Note: Only MP3, WAV, and Ogg audio are supported by the HTML standard.

HTML Video

The HTML `<video>` element is used to show a video on a web page.

Example

Courtesy of [Big Buck Bunny](#):

Your browser does not support HTML5 video.

The HTML `<video>` Element

To show a video in HTML, use the `<video>` element:

Example

```
<video width="320" height="240" controls>
  &#xA0; <source src="movie.mp4" type="video/mp4">
  &#xA0; <source src="movie.ogg" type="video/ogg">
```

Your browser does not support the video tag.
</video>

How it Works

The `controls` attribute adds video controls, like play, pause, and volume.

It is a good idea to always include `width` and `height` attributes. If height and width are not set, the page might flicker while the video loads.

The `<source>` element allows you to specify alternative video files which the browser may choose from. The browser will use the first recognized format.

The text between the `<video>` and `</video>` tags will only be displayed in browsers that do not support the `<video>` element.

HTML <video> Autoplay

To start a video automatically, use the `autoplay` attribute:

Example

```
<video width="320" height="240" autoplay>
  &lt;source src="movie.mp4" type="video/mp4">
  &lt;source src="movie.ogg" type="video/ogg">
  Your browser does not support the video tag.
</video>
```

Note: Chromium browsers do not allow autoplay in most cases. However, muted autoplay is always allowed.

Add `muted` after `autoplay` to let your video start playing automatically (but muted):

Example

```
<video width="320" height="240" autoplay muted>
  &lt;source src="movie.mp4" type="video/mp4">
  &lt;source src="movie.ogg" type="video/ogg">
  Your browser does not support the video tag.
</video>
```

Browser Support

The numbers in the table specify the first browser version that fully supports the `<video>` element.

Element

| | | | | | |
|---------|-----|-----|-----|-----|------|
| <video> | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |
|---------|-----|-----|-----|-----|------|

HTML Video Formats

There are three supported video formats: MP4, WebM, and Ogg. The browser support for the different formats is:

| Browser | MP4 | WebM | Ogg |
|---------|-----|------|-----|
| Edge | YES | YES | YES |
| Chrome | YES | YES | YES |
| Firefox | YES | YES | YES |
| Safari | YES | YES | NO |
| Opera | YES | YES | YES |

HTML Video - Media Types

| File Format | Media Type |
|----------------|---------------|
|----------------|---------------|

| | |
|------|------------|
| MP4 | video/mp4 |
| WebM | video/webm |
| Ogg | video/ogg |

HTML Video - Methods, Properties, and Events

The HTML DOM defines methods, properties, and events for the <video> element.

This allows you to load, play, and pause videos, as well as setting duration and volume.

There are also DOM events that can notify you when a video begins to play, is paused, etc.

Example: Using JavaScript

Play/Pause Big Small Normal

Your browser does not support HTML5 video.

Video courtesy of [Big Buck Bunny](#).

For a full DOM reference, go to our [HTML Audio/Video DOM Reference](#).

HTML Video Tags

| Tag | Description |
|--------------------------------|----------------------------------------------------------------------------------|
| <video> | Defines a video or movie |
| <source> | Defines multiple media resources for media elements, such as <video> and <audio> |
| <track> | Defines text tracks in media players |

HTML Audio

The HTML <audio> element is used to play an audio file on a web page.

The HTML <audio> Element

To play an audio file in HTML, use the <audio> element:

Example

```
<audio controls>
  &#xA0; <source src="horse.ogg" type="audio/ogg">
  &#xA0; <source src="horse.mp3" type="audio/mpeg">
  Your browser does not support the audio element.
</audio>
```

HTML Audio - How It Works

The controls attribute adds audio controls, like play, pause, and volume.

The <source> element allows you to specify alternative audio files which the browser may choose from. The browser will use the first recognized format.

The text between the <audio> and </audio> tags will only be displayed in browsers that do not support the <audio> element.

HTML <audio> Autoplay

To start an audio file automatically, use the `autoplay` attribute:

Example

```
<audio controls autoplay>
  &#xA0; <source src="horse.ogg" type="audio/ogg">
  &#xA0; <source src="horse.mp3" type="audio/mpeg">
  Your browser does not support the audio element.
</audio>
```

Note: Chromium browsers do not allow autoplay in most cases. However, muted autoplay is always allowed.

Add `muted` after `autoplay` to let your audio file start playing automatically (but muted):

Example

```
<audio controls autoplay muted>
  &#xA0; <source src="horse.ogg" type="audio/ogg">
  &#xA0; <source src="horse.mp3" type="audio/mpeg">
  Your browser does not support the audio element.
</audio>
```

Browser Support

The numbers in the table specify the first browser version that fully supports the `<audio>` element.

Element

| | | | | | |
|----------------------------|-----|-----|-----|-----|------|
| <code><audio></code> | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |
|----------------------------|-----|-----|-----|-----|------|

HTML Audio Formats

There are three supported audio formats: MP3, WAV, and OGG. The browser support for the different formats is:

| Browser | MP3 | WAV | OGG |
|---------|-----|------|------|
| Edge/IE | YES | YES* | YES* |
| Chrome | YES | YES | YES |
| Firefox | YES | YES | YES |
| Safari | YES | YES | NO |
| Opera | YES | YES | YES |

*From Edge 79

HTML Audio - Media Types

| File Format | Media Type |
|-------------|------------|
| MP3 | audio/mpeg |
| OGG | audio/ogg |
| WAV | audio/wav |

HTML Audio - Methods, Properties, and Events

The HTML DOM defines methods, properties, and events for the `<audio>` element.

This allows you to load, play, and pause audios, as well as set duration and volume.

There are also DOM events that can notify you when an audio begins to play, is paused, etc.

For a full DOM reference, go to our [HTML Audio/Video DOM Reference](#).

HTML Audio Tags

| Tag | Description |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <code><audio></code> | Defines sound content |
| <code><source></code> | Defines multiple media resources for media elements, such as <code><video></code> and <code><audio></code> |

HTML Plug-ins

Plug-ins are computer programs that extend the standard functionality of the browser.

Plug-ins

Plug-ins were designed to be used for many different purposes:

- To run Java applets
- To run Microsoft ActiveX controls
- To display Flash movies
- To display maps
- To scan for viruses
- To verify a bank id

Warning !

Most browsers no longer support Java Applets and Plug-ins.

ActiveX controls are no longer supported in any browsers.

The support for Shockwave Flash has also been turned off in modern browsers.

The `<object>` Element

The `<object>` element is supported by all browsers.

The `<object>` element defines an embedded object within an HTML document.

It was designed to embed plug-ins (like Java applets, PDF readers, and Flash Players) in web pages, but can also be used to include HTML in HTML:

Example

```
<object width="100%" height="500px" data="snippet.html"></object>
```

Or images if you like:

Example

```
<object data="audi.jpeg"></object>
```

The `<embed>` Element

The `<embed>` element is supported in all major browsers.

The `<embed>` element also defines an embedded object within an HTML document.

Web browsers have supported the `<embed>` element for a long time. However, it has not been a part of the HTML specification before HTML5.

Example

```
<embed src="audi.jpeg">
```

Note that the `<embed>` element does not have a closing tag. It can not contain alternative text.

The `<embed>` element can also be used to include HTML in HTML:

Example

```
<embed width="100%" height="500px" src="snippet.html">
```

HTML YouTube Videos

The easiest way to play videos in HTML, is to use YouTube.

Struggling with Video Formats?

Converting videos to different formats can be difficult and time-consuming.

An easier solution is to let YouTube play the videos in your web page.

YouTube Video Id

YouTube will display an id (like `tgBNymZ7vqY`), when you save (or play) a video.

You can use this id, and refer to your video in the HTML code.

Playing a YouTube Video in HTML

To play your video on a web page, do the following:

- Upload the video to YouTube
- Take a note of the video id
- Define an `<iframe>` element in your web page
- Let the `src` attribute point to the video URL
- Use the `width` and `height` attributes to specify the dimension of the player
- Add any other parameters to the URL (see below)

Example

```
<iframe width="420" height="315"
src="https://www.youtube.com/embed/tgBNymZ7vqY">
</iframe>
```

YouTube Autoplay + Mute

You can let your video start playing automatically when a user visits the page, by adding `autoplay=1` to the YouTube URL. However, automatically starting a video is annoying for your visitors!

Note: Chromium browsers do not allow autoplay in most cases. However, muted autoplay is always allowed.

Add `mute=1` after `autoplay=1` to let your video start playing automatically (but muted).

YouTube - Autoplay + Muted

```
<iframe width="420" height="315"
src="https://www.youtube.com/embed/tgBNymZ7vqY?autoplay=1&mute=1">
</iframe>
```

YouTube Playlist

A comma separated list of videos to play (in addition to the original URL).

YouTube Loop

Add loop=1 to let your video loop forever.

Value 0 (default): The video will play only once.

Value 1: The video will loop (forever).

YouTube - Loop

```
<iframe width="420" height="315"
src="https://www.youtube.com/embed/tgbNymZ7vqY?playlist=tgbNymZ7vqY&loop=1">
</iframe>
```

YouTube Controls

Add controls=0 to not display controls in the video player.

Value 0: Player controls does not display.

Value 1 (default): Player controls display.

YouTube - Controls

```
<iframe width="420" height="315"
src="https://www.youtube.com/embed/tgbNymZ7vqY?controls=0">
</iframe>
```

HTML Geolocation API

The HTML Geolocation API is used to locate a user's position.

Locate the User's Position

The HTML Geolocation API is used to get the geographical position of a user.

Since this can compromise privacy, the position is not available unless the user approves it.

Try It

Note: Geolocation is most accurate for devices with GPS, like smartphones.

Browser Support

The numbers in the table specify the first browser version that fully supports Geolocation.

API

| | | | | | |
|-------------|--------------|-----|-----|-----|------|
| | 5.0 - 49.0 | | | | |
| Geolocation | (http) | 9.0 | 3.5 | 5.0 | 16.0 |
| | 50.0 (https) | | | | |

Note: As of Chrome 50, the Geolocation API will only work on secure contexts such as HTTPS. If your site is hosted on a non-secure origin (such as HTTP) the requests to get the users location will no longer function.

Using HTML Geolocation

The `getCurrentPosition()` method is used to return the user's position.

The example below returns the latitude and longitude of the user's position:

Example

```
<script>
var x = document.getElementById("demo");
function getLocation() {
  if (navigator.geolocation) {
    navigator.geolocation.getCurrentPosition(showPosition);
  } else {
    x.innerHTML = "Geolocation is not supported by this browser.";
  }
}

function showPosition(position) {
  x.innerHTML = "Latitude: " + position.coords.latitude +
  "<br>Longitude: " + position.coords.longitude;
}
</script>
```

Example explained:

- Check if Geolocation is supported
- If supported, run the `getCurrentPosition()` method. If not, display a message to the user
- If the `getCurrentPosition()` method is successful, it returns a coordinates object to the function specified in the parameter (`showPosition`)
- The `showPosition()` function outputs the Latitude and Longitude

The example above is a very basic Geolocation script, with no error handling.

Handling Errors and Rejections

The second parameter of the `getCurrentPosition()` method is used to handle errors. It specifies a function to run if it fails to get the user's location:

Example

```
function showError(error) {
  switch(error.code) {
    case error.PERMISSION_DENIED:
      x.innerHTML = "User denied the request for Geolocation."
      break;
    case error.POSITION_UNAVAILABLE:
      x.innerHTML = "Location information is unavailable."
      break;
    case error.TIMEOUT:
      x.innerHTML = "The request to get user location timed out."
      break;
    case error.UNKNOWN_ERROR:
      x.innerHTML = "An unknown error occurred."
      break;
  }
}
```

Displaying the Result in a Map

To display the result in a map, you need access to a map service, like Google Maps.

In the example below, the returned latitude and longitude is used to show the location in a Google Map (using a static image):

Example

```
function showPosition(position) {
  var latlon = position.coords.latitude + "," + position.coords.longitude;
```

```

    var img_url = "https://maps.googleapis.com/maps/api/staticmap?center=
    "+latlon+"&zoom=14&size=400x300&sensor=false&key=YOUR_KEY";

    document.getElementById("mapholder").innerHTML = "<img src='"+img_url+"'>";
}

```

Location-specific Information

This page has demonstrated how to show a user's position on a map.

Geolocation is also very useful for location-specific information, like:

- Up-to-date local information
 - Showing Points-of-interest near the user
 - Turn-by-turn navigation (GPS)
-

The `getCurrentPosition()` Method - Return Data

The `getCurrentPosition()` method returns an object on success. The latitude, longitude and accuracy properties are always returned. The other properties are returned if available:

| Property | Returns |
|--------------------------------------|-------------------------------------------------------------------------|
| <code>coords.latitude</code> | The latitude as a decimal number (always returned) |
| <code>coords.longitude</code> | The longitude as a decimal number (always returned) |
| <code>coords.accuracy</code> | The accuracy of position (always returned) |
| <code>coords.altitude</code> | The altitude in meters above the mean sea level (returned if available) |
| <code>coords.altitudeAccuracy</code> | The altitude accuracy of position (returned if available) |
| <code>coords.heading</code> | The heading as degrees clockwise from North (returned if available) |
| <code>coords.speed</code> | The speed in meters per second (returned if available) |
| <code>timestamp</code> | The date/time of the response (returned if available) |

Geolocation Object - Other interesting Methods

The Geolocation object also has other interesting methods:

- `watchPosition()` - Returns the current position of the user and continues to return updated position as the user moves (like the GPS in a car).
- `clearWatch()` - Stops the `watchPosition()` method.

The example below shows the `watchPosition()` method. You need an accurate GPS device to test this (like smartphone):

Example

```

<script>
var x = document.getElementById("demo");
function getLocation() {
    if (navigator.geolocation) {
        navigator.geolocation.watchPosition(showPosition);
    } else {
        x.innerHTML = "Geolocation is not supported by this browser.";
    }
}
function showPosition(position) {
    x.innerHTML = "Latitude: " + position.coords.latitude +
    "<br>Longitude: " + position.coords.longitude;
}
</script>

```

HTML Drag and Drop API

In HTML, any element can be dragged and dropped.

Example



Drag the W3Schools image into the rectangle.

Drag and Drop

Drag and drop is a very common feature. It is when you "grab" an object and drag it to a different location.

Browser Support

The numbers in the table specify the first browser version that fully supports Drag and Drop.

API

| | | | | | |
|---------------|-----|-----|-----|-----|------|
| Drag and Drop | 4.0 | 9.0 | 3.5 | 6.0 | 12.0 |
|---------------|-----|-----|-----|-----|------|

HTML Drag and Drop Example

The example below is a simple drag and drop example:

Example

```
<!DOCTYPE HTML>
<html>
<head>
<script>
function allowDrop(ev) {
  Â Â ev.preventDefault();
}

function drag(ev) {
  Â ev.dataTransfer.setData("text", ev.target.id);
}

function drop(ev) {
  Â ev.preventDefault();
  Â Â var data = ev.dataTransfer.getData("text");
  Â Â ev.target.appendChild(document.getElementById(data));
}
</script>
</head>
<body>

<div id="div1" ondrop="drop(event)" ondragover="allowDrop(event)"></div>



</body>
</html>
```

It might seem complicated, but lets go through all the different parts of a drag and drop event.

Make an Element Draggable

First of all: To make an element draggable, set the `draggable` attribute to `true`:

```
<img draggable="true">
```

What to Drag - `ondragstart` and `setData()`

Then, specify what should happen when the element is dragged.

In the example above, the `ondragstart` attribute calls a function, `drag(event)`, that specifies what data to be dragged.

The `dataTransfer.setData()` method sets the data type and the value of the dragged data:

```
function drag(ev) {  
  ev.dataTransfer.setData("text", ev.target.id);  
}
```

In this case, the data type is "text" and the value is the id of the draggable element ("drag1").

Where to Drop - `ondragover`

The `ondragover` event specifies where the dragged data can be dropped.

By default, data/elements cannot be dropped in other elements. To allow a drop, we must prevent the default handling of the element.

This is done by calling the `event.preventDefault()` method for the `ondragover` event:

```
event.preventDefault()
```

Do the Drop - `ondrop`

When the dragged data is dropped, a drop event occurs.

In the example above, the `ondrop` attribute calls a function, `drop(event)`:

```
function drop(ev) {  
  ev.preventDefault();  
  var data = ev.dataTransfer.getData("text");  
  ev.target.appendChild(document.getElementById(data));  
}
```

Code explained:

- Call `preventDefault()` to prevent the browser default handling of the data (default is open as link on drop)
 - Get the dragged data with the `dataTransfer.getData()` method. This method will return any data that was set to the same type in the `setData()` method
 - The dragged data is the id of the dragged element ("drag1")
 - Append the dragged element into the drop element
-

More Examples

Example

How to drag (and drop) an image back and forth between two `<div>` elements:

HTML Web Storage API

HTML web storage; better than cookies.

What is HTML Web Storage?

With web storage, web applications can store data locally within the user's browser.

Before HTML5, application data had to be stored in cookies, included in every server request. Web storage is more secure, and large amounts of data can be stored locally, without affecting website performance.

Unlike cookies, the storage limit is far larger (at least 5MB) and information is never transferred to the server.

Web storage is per origin (per domain and protocol). All pages, from one origin, can store and access the same data.

Browser Support

The numbers in the table specify the first browser version that fully supports Web Storage.

API

| | | | | |
|-----------------|-----|-----|-----|------|
| Web Storage 4.0 | 8.0 | 3.5 | 4.0 | 11.5 |
|-----------------|-----|-----|-----|------|

HTML Web Storage Objects

HTML web storage provides two objects for storing data on the client:

- `window.localStorage` - stores data with no expiration date
- `window.sessionStorage` - stores data for one session (data is lost when the browser tab is closed)

Before using web storage, check browser support for `localStorage` and `sessionStorage`:

```
if (typeof(Storage) !== "undefined") {  
    // Code for localStorage/sessionStorage.  
} else {  
    // Sorry! No Web Storage support..  
}
```

The localStorage Object

The `localStorage` object stores the data with no expiration date. The data will not be deleted when the browser is closed, and will be available the next day, week, or year.

Example

```
// Store  
localStorage.setItem("lastname", "Smith");  
  
// Retrieve  
document.getElementById("result").innerHTML = localStorage.getItem("lastname");
```

Example explained:

- Create a `localStorage` name/value pair with `name="lastname"` and `value="Smith"`
- Retrieve the value of `"lastname"` and insert it into the element with `id="result"`

The example above could also be written like this:

```
// Store  
localStorage.lastname = "Smith";  
// Retrieve  
document.getElementById("result").innerHTML = localStorage.lastname;
```

The syntax for removing the `"lastname"` `localStorage` item is as follows:

```
localStorage.removeItem("lastname");
```

Note: Name/value pairs are always stored as strings. Remember to convert them to another format when needed!

The following example counts the number of times a user has clicked a button. In this code the value string is converted to a number to be able to increase the counter:

Example

```
if (localStorage.clickcount) {  
  Å localStorage.clickcount = Number(localStorage.clickcount) + 1;  
} else {  
  Å localStorage.clickcount = 1;  
}  
document.getElementById("result").innerHTML = "You have clicked the button " +  
localStorage.clickcount + " time(s).";
```

The sessionStorage Object

The `sessionStorage` object is equal to the `localStorage` object, **except** that it stores the data for only one session. The data is deleted when the user closes the specific browser tab.

The following example counts the number of times a user has clicked a button, in the current session:

Example

```
if (sessionStorage.clickcount) {  
  Å sessionStorage.clickcount = Number(sessionStorage.clickcount) + 1;  
} else {  
  Å sessionStorage.clickcount = 1;  
}  
document.getElementById("result").innerHTML = "You have clicked the button " +  
sessionStorage.clickcount + " time(s) in this session.";
```

HTML Web Workers API

A web worker is a JavaScript running in the background, without affecting the performance of the page.

What is a Web Worker?

When executing scripts in an HTML page, the page becomes unresponsive until the script is finished.

A web worker is a JavaScript that runs in the background, independently of other scripts, without affecting the performance of the page. You can continue to do whatever you want: clicking, selecting things, etc., while the web worker runs in the background.

Browser Support

The numbers in the table specify the first browser version that fully support Web Workers.

API

| | | | | |
|-----------------|------|-----|-----|------|
| Web Workers 4.0 | 10.0 | 3.5 | 4.0 | 11.5 |
|-----------------|------|-----|-----|------|

HTML Web Workers Example

The example below creates a simple web worker that count numbers in the background:

Example

Count numbers:

Start Worker

Stop Worker

Check Web Worker Support

Before creating a web worker, check whether the user's browser supports it:

```
if (typeof(Worker) !== "undefined") {  
    Â Â // Yes! Web worker support!  
    Â // Some code.....  
} else {  
    Â // Sorry! No Web Worker support..  
}
```

Create a Web Worker File

Now, let's create our web worker in an external JavaScript.

Here, we create a script that counts. The script is stored in the "demo_workers.js" file:

```
var i = 0;  
  
function timedCount() {  
    Â i = i + 1;  
    Â postMessage(i);  
    Â Â setTimeout("timedCount()",500);  
}  
  
timedCount();
```

The important part of the code above is the `postMessage()` method - which is used to post a message back to the HTML page.

Note: Normally web workers are not used for such simple scripts, but for more CPU intensive tasks.

Create a Web Worker Object

Now that we have the web worker file, we need to call it from an HTML page.

The following lines checks if the worker already exists, if not - it creates a new web worker object and runs the code in "demo_workers.js":

```
if (typeof(w) == "undefined") {  
    Â w = new Worker("demo_workers.js");  
}
```

Then we can send and receive messages from the web worker.

Add an "onmessage" event listener to the web worker.

```
w.onmessage = function(event){  
    Â Â document.getElementById("result").innerHTML = event.data;  
};
```

When the web worker posts a message, the code within the event listener is executed. The data from the web worker is stored in `event.data`.

Terminate a Web Worker

When a web worker object is created, it will continue to listen for messages (even after the external script is finished) until it is terminated.

To terminate a web worker, and free browser/computer resources, use the `terminate()` method:

```
w.terminate();
```

Reuse the Web Worker

If you set the worker variable to undefined, after it has been terminated, you can reuse the code:

w = undefined;

Full Web Worker Example Code

We have already seen the Worker code in the .js file. Below is the code for the HTML page:

Example

```
<!DOCTYPE html>
<html>
<body>

<p>Count numbers: <output id="result"></output></p>
<button onclick="startWorker()">Start Worker</button>
<button onclick="stopWorker()">Stop Worker</button>

<script>
var w;

function startWorker() {
  if (typeof(Worker) !== "undefined") {
    if (typeof(w) == "undefined") {
      w = new Worker("demo_workers.js");
    }
    w.onmessage = function(event) {
      document.getElementById("result").innerHTML = event.data;
    };
  } else {
    document.getElementById("result").innerHTML = "Sorry! No Web Worker support.";
  }
}

function stopWorker() {
  w.terminate();
  w = undefined;
}
</script>

</body>
</html>
```

Web Workers and the DOM

Since web workers are in external files, they do not have access to the following JavaScript objects:

- The window object
- The document object
- The parent object

HTML SSE API

Server-Sent Events (SSE) allow a web page to get updates from a server.

Server-Sent Events - One Way Messaging

A server-sent event is when a web page automatically gets updates from a server.

This was also possible before, but the web page would have to ask if any updates were available. With server-sent events, the updates come automatically.

Examples: Facebook/Twitter updates, stock price updates, news feeds, sport results, etc.

Browser Support

The numbers in the table specify the first browser version that fully support server-sent events.

API

| | | | | | |
|-----|-----|------|-----|-----|------|
| SSE | 6.0 | 79.0 | 6.0 | 5.0 | 11.5 |
|-----|-----|------|-----|-----|------|

Receive Server-Sent Event Notifications

The EventSource object is used to receive server-sent event notifications:

Example

```
var source = new EventSource("demo_sse.php");
source.onmessage = function(event) {
    Â Â document.getElementById("result").innerHTML += event.data + "<br>";
};
```

Example explained:

- Create a new EventSource object, and specify the URL of the page sending the updates (in this example "demo_sse.php")
 - Each time an update is received, the onmessage event occurs
 - When an onmessage event occurs, put the received data into the element with id="result"
-

Check Server-Sent Events Support

In the tryit example above there were some extra lines of code to check browser support for server-sent events:

```
if(typeof(EventSource) !== "undefined") {
    Â // Yes! Server-sent events support!
    Â // Some code.....
} else {
    Â // Sorry! No server-sent events support..
}
```

Server-Side Code Example

For the example above to work, you need a server capable of sending data updates (like PHP or ASP).

The server-side event stream syntax is simple. Set the "Content-Type" header to "text/event-stream". Now you can start sending event streams.

Code in PHP (demo_sse.php):

```
<?php
header('Content-Type: text/event-stream');
header('Cache-Control: no-cache');

$time = date('r');
echo "data: The server time is: {$time}\n\n";
flush();
?>
```

Code in ASP (VB) (demo_sse.asp):

```
<%
Response.ContentType = "text/event-stream"
Response.Expires = -1
Response.Write("data: The server time is: " & now())
Response.Flush()
%>
```

Code explained:

- Set the "Content-Type" header to "text/event-stream"
- Specify that the page should not cache
- Output the data to send (**Always** start with "data: ")
- Flush the output data back to the web page

The EventSource Object

In the examples above we used the onmessage event to get messages. But other events are also available:

| Events | Description |
|-----------|-------------------------------------------|
| onopen | When a connection to the server is opened |
| onmessage | When a message is received |
| onerror | When an error occurs |

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HTML Quiz

You can test your HTML skills with W3Schools' Quiz.

The Test

The test contains 40 questions and there is no time limit.

The test is not official, it's just a nice way to see how much you know, or don't know, about HTML.

Count Your Score

You will get 1 point for each correct answer. At the end of the Quiz, your total score will be displayed. Maximum score is 40 points.

Start the Quiz

Good luck!

If you don't know HTML, we suggest that you read our [HTML Tutorial](#) from scratch.

HTML Exercises

You can test your HTML skills with W3Schools' Exercises.

Exercises

We have gathered a variety of HTML exercises (with answers) for each HTML Chapter.

Try to solve an exercise by editing some code. Get a "hint" if you're stuck, or show the answer to see what you've done wrong.

Count Your Score

You will get 1 point for each correct answer. Your score and total score will always be displayed.

Start HTML Exercises

Good luck!

If you don't know HTML, we suggest that you read our [HTML Tutorial](#) from scratch.

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You Have Learned HTML, Now What?

HTML Summary

This tutorial has taught you how to use HTML to create your own web site.

HTML is the universal markup language for the Web. HTML lets you format text, add graphics, create links, input forms, frames and tables, etc., and save it all in a text file that any browser can read and display.

For more information on HTML, please take a look at our [HTML examples](#) and our [HTML reference](#).

You can also test your HTML skills with [HTML Exercises](#) and [HTML Quizzes](#).

Now You Know HTML, What's Next?

Learn CSS

CSS lets you style your HTML pages.

CSS gives you total control of the layout, without messing up the document content.

To learn more about CSS, please visit our [CSS tutorial](#).

Learn JavaScript

JavaScript makes your website more dynamic. A dynamic website can react to events and allow user interaction.

JavaScript is the most popular scripting language on the internet and it works with all major browsers.

If you want to learn more about JavaScript, please visit our [JavaScript tutorial](#).

Publishing Your Website

To make your website available to the world, you must publish it.

For this, you have two options:

- Use an Internet Service Provider
 - Host your own website
-

Using an Internet Service Provider

An Internet service provider (ISP) is a company that provides services for accessing and using the Internet.

Internet services typically provided by ISPs include Internet access, Internet transit, domain name registration, web hosting, Usenet service, and colocation.

Using an Internet Service Provider (ISP) is the most common option.

Advantages:

- **Connection Speed** - ISPs have very fast connections to the internet.
- **Powerful Hardware** - ISPs have powerful web servers that can be shared by several clients. You can also expect an effective load balancing and necessary backup servers
- **Security and Stability** - ISPs are specialists on web hosting. Expect more than 99% up time, the latest software patches, and the best virus protection

Things to Consider:

- **24-hour support** - The ISP should offer 24-hours support. Toll-free phone could also be vital
 - **Daily Backup** - The ISP must run a daily backup routine
 - **Traffic Volume** - Check the ISP's traffic volume restrictions (do not end up paying a fortune for unexpected high traffic)
 - **Bandwidth or Content Restrictions** - Check the ISP's bandwidth and content restrictions (Is it possible to publish pictures, video, or sound?)
 - **E-mail Capabilities** - Make sure the ISP supports the e-mail capabilities you need
 - **Database Access** - Make sure the ISP supports the database access you need
-

Hosting Your Own Website

Hosting your own website, on your own server, is also an option.

Things to Consider:

- **Hardware Expenses** - To run a "real" web site, you must buy powerful server hardware (a low cost PC will not do the job). You will also need a permanent (24/7) high-speed connection
 - **Software Expenses** - Server-licenses are often higher than client-licenses. Server-licenses also might have limits on number of users
 - **Labor Expenses** - Don't expect low labor expenses. You have to install your own hardware and software. You also have to deal with bugs and viruses, and keep your server constantly running
-

HTML Accessibility

HTML Accessibility

Always write HTML code with accessibility in mind!

Provide the user a good way to navigate and interact with your site. Make your HTML code as **semantic** as possible.

Semantic HTML

Semantic HTML means using correct HTML elements for their correct purpose as much as possible. Semantic elements are elements with a meaning; if you need a button, use the `<button>` element (and not a `<div>` element).

semantic

`<button>Click Me</button>`

Non-semantic

`<div>Click Me</div>`

Semantic HTML gives context to screen readers, which read the contents of a page out loud.

With the button example in mind:

- buttons have more suitable styling by default
- a screen reader identifies it as a button
- focusable
- clickable

A button is also accessible for people relying on keyboard-only navigation; it can be clickable with both mouse and keys, and it can be tabbed between (using the tab key on the keyboard).

Examples of **non-semantic** elements: `<div>` and `` - Tells nothing about its content.

Examples of **semantic** elements: `<form>`, `<table>`, and `<article>` - Clearly defines its content.

Headings Are Important

Headings are defined with the `<h1>` to `<h6>` tags:

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>
```

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

Users skim your pages by its headings. It is important to use headings to show the document structure and the relationships between different sections.

`<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**.

Alternative Text

The `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:

Example

```

```

If a browser cannot find an image, it will display the value of the `alt` attribute:

Example

```

```

Declare the Language

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 following example specifies English as the language:

```
<!DOCTYPE html>
<html lang="en">
<body>
```

...

```
</body>
</html>
```

Use Clear Language

Always use a clear language, that is easy to understand. Also try to avoid characters that cannot be read clearly by a screen reader. For example:

- Keep sentences as short as possible
 - Avoid dashes. Instead of writing 1-3, write 1 to 3
 - Avoid abbreviations. Instead of writing Feb, write February
 - Avoid slang words
-

Create Good Link Text

A link text should explain clearly what information the reader will get by clicking on that link.

Examples of good and bad links:

Good

[Find out more about the HTML language](#)

Read more about [how to eat healthy](#)

[Buy tickets to Mars here](#)

Bad

[Click here](#)

[Read more..](#)

Buy tickets to Mars [here](#)

The title Attribute

The title attribute specifies extra information about an element.

The information is most often shown as a tooltip text when the mouse moves over the element.

The title attribute can be used on any HTML element (it will validate on any HTML element. However, it is not necessarily useful).

Example

```
<p><abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>
```

```
<p title="Free Web tutorials">W3Schools.com</p>
```

HTML Element Reference

HTML Tags Ordered Alphabetically

| Tag | Description |
|----------------------------------|---------------------------|
| <!--...--> | Defines a comment |
| <!DOCTYPE> | Defines the document type |

| | |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <code><a></code> | Defines a hyperlink |
| <code><abbr></code> | Defines an abbreviation or an acronym |
| <code><acronym></code> | Not supported in HTML5. Use <code><abbr></code> instead. |
| <code><address></code> | Defines an acronym |
| <code><address></code> | Defines contact information for the author/owner of a document |
| <code><applet></code> | Not supported in HTML5. Use <code><embed></code> or <code><object></code> instead. |
| <code><area></code> | Defines an embedded applet |
| <code><area></code> | Defines an area inside an image map |
| <code><article></code> | Defines an article |
| <code><aside></code> | Defines content aside from the page content |
| <code><audio></code> | Defines embedded sound content |
| <code></code> | Defines bold text |
| <code><base></code> | Specifies the base URL/target for all relative URLs in a document |
| <code><basefont></code> | Not supported in HTML5. Use CSS instead. |
| <code><bdi></code> | Specifies a default color, size, and font for all text in a document |
| <code><bdi></code> | Isolates a part of text that might be formatted in a different direction from other text outside it |
| <code><bdo></code> | Overrides the current text direction |
| <code><big></code> | Not supported in HTML5. Use CSS instead. |
| <code><big></code> | Defines big text |
| <code><blockquote></code> | Defines a section that is quoted from another source |
| <code><body></code> | Defines the document's body |
| <code> </code> | Defines a single line break |
| <code><button></code> | Defines a clickable button |
| <code><canvas></code> | Used to draw graphics, on the fly, via scripting (usually JavaScript) |
| <code><caption></code> | Defines a table caption |
| <code><center></code> | Not supported in HTML5. Use CSS instead. |
| <code><center></code> | Defines centered text |
| <code><cite></code> | Defines the title of a work |
| <code><code></code> | Defines a piece of computer code |
| <code><col></code> | Specifies column properties for each column within a <code><colgroup></code> element |
| <code><colgroup></code> | Specifies a group of one or more columns in a table for formatting |
| <code><data></code> | Adds a machine-readable translation of a given content |
| <code><datalist></code> | Specifies a list of pre-defined options for input controls |
| <code><dd></code> | Defines a description/value of a term in a description list |
| <code></code> | Defines text that has been deleted from a document |
| <code><details></code> | Defines additional details that the user can view or hide |
| <code><dfn></code> | Specifies a term that is going to be defined within the content |
| <code><dialog></code> | Defines a dialog box or window |
| <code><dir></code> | Not supported in HTML5. Use <code></code> instead. |
| <code><dir></code> | Defines a directory list |
| <code><div></code> | Defines a section in a document |
| <code><dl></code> | Defines a description list |
| <code><dt></code> | Defines a term/name in a description list |
| <code></code> | Defines emphasized text |
| <code><embed></code> | Defines a container for an external application |
| <code><fieldset></code> | Groups related elements in a form |
| <code><figcaption></code> | Defines a caption for a <code><figure></code> element |
| <code><figure></code> | Specifies self-contained content |
| <code></code> | Not supported in HTML5. Use CSS instead. |
| <code></code> | Defines font, color, and size for text |
| <code><footer></code> | Defines a footer for a document or section |
| <code><form></code> | Defines an HTML form for user input |
| <code><frame></code> | Not supported in HTML5. |
| <code><frame></code> | Defines a window (a frame) in a frameset |
| <code><frameset></code> | Not supported in HTML5. |
| <code><frameset></code> | Defines a set of frames |
| <code><h1> to <h6></code> | Defines HTML headings |
| <code><head></code> | Contains metadata/information for the document |

| | |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code><header></code> | Defines a header for a document or section |
| <code><hr></code> | Defines a thematic change in the content |
| <code><html></code> | Defines the root of an HTML document |
| <code><i></code> | Defines a part of text in an alternate voice or mood |
| <code><iframe></code> | Defines an inline frame |
| <code></code> | Defines an image |
| <code><input></code> | Defines an input control |
| <code><ins></code> | Defines a text that has been inserted into a document |
| <code><kbd></code> | Defines keyboard input |
| <code><label></code> | Defines a label for an <code><input></code> element |
| <code><legend></code> | Defines a caption for a <code><fieldset></code> element |
| <code></code> | Defines a list item |
| <code><link></code> | Defines the relationship between a document and an external resource (most used to link to style sheets) |
| <code><main></code> | Specifies the main content of a document |
| <code><map></code> | Defines an image map |
| <code><mark></code> | Defines marked/highlighted text |
| <code><meta></code> | Defines metadata about an HTML document |
| <code><meter></code> | Defines a scalar measurement within a known range (a gauge) |
| <code><nav></code> | Defines navigation links |
| <code><noframes></code> | Not supported in HTML5. Defines an alternate content for users that do not support frames |
| <code><noscript></code> | Defines an alternate content for users that do not support client-side scripts |
| <code><object></code> | Defines a container for an external application |
| <code></code> | Defines an ordered list |
| <code><optgroup></code> | Defines a group of related options in a drop-down list |
| <code><option></code> | Defines an option in a drop-down list |
| <code><output></code> | Defines the result of a calculation |
| <code><p></code> | Defines a paragraph |
| <code><param></code> | Defines a parameter for an object |
| <code><picture></code> | Defines a container for multiple image resources |
| <code><pre></code> | Defines preformatted text |
| <code><progress></code> | Represents the progress of a task |
| <code><q></code> | Defines a short quotation |
| <code><rp></code> | Defines what to show in browsers that do not support ruby annotations |
| <code><rt></code> | Defines an explanation/pronunciation of characters (for East Asian typography) |
| <code><ruby></code> | Defines a ruby annotation (for East Asian typography) |
| <code><s></code> | Defines text that is no longer correct |
| <code><samp></code> | Defines sample output from a computer program |
| <code><script></code> | Defines a client-side script |
| <code><section></code> | Defines a section in a document |
| <code><select></code> | Defines a drop-down list |
| <code><small></code> | Defines smaller text |
| <code><source></code> | Defines multiple media resources for media elements (<code><video></code> and <code><audio></code>) |
| <code></code> | Defines a section in a document |
| <code><strike></code> | Not supported in HTML5. Use <code></code> or <code><s></code> instead. Defines strikethrough text |
| <code></code> | Defines important text |
| <code><style></code> | Defines style information for a document |
| <code><sub></code> | Defines subscripted text |
| <code><summary></code> | Defines a visible heading for a <code><details></code> element |
| <code><sup></code> | Defines superscripted text |
| <code><svg></code> | Defines a container for SVG graphics |
| <code><table></code> | Defines a table |
| <code><tbody></code> | Groups the body content in a table |
| <code><td></code> | Defines a cell in a table |
| <code><template></code> | Defines a container for content that should be hidden when the page loads |

| | |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------|
| <code><textarea></code> | Defines a multiline input control (text area) |
| <code><tfoot></code> | Groups the footer content in a table |
| <code><th></code> | Defines a header cell in a table |
| <code><thead></code> | Groups the header content in a table |
| <code><time></code> | Defines a specific time (or datetime) |
| <code><title></code> | Defines a title for the document |
| <code><tr></code> | Defines a row in a table |
| <code><track></code> | Defines text tracks for media elements (<code><video></code> and <code><audio></code>) |
| <code><tt></code> | Not supported in HTML5. Use CSS instead. Defines teletype text |
| <code><u></code> | Defines some text that is unarticulated and styled differently from normal text |
| <code></code> | Defines an unordered list |
| <code><var></code> | Defines a variable |
| <code><video></code> | Defines embedded video content |
| <code><wbr></code> | Defines a possible line-break |

HTML Attribute Reference

HTML Attribute Reference

The table below lists all HTML attributes and what elements they can be used within:

| Attribute | Belongs to | Description |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>accept</code> | <code><input></code> | Specifies the types of files that the server accepts (only for <code>type="file"</code>) |
| <code>accept-charset</code> | <code><form></code> | Specifies the character encodings that are to be used for the form submission |
| <code>accesskey</code> | Global Attributes | Specifies a shortcut key to activate/focus an element |
| <code>action</code> | <code><form></code> | Specifies where to send the form-data when a form is submitted |
| <code>align</code> | Not supported in HTML 5. | Specifies the alignment according to surrounding elements. Use CSS instead |
| <code>alt</code> | <code><area></code> , <code></code> , <code><input></code> | Specifies an alternate text when the original element fails to display |
| <code>async</code> | <code><script></code> | Specifies that the script is executed asynchronously (only for external scripts) |
| <code>autocomplete</code> | <code><form></code> , <code><input></code> | Specifies whether the <code><form></code> or the <code><input></code> element should have autocomplete enabled |
| <code>autofocus</code> | <code><button></code> , <code><input></code> , <code><select></code> , <code><textarea></code> | Specifies that the element should automatically get focus when the page loads |
| <code>autoplay</code> | <code><audio></code> , <code><video></code> | Specifies that the audio/video will start playing as soon as it is ready |
| <code>bgcolor</code> | Not supported in HTML 5. | Specifies the background color of an element. Use CSS instead |
| <code>border</code> | Not supported in HTML 5. | Specifies the width of the border of an element. Use CSS instead |
| <code>charset</code> | <code><meta></code> , <code><script></code> | Specifies the character encoding |
| <code>checked</code> | <code><input></code> | Specifies that an <code><input></code> element should be pre-selected when the page loads (for <code>type="checkbox"</code> or <code>type="radio"</code>) |
| <code>cite</code> | <code><blockquote></code> , <code></code> , <code><ins></code> , <code><q></code> | Specifies a URL which explains the quote/deleted/inserted text |
| <code>class</code> | Global Attributes | Specifies one or more classnames for an element (refers to a class in a style sheet) |

| | | |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| color | Not supported in HTML 5. | Specifies the text color of an element. Use CSS instead |
| cols | <textarea> | Specifies the visible width of a text area |
| colspan | <td> , <th> | Specifies the number of columns a table cell should span |
| content | <meta> | Gives the value associated with the http-equiv or name attribute |
| contenteditable | Global Attributes | Specifies whether the content of an element is editable or not |
| controls | <audio> , <video> | Specifies that audio/video controls should be displayed (such as a play/pause button etc) |
| coords | <area> | Specifies the coordinates of the area |
| data | <object> | Specifies the URL of the resource to be used by the object |
| data-* | Global Attributes | Used to store custom data private to the page or application |
| datetime | , <ins> , <time> | Specifies the date and time |
| default | <track> | Specifies that the track is to be enabled if the user's preferences do not indicate that another track would be more appropriate |
| defer | <script> | Specifies that the script is executed when the page has finished parsing (only for external scripts) |
| dir | Global Attributes | Specifies the text direction for the content in an element |
| dirname | <input> , <textarea> | Specifies that the text direction will be submitted |
| disabled | <button> , <fieldset> , <input> , <optgroup> , <option> , <select> , <textarea> | Specifies that the specified element/group of elements should be disabled |
| download | <a> , <area> | Specifies that the target will be downloaded when a user clicks on the hyperlink |
| draggable | Global Attributes | Specifies whether an element is draggable or not |
| enctype | <form> | Specifies how the form-data should be encoded when submitting it to the server (only for method="post") |
| for | <label> , <output> | Specifies which form element(s) a label/calculation is bound to |
| form | <button> , <fieldset> , <input> , <label> , <meter> , <object> , <output> , <select> , <textarea> | Specifies the name of the form the element belongs to |
| formaction | <button> , <input> | Specifies where to send the form-data when a form is submitted. Only for type="submit" |
| headers | <td> , <th> | Specifies one or more headers cells a cell is related to |
| height | <canvas> , <embed> , <iframe> , , <input> , <object> , <video> | Specifies the height of the element |
| hidden | Global Attributes | Specifies that an element is not yet, or is no longer, relevant |
| high | <meter> | Specifies the range that is considered to be a high value |
| href | <a> , <area> , <base> , <link> | Specifies the URL of the page the link goes to |
| hreflang | <a> , <area> , <link> | Specifies the language of the linked document |
| http-equiv | <meta> | Provides an HTTP header for the information/value of the content attribute |
| id | Global Attributes | Specifies a unique id for an element |
| ismap | | Specifies an image as a server-side image map |
| kind | <track> | Specifies the kind of text track |
| label | <track> , <option> , <optgroup> | Specifies the title of the text track |
| lang | Global Attributes | Specifies the language of the element's content |
| list | <input> | Refers to a <datalist> element that contains pre-defined options for an <input> element |

| | | |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| loop | <audio> , <video> | Specifies that the audio/video will start over again, every time it is finished |
| low | <meter> | Specifies the range that is considered to be a low value |
| max | <input> , <meter> , <progress> | Specifies the maximum value |
| maxlength | <input> , <textarea> | Specifies the maximum number of characters allowed in an element |
| media | <a> , <area> , <link> , <source> , <style> | Specifies what media/device the linked document is optimized for |
| method | <form> | Specifies the HTTP method to use when sending form-data |
| min | <input> , <meter> | Specifies a minimum value |
| multiple | <input> , <select> | Specifies that a user can enter more than one value |
| muted | <video> , <audio> | Specifies that the audio output of the video should be muted |
| name | <button> , <fieldset> , <form> , <iframe> , <input> , <map> , <meta> , <object> , <output> , <param> , <select> , <textarea> | Specifies the name of the element |
| novalidate | <form> | Specifies that the form should not be validated when submitted |
| onabort | <audio> , <embed> , , <object> , <video> | Script to be run on abort |
| onafterprint | <body> | Script to be run after the document is printed |
| onbeforeprint | <body> | Script to be run before the document is printed |
| onbeforeunload | <body> | Script to be run when the document is about to be unloaded |
| onblur | All visible elements. | Script to be run when the element loses focus |
| oncanplay | <audio> , <embed> , <object> , <video> | Script to be run when a file is ready to start playing (when it has buffered enough to begin) |
| oncanplaythrough | <audio> , <video> | Script to be run when a file can be played all the way to the end without pausing for buffering |
| onchange | All visible elements. | Script to be run when the value of the element is changed |
| onclick | All visible elements. | Script to be run when the element is being clicked |
| oncontextmenu | All visible elements. | Script to be run when a context menu is triggered |
| oncopy | All visible elements. | Script to be run when the content of the element is being copied |
| oncuechange | <track> | Script to be run when the cue changes in a <track> element |
| oncut | All visible elements. | Script to be run when the content of the element is being cut |
| ondblclick | All visible elements. | Script to be run when the element is being double-clicked |
| ondrag | All visible elements. | Script to be run when the element is being dragged |
| ondragend | All visible elements. | Script to be run at the end of a drag operation |
| ondragenter | All visible elements. | Script to be run when an element has been dragged to a valid drop target |
| ondragleave | All visible elements. | Script to be run when an element leaves a valid drop target |
| ondragover | All visible elements. | Script to be run when an element is being dragged over a valid drop target |
| ondragstart | All visible elements. | Script to be run at the start of a drag operation |
| ondrop | All visible elements. | Script to be run when dragged element is being dropped |
| ondurationchange | <audio> , <video> | Script to be run when the length of the media changes |

| | | |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| onemptied | <audio> , <video> | Script to be run when something bad happens and the file is suddenly unavailable (like unexpectedly disconnects) |
| onended | <audio> , <video> | Script to be run when the media has reach the end (a useful event for messages like "thanks for listening") |
| onerror | <audio> , <body> , <embed> , , <object> , <script> , <style> , <video> | Script to be run when an error occurs |
| onfocus | All visible elements. | Script to be run when the element gets focus |
| onhashchange | <body> | Script to be run when there has been changes to the anchor part of the a URL |
| oninput | All visible elements. | Script to be run when the element gets user input |
| oninvalid | All visible elements. | Script to be run when the element is invalid |
| onkeydown | All visible elements. | Script to be run when a user is pressing a key |
| onkeypress | All visible elements. | Script to be run when a user presses a key |
| onkeyup | All visible elements. | Script to be run when a user releases a key |
| onload | <body> , <iframe> , , <input> , <link> , <script> , <style> | Script to be run when the element is finished loading |
| onloadeddata | <audio> , <video> | Script to be run when media data is loaded |
| onloadedmetadata | <audio> , <video> | Script to be run when meta data (like dimensions and duration) are loaded |
| onloadstart | <audio> , <video> | Script to be run just as the file begins to load before anything is actually loaded |
| onmousedown | All visible elements. | Script to be run when a mouse button is pressed down on an element |
| onmousemove | All visible elements. | Script to be run as long as the mouse pointer is moving over an element |
| onmouseout | All visible elements. | Script to be run when a mouse pointer moves out of an element |
| onmouseover | All visible elements. | Script to be run when a mouse pointer moves over an element |
| onmouseup | All visible elements. | Script to be run when a mouse button is released over an element |
| onmousewheel | All visible elements. | Script to be run when a mouse wheel is being scrolled over an element |
| onoffline | <body> | Script to be run when the browser starts to work offline |
| ononline | <body> | Script to be run when the browser starts to work online |
| onpagehide | <body> | Script to be run when a user navigates away from a page |
| onpageshow | <body> | Script to be run when a user navigates to a page |
| onpaste | All visible elements. | Script to be run when the user pastes some content in an element |
| onpause | <audio> , <video> | Script to be run when the media is paused either by the user or programmatically |
| onplay | <audio> , <video> | Script to be run when the media has started playing |
| onplaying | <audio> , <video> | Script to be run when the media has started playing |
| onpopstate | <body> | Script to be run when the window's history changes. |
| onprogress | <audio> , <video> | Script to be run when the browser is in the process of getting the media data |
| onratechange | <audio> , <video> | Script to be run each time the playback rate changes (like when a user switches to a slow motion or fast forward mode). |
| onreset | <form> | Script to be run when a reset button in a form is clicked. |

| | | |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| onresize | <body> | Script to be run when the browser window is being resized. |
| onscroll | All visible elements. | Script to be run when an element's scrollbar is being scrolled |
| onsearch | <input> | Script to be run when the user writes something in a search field (for <code><input="search"></code>) |
| onseeked | <audio> , <video> | Script to be run when the seeking attribute is set to false indicating that seeking has ended |
| onseeking | <audio> , <video> | Script to be run when the seeking attribute is set to true indicating that seeking is active |
| onselect | All visible elements. | Script to be run when the element gets selected |
| onstalled | <audio> , <video> | Script to be run when the browser is unable to fetch the media data for whatever reason |
| onstorage | <body> | Script to be run when a Web Storage area is updated |
| onsubmit | <form> | Script to be run when a form is submitted |
| onsuspend | <audio> , <video> | Script to be run when fetching the media data is stopped before it is completely loaded for whatever reason |
| ontimeupdate | <audio> , <video> | Script to be run when the playing position has changed (like when the user fast forwards to a different point in the media) |
| ontoggle | <details> | Script to be run when the user opens or closes the <code><details></code> element |
| onunload | <body> | Script to be run when a page has unloaded (or the browser window has been closed) |
| onvolumechange | <audio> , <video> | Script to be run each time the volume of a video/audio has been changed |
| onwaiting | <audio> , <video> | Script to be run when the media has paused but is expected to resume (like when the media pauses to buffer more data) |
| onwheel | All visible elements. | Script to be run when the mouse wheel rolls up or down over an element |
| open | <details> | Specifies that the details should be visible (open) to the user |
| optimum | <meter> | Specifies what value is the optimal value for the gauge |
| pattern | <input> | Specifies a regular expression that an <code><input></code> element's value is checked against |
| placeholder | <input> , <textarea> | Specifies a short hint that describes the expected value of the element |
| poster | <video> | Specifies an image to be shown while the video is downloading, or until the user hits the play button |
| preload | <audio> , <video> | Specifies if and how the author thinks the audio/video should be loaded when the page loads |
| readonly | <input> , <textarea> | Specifies that the element is read-only |
| rel | <a> , <area> , <form> , <link> | Specifies the relationship between the current document and the linked document |
| required | <input> , <select> , <textarea> | Specifies that the element must be filled out before submitting the form |
| reversed | | Specifies that the list order should be descending (9,8,7...) |
| rows | <textarea> | Specifies the visible number of lines in a text area |
| rowspan | <td> , <th> | Specifies the number of rows a table cell should span |
| sandbox | <iframe> | Enables an extra set of restrictions for the content in an <code><iframe></code> |
| scope | <th> | Specifies whether a header cell is a header for a column, row, or group of columns or rows |

| | | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| selected | <option> | Specifies that an option should be pre-selected when the page loads |
| shape | <area> | Specifies the shape of the area |
| size | <input> , <select> | Specifies the width, in characters (for <input>) or specifies the number of visible options (for <select>) |
| sizes | , <link> , <source> | Specifies the size of the linked resource |
| span | <col> , <colgroup> | Specifies the number of columns to span |
| spellcheck | Global Attributes | Specifies whether the element is to have its spelling and grammar checked or not |
| src | <audio> , <embed> , <iframe> , , <input> , <script> , <source> , <track> , <video> | Specifies the URL of the media file |
| srcdoc | <iframe> | Specifies the HTML content of the page to show in the <iframe> |
| srclang | <track> | Specifies the language of the track text data (required if kind="subtitles") |
| srcset | , <source> | Specifies the URL of the image to use in different situations |
| start | | Specifies the start value of an ordered list |
| step | <input> | Specifies the legal number intervals for an input field |
| style | Global Attributes | Specifies an inline CSS style for an element |
| tabindex | Global Attributes | Specifies the tabbing order of an element |
| target | <a> , <area> , <base> , <form> | Specifies the target for where to open the linked document or where to submit the form |
| title | Global Attributes | Specifies extra information about an element |
| translate | Global Attributes | Specifies whether the content of an element should be translated or not |
| type | <a> , <button> , <embed> , <input> , <link> , <menu> , <object> , <script> , <source> , <style> | Specifies the type of element |
| usemap | , <object> | Specifies an image as a client-side image map |
| value | <button> , <input> , , <option> , <meter> , <progress> , <param> | Specifies the value of the element |
| width | <canvas> , <embed> , <iframe> , , <input> , <object> , <video> | Specifies the width of the element |
| wrap | <textarea> | Specifies how the text in a text area is to be wrapped when submitted in a form |

HTML Global Attributes

HTML Global Attributes

The global attributes are attributes that can be used with all HTML elements.

| Attribute | Description |
|---------------------------------|--------------------------------------------------------------------------------------|
| accesskey | Specifies a shortcut key to activate/focus an element |
| class | Specifies one or more classnames for an element (refers to a class in a style sheet) |
| contenteditable | Specifies whether the content of an element is editable or not |
| data-* | Used to store custom data private to the page or application |
| dir | Specifies the text direction for the content in an element |
| draggable | Specifies whether an element is draggable or not |
| hidden | Specifies that an element is not yet, or is no longer, relevant |
| id | Specifies a unique id for an element |
| lang | Specifies the language of the element's content |

| | |
|----------------------------|----------------------------------------------------------------------------------|
| spellcheck | Specifies whether the element is to have its spelling and grammar checked or not |
| style | Specifies an inline CSS style for an element |
| tabindex | Specifies the tabbing order of an element |
| title | Specifies extra information about an element |
| translate | Specifies whether the content of an element should be translated or not |

HTML Reference - Browser Support

HTML Reference With Browser Support

The table below lists all HTML elements and their attributes, along with browser support:

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| | | | | | |
|--------------------------------|------|------|------|------|------|
| <a> | Yes | Yes | Yes | Yes | Yes |
| download | 14.0 | 18.0 | 20.0 | 10.1 | 15.0 |
| href | Yes | Yes | Yes | Yes | Yes |
| hreflang | Yes | Yes | Yes | Yes | Yes |
| media | Yes | Yes | Yes | Yes | Yes |
| ping | Yes | No | Yes | No | Yes |
| referrerpolicy | 51.0 | 79.0 | 50.0 | 11.1 | 38.0 |
| rel | Yes | Yes | Yes | Yes | Yes |
| target | Yes | Yes | Yes | Yes | Yes |
| type | Yes | Yes | Yes | Yes | Yes |

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<abbr> Yes Yes Yes Yes Yes

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<address> Yes Yes Yes Yes Yes

 \hat{A}

| | | | | | |
|--------------------------------|------|------|------|------|------|
| <area> | Yes | Yes | Yes | Yes | Yes |
| alt | Yes | Yes | Yes | Yes | Yes |
| coords | Yes | Yes | Yes | Yes | Yes |
| download | Yes | Yes | Yes | Yes | Yes |
| href | Yes | Yes | Yes | Yes | Yes |
| hreflang | Yes | Yes | Yes | Yes | Yes |
| media | Yes | Yes | Yes | Yes | Yes |
| referrerpolicy | 51.0 | 79.0 | 50.0 | 11.1 | 38.0 |
| rel | Yes | Yes | Yes | Yes | Yes |
| shape | Yes | Yes | Yes | Yes | Yes |
| target | Yes | Yes | Yes | Yes | Yes |
| type | Yes | Yes | Yes | Yes | Yes |

 \hat{A}

<article> 6.0 9.0 4.0 5.0 11.1

 \hat{A}

<aside> 6.0 9.0 4.0 5.0 11.1

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| | | | | | |
|----------------------|-----|-----|-----|-----|------|
| <u><audio></u> | 4.0 | 9.0 | 3.5 | 4.0 | 11.5 |
| <u>autoplay</u> | 4.0 | 9.0 | 3.5 | 4.0 | 11.5 |

| | | | | | |
|--------------------------|-----|------|------|-----|------|
| controls | 4.0 | 9.0 | 3.5 | 4.0 | 11.5 |
| loop | 4.0 | 9.0 | 3.5 | 4.0 | 11.5 |
| muted | 4.0 | 10.0 | 11.0 | 7.1 | 11.5 |
| preload | 4.0 | 9.0 | 4.0 | 4.0 | 11.5 |
| src | 4.0 | 9.0 | 3.5 | 4.0 | 11.5 |

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[](#) Yes Yes Yes Yes Yes

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[<base>](#) Yes Yes Yes Yes Yes

[href](#) Yes Yes Yes Yes Yes

[target](#) Yes Yes Yes Yes Yes

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[<bdi>](#) 16.0 79.0 10.0 No 15.0

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[<bdo>](#) Yes Yes Yes Yes Yes

[dir](#) Yes Yes Yes Yes Yes

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[<blockquote>](#) Yes Yes Yes Yes Yes

[cite](#) Yes Yes Yes Yes Yes

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[<body>](#) Yes Yes Yes Yes Yes

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[
](#) Yes Yes Yes Yes Yes

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|--------------------------------|------|------|-----|-----|------|
| <button> | Yes | Yes | Yes | Yes | Yes |
| autofocus | 5.0 | 10.0 | 4.0 | 5.0 | 9.6 |
| disabled | Yes | Yes | Yes | Yes | Yes |
| form | 10.0 | 16.0 | 4.0 | 5.1 | 9.5 |
| formaction | 9.0 | 10.0 | 4.0 | 5.1 | 15.0 |
| formenctype | 9.0 | 10.0 | 4.0 | 5.1 | 11.5 |
| formmethod | 9.0 | 10.0 | 4.0 | 5.1 | 15.0 |
| formnovalidate | 6.0 | 11.0 | 4.0 | Yes | Yes |
| formtarget | 9.0 | 10.0 | 4.0 | 5.1 | 10.6 |
| name | Yes | Yes | Yes | Yes | Yes |
| type | Yes | Yes | Yes | Yes | Yes |
| value | Yes | Yes | Yes | Yes | Yes |

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[<canvas>](#) 4.0 9.0 2.0 3.1 9.0

[height](#) 4.0 9.0 2.0 3.1 9.0

[width](#) 4.0 9.0 2.0 3.1 9.0

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[<caption>](#) Yes Yes Yes Yes Yes

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[<cite>](#) Yes Yes Yes Yes Yes

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[<code>](#) Yes Yes Yes Yes Yes

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[<col>](#) Yes Yes Yes Yes Yes

[span](#) Yes Yes Yes Yes Yes

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[<colgroup>](#) Yes Yes Yes Yes Yes

[span](#) Yes Yes Yes Yes Yes

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[<data>](#) 62.0 13.0 22.0 No 49.0

value 62.0 13.0 22.0 No 49.0

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[<datalist>](#) 20.0 10.0 4.0 12.1 9.5

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[<dd>](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes

[cite](#) Yes Yes Yes Yes Yes

[datetime](#) Yes Yes Yes Yes Yes

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[<details>](#) 12.0Â 79.0 49.0 6.0 15.0

[open](#) 12.0 79.0 49.0 6.0 15.0

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[<dfn>](#) Yes Yes Yes Yes Yes

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[<dialog>](#) 37.0 79.0 53.0* No 24.0

[open](#) 37.0 79.0 53.0* No 24.0

* Not supported by default, but can be enabled in about:config (set dom.dialog_element.enabled to true).

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[<div>](#) Yes Yes Yes Yes Yes

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[<dl>](#) Yes Yes Yes Yes Yes

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[<dt>](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes

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[<embed>](#) Yes Yes Yes Yes Yes

[height](#) Yes Yes Yes Yes Yes

[src](#) Yes Yes Yes Yes Yes

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|-----------------------|-----|-----|-----|-----|-----|
| type | Yes | Yes | Yes | Yes | Yes |
| width | Yes | Yes | Yes | Yes | Yes |

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|----------------------------------|-----|------|-----|-----|-----|
| <fieldset> | Yes | Yes | Yes | Yes | Yes |
| disabled | Yes | Yes | Yes | 6.0 | Yes |
| form | Yes | Yes | Yes | Yes | Yes |
| name | Yes | 11.0 | Yes | Yes | Yes |

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|------------------------------------|-----|-----|-----|-----|------|
| <figcaption> | 8.0 | 9.0 | 4.0 | 5.1 | 11.0 |
|------------------------------------|-----|-----|-----|-----|------|

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| <figure> | 8.0 | 9.0 | 4.0 | 5.1 | 11.0 |
|--------------------------------|-----|-----|-----|-----|------|

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|--------------------------------|-----|-----|-----|-----|------|
| <footer> | 5.0 | 9.0 | 4.0 | 5.0 | 11.1 |
|--------------------------------|-----|-----|-----|-----|------|

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|--------------------------------|-----|------|-----|------|------|
| <form> | Yes | Yes | Yes | Yes | Yes |
| accept-charset | Yes | Yes | Yes | Yes | Yes |
| action | Yes | Yes | Yes | Yes | Yes |
| autocomplete | Yes | Yes | 4.0 | 5.2 | 15.0 |
| enctype | Yes | Yes | Yes | Yes | Yes |
| method | Yes | Yes | Yes | Yes | Yes |
| name | Yes | Yes | Yes | Yes | Yes |
| novalidate | Yes | 10.0 | 4.0 | 10.1 | 15.0 |
| rel | Yes | Yes | Yes | Yes | Yes |
| target | Yes | Yes | Yes | Yes | Yes |

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|---------------------------------------------|-----|-----|-----|-----|-----|
| <h1> - <h6> | Yes | Yes | Yes | Yes | Yes |
|---------------------------------------------|-----|-----|-----|-----|-----|

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|------------------------------|-----|-----|-----|-----|-----|
| <head> | Yes | Yes | Yes | Yes | Yes |
|------------------------------|-----|-----|-----|-----|-----|

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|--------------------------------|-----|-----|-----|-----|------|
| <header> | 5.0 | 9.0 | 4.0 | 5.0 | 11.1 |
|--------------------------------|-----|-----|-----|-----|------|

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|----------------------------|-----|-----|-----|-----|-----|
| <hr> | Yes | Yes | Yes | Yes | Yes |
|----------------------------|-----|-----|-----|-----|-----|

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|------------------------------|-----|-----|-----|-----|-----|
| <html> | Yes | Yes | Yes | Yes | Yes |
| xmlns | Yes | Yes | Yes | Yes | Yes |

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|---------------------------|-----|-----|-----|-----|-----|
| <i> | Yes | Yes | Yes | Yes | Yes |
|---------------------------|-----|-----|-----|-----|-----|

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|--------------------------------|------|-----------|------|------|------|
| <iframe> | Yes | Yes | Yes | Yes | Yes |
| allow | 60.0 | 79.0 | 74.0 | 11.1 | 47.0 |
| allowfullscreen | 27.0 | 11.0 -ms- | 18.0 | 7.0 | Yes |
| allowpaymentrequest | No | No | No | No | No |
| height | Yes | Yes | Yes | Yes | Yes |

| | | | | | |
|--------------------------------|------|------|------|------|------|
| name | Yes | Yes | Yes | Yes | Yes |
| referrerpolicy | 51.0 | 79.0 | 50.0 | 11.1 | 38.0 |
| sandbox | 4.0 | 10.0 | 17.0 | 5.0 | 15.0 |
| src | Yes | Yes | Yes | Yes | Yes |
| srcdoc | 20.0 | 79.0 | 25.0 | 6.0 | 15.0 |
| width | Yes | Yes | Yes | Yes | Yes |

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| | | | | | |
|--------------------------------|------|------|------|------|------|
| | Yes | Yes | Yes | Yes | Yes |
| alt | Yes | Yes | Yes | Yes | Yes |
| crossorigin | Yes | Yes | Yes | Yes | Yes |
| height | Yes | Yes | Yes | Yes | Yes |
| ismap | Yes | Yes | Yes | Yes | Yes |
| loading | 77.0 | 79.0 | 75.0 | No | 64.0 |
| longdesc | Yes | Yes | Yes | Yes | Yes |
| referrerpolicy | 51.0 | 79.0 | 50.0 | 11.1 | 38.0 |
| sizes | Yes | Yes | Yes | Yes | Yes |
| src | Yes | Yes | Yes | Yes | Yes |
| srcset | 34.0 | ? | 38.0 | 8.0 | 21.0 |
| usemap | Yes | Yes | Yes | Yes | Yes |
| width | Yes | Yes | Yes | Yes | Yes |

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| | | | | | |
|--------------------------------|------|------|------|------|------|
| <input> | Yes | Yes | Yes | Yes | Yes |
| accept | 26.0 | 10.0 | 37.0 | 11.1 | 15.0 |
| alt | Yes | Yes | Yes | Yes | Yes |
| autocomplete | 17.0 | 6.0 | 2.0 | 5.1 | 10.0 |
| autofocus | 5.0 | 11.0 | 4.0 | 5.0 | 9.6 |
| checked | Yes | Yes | Yes | Yes | Yes |
| dirname | Yes | 79.0 | No | Yes | Yes |
| disabled | Yes | Yes | Yes | Yes | Yes |
| form | Yes | Yes | Yes | 5.1 | 10.6 |
| formaction | Yes | 10.0 | Yes | 5.1 | 10.6 |
| formenctype | Yes | 10.0 | Yes | 5.1 | 10.6 |
| formmethod | Yes | 10.0 | Yes | 5.1 | 10.6 |
| formnovalidate | Yes | 10.0 | Yes | 10.1 | 10.6 |
| formtarget | Yes | 10.0 | Yes | 5.1 | 10.6 |
| height | Yes | Yes | 16.0 | Yes | Yes |
| list | 20.0 | 10.0 | 4.0 | No | 9.6 |
| max | 5.0 | 10.0 | 16.0 | 5.1 | 10.6 |
| maxlength | 4.0 | 10.0 | 4.0 | 5.1 | 15.0 |
| min | 5.0 | 10.0 | 16.0 | 5.1 | 10.6 |
| minlength | 40.0 | 17.0 | 51.0 | 10.1 | 27.0 |
| multiple | 6.0 | 10.0 | 3.6 | 5.0 | 11.0 |
| name | Yes | Yes | Yes | Yes | Yes |
| pattern | 5.0 | 10.0 | 4.0 | 10.1 | 9.6 |
| placeholder | 10.0 | 10.0 | 4.0 | 5.0 | 11.0 |
| readonly | Yes | Yes | Yes | Yes | Yes |
| required | 5.0 | 10.0 | 4.0 | 10.1 | 9.6 |
| size | Yes | Yes | Yes | Yes | Yes |
| src | Yes | Yes | Yes | Yes | Yes |
| step | 6.0 | 10.0 | 16.0 | 5.0 | 10.6 |
| type | Yes | Yes | Yes | Yes | Yes |
| value | Yes | Yes | Yes | Yes | Yes |
| width | Yes | Yes | 16.0 | Yes | Yes |

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[<ins>](#) Yes Yes Yes Yes Yes
[cite](#) Yes Yes Yes Yes Yes
[datetime](#) Yes Yes Yes Yes Yes

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[<kbd>](#) Yes Yes Yes Yes Yes

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[<label>](#) Yes Yes Yes Yes Yes
[for](#) Yes Yes Yes Yes Yes
[form](#) Yes Yes Yes Yes Yes

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[<legend>](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes
[value](#) Yes Yes Yes Yes Yes

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|--------------------------------|------|------|------|------|------|
| <link> | Yes | Yes | Yes | Yes | Yes |
| crossorigin | 25.0 | 79.0 | 18.0 | ? | 15.0 |
| href | Yes | Yes | Yes | Yes | Yes |
| hreflang | Yes | Yes | Yes | Yes | Yes |
| media | Yes | Yes | Yes | Yes | Yes |
| referrerpolicy | 51.0 | 79.0 | 50.0 | 11.1 | 38.0 |
| rel | Yes | Yes | Yes | Yes | Yes |
| sizes | No | No | No | No | No |
| title | Yes | Yes | Yes | Yes | Yes |
| type | Yes | Yes | Yes | Yes | Yes |

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[<main>](#) 26.0 12.0 21.0 7.0 16.0

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[<map>](#) Yes Yes Yes Yes Yes
[name](#) Yes Yes Yes Yes Yes

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[<mark>](#) 6.0 9.0 4.0 5.0 11.1

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|------------------------------|-----|-----|-----|-----|-----|
| <meta> | Yes | Yes | Yes | Yes | Yes |
| charset | Yes | Yes | Yes | Yes | Yes |
| content | Yes | Yes | Yes | Yes | Yes |
| http_equiv | Yes | Yes | Yes | Yes | Yes |
| name | Yes | Yes | Yes | Yes | Yes |

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|-------------------------------|-----|------|------|-----|------|
| <meter> | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |
| form | No | No | No | No | No |
| high | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |
| low | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |
| max | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |
| min | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |
| optimum | 8.0 | 13.0 | 16.0 | 6.0 | 11.5 |

[value](#) 8.0 13.0 16.0 6.0 11.5

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[<nav>](#) 5.0 9.0 4.0 5.0 11.1

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[<noscript>](#) Yes Yes Yes Yes Yes

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[<object>](#) Yes Yes Yes Yes Yes

[data](#) Yes Yes Yes Yes Yes

[form](#) No No No No No

[height](#) Yes Yes Yes Yes Yes

[name](#) Yes Yes Yes Yes Yes

[type](#) Yes Yes Yes Yes Yes

[usemap](#) No No Yes No No

[width](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes

[reversed](#) 18.0 79.0 18.0 6.0 12.1

[start](#) Yes Yes Yes Yes Yes

[type](#) Yes Yes Yes Yes Yes

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[<optgroup>](#) Yes Yes Yes Yes Yes

[disabled](#) Yes 8.0 Yes Yes Yes

[label](#) Yes Yes Yes Yes Yes

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[<option>](#) Yes Yes Yes Yes Yes

[disabled](#) Yes 8.0 Yes Yes Yes

[label](#) Yes 8.0 No Yes Yes

[selected](#) Yes Yes Yes Yes Yes

[value](#) Yes Yes Yes Yes Yes

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[<output>](#) 10.0 13.0 4.0 5.1 11.0

[for](#) 10.0 13.0 4.0 7.0 11.5

[form](#) No No No No No

[name](#) 10.0 13.0 4.0 7.0 11.5

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[<p>](#) Yes Yes Yes Yes Yes

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[<param>](#) Yes Yes Yes Yes Yes

[name](#) Yes Yes Yes Yes Yes

[value](#) Yes Yes Yes Yes Yes

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[<picture>](#) 38.0 13.0 38.0 9.1 25.0

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[<pre>](#) Yes Yes Yes Yes Yes

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|----------------------------------|-----|------|------|-----|------|
| <progress> | 8.0 | 10.0 | 16.0 | 6.0 | 11.0 |
| max | 8.0 | 10.0 | 16.0 | 6.0 | 11.0 |
| value | 8.0 | 10.0 | 16.0 | 6.0 | 11.0 |

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|---------------------------|-----|-----|-----|-----|-----|
| <q> | Yes | Yes | Yes | Yes | Yes |
| cite | Yes | Yes | Yes | Yes | Yes |

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|----------------------------|-----|-----|------|-----|------|
| <rp> | 5.0 | 5.5 | 38.0 | 5.0 | 15.0 |
|----------------------------|-----|-----|------|-----|------|

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|----------------------------|-----|-----|------|-----|------|
| <rt> | 5.0 | 5.5 | 38.0 | 5.0 | 15.0 |
|----------------------------|-----|-----|------|-----|------|

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| <ruby> | 5.0 | 5.5 | 38.0 | 5.0 | 15.0 |
|------------------------------|-----|-----|------|-----|------|

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|---------------------------|-----|-----|-----|-----|-----|
| <s> | Yes | Yes | Yes | Yes | Yes |
|---------------------------|-----|-----|-----|-----|-----|

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|------------------------------|-----|-----|-----|-----|-----|
| <samp> | Yes | Yes | Yes | Yes | Yes |
|------------------------------|-----|-----|-----|-----|-----|

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|--------------------------------|------|------|------|------|------|
| <script> | Yes | Yes | Yes | Yes | Yes |
| async | 8.0 | 10.0 | 3.6 | 5.1 | 15.0 |
| crossorigin | 30.0 | 18.0 | 13.0 | 13.0 | 12.1 |
| defer | 8.0 | 10.0 | 3.5 | 5.0 | 15.0 |
| integrity | 45.0 | 17.0 | 43.0 | 13.0 | 66.0 |
| nomodule | 61.0 | 16.0 | 60.0 | 11.0 | 48.0 |
| referrerpolicy | 70.0 | 79.0 | 65.0 | No | Yes |
| src | Yes | Yes | Yes | Yes | Yes |
| type | Yes | Yes | Yes | Yes | Yes |

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|---------------------------------|-----|-----|-----|-----|------|
| <section> | 5.0 | 9.0 | 4.0 | 5.0 | 11.5 |
|---------------------------------|-----|-----|-----|-----|------|

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|--------------------------------|-----|------|-----|-----|-----|
| <select> | Yes | Yes | Yes | Yes | Yes |
| autofocus | Yes | 10.0 | No | Yes | Yes |
| disabled | Yes | 9.0 | Yes | Yes | Yes |
| form | Yes | Yes | Yes | Yes | Yes |
| multiple | Yes | Yes | Yes | Yes | Yes |
| name | Yes | Yes | Yes | Yes | Yes |
| required | Yes | 10.0 | 4.0 | Yes | Yes |
| size | Yes | Yes | Yes | Yes | Yes |

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|------------------------------|------|------|------|------|------|
| <slot> | 53.0 | 79.0 | 63.0 | 10.0 | 40.0 |
|------------------------------|------|------|------|------|------|

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| <small> | Yes | Yes | Yes | Yes | Yes |
|-------------------------------|-----|-----|-----|-----|-----|

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|--------------------------------|-----|-----|-----|-----|------|
| <source> | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |
|--------------------------------|-----|-----|-----|-----|------|

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|------------------------|------|------|------|-----|------|
| media | 38.0 | 9.0 | 15.0 | 9.1 | 25.0 |
| sizes | 38.0 | 13.0 | 3.8 | 9.1 | 25.0 |
| src | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |
| srcset | 38.0 | 13.0 | 38.0 | 9.1 | 25.0 |
| type | 4.0 | 9.0 | 3.5 | 4.0 | 10.5 |

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[](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes

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[<style>](#) Yes Yes Yes Yes Yes

[media](#) Yes Yes Yes Yes Yes

[type](#) Yes Yes Yes Yes Yes

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[<sub>](#) Yes Yes Yes Yes Yes

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[<summary>](#) 12.0 79.0 49.0 6.0 15.0

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[<sup>](#) Yes Yes Yes Yes Yes

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[<svg>](#) 4.0 9.0 3.0 3.2 10.1

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[<table>](#) Yes Yes Yes Yes Yes

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[<tbody>](#) Yes Yes Yes Yes Yes

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[<td>](#) Yes Yes Yes Yes Yes

[colspan](#) Yes Yes Yes Yes Yes

[headers](#) Yes Yes Yes Yes Yes

[rowspan](#) Yes Yes Yes Yes Yes

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[<template>](#) 26.0 13.0 22.0 8.0 15.0

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[<textarea>](#) Yes Yes Yes Yes Yes

autocomplete No No 59.0 13.0 No

[autofocus](#) Yes 10.0 4.0 Yes Yes

[cols](#) Yes Yes Yes Yes Yes

[dirname](#) Yes 79.0 No Yes Yes

[disabled](#) Yes Yes Yes Yes Yes

[form](#) Yes 11.0 Yes Yes Yes

[maxlength](#) Yes 10.0 4.0 Yes Yes

minlength Yes Yes Yes Yes Yes

[name](#) Yes Yes Yes Yes Yes

[placeholder](#) Yes 10.0 4.0 5.0 11.5

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|--------------------------|-----|------|-----|-----|-----|
| readonly | Yes | Yes | Yes | Yes | Yes |
| required | Yes | 10.0 | 4.0 | Yes | Yes |
| rows | Yes | Yes | Yes | Yes | Yes |
| spellcheck | Yes | 11.0 | Yes | Yes | Yes |
| wrap | Yes | Yes | Yes | Yes | Yes |

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[<tfoot>](#) Yes Yes Yes Yes Yes

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[<th>](#) Yes Yes Yes Yes Yes
[abbr](#) Yes Yes Yes Yes Yes
[colspan](#) Yes Yes Yes Yes Yes
[headers](#) Yes Yes Yes Yes Yes
[rowspan](#) Yes Yes Yes Yes Yes
[scope](#) Yes Yes Yes Yes Yes

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[<thead>](#) Yes Yes Yes Yes Yes

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[<time>](#) 62.0 18.0 22.0 7.0 49.0
[datetime](#) 62.0 18.0 22.0 7.0 49.0

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[<title>](#) Yes Yes Yes Yes Yes

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[<tr>](#) Yes Yes Yes Yes Yes

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[<track>](#) 23.0 10.0 31.0 6.0 12.1
[default](#) 23.0 10.0 31.0 6.0 12.1
[kind](#) 23.0 10.0 31.0 6.0 12.1
[label](#) 23.0 10.0 31.0 6.0 12.1
[src](#) 23.0 10.0 31.0 6.0 12.1
[srclang](#) 23.0 10.0 31.0 6.0 12.1

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[<u>](#) Yes Yes Yes Yes Yes

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[](#) Yes Yes Yes Yes Yes

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[<var>](#) Yes Yes Yes Yes Yes

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[<video>](#) 4.0 9.0 3.5 3.1 11.5
[autoplay](#) 4.0 9.0 3.5 3.1 11.5
[controls](#) 4.0 9.0 3.5 3.1 11.5
[height](#) 4.0 9.0 3.5 3.1 11.5
[loop](#) 4.0 9.0 11.0 3.1 11.5
[muted](#) 30.0 10.0 11.0 5.0 Yes
[poster](#) 4.0 9.0 3.6 3.1 10.5
[preload](#) 4.0 9.0 4.0 3.1 10.5

| | | | | | |
|-----------------------|-----|-----|-----|-----|------|
| src | 4.0 | 9.0 | 3.5 | 3.1 | 11.5 |
| width | 4.0 | 9.0 | 3.5 | 3.1 | 11.5 |

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[<wbr>](#) Yes Yes Yes Yes Yes

HTML Event Attributes

Global Event Attributes

HTML has the ability to let events trigger actions in a browser, like starting a JavaScript when a user clicks on an element.

To learn more about programming events, please visit our [JavaScript tutorial](#).

Below are the global event attributes that can be added to HTML elements to define event actions.

Window Event Attributes

Events triggered for the window object (applies to the <body> tag):

| Attribute | Value | Description |
|--------------------------------|---------------|------------------------------------------------------------------------------|
| onafterprint | <i>script</i> | Script to be run after the document is printed |
| onbeforeprint | <i>script</i> | Script to be run before the document is printed |
| onbeforeunload | <i>script</i> | Script to be run when the document is about to be unloaded |
| onerror | <i>script</i> | Script to be run when an error occurs |
| onhashchange | <i>script</i> | Script to be run when there has been changes to the anchor part of the a URL |
| onload | <i>script</i> | Fires after the page is finished loading |
| onmessage | <i>script</i> | Script to be run when the message is triggered |
| onoffline | <i>script</i> | Script to be run when the browser starts to work offline |
| ononline | <i>script</i> | Script to be run when the browser starts to work online |
| onpagehide | <i>script</i> | Script to be run when a user navigates away from a page |
| onpageshow | <i>script</i> | Script to be run when a user navigates to a page |
| onpopstate | <i>script</i> | Script to be run when the window's history changes |
| onresize | <i>script</i> | Fires when the browser window is resized |
| onstorage | <i>script</i> | Script to be run when a Web Storage area is updated |
| onunload | <i>script</i> | Fires once a page has unloaded (or the browser window has been closed) |

Form Events

Events triggered by actions inside a HTML form (applies to almost all HTML elements, but is most used in form elements):

| Attribute | Value | Description |
|-------------------------------|---------------|-------------------------------------------------------------------------------|
| onblur | <i>script</i> | Fires the moment that the element loses focus |
| onchange | <i>script</i> | Fires the moment when the value of the element is changed |
| oncontextmenu | <i>script</i> | Script to be run when a context menu is triggered |
| onfocus | <i>script</i> | Fires the moment when the element gets focus |
| oninput | <i>script</i> | Script to be run when an element gets user input |
| oninvalid | <i>script</i> | Script to be run when an element is invalid |
| onreset | <i>script</i> | Fires when the Reset button in a form is clicked |
| onsearch | <i>script</i> | Fires when the user writes something in a search field (for <input="search">) |
| onselect | <i>script</i> | Fires after some text has been selected in an element |
| onsubmit | <i>script</i> | Fires when a form is submitted |

Keyboard Events

| Attribute | Value | Description |
|----------------------------|---------------|-------------------------------------|
| onkeydown | <i>script</i> | Fires when a user is pressing a key |
| onkeypress | <i>script</i> | Fires when a user presses a key |
| onkeyup | <i>script</i> | Fires when a user releases a key |

Mouse Events

| Attribute | Value | Description |
|-----------------------------|---------------|--------------------------------------------------------------------|
| onclick | <i>script</i> | Fires on a mouse click on the element |
| ondblclick | <i>script</i> | Fires on a mouse double-click on the element |
| onmousedown | <i>script</i> | Fires when a mouse button is pressed down on an element |
| onmousemove | <i>script</i> | Fires when the mouse pointer is moving while it is over an element |
| onmouseout | <i>script</i> | Fires when the mouse pointer moves out of an element |
| onmouseover | <i>script</i> | Fires when the mouse pointer moves over an element |
| onmouseup | <i>script</i> | Fires when a mouse button is released over an element |
| onmousewheel | <i>script</i> | Deprecated. Use the onwheel attribute instead |
| onwheel | <i>script</i> | Fires when the mouse wheel rolls up or down over an element |

Drag Events

| Attribute | Value | Description |
|-----------------------------|---------------|----------------------------------------------------------------------------|
| ondrag | <i>script</i> | Script to be run when an element is dragged |
| ondragend | <i>script</i> | Script to be run at the end of a drag operation |
| ondragenter | <i>script</i> | Script to be run when an element has been dragged to a valid drop target |
| ondragleave | <i>script</i> | Script to be run when an element leaves a valid drop target |
| ondragover | <i>script</i> | Script to be run when an element is being dragged over a valid drop target |
| ondragstart | <i>script</i> | Script to be run at the start of a drag operation |
| ondrop | <i>script</i> | Script to be run when dragged element is being dropped |
| onscroll | <i>script</i> | Script to be run when an element's scrollbar is being scrolled |

Clipboard Events

| Attribute | Value | Description |
|-------------------------|---------------|-------------------------------------------------------|
| oncopy | <i>script</i> | Fires when the user copies the content of an element |
| oncut | <i>script</i> | Fires when the user cuts the content of an element |
| onpaste | <i>script</i> | Fires when the user pastes some content in an element |

Media Events

Events triggered by medias like videos, images and audio (applies to all HTML elements, but is most common in media elements, like `<audio>`, `<embed>`, ``, `<object>`, and `<video>`).

Tip: Look at our [HTML Audio and Video DOM Reference](#) for more information.

| Attribute | Value | Description |
|------------------|---------------|-------------------------------------------------------------------------------------------------|
| onabort | <i>script</i> | Script to be run on abort |
| oncanplay | <i>script</i> | Script to be run when a file is ready to start playing (when it has buffered enough to begin) |
| oncanplaythrough | <i>script</i> | Script to be run when a file can be played all the way to the end without pausing for buffering |

| | | |
|------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------|
| oncuechange | <i>script</i> | Script to be run when the cue changes in a <track> element |
| ondurationchange | <i>script</i> | Script to be run when the length of the media changes |
| onemptied | <i>script</i> | Script to be run when something bad happens and the file is suddenly unavailable (like unexpectedly disconnects) |
| onended | <i>script</i> | Script to be run when the media has reach the end (a useful event for messages like "thanks for listening") |
| onerror | <i>script</i> | Script to be run when an error occurs when the file is being loaded |
| onloadeddata | <i>script</i> | Script to be run when media data is loaded |
| onloadedmetadata | <i>script</i> | Script to be run when meta data (like dimensions and duration) are loaded |
| onloadstart | <i>script</i> | Script to be run just as the file begins to load before anything is actually loaded |
| onpause | <i>script</i> | Script to be run when the media is paused either by the user or programmatically |
| onplay | <i>script</i> | Script to be run when the media is ready to start playing |
| onplaying | <i>script</i> | Script to be run when the media actually has started playing |
| onprogress | <i>script</i> | Script to be run when the browser is in the process of getting the media data |
| onratechange | <i>script</i> | Script to be run each time the playback rate changes (like when a user switches to a slow motion or fast forward mode) |
| onseeked | <i>script</i> | Script to be run when the seeking attribute is set to false indicating that seeking has ended |
| onseeking | <i>script</i> | Script to be run when the seeking attribute is set to true indicating that seeking is active |
| onstalled | <i>script</i> | Script to be run when the browser is unable to fetch the media data for whatever reason |
| onsuspend | <i>script</i> | Script to be run when fetching the media data is stopped before it is completely loaded for whatever reason |
| ontimeupdate | <i>script</i> | Script to be run when the playing position has changed (like when the user fast forwards to a different point in the media) |
| onvolumechange | <i>script</i> | Script to be run each time the volume is changed which (includes setting the volume to "mute") |
| onwaiting | <i>script</i> | Script to be run when the media has paused but is expected to resume (like when the media pauses to buffer more data) |

Misc Events

| Attribute | Value | Description |
|--------------------------|---------------|-----------------------------------------------------------|
| ontoggle | <i>script</i> | Fires when the user opens or closes the <details> element |

HTML Color Names

Color Names Supported by All Browsers

All modern browsers support the following 140 color names (click on a color name, or a hex value, to view the color as the background-color along with different text colors):

[For a full overview of HTML colors, visit our colors tutorial.](#)

AliceBlue

#F0F8FF

Color Mixer

Color Picker

AntiqueWhite

#FAEBD7

Color Mixer

Color Picker

Aqua

#00FFFF

| | |
|----------------------------------|--------------|
| Color Mixer | Color Picker |
| Aquamarine #7FFFD4 | |
| Color Mixer | Color Picker |
| Azure #F0FFFF | |
| Color Mixer | Color Picker |
| Beige #F5F5DC | |
| Color Mixer | Color Picker |
| Bisque #FFE4C4 | |
| Color Mixer | Color Picker |
| Black #000000 | |
| Color Mixer | Color Picker |
| BlanchedAlmond #FFEBCD | |
| Color Mixer | Color Picker |
| Blue #0000FF | |
| Color Mixer | Color Picker |
| BlueViolet #8A2BE2 | |
| Color Mixer | Color Picker |
| Brown #A52A2A | |
| Color Mixer | Color Picker |
| BurlyWood #DEB887 | |
| Color Mixer | Color Picker |
| CadetBlue #5F9EA0 | |
| Color Mixer | Color Picker |
| Chartreuse #7FFF00 | |
| Color Mixer | Color Picker |
| Chocolate #D2691E | |
| Color Mixer | Color Picker |
| Coral #FF7F50 | |
| Color Mixer | Color Picker |
| CornflowerBlue | |

#6495ED

Color Mixer

Color Picker

Cornsilk

#FFF8DC

Color Mixer

Color Picker

Crimson

#DC143C

Color Mixer

Color Picker

Cyan

#00FFFF

Color Mixer

Color Picker

DarkBlue

#00008B

Color Mixer

Color Picker

DarkCyan

#008B8B

Color Mixer

Color Picker

DarkGoldenRod

#B8860B

Color Mixer

Color Picker

DarkGray

#A9A9A9

Color Mixer

Color Picker

DarkGrey

#A9A9A9

Color Mixer

Color Picker

DarkGreen

#006400

Color Mixer

Color Picker

DarkKhaki

#BDB76B

Color Mixer

Color Picker

DarkMagenta

#8B008B

Color Mixer

Color Picker

DarkOliveGreen

#556B2F

Color Mixer

Color Picker

DarkOrange

#FF8C00

Color Mixer

Color Picker

DarkOrchid

#9932CC

Color Mixer

Color Picker

DarkRed

#8B0000

Color Mixer

Color Picker

DarkSalmon

#E9967A

Color Mixer

Color Picker

DarkSeaGreen

#8FBC8F

Color Mixer

Color Picker

DarkSlateBlue

#483D8B

Color Mixer

Color Picker

DarkSlateGray

#2F4F4F

Color Mixer

Color Picker

DarkSlateGrey

#2F4F4F

Color Mixer

Color Picker

DarkTurquoise

#00CED1

Color Mixer

Color Picker

DarkViolet

#9400D3

Color Mixer

Color Picker

DeepPink

#FF1493

Color Mixer

Color Picker

DeepSkyBlue

#00BFFF

Color Mixer

Color Picker

DimGray

#696969

Color Mixer

Color Picker

DimGrey

#696969

Color Mixer

Color Picker

DodgerBlue

#1E90FF

Color Mixer

Color Picker

FireBrick

#B22222

Color Mixer

Color Picker

FloralWhite

#FFFAF0

| | |
|-------------------------------|--------------|
| Color Mixer | Color Picker |
| ForestGreen #228B22 | |
| Color Mixer | Color Picker |
| Fuchsia #FF00FF | |
| Color Mixer | Color Picker |
| Gainsboro #DCDCDC | |
| Color Mixer | Color Picker |
| GhostWhite #F8F8FF | |
| Color Mixer | Color Picker |
| Gold #FFD700 | |
| Color Mixer | Color Picker |
| GoldenRod #DAA520 | |
| Color Mixer | Color Picker |
| Gray #808080 | |
| Color Mixer | Color Picker |
| Grey #808080 | |
| Color Mixer | Color Picker |
| Green #008000 | |
| Color Mixer | Color Picker |
| GreenYellow #ADFF2F | |
| Color Mixer | Color Picker |
| HoneyDew #F0FFF0 | |
| Color Mixer | Color Picker |
| HotPink #FF69B4 | |
| Color Mixer | Color Picker |
| IndianRed #CD5C5C | |
| Color Mixer | Color Picker |
| Indigo #4B0082 | |
| Color Mixer | Color Picker |
| Ivory | |

#FFFFFF0

Color Mixer

Color Picker

Khaki

#F0E68C

Color Mixer

Color Picker

Lavender

#E6E6FA

Color Mixer

Color Picker

LavenderBlush

#FFF0F5

Color Mixer

Color Picker

LawnGreen

#7CFC00

Color Mixer

Color Picker

LemonChiffon

#FFFACD

Color Mixer

Color Picker

LightBlue

#ADD8E6

Color Mixer

Color Picker

LightCoral

#F08080

Color Mixer

Color Picker

LightCyan

#E0FFFF

Color Mixer

Color Picker

LightGoldenRodYellow

#FAFAD2

Color Mixer

Color Picker

LightGray

#D3D3D3

Color Mixer

Color Picker

LightGrey

#D3D3D3

Color Mixer

Color Picker

LightGreen

#90EE90

Color Mixer

Color Picker

LightPink

#FFB6C1

Color Mixer

Color Picker

LightSalmon

#FFA07A

Color Mixer

Color Picker

LightSeaGreen

#20B2AA

Color Mixer

Color Picker

LightSkyBlue

#87CEFA

Color Mixer

Color Picker

LightSlateGray

#778899

Color Mixer

Color Picker

LightSlateGrey

#778899

Color Mixer

Color Picker

LightSteelBlue

#B0C4DE

Color Mixer

Color Picker

LightYellow

#FFFFE0

Color Mixer

Color Picker

Lime

#00FF00

Color Mixer

Color Picker

LimeGreen

#32CD32

Color Mixer

Color Picker

Linen

#FAF0E6

Color Mixer

Color Picker

Magenta

#FF00FF

Color Mixer

Color Picker

Maroon

#800000

Color Mixer

Color Picker

MediumAquaMarine

#66CDAA

Color Mixer

Color Picker

MediumBlue

#0000CD

Color Mixer

Color Picker

MediumOrchid

#BA55D3

Color Mixer

Color Picker

MediumPurple

#9370DB

| | |
|-------------------------------------|--------------|
| Color Mixer | Color Picker |
| MediumSeaGreen #3CB371 | |
| Color Mixer | Color Picker |
| MediumSlateBlue #7B68EE | |
| Color Mixer | Color Picker |
| MediumSpringGreen #00FA9A | |
| Color Mixer | Color Picker |
| MediumTurquoise #48D1CC | |
| Color Mixer | Color Picker |
| MediumVioletRed #C71585 | |
| Color Mixer | Color Picker |
| MidnightBlue #191970 | |
| Color Mixer | Color Picker |
| MintCream #F5FFFA | |
| Color Mixer | Color Picker |
| MistyRose #FFE4E1 | |
| Color Mixer | Color Picker |
| Moccasin #FFE4B5 | |
| Color Mixer | Color Picker |
| NavajoWhite #FFDEAD | |
| Color Mixer | Color Picker |
| Navy #000080 | |
| Color Mixer | Color Picker |
| OldLace #FDF5E6 | |
| Color Mixer | Color Picker |
| Olive #808000 | |
| Color Mixer | Color Picker |
| OliveDrab #6B8E23 | |
| Color Mixer | Color Picker |
| Orange | |

#FFA500

Color Mixer

Color Picker

OrangeRed

#FF4500

Color Mixer

Color Picker

Orchid

#DA70D6

Color Mixer

Color Picker

PaleGoldenRod

#EEE8AA

Color Mixer

Color Picker

PaleGreen

#98FB98

Color Mixer

Color Picker

PaleTurquoise

#AFEEEE

Color Mixer

Color Picker

PaleVioletRed

#DB7093

Color Mixer

Color Picker

PapayaWhip

#FFEFD5

Color Mixer

Color Picker

PeachPuff

#FFDAB9

Color Mixer

Color Picker

Peru

#CD853F

Color Mixer

Color Picker

Pink

#FFC0CB

Color Mixer

Color Picker

Plum

#DDA0DD

Color Mixer

Color Picker

PowderBlue

#B0E0E6

Color Mixer

Color Picker

Purple

#800080

Color Mixer

Color Picker

RebeccaPurple

#663399

Color Mixer

Color Picker

| | |
|-------------------------------|--------------|
| Red #FF0000 | |
| Color Mixer | Color Picker |
| RosyBrown #BC8F8F | |
| Color Mixer | Color Picker |
| RoyalBlue #4169E1 | |
| Color Mixer | Color Picker |
| SaddleBrown #8B4513 | |
| Color Mixer | Color Picker |
| Salmon #FA8072 | |
| Color Mixer | Color Picker |
| SandyBrown #F4A460 | |
| Color Mixer | Color Picker |
| SeaGreen #2E8B57 | |
| Color Mixer | Color Picker |
| SeaShell #FFF5EE | |
| Color Mixer | Color Picker |
| Sienna #A0522D | |
| Color Mixer | Color Picker |
| Silver #C0C0C0 | |
| Color Mixer | Color Picker |
| SkyBlue #87CEEB | |
| Color Mixer | Color Picker |
| SlateBlue #6A5ACD | |
| Color Mixer | Color Picker |
| SlateGray #708090 | |
| Color Mixer | Color Picker |
| SlateGrey #708090 | |
| Color Mixer | Color Picker |
| Snow #FFFAFA | |

| | |
|-------------------------------|--------------|
| Color Mixer | Color Picker |
| SpringGreen #00FF7F | |
| Color Mixer | Color Picker |
| SteelBlue #4682B4 | |
| Color Mixer | Color Picker |
| Tan #D2B48C | |
| Color Mixer | Color Picker |
| Teal #008080 | |
| Color Mixer | Color Picker |
| Thistle #D8BFD8 | |
| Color Mixer | Color Picker |
| Tomato #FF6347 | |
| Color Mixer | Color Picker |
| Turquoise #40E0D0 | |
| Color Mixer | Color Picker |
| Violet #EE82EE | |
| Color Mixer | Color Picker |
| Wheat #F5DEB3 | |
| Color Mixer | Color Picker |
| White #FFFFFF | |
| Color Mixer | Color Picker |
| WhiteSmoke #F5F5F5 | |
| Color Mixer | Color Picker |
| Yellow #FFFF00 | |
| Color Mixer | Color Picker |
| YellowGreen #9ACD32 | |
| Color Mixer | Color Picker |

HTML Canvas Reference

HTML Canvas Reference

The HTML <canvas> tag is used to draw graphics, on the fly, via scripting (usually JavaScript).

To learn more about <canvas>, please read our [HTML Canvas tutorial](#).

Colors, Styles, and Shadows

| Property | Description |
|----------------------------------------|--------------------------------------------------------------------------|
| fillStyle | Sets or returns the color, gradient, or pattern used to fill the drawing |
| strokeStyle | Sets or returns the color, gradient, or pattern used for strokes |
| shadowColor | Sets or returns the color to use for shadows |
| shadowBlur | Sets or returns the blur level for shadows |
| shadowOffsetX | Sets or returns the horizontal distance of the shadow from the shape |
| shadowOffsetY | Sets or returns the vertical distance of the shadow from the shape |
| Method | Description |
| createLinearGradient() | Creates a linear gradient (to use on canvas content) |
| createPattern() | Repeats a specified element in the specified direction |
| createRadialGradient() | Creates a radial/circular gradient (to use on canvas content) |
| addColorStop() | Specifies the colors and stop positions in a gradient object |

Line Styles

| Property | Description |
|----------------------------|-----------------------------------------------------------------|
| lineCap | Sets or returns the style of the end caps for a line |
| lineJoin | Sets or returns the type of corner created, when two lines meet |
| lineWidth | Sets or returns the current line width |
| miterLimit | Sets or returns the maximum miter length |

Rectangles

| Method | Description |
|------------------------------|------------------------------------------------------|
| rect() | Creates a rectangle |
| fillRect() | Draws a "filled" rectangle |
| strokeRect() | Draws a rectangle (no fill) |
| clearRect() | Clears the specified pixels within a given rectangle |

Paths

| Method | Description |
|------------------------------------|-----------------------------------------------------------------------------------------------|
| fill() | Fills the current drawing (path) |
| stroke() | Actually draws the path you have defined |
| beginPath() | Begins a path, or resets the current path |
| moveTo() | Moves the path to the specified point in the canvas, without creating a line |
| closePath() | Creates a path from the current point back to the starting point |
| lineTo() | Adds a new point and creates a line to that point from the last specified point in the canvas |
| clip() | Clips a region of any shape and size from the original canvas |
| quadraticCurveTo() | Creates a quadratic Bézier curve |
| bezierCurveTo() | Creates a cubic Bézier curve |
| arc() | Creates an arc/curve (used to create circles, or parts of circles) |
| arcTo() | Creates an arc/curve between two tangents |

| | |
|---------------------------------|-----------------------------------------------------------------------------|
| isPointInPath() | Returns true if the specified point is in the current path, otherwise false |
|---------------------------------|-----------------------------------------------------------------------------|

Transformations

| Method | Description |
|--------------------------------|--------------------------------------------------------------------------------------------|
| scale() | Scales the current drawing bigger or smaller |
| rotate() | Rotates the current drawing |
| translate() | Remaps the (0,0) position on the canvas |
| transform() | Replaces the current transformation matrix for the drawing |
| setTransform() | Resets the current transform to the identity matrix. Then runs transform() |

Text

| Property | Description |
|------------------------------|------------------------------------------------------------------|
| font | Sets or returns the current font properties for text content |
| textAlign | Sets or returns the current alignment for text content |
| textBaseline | Sets or returns the current text baseline used when drawing text |

| Method | Description |
|-------------------------------|-----------------------------------------------------------------|
| fillText() | Draws "filled" text on the canvas |
| strokeText() | Draws text on the canvas (no fill) |
| measureText() | Returns an object that contains the width of the specified text |

Image Drawing

| Method | Description |
|-----------------------------|--------------------------------------------------|
| drawImage() | Draws an image, canvas, or video onto the canvas |

Pixel Manipulation

| Property | Description |
|------------------------|----------------------------------------------------------------------------|
| width | Returns the width of an ImageData object |
| height | Returns the height of an ImageData object |
| data | Returns an object that contains image data of a specified ImageData object |

| Method | Description |
|-----------------------------------|------------------------------------------------------------------------------------------------|
| createImageData() | Creates a new, blank ImageData object |
| getImageData() | Returns an ImageData object that copies the pixel data for the specified rectangle on a canvas |
| putImageData() | Puts the image data (from a specified ImageData object) back onto the canvas |

Compositing

| Property | Description |
|------------------------------------------|------------------------------------------------------------------------|
| globalAlpha | Sets or returns the current alpha or transparency value of the drawing |
| globalCompositeOperation | Sets or returns how a new image is drawn onto an existing image |

Other

| Method | Description |
|-------------------------------|----------------------------------------------------|
| save() | Saves the state of the current context |
| restore() | Returns previously saved path state and attributes |
| createEvent() | Â |

getContext() Å
toDataURL() Å

HTML Audio/Video DOM Reference

HTML Audio and Video DOM Reference

The HTML5 DOM has methods, properties, and events for the <audio> and <video> elements.

HTML Audio/Video Methods

| Method | Description |
|--------------------------------|---------------------------------------------------------------|
| addTextTrack() | Adds a new text track to the audio/video |
| canPlayType() | Checks if the browser can play the specified audio/video type |
| load() | Re-loads the audio/video element |
| play() | Starts playing the audio/video |
| pause() | Pauses the currently playing audio/video |

HTML Audio/Video Properties

| Property | Description |
|-------------------------------------|---------------------------------------------------------------------------------------------------|
| audioTracks | Returns an AudioTrackList object representing available audio tracks |
| autoplay | Sets or returns whether the audio/video should start playing as soon as it is loaded |
| buffered | Returns a TimeRanges object representing the buffered parts of the audio/video |
| controller | Returns the MediaController object representing the current media controller of the audio/video |
| controls | Sets or returns whether the audio/video should display controls (like play/pause etc.) |
| crossOrigin | Sets or returns the CORS settings of the audio/video |
| currentSrc | Returns the URL of the current audio/video |
| currentTime | Sets or returns the current playback position in the audio/video (in seconds) |
| defaultMuted | Sets or returns whether the audio/video should be muted by default |
| defaultPlaybackRate | Sets or returns the default speed of the audio/video playback |
| duration | Returns the length of the current audio/video (in seconds) |
| ended | Returns whether the playback of the audio/video has ended or not |
| error | Returns a MediaError object representing the error state of the audio/video |
| loop | Sets or returns whether the audio/video should start over again when finished |
| mediaGroup | Sets or returns the group the audio/video belongs to (used to link multiple audio/video elements) |
| muted | Sets or returns whether the audio/video is muted or not |
| networkState | Returns the current network state of the audio/video |
| paused | Returns whether the audio/video is paused or not |
| playbackRate | Sets or returns the speed of the audio/video playback |
| played | Returns a TimeRanges object representing the played parts of the audio/video |
| preload | Sets or returns whether the audio/video should be loaded when the page loads |
| readyState | Returns the current ready state of the audio/video |
| seekable | Returns a TimeRanges object representing the seekable parts of the audio/video |
| seeking | Returns whether the user is currently seeking in the audio/video |
| src | Sets or returns the current source of the audio/video element |
| startDate | Returns a Date object representing the current time offset |
| textTracks | Returns a TextTrackList object representing the available text tracks |
| videoTracks | Returns a VideoTrackList object representing the available video tracks |
| volume | Sets or returns the volume of the audio/video |

HTML Audio/Video Events

| Event | Description |
|--------------------------------|-----------------------------------------------------------------------------------------|
| abort | Fires when the loading of an audio/video is aborted |
| canplay | Fires when the browser can start playing the audio/video |
| canplaythrough | Fires when the browser can play through the audio/video without stopping for buffering |
| durationchange | Fires when the duration of the audio/video is changed |
| emptied | Fires when the current playlist is empty |
| ended | Fires when the current playlist is ended |
| error | Fires when an error occurred during the loading of an audio/video |
| loadeddata | Fires when the browser has loaded the current frame of the audio/video |
| loadedmetadata | Fires when the browser has loaded meta data for the audio/video |
| loadstart | Fires when the browser starts looking for the audio/video |
| pause | Fires when the audio/video has been paused |
| play | Fires when the audio/video has been started or is no longer paused |
| playing | Fires when the audio/video is playing after having been paused or stopped for buffering |
| progress | Fires when the browser is downloading the audio/video |
| ratechange | Fires when the playing speed of the audio/video is changed |
| seeked | Fires when the user is finished moving/skipping to a new position in the audio/video |
| seeking | Fires when the user starts moving/skipping to a new position in the audio/video |
| stalled | Fires when the browser is trying to get media data, but data is not available |
| suspend | Fires when the browser is intentionally not getting media data |
| timeupdate | Fires when the current playback position has changed |
| volumechange | Fires when the volume has been changed |
| waiting | Fires when the video stops because it needs to buffer the next frame |

HTML <!DOCTYPE>

The HTML Document Type

All HTML documents must start with a [<!DOCTYPE>](#) declaration.

The declaration is not an HTML tag. It is an "information" to the browser about what document type to expect.

In HTML5, the <!DOCTYPE> declaration is simple:

```
<!DOCTYPE html>
```

In older documents (HTML 4 or XHTML), the declaration is more complicated because the declaration must refer to a DTD (Document Type Definition).

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN" "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
```

You can read more about document types in the [<!DOCTYPE>](#) reference.

Valid HTML Elements in Different DOCTYPES

| Tag | HTML 5 | HTML 4 | XHTML |
|---------------------------------|--------|--------|-------|
| <a> | Yes | Yes | Yes |
| <abbr> | Yes | Yes | Yes |
| <acronym> | No | Yes | Yes |
| <address> | Yes | Yes | Yes |
| <applet> | No | Yes | No |
| <area> | Yes | Yes | No |

| | | | |
|-------------------------------------------------|-----|-----|-----|
| <u><article></u> | Yes | No | No |
| <u><aside></u> | Yes | No | No |
| <u><audio></u> | Yes | No | No |
| <u></u> | Yes | Yes | Yes |
| <u><base></u> | Yes | Yes | Yes |
| <u><basefont></u> | No | Yes | No |
| <u><bdi></u> | Yes | No | No |
| <u><bdo></u> | Yes | Yes | No |
| <u><big></u> | No | Yes | Yes |
| <u><blockquote></u> | Yes | Yes | Yes |
| <u><body></u> | Yes | Yes | Yes |
| <u> </u> | Yes | Yes | Yes |
| <u><button></u> | Yes | Yes | Yes |
| <u><canvas></u> | Yes | No | No |
| <u><caption></u> | Yes | Yes | Yes |
| <u><center></u> | No | Yes | No |
| <u><cite></u> | Yes | Yes | Yes |
| <u><code></u> | Yes | Yes | Yes |
| <u><col></u> | Yes | Yes | No |
| <u><colgroup></u> | Yes | Yes | No |
| <u><datalist></u> | Yes | No | No |
| <u><dd></u> | Yes | Yes | Yes |
| <u></u> | Yes | Yes | No |
| <u><details></u> | Yes | No | No |
| <u><dfn></u> | Yes | Yes | Yes |
| <u><dialog></u> | Yes | No | No |
| <u><dir></u> | No | Yes | No |
| <u><div></u> | Yes | Yes | Yes |
| <u><dl></u> | Yes | Yes | Yes |
| <u><dt></u> | Yes | Yes | Yes |
| <u></u> | Yes | Yes | Yes |
| <u><embed></u> | Yes | No | No |
| <u><fieldset></u> | Yes | Yes | Yes |
| <u><figcaption></u> | Yes | No | No |
| <u><figure></u> | Yes | No | No |
| <u></u> | No | Yes | No |
| <u><footer></u> | Yes | No | No |
| <u><form></u> | Yes | Yes | Yes |
| <u><frame></u> | No | No | No |
| <u><frameset></u> | No | Yes | No |
| <u><h1> to <h6></u> | Yes | Yes | Yes |
| <u><head></u> | Yes | Yes | Yes |
| <u><header></u> | Yes | No | No |
| <u><hr></u> | Yes | Yes | Yes |
| <u><html></u> | Yes | Yes | Yes |
| <u><i></u> | Yes | Yes | Yes |
| <u><iframe></u> | Yes | Yes | No |
| <u></u> | Yes | Yes | Yes |
| <u><input></u> | Yes | Yes | Yes |
| <u><ins></u> | Yes | Yes | No |
| <u><kbd></u> | Yes | Yes | Yes |
| <u><label></u> | Yes | Yes | Yes |
| <u><legend></u> | Yes | Yes | Yes |
| <u></u> | Yes | Yes | Yes |
| <u><link></u> | Yes | Yes | Yes |
| <u><main></u> | Yes | No | No |

| | | | |
|-----------------------------------------|-----|-----|-----|
| <u><map></u> | Yes | Yes | No |
| <u><mark></u> | Yes | No | No |
| <u><meta></u> | Yes | Yes | Yes |
| <u><meter></u> | Yes | No | No |
| <u><nav></u> | Yes | No | No |
| <u><noframes></u> | No | Yes | No |
| <u><noscript></u> | Yes | Yes | Yes |
| <u><object></u> | Yes | Yes | Yes |
| <u></u> | Yes | Yes | Yes |
| <u><optgroup></u> | Yes | Yes | Yes |
| <u><option></u> | Yes | Yes | Yes |
| <u><output></u> | Yes | No | No |
| <u><p></u> | Yes | Yes | Yes |
| <u><param></u> | Yes | Yes | Yes |
| <u><pre></u> | Yes | Yes | Yes |
| <u><progress></u> | Yes | No | No |
| <u><q></u> | Yes | Yes | Yes |
| <u><rp></u> | Yes | No | No |
| <u><rt></u> | Yes | No | No |
| <u><ruby></u> | Yes | No | No |
| <u><s></u> | Yes | Yes | No |
| <u><samp></u> | Yes | Yes | Yes |
| <u><script></u> | Yes | Yes | Yes |
| <u><section></u> | Yes | No | No |
| <u><select></u> | Yes | Yes | Yes |
| <u><small></u> | Yes | Yes | Yes |
| <u><source></u> | Yes | No | No |
| <u></u> | Yes | Yes | Yes |
| <u><strike></u> | No | Yes | No |
| <u></u> | Yes | Yes | Yes |
| <u><style></u> | Yes | Yes | Yes |
| <u><sub></u> | Yes | Yes | Yes |
| <u><summary></u> | Yes | No | No |
| <u><sup></u> | Yes | Yes | Yes |
| <u><table></u> | Yes | Yes | Yes |
| <u><tbody></u> | Yes | Yes | No |
| <u><td></u> | Yes | Yes | Yes |
| <u><textarea></u> | Yes | Yes | Yes |
| <u><tfoot></u> | Yes | Yes | No |
| <u><th></u> | Yes | Yes | Yes |
| <u><thead></u> | Yes | Yes | No |
| <u><time></u> | Yes | No | No |
| <u><title></u> | Yes | Yes | Yes |
| <u><tr></u> | Yes | Yes | Yes |
| <u><track></u> | Yes | No | No |
| <u><tt></u> | No | Yes | Yes |
| <u><u></u> | Yes | Yes | No |
| <u></u> | Yes | Yes | Yes |
| <u><var></u> | Yes | Yes | Yes |
| <u><video></u> | Yes | No | No |
| <u><wbr></u> | Yes | No | No |

HTML Character Sets

Common HTML Character Sets

The default character set in HTML5 is UTF-8.

For a closer look, visit our [Complete HTML Character Set Reference](#).

| Number | ASCII | ANSI | 8859-1 | UTF-8 | Description |
|--------|-------|------|--------|-------|------------------------|
| 32 | | | | | space |
| 33 | ! | ! | ! | ! | exclamation mark |
| 34 | " | " | " | " | quotation mark |
| 35 | # | # | # | # | number sign |
| 36 | \$ | \$ | \$ | \$ | dollar sign |
| 37 | % | % | % | % | percent sign |
| 38 | & | & | & | & | ampersand |
| 39 | ' | ' | ' | ' | apostrophe |
| 40 | (| (| (| (| left parenthesis |
| 41 |) |) |) |) | right parenthesis |
| 42 | * | * | * | * | asterisk |
| 43 | + | + | + | + | plus sign |
| 44 | , | , | , | , | comma |
| 45 | - | - | - | - | hyphen-minus |
| 46 | . | . | . | . | full stop |
| 47 | / | / | / | / | solidus |
| 48 | 0 | 0 | 0 | 0 | digit zero |
| 49 | 1 | 1 | 1 | 1 | digit one |
| 50 | 2 | 2 | 2 | 2 | digit two |
| 51 | 3 | 3 | 3 | 3 | digit three |
| 52 | 4 | 4 | 4 | 4 | digit four |
| 53 | 5 | 5 | 5 | 5 | digit five |
| 54 | 6 | 6 | 6 | 6 | digit six |
| 55 | 7 | 7 | 7 | 7 | digit seven |
| 56 | 8 | 8 | 8 | 8 | digit eight |
| 57 | 9 | 9 | 9 | 9 | digit nine |
| 58 | : | : | : | : | colon |
| 59 | ; | ; | ; | ; | semicolon |
| 60 | < | < | < | < | less-than sign |
| 61 | = | = | = | = | equals sign |
| 62 | > | > | > | > | greater-than sign |
| 63 | ? | ? | ? | ? | question mark |
| 64 | @ | @ | @ | @ | commercial at |
| 65 | A | A | A | A | Latin capital letter A |
| 66 | B | B | B | B | Latin capital letter B |
| 67 | C | C | C | C | Latin capital letter C |
| 68 | D | D | D | D | Latin capital letter D |
| 69 | E | E | E | E | Latin capital letter E |
| 70 | F | F | F | F | Latin capital letter F |
| 71 | G | G | G | G | Latin capital letter G |
| 72 | H | H | H | H | Latin capital letter H |
| 73 | I | I | I | I | Latin capital letter I |
| 74 | J | J | J | J | Latin capital letter J |
| 75 | K | K | K | K | Latin capital letter K |
| 76 | L | L | L | L | Latin capital letter L |
| 77 | M | M | M | M | Latin capital letter M |
| 78 | N | N | N | N | Latin capital letter N |
| 79 | O | O | O | O | Latin capital letter O |
| 80 | P | P | P | P | Latin capital letter P |
| 81 | Q | Q | Q | Q | Latin capital letter Q |

| | | | | | |
|-----|-----|-----|---|---|-----------------------------------|
| 82 | R | R | R | R | Latin capital letter R |
| 83 | S | S | S | S | Latin capital letter S |
| 84 | T | T | T | T | Latin capital letter T |
| 85 | U | U | U | U | Latin capital letter U |
| 86 | V | V | V | V | Latin capital letter V |
| 87 | W | W | W | W | Latin capital letter W |
| 88 | X | X | X | X | Latin capital letter X |
| 89 | Y | Y | Y | Y | Latin capital letter Y |
| 90 | Z | Z | Z | Z | Latin capital letter Z |
| 91 | [| [| [| [| left square bracket |
| 92 | \ | \ | \ | \ | reverse solidus |
| 93 |] |] |] |] | right square bracket |
| 94 | ^ | ^ | ^ | ^ | circumflex accent |
| 95 | — | — | — | — | low line |
| 96 | ` | ` | ` | ` | grave accent |
| 97 | a | a | a | a | Latin small letter a |
| 98 | b | b | b | b | Latin small letter b |
| 99 | c | c | c | c | Latin small letter c |
| 100 | d | d | d | d | Latin small letter d |
| 101 | e | e | e | e | Latin small letter e |
| 102 | f | f | f | f | Latin small letter f |
| 103 | g | g | g | g | Latin small letter g |
| 104 | h | h | h | h | Latin small letter h |
| 105 | i | i | i | i | Latin small letter i |
| 106 | j | j | j | j | Latin small letter j |
| 107 | k | k | k | k | Latin small letter k |
| 108 | l | l | l | l | Latin small letter l |
| 109 | m | m | m | m | Latin small letter m |
| 110 | n | n | n | n | Latin small letter n |
| 111 | o | o | o | o | Latin small letter o |
| 112 | p | p | p | p | Latin small letter p |
| 113 | q | q | q | q | Latin small letter q |
| 114 | r | r | r | r | Latin small letter r |
| 115 | s | s | s | s | Latin small letter s |
| 116 | t | t | t | t | Latin small letter t |
| 117 | u | u | u | u | Latin small letter u |
| 118 | v | v | v | v | Latin small letter v |
| 119 | w | w | w | w | Latin small letter w |
| 120 | x | x | x | x | Latin small letter x |
| 121 | y | y | y | y | Latin small letter y |
| 122 | z | z | z | z | Latin small letter z |
| 123 | { | { | { | { | left curly bracket |
| 124 | | | | | vertical line |
| 125 | } | } | } | } | right curly bracket |
| 126 | ~ | ~ | ~ | ~ | tilde |
| 127 | DEL | Â | Â | Â | Â |
| 128 | Â | â,¬ | Â | Â | euro sign |
| 129 | Â | Â | Â | Â | NOT USED |
| 130 | Â | â€š | Â | Â | single low-9 quotation mark |
| 131 | Â | Æ' | Â | Â | Latin small letter f with hook |
| 132 | Â | â€ž | Â | Â | double low-9 quotation mark |
| 133 | Â | â€ | Â | Â | horizontal ellipsis |
| 134 | Â | â€ | Â | Â | dagger |
| 135 | Â | â€ | Â | Â | double dagger |
| 136 | Â | Ë† | Â | Â | modifier letter circumflex accent |
| 137 | Â | â€° | Â | Â | per mille sign |
| 138 | Â | Š | Â | Â | Latin capital letter S with caron |

| | | | | | |
|-----|---|-----|----|----|--------------------------------------------|
| 139 | À | â€¹ | À | À | single left-pointing angle quotation mark |
| 140 | Â | Â´ | Â | Â | Latin capital ligature OE |
| 141 | Â | Â | Â | Â | NOT USED |
| 142 | Â | Â½ | Â | Â | Latin capital letter Z with caron |
| 143 | Â | Â | Â | Â | NOT USED |
| 144 | Â | Â | Â | Â | NOT USED |
| 145 | Â | â€˜ | Â | Â | left single quotation mark |
| 146 | Â | â€™ | Â | Â | right single quotation mark |
| 147 | Â | â€œ | Â | Â | left double quotation mark |
| 148 | Â | â€ | Â | Â | right double quotation mark |
| 149 | Â | â€¢ | Â | Â | bullet |
| 150 | Â | â€” | Â | Â | en dash |
| 151 | Â | â€” | Â | Â | em dash |
| 152 | Â | Ëœ | Â | Â | small tilde |
| 153 | Â | â„¢ | Â | Â | trade mark sign |
| 154 | Â | Â¸ | Â | Â | Latin small letter s with caron |
| 155 | Â | â€² | Â | Â | single right-pointing angle quotation mark |
| 156 | Â | Â“ | Â | Â | Latin small ligature oe |
| 157 | Â | Â | Â | Â | NOT USED |
| 158 | Â | Â¾ | Â | Â | Latin small letter z with caron |
| 159 | Â | Â¸ | Â | Â | Latin capital letter Y with diaeresis |
| 160 | Â | Â | Â | Â | no-break space |
| 161 | Â | Â¡ | Â¡ | Â¡ | inverted exclamation mark |
| 162 | Â | Â¢ | Â¢ | Â¢ | cent sign |
| 163 | Â | Â£ | Â£ | Â£ | pound sign |
| 164 | Â | Â¤ | Â¤ | Â¤ | currency sign |
| 165 | Â | Â¥ | Â¥ | Â¥ | yen sign |
| 166 | Â | Â¸ | Â¸ | Â¸ | broken bar |
| 167 | Â | Â§ | Â§ | Â§ | section sign |
| 168 | Â | Â¨ | Â¨ | Â¨ | diaeresis |
| 169 | Â | Â© | Â© | Â© | copyright sign |
| 170 | Â | Âª | Âª | Âª | feminine ordinal indicator |
| 171 | Â | Â« | Â« | Â« | left-pointing double angle quotation mark |
| 172 | Â | Â¬ | Â¬ | Â¬ | not sign |
| 173 | Â | Â | Â | Â | soft hyphen |
| 174 | Â | Â® | Â® | Â® | registered sign |
| 175 | Â | Â¯ | Â¯ | Â¯ | macron |
| 176 | Â | Â° | Â° | Â° | degree sign |
| 177 | Â | Â± | Â± | Â± | plus-minus sign |
| 178 | Â | Â² | Â² | Â² | superscript two |
| 179 | Â | Â³ | Â³ | Â³ | superscript three |
| 180 | Â | Â´ | Â´ | Â´ | acute accent |
| 181 | Â | Âµ | Âµ | Âµ | micro sign |
| 182 | Â | Â¶ | Â¶ | Â¶ | pilcrow sign |
| 183 | Â | Â· | Â· | Â· | middle dot |
| 184 | Â | Â¸ | Â¸ | Â¸ | cedilla |
| 185 | Â | Â¹ | Â¹ | Â¹ | superscript one |
| 186 | Â | Âº | Âº | Âº | masculine ordinal indicator |
| 187 | Â | Â» | Â» | Â» | right-pointing double angle quotation mark |
| 188 | Â | Â¼ | Â¼ | Â¼ | vulgar fraction one quarter |
| 189 | Â | Â½ | Â½ | Â½ | vulgar fraction one half |
| 190 | Â | Â¾ | Â¾ | Â¾ | vulgar fraction three quarters |
| 191 | Â | Â¿ | Â¿ | Â¿ | inverted question mark |
| 192 | Â | Ã€ | Ã€ | Ã€ | Latin capital letter A with grave |
| 193 | Â | Ã | Ã | Ã | Latin capital letter A with acute |
| 194 | Â | Ã‚ | Ã‚ | Ã‚ | Latin capital letter A with circumflex |

| | | | | | |
|-----|---|------|------|------|----------------------------------------|
| 195 | Ā | Āf | Āf | Āf | Latin capital letter A with tilde |
| 196 | Â | Â„ | Â„ | Â„ | Latin capital letter A with diaeresis |
| 197 | Â | Â... | Â... | Â... | Latin capital letter A with ring above |
| 198 | Â | Â† | Â† | Â† | Latin capital letter AE |
| 199 | Â | Â‡ | Â‡ | Â‡ | Latin capital letter C with cedilla |
| 200 | Â | Âˆ | Âˆ | Âˆ | Latin capital letter E with grave |
| 201 | Â | Â%◌ | Â%◌ | Â%◌ | Latin capital letter E with acute |
| 202 | Â | ÂŠ | ÂŠ | ÂŠ | Latin capital letter E with circumflex |
| 203 | Â | Â◌ | Â◌ | Â◌ | Latin capital letter E with diaeresis |
| 204 | Â | ÂŒ | ÂŒ | ÂŒ | Latin capital letter I with grave |
| 205 | Â | Â | Â | Â | Latin capital letter I with acute |
| 206 | Â | ÂŽ | ÂŽ | ÂŽ | Latin capital letter I with circumflex |
| 207 | Â | Â | Â | Â | Latin capital letter I with diaeresis |
| 208 | Â | Â | Â | Â | Latin capital letter Eth |
| 209 | Â | Â‘ | Â‘ | Â‘ | Latin capital letter N with tilde |
| 210 | Â | Â’ | Â’ | Â’ | Latin capital letter O with grave |
| 211 | Â | Â“ | Â“ | Â“ | Latin capital letter O with acute |
| 212 | Â | Â” | Â” | Â” | Latin capital letter O with circumflex |
| 213 | Â | Â• | Â• | Â• | Latin capital letter O with tilde |
| 214 | Â | Â– | Â– | Â– | Latin capital letter O with diaeresis |
| 215 | Â | Â— | Â— | Â— | multiplication sign |
| 216 | Â | Â˘ | Â˘ | Â˘ | Latin capital letter O with stroke |
| 217 | Â | Â™ | Â™ | Â™ | Latin capital letter U with grave |
| 218 | Â | Âš | Âš | Âš | Latin capital letter U with acute |
| 219 | Â | Â› | Â› | Â› | Latin capital letter U with circumflex |
| 220 | Â | Âœ | Âœ | Âœ | Latin capital letter U with diaeresis |
| 221 | Â | Â | Â | Â | Latin capital letter Y with acute |
| 222 | Â | Âž | Âž | Âž | Latin capital letter Thorn |
| 223 | Â | Âÿ | Âÿ | Âÿ | Latin small letter sharp s |
| 224 | Â | Â | Â | Â | Latin small letter a with grave |
| 225 | Â | Âı | Âı | Âı | Latin small letter a with acute |
| 226 | Â | Âç | Âç | Âç | Latin small letter a with circumflex |
| 227 | Â | Â£ | Â£ | Â£ | Latin small letter a with tilde |
| 228 | Â | Â◌ | Â◌ | Â◌ | Latin small letter a with diaeresis |
| 229 | Â | Â¥ | Â¥ | Â¥ | Latin small letter a with ring above |
| 230 | Â | Âı | Âı | Âı | Latin small letter ae |
| 231 | Â | Â§ | Â§ | Â§ | Latin small letter c with cedilla |
| 232 | Â | Â˘ | Â˘ | Â˘ | Latin small letter e with grave |
| 233 | Â | Â© | Â© | Â© | Latin small letter e with acute |
| 234 | Â | Âª | Âª | Âª | Latin small letter e with circumflex |
| 235 | Â | Â« | Â« | Â« | Latin small letter e with diaeresis |
| 236 | Â | Âı | Âı | Âı | Latin small letter i with grave |
| 237 | Â | Â | Â | Â | Latin small letter i with acute |
| 238 | Â | Â® | Â® | Â® | Latin small letter i with circumflex |
| 239 | Â | Â˘ | Â˘ | Â˘ | Latin small letter i with diaeresis |
| 240 | Â | Â° | Â° | Â° | Latin small letter eth |
| 241 | Â | Â± | Â± | Â± | Latin small letter n with tilde |
| 242 | Â | Â² | Â² | Â² | Latin small letter o with grave |
| 243 | Â | Â³ | Â³ | Â³ | Latin small letter o with acute |
| 244 | Â | Â´ | Â´ | Â´ | Latin small letter o with circumflex |
| 245 | Â | Âµ | Âµ | Âµ | Latin small letter o with tilde |
| 246 | Â | Â¶ | Â¶ | Â¶ | Latin small letter o with diaeresis |
| 247 | Â | Â· | Â· | Â· | division sign |
| 248 | Â | Â¸ | Â¸ | Â¸ | Latin small letter o with stroke |
| 249 | Â | Â¹ | Â¹ | Â¹ | Latin small letter u with grave |
| 250 | Â | Â² | Â² | Â² | Latin small letter u with acute |
| 251 | Â | Â» | Â» | Â» | Latin small letter with circumflex |

| | | | | | |
|-----|---|----|----|----|-------------------------------------|
| 252 | Ä | Ä¼ | Ä¼ | Ä¼ | Latin small letter u with diaeresis |
| 253 | Â | Â½ | Â½ | Â½ | Latin small letter y with acute |
| 254 | Â | Â¾ | Â¾ | Â¾ | Latin small letter thorn |
| 255 | Ä | Ä¸ | Ä¸ | Ä¸ | Latin small letter y with diaeresis |

HTML URL Encoding Reference

URL - Uniform Resource Locator

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

The URL is the address of a web page, like:<https://www.w3schools.com>.

URL Encoding (Percent Encoding)

URL encoding converts characters into a format that can be transmitted over the Internet.

URLs can only be sent over the Internet using the[ASCII character-set](#).

Since URLs often contain characters outside the ASCII set, the URL has to be converted into a valid ASCII format.

URL encoding replaces unsafe ASCII characters with a "%" followed by two hexadecimal digits.

URLs cannot contain spaces. URL encoding normally replaces a space with a plus (+) sign or with %20.

Try It Yourself

If you click the "Submit" button below, the browser will URL encode the input before it is sent to the server. A page at the server will display the received input.

Try some other input and click Submit again.

URL Encoding Functions

In JavaScript, PHP, and ASP there are functions that can be used to URL encode a string.

PHP has the `rawurlencode()` function, and ASP has the `Server.URLEncode()` function.

In JavaScript you can use the `encodeURIComponent()` function.

Click the "URL Encode" button to see how the JavaScript function encodes the text.

Note: The JavaScript function encodes space as %20.

ASCII Encoding Reference

Your browser will encode input, according to the character-set used in your page.

The default character-set in HTML5 is UTF-8.

| Character | From Windows-1252 | From UTF-8 |
|-----------|-------------------|------------|
| space | %20 | %20 |

| | | |
|----|-----|-----|
| ! | %21 | %21 |
| " | %22 | %22 |
| # | %23 | %23 |
| \$ | %24 | %24 |
| % | %25 | %25 |
| & | %26 | %26 |
| ' | %27 | %27 |
| (| %28 | %28 |
|) | %29 | %29 |
| * | %2A | %2A |
| + | %2B | %2B |
| , | %2C | %2C |
| - | %2D | %2D |
| . | %2E | %2E |
| / | %2F | %2F |
| 0 | %30 | %30 |
| 1 | %31 | %31 |
| 2 | %32 | %32 |
| 3 | %33 | %33 |
| 4 | %34 | %34 |
| 5 | %35 | %35 |
| 6 | %36 | %36 |
| 7 | %37 | %37 |
| 8 | %38 | %38 |
| 9 | %39 | %39 |
| : | %3A | %3A |
| ; | %3B | %3B |
| < | %3C | %3C |
| = | %3D | %3D |
| > | %3E | %3E |
| ? | %3F | %3F |
| @ | %40 | %40 |
| A | %41 | %41 |
| B | %42 | %42 |
| C | %43 | %43 |
| D | %44 | %44 |
| E | %45 | %45 |
| F | %46 | %46 |
| G | %47 | %47 |
| H | %48 | %48 |
| I | %49 | %49 |
| J | %4A | %4A |
| K | %4B | %4B |
| L | %4C | %4C |
| M | %4D | %4D |
| N | %4E | %4E |
| O | %4F | %4F |
| P | %50 | %50 |
| Q | %51 | %51 |
| R | %52 | %52 |
| S | %53 | %53 |
| T | %54 | %54 |
| U | %55 | %55 |
| V | %56 | %56 |
| W | %57 | %57 |
| X | %58 | %58 |

| | | |
|--------|-----|-----------|
| Y | %59 | %59 |
| Z | %5A | %5A |
| [| %5B | %5B |
| \ | %5C | %5C |
|] | %5D | %5D |
| ^ | %5E | %5E |
| _ | %5F | %5F |
| ` | %60 | %60 |
| a | %61 | %61 |
| b | %62 | %62 |
| c | %63 | %63 |
| d | %64 | %64 |
| e | %65 | %65 |
| f | %66 | %66 |
| g | %67 | %67 |
| h | %68 | %68 |
| i | %69 | %69 |
| j | %6A | %6A |
| k | %6B | %6B |
| l | %6C | %6C |
| m | %6D | %6D |
| n | %6E | %6E |
| o | %6F | %6F |
| p | %70 | %70 |
| q | %71 | %71 |
| r | %72 | %72 |
| s | %73 | %73 |
| t | %74 | %74 |
| u | %75 | %75 |
| v | %76 | %76 |
| w | %77 | %77 |
| x | %78 | %78 |
| y | %79 | %79 |
| z | %7A | %7A |
| { | %7B | %7B |
| | %7C | %7C |
| } | %7D | %7D |
| ~ | %7E | %7E |
| À | %7F | %7F |
| ` | %80 | %E2%82%AC |
| Ã,Â | %81 | %81 |
| ÃÇÂ€Âš | %82 | %E2%80%9A |
| Ã†Â' | %83 | %C6%92 |
| ÃÇÂ€Âž | %84 | %E2%80%9E |
| ÃÇÂ€Â | %85 | %E2%80%A6 |
| ÃÇÂ€Â | %86 | %E2%80%A0 |
| ÃÇÂ€Âj | %87 | %E2%80%A1 |
| Ã<Â† | %88 | %CB%86 |
| ÃÇÂ€Â° | %89 | %E2%80%B0 |
| Ã...Â | %8A | %C5%A0 |
| ÃÇÂ€Â¹ | %8B | %E2%80%B9 |
| Ã...Â' | %8C | %C5%92 |
| Ã,Â | %8D | %C5%8D |
| Ã...Â½ | %8E | %C5%BD |
| Ã,Â | %8F | %8F |
| Ã,Â | %90 | %C2%90 |

| | | |
|----------------------|-----|-----------|
| Ã¸Ã¸Ã¸ | %91 | %E2%80%98 |
| Ã¸Ã¸Ã¸™ | %92 | %E2%80%99 |
| Ã¸Ã¸Ã¸œ | %93 | %E2%80%9C |
| Ã¸Ã¸Ã¸ | %94 | %E2%80%9D |
| Ã¸Ã¸Ã¸¸ | %95 | %E2%80%A2 |
| Ã¸Ã¸Ã¸“ | %96 | %E2%80%93 |
| Ã¸Ã¸Ã¸” | %97 | %E2%80%94 |
| Ã¸Ã¸ | %98 | %CB%9C |
| Ã¸Ã¸,Ã¸ | %99 | %E2%84 |
| Ã¸...Ã¸ _i | %9A | %C5%A1 |
| Ã¸Ã¸Ã¸º | %9B | %E2%80 |
| Ã¸...Ã¸“ | %9C | %C5%93 |
| Ã¸,Ã¸ | %9D | %9D |
| Ã¸...Ã¸¾ | %9E | %C5%BE |
| Ã¸...Ã¸ _s | %9F | %C5%B8 |
| Ã¸ | %A0 | %C2%A0 |
| Ã¸,Ã¸ _i | %A1 | %C2%A1 |
| Ã¸,Ã¸¸ | %A2 | %C2%A2 |
| Ã¸,Ã¸£ | %A3 | %C2%A3 |
| Ã¸,Ã¸¤ | %A4 | %C2%A4 |
| Ã¸,Ã¸¥ | %A5 | %C2%A5 |
| Ã¸,Ã¸¦ | %A6 | %C2%A6 |
| Ã¸,Ã¸§ | %A7 | %C2%A7 |
| Ã¸,Ã¸¨ | %A8 | %C2%A8 |
| Ã¸,Ã¸© | %A9 | %C2%A9 |
| Ã¸,Ã¸ª | %AA | %C2%AA |
| Ã¸,Ã¸« | %AB | %C2%AB |
| Ã¸,Ã¸¬ | %AC | %C2%AC |
| Ã¸,Ã¸ | %AD | %C2%AD |
| Ã¸,Ã¸® | %AE | %C2%AE |
| Ã¸,Ã¸¯ | %AF | %C2%AF |
| Ã¸,Ã¸° | %B0 | %C2%B0 |
| Ã¸,Ã¸± | %B1 | %C2%B1 |
| Ã¸,Ã¸² | %B2 | %C2%B2 |
| Ã¸,Ã¸³ | %B3 | %C2%B3 |
| Ã¸,Ã¸´ | %B4 | %C2%B4 |
| Ã¸,Ã¸µ | %B5 | %C2%B5 |
| Ã¸,Ã¸¶ | %B6 | %C2%B6 |
| Ã¸,Ã¸· | %B7 | %C2%B7 |
| Ã¸,Ã¸¸ | %B8 | %C2%B8 |
| Ã¸,Ã¸¹ | %B9 | %C2%B9 |
| Ã¸,Ã¸º | %BA | %C2%BA |
| Ã¸,Ã¸» | %BB | %C2%BB |
| Ã¸,Ã¸¼ | %BC | %C2%BC |
| Ã¸,Ã¸½ | %BD | %C2%BD |
| Ã¸,Ã¸¾ | %BE | %C2%BE |
| Ã¸,Ã¸¿ | %BF | %C2%BF |
| Ã¸fÃ¸€ | %C0 | %C3%80 |
| Ã¸fÃ¸ | %C1 | %C3%81 |
| Ã¸fÃ¸, | %C2 | %C3%82 |
| Ã¸fÃ¸f | %C3 | %C3%83 |
| Ã¸fÃ¸,, | %C4 | %C3%84 |
| Ã¸fÃ¸... | %C5 | %C3%85 |
| Ã¸fÃ¸† | %C6 | %C3%86 |
| Ã¸fÃ¸‡ | %C7 | %C3%87 |
| Ã¸fÃ¸^ | %C8 | %C3%88 |
| Ã¸fÃ¸% | %C9 | %C3%89 |

| | | |
|------|-----|--------|
| ÃfÂŠ | %CA | %C3%8A |
| ÃfÂ¸ | %CB | %C3%8B |
| ÃfÂŒ | %CC | %C3%8C |
| ÃfÂ | %CD | %C3%8D |
| ÃfÂŽ | %CE | %C3%8E |
| ÃfÂ | %CF | %C3%8F |
| ÃfÂ | %D0 | %C3%90 |
| ÃfÂ´ | %D1 | %C3%91 |
| ÃfÂ´ | %D2 | %C3%92 |
| ÃfÂ“ | %D3 | %C3%93 |
| ÃfÂ” | %D4 | %C3%94 |
| ÃfÂ• | %D5 | %C3%95 |
| ÃfÂ– | %D6 | %C3%96 |
| ÃfÂ— | %D7 | %C3%97 |
| ÃfÂ˘ | %D8 | %C3%98 |
| ÃfÂ™ | %D9 | %C3%99 |
| ÃfÂš | %DA | %C3%9A |
| ÃfÂ¸ | %DB | %C3%9B |
| ÃfÂœ | %DC | %C3%9C |
| ÃfÂ | %DD | %C3%9D |
| ÃfÂž | %DE | %C3%9E |
| ÃfÂŸ | %DF | %C3%9F |
| ÃfÂ | %E0 | %C3%A0 |
| ÃfÂı | %E1 | %C3%A1 |
| ÃfÂ¸ | %E2 | %C3%A2 |
| ÃfÂ£ | %E3 | %C3%A3 |
| ÃfÂ¤ | %E4 | %C3%A4 |
| ÃfÂ¥ | %E5 | %C3%A5 |
| ÃfÂ¦ | %E6 | %C3%A6 |
| ÃfÂ§ | %E7 | %C3%A7 |
| ÃfÂ¨ | %E8 | %C3%A8 |
| ÃfÂ© | %E9 | %C3%A9 |
| ÃfÂª | %EA | %C3%AA |
| ÃfÂ« | %EB | %C3%AB |
| ÃfÂ¬ | %EC | %C3%AC |
| ÃfÂ | %ED | %C3%AD |
| ÃfÂ® | %EE | %C3%AE |
| ÃfÂ¯ | %EF | %C3%AF |
| ÃfÂ° | %F0 | %C3%B0 |
| ÃfÂ± | %F1 | %C3%B1 |
| ÃfÂ² | %F2 | %C3%B2 |
| ÃfÂ³ | %F3 | %C3%B3 |
| ÃfÂ´ | %F4 | %C3%B4 |
| ÃfÂµ | %F5 | %C3%B5 |
| ÃfÂ¶ | %F6 | %C3%B6 |
| ÃfÂ· | %F7 | %C3%B7 |
| ÃfÂ¸ | %F8 | %C3%B8 |
| ÃfÂ¹ | %F9 | %C3%B9 |
| ÃfÂº | %FA | %C3%BA |
| ÃfÂ» | %FB | %C3%BB |
| ÃfÂ¼ | %FC | %C3%BC |
| ÃfÂ½ | %FD | %C3%BD |
| ÃfÂ¾ | %FE | %C3%BE |
| ÃfÂ¿ | %FF | %C3%BF |

URL Encoding Reference

The ASCII control characters %00-%1F were originally designed to control hardware devices.

Control characters have nothing to do inside a URL.

| ASCII Character | Description | URL-encoding |
|-----------------|------------------------|--------------|
| NUL | null character | %00 |
| SOH | start of header | %01 |
| STX | start of text | %02 |
| ETX | end of text | %03 |
| EOT | end of transmission | %04 |
| ENQ | enquiry | %05 |
| ACK | acknowledge | %06 |
| BEL | bell (ring) | %07 |
| BS | backspace | %08 |
| HT | horizontal tab | %09 |
| LF | line feed | %0A |
| VT | vertical tab | %0B |
| FF | form feed | %0C |
| CR | carriage return | %0D |
| SO | shift out | %0E |
| SI | shift in | %0F |
| DLE | data link escape | %10 |
| DC1 | device control 1 | %11 |
| DC2 | device control 2 | %12 |
| DC3 | device control 3 | %13 |
| DC4 | device control 4 | %14 |
| NAK | negative acknowledge | %15 |
| SYN | synchronize | %16 |
| ETB | end transmission block | %17 |
| CAN | cancel | %18 |
| EM | end of medium | %19 |
| SUB | substitute | %1A |
| ESC | escape | %1B |
| FS | file separator | %1C |
| GS | group separator | %1D |
| RS | record separator | %1E |
| US | unit separator | %1F |

HTML Language Code Reference

ISO Language Codes

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:

```
<html lang="en">
...
</html>
```

In XHTML, the language is declared inside the `<html>` tag as follows:

```
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en">
...
</html>
```

ISO 639-1 Language Codes

ISO 639-1 defines abbreviations for languages:

See also: [Reference for Country Codes](#).

| Language | ISO Code |
|----------------------------|----------|
| Abkhazian | ab |
| Afar | aa |
| Afrikaans | af |
| Akan | ak |
| Albanian | sq |
| Amharic | am |
| Arabic | ar |
| Aragonese | an |
| Armenian | hy |
| Assamese | as |
| Avaric | av |
| Avestan | ae |
| Aymara | ay |
| Azerbaijani | az |
| Bambara | bm |
| Bashkir | ba |
| Basque | eu |
| Belarusian | be |
| Bengali (Bangla) | bn |
| Bihari | bh |
| Bislama | bi |
| Bosnian | bs |
| Breton | br |
| Bulgarian | bg |
| Burmese | my |
| Catalan | ca |
| Chamorro | ch |
| Chechen | ce |
| Chichewa, Chewa, Nyanja | ny |
| Chinese | zh |
| Chinese (Simplified) | zh-Hans |
| Chinese (Traditional) | zh-Hant |
| Chuvash | cv |
| Cornish | kw |
| Corsican | co |
| Cree | cr |
| Croatian | hr |
| Czech | cs |
| Danish | da |
| Divehi, Dhivehi, Maldivian | dv |
| Dutch | nl |
| Dzongkha | dz |
| English | en |
| Esperanto | eo |
| Estonian | et |
| Ewe | ee |
| Faroese | fo |
| Fijian | fj |
| Finnish | fi |
| French | fr |

| | |
|----------------------------|--------|
| Fula, Fulah, Pulaar, Pular | ff |
| Galician | gl |
| Gaelic (Scottish) | gd |
| Gaelic (Manx) | gv |
| Georgian | ka |
| German | de |
| Greek | el |
| Greenlandic | kl |
| Guarani | gn |
| Gujarati | gu |
| Haitian Creole | ht |
| Hausa | ha |
| Hebrew | he |
| Herero | hz |
| Hindi | hi |
| Hiri Motu | ho |
| Hungarian | hu |
| Icelandic | is |
| Ido | io |
| Igbo | ig |
| Indonesian | id, in |
| Interlingua | ia |
| Interlingue | ie |
| Inuktitut | iu |
| Inupiak | ik |
| Irish | ga |
| Italian | it |
| Japanese | ja |
| Javanese | jv |
| Kalaallisut, Greenlandic | kl |
| Kannada | kn |
| Kanuri | kr |
| Kashmiri | ks |
| Kazakh | kk |
| Khmer | km |
| Kikuyu | ki |
| Kinyarwanda (Rwanda) | rw |
| Kirundi | rn |
| Kyrgyz | ky |
| Komi | kv |
| Kongo | kg |
| Korean | ko |
| Kurdish | ku |
| Kwanyama | kj |
| Lao | lo |
| Latin | la |
| Latvian (Lettish) | lv |
| Limburgish (Limburger) | li |
| Lingala | ln |
| Lithuanian | lt |
| Luga-Katanga | lu |
| Luganda, Ganda | lg |
| Luxembourgish | lb |
| Manx | gv |
| Macedonian | mk |
| Malagasy | mg |
| Malay | ms |

| | |
|------------------------------------|----|
| Malayalam | ml |
| Maltese | mt |
| Maori | mi |
| Marathi | mr |
| Marshallese | mh |
| Moldavian | mo |
| Mongolian | mn |
| Nauru | na |
| Navajo | nv |
| Ndonga | ng |
| Northern Ndebele | nd |
| Nepali | ne |
| Norwegian | no |
| Norwegian bokmål | nb |
| Norwegian nynorsk | nn |
| Nuosu | ii |
| Occitan | oc |
| Ojibwe | oj |
| Old Church Slavonic, Old Bulgarian | cu |
| Oriya | or |
| Oromo (Afaan Oromo) | om |
| Ossetian | os |
| Pāli | pi |
| Pashto, Pushto | ps |
| Persian (Farsi) | fa |
| Polish | pl |
| Portuguese | pt |
| Punjabi (Eastern) | pa |
| Quechua | qu |
| Romansh | rm |
| Romanian | ro |
| Russian | ru |
| Sami | se |
| Samoan | sm |
| Sango | sg |
| Sanskrit | sa |
| Serbian | sr |
| Serbo-Croatian | sh |
| Sesotho | st |
| Setswana | tn |
| Shona | sn |
| Sichuan Yi | ii |
| Sindhi | sd |
| Sinhalese | si |
| Siswati | ss |
| Slovak | sk |
| Slovenian | sl |
| Somali | so |
| Southern Ndebele | nr |
| Spanish | es |
| Sundanese | su |
| Swahili (Kiswahili) | sw |
| Swati | ss |
| Swedish | sv |
| Tagalog | tl |
| Tahitian | ty |

| | |
|-----------------|--------|
| Tajik | tg |
| Tamil | ta |
| Tatar | tt |
| Telugu | te |
| Thai | th |
| Tibetan | bo |
| Tigrinya | ti |
| Tonga | to |
| Tsonga | ts |
| Turkish | tr |
| Turkmen | tk |
| Twi | tw |
| Uyghur | ug |
| Ukrainian | uk |
| Urdu | ur |
| Uzbek | uz |
| Venda | ve |
| Vietnamese | vi |
| Volapük | vo |
| Wallon | wa |
| Welsh | cy |
| Wolof | wo |
| Western Frisian | fy |
| Xhosa | xh |
| Yiddish | yi, ji |
| Yoruba | yo |
| Zhuang, Chuang | za |
| Zulu | zu |

HTTP Status Messages

HTML Error Messages

When a browser requests a service from a web server, an error might occur, and the server might return an error code like "404 Not Found".

It is common to name these errors HTML error messages.

But these messages are something called HTTP status messages. In fact, the server always returns a message for every request. The most common message is 200 OK.

Below is a list of HTTP status messages that might be returned:

1xx: Information

| Message: | Description: |
|-------------------------|-----------------------------------------------------------------------------------------------------|
| 100 Continue | The server has received the request headers, and the client should proceed to send the request body |
| 101 Switching Protocols | The requester has asked the server to switch protocols |
| 103 Checkpoint | Used in the resumable requests proposal to resume aborted PUT or POST requests |

2xx: Successful

| Message: | Description: |
|----------|--------------|
|----------|--------------|

| | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 200 OK | The request is OK (this is the standard response for successful HTTP requests) |
| 201 Created | The request has been fulfilled, and a new resource is created |
| 202 Accepted | The request has been accepted for processing, but the processing has not been completed |
| 203 Non-Authoritative Information | The request has been successfully processed, but is returning information that may be from another source |
| 204 No Content | The request has been successfully processed, but is not returning any content |
| 205 Reset Content | The request has been successfully processed, but is not returning any content, and requires that the requester reset the document view |
| 206 Partial Content | The server is delivering only part of the resource due to a range header sent by the client |

3xx: Redirection

| Message: | Description: |
|------------------------|-----------------------------------------------------------------------------------------|
| 300 Multiple Choices | A link list. The user can select a link and go to that location. Maximum five addresses |
| 301 Moved Permanently | The requested page has moved to a new URL |
| 302 Found | The requested page has moved temporarily to a new URL |
| 303 See Other | The requested page can be found under a different URL |
| 304 Not Modified | Indicates the requested page has not been modified since last requested |
| 306 Switch Proxy | <i>No longer used</i> |
| 307 Temporary Redirect | The requested page has moved temporarily to a new URL |
| 308 Resume Incomplete | Used in the resumable requests proposal to resume aborted PUT or POST requests |

4xx: Client Error

| Message: | Description: |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 400 Bad Request | The request cannot be fulfilled due to bad syntax |
| 401 Unauthorized | The request was a legal request, but the server is refusing to respond to it. For use when authentication is possible but has failed or not yet been provided |
| 402 Payment Required | <i>Reserved for future use</i> |
| 403 Forbidden | The request was a legal request, but the server is refusing to respond to it |
| 404 Not Found | The requested page could not be found but may be available again in the future |
| 405 Method Not Allowed | A request was made of a page using a request method not supported by that page |
| 406 Not Acceptable | The server can only generate a response that is not accepted by the client |
| 407 Proxy Authentication Required | The client must first authenticate itself with the proxy |
| 408 Request Timeout | The server timed out waiting for the request |
| 409 Conflict | The request could not be completed because of a conflict in the request |
| 410 Gone | The requested page is no longer available |
| 411 Length Required | The "Content-Length" is not defined. The server will not accept the request without it |
| 412 Precondition Failed | The precondition given in the request evaluated to false by the server |
| 413 Request Entity Too Large | The server will not accept the request, because the request entity is too large |
| 414 Request-URI Too Long | The server will not accept the request, because the URL is too long. Occurs when you convert a POST request to a GET request with a long query information |
| 415 Unsupported Media Type | The server will not accept the request, because the media type is not supported |
| 416 Requested Range Not Satisfiable | The client has asked for a portion of the file, but the server cannot supply that portion |

417 Expectation Failed

The server cannot meet the requirements of the Expect request-header field

5xx: Server Error

| Message: | Description: |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|
| 500 Internal Server Error | A generic error message, given when no more specific message is suitable |
| 501 Not Implemented | The server either does not recognize the request method, or it lacks the ability to fulfill the request |
| 502 Bad Gateway | The server was acting as a gateway or proxy and received an invalid response from the upstream server |
| 503 Service Unavailable | The server is currently unavailable (overloaded or down) |
| 504 Gateway Timeout | The server was acting as a gateway or proxy and did not receive a timely response from the upstream server |
| 505 HTTP Version Not Supported | The server does not support the HTTP protocol version used in the request |
| 511 Network Authentication Required | The client needs to authenticate to gain network access |

HTTP Request Methods

What is HTTP?

The Hypertext Transfer Protocol (HTTP) is designed to enable communications between clients and servers.

HTTP works as a request-response protocol between a client and server.

Example: A client (browser) sends an HTTP request to the server; then the server returns a response to the client. The response contains status information about the request and may also contain the requested content.

HTTP Methods

- GET
- POST
- PUT
- HEAD
- DELETE
- PATCH
- OPTIONS

The two most common HTTP methods are: GET and POST.

The GET Method

GET is used to request data from a specified resource.

GET is one of the most common HTTP methods.

Note that the query string (name/value pairs) is sent in the URL of a GET request:

/test/demo_form.php?name1=value1&name2=value2

Some other notes on GET requests:

- GET requests can be cached
- GET requests remain in the browser history
- GET requests can be bookmarked
- GET requests should never be used when dealing with sensitive data
- GET requests have length restrictions
- GET requests are only used to request data (not modify)

The POST Method

POST is used to send data to a server to create/update a resource.

The data sent to the server with POST is stored in the request body of the HTTP request:

```
POST /test/demo_form.php HTTP/1.1
Host: w3schools.com
name1=value1&name2=value2
```

POST is one of the most common HTTP methods.

Some other notes on POST requests:

- POST requests are never cached
- POST requests do not remain in the browser history
- POST requests cannot be bookmarked
- POST requests have no restrictions on data length

The PUT Method

PUT is used to send data to a server to create/update a resource.

The difference between POST and PUT is that PUT requests are idempotent. That is, calling the same PUT request multiple times will always produce the same result. In contrast, calling a POST request repeatedly have side effects of creating the same resource multiple times.

The HEAD Method

HEAD is almost identical to GET, but without the response body.

In other words, if GET /users returns a list of users, then HEAD /users will make the same request but will not return the list of users.

HEAD requests are useful for checking what a GET request will return before actually making a GET request - like before downloading a large file or response body.

The DELETE Method

The DELETE method deletes the specified resource.

The OPTIONS Method

The OPTIONS method describes the communication options for the target resource.

Compare GET vs. POST

The following table compares the two HTTP methods: GET and POST.

| Â | GET | POST |
|--------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------|
| BACK button/Reload | Harmless | Data will be re-submitted (the browser should alert the user that the data are about to be re-submitted) |
| Bookmarked | Can be bookmarked | Cannot be bookmarked |
| Cached | Can be cached | Not cached |
| Encoding type | application/x-www-form-urlencoded | application/x-www-form-urlencoded or multipart/form-data. Use multipart encoding for binary data |
| History | Parameters remain in browser history | Parameters are not saved in browser history |

| | | |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Restrictions on data length | Yes, when sending data, the GET method adds the data to the URL; and the length of a URL is limited (maximum URL length is 2048 characters) | No restrictions |
| Restrictions on data type | Only ASCII characters allowed GET is less secure compared to POST because data sent is part of the URL | No restrictions. Binary data is also allowed |
| Security | Never use GET when sending passwords or other sensitive information! | POST is a little safer than GET because the parameters are not stored in browser history or in web server logs |
| Visibility | Data is visible to everyone in the URL | Data is not displayed in the URL |

Pixels to Ems Conversion

Pixel to Em Converter

The tool below allows you to work out the em sizes from pixels (or vice versa).

- Set a default pixel size for body (usually 16px)
- Then, convert a pixel value to em, based on the default pixel size
- Or, convert an em value to pixels, based on the default pixel size

Set a default pixel size:

px

Convert PX to EM:

px

Convert EM to PX:

em

Result:

Body Font Size

In the table below, select a body font size in pixels (px) to display a complete "px to em and percent" conversion table.

Tip: The default font size is usually 16px.

What is the difference between PX, EM and Percent?

Pixel is a static measurement, while percent and EM are relative measurements. The size of an EM or percent depends on its parent. If the text size of body is 16 pixels, then 150% or 1.5 EM will be 24 pixels (1.5 * 16). Look at [CSS Units](#) for more measurement units.

Keyboard Shortcuts

Keyboard Shortcuts For Windows and Mac

Keyboard shortcuts are often used in modern operating systems and computer software programs.

Learning and using keyboard shortcuts can save you a lot of time.

Basic Shortcuts

| Description | Windows | Mac OS |
|-----------------------|----------|-----------------|
| Edit menu | Alt + E | Ctrl + F2 + F |
| File menu | Alt + F | Ctrl + F2 + E |
| View menu | Alt + V | Ctrl + F2 + V |
| Select all text | Ctrl + A | Cmd + A |
| Copy text | Ctrl + C | Cmd + C |
| Find text | Ctrl + F | Cmd + F |
| Find and replace text | Ctrl + H | Cmd + F |
| New Document | Ctrl + N | Cmd + N |
| Open a file | Ctrl + O | Cmd + O |
| Print options | Ctrl + P | Cmd + P |
| Save file | Ctrl + S | Cmd + S |
| Paste text | Ctrl + V | Cmd + V |
| Cut text | Ctrl + X | Cmd + X |
| Redo text | Ctrl + Y | Shift + Cmd + Z |
| Undo text | Ctrl + Z | Cmd + Z |

Text Editing

| Description | Windows | Mac OS |
|--------------------------------------------------------|----------------------|----------------------|
| Cursor Movement | | |
| Go to the right or to the beginning of next line break | Right Arrow | Right Arrow |
| Go to the left or to the end of previous line break | Left Arrow | Left Arrow |
| Go up one row | Up Arrow | Up Arrow |
| Go down one row | Down Arrow | Down Arrow |
| Go to the beginning of the current line | Home | Cmd + Left Arrow |
| Go to the end of the current line | End | Cmd + Right Arrow |
| Go to the beginning of the document | Ctrl + Home | Cmd + Up Arrow |
| Go to the end of the document | Ctrl + End | Cmd + Down Arrow |
| Move up one frame | Page Up | Fn + Up Arrow |
| Move down one frame | Page Down | Fn + Down Arrow |
| Go to beginning of previous word | Ctrl + Left Arrow | Option + Left Arrow |
| Go to beginning of next word | Ctrl + Right Arrow | Option + Right Arrow |
| Go to beginning of line break | Ctrl + Up Arrow | Cmd + Left Arrow |
| Go to end of line break | Ctrl + Down Arrow | Cmd + Right Arrow |
| ⌘ | ⌘ | ⌘ |
| Text Selection | | |
| Select characters to the left | Shift + Left Arrow | Shift + Left Arrow |
| Select characters to the right | Shift + Right Arrow | Shift + Right Arrow |
| Select lines upwards | Shift + Up Arrow | Shift + Up Arrow |
| Select lines downwards | Shift + Down Arrow | Shift + Down Arrow |
| Select words to the left | Shift + Ctrl + Left | Shift + Opt + Left |
| Select words to the right | Shift + Ctrl + Right | Shift + Opt + Right |
| Select paragraphs to the left | Shift + Ctrl + Up | Shift + Opt + Up |

| | | |
|----------------------------------------------------------------------|---------------------|---------------------------------------------------------------|
| Select paragraphs to the right | Shift + Ctrl + Down | Shift + Opt + Down |
| Select text between the cursor and the beginning of the current line | Shift + Home | Cmd + Shift + Left Arrow |
| Select text between the cursor and the end of the current line | Shift + End | Cmd + Shift + Right Arrow |
| Select text between the cursor and the beginning of the document | Shift + Ctrl + Home | Cmd + Shift + Up Arrow or Cmd + Shift + Fn + Left Arrow |
| Select text between the cursor and the end of the document | Shift + Ctrl + End | Cmd + Shift + Down Arrow or Cmd + Shift + Fn + Right Arrow |
| Select one frame at a time of text above the cursor | Shift + Page Up | Shift + Fn + Up Arrow |
| Select one frame at a time of text below the cursor | Shift + Page Down | Shift + Fn + Down Arrow |
| Select all text | Ctrl + A | Cmd + A |
| Find text | Ctrl + F | Cmd + F |
| Â | Â | Â |
| Text Formatting | | |
| Make selected text bold | Ctrl + B | Cmd + B |
| Make selected text italic | Ctrl + I | Cmd + I |
| Underline selected text | Ctrl + U | Cmd + U |
| Make selected text superscript | Ctrl + Shift + = | Cmd + Shift + = |
| Make selected text subscript | Ctrl + = | Cmd + = |
| Â | Â | Â |
| Text Editing | | |
| Delete characters to the left | Backspace | Backspace |
| Delete characters to the right | Delete | Fn + Backspace |
| Delete words to the right | Ctrl + Del | Cmd + Backspace |
| Delete words to the left | Ctrl + Backspace | Cmd + Fn + Backspace |
| Indent | Tab | Tab |
| Outdent | Shift + Tab | Shift + Tab |
| Copy text | Ctrl + C | Cmd + C |
| Find and replace text | Ctrl + H | Cmd + F |
| Paste text | Ctrl + V | Cmd + V |
| Cut text | Ctrl + X | Cmd + X |
| Redo text | Ctrl + Y | Shift + Cmd + Z |
| Undo text | Ctrl + Z | Cmd + Z |

Web Browsers

| Description | Windows | Mac OS |
|------------------------------|-------------------------------------------|--------------------------------|
| Navigation | | |
| Scroll down a frame | Space or Page Down | Space or Fn + Down Arrow |
| Scroll up a frame | Shift + Space or Page Up | Shift + Space or Fn + Up Arrow |
| Go to bottom of the page | End | Cmd + Down Arrow |
| Go to top of the page | Home | Cmd + Up Arrow |
| Go back | Alt + Left Arrow or Backspace | Cmd + Left Arrow |
| Go forward | Alt + Right Arrow or Shift + Backspace | Cmd + Right Arrow |
| Refresh a webpage | F5 | Cmd + R |
| Refresh a webpage (no cache) | Ctrl + F5 | Cmd + Shift + R |
| Stop | Esc | Esc |
| Toggle full-screen | F11 | Cmd + Shift + F |
| Zoom in | Ctrl + + | Cmd + + |
| Zoom out | Ctrl + - | Cmd + - |
| Zoom 100% (default) | Ctrl + 0 | Cmd + 0 |

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------|
| Open homepage | Alt + Home | Option + Home or Option + Fn + Left Arrow |
| Find text | Ctrl + F | Cmd + F |
| ⌘ | ⌘ | ⌘ |
| Tab / Window Management | | |
| Open a new tab | Ctrl + T | Cmd + T |
| Close current tab | Ctrl + W | Cmd + W |
| Close all tabs | Ctrl + Shift + W | Cmd + Q |
| Close all tabs except the current tab | Ctrl + Alt + F4 | Cmd + Opt + W |
| Go to next tab | Ctrl + Tab | Control + Tab or Cmd + Shift + Right Arrow |
| Go to previous tab | Ctrl + Shift + Tab | Shift + Control + Tab or Cmd + Shift + Left Arrow |
| Go to a specific tab number | Ctrl + 1-8 | Cmd + 1-8 |
| Go to the last tab | Ctrl + 9 | Cmd + 9 |
| Reopen the last closed tab | Ctrl + Shift + T | Cmd + Shift + T |
| Open a new window | Ctrl + N | Cmd + N |
| Close current window | Alt + F4 | Cmd + W |
| Go to next window | Alt + Tab | Cmd + Tab |
| Go to previous window | Alt + Shift + Tab | Cmd + Shift + Tab |
| Reopen the last closed window | Ctrl + Shift + N | ⌘ |
| Open links in a new tab in the background | Ctrl + Click | Cmd + Click |
| Open links in a new tab in the foreground | Ctrl + Shift + Click | Cmd + Shift + Click |
| Print current webpage | Ctrl + P | Cmd + P |
| Save current webpage | Ctrl + S | Cmd + S |
| ⌘ | ⌘ | ⌘ |
| Address Bar | | |
| Cycle between toolbar, search bar, and page elements | Tab | Tab |
| Go to browser's address bar | Ctrl + L or Alt + D | Cmd + L |
| Focus and select the browser's search bar | Ctrl + E | Cmd + E / Cmd + K |
| Open the address bar location in a new tab | Alt + Enter | Opt + Enter |
| Display a list of previously typed addresses | F4 | ⌘ |
| Add "www." to the beginning and ".com" to the end of the text typed in the address bar (e.g., type "w3schools" and press Ctrl + Enter to open "www.w3schools.com") | Ctrl + Enter | Cmd + Enter or Control + Enter |
| ⌘ | ⌘ | ⌘ |
| Bookmarks | | |
| Open the bookmarks menu | Ctrl + B | Cmd + B |
| Add bookmark for current page | Ctrl + D | Cmd + Opt + B or Cmd + Shift + B |
| Open browsing history | Ctrl + H | Cmd + Shift + H or Cmd + Y |
| Open download history | Ctrl + J | Cmd + J or Cmd + Shift + J |

Screenshots

| Description | Windows | Mac OS |
|------------------------------------------------------|----------------------------------------|------------------------------------|
| Save screenshot of the whole screen as file | ⌘ | Cmd + Shift + 3 |
| Copy screenshot of the whole screen to the clipboard | PrtScr (Print Screen) or Ctrl + PrtScr | Cmd + Ctrl + Shift + 3 |
| Save screenshot of window as file | ⌘ | Cmd + Shift + 4, then Space |
| Copy screenshot of window to the clipboard | Alt + PrtScr | Cmd + Ctrl + Shift + 4, then Space |
| Copy screenshot of wanted area to the clipboard | | Cmd + Ctrl + Shift + 4 |
| Save screenshot of wanted area as file | ⌘ | Cmd + Shift + 4 |

Note: Due to different keyboard setups, some shortcuts may not be compatible for all users.

