

Programming of Web Pages

Lecture 2 - HTML

2023

What is HTML?



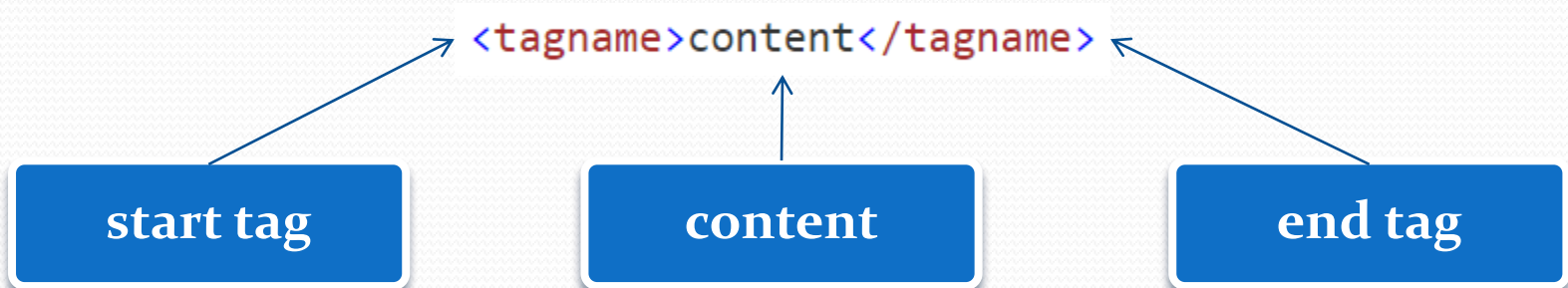
HTML is a **markup** language describing websites

HTML – **H**yper **T**ext **M**arkup **L**anguage

Tags

They are basic components of HTML

Example:



Tags usually occur in pairs...

...but not always:

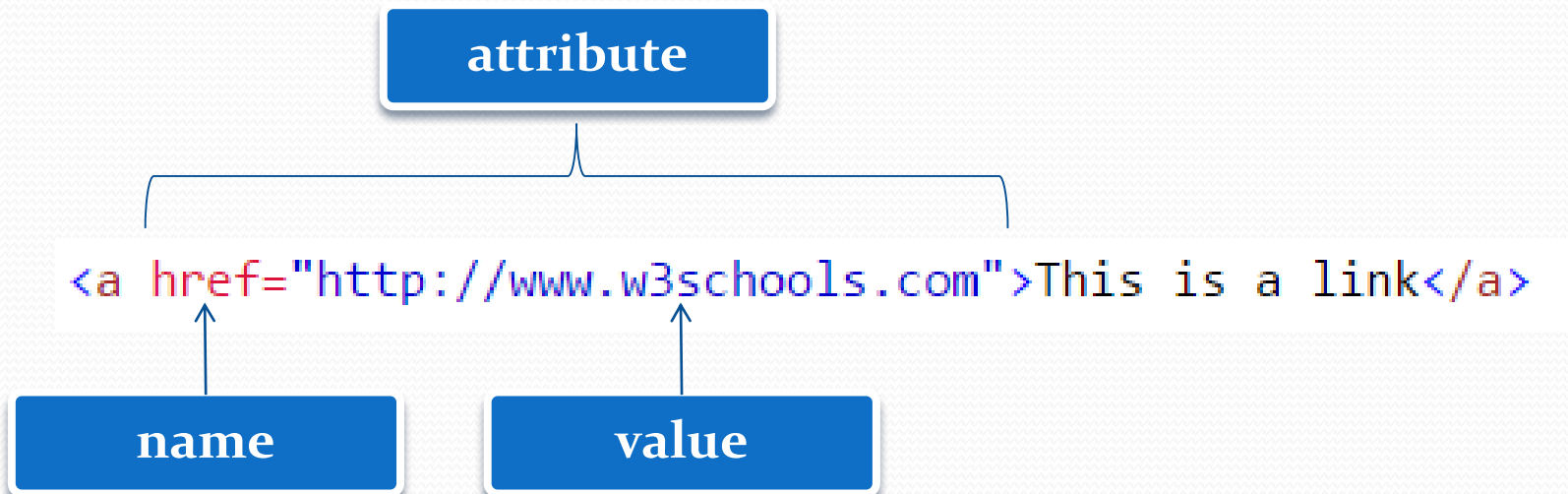
This text contains `
` a line break.

Attributes

They are included in the start tag

They provide additional information on tags

Example:



Attributes

It is recommended to place the attributes in quotes

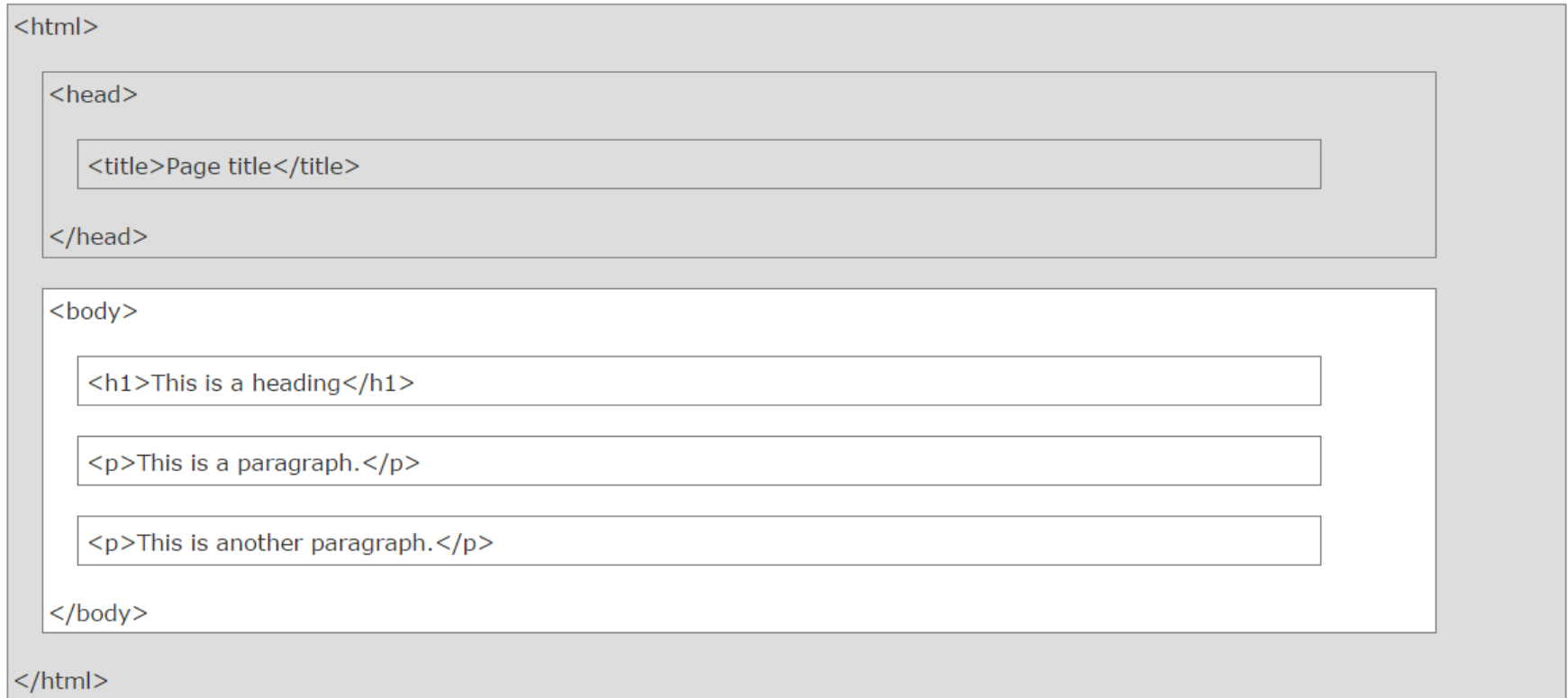
If the value of the attribute contains **a double** quote:

```
<p title='John "ShotGun" Nelson'>
```

If the value of the attribute contains **a single** quote:

```
<p title="John 'ShotGun' Nelson">
```

Structure of the HTML document



Only **body** section is displayed in the web browser

<html> tag

This tag is a **root** of the HTML document

It is recommended to define in this tag a language,
which will be used on the website

Example:

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

<!DOCTYPE> declaration

This declaration helps the browser
correctly display the web page

The browser should know
the type and version of the document

Examples:

HTML5

```
<!DOCTYPE html>
```

HTML 4.01

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
```

XHTML 1.0

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```


<!DOCTYPE> Declaration

Example:

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

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

Omission of <html> and <body>

In HTML5 tags **<html>** i **<body>** can be omitted

However, it is not recommended!

Example:

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

<h1>This is a heading</h1>
<p>This is a paragraph.</p>
```

Omission of <head>

In HTML5 tag **<head>** also can be omitted

In this case the browser creates <head> section for all elements before <body> start tag

Example:

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

<body>
  <h1>This is a heading</h1>
  <p>This is a paragraph.</p>
</body>

</html>
```

Components of the <head>

Section **<head>** is a container for **meta data** - the data describing data 😊

These data **are not** displayed in the browser

They usually **describe** title, styles, links, scripts, etc. ...

The following tags are used to determine meta data:

<title>, <style>, <meta>, <link>, <script>, <base>

Meta data: <title>

It defines **title of the document**

It is required in HTML documents

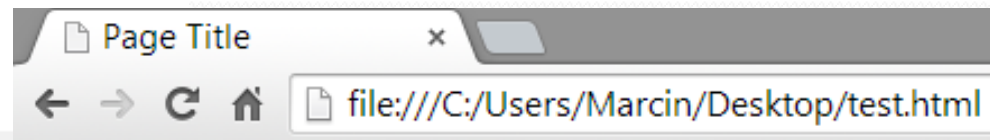
It is displayed in the browser bar

It is displayed in the results of search engines

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

<body>
The content of the document.....
</body>

</html>
```



Meta data: <style>

It defines **style of the document**

Example:

```
<style>  
body {background-color:yellow;}  
p {color:blue;}  
</style>
```

Meta data: <link>

It defines **relationship of the document**
with an external resource

Most often it refers to the external style sheet

Example:

```
<link rel="stylesheet" href="mystyle.css">
```

Type

Source

Meta data: <meta>

It defines **description of the website, keywords, etc.**

It is used by **web browsers** and **search engines**

Keywords:

```
<meta name="keywords" content="HTML, CSS, XML, XHTML, JavaScript">
```

Website description:

```
<meta name="description" content="Free Web tutorials on HTML and CSS">
```


Meta data: <meta>

Encoding:

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

Author name:

```
<meta name="author" content="Hege Refsnes">
```

Page refresh (reload):

```
<meta http-equiv="refresh" content="30">
```

seconds

Meta data

Scripts including:

```
<script>
function myFunction {
    document.getElementById("demo").innerHTML = "Hello JavaScript!";
}
</script>
```

Tags: headers

Headers are defined by the following tags:
<h1> - <h6>

<h1> is the most important header,
<h6> is the least important one

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

<h1>This is heading 1</h1>
<h2>This is heading 2</h2>
<h3>This is heading 3</h3>
<h4>This is heading 4</h4>
<h5>This is heading 5</h5>
<h6>This is heading 6</h6>

</body>
</html>
```

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

Tags: headers

Headers **should not** be used to make text **larger** or **bold**

Search engines use headers to **index the structure and content** of the website

Tags: <hr>

Tag **<hr>** creates **horizontal line** on the website

```
<p>The hr tag defines a horizontal rule:</p>
<hr>
<p>This is a paragraph.</p>
<hr>
<p>This is a paragraph.</p>
<hr>
<p>This is a paragraph.</p>
```

The hr tag defines a horizontal rule:

This is a paragraph.

This is a paragraph.

This is a paragraph.

Tags: <p>

Tag **<p>** defines **paragraphs**

Web browser **automatically adds blank line** before and after the paragraph

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

This is a paragraph.

This is another paragraph.

Tags: <p>

Please note that the number of displayed lines depends on the width of the browser window

Please note that the browser removes all additional spaces, enters and blank lines

```
<p>
This paragraph
contains a lot of lines
in the source code,
but the browser
ignores it.
</p>

<p>
This paragraph
contains          a lot of spaces
in the source      code,
but the           browser
ignores it.
</p>
```

This paragraph contains a lot of lines in the source code, but the browser ignores it.

This paragraph contains a lot of spaces in the source code, but the browser ignores it.

Tags:

Tag **
** defines **a new line**

```
<p>This is<br>a para<br>graph with line breaks</p>
```

This is
a para
graph with line breaks

Tags: „The Poem Problem”

```
<p>This poem will display as one line:</p>
```

```
<p>
```

```
    My Bonnie lies over the ocean.
```

```
    My Bonnie lies over the sea.
```

```
    My Bonnie lies over the ocean.
```

```
    Oh, bring back my Bonnie to me.
```

```
</p>
```

This poem will display as one line:

My Bonnie lies over the ocean. My Bonnie lies over the sea. My Bonnie lies over the ocean. Oh, bring back my Bonnie to me.

Tags: „The Poem Problem”

```
<p>This will display as a poem:</p>
```

```
<pre>
```

```
My Bonnie lies over the ocean.
```

```
My Bonnie lies over the sea.
```

```
My Bonnie lies over the ocean.
```

```
Oh, bring back my Bonnie to me.
```

```
</pre>
```

This will display as a poem:

```
My Bonnie lies over the ocean.
```

```
My Bonnie lies over the sea.
```

```
My Bonnie lies over the ocean.
```

```
Oh, bring back my Bonnie to me.
```

Tags: text formatting

Tag **** defines **bold**

```
<p>This text is normal.</p>
```

This text is normal.

```
<p><b>This text is bold.</b></p>
```

This text is bold.

Tag **<i>** defines **italic**

```
<p>This text is normal.</p>
```

This text is normal.

```
<p><i>This text is italic.</i></p>
```

This text is italic.

Tag **<small>** defines **small text**

```
<h2>HTML <small>Small</small> Formatting</h2>
```

HTML Small Formatting

Tags: text formatting

Tag **<marked>**

```
<h2>HTML <mark>Marked</mark> Formatting</h2>
```

HTML Marked Formatting

Tag **<deleted>**

```
<p>My favorite color is <del>blue</del> red.</p>
```

My favorite color is ~~blue~~ red.

Tag **<inserted>**

```
<p>My favorite <ins>color</ins> is red.</p>
```

My favorite color is red.

Tags: text formatting

Tag **<sub>** defines **subscript**

```
<p>This is <sub>subscripted</sub> text.</p>
```

This is _{subscripted} text.

Tag **<sup>** defined **superscript**

```
<p>This is <sup>superscripted</sup> text.</p>
```

This is ^{superscripted} text.

Tags: <a>

Tag **<a>** defines **hyperlink**

A hyperlink is a text or an image you can click on, and jump to another document.

```
<a href="http://www.w3schools.com/html/">Visit our HTML tutorial</a>
```

destination
address

visible part of
hyperlink

[Visit our HTML tutorial](http://www.w3schools.com/html/)

Tags: <a>

Attribute **target** specifies where to open linked document

For example target set as „**_blank**”
opens document in **new window or tab**

```
<a href="http://www.w3schools.com/" target="_blank">Visit W3Schools!</a>
```

The website also can contain **local links**

```
<a href="html_images.asp">HTML Images</a>
```

Tags:

Tag **** defines **image**

It is a **single tag**

```
<h2>Spectacular Mountains</h2>  

```

Image
address

Alternative text

Spectacular Mountains



Tags:

Attributes **width** and **height** are optional

It is recommended to set size of the elements using **CSS**

```
<h2>Spectacular Mountains</h2>  

```

Spectacular Mountains



Obraz jako link:

```
<a href="default.asp">  
    
</a>
```

Tags: lists

Unordered

- Coffee
- Tea
- Milk

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

Ordered

1. Coffee
2. Milk

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

Description lists

Coffee
- black hot drink

Milk
- white cold drink

```
<dl>  
  <dt>Coffee</dt>  
  <dd>- black hot drink</dd>  
  <dt>Milk</dt>  
  <dd>- white cold drink</dd>  
</dl>
```

Tags: ordered lists

```
<ol type="A">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```

- A. Coffee
- B. Tea
- C. Milk

```
<ol type="a">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```

- a. Coffee
- b. Tea
- c. Milk

```
<ol type="I">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```

- I. Coffee
- II. Tea
- III. Milk

```
<ol type="i">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```

- i. Coffee
- ii. Tea
- iii. Milk

Tags: nested lists

```
<ul>
  <li>Coffee</li>
  <li>Tea
    <ul>
      <li>Black tea</li>
      <li>Green tea</li>
    </ul>
  </li>
  <li>Milk</li>
</ul>
```

- Coffee
- Tea
 - Black tea
 - Green tea
- Milk

Tags: <table>

```
<table>
```

```
<tr> ←
```

Table row tag

```
<th>Firstname</th>
```

```
<th>Lastname</th> ←
```

Table heading tag

```
<th>Points</th>
```

```
</tr>
```

```
<tr>
```

```
<td>Jill</td> ←
```

Table data tag

```
<td>Smith</td>
```

```
<td>50</td>
```

```
</tr>
```

```
<tr>
```

```
<td>Eve</td>
```

```
<td>Jackson</td>
```

```
<td>94</td>
```

```
</tr>
```

```
</table>
```

| Firstname | Lastname | Points |
|-----------|----------|--------|
|-----------|----------|--------|

| | | |
|------|-------|----|
| Jill | Smith | 50 |
|------|-------|----|

| | | |
|-----|---------|----|
| Eve | Jackson | 94 |
|-----|---------|----|

Display value of HTML elements

Block

Block elements always starts on a new line

They always takes up the full width available

Examples of block elements: `<h1>`, `<p>`, `<div>`

Inline

Inline elements are displayed side by side in a line

Height and **width** of these elements **can't be specified**

Examples of inline elements : ``, `<i>`, ``

Tags: <div>,

These tags are so-called **containers**

Tag **<div>** contains other HTML tags,
it is used to create structure of the document

Tag **** is most often text container

HTML5 – new elements

semantic



`<header>` defines a header for the document or a section

`<nav>` defines navigation links in the document

`<section>` groups elements **thematically related**

`<article>` defines **independent content**

`<footer>` defines a footer for the document or a section

`<aside>` defines a content aside from the page content

HTML5 – new elements

audio, video

```
<audio controls>  
  <source src="horse.ogg" type="audio/ogg">  
  <source src="horse.mp3" type="audio/mpeg">  
Your browser does not support the audio element.  
</audio>
```



```
<video width="320" height="240" controls>  
  <source src="movie.mp4" type="video/mp4">  
  <source src="movie.ogv" type="video/ogg">  
Your browser does not support the video tag.  
</video>
```



HTML5 – good practices

Use **lower case**
element names

Bad:

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

Very Bad:

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

Good:

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

HTML5 – good practices

Close single tags

This is allowed:

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

This is also allowed:

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

HTML5 – good practices

Use **lower case**
attribute names

Looking bad:

```
<div CLASS="menu">
```

Looking good:

```
<div class="menu">
```

HTML5 – good practices

Quote
attribute values

This will not work, because the value contains spaces:

```
<table class=table striped>
```

This will work:

```
<table class="table striped">
```

HTML5 – good practices

**Do not overuse
spaces**

Spaces around equal signs is legal:

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

But space-less is easier to read, and groups entities better together:

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

Literature

A. Freeman, *The Definitive Guide to HTML5*, Apress 2011

S.M. Shafer, *HTML, XHTML, and CSS*, Wiley 2010

www.W3schools.com