"Web server" can refer to hardware or software, or both of them working together.

1. On the hardware side, a web server is a computer that stores a website's component files (e.g. HTML documents, images, CSS stylesheets, and JavaScript files) and delivers them to the end-user's device. It is connected to the Internet and can be accessed through a domain name like mozilla.org.
2. On the software side, a web server includes several parts that control how web users access hosted files, at minimum an *HTTP server.*An HTTP server is a piece of software that understands [URLs](https://developer.mozilla.org/en-US/docs/Glossary/URL) (web addresses) and [HTTP](https://developer.mozilla.org/en-US/docs/Glossary/HTTP) (the protocol your browser uses to view webpages).

At the most basic level, whenever a browser needs a file hosted on a web server, the browser requests the file via HTTP. When the request reaches the correct web server (hardware), the *HTTP server* (software) sends the requested document back, also through HTTP.

<https://mdn.mozillademos.org/files/8659/web-server.svg>

To publish a website, you need either a static or a dynamic web server.

A **static web server**, or stack, consists of a computer (hardware) with an HTTP server (software). We call it "static" because the server sends its hosted files "as-is" to your browser.

A **dynamic web server**consists of a static web server plus extra software, most commonly an *application server*and a *database.*We call it "dynamic" because the application server updates the hosted files before sending them to your browser via the HTTP server.

***HTML tags***

Hypertext Markup Language (**HTML**)

* HTML elements are the building blocks of HTML pages
* HTML elements are represented by tags

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

<meta charset="UTF-8">  
</head>  
<body>  
  
<h1>My First Heading</h1>  
<p>This is<br>a paragraph<br>with line breaks.</p>  
</body>  
</html>

Output

My first **heading**

This is  
a paragraph  
with line breaks

* !DOCTYPE html- declaration defines this document to be HTML5

head- contains metainformation about the document(title, location, and subject)

* HTML paragraphs are defined with the **<p>** tag:
* HTML elements with no content are called empty elements.
* <br> is an empty element without a closing tag (the <br> tag defines a line break).Empty elements can be "closed" in the opening tag like this: <br />.
* HTML headings are defined with the **<h1>** to **<h6>** tags.<h1> defines the most important heading. <h6> defines the least important heading
* A character in UTF8 can be from 1 to 4 bytes long. UTF-8 can represent any character in the Unicode standard. UTF-8 is backwards compatible with ASCII. UTF-8 is the preferred encoding for e-mail and web pages
* HTML tags are not case sensitive: <P> means the same as <p>
* To draw lines in html

1. Vertical line - <hr width="1" size="500">
2. Horizontal line- <hr>

## HTML Attributes

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

1. Src,width,height

<img src="img\_girl.jpg" width="500" height="600">

here width="500" implies the image is 500 px wide

## The HTML Style Attribute

<tagname style="property:value;">

- to specify styling of an element

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

<p style="color:red">I am a paragraph</p>

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

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

<h1 style="text-align:center;">Centered Heading</h1>

<h1 style="font-family:verdana;">This is a heading</h1>

<h1 style="border:2px solid Tomato;">Hello World</h1> //change border color and make it solid

* Multiple attributes

style="width:42px;height:42px;"

colors also specified as RGB values, HEX values, HSL values, RGBA values, and HSLA values

1. lang attribute

<html lang="en-US">

en- language

US- dialect

1. a **title** attribute is added to the **<p>** element. The value of the title attribute will be displayed as a tooltip when you mouse over the paragraph:

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

1. href

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

1. alt : The required alt attribute specifies an alternate text for an image, if the image cannot be displayed due to slow data or image not existing.

<img src="img\_girl.jpg" alt="Girl with a jacket">

|  |  |
| --- | --- |
| 1. disabled | Specifies that an input element should be disabled |

* quotes around attribute values are not mandatory for html5, but required for xhtml

**HTML: Images**

<img src="https://www.kasandbox.org/programming-images/animals/rabbit.png" alt="Rabbit with lop ears in barn" width="203">

src and alt are attributes of image tag

The alt attribute provides alternative information for an image if a 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).

src – url of the image

width or height tag can be used

another format

<p>

<img src="https://www.kasandbox.org/programming-images/misc/tim-berners-lee-webpage.png" width="300">

<br>Image courtesy CERN

</p>

* img {

width:100%;

}

this style rule can override the width attribute

## 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>

Output

# This is heading 1

This is some text.

## This is heading 2

This is some other text.

## This is heading 2

This is some other text.

# HTML Text Formatting

* <b> - Bold text
* <strong> - Important text
* <i> - Italic text
* <em> - Emphasized text
* <mark> - Marked text(highlighted text)
* <small> - Small text
* <del> - Deleted text is crossed
* <ins> - Inserted text is underlined
* <sub> - Subscript text
* <sup> - Superscript text

<b>This text is bold</b>

# HTML comments

<!-- Hello humans -->

## Conditional Comments

<!--[if IE 9]>  
    .... some HTML here ....  
<![endif]-->

# HTML Quotation and Citation Elements

1. The HTML **<q>** element defines a short quotation.

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

<p>Browsers usually indent blockquote elements.</p>

1. **<blockquote>** element defines a section that is quoted from another source.

Browsers usually indent <blockquote> elements.

<blockquote cite="http://www.worldwildlife.org/who/index.html">

For 50 years, WWF has been protecting the future of nature.

</blockquote>

shown as

Browsers usually indent blockquote elements.

For 50 years, WWF has been protecting the future of nature. The world's leading conservation

1. The HTML **<abbr>** element defines an abbreviation or an acronym.

<abbr title="World Health Organization">WHO</abbr>

1. **<address>** element defines contact information (author/owner) of a document or an article.The <address> element is usually displayed in italic.
2. **<cite>** element defines the title of a work, displayed in italic
3. <bdo> bi-directional override

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

# HTML: Lists

**ul – unordered list** ( no number for list , just bullets)

<ul>

<li>They're furry!</li>

<li>Great listeners!</li>

<li>Eat all your leftover carrots!</li>

</ul>

every ul should have atleast 1 li under it

**ol- ordered list**

<ol>

<li>Bugs bunny</li>

<li>Easter Bunny</li>

<li>Thumper</li>

</ol>

|  |  |
| --- | --- |
| 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 |

### Eg of type attribute

<ol type="1">

## 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>

output

Coffee

- black hot drink

Milk

- white cold drink

## to get Horizontal Lists

ul {

list-style-type: none;

margin: 0;

padding: 0;

}

***CSS***

**Cascading style sheets**

**we use CSS rules** to select elements on a web page so that we can then style those elements.

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

<!DOCTYPE html>

<html>

<head>

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

</head>

<body>

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

[OR](https://www.w3schools.com/html/tryit.asp?filename=tryhtml_css_external_url)

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

ON same website

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

located in same folder as current page

The way we tell our CSS rule which HTML elements to style is by using **selectors**. There are many types of selectors

1. the **element selector**.

The element selector selects HTML elements based on their tag names. Each HTML element—<h1>, <p>, <li>, <body>—and *any* other HTML element can be selected with CSS by using the tag name without the angle brackets (< and >). For example, you can select all of the <p> tags in your webpage by using the element selector p. Here's a CSS rule that changes the color of each paragraph on a web page:

**p {**

**color: rgb(255, 0, 0);**

**}**

eg:

<head>

<meta charset="utf-8">

<title>CSS Basics</title>

**<style>**

**h2 {**

**color: rgb(0, 232, 15);**

**}**

**body {**

**background-color: rgb(97, 250, 255);**

**}**

**</style>**

</head>

Everything in style tag is css, Here css parser is used instead of html parser.

Rgb(x,y,z)- gives red green and blue values for that particular color

Selector h2 – to style all h2 s in the page

Selector body- to give background color

* To change color of entire body

**body{**

**color: red;**

**}**

1. **CSS: Selecting by id**

Give id for the required <p> tag or heading tags

We can’t have spaces in ids

Id selector is #

Eg:

 <!DOCTYPE html>

<html>

<head>

<meta charset="utf-8">

<title>CSS: Selecting by id</title>

<style>

**#rabbits-song {**

**background-color: yellow;**

**}**

**#rabbits-info-heading {**

**background-color: purple;**

**}**

</style>

</head>

<body>

<h1>All about rabbits!</h1>

**<h2 id="rabbits-info-heading">**Basic info</h2>

<p>Rabbits are little creatures with long ears and puffy tails, and they move their nose up and down in an adorable way. They eat the most orange vegetables in <em>our</em> world, and <strong>they reproduce more than any human <em>ever</em> has</strong>.</p>

**<p id="rabbits-song">**Little Bunny Foo Foo, <br>

I don't want to see you <br>

scooping up the field mice <br>

and bopping them on the head!</p>

</body>

</html>

or

<img id="mainpic" src="cat.png">

1. **CSS: Selecting by class**

To give rules for multiple headings or p tags, instead of giving individual ids

Class selector is ‘.’

Classes cant have white space

<!DOCTYPE html>

<html>

<head>

<meta charset="utf-8">

<title>CSS: Selecting by class</title>

<style>

**.song-lyrics {**

**background-color: yellow;**

**}**

</style>

</head>

<body>

</p>

<h2>Songs</h2>

**<p class="song-lyrics">**Little Bunny Foo Foo, <br>

I don't want to see you <br>

and bopping them on the head!</p>

**<p class="song-lyrics">**And down came the Good Fairy <br>

And she said </p>

**<p class="song-lyrics">**I'll give you 3 chances. <br>

Then I'll turn you into a goon! <br>

The next day…</p>

</body>

</html>

or

<h1><strong class="apples">Apples</strong> and <strong class="bananas">Bananas</strong></h1>

* HTML elements can have more than one class name, each class name must be separated by a space.

### **Example**

Style elements with the class name "city", also style elements with the class name "main":

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

# CSS box model

# Every elements box has the following parts

# 

# padding,border and margin can be varied

## CSS Border

p {  
    border: 1px solid powderblue;  
}

<p>This is a paragraph.</p>  
border can be solid, dotted, ridge etc

This is a paragraph.

## CSS Padding

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

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

This is a paragraph.

## CSS Margin

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

### **Example**

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

}

# margin: 15px 0px 10px 6px;//top,right,bottom,left

# #cute-cat {

# width: 120px;

# margin-right: 10px;

# margin-bottom: 10px;

# }

# #container {

# width: 400px;

# margin: auto; //centres page

# border: 1px solid rgb(145, 0, 0); //gives border to the block

# }

# border-top: 10px solid purple;

# padding provides apace between border and objects

padding: 6px

# HTML links

a tag – anchor

absolute url has domain name/path in server in which its located

relative urls like / topics/birth-web – means stay on current domain and look for other path

(eg: href="/html/default.asp")

## 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

target="\_blank" – to open url in new window

if link is in same domain, use same window, otherwise if link is in a diff domain user target=”\_blank”

eg1

to get a link to another html page

**<a target="\_blank" href="http://home.web.cern.ch/topics/birth-web">Read more about the history of HTML</a>**

eg2

to turn the image into a link

<a target="\_blank" href="http://home.web.cern.ch/topics/birth-web">Read more about the history of HTML

<p>

<img src="https://www.kasandbox.org/programming-images/misc/tim-berners-lee-webpage.png" width="300">

<br>Image courtesy CERN

</p>

</a>

# HTML internal links

Connect one part of webpage to another part of the same webpage

This is done by using CSS id selector

<body>

<h1>HTML: HyperText Markup Language</h1>

<ul>

<li>**<a href="#web-history">History of the web</a><**/li>

<li>History of HTML versions</li>

</ul>

<p>Tim Berners-Lee invented the first browser at CERN, to enable researchers to share their research with eachother.</p>

<p>

<img src="https://www.kasandbox.org/programming-images/misc/tim-berners-lee-webpage.png" width="200">

<br>Image courtesy CERN

</p>

<h2 **id="web-history"**>History of the web</h2>

**HTML tables**

<table>

<caption>Pets</caption>

<thead>

<tr>

<th>Pet name</th>

<th>Species</th>

<th>Color</th>

</tr>

</thead>

<tbody>

<tr>

<td>Black & white</td>

<td>rabbit</td>

<td>black and white</td>

</tr>

<tr>

<td>Daemon</td>

<td>cat</td>

<td>black</td>

</tr>

<tr>

<td>Angel</td>

<td>cat</td>

<td>orange</td>

</tr>

</tbody>

</table>

th- table head

td- table data

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

border-collapse: collapse;

}

|  |  |  |
| --- | --- | --- |
| **Firstname** | **Lastname** | **Age** |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |

* th, td {  
      padding: 15px;

text-align: left;

}

* 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;  
}

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

<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>

* Similarly for rows that span more than 1 row use rowspan="2"

# CSS font-family property

# Serif – fonts like times new roman

# Sans-serif- like ariel

p {

color: rgb(191, 0, 255);

font-family: sans-serif;

}

* if Helvetica is not present compiler will give any other sans-serif font

p {

color: rgb(191, 0, 255);

font-family: "Helvetica", sans-serif;

}

other font family- cursive, fantasy, monospace

# CSS font-size property

# <style>

# body {

# font-size: 12px;

# }

# h2 {

# color: rgb(0, 232, 15);

# font-size: 1.5em;

# }

# </style>

# 12px- 12 pixels

# font-size : 1.5em; implies h2 is 1.5 times size of the body size(12\*2 px)

# CSS font styles and shorthand

# .song-lyrics {

# background-color: yellow;

# font-family: fantasy;

# font-size: 13px;

# font-weight: bold; //normal for not bold

# font-style: italic; //get in italics

# line-height: 1.5em;

# text-align: center; //center, right or left

# text-decoration: underline;

# }

# is same as

# .song-lyrics {

# background-color: yellow;

# font: italic 13px fantasy;

# }

# a {

# text-decoration: none;

# }

# removes the underline from the hyperlink

# CSS inheritance

# Font –family is inherited from parent tag to children tag and stops only if another rule specified to overrwite it for a child.

# Same for color.

# Most properties are inherited.

# CSS grouping elements

* **spans** are good to group selections of text

<style>

.lovey-dovey {

color: red;

}

</style>

<h3>Why I **<span class="lovey-dovey">Love</span>** Cats</h3>

* **div** – to group elements together

esp good to highlight paragraphs

#official-info {

background-color: rgb(230, 230, 230);

}

<div>

Read more on <a href="http://en.wikipedia.org/wiki/Cat">Wikipedia</a>.

</div>

* **inline elements**- img, a tag

**block elements**- h, p ol.here we need not explicitly give <br>, browser creates a new line before and after these tags

span creates an inline element, div create block elements

# CSS width, height, and overflow

# Along with div tag, width can be used in CSS style to change the width of highlighted block

# #official-info {

# background: rgb(230, 230, 230);

# width: 300px;

# }

# block takes up 70% of the available width

# #official-info {

# background: rgb(230, 230, 230);

# width: 70%;

# height:180px;

# overflow: visible;

# }

# as the block size decreases due to smaller height than what is required, the content might overflow of the highlighted block.

# overflow: hidden; //cuts the content off

# overflow: auto; //adds scroll bar inside the box

# overflow-y: auto;//allow overflow in y direction

# overflow-x: hidden;//trim it in x-direction

# width, height style rules can be used for images as well(instead of using width attribute inside img tag)

# #cute-cat {

# width: 120px;

# }

# <img id="cute-cat" src="https://www.kasandbox.org/programming-images/animals/cat.png">

## Image Floating

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

### **Example**

<p><img src="smiley.gif" alt="Smiley face" style="float:right;width:42px;height:42px;">  
The image will float to the right of the text.</p>

## Background Image

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

### **Example**

To add a background image on a web page, specify the background-image property on the BODY element:

<body style="background-image:url('clouds.jpg')">  
  
<h2>Background Image</h2>  
  
</body>

# HTML and XHTML

XHTML is HTML written as XML.

## What Is XHTML?

* XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage
* XHTML is almost identical to HTML
* XHTML is stricter than HTML
* XHTML is HTML defined as an XML application(XML above does not DO anything. XML is just information wrapped in tags.)
* XHTML is supported by all major browsers

## Why XHTML?

Many pages on the internet contain "bad" HTML.

This HTML code works fine in most browsers (even if it does not follow the HTML rules): Today's market consists of different browser technologies. Some browsers run on computers, and some browsers run on mobile phones or other small devices. Smaller devices often lack the resources or power to interpret "bad" markup. So XHTML was developed

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.

This example shows an XHTML document with a minimum of required tags:

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
  
<html xmlns="http://www.w3.org/1999/xhtml">  
  
<head>  
  <title>Title of document</title>  
</head>  
  
<body>  
  some content   
</body>  
  
</html>

* Empty elements must also be closed

A break: <br />  
A horizontal rule: <hr />  
An image: <img src="happy.gif" alt="Happy face" />

## XHTML Elements Must Be In Lower Case

## XHTML Attribute Names Must Be In Lower Case

## How to Convert from HTML to XHTML

1. Add an XHTML <!DOCTYPE> to the first line of every page
2. Add an xmlns attribute to the html element of every page
3. Change all element names to lowercase
4. Close all empty elements
5. Change all attribute names to lowercase
6. Quote all attribute values