

< HTML Basics >

HTML is the standard markup language for creating webpages.

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage.
- HTML describes the ***structure*** of webpages using markup.
- HTML ***elements*** are the building blocks of HTML pages.
- HTML elements are represented by ***Tags*** which label pieces of content such as *heading*, *paragraph*, *table*, *form*...
- Browsers do not display the HTML Tags, but use them to render the content of the page.

Structure of the language: Tags

The content is enclosed by a **Start Tag** (opening tag) and an **End Tag** (closing tag)

`<tagname>content</tagname>`

The End Tag is written like the Start Tag, but with a forward slash inserted before the Tag name.

Some elements don't need a closing Tag, they are called empty elements:

image: ``

line break: `
`

form input field: `<input>`

Example of a simple HTML Document

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    <title>Page Title</title>
```

```
  </head>
```

```
  <body>
```

```
    <h1>Heading</h1>
```

```
    <p>Paragraph</p>
```

```
  </body>
```

```
</html>
```

visible part of
the document

Explanation of the Tags used in the example

- 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
- 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

Use `<html>`, `<head>`, `<title>`, `<body>`, `<h1>` only **ONCE!**

Some simple HTML Elements to start with

Headings

`<h1>`This is heading 1`</h1>`

`<h2>`This is heading 2`</h2>`

`<h3>`This is heading 3`</h3>`

Paragraphs

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

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

HTML tags are not case sensitive, but use lowercase!

Some more basic HTML elements

Link

```
<a href="http://www.mynewwebsite.com">This is a link</a>
```

The link's destination is specified in the **href attribute**. Every HTML element can have one or more attributes.

Image

```

```

This image element has a **src (source) attribute** and an **alt (alternate text) attribute**. Later more about attributes...

The HTML Head Element

The HTML `<head>` element has nothing to do with HTML headings (h1, h2,...)!

The `<head>` element is a container for **Metadata** (meta tags) and other informations about the HTML document. Metadata are not displayed in the browser window.

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
  <title>Title of the HTML document</title>
```

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

```
  <meta name="author" content="Bruce Wayne">
```

```
  ...
```


The HTML Head Element

Inside the `<head> ... </head>` you can for example place the following elements:

- `<title>` Defines the page title (important for SEO)
- `<style>` Style information for your webpage
- `<link>` Used to link to external stylesheets (see CSS), favicon, Google fonts etc.
- `<meta>` Defines meta data like character set, description, keywords, author and more
- `<script>` Defines client side JavaScript for your page

HTML Elements can be nested

Example: Inline Link

`<p>`You can buy this book and other books from the author in my ``webshop`` or in most bookstores in town.`</p>`

In this example `p` is called the **parent** element, `a` is called the **child** element.

Remember also the basic structure of an HTML document:

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

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"`
- Some Attributes just have a name with no value:
`required, selected, checked, autofocus`

HTML Attributes

Examples

Language: `<html lang="en-US">`

Title: `<p title="I'm a tooltip">content</p>`

Link address:

```
<a href="https://soundcloud.com" target="_blank"
title="External link" rel="nofollow">Go to Soundcloud</a>
```

Image Attributes:

```

```

HTML Text Formatting Elements

<code></code>	Defines bold text
<code></code>	Defines emphasized text
<code><i></code>	Defines italic text
<code><small></code>	Defines smaller text
<code></code>	Defines important text
<code><sub></code>	Defines subscripted text
<code><sup></code>	Defines superscripted text
<code><mark></code>	Defines marked/highlighted text
<code></code>	Defines deleted text

HTML Comments

Comments are not displayed by the browser, but they can help explaining or debugging your HTML source code.

```
<!-- Left column starts here -->
```

```
<!-- Added on 07-22-2017 by John -->
```

```
<!-- Main Navigation Start -->
```

```
<!-- Main Navigation End -->
```


HTML Link Element as Bookmark Jump

Bookmark Jumps are useful if your webpage is very long. Give the element to jump to an **id attribute** and refer to that id in your link.

```
<a href="#free">Go to free downloads</a>
```

...

...

...

...

```
<h2 id="free">Free downloads</h2>
```

```
<p>You can download our free software here.</p>
```


HTML Tables

A simple table with 2 rows and 3 columns.

```
<table>
  <tr>
    <th>First Name</th>
    <th>Last Name</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Smith</td>
    <td>46</td>
  </tr>
</table>
```

HTML Table Elements

<code><table></code>	Defines a table
<code><tr></code>	Defines a table row
<code><td></code>	Data container. Can contain all sorts of HTML elements
<code><th></code>	Defines a table heading
<code><caption></code>	Defines a table caption
<code><colgroup></code>	Specifies a group of columns in a table for formatting
<code><col></code>	Specifies column properties for each column within a <code><colgroup></code> element

HTML Table Attributes

border attribute defines a border (in pixel)

cellspacing defines the space between table cells (px, %)

cellpadding defines the space between the border of a cell and its content (px, %)

colspan attribute makes a cell span many columns

rowspan attribute makes a cell span many rows

Use of Tables

HTML Tables are used to display tabular data.

Don't use HTML Tables to layout/design your website!

HTML Lists

Ordered List

```
<ol>  
  <li>First Item</li>  
  <li>Second Item</li>  
  <li>Third Item</li>  
</ol>
```

Resulting output

1. First Item
2. Second Item
3. Third Item

Unordered List

```
<ul>  
  <li>Home</li>  
  <li>Products</li>  
  <li>Contact</li>  
</ul>
```

- Home
- Products
- Contact

HTML List Elements

`` Defines an ordered list

`` Defines an unordered list

`` Defines a list item

`type` Attribute to define the numbering type (1, A, a, I, i)

Nesting: List items can contain new lists and other HTML elements, like images and links, etc.

Unordered lists are often used to create a menu/navigation for your website. They can be styled in many different ways with CSS.

Structure of a Website



Navigation

In order to navigate between the different pages of the website, we need a navigation on every page, which links the pages together.

```
<nav>
  <ul>
    <li><a href="index.html">Home</a></li>
    <li><a href="products.html">Products</a></li>
    <li><a href="service.html">Service</a></li>
    <li><a href="contact.html">Contact</a></li>
  </ul>
</nav>
```


HTML Block and Inline Elements

Block Elements takes up the entire width of their parent element. This means they push sibling elements to a new line.

Inline Elements take up only as much space as they need and will not force surrounding content to a new line.

Block-Level Elements

`<h1>` - `<h6>`

`<p>`

`<form>`

`<div>`

``, ``

Inline-Level Elements

``

`<a>`

`<input>`

``

``

HTML Form Elements

The HTML Form element defines a form used to collect user input.

- `<form>` Defines a form element
- `<input>` Input element, depends on the input type
- `<textarea>` Defines a multiline input field
- `<label>` Defines a label for an `<input>` element
- `<select>` Defines a drop-down list
- `<option>` Defines an option in a drop-down list
- `<datalist>` List of pre-defined options for an input element

HTML Form Example

```
<form action="action_page.php">  
  <label for="fn">First name:</label> <br>  
  <input type="text" name="firstname" id="fn"> <br>  
  <label for="ln">Last name:</label> <br>  
  <input type="text" name="lastname" id="ln"> <br>  
  <input type="radio" name="gender" value="male" id="male"  
    checked> <label for="male">Male</label> <br>  
  <input type="radio" name="gender" value="female"  
    id="female"> <label for="female">Female</label> <br>  
  <input type="submit" value="Submit">  
</form>
```

HTML Form Example

First name:

Last name:

- ☒ Male
☐ Female

Submit

Form Input Types

text	Defines a one-line text input field
password	Defines a password field
submit	Button for submitting form data
reset	Button that resets all form data to default values
radio	Defines a radio button (one choice)
checkbox	Defines a checkbox (0 or more options)
button	Defines a button
number	Defines a numeric input field
image	Defines an image as the submit button

Form Input Attributes

- value** Defines the initial value for an input field
- readonly** The input field can not be changed
- size** Size (in characters) for the input field
- maxlength** Maximum number of characters allowed

HTML5 Form Attributes

autocomplete, autofocus, formaction, formmethod, formtarget, multiple, required, placeholder, min, max and many more...

HTML5 Form attributes help making forms more user-friendly.

HTML IFrames

An iframe (inline frame) is used to display a webpage within a webpage.

```
<iframe src="ext_webpage.htm" height="400" width="700"  
name="my_iframe" style="border:none"></iframe>
```

An iframe can be the target frame for a link.

```
<p><a href="http://www.devugees.org"  
target="my_iframe">Devugees Project</a></p>
```

Embedding of Youtube Videos, Google Maps or Soundcloud

HTML5 Outlook

The most interesting "new" **HTML5** elements are:

Semantic elements like `<header>`, `<footer>`, `<main>`, `<nav>`, `<article>`, `<section>` and `<aside>`.

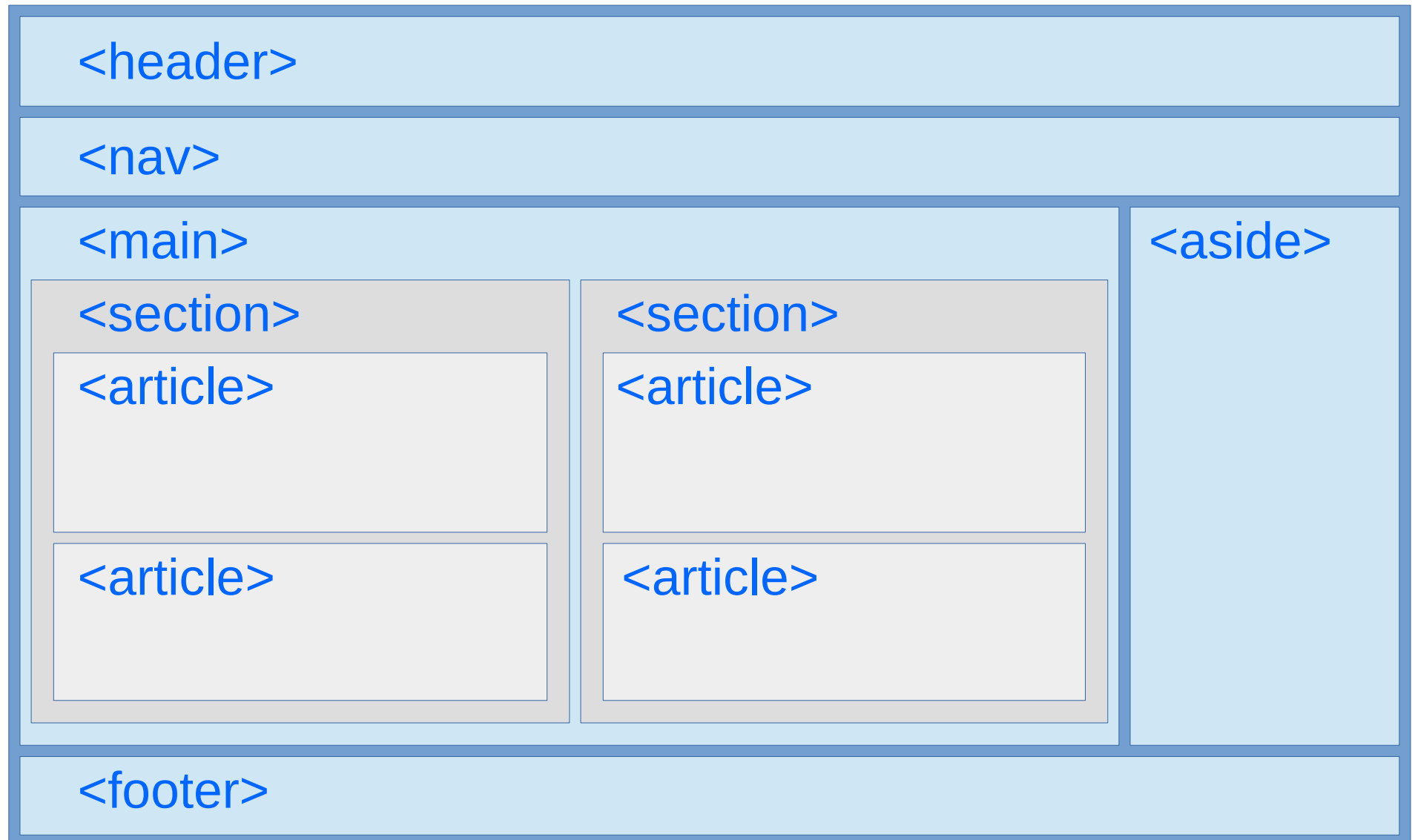
Graphic elements: `<svg>` and `<canvas>`.

Multimedia elements: `<audio>` and `<video>`.

New **types** for **input** elements like:
`number`, `date`, `time`, `week`, `month`, `range`, `color` ...

HTML5 API's: Geolocation, Websockets, Offline Storage...

HTML5 Structure with Semantic Elements



HTML5 Multimedia Elements

<audio controls autoplay>

<source src="test.ogg" type="audio/ogg">

<source src="test.mp3" type="audio/mpeg">

Your browser does not support the HTML5 audio element.

</audio>

<video controls width="320" height="240">

<source src="test.mp4" type="video/mp4">

<source src="test.ogg" type="video/ogg">

Your browser does not support the HTML5 video element.

</video>

The HTML Style Attribute

With the style attribute you can set the style of an HTML element. This is called *inline style*.

```
<body style="background-color: blue; margin: 0">
```

```
<h1 style="color: red">This heading ist red.</h1>
```

```
<p style="font-weight: bold">This paragraph is bold.</p>
```

```
</body>
```

The style attribute is part of the styling language **CSS: Cascading Style Sheets**.

Styling HTML with CSS

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

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 the `<link>` element and external CSS file

With CSS you can define colors, font properties, box sizes and positions, margins, borders and much more.

HTML Editors and Tools

Write HTML using a simple **Text Editor** like NotePad (PC) or TextEdit (Mac). Don't use MS Word!

Code Editors like NotePad++ (PC), Sublime Text, Atom or Brackets (Adobe) help you with Syntax Highlighting, Auto Complete, Makros, Plugins or Extensions.

For advanced users an **Integrated Development Environment** (IDE) like NetBeans is recommendable. With an IDE you can use Automation Tools, Debugger or a Version Control System.

Use a **Local Web Server** for testing purposes like XAMPP or MAMP.