Universidad Zaragoza

Introducción HTML y CSS

Grado en Ingeniería en Informática

Curso 2024-2025

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Web technologies Introduction

HTML & CSS

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Outline

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HTML Introduction

HTML: Hyper Text Markup Language

Markup language (tag based). Tags help to define content and structure.

Tags:

Delimited by < & >

HTML tags most commonly come in pairs (start tag and end tag)

- <tag> content </tag>

They can have attributes:

- <tag attribute1="valueAttrib1"> …</tag>
- <tag attribute1='valueAttrib1'> …</tag>

Tags without content:

- <tag> </tag>
- Abbreviated form <tag/>

No *case-sensitive*

- **Recommendation**: lowercase

Examples: <html> …</html>, …

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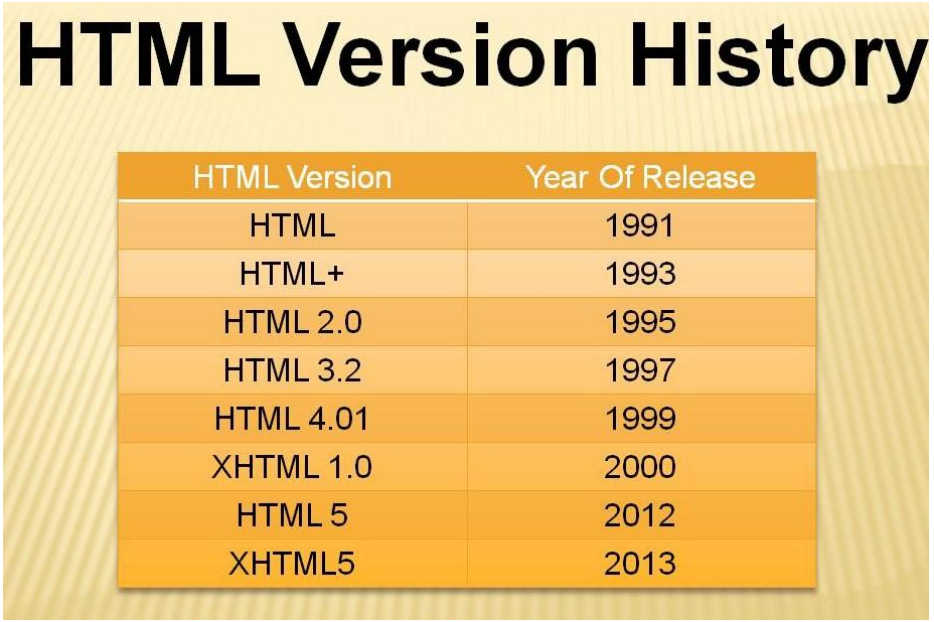
HTML: Hyper Text Markup Language

HTML several versions…

In general, first somebody proposes it and people start to use it, later they are standardized (not all tags get into the standards)



HTML 5.2
W3C Recommendation, 14 December 2017

[Image from: https://aravindh62.wordpress.com/2023/07/03/history-and-versions/]

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HTML: Hyper Text Markup Language

HTML5

New features oriented to the creation of **Web applications** and not only **web pages (or HTML documents)**.

HTML document (or HTML Web page):

Text file written in HTML language; Web browsers (Firefox, IE, Edge, Chrome, Safari, etc.):

1. Request documents.
2. Receive HTML documents from a web server or from local storage
3. Render the documents into multimedia web pages.

They don't show tags.

Clear separation of content and presentation (CSS).
Multiformat/multiplatform/responsive

Multimedia content **integrated**. **No need** of plug-ins installation

Vectorial graphics (<canvas> tag)

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HTML: Hyper Text Markup Language

HTML editors

Any text editor:: NotePad, gedit, nedit, vi(m), emacs, etc.

Specific editors (or plugins for programming IDEs): Eclipse, Sublime Text, Visual Studio Code

Specific frameworks: Adobe DreamWeaver, brackets, aptana...

Other options:

Mozilla Firefox / Chrome Developer Tools (DevTools):
Menu->More tools->Web Developer Tools

Google Sites (PaaS for web site creation)

Content Management Systems: Wordpress, Joomla, Drupal...

AI Systems:
https://blog.mozilla.org/en/mozilla/introducing-solo-ai-website-builder/

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HTML: Hyper Text Markup Language

Some considerations when creating web applications and HTML documents.

Test, at least, in the most common browsers:

- https://www.genbeta.com/a-fondo/asi-esta-el-ranking-de-losnavegadores-y-sistemas-operativos-mas-utilizados-al-empezar-2017
- http://jmacuna73.blogspot.com.es/2017/02/ranking-de-navegadoresweb-mas-usados.html
- https://www.taringa.net/posts/info/18455353/TOP-de-navegadoresmas-utilizados-en-2015.html
- https://www.xatakamovil.com/aplicaciones/las-estadisticas-de-losnavegadores-web-mas-usados-en-movil-con-chrome-y-safari-comolideres

Test in different devices (screen size) and different screen resolutions.

Follow good practices and usability guides.

There are tools: https://www.browserling.com/

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HTML: Hyper Text Markup Language

HTML document structure

Head (title, style and meta-information) **and Body** (content)

Comments: <!-- They can be multi-line -->

```
<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <p>This is another paragraph.</p>
  </body>
</html>
```

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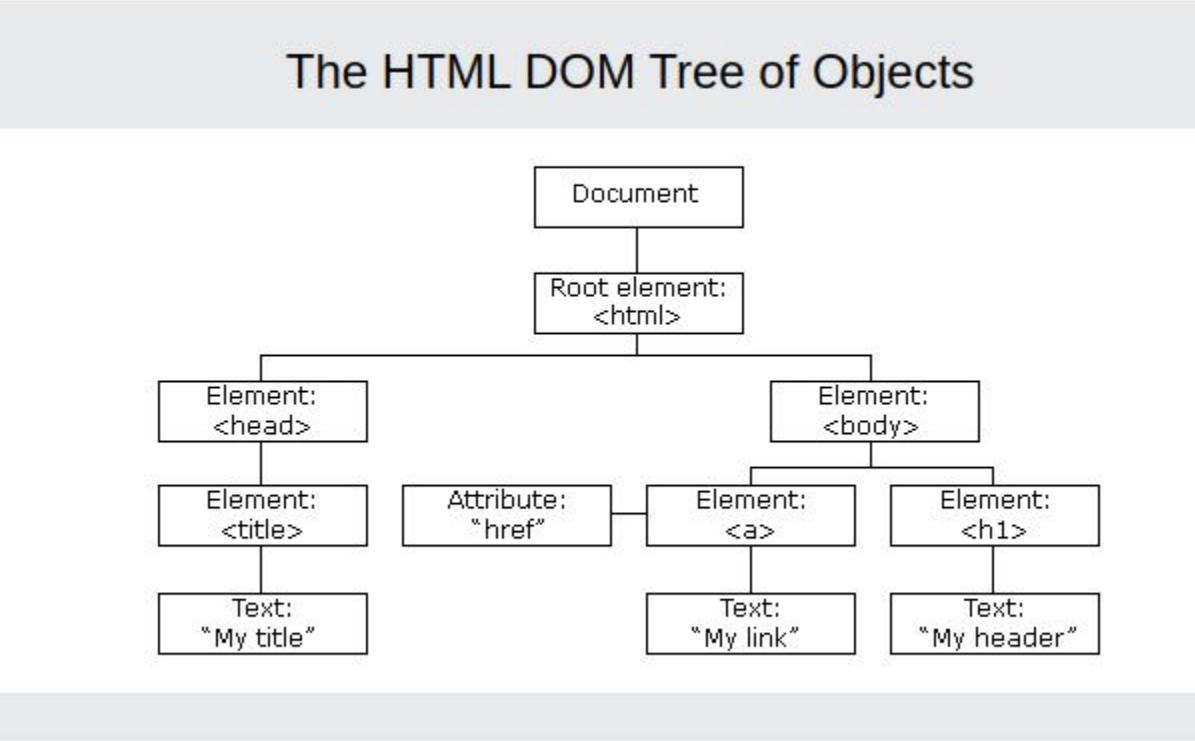
HTML DOM: Document Object Model

When the HTML document is received the browser interprets it and constructs an XML document as a tree structure (each node is an object representing a part of the document) in memory (document object model, DOM) which can be renderized and manipulated using CSS and Javascript



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HTML: Hyper Text Markup Language

HTML document structure

Example: My first HTML document

```
<!DOCTYPE html>

<html>

<head> <title> My first html document </title> </head>

<!-- Comments -->

        <body>

                <p> Hello World! </p>

        </body>

</html>
```

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HTML: Hyper Text Markup Language

Header (<head>)

<title> Title **</title>**

<!-- Standard says it is compulsory (Always recommended -->)

<style> Style definitions **</style>**

<script> JavaScript definitions.
</script>

<link rel="StyleSheet" href="style.css" type="text/css"/>

<meta name="element" **content=**"description"**/>.**

Some common elements: author, description, keywords

<meta charset="UTF-8"/> ASCII, iso-8859-1, etc.

Be careful with the encoding of the document

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HTML: Hyper Text Markup Language

HTML document structure

```
<!DOCTYPE html>

<html lang="es">

<head>

<title> Mi primer documento html </title>

<meta name="description" content="indefinido">

 </head>

        <body> ... </body>

</html>
```

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HTML: Hyper Text Markup Language

Text tags

**Paragraphs: ** This is a

paragraph** **

Headings (6 levels):

<h1> </h1>, …<h6> </h6>

White space, tabs, newlines…?

**Line skip:
**

**Strong importance text: **

**Emphasized text: **

Tags (bold) & (italic) are obsolete

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HTML: Hyper Text Markup Language

Image tags

****

Ejemplo:

```
<!DOCTYPE html>
<body>
<h1> Mi segunda pág. HTML </h1>

<img src="./Foto.jpg" alt="Somebody"/>
</body>


</html>
```

Code indentation?

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HTML: Hyper Text Markup Language

Link tags

**** content which will generate the request clicking (***anchor***) ****

Example:

```
<html lang="es">.....
        <body>
                <h1> Mi tercera página HTML </h1>
                <p> Apuntes de la asignatura disponibles en
                        <a href="http://add.unizar.es" > aquí </a> </p>
        </body>
</html>
```

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HTML: Hyper Text Markup Language

Formatting text: tables

<table> content </table>

Define heading (table header): <th> Some title </th>

Define rows (table row): <tr> File content</tr>

Define cells (table data, cell): <td> cell content </td>

Example:

```
<html lang="es">.....
        <body><table>
                <tr> <th>Alumno</th> <th>Nota</th> </tr>
                <tr> <td> Pepe Camino </td> <td> 9</td></tr>
                <tr> <td> Ana Yus</td><td> 8</td></tr>
        </table></body>
</html>
```

https://www.tablesgenerator.com/html_tables

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HTML: Hyper Text Markup Language

Listings

Unordered lists:

 item 1 item N

Ordered lists (con índice, numérico o alfabético):

 item 1 item N

Definition lists:

<dl> <dt>término a definir</dt> y <dd> definición </dd> </dl> Ejemplo:

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HTML: Hyper Text Markup Language

Listings. Example.

```
<html lang="es">.....
```

```
    <body>

    <ul>

      <li>Coffee</li>

      <li>Tea</li>

      <li>Milk</li>

    </ul>

  <dl>
    <dt>URL</dt>
    <dd>Uriform Resource Locator</dd>
    <dt>URI</dt>
    <dd>Uniform Resrouce Identifier</dd>
  </dl>

    </body>
</html>
```

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

<ol start="50">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>
```

https://www.w3schools.com/tags/tag_ul.asp

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HTML: Hyper Text Markup Language

When the user provides information: forms

Tag <form> they get information from the client which will be provided in the following request

Example:

```
<form name="input" action="/procesarForm.do"
        method="get">
        <!- - Fields with information - - >
        <!- - Mainly input - - >
</form>
```

Remember:
GET
POST

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HTML: Hyper Text Markup Language

When the user provides information: forms

Tag <input> to get information.

```
<input type="text" name="someName" />
```

Text boxes, attributes:

- **type="text"**
- **type="password"**

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HTML: Hyper Text Markup Language

When the user provides information: forms

Example:

```
<form name="register" action="procesarForm.do" method="get">
    First Name: <input type="text" name="First name"/>
    Last Name: <input type="text" name="Last name"/>
    Password: <input type="password" name="Password"/>
</form>
```

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HTML: Hyper Text Markup Language

When the user provides information: forms

Example:

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

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HTML: Hyper Text Markup Language

When the user provides information: forms

Selection between some related options (just one) type="radio"

```
<input type="radio" id="html" name="fav_language" value="HTML">
<label for="html">HTML</label><br>
<input type="radio" id="css" name="fav_language" value="CSS">
<label for="css">CSS</label><br>
<input type="radio" id="javascript" name="fav_language"
value="JavaScript">
<label for="javascript">JavaScript</label>
```

Selection between of (several) related options type="checkbox"

```
<input type="checkbox" id="vehicle1" name="vehicle1" value="Bike">
<label for="vehicle1"> I have a bike</label><br>
<input type="checkbox" id="vehicle2" name="vehicle2" value="Car">
<label for="vehicle2"> I have a car</label><br>
<input type="checkbox" id="vehicle3" name="vehicle3" value="Boat">
<label for="vehicle3"> I have a boat</label><br>
```

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HTML: Hyper Text Markup Language

<input> tag

Sending button: <input type="**submit**"/>

Reset button: <input type="**reset**"/>

Other: <input type="**button**" onclick="functionCall"/>

Hidden fields: <input type="**hidden**" name="variableX" value="someValue"/>

Security question:

Can a user see/modify some hidden field?

How?

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HTML: Hyper Text Markup Language

Other tags (forms)

<textarea> tag: longer texts

Drop-down lists: <select> & <option> tags

Example:

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

<select id="cars">
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="opel">Opel</option>
  <option value="audi">Audi</option>
</select>
```

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HTML: Hyper Text Markup Language

tag. Grouping elements.

No visualization, it defines a division or section.

Easily styled (id attribute)

Especially important in responsive design (blocks can be moved around but each block will remain together.

They can be nested.

Browsers always place a line break after each div

Any content inside

```
<style>
.myDiv {
  border: 5px outset red;
  background-color: lightblue;
  text-align: center;
}
.myDiv h2 {
   color: red;
}
</style>


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

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HTML: Hyper Text Markup Language

Mutlimedia tags

Sound:

<audio src="path to some sound file" **preload="none, auto o metadata"** controls autoplay loop**> </audio>**

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

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HTML: Hyper Text Markup Language

Other multimedia tags

Video:

<video controls>

<source src="ruta fichero principal en formato ogg" type="video/ogg">

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

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HTML: Hyper Text Markup Language

Other tags and some notes

<fieldset> <legend> <canvas> <hr/>

HTML documents are interpreted in the browser

Cascading Style Sheets (CSS) describe how HTML elements are to be displayed on screen, paper, or in other media

JavaScript can be used to introduce dynamic behavior in HTML documents. It is interpreted by the browser.

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Hojas de estilo CSS

Introduction CSS: Cascading Style Sheets

They define the presentation **format** for the different elements of the document.

They are interpreted in the browser

Definition:

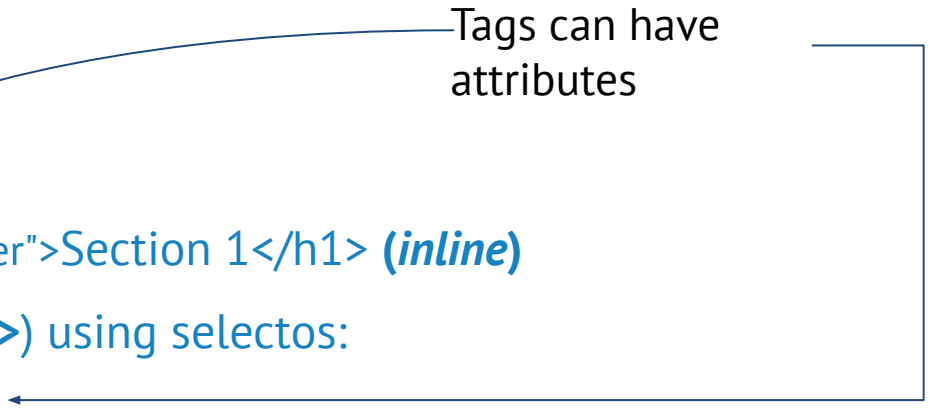
style attribute for each tag:

```
<h1  style="text-align:center">Section 1</h1> (inline)
```

In the header section (**<style>**) using selectos:

selector
{property:value;} (*internal*)

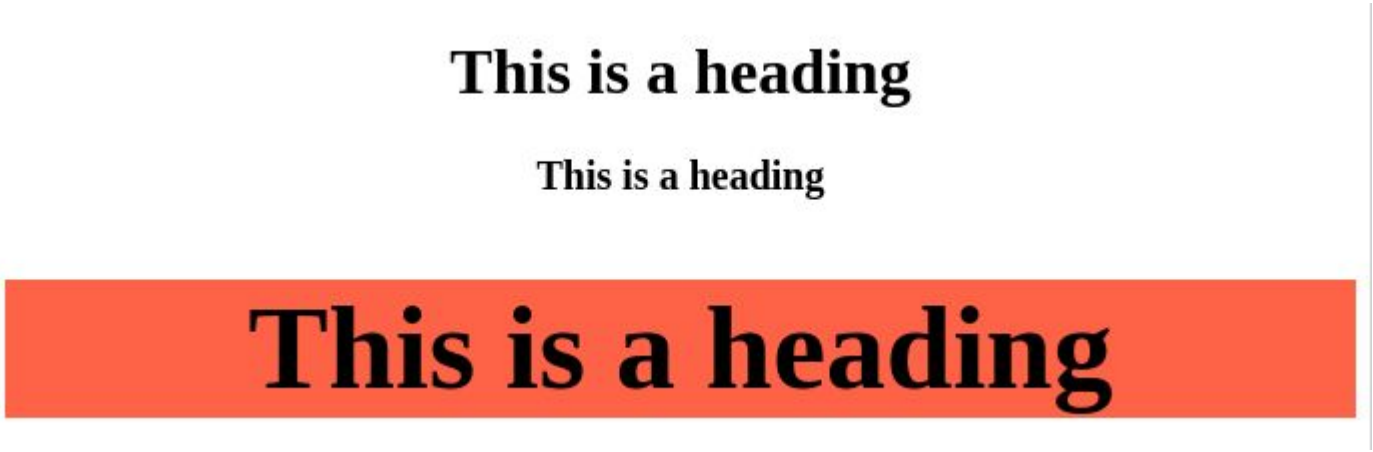
```
<style>
        h1{text-align: center; font-size: 12;}
</style>
```



CSS

Introductionn CSS: Cascading Style Sheets

```
<h1 style="text-align:center;">This is a heading</h1>
<h1 style="text-align:center;font-size:20px">This is a heading</h1>
<h1 style="background-color:tomato;
text-align:center;font-size:60px">This is a heading</h1>
```



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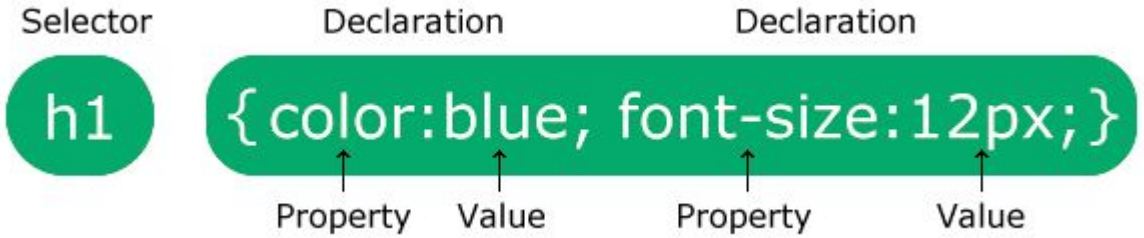

CSS

Introduction CSS: Cascading Style Sheets

```
<!DOCTYPE html>
<html>
<head>
<style>
p.center {
  text-align: center;
  color: red;
}

p.large {
  font-size: 300%;
}
</style>
</head>
<body>

<h1 class="center">This heading will not be affected</h1>
<p class="center">This paragraph will be red and center-aligned.</p>
<p class="center large">This paragraph will be red, center-aligned, and in a large font-size.</p>

</body>
</html>
```

CSS

Introduction CSS: Cascading Style Sheets

```
<!DOCTYPE html>
<html>
<head>
<style>
p.center {
  text-align: center;
  color: red;
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</body>
</html>
```

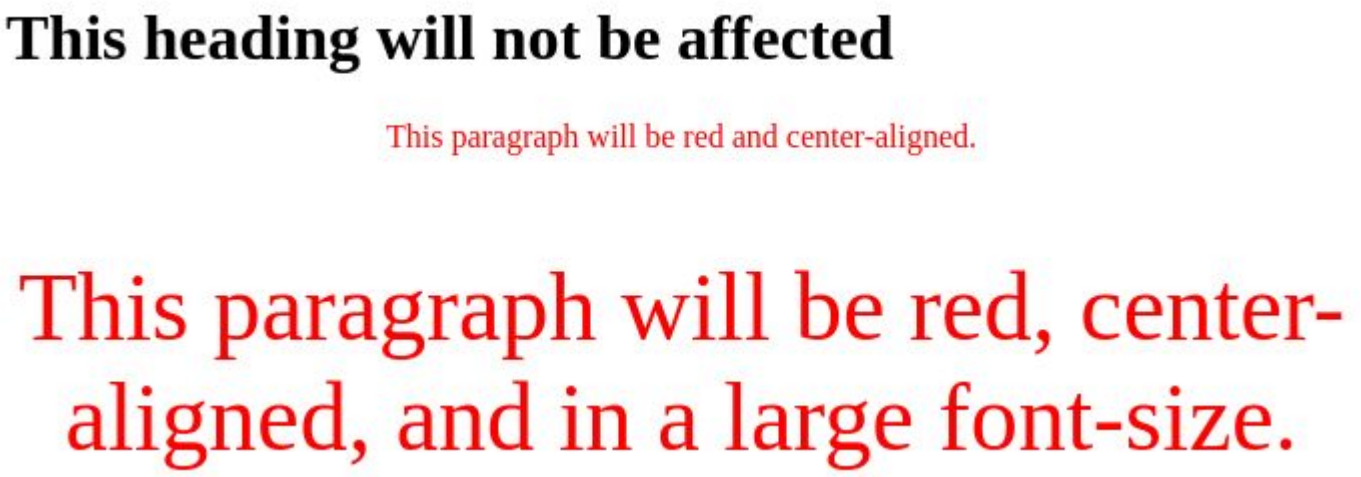

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Introduction CSS: Cascading Style Sheets

Types of selectors: (*external*) (in a .css file)

Basical: the name of a tag

Example: h1 {text-align: center;
font-size: 12;}

Class: .name of the class

Example: .ef1 {text-align: left;
font-size: 24;}

<h1 **class**="ef1"> some heading </h1>

<h1> other heading</h1>

Identifier: #name of the identifier

Similar to the class selectors, but for just one element in the page

Example:#id1 {text-align: center; font-size: 12;}

<h1 id="id1"> some heading </h1>

<h1> other heading</h1>

<h1 class="ef1"> another heading</h1>

You **cannot** have **more than one element** with the same id in an HTML document.

Introduction CSS: Cascading Style Sheets

First step: creating the web document or application

Second step:

- They must be available in some server.
- It is convenient to have a significative domain name
  - Example:

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https://www.unizar.es/

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https://eina.unizar.es/

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Bibliography and References

W3C HTML tutorial: https://www.w3schools.com/html/default.asp

[Last accessed: 2020/09/18]

W3C Tutorial de CSS: https://www.w3schools.com/css/default.asp

[Last Accessed: 2020/09/18]

Luc Van Lancker, "*Recursos Informáticos: HTML5 y CSS3. Domine los estándares de las aplicaciones Web*", ediciones ENI, septiembre de 2011. [Edición española traducida e interpretada por Francisco Javier Piqueres Juan]

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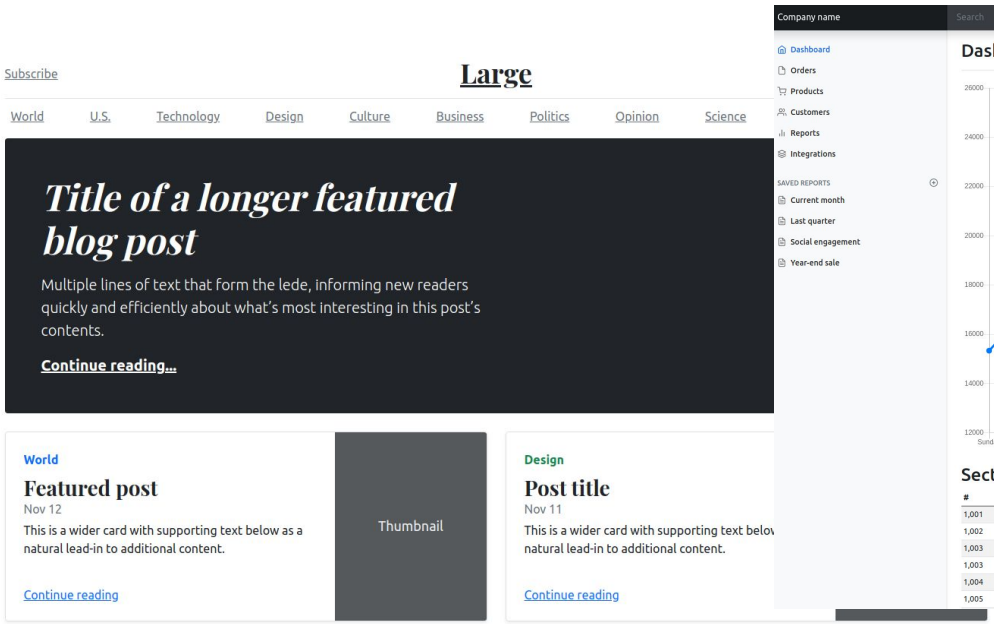
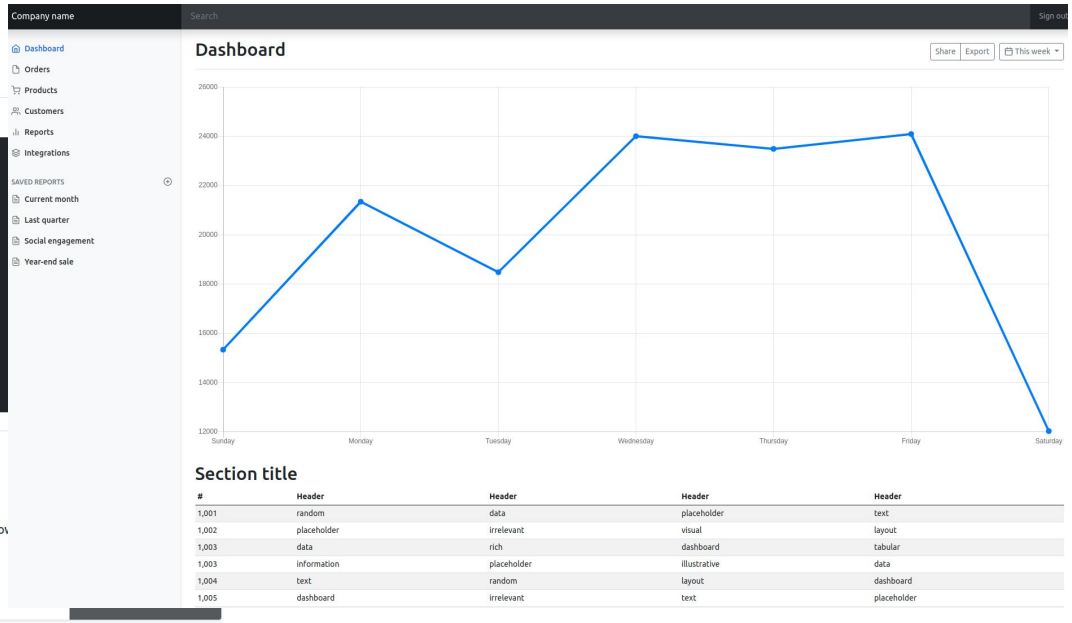
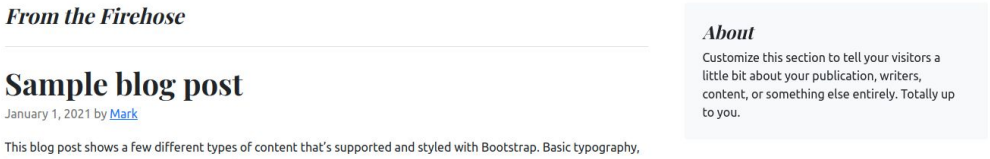
Bootstrap + jquery

Combining styles (CSS) and functionality (javascript)

- Multiple components and effects
- Oriented to simplify adaptive design (responsive)







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Introducción HTML y CSS

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