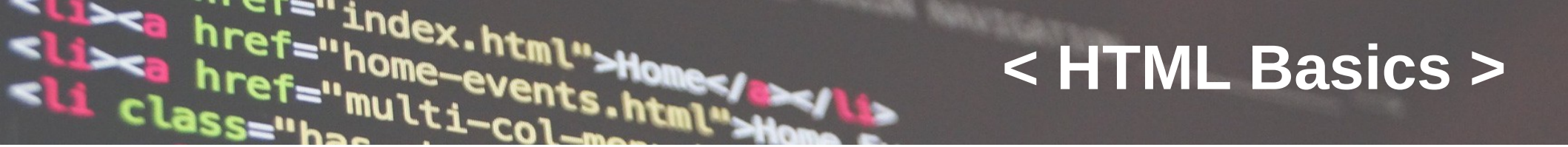
< HTML Basics >



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: <img>
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

```
<img src="myimage.jpg" alt="children playing on the beach">
```

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 <a href="http://www.webshop.com">webshop</a> 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:

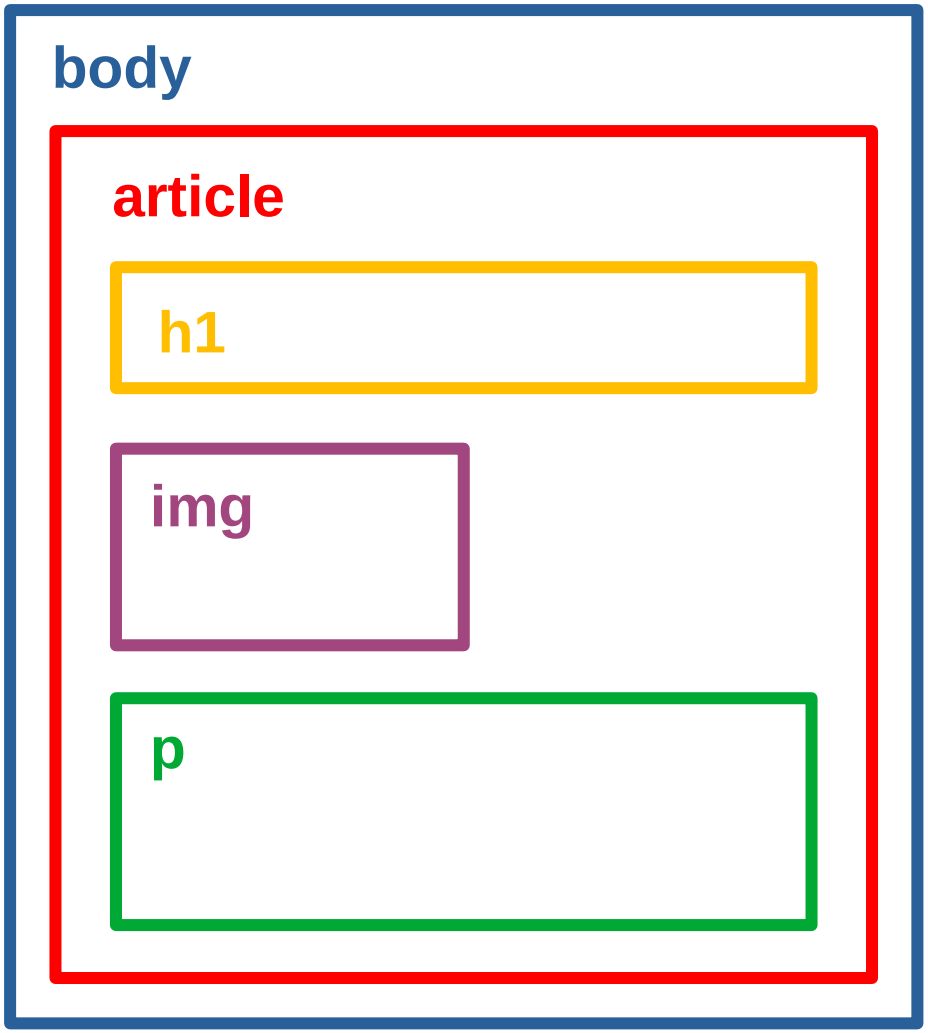
```
<html>
    <head>
        <title>Page Title</title>
    </head>
    <body>
```

HTML Elements Structure

Tree Structure in the editor

```
<html>
    <head> … </head>
    <body>
        <article>
            <h1>Heading</h1>
            <img src="…" …  >
            <p>Paragraph</p>
        </article>
    </body>
</html>
```

Element Flow in the Browser



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: content

Link adress:

Go to Soundcloud

Image Attributes:

<img src="myimage.jpg" alt="two children playing" width="104" height="142" title="holydays">

HTML Text Formatting Elements

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

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

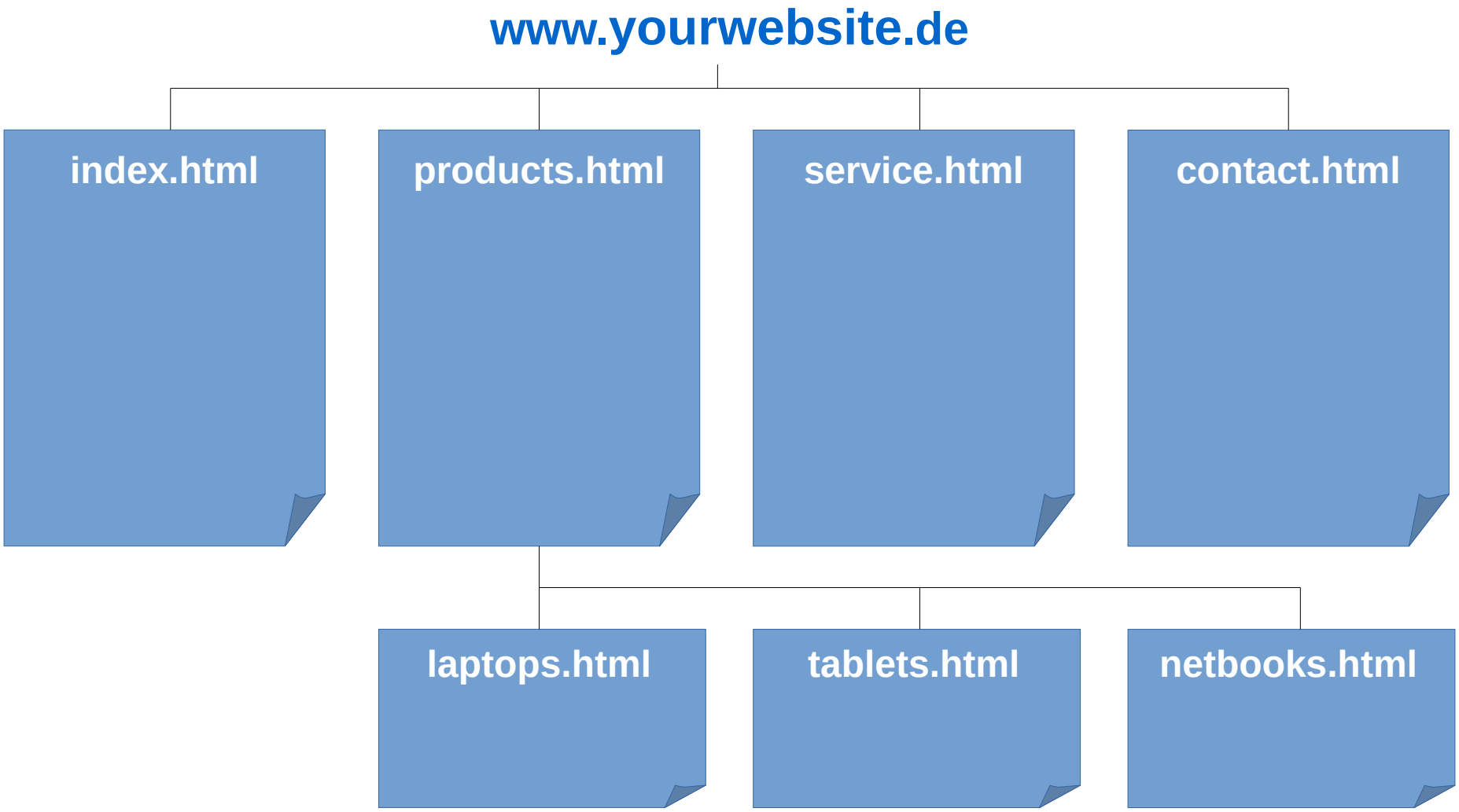
 Defines a list item

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	Inline-Level Elements
<h1> - <h6>	
<p>	<a>
<form>	<input>
,	<img>

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>.

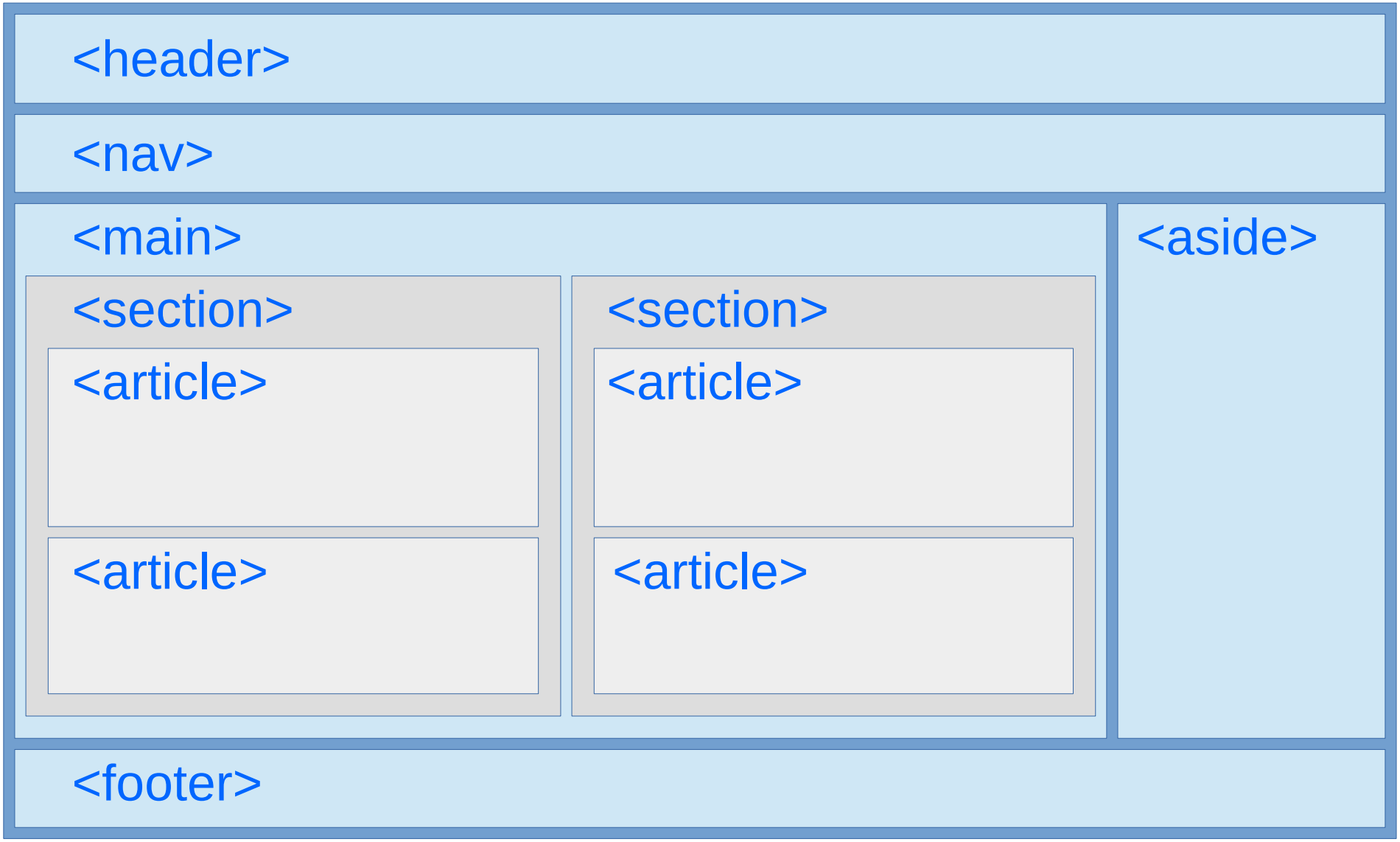
Graphic elements: <svg> and <canvas>.

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.