### What is HTML?

* HTML stands for ***Hyper Text Markup Language***
* HTML is a ***declarative*** language.
* HTML is the ***standard markup language*** for creating Web pages
* HTML describes the ***structure*** of a Web page
* HTML elements ***tell the browser how to display the content***

|  |  |
| --- | --- |
| 1989 | Tim Berners-Lee invented **WWW** |
| 1991 | Tim Berners-Lee invented **HTML** |
| 2008 | WHATWG (Web Hypertext application technology working group) created **HTML5** |

**Hypertext** is [text](https://en.wikipedia.org/wiki/E-text) displayed on a [computer display](https://en.wikipedia.org/wiki/Computer_display) or other [electronic devices](https://en.wikipedia.org/wiki/Electronic_devices) with references ([hyperlinks](https://en.wikipedia.org/wiki/Hyperlinks)) to other text that the reader can immediately access.

### HTML Working

[Web browsers](https://en.wikipedia.org/wiki/Web_browser) receive HTML documents from a [web server](https://en.wikipedia.org/wiki/Web_server) or from local storage and [render](https://en.wikipedia.org/wiki/Browser_engine) the documents into multimedia web pages.

### Basic program

<!DOCTYPE html>

<html lang="en-IN">

<head>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1">

<title>Page Title</title>

</head>

<body>

<h1>This is a Heading</h1>

<p>This is a paragraph.</p>

</body>

</html>

* The <!DOCTYPE html> declaration defines that this document is an HTML5 document and helps browsers to display web pages correctly.
* The <html> element is the **root element** of an HTML page
* The lang attribute inside the <html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers.

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

* The <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

Using either .htm or .html as file extension. There is no difference.

# HTML Element

* [HTML elements](https://en.wikipedia.org/wiki/HTML_element) are the ***building blocks*** of HTML pages

<h1 style="color: aqua;">Saranj Bule </h1>

Start tag

Closing tag

Content

Value

Key

Html Element

Attribute

Some HTML elements have no content (like the <br> (line break), <hr> (thematic break), <input>, <img>, <link>, <meta> element). These elements are called ***empty elements or void elements***. Empty elements do not have an end tag!

### HTML is Not Case Sensitive

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

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

### 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 anchor <a> tag defines a hyperlink.

The href attribute specifies the URL of the page the link goes to: (**href = hypertext reference**)

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

## The src Attribute

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

The required src attribute specifies the path to the image to be displayed: (**src = source**)

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

<img src="img\_girl.jpg" alt="Girl Image" >

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

***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**. (a full web address). 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. A **local link** (a link to a page within the same website). 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.

### HTML Headings

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

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

# HTML Formatting Elements

Formatting elements were designed to display special types of text:

* <b> - Bold text
* <strong> - Important text
* <i> - Italic text, Defines a part of text in an alternate voice or mood
* <em> - Emphasized text
* <mark> - Marked/ Highlighted text
* <small> - Smaller text
* <big> - Bigger text
* <del> - Deleted text
* <strike> - Strike text
* <ins> - Inserted text
* <u> - Underline text
* <sub> - Subscript text
* <sup> - Superscript text

# Comments

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

<!-- Write your comments here -->

# HTML Links

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

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

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.

* \_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

# Bookmarks

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

Step 1: First, use the id attribute to create a bookmark:

<h2 id="C4">Chapter 4</h2>

Step 2: Then, add a link to the bookmark ("Jump to Chapter 4"), from within the same page:

<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>

# Colors

# RGB & RGBA

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

**rgb(red, green, blue)**

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

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

There are 256 x 256 x 256 = 16777216 possible colors.

rgb(255, 0, 0) = red | rgb(0, 255, 0) = green | rgb(0, 0, 255) = blue

rgb(0, 0, 0) = black | rgb(255, 255, 255) = white

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

**rgba(red, green, blue, alpha)**

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

# HEX

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

**#rrggbb**

#ff0000 = red | #00ff00 = green | #0000ff = blue | #000000 = black | #ffffff = white

# HSL & HSLA

HSL stands for hue, saturation, and lightness.

**hsl(hue, saturation, lightness)**

* Hue is a degree on the color wheel from 0 to 360. 0,360 is red, 120 is green, and 240 is blue.
* Saturation can be described as the intensity of a color. Saturation is a percentage value, 0% means a shade of gray, and 100% is the pure color.
* The lightness of a color can be described as how much light you want to give the color. Lightness is also a percentage value, 0% is black, and 100% is white.

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

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

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

# Favicon

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

<link rel="icon" type="image/x-icon" href="/images/favicon.ico">

# Table

<table> is the root HTML element to describe the table Structure.

<tr> (table row) element is used to declare a row.

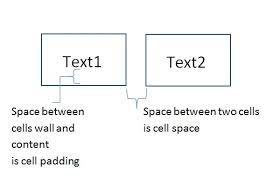
<th> (table heading) is used to provide heading to a table.

<td> (table data) is used for data element for each row.

<colgroup> to group the cols of a table

Cell padding is the space between the cell edges and the cell content. (Default 0)

Cell spacing is the space between each cell. (Default 2px)



# List

**Descriptive List**

|  |  |
| --- | --- |
| [<dl>](https://www.w3schools.com/tags/tag_dl.asp) | Defines a description list (root element) |
| [<dt>](https://www.w3schools.com/tags/tag_dt.asp) | Defines a term in a description list |
| [<dd>](https://www.w3schools.com/tags/tag_dd.asp) | Describes the term in a description list |

**Ordered List**

|  |  |
| --- | --- |
| [<ol>](https://www.w3schools.com/tags/tag_ol.asp) | Defines an ordered list (root element) |
| 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 |

**Unordered List**

|  |  |
| --- | --- |
| [<ul>](https://www.w3schools.com/tags/tag_ul.asp) | Defines an unordered list (root element) |
| 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 |

|  |  |
| --- | --- |
| [<li>](https://www.w3schools.com/tags/tag_li.asp) | Defines a list item |

# Block-level Elements

A block-level element **always starts on a new line**, and the browsers automatically add some space (a margin) before and after the element.

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

The <div> element defines a division or a section in an HTML document.

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

# 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 <span> element inside a paragraph.

An inline element cannot contain a block-level element!

# Class

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

# ID

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

# <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.

# Iframe

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

The HTML <iframe> tag specifies an inline frame.

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

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

# 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.

# 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.**

# Spacing Entities

Extra spaces or tabs are not directly created in HTML

&thinsp; - thin space smaller than nbsp

&nbsp; - non-breakable space (*1 WhiteSpace Character)*

&ensp; - en space 2 &nbsp (*2 WhiteSpace Characters*)

&emsp; - em space 2 &ensp (*4 WhiteSpace Characters* or **TAB**)

# 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 <span> - Tells nothing about its content.

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

# NOTE

While assigning multiple tag is use similar pattern to LIFO (last in, first out) concept

<b><u><i>Saranj</i></u></b>

# XHTML

XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage

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

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.

# The Most Important Differences from HTML

* <!DOCTYPE> is **mandatory**
* The xmlns attribute in <html> is **mandatory** (the xmlns attribute in <html> must specify the xml namespace for the document.)
* <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**