HTML

Markup Language:

Markup language is used to format text into a specified format. It uses some predefined tags. These tags are not so flexible and hence markup language possesses certain restrictions to the web developers. A markup language is not a programming language because a programming language creates a set of instructions that are interpreted or compiled into a program or application.
The best example of a programming language is PHP, Java, etc. and HTML is a markup language.

Hyper Text Markup Language:

HTML stands for Hypertext Markup Language and it is the standard used by the world wide web document.
All html pages should contain four basic HTML elements: **HTML, HEAD, TITLE, BODY.**

Structure:

General HTML Template for All Web Pages:

```
<!DOCTYPE html>
<html>
    <head>
        <title> Title of a web page (can be seen on browser"s window title bar)</title>
    </head>
    <body>
        This is the main part of any web page. The text and graphics inside the body
        elements are displayed in the browser"s web page display.
        <h1>This is a Heading</h1>
        <p>This is a paragraph.</p>
        <!-- Write your comments here -->
    </body>
</html
```

HTML tags:

HTML documents are text files made up of HTML elements. HTML elements are defined using HTML tags.
An HTML element is defined by a start tag, some content, and an end tag.

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>
* My first paragraph. *

Start tag	Element content	End tag
<h1>	My First Heading	</h1>
	My first paragraph.	
 	none	none

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 are defined with the **<h1>** to **<h6>** tags.
<h1> defines the most important heading. **<h6>** defines the least important heading:
<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>

HTML Paragraphs

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

Code:
* This is a paragraph. *
* This is another paragraph. *

HTML Styles

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

The HTML Style Attribute:
Setting the style of an HTML element, can be done with the **style** attribute. The HTML **style** attribute has the following syntax:
<tagname style="property:value;">
The property is a CSS property. The value is a CSS value.

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>
* This is a paragraph. *
</body>
Example,
Set background color for two different elements:
<body>
<h1 style="background-color:powderblue;">This is a heading</h1>
* This is a paragraph. *
</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>
* This is a paragraph. *

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>
* This is a paragraph. *

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>
* This is a paragraph. *

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>
* Centered paragraph. *

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 Text Formatting Elements

Tag	Description
<b>	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
<del>	Defines deleted text
<mark>	Defines marked/highlighted text

HTML Colors

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

Color Names:

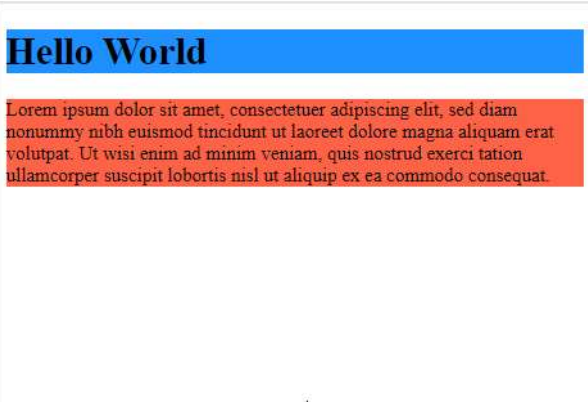
In HTML, a color can be specified by using a color name:

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

<h1 style="background-color:Tomato;">Tomato</h1>
<h1 style="background-color:Orange;">Orange</h1>
<h1 style="background-color:DodgerBlue;">DodgerBlue</h1>
<h1 style="background-
color:MediumSeaGreen;">MediumSeaGreen</h1>
<h1 style="background-color:Gray;">Gray</h1>
<h1 style="background-color:SlateBlue;">SlateBlue</h1>
<h1 style="background-color:Violet;">Violet</h1>
<h1 style="background-color:LightGray;">LightGray</h1>

</body>
</html>
```

Background color:

You can set the background color for HTML elements:

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

<h1 style="background-color:DodgerBlue;">Hello World</h1>

<p style="background-color:Tomato;">
Lorem ipsum dolor sit amet, consectetuer 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.
</p>

</body>
</html>
```



Text Color:

You can set the color of text:

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

Hello World

Lorem ipsum dolor sit amet, consectetuer 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.

```
<p style="color:MediumSeaGreen;">Ut wisi enim...</p>
```

Border Color:

You can set the color of borders:

Hello World

Hello World

Hello World

```
<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 elements have their background color set with RGB, HEX, and HSL values:

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

<p>Same as color name "Tomato":</p>

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

<p>Same as color name "Tomato", but 50% transparent:</p>
<h1 style="background-color:rgba(255, 99, 71,
0.5);">rgba(255, 99, 71, 0.5)</h1>
<h1 style="background-color:hsla(9, 100%, 64%,
0.5);">hsla(9, 100%, 64%, 0.5)</h1>

<p>In addition to the predefined color names, colors can
be specified using RGB, HEX, HSL, or even transparent
colors using RGBA or HSLA color values.</p>

</body>
</html>
```

Same as color name "Tomato":

rgb(255, 99, 71)

#ff6347

hsl(9, 100%, 64%)

Same as color name "Tomato", but 50% transparent:

rgba(255, 99, 71, 0.5)

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

In addition to the predefined color names, colors can be specified using RGB, HEX, HSL, or even transparent colors using RGBA or HSLA color values.

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?

CSS is used to style HTML elements.
– CSS stands for Cascading Style Sheets.
– Styles define how to display HTML elements.
– Styles are normally stored in Style Sheets.
– External Style Sheets can save you a lot of work.
– External Style Sheets are stored in CSS files.
– Multiple style definitions will cascade into one.

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:

```
<h1 style="color:blue;">A Blue Heading</h1>
<p style="color:red;">A red paragraph.</p>
```

Internal CSS:

An internal style sheet should be used when a single document has a unique style. Changing the style sheet modifies only the document that contains it. You define internal styles in the head section with the **<style>** tag.

E.g

```
<head>
        <style type="text/css">
                body {background-color: red}
                p {margin-left: 20px}
        </style>
```

</head>

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:

```
/*mystyle.css*/
h1
{
        font-weight:normal;
        font-size:16pt;
        color:red
}
p
{
        font-weight:bold;
        text-align:center;
        font-family:"sans serif";
        color:blue
}
```

```
<!--external_style_sheet.htm-->
<html>
<head>
    <title>Style sheets by LINKING</title>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
<body>
<h1>I am formatted with a linked style sheet</h1>
<p>Me too!</p>
</body>
</html>
```

HTML Links

Links are found in nearly all web pages. Links allow users to click their way from page to page.HTML uses a hyperlink to link to another document on the Web. HTML uses the (**anchor**) tag to create a link to another document.
The syntax of creating an anchor is:
 Text to be displayed
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

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

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

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

Absolute URLs VS Relative URLs

Above are using an absolute URL (a full web address) in the href attribute.
A local link (a link to a page within the same website) is specified with a relative URL (without the "https://www" part):
Example,

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

HTML Links: Use an Image as a Link

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

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

Link to an Email Address:

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

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>

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,
Visit our HTML Tutorial

TML Images

Images can improve the design and the appearance of a web page.
HTML Images Syntax:
The HTML **<img>** tag is used to embed an image in a web page.
Images are not technically inserted into a web page; images are linked to web pages. The <img> tag creates a holding space for the referenced image.
The **<img>** tag is empty, it contains attributes only, and does not have a closing tag.
The **<img>** tag has two required attributes:

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

Syntax:
<img src="url" alt="alternate text">

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.
<img src="img_chania.jpg" alt="Flowers in Chania">

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:
<img src="img_chania.jpg" alt="Flowers in Chania">
If a browser cannot find an image, it will display the value of the alt attribute.

Image Size - Width and Height

You can use the style attribute to specify the width and height of an image.
<img src="img_girl.jpg" alt="Girl in a jacket" style="width:500px;height:600px;">

Width, 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:

```
<!DOCTYPE html>
<html>
<head>
	<style>
		img {
		width: 100%;
		}
	</style>
</head>
<body>
	<img src="html5.gif" alt="HTML5 Icon" width="128" height="128">
	<img src="html5.gif" alt="HTML5 Icon" style="width:128px;height:128px;">
</body>
</html>
```

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:
<img src="https://www.w3schools.com/images/w3schools_green.jpg" alt="W3Schools.com">

Image as a Link:

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

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

Audio, Video and Canvas tags:

Audio <audio> tag:

It is used to insert any audio file at some part of an html document, so that it will be easy for any user to hear the audio sound in a web page <audio> tag is a root element, if we need to show the controls on UI then we need to include controls attribute in <audio> tag. Source <source> tag is included inside <audio> tag and is used for external source files with its type.
There are three supported audio formats in HTML: MP3, WAV, and OGG.
Example,

```
<html>
<body>
        <audio controls>
                <source src=”fuddy.mp3” type=”audio/mpeg”>
        </audio>
</body>
</html>
```

Video <video> tag:

HTML5 has a native video element that supports three video formats (MP4, WebM and Ogg), making it much easier to embed videos in a webpage. You can define the external source for the video using a file or a URL.
Example,

```
<!DOCTYPE html>
<html>
<body>
        <video width="400" controls>
        <source src="funnydance.webm" type="video/mp4">
        </video>
        <p>
                Video courtesy of
                <a href="https://www.youtube.com/watch?v=FzG4uDgje3M"
        target="_blank">Test>.
        </p>
</body>
</html>
```

Canvas <canvas> tag in html:

- The HTML5 <canvas> tag is used to draw graphics via scripting (usually JavaScript).
- However, the <canvas> element has no drawing abilities of its own (it is only a container for graphics) - you must use a script to actually draw the graphics.
- The getContext() method returns an object that provides methods and properties for drawing on the canvas.
- This reference will cover the properties and methods of the getContext("2d") object, which can be used to draw text, lines, boxes, circles, and more - on the canvas.

Example:

```
<!DOCTYPE html>
<html>
<body>
        <canvas id="myCanvas" width="800" height="800" style="border:1px solid
    #d3d3d3;background-color:antiquewhite;">
        </canvas>
    <script>
        var c = document.getElementById("myCanvas");
        var ctx = c.getContext("2d");
        ctx.moveTo(0, 0); //initial point position is (0,0)
        ctx.lineTo(500, 700); //final position point of a line
        ctx.stroke(); //strokes by drawing from 500 to 700
    </script>
</body>
</html>
```

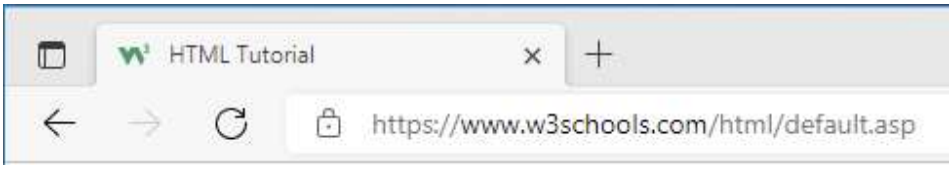
HTML Favicon

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

How To Add a Favicon in HTML

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

A favicon image is displayed to the left of the page title in the browser tab, like this:



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

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

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

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:

A table in HTML consists of table cells inside rows and columns
A simple HTML table:

```
<table>
  <tr>
    <th>Company</th>
    <th>Contact</th>
    <th>Country</th>
  </tr>
  <tr>
    <td>Alfreds Futterkiste</td>
    <td>Maria Anders</td>
    <td>German</td>
  </tr>
  <tr>
    <td>Centro comercial Moctezuma</td>
    <td>Francisco Chang</td>
    <td>Mexico</td>
  </tr>
</table>
```

Table Cells:

Each table cell is defined by a <td> and a </td> tag.
td stands for table data.
Everything between <td> and </td> are the content of the table cell.

```
<table>
  <tr>
    <td>Emil</td>
    <td>Tobias</td>
    <td>Linus</td>
  </tr>
</table>
```

Table Rows:

Each table row starts with a <tr> and ends with a </tr> tag.
tr stands for table row.
Example,

```
<table>
  <tr>
    <td>Emil</td>
    <td>Tobias</td>
    <td>Linus</td>
  </tr>
  <tr>
    <td>16</td>
    <td>14</td>
    <td>10</td>
  </tr>
</table>
```

Table Headers:

Sometimes you want your cells to be headers, in those cases use the <th> tag instead of the <td> tag:
Example,

```
<table>
  <tr>
    <th>Person 1</th>
    <th>Person 2</th>
    <th>Person 3</th>
  </tr>
  <tr>
```

```
    <td>Emil</td>
    <td>Tobias</td>
    <td>Linus</td>

  </tr>
  <tr>
    <td>16</td>
    <td>14</td>
    <td>10</td>
  </tr>
</table>
```

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 <colgroup> 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

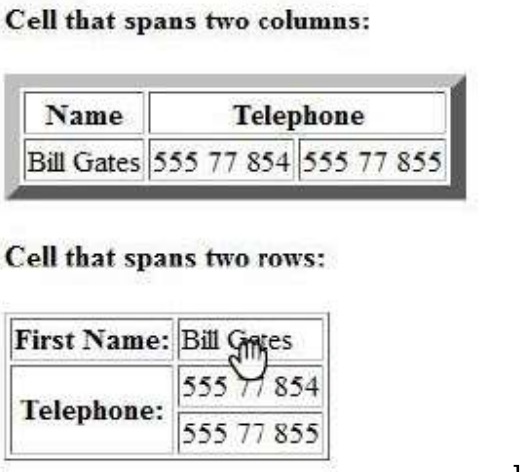
Table Cell Spanning:

There are two types of cell spanning in table properties, they are colspan and rowspan. Colspan merges two or more columns while rowspan merges two or more rows.

Example

```
<!--cell_span.htm-->
<html>
<body>
	<h4>Cell that spans two columns:</h4>
	<table border="8">
	<tr>
		<th>Name</th>
	<th colspan="2">Telephone</th>
	</tr>

	<tr>
		<td>Bill Gates</td>
		<td>555 77 854</td>
		<td>555 77 855</td>
	</tr>
	</table>

	<h4>Cell that spans two rows:</h4>

	<table border="1">
		<tr>
			<th>First Name:</th>
			<td>Bill Gates</td>
		</tr>

		<tr>
			<th rowspan="2">Telephone:</th>
			<td>555 77 854</td>
		</tr>

		<tr>
			<td>555 77 855</td>
		</tr>
	</table>
</body>
</html>
```

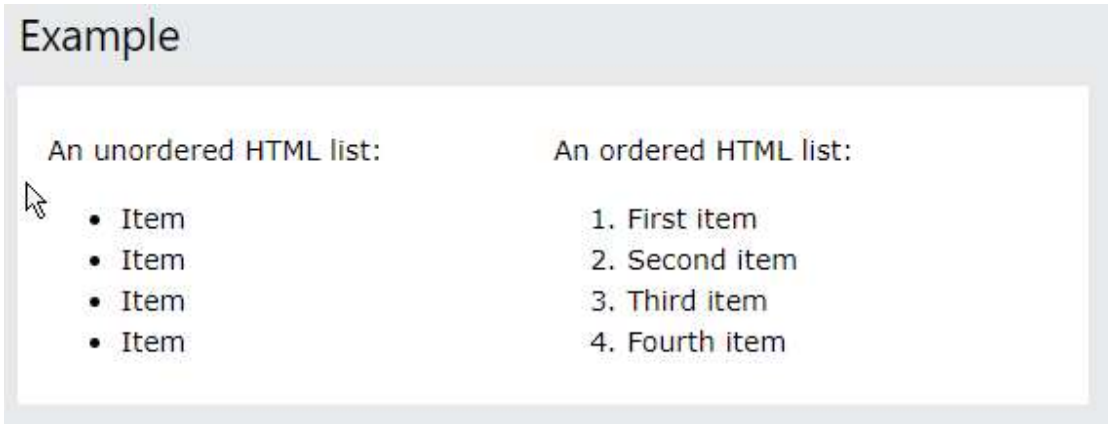
Output:



]

HTML Lists

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



Unordered HTML List:

An unordered list starts with the **<ul>** tag. Each list item starts with the **<li>** tag.
The list items will be marked with bullets (small black circles) by default:

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

Order HTML List:

An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.
The list items will be marked with numbers by default:

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

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

HTML Forms

An HTML form is used to collect user input. The user input is most often sent to a server for processing.

The <form> Element:

The HTML <form> element is used to create an HTML form for user input:
<form>
.
form elements
.
</form>

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:

Here are some examples:

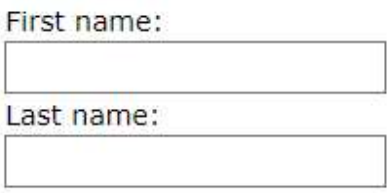
Type	Description
<input type="text">	Displays a single-line text input field
<input type="radio">	Displays a radio button (for selecting one of many choices)
<input type="checkbox">	Displays a checkbox (for selecting zero or more of many choices)
<input type="submit">	Displays a submit button (for submitting the form)
<input type="button">	Displays a clickable button

Text Fields:

The <input type="text"> defines a single-line input field for text input.
Example,
A form with input fields for text:

```
<form>
  <label for="fname">First name:</label><br>
  <input type="text" id="fname" name="fname"><br>
  <label for="lname">Last name:</label><br>
  <input type="text" id="lname" name="lname">
</form>
```

Output:



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:

```
<p>Choose your favorite Web language:</p>
```

```
<form>
  <input type="radio" id="html" name="fav_language" value="HTML">
  <label for="html">HTML</label><br>
  <input type="radio" id="css" name="fav_language" value="CSS">
  <label for="css">CSS</label><br>
  <input type="radio" id="javascript" name="fav_language" value="JavaScript">
  <label for="javascript">JavaScript</label>
</form>
```

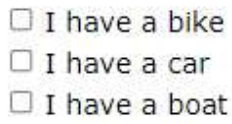
Output:

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>
```

Output:

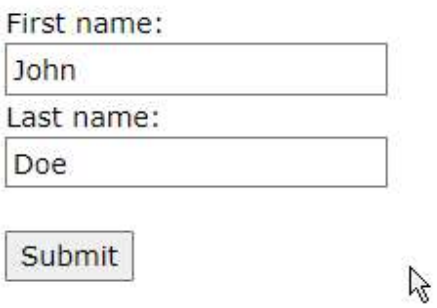


The Submit Button:

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">
  <label for="fname">First name:</label><br>
  <input type="text" id="fname" name="fname" value="John"><br>
  <label for="lname">Last name:</label><br>
  <input type="text" id="lname" name="lname" value="Doe"><br><br>
  <input type="submit" value="Submit">
</form>
```

Output:



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,

```
<form action="/action_page.php">
  <label for="fname">First name:</label><br>
  <input type="text" id="fname" value="John"><br><br>
  <input type="submit" value="Submit">
</form>
```