

Topic 1. Basics of 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!

➤ What is HTML?

HTML is the standard markup language for creating Web pages.

- HTML stands for Hyper Text Markup Language
- 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 are represented by tags
- HTML tags label pieces of content such as "heading", "paragraph", "table", and so on
- Browsers do not display the HTML tags, but use them to render the content of the page.

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 this document to be HTML5
- The `<html>` element is the root element of an HTML page
- The `<head>` element contains meta information about the document
- The `<title>` element specifies a title for the document
- The `<body>` element contains the visible page content

- The `<h1>` element defines a large heading
- The `<p>` element defines a paragraph

➤ HTML Tags

HTML tags are element names surrounded by angle brackets:

`<tagname>content goes here...</tagname>`

- HTML tags normally come **in pairs** like `<p>` and `</p>`
- The first tag in a pair is the **start tag**, the second tag is the **end tag**
- The end tag is written like the start tag, but with a **forward slash** inserted before the tag name

➤ Web Browsers

The purpose of a web browser (Chrome, Edge, Firefox, Safari) is to read HTML documents and display them.

The 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:

```
<html>
<head>
<title>Page title</title>
</head>
<body>
<h1>This is a heading</h1>
<p>This is a paragraph.</p>
<p>This is another 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 Versions

Since the early days of the web, there have been many versions of HTML:

| Version | Year |
|-----------|------|
| HTML | 1991 |
| HTML 2.0 | 1995 |
| HTML 3.2 | 1997 |
| HTML 4.01 | 1999 |
| XHTML | 2000 |
| HTML5 | 2014 |

➤ 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>
```

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>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.

Attributes are used to provide additional information about HTML elements.

HTML Images

HTML images are defined with the `` tag.

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

Example

```

```

List

1. 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>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <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:

| 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>
```

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>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>
```

2.Ordered HTML List - The Type Attribute

The **type** attribute of the [](#) tag, defines the type of the list item marker:

| Type | Description |
|----------|--|
| type="1" | The list items will be numbered with numbers (default) |
| type="A" | The list items will be numbered with uppercase letters |
| type="a" | The list items will be numbered with lowercase letters |

type="I" The list items will be numbered with uppercase roman numbers

type="i" The list items will be numbered with lowercase roman numbers

Numbers:

```
<ol type="1">
  <li>Coffee</li>
  <li>Tea</li>
  <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>
  <dt>Coffee</dt>
  <dd>- black hot drink</dd>
  <dt>Milk</dt>
  <dd>- white cold drink</dd>
</dl>
```

Nested HTML Lists

List can be nested (lists inside lists):

Example

```
<ul>
  <li>Coffee</li>
  <li>Tea
    <ul>
      <li>Black tea</li>
    </ul>
  </li>
</ul>
```



```

        <li>Green tea</li>
    </ul>
</li>
<li>Milk</li>
</ul>

```

HTML <dl> Tag

Example

A description list, with terms and descriptions:

```

<dl>
  <dt>Coffee</dt>
  <dd>Black hot drink</dd>
  <dt>Milk</dt>
  <dd>White cold drink</dd>
</dl>

```

Definition and Usage

The <dl> tag defines a description list.

The <dl> tag is used in conjunction with [<dt>](#) (defines terms/names) and [<dd>](#) (describes each term/name).

Topic 3.URL and Anchor Tags

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.

HTML Links - Syntax

Hyperlinks are defined with the HTML `<a>` tag:

```
<a href="url">link text</a>
```

Example

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

The href attribute specifies the destination address (https://www.w3schools.com/html/) of the link.

The link text is the visible part (Visit our HTML tutorial).

Clicking on the link text will send you to the specified address.

Local Links

The example above used an absolute URL (a full web address).

A local link (link to the same web site) is specified with a relative URL (without https://www....).

Example

```
<a href="html_images.asp">HTML Images</a>
```

HTML Links - The target Attribute

The target attribute specifies where to open the linked document.

The target attribute can have one of the following values:

- `_blank` - Opens the linked document in a new window or tab
- `_self` - Opens the linked document in the same window/tab as it was clicked (this is default)
- `_parent` - Opens the linked document in the parent frame
- `_top` - Opens the linked document in the full body of the window
- `framename` - Opens the linked document in a named frame

This example will open the linked document in a new browser window/tab:

Example

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

HTML Links - Image as Link

It is common to use images as links:

Example

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

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>
```

External Paths

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

This example uses a full URL to link to a web page:

Example

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

This example links to a page located in the **html folder on the current web site**:

Example

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

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

Example

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

HTML Link Bookmarks**HTML Links - Create a Bookmark**

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

Bookmarks can be useful if a webpage 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, 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>
```

Example

```
<!DOCTYPE html>
<html>
<body>
<p><a href="#C4">Jump to Chapter 4</a></p>
<p><a href="#C10">Jump to Chapter 10</a></p>
<h2>Chapter 1</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 2</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 3</h2>
<p>This chapter explains ba bla bla</p>
<b2 id="C4">Chapter 4</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 5</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 6</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 7</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 8</h2>
<p>This chapter explains ba bla bla</p>
<h2>Chapter 9</h2>
<p>This chapter explains ba bla bla</p>
```

```
<h2 id="C10">Chapter 10</h2>
```

```
<p>This chapter explains ba bla bla</p>
```

```
<h2>Chapter 11</h2>
```

```
<p>This chapter explains ba bla bla</p>
```

```
</body>
```

```
</html>
```

HTML Images

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

Example

```

```

HTML Images Syntax

In HTML, images are defined with the `` tag.

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

The `src` attribute specifies the URL (web address) of the image:

```

```

The alt Attribute

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

```

```

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 defines the width and height of the image in pixels.

Width and Height, or Style?

The `width`, `height`, and `style` attributes are 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 not specified, the browser expects to find the image in the same folder as the web page.

However, it is common to store images in a sub-folder. You must then include the folder name in the `src` attribute:

Example

```

```

Images on Another Server

Some web sites store their images on image servers.

Actually, you can access images from any web address in the world:

Example

```

```

Image as a Link

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

Example

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

Image Floating

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

```
<!DOCTYPE html>
<html> <body>
<h2>Floating Images</h2>
<p><strong>Float the image to the right:</strong></p>
<p>

```

A paragraph with a floating image. A paragraph with a floating image. A paragraph with a floating image.</p>

<p>Float the image to the left:</p>

<p>

A paragraph with a floating image. A paragraph with a floating image. A paragraph with a floating image.

</p>

</body>

</html>

Topic 4

HTML Tables

Defining an HTML Table

An HTML table is defined with the `<table>` tag.

Each table row is defined with the `<tr>` tag. A table header is defined with the `<th>` tag. By default, table headings are bold and centered. A table data/cell is defined with the `<td>` tag.

```
<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 - Adding a Border

If you do not specify a border for the table, it will be displayed without borders.

A border is set using the CSS `border` property:

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

HTML Table - Collapsed Borders

If you want the borders to collapse into one border, add the CSS `border-collapse` property:

Example

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

HTML Table - Adding 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 - Adding 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;
}
```

HTML Table - Cells that Span 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 - Cells that Span Many Rows

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

```
<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>

```

Set the background color of the three columns with the <colgroup> and <col> tags:

```

<table>
  <colgroup>
    <col span="2" style="background-color: red">
    <col style="background-color: yellow">
  </colgroup>
  <tr>
    <th>ISBN</th>
    <th>Title</th>
    <th>Price</th>
  </tr>
  <tr>
    <td>3476896</td>
    <td>My first HTML</td>
    <td>$53</td>
  </tr>
</table>

```

Frames-

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset. The window is divided into frames in a similar way the tables are organized: into rows and columns.

Creating Frames

To use frames on a page we use `<frameset>` tag instead of `<body>` tag. The `<frameset>` tag defines, how to divide the window into frames. The **rows** attribute of `<frameset>` tag defines horizontal frames and **cols** attribute defines vertical frames. Each frame is indicated by `<frame>` tag and it defines which HTML document shall open into the frame.

Following is the example to create three horizontal frames –

[Live Demo](#)

```
<!DOCTYPE html>
<html>

  <head>
    <title>HTML Frames</title>
  </head>

  <frameset rows = "10%,80%,10%">
    <frame name = "top" src = "/html/top_frame.htm" />
    <frame name = "main" src = "/html/main_frame.htm" />
    <frame name = "bottom" src = "/html/bottom_frame.htm" />

    <noframes>
      <body>Your browser does not support frames.</body>
    </noframes>

  </frameset>

</html>
```

The <frameset> Tag Attributes

Following are important attributes of the <frameset> tag –

| Sr.No | Attribute & Description |
|-------|---|
| 1 | <p>cols</p> <p>Specifies how many columns are contained in the frameset and the size of each column. You can specify the width of each column in one of the four ways –</p> <p>Absolute values in pixels. For example, to create three vertical frames, use <i>cols</i> = "100, 500, 100".</p> <p>A percentage of the browser window. For example, to create three vertical frames, use <i>cols</i> = "10%, 80%, 10%".</p> <p>Using a wildcard symbol. For example, to create three vertical frames, use <i>cols</i> = "10%, *, 10%". In this case wildcard takes remainder of the window.</p> <p>As relative widths of the browser window. For example, to create three vertical frames, use <i>cols</i> = "3*, 2*, 1*". This is an alternative to percentages. You can use relative widths of the browser window. Here the window is divided into sixths: the first column takes up half of the window, the second takes one third, and the third takes one sixth.</p> |
| 2 | <p>rows</p> <p>This attribute works just like the cols attribute and takes the same values, but it is used to specify the rows in the frameset. For example, to create two horizontal frames, use <i>rows</i> = "10%, 90%". You can specify the height of each row in the same way as explained above for columns.</p> |
| 3 | <p>border</p> <p>This attribute specifies the width of the border of each frame in pixels. For example, border = "5". A value of zero means no border.</p> |
| 4 | <p>frameborder</p> <p>This attribute specifies whether a three-dimensional border should be displayed between frames. This attribute takes value either 1 (yes) or 0 (no). For example frameborder = "0" specifies no border.</p> |
| 5 | <p>framespacing</p> <p>This attribute specifies the amount of space between frames in a frameset. This can take any integer value. For example framespacing = "10" means there should be 10 pixels spacing between each frames.</p> |

The <frame> Tag Attributes

Following are the important attributes of <frame> tag –

| Sr.No | Attribute & Description |
|-------|---|
| 1 | src This attribute is used to give the file name that should be loaded in the frame. Its value can be any URL. For example, src = "/html/top_frame.htm" will load an HTML file available in html directory. |
| 2 | name This attribute allows you to give a name to a frame. It is used to indicate which frame a document should be loaded into. This is especially important when you want to create links in one frame that load pages into an another frame, in which case the second frame needs a name to identify itself as the target of the link. |
| 3 | frameborder This attribute specifies whether or not the borders of that frame are shown; it overrides the value given in the frameborder attribute on the <frameset> tag if one is given, and this can take values either 1 (yes) or 0 (no). |
| 4 | marginwidth This attribute allows you to specify the width of the space between the left and right of the frame's borders and the frame's content. The value is given in pixels. For example marginwidth = "10". |
| 5 | marginheight This attribute allows you to specify the height of the space between the top and bottom of the frame's borders and its contents. The value is given in pixels. For example marginheight = "10". |
| 6 | noresize By default, you can resize any frame by clicking and dragging on the borders of a frame. The noresize attribute prevents a user from being able to resize the frame. For example noresize = "noresize". |

| | |
|---|--|
| 7 | <p>scrolling</p> <p>This attribute controls the appearance of the scrollbars that appear on the frame. This takes values either "yes", "no" or "auto". For example scrolling = "no" means it should not have scroll bars.</p> |
| 8 | <p>longdesc</p> <p>This attribute allows you to provide a link to another page containing a long description of the contents of the frame. For example longdesc = "framedescription.htm"</p> |

Example-

```

<html>
<frameset rows="*,*">
  <frame src="a.html">
</frameset>
<frameset cols="*,*,*">
  <frame src="link.html">
  <frame src="olist.html">
  <frame src="image1.html">
</frameset>
</html>

```

Advantages:

- It allows the user to view multiple documents within a single Web page.
- It load pages from different servers in a single frameset.
- The older browsers that do not support frames can be addressed using the tag.

Disadvantages: Due to some of its disadvantage it is rarely used in web browser.

- Frames can make the production of website complicated.
- A user is unable to bookmark any of the Web pages viewed within a frame.
- The browser's back button might not work as the user hopes.
- The use of too many frames can put a high workload on the server.
- Many old web browser doesn't support frames.

Topic 5. Cascading Style Sheets.

Styling HTML with CSS

CSS stands for **C**ascading **S**tyle **S**heets.

CSS describes **how HTML elements are to be displayed on screen, paper, or in other media.**

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

CSS can be added to HTML elements in 3 ways:

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

1. 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.

This example sets the text color of the `<h1>` element to blue:

Example

```
<h1 style="color:blue;">This is a Blue Heading</h1>
```

2. 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:

Example

```
<!DOCTYPE html>
<html>
<head>
<style>
body {background-color: powderblue;}
```

```

h1    {color: blue;}
p     {color: red;}
</style>
</head>
<body>

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

</body>
</html>

```

3. External CSS

An external style sheet is used to define the style for many HTML pages.

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

To use an external style sheet, add a link to it in the `<head>` section of the HTML page:

Example

```

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

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

</body>
</html>

```

Here is how the "styles.css" looks:

```

body {
  background-color: powderblue;
}
h1 {
  color: blue;
}

```

```
p {
  color: red;
}
```

- **CSS Fonts**

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

```
<!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:

```
<html>
<head>
<style>
```

```

p {
  border: 1px solid powderblue;
}
</style>
</head>
<body>

<h1>This is a heading</h1>

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

</body>
</html>

```

- **CSS Padding**

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

Example

```

p {
  border: 1px solid powderblue;
  padding: 30px;
}

```

- **CSS Margin**

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

Example

```

p {
  border: 1px solid powderblue;
  margin: 50px;
}

```

- **The id Attribute**

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

```
<p id="p01">I am different</p>
```

then define a style for the element with the specific id:

Example

```
<html>
<head>
<style>
#p01 {
    color: blue;
}
</style>
</head>
<body>

<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
<p id="p01">I am different.</p>

</body>
</html>
```

- **The class Attribute**

To define a style for special types of elements, add a `class` attribute to the element:

```
<p class="error">I am different</p>
```

then define a style for the elements with the specific class:

```
<html>
```



```

<head>
<style>
p.error {
  color: red;
}
</style>
</head>
<body>

<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
<p class="error">I am different.</p>
<p>This is a paragraph.</p>
<p class="error">I am different too.</p>

</body>
</html>

```

➤ External References

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

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

```

<html>
<head>
  <link rel="stylesheet" href="https://www.w3schools.com/html/styles.css">
</head><body>
<h1>This is a heading</h1>
<p>This is a paragraph.</p>
</body>
</html>

```