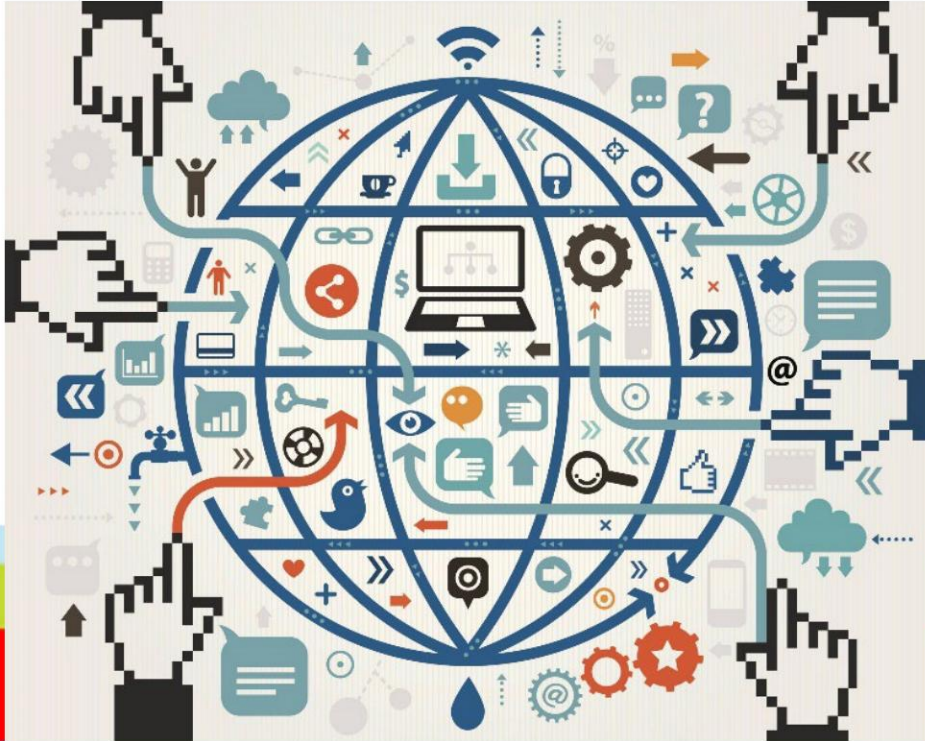


CEU | *Universidad
San Pablo*



Html

Web Systems I

Degree in Information Systems Engineering Álvaro Sánchez
Picot

Based on the work of: •
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Markup languages

- “Markup languages” •

System for annotating documents •

Distinguishable from the text (content) •

Not shown when processed • Used to format
the text • Order matters • Examples:

- TeX (LaTeX)
- Hypertext Markup Language (HTML)
- Standard Generalized Markup Language (SGML)

Markup languages

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\title{An interesting theory}
\author{Juan Perez}
\date{April 2020}
\usepackage{natbib}
\usepackage{graphicx}
\begin{document}
  \maketitle
  \section{Introduction}
  There is a theory which states that if ever anyone discovers
  (...)
  \begin{figure}[h!]
    \centering
    \includegraphics[scale=1.7]{universe}
    \caption{The Universe}
    \label{fig:universe}
  \end{figure}
  \section{Conclusion}
  "I always thought something was fundamentally wrong with the universe"
  \citep{adams1995hitchhiker}
  \bibliographystyle{plain}
  \bibliography{references}
\end{document}
```

Latex

An interesting theory

Juan Perez

April 2020

1 Introduction

There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.



Figure 1: The Universe

2 Conclusion

"I always thought something was fundamentally wrong with the universe" [1]

References

[1] D. Adams. *The Hitchhiker's Guide to the Galaxy*. San Val, 1995.

Markup languages

File html_example.xml:

```
<!DOCTYPE html>
<html>
  <head>
    <title> A Simple HTML Document </title> <link
      rel="stylesheet"
      href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css">

  </head>
  <body>
    <!-- Site navigation menu --> <nav
      class="navbar navbar-expand-lg navbar-light bg-light"> <!--
      Navigation bar --></nav>
    <!-- Main content -->
    <div class="container">
      <h1>My first styled page</h1>
      <p>Welcome to my styled page!</p>  <p>There should be
        more here, but I don't know what yet.</p> <address>Made April 2018<br> by
        myself.</address>
    </div>
  </body>
</html>
```

Html

Navbar Home Features Documentation Disabled

My first styled page

Welcome to my styled page!



There should be more here, but I don't know what yet.

Made April 2018
by myself.

Introduction

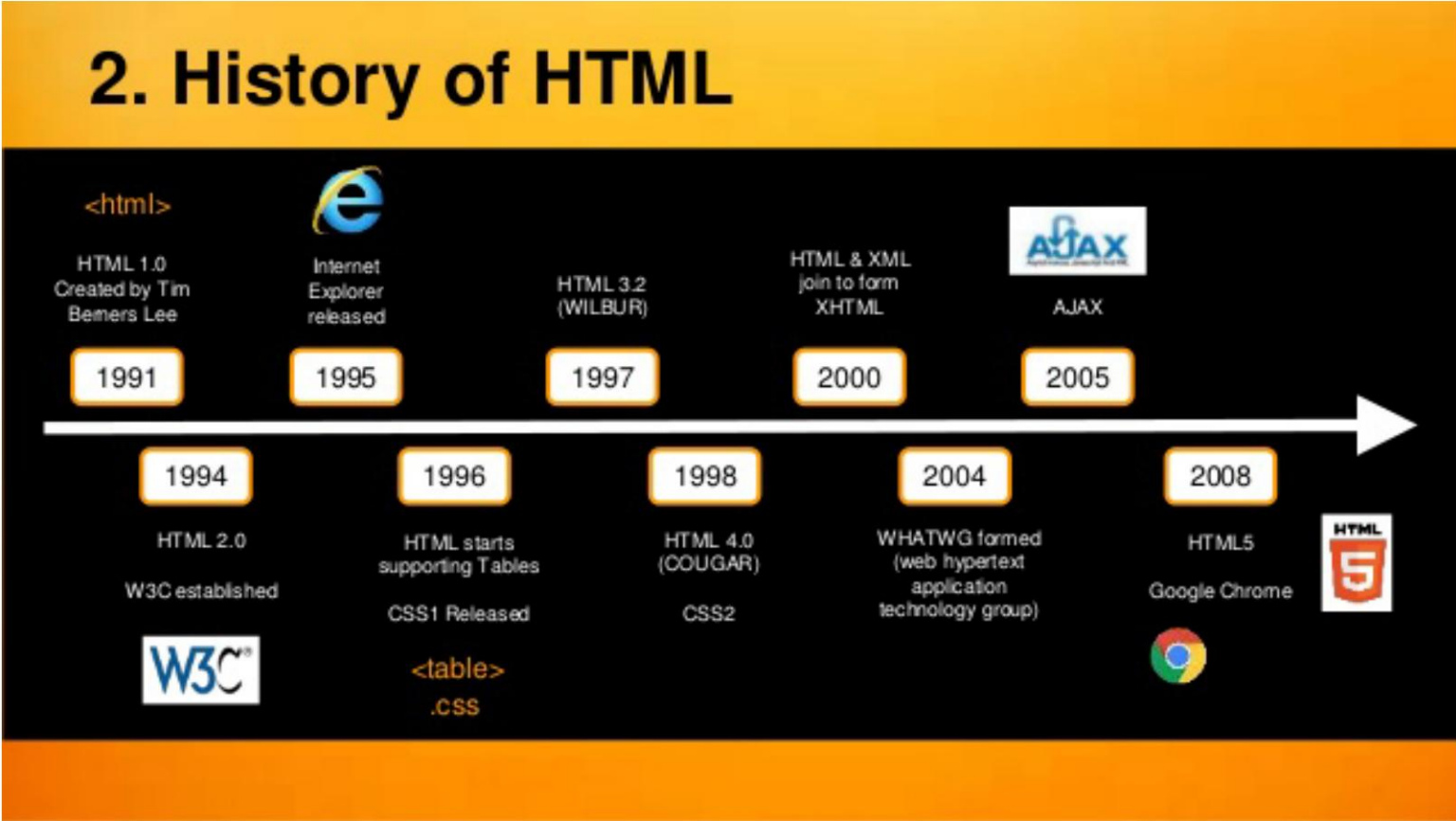
- HTML: HyperText Markup Language • Hypertext: text with references to other text (hyperlinks)
 - Language in which web pages are built • HTML Tags (HTML Tags)
-
- First public description of HTML
 - Published online by Tim Berners-Lee, a CERN scientist, in 1991
 - Facilitate navigation between different documents



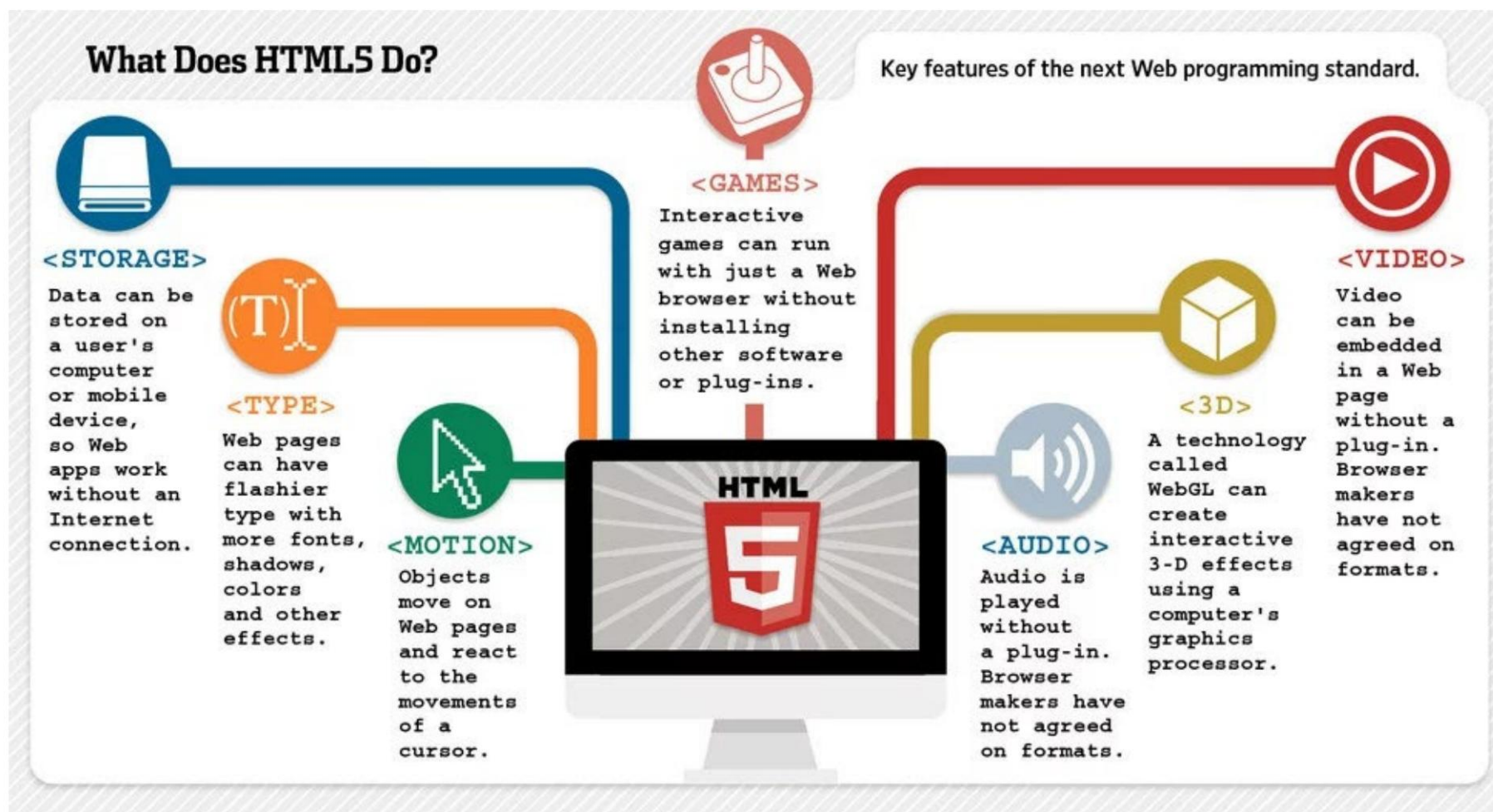
Introduction

- 1990: First draft of HTML by Tim Berners-Lee
 - 1995: The first version of HTML to become a standard was 3.0, when the World Wide Web Consortium (W3C) accepted it as one of its standards
 - 1999: HTML 4.0 arrived
 - 2008: Beginning of definition of version 5
 - Today, it is simply known as HTML and is a “Living Standard”
-

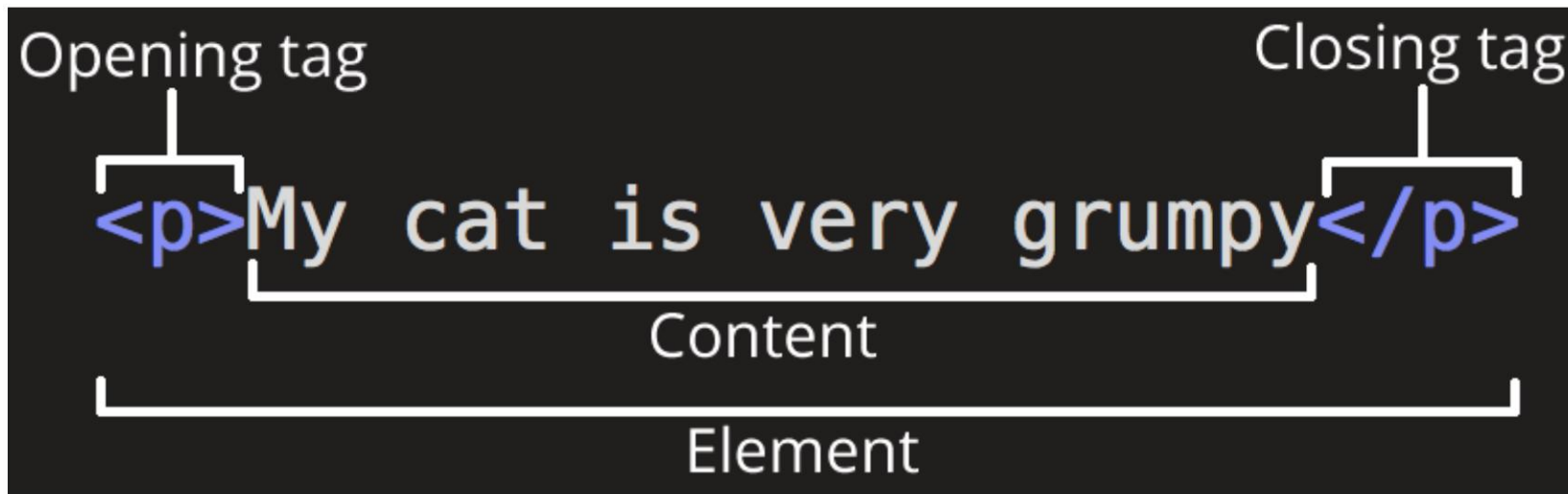
Introduction



Introduction



Element



Element

`<tag_name [attribute1="value1", ...]> [tag content] [</tag_name>]`

- Attributes
 - Some do not have an associated value (compact attributes)
 - If they have value, they must be in quotes
- Content
 - Text, other labels or empty

Element

Void element:

- Element that cannot have any child node
- They do not have a closing tag
- In

HTML there are no 'self-closing' tags `<tag></`

`tag>` `<tag/>`

`<tag>`

Element – Nesting

- Elements can be nested
- This creates a tree structure
 - The root element is `<html>...</html>`
- Be careful with the order of the closing tags:

• `<tag1><tag2>Content</tag1></tag2>`

• `<tag1><tag2>Content</tag2></tag1>`

Element – html

`<!DOCTYPE html>`

- Document type declaration
- Not an HTML tag
- At the beginning of the HTML document

`<html [lang="en"]> </html>`

- Document root element
- Container for all HTML elements (except doctype)
- It is recommended to use the lang attribute

Element – head

`<head> </head>`

- Container for meta information
- Does not render
- Used by browsers, search engines (SEO) and other services
- Inside `<html>` before `<body>` `<title>` `</`

`title>`

- Inside `<head>`
- The title that the browser shows in the bar
- Content can only be text
- Mandatory
- There can only be one `<title>` tag

Element – head

- Metadata <meta>
 - They go inside <head>
 - Add information about the document data
 - The metadata does not appear on the screen, but the machines analyze it – keywords are not used by search engines because they were used by pages to spam

<head>

<meta charset="UTF-8">

<meta name="description" content="Free Web tutorials"> <meta
name="keywords" content="HTML, CSS, JavaScript">

<meta name="author" content="John Doe">

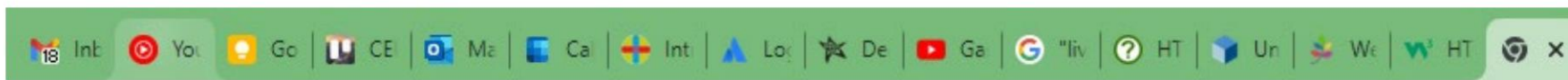
<meta name="viewport" content="width=device-width, initial-scale=1.0">

</head>



Element – Favicon

- Small image that appears in the browser bar
- It is also used when adding a website to favorites
- Normally square
- Resolution: From 16x16 to 256x256 pixels • Formats: ico, png, svg
- Average size: about 2KB
- Map of the main favicons (explanation) _____



Element – Favicon

- Defined in the <link> tag within <head>
- The standard name is favicon
- type:
 - image/x-icon `ico` –
 - image/png `png` –
 - image/svg `svg` •

Example:

`<link rel="icon" type="image/x-icon" href="/images/favicon. ico">` •

How to Favicon

Element – body

`<body> </body>`

- Content of the website
 - All elements visible on the web page
 - There can only be one `<body>` tag

`<!-- -->`

- To add comments
- Can be used on multiple lines
- Ignored by the web browser

Basic structure

- HTML document example

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    <title>Title of our first page</title>
```

```
  </head>
```

```
  <body>
```

```
    Hello World!
```

```
    <!-- This is a comment -->
```

```
  </body>
```

```
</html>
```

Element

- Headers

`<h1>Header 1</h1>`

`<h2>Header 2</h2>`

`<h3>Header 3</h3>`

`<h4>Header 4</h4>`

`<h5>Header 5</h5>`

`<h6>Header 6</h6>`

- Paragraphs

`<p>Paragraph</`

`p>` • Line break

`
`

Encabezado 1

Encabezado 2

Encabezado 3

Encabezado 4

Encabezado 5

Encabezado 6

Element

- Text styles

`Bold <i>Italic
(italic)</i> Emphasis</
em> More emphasis</
strong >
<small>Reduced size</small>
<u>Underline (underline)</u>`

- Ordered list (ordered list)

`
 Coffee
 Tea
 Milk
`

Negrita (bold)
Cursiva (italic)
Énfasis (emphasis)
Más énfasis
Tamaño reducido
Subrayar (underline).

1. Coffee
2. Tea
3. Milk



Element

- Unordered list

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

- Coffee
- Tea
- Milk

- Description list

```
<dl>  
  <dt>Coffee</dt>  
  <dd>Black hot drink</dd>  
  <dt>Milk</dt>  
  <dd>White cold drink</dd>  
</dl>
```

Coffee
Black hot drink
Milk
White cold drink

Element – img

`` •

To add an image

- Void element
- src: path of the image (relative) •
- alt: Alternative text in case the image cannot be displayed (mandatory) •
- width and height: Width and height of the image in pixels

Element – table

- Tables `<table> </table>`

```
<table>
```

```
<tr>
```

```
<th>Month</th>
```

```
<th>Savings</th>
```

```
</tr>
```

```
<tr>
```

```
<td>January</td>
```

```
<td>$100</td>
```

```
</tr>
```

```
</table>
```

Month Savings

January \$100

Element – a

`Link text`

- Links (anchor) •

Example: `Go to Google.com`

- href:

- Use relative paths, do not use absolute paths

~~` My resume `~~

` My resume `

- You can add a telephone number: `href="tel:+4733378901"`
- You can add an email: `href="mailto:me@ruwix.com?Subject=Hi%20mate"`

Element – a

`Link text`

- href:

- Text fragments: allow you to link a section of the document

- #id_name ÿ to link to the element with id id_name

- `return to index`

- `return to index`

- :~:~text= ÿ to link to a text

- There is more

Element – a

`Link text`

- target:

- Indicates where the linked URL appears
- `_self`: the current context (default) – `_blank`: usually in a new tab (can be set in the browser)

- download:

- The browser treats the URL as a download
- Can be used with filename (if not, user is prompted)
- Examples:
 - ``
 - ``

Element

- Division `<div>` `</div>`

- Division or a section in the document
- Container for other HTML elements
- Sometimes its use is abused

```
<div class="myDiv">
```

```
  <h2>This is a heading in a div element</h2> <p>This is  
  some text in a div element.</p>
```

```
</div>
```

- Span ``

- Line container
- Highlight a part of a text or document `<p>My mother
has blue eyes.</p>`

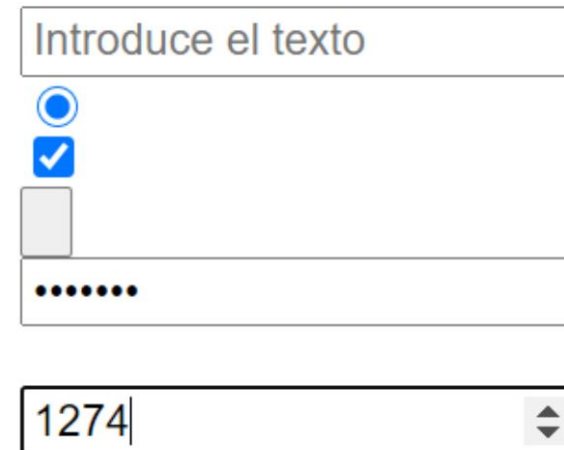
Element – Forms

- `<form action="/action_page.php" method="get"> </form>`
 - Form
 - For the user to enter information
 - action: URL
 - method: get/post (written in lower case)
- `<label for="element_id" form="form_id"> </label>`
 - Label for the form elements – form: id of the form to which the label belongs – for: id of the element associated with the label
 - Associated elements can also be included within

Element – Forms

<input>

- Input field in a form
- Void element
- Text: `<input type="text" placeholder="Enter the text">`
- Radio: `<input type="radio">`
- Checkbox: `<input type="checkbox">`
 - You can even make art
- Button: `<input type="button">`
- Password: `<input type="password">`
- Hidden: `<input type="hidden">`
- Numbers: `<input type="number">`
- And many more



Introduce el texto

☐

☒

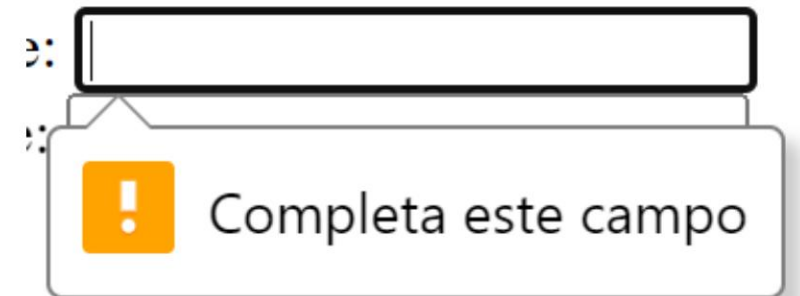
.....

1274

Element – Forms

`<input>`

- `<input required ...>` y this field is required
- `<input minlength="5" ...>`
- `<input maxlength="50" ...>`



Element – Forms

`<select> </select>`

- To create a list of elements (drop-down list)
- Needs the id attribute associated with a label
- Need the name attribute for when the form is submitted

`<label for="cars">Choose a car:</label>`

`<select name="cars" id="cars">`

`<option value="volvo">Volvo</option> <option
value="saab">Saab</option> <option
value="mercedes">Mercedes</option> <option
value="audi">Audi</ option> </select>`

Choose a car:

Volvo	▼
Volvo	
Saab	
Mercedes	
Audi	

Element – Forms

- GET

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

Element – Forms

- POST

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

Element – button

`<button>Content</button>`

- Interactive element activated by the user to perform an action
- Use better than

`<input type="button">`

- Allows you to add other elements such as

images

- Can be associated with a form with the form attribute

`<button form="form_id">Submit</button>`

- More information

Element – Content structure

- `<article>` ÿ Composition in a document (post, comment...)
- `<footer>` ÿ Footer with author, copyright and other information
- `<nav>` ÿ Navigation links such as menus or tables of contents
- `<header>` ÿ Page header
- `<section>` ÿ Section of a document
- `<aside>` ÿ Side menu



Element – canvas

`<canvas> </canvas>`

- Graphics container
- Used in conjunction with JavaScript

`<canvas id="myCanvas">`

Your browser does not support the canvas tag. `</canvas>`

`<script>`

```
var canvas = document.getElementById("myCanvas"); var ctx
= canvas.getContext("2d"); ctx.fillStyle =
"#FF0000"; ctx.fillRect(0, 0, 80,
80); </script>
```



Element

- There are many more _____ elements
- There are also deprecated elements

Style

- General style considerations
 - Tag and attribute names always in lower case
 - Apply closing tags
 - Attribute values in quotes
 - Specify the alt, width and height attributes of the images
``
 - Do not use spaces before and after the equal sign
 - Avoid too long lines of code
 - Do not add blank lines or apply indentation unnecessarily
 - It is recommended to use two spaces to indent and not tab
 - Always use the `<html>`, `<head>`, `<body>` and `<title>` tags

Special characters

- In HTML there are some characters that have special meaning • They cannot be used directly in the HTML code • An equivalent escape sequence must be used
 - They start with an "&"
 - They end in a ";"
- Most modern browsers allow you to type accented vowels and characters like "ñ" directly into the HTML

Special characters

Escape sequence <	Characters
	<
>	>
&	&
"	"
á é í ∨ ú	a e i o u
	ñ
ñ ?	¿
 	(Non separator space)

Attributes

`id="name_id"`

- Unique name for the HTML element
- The name cannot contain spaces
- Used with CSS and JS

`class="class_name1 class_name2"`

- One or more class names for the HTML element
- Can have multiple names separated by spaces
- Names cannot have numbers in the first character
- Used with CSS and JS

robots.txt

- File that you can include in the root directory
- UTF-8 format
- You tell web crawlers which URLs they can access on your site
- It serves to avoid overloading the site with requests
- It does not prevent a resource from appearing in search engines
- More info

```
User-agent: Googlebot  
Disallow: /nogooglebot/
```

```
User-agent: *  
Allow: /
```

```
Sitemap: http://www.example.com/sitemap.xml
```

security.txt

- File that you can include in /.well-known/security.txt
- Tells someone who has found a vulnerability how to proceed
- Includes contact information
- Can include keys to encrypt the information
- RFC 9116

```
# Our security address  
Contact: mailto:security@example.com  
  
# Our OpenPGP key  
Encryption: https://example.com/pgp-key.txt  
  
# Our security policy  
Policy: https://example.com/security-policy.html  
  
# Our security acknowledgments page  
Acknowledgments: https://example.com/hall-of-fame.html  
  
Expires: 2021-12-31T18:37:07z
```



ai.txt

- Proposed standard
- File that you can

include in the root directory

- Instructions on the use of images, media and

code by AI

- More information

```
# AI.TXT
```

```
# Spawning AI / Prevent datasets from using the following file types
```

```

User-Agent: *
Disallow: *.gif
Disallow: *.jpg
Disallow: *.png
```

```
...
Allow: *.txt
Allow: *.pdf
Allow: *.doc
```

```
...
Allow: *.css
Allow: *.php
Allow: *.sql
Allow: /
```

XHTML

HTML vs. XHTML Comparison

HTML

```
<html>
  <header>
    <title>My Web Page
  </title>
  </header>
  <body>
    <p>
      Hello to my page!!
    </p>
  </body>
</html>
```

XHTML

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML
1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml
1-transitional.dtd">
<html
  xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type"
content="text/html; charset=utf-8" />
    <title>XHTML Sample Web Page</title>
  </head>
  <body>
    <p>
      Here is my content!!
    </p>
  </body>
</html>
```



XHTML

Html		XHTML
Filename extension	.html, .htm	.xhtml, .xht, .xml, .html, .htm
Internet media type	text/html	application/xhtml+xml
Developed by	W3C & WHATWG	World Wide Web Consortium
Type of format	Document file format	Markup language
Extended from	SGML	XML, HTML
Stands for	HyperText Markup Language	Extensible HyperText Markup Language
Application	Application of Standard Generalized Markup Language (SGML).	Application of XML
function	Web pages are written in HTML.	Extended version of HTML that is stricter and XML-based.
Nature	Flexible framework requiring lenient HTML specific parser.	Restrictive subset of XML and needs to be parsed with standard XML parsers.
Origin	Proposed by Tim Berners-Lee in 1987.	World Wide Web Consortium Recommendation in 2000.
Versions	HTML 2, HTML 3.2, HTML 4.0, HTML 5.	XHTML 1, XHTML 1.1, XHTML 2, XHTML 5.



XHTML

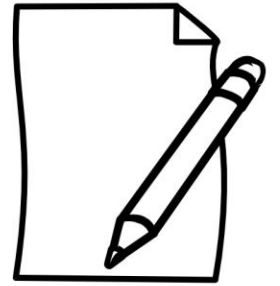
	Html	XHTML
Tag nesting	Tags may be closed out of order	Tags must be closed in the order opened
Tag case	Tags may be written in upper or lower case	Tags must be written in lower case
Tag closure	Closing tags may be omitted for some elements	All opening tags must be matched with closing tags
Attribute name/value pairs	Value may occur without attribute name	Name/value pair required
Empty elements	Empty elements do not need to be closed	Empty elements must be closed
Script and Style elements	Elements may be placed within HTML document	Elements must be in separate documents and linked to XHTML documents
Attribute values	Values may be enclosed within quotes	Values must be enclosed within quotes
ID and Name attributes	Either attribute may be used	ID attribute may be used, Name attribute prohibited
Character codes for special characters	Recommended codes	Codes required

Tools

- Validator: <https://validator.w3.org/> •
- Browser support: <https://caniuse.com/> • Icons: <https://www.utf8icons.com/> • Tools: <https://tiny-helpers.dev/html/>

HTML – Exercise

- Create a web page with the content you want • Make use of some elements that we have seen
- Add a favicon
- Save it in a file with a .html extension
- Open it with the browser



References

- HTML5 Style Guide and Coding Conventions

https://www.w3schools.com/html/html5_syntax.asp

- Tags Reference [https://](https://www.w3schools.com/tags/default.asp)

www.w3schools.com/tags/default.asp

- HTML Cheat Sheet

<https://htmlcheatsheet.com/>

<https://websitesetup.org/html5-cheat-sheet/>

- HTML validator

<https://validator.w3.org/>