FUNDAMENTALS OF WEB DEVELOPMENT

PART I
HTML

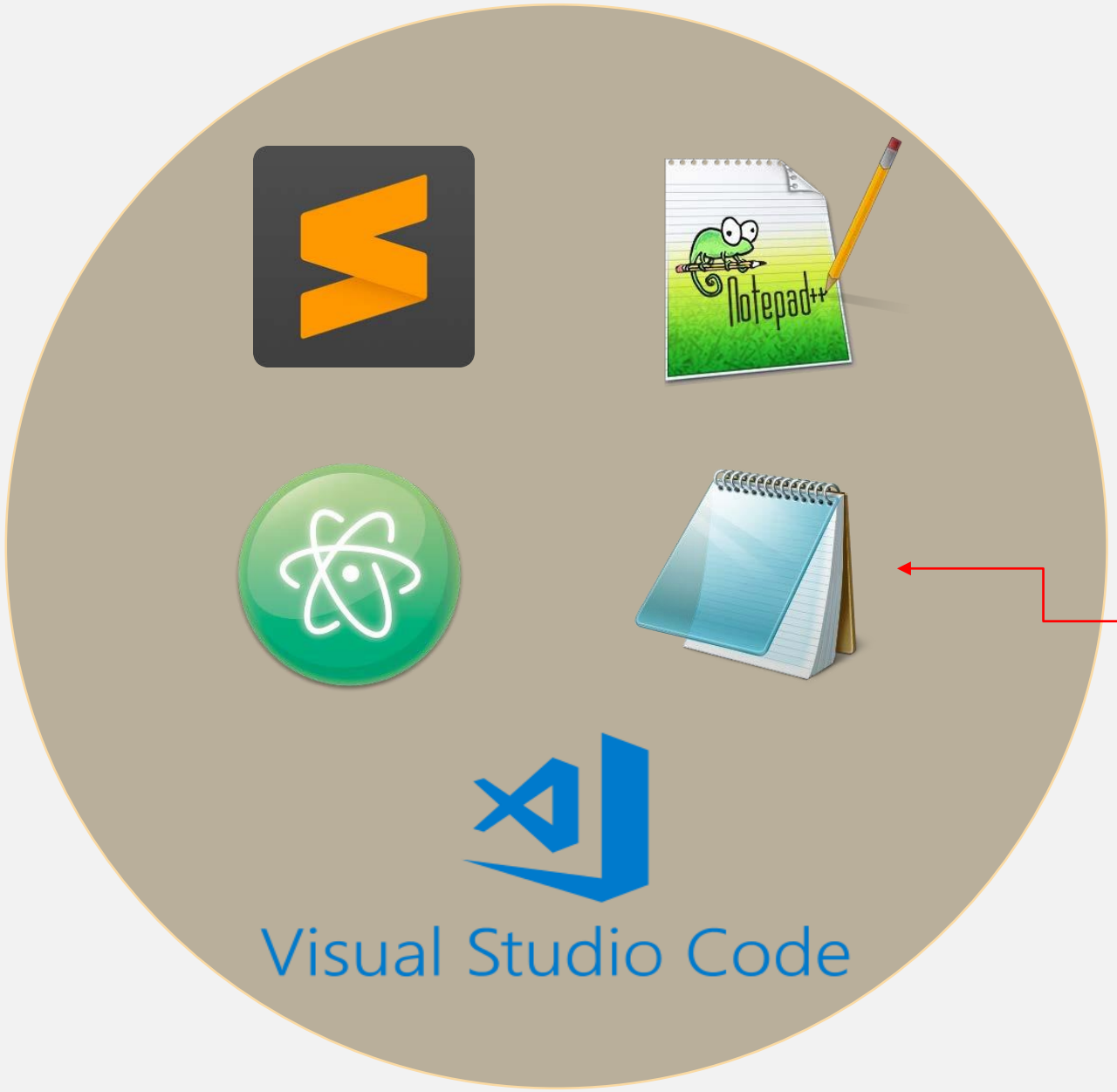
INTRODUCTION OF WEB PAGES

- There are web servers that store web pages and other related contents. Servers have names that are used in URL:s when some page is to be loaded to client machine and shown by the web browser.
- Tim Berners-Lee published the first web page 6.8.1991.
- HTML pages can be opened with a Web browser. Common browsers are Internet Explorer, Mozilla Firefox, Chrome and Safari. Pages are text files whose extension is normally .html. For creating HTML pages you can use a standard text editor (e.g.Notepad in Windows machine) or special tools that can be WYSIWYG or NON-WYSIWYG. Some tools are PageBreeze, CoffeeCup, KompoZer, Dreamweaver and Amay. Some of tools are free. You can easily find lists of tools with Google. You can test tools and try to find the most suitable tool for your use.

WHAT IS HTML ?

HTML comes from words **HyperText MarkUp Language**. It is used to create web pages. The organisation that takes care of HTML standards is "The World Wide Web Consortium" (W3C).

The newest HTML standard is 5.0.



TOOLS

There are a lot of editors that we can choose for web programming such as Sublime Text, Atom, Visual Studio Code, Notepad, Notepad ++

During this course we use mainly a poor clean text editor, now **Notepad or Notepad++.** We should load the file by using Chrome or Firefox for the best results.

. Let's go and study HTML!

HTML TAGS/ELEMENTS

Example:

<tagname> Content goes here </tagname>

HTML elements are mainly pairs of tags. There is starting tag and ending tag. **Closing tag has an extra /**

HTML ATTRIBUTES

Attributes provide additional information about the contents of an element/tag. They are shown in opening tag and made up of two tags: a name and a value with a quote.

<tagname attribute="value"> Content goes here </tagname>

BASIC STRUCTURE OF HTML CODE

it is a document type declaration.

starting tag

<head>tag contains information about the page

<title>tag contains web page title

<body> tag contains the content of the web page

closing tag

```
<!DOCTYPE html>
<html>

    <head>
        <title> Title here </title>
    </head>

    <body>
        Web page content goes here.
    </body>

</html>
```

PAGE STRUCTURE

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

<h1>My First Heading</h1> <!--Main heading-->
<p>My first paragraph.</p> <!-- A paragraph of text-->
<h2>This is a Sub-Heading</h2> <!--Sub-heading-->
<p>My second paragraph.</p><!-- A paragraph of text-->

</body>
</html>
```

You can try to run the above code in Notepad or any text editor.
Save the file as an extension .html
For example page1.html

The output when you open your page.

PAGE STRUCTURE – HEAD ELEMENT

```
<head>

<title>content</title> <!--defines the title to the document -->
<meta> <!--defines additional infromation about an HTML element-->
<link><!--links to style sheets-->
<base><!--defines a default address or a default target for all links-->
<style>     <!--defines the style information for an HTML document-->
<script> </script> <!--define client side java scripts-->

</head>
```

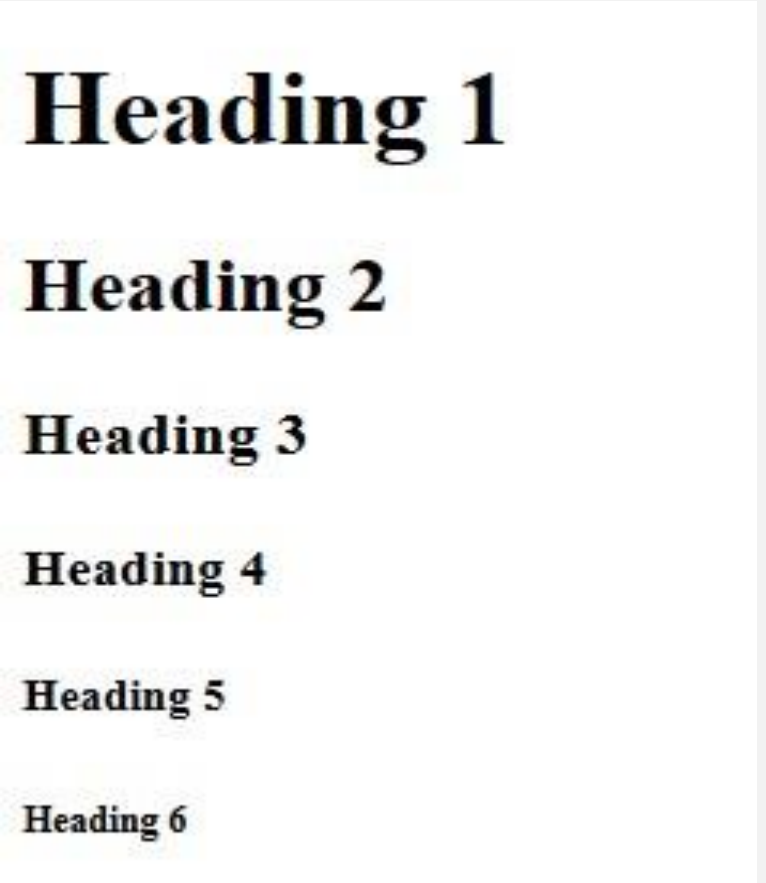
- Before <body> element, we usually see a <head> element.
- It contains the information about the page. Therefore, those information are not displayed in the browser to visitors.

HTML FORMATTING TAGS- HEADING TAGS

```
<h1>Heading 1</h1>
<h2>Heading 2</h2>
<h3>Heading 3</h3>
<h4>Heading 4</h4>
<h5>Heading 5</h5>
<h6>Heading 6</h6>
```

Output

Heading element run from h1 -> h6 with h1 normally is the main heading and sub-heading are h2-h6.



HTML FORMATTING TAGS- PARAGRAPHS TAG

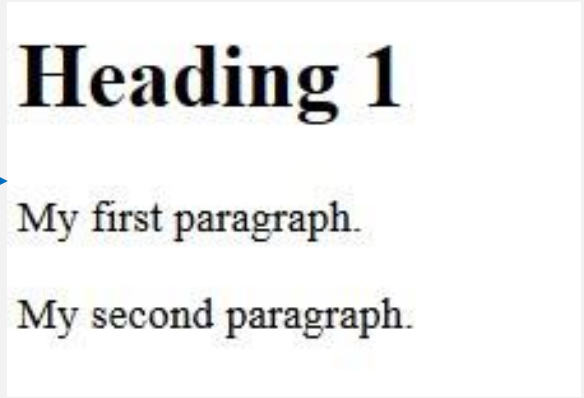
<p> tag defines a paragraph of text. It will displayed separate paragraph as an empty line .

```
<body>

<h1> Heading 1</h1>
<p>My first paragraph.</p>
<p>My second paragraph.</p>

</body>
```

Output



HTML STYLES

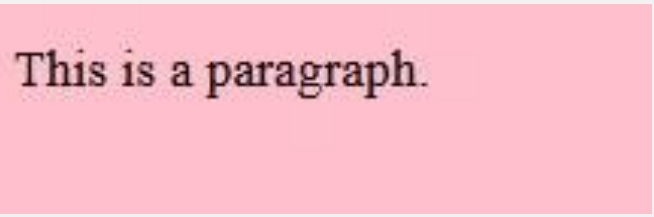
As we know from the last slide,<style> elements is placed inside<head> tag. Therefore, it also can be written inside <body>tag using **styles attribute**, it is called inline style.

```
<body style="background-color:pink;">

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

</body>
```

Output



HTML FORMATTING TAGS

**** and **** tags are used for defining **bold** text.

```
<p><b>Blod type</b></p>
```

Output → **Bold type**

**** and **** tags are used for defining *italic* text.

```
<p><i>Italic type</i></p>
```

Output → *Italic type*

<u> and **</u>** tags are used for defining underlined text.

```
<p><u>Underlined text</b></u>
```

Output → Underlined text

HTML FORMATTING(CONT.)

- What is the **difference** between <b> tag and tag, <i> tag and <emphasize> tag ? Are they all define bold text and italic text respectively ?

Answer:

<b> and <i> are styles - they specify bold and italic supposed to look like.

 and are semantic - it describes the text it surrounds (e.g., "*this text should be stronger or emphasize than the rest of the text you've displayed*") - Do some searches for *"Tim Berners-Lee"* and "*the semantic web.*"

HTML FORMATTING(CONT.)

The **<sub>** tag defines that the text should be subscripted.

```
<p>How does <sub>subscripted</sub> text look like?</p>
```

Output → How does $_{\text{subscripted}}$ text look like?

```
<p>H<sub>2</sub> SO<sub>4</sub></p>
```

Output → H_2 SO_4

The **<sup>** tag defines that the text should be superscripted.

```
<p>How does <sup>superscripted</sup> text look like?</p>
```

Output → How does $^{\text{superscripted}}$ text look like?

```
<p>2<sup>2</sup> = 4 </p>
```

Output → $2^2 = 4$

HTML FORMATTING(CONT.)

<hr> tag is used to separate a content by a horizontal line break and it does not require ending task.

```
<body>

<h4>Part 1 <hr>
    Part 2 </h4>

</body>
```

Output

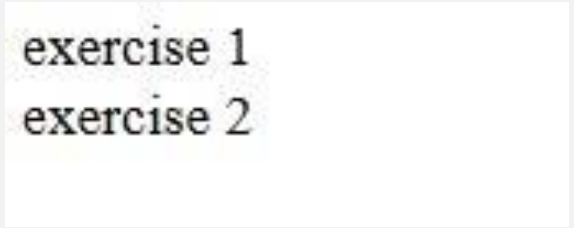
**
** tag is used for a new line/ break the line and it does not require ending tag.

```
<body>

exercise 1 <br>
exercise 2

</body>
```

Output



HTML FORMATTING(CONT.)

<q> tag is used for defining a short quotation in the paragraph. The browser will automatically insert the quote mark for your quote.

```
<body>

<p>People say:<q>Text goes here</q></p>

</body>
```

Output

People say:“Text goes here”

<blockquote> is used for defining a long quotation. The browser will automatically indent your blockquote.

```
<p>Your blockquote:</p>
<blockquote>
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim
veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea
commodo consequat.
</blockquote>
```

Output

Your blockquote:

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

HTML LIST – ORDERED LIST

Ordered lists are marked as number.

We use tag and it is matched with end tag and the tags is nested inside <ol> elements.

```
My hobbies:<br>
<ol>
  <li>Cooking</li>
  <li>Listen to music</li>
  <li>Drawing</li>
</ol>
```

Output →

My hobbies:

1. Cooking
2. Listen to music
3. Drawing

HTML LIST – UNORDERED LIST

Unordered lists are marked as symbol which are the small black circles.

We use tag and it is matched with end tag and the tags is nested inside <ul> elements.

```
<p>Here I will list instrument I play in way how good I am in it.</p>
<ul>
<li>Violine</li>
<li>Guitar</li>
<li>Bass Guitar</li>
<li>Drumms</li>
<li>Piano</li>
</ul>
```

Output

Here I will list instrument I play in way how good I am in it.

- Violine
- Guitar
- Bass Guitar
- Drumms
- Piano

HTML LIST – DEFINITION LIST

If you want to create a doc that u want to define words to your visitors then you can use<dl>tag to define the description list and <dt> tag is used for defining the term being defined in definition list,<dd> contains dât that describes a definition term.

```
<dl>

  <dt>UAS</dt>
  <dd>- University of Applied Sciences </dd>

</dl>
```

Output →

UAS
- University of Applied Sciences

HTML TAGS-TABLES

- **<table>...</table>** : Places a table on your page.
- **<caption>...</caption>:** contains the caption of the table, the title of sorts. It will appear across the top unless specified otherwise. This tag should not be contained in a tr or td.
- **<tr>...</tr>** :starts a new table row. Cells go inside this. Attributes are the same as td's.
- **<td>...</td>** : encloses a table cell. Content goes in these.
- **<th>...</th>** :same as table cells, but with all contents bold and aligned to the centre
- **<thead> <tbody> <tfoot>** : large table that spans multiple pages.

HTML TAGS-TABLES(CONT.)

Example:

```
<table >
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
  </tr>
  <tr>
    <td>Perli</td>
    <td>Meow</td>
  </tr>
  <tr>
    <td>Milo</td>
    <td>Milky</td>
  </tr>

</table>
```

Output

Firstname	Lastname
Perli	Meow
Milo	Milky

TABLES – CELLS SPAN COLUMNS/ROWS

colspan lets a table cell span the width of more than one column.

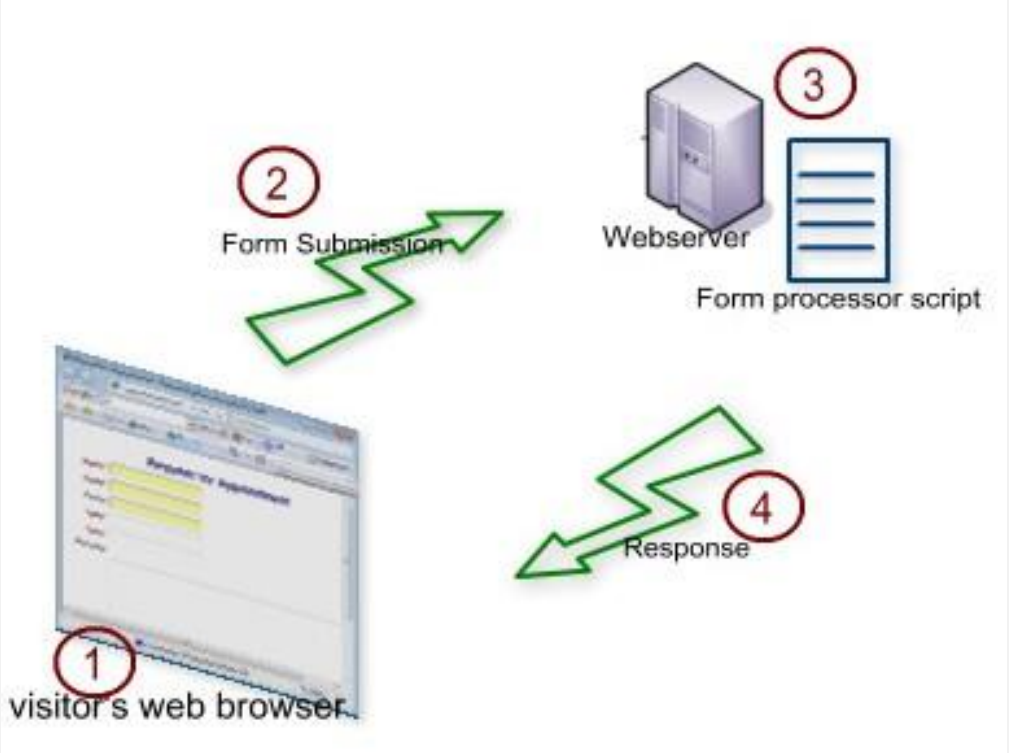
```
<th colspan="2">Text</th>
```

rowspan lets a table cell span the height of more than one row.

```
<th rowspan="2">Text:</th>
```

FORMS TAG

A form is the web page with input fields that let us to enter data. When the form is filled out and sent, it will be transfer to the web server and the data is processed by server script. After that, web server will give the response to the browser.



Pic sourse: https://simfatic.com/forms/help/v40/how_does_an_html_form_work_.html

FORMS ELEMENTS

```
<body>
<form action="Link to the form processor script" method="post/get">
</form>
</body>
```

When the form is submitted, **action** attribute defines the URL that the form collect data should be sent.

It can be post or get for the method attribute defines which HTTP method to send the data with.
GET: The data is sent are passed as part of the URL.
POST: The data is sent to the server and not visible in URL box(visitor's browser)

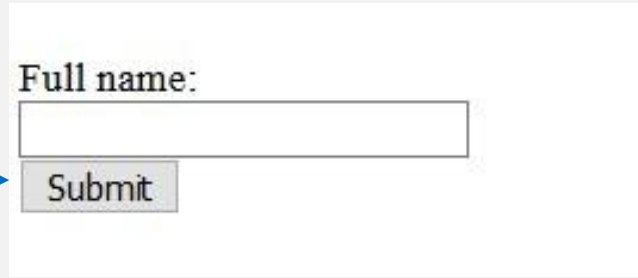
FORM INPUT ELEMENTS

<input> tag allows you to add various user input fields, like text-box, password input, checkboxes, radio buttons, submit and reset buttons, depending on how you set the type attribute.

"submit" attribute defines a submit button, "text" defines text input field

```
<form>
    Full name:<br>
  <input type="text" name="firstname">
  <br>
  <input type="submit" value="Submit">
</form>
```

Output



We also can set the length for character & the size of text box

```
<input type="text" name="firstname"size="20" maxlength="20">
```

FORM INPUT ELEMENTS(CONT.)

File input "file" attribute defines a file-select field which allow us to choose one or multiple files.

```
<form>
  Select a file: <input type="file" name="myfile"><br><br>
  <input type="submit" value="Submit">
</form>
```

Output

For letting user choose multiple files:

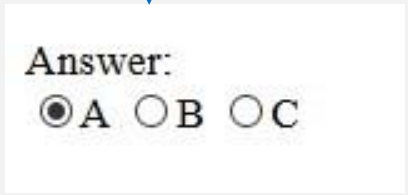
```
<input type="file" name="myFile" multiple><br><br>
```

FORM INPUT ELEMENTS(CONT.)

Checkboxes -“radio” attribute use for selecting one of many choice.

```
<form action="Link to the form processor script" method="post/get">
<p>Answer:
<br>
<input type="radio" name="option" value="a" checked="checked">A
<input type="radio" name="option" value="b" >B
<input type="radio" name="option" value="c" >C
</p>
</form>
```

Output

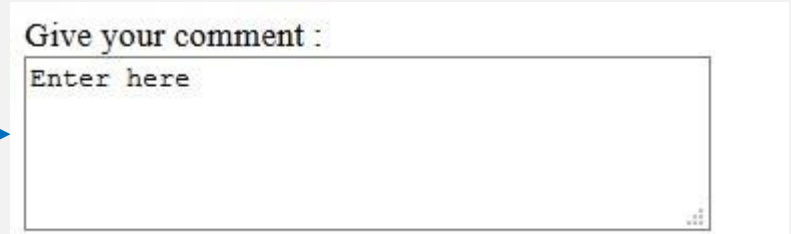


FORM INPUT ELEMENTS(CONT.)

<textarea>...</textarea> :add a multi-lined text area, suitable for input of a larger amount of information than the single-line text box. Any text added between the tags is placed in the area when the page loads.

```
Give your comment :<br>
<textarea rows="4" cols="40">
Enter here
</textarea>
```

Output



Using “row” and “column” attributes to modify the text-box

FORM INPUT ELEMENTS(CONT.)

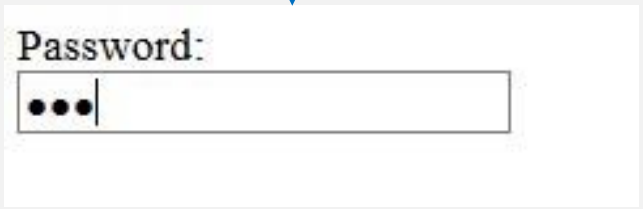
Password input

```
<body>

<form>
  Password:<br>
  <input type="password" name="password"size="20" maxlength="20">
</form>

</body>
```

Output

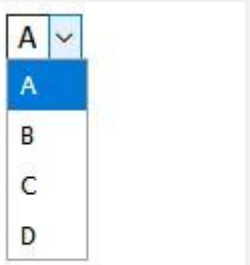


FORM ELEMENTS(CONT.)

<select>...</select>: Sets up an empty drop-down selection box. You can add choices with the <option>...</option> tag.

```
<select>
  <option value="A">A</option>
  <option value="B">B</option>
  <option value="C">C</option>
  <option value="D">D</option>
</select>
```

Output

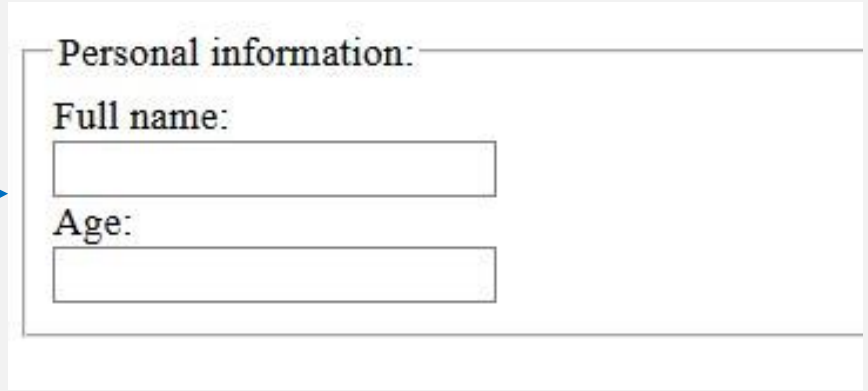


FORM ELEMENTS(CONT.)

- **<fieldset>...</fieldset>** :allows you to group form elements together into logical arrangements.
- **<legend>...</legend>**:You can title your fieldsets with this tag.

```
<form>
  <fieldset>
    <legend>Personal information:</legend>
    Full name:<br>
    <input type="text" name="firstname">
    <br>
    Age:<br>
    <input type="text" name="lastname">
  </fieldset>
</form>
```

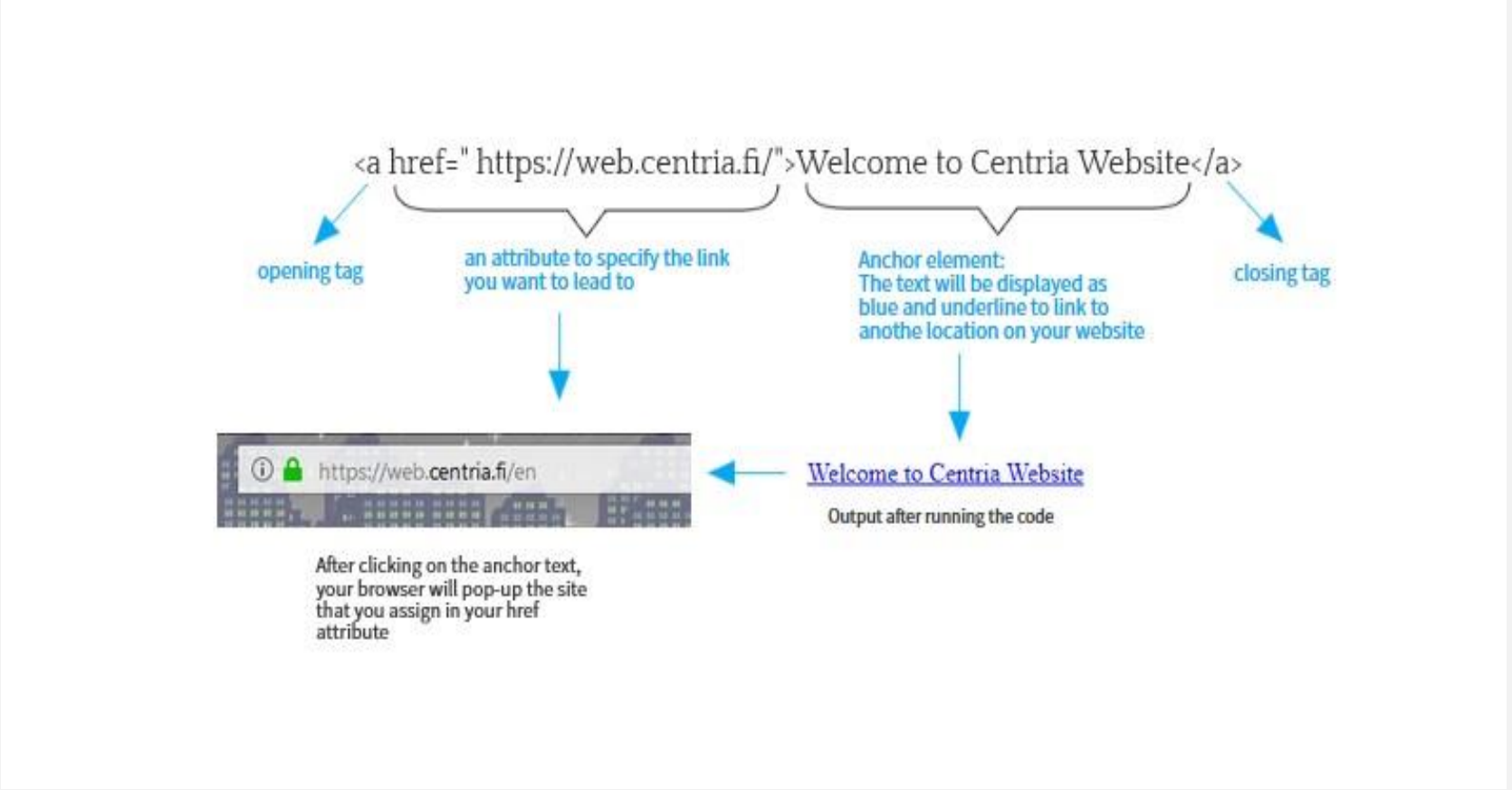
Output



HTML LINK ELEMENTS

How to work with Links?

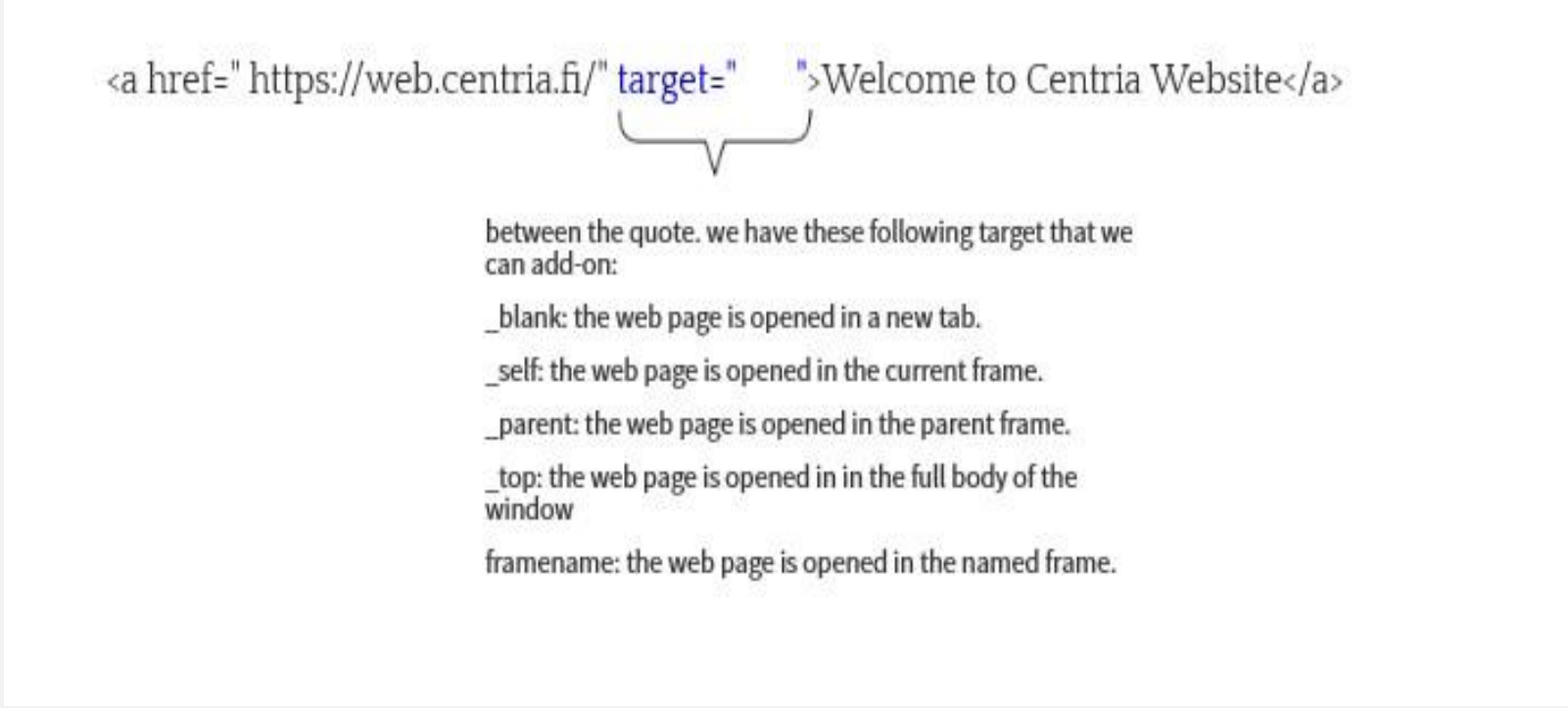
- There are many ways to create a link in your website, it depends on the purpose that you want to display in the site.



Structure of code

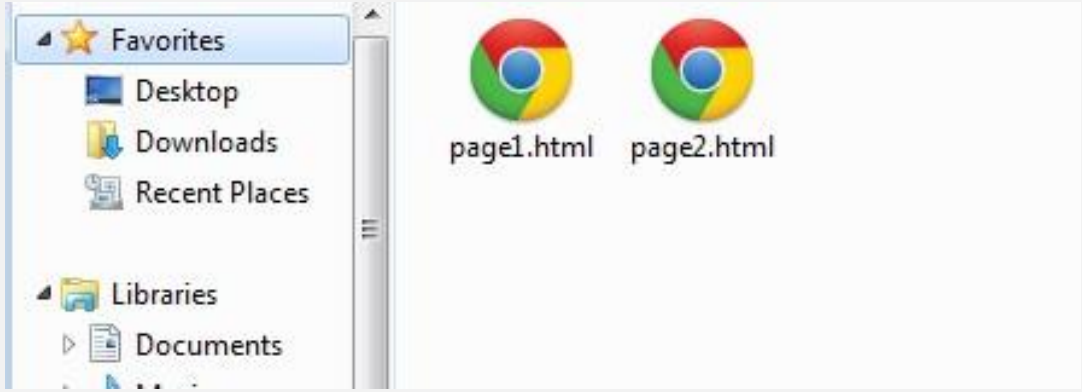
HTML LINK ELEMENTS(CONT.)

- Most users want to open links in the new tab or in specific location which depends on user needs, we will add a target:



HTML LINK ELEMENTS(CONT.)

- Above is an example for exiting link which is https://web.centria.fi . Many of you would wonder:" What if I want to assign the page that I create instead of exiting page?" or in another way we want to go from one page to another page. Therefore, we should create links between our pages.

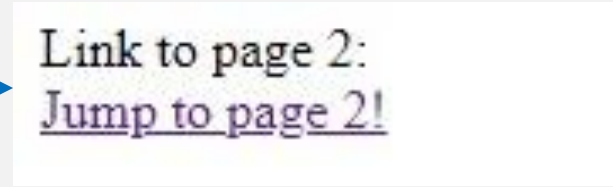


How we can go from page1 to page 2 without having website address?

HTML LINK ELEMENTS(CONT.)

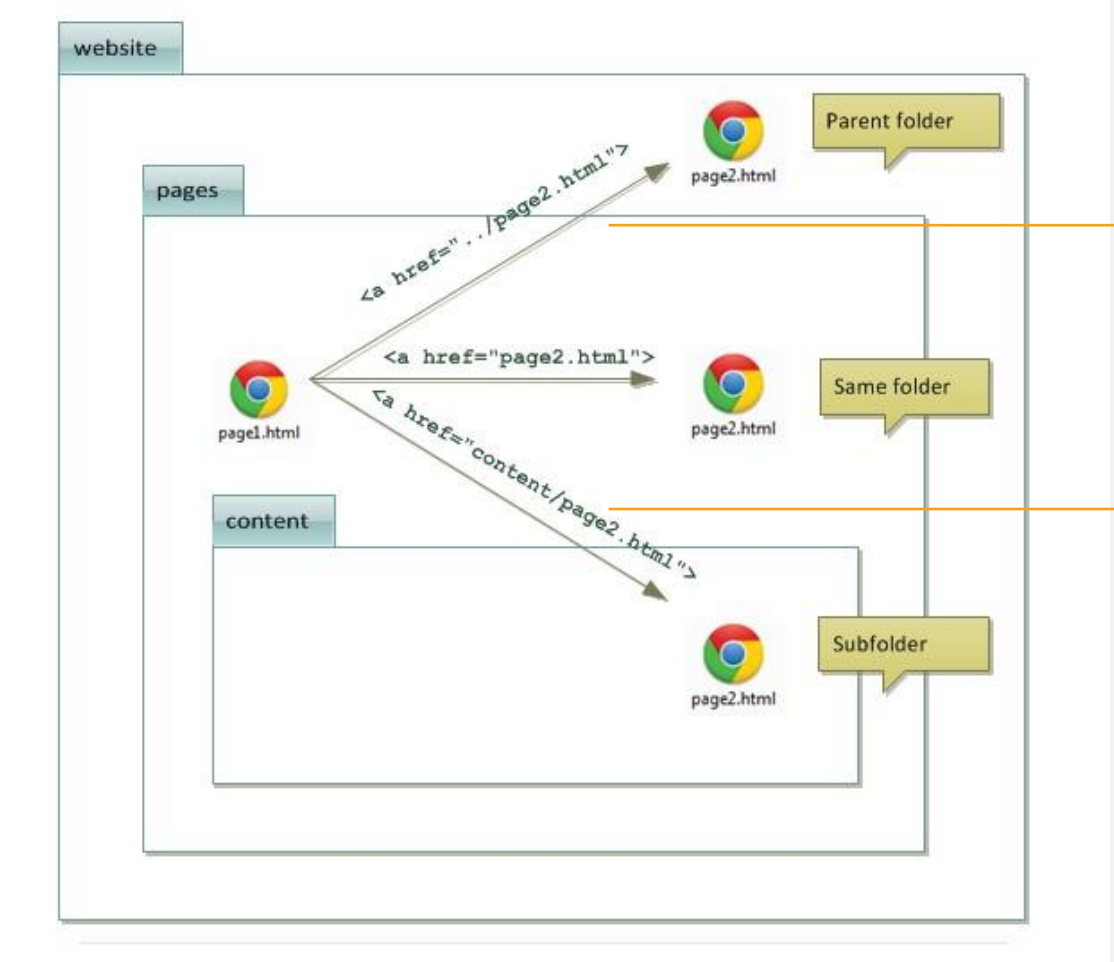
```
<body>
Link to page 2: <br>
<a href="page2.html">Jump to page 2!</a>
</body>
```

Output



We simply use the same attribute **href** with the name file "page2.html". This is called relative link. In the example above, all files are located in the same file. What if it is placed in different location?

HTML LINK ELEMENTS(CONT.)

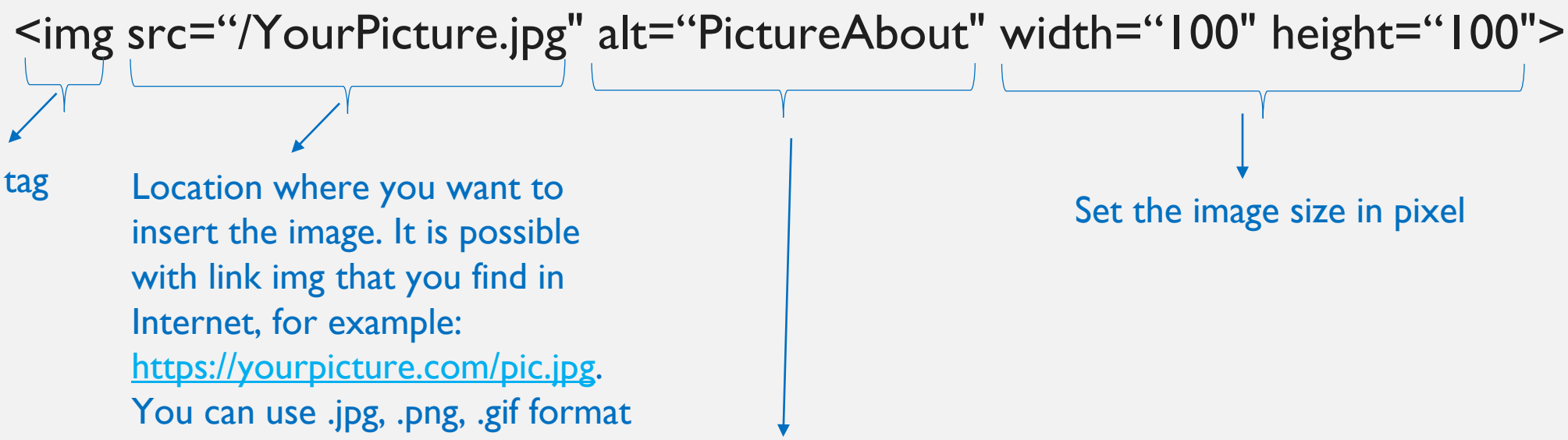


Parent folder
< a href= "…/page2.html">

Sub folder /Child folder
<a href= "content/page2.html">

Pic source https://openclassrooms.com/en/courses/2479876-build-your-website-with-html5-and-css3/2490386-creating-links#/id/r-2490328

HTML IMAGE


<img src="/YourPicture.jpg" alt="PictureAbout" width="100" height="100">
Image tag
Location where you want to insert the image. It is possible with link img that you find in Internet, for example: https://yourpicture.com/pic.jpg. You can use .jpg, .png, .gif format
Set the image size in pixel
Alternative text which describe the image, it will be shown if the page failed to download the image

HTML IMAGE(CONT.)

<figure> tag defines self-contained content and it often goes with <figcaption>.

Adding caption for picture using **<figcaption></figcapiton> .**

```
<figure>
  <img src="https://upload.wikimedia.org/wikipedia/commons
/3/35/Spartan_apple.jpg" alt="Apple" style="width:100%">
  <figcaption>Fig.1 - Apples.</figcaption>
</figure>
```

Output

Fig.1 - Apples.

HTML VIDEO

<video></video> tag is used to embed a video to your site.

poster attribute: get a source to set a thumbnail image for the video. The thumbnail img which represents the whole video when you click on.

```
<video controls
    src="https://archive.org/download/BigBuckBunny_124/Content
/big_buck_bunny_720p_surround.mp4"
    poster="https://peach.blender.org/wp-content/uploads
/title_anouncement.jpg?x11217"
    width="620">

</video>
```

Set the width for the video

Source code: https://developer.mozilla.org/en-US/docs/Web/HTML/Element/video

HTML CANVAS

<canvas></canvas> tag is used for drawing graphics and animations.

```
<canvas id="canvas" width="200" height="300">
</canvas>
```

The canvas element has the basic structure above, it's pure without styling.
We actually should combine it with Javascript to draw the graphics and we are going to learn it in few more chapter !

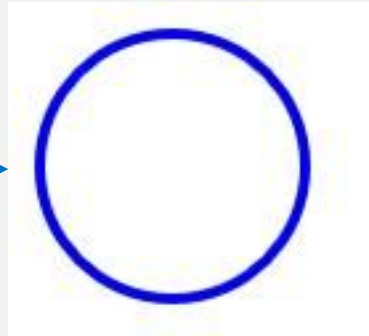
Read more at https://www.w3schools.com/html/html5_canvas.asp

SVG ELEMENTS

svg stands for Scalable Vector Graphics and is used to define graphics for the web.

```
<svg width="200" height="200">
  <circle cx="60" cy="60" r="50"
  stroke="blue" stroke-width="4" fill="white" />
</svg>
```

Output



<circle> tag for drawing a circle, cx: x-axis coordinate, cy: y-axis coordinate, r is radius of the circle

You also can draw rectangle , ellipse, line, polygon,…

Read more: https://www.w3schools.com/graphics/svg_circle.asp

GIVING FEEDBACK AND CONTRIBUTION

- If there are some mistakes, you can freely report it.
- Giving feedback.
- Any suggestion?

Thank you for your time!