Fundamentals of Computer Engineering

Module IV - Unit II
Introduction

Teachers: Moisés Martínez (1ºA English)

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Universidad Francisco de Vitoria **UFV** Madrid

Grado en Ingeniería Informática
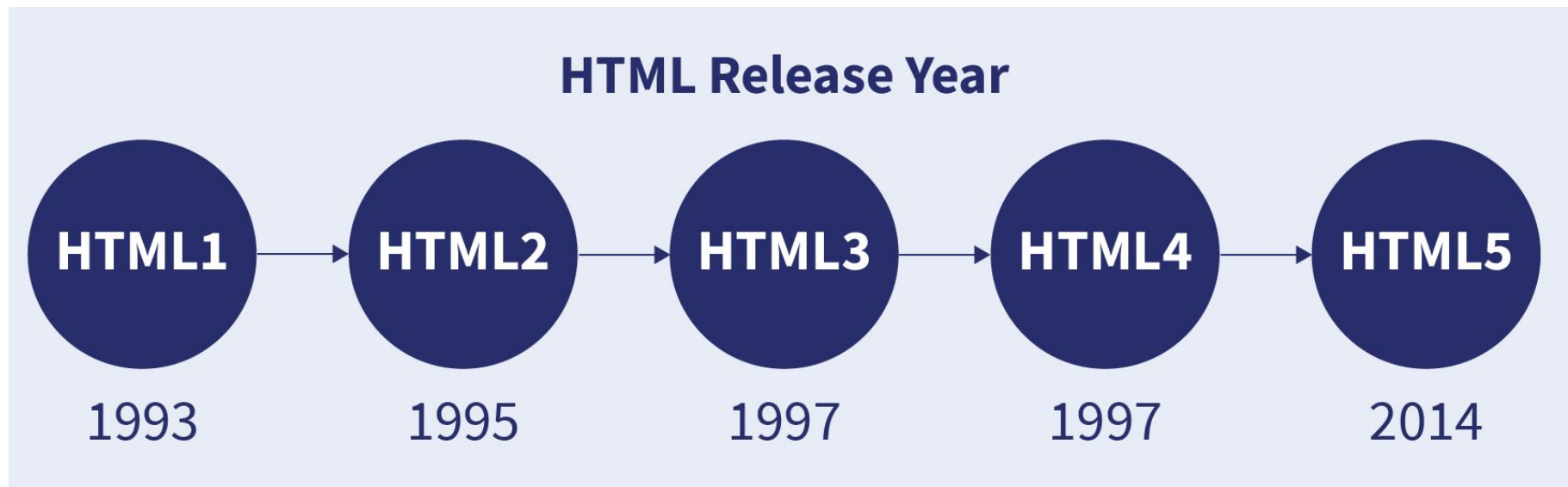*Escuela Politécnica Superior*

HTML basics

HTML basics

The **HyperText Markup Language** or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.

- HyperText: HyperText simply means "Text within Text." A text has a link within it, is a hypertext. HyperText is a way to link two or more web pages (HTML documents) with each other.
- Markup Language: A markup language is a computer language that is used to apply layout and formatting conventions to a text document.
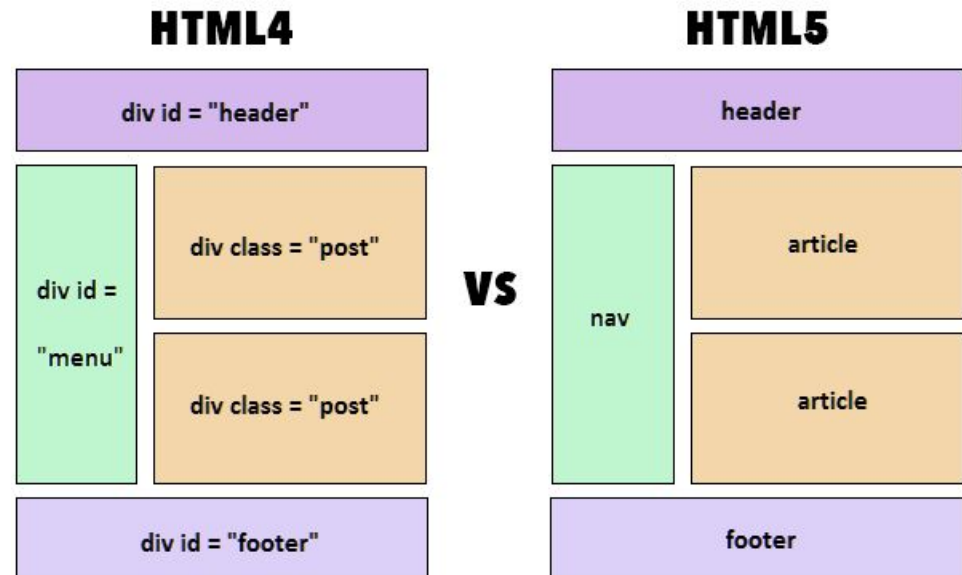
HTML basics

HTML is a markup language used by the browser to manipulate text, images, and other content, in order to display it in the required format. HTML was created by Tim Berners-Lee in 1991.

HTML Release Year

HTML1 → HTML2 → HTML3 → HTML4 → HTML5

1993   1995   1997   1997   2014

HTML basics

What is the difference between HTML5 and HTML4?

HTML stands for HyperText Markup Language and HTML5 is the latest version of HTML Language. It is a cleaner markup and improved code for developers.

- New semantic elements: <header>, <footer>, <main>, <section>, <article>, <figure>, <aside>, and <nav> etc.
- New attributes of form elements: number, date, time, calendar and range, etc.
- New form elements: <datalist> and <output>
- New graphic elements: <svg> and <canvas>
- New multimedia elements: <audio>, <source>, <track>, and <video>

HTML4

| div id = "header" |
| div id = "menu" | div class = "post" |
| | div class = "post" |
| div id = "footer" |

VS

HTML5

| header |
| nav | article |
| | article |
| footer |

HTML basics

The basic structure of an HTML page is composed of different blocks (i.e. doctype declaration, HTML, head, title, and body elements) which define the structure of the web page.


```
<!DOCTYPE html>          ←——————————— Tells version of HTML
<html>        ←————————— HTML Root Element

<head>        ←————————— Used to contain  page HTML metadata
  <title>Page Title</title>   ←——————————Title of HTML page
</head>

<body>        ←————————— Hold content of HTML
  <h2>Heading Content</h2>   ←————————— HTML headling tag
  <p>Paragraph Content</p>   ←————————— HTML paragraph tag
</body>

</html>
```

HTML basics

There are four main tags that we should include in any web page:

- DOCTYPE html (optional): This is the document type declaration (not technically a tag). It declares a document as being an HTML document.
- html: This tag is called the HTML root element. All other elements in the webpage are contained within it.
- head: This tag defines the head which contains the "behind the scenes" elements for a webpage. Elements within the head aren't visible on the front-end of a webpage.
- body: This tag defines the content which is used to enclose all the visible content of a webpage. In other words, the body content is what the browser will show on the front-end.

HTML basics

The <head> element is a container for metadata (data about data) and is placed between the <html> tag and the <body> tag. Metadata is a no displayed data about the HTML document. The following elements can go inside the <head> element:

- <title> (required in every HTML document)
- <style>
- <base>
- <link>
- <meta>
- <script>
- <noscript>

Metadata typically define the document title, character set, styles, scripts, and other meta information.

HTML basics

The <body> tag defines the document's body. The body element contains all the contents of an HTML document, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

```
<!DOCTYPE html>
<html>

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!--The above meta characteristics make a website compatible with different devices. -->
    <title>Demo Web Page</title>
</head>

<body>

  <h1>First title</h1>
  <p>Hello world!!!</p>

</body>
</html>
```
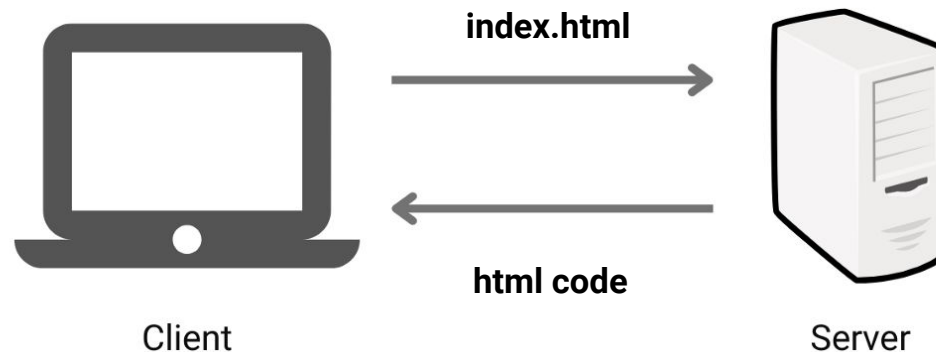
Important: There can only be one <body> element in an HTML document.

HTML basics

Client-Server architecture

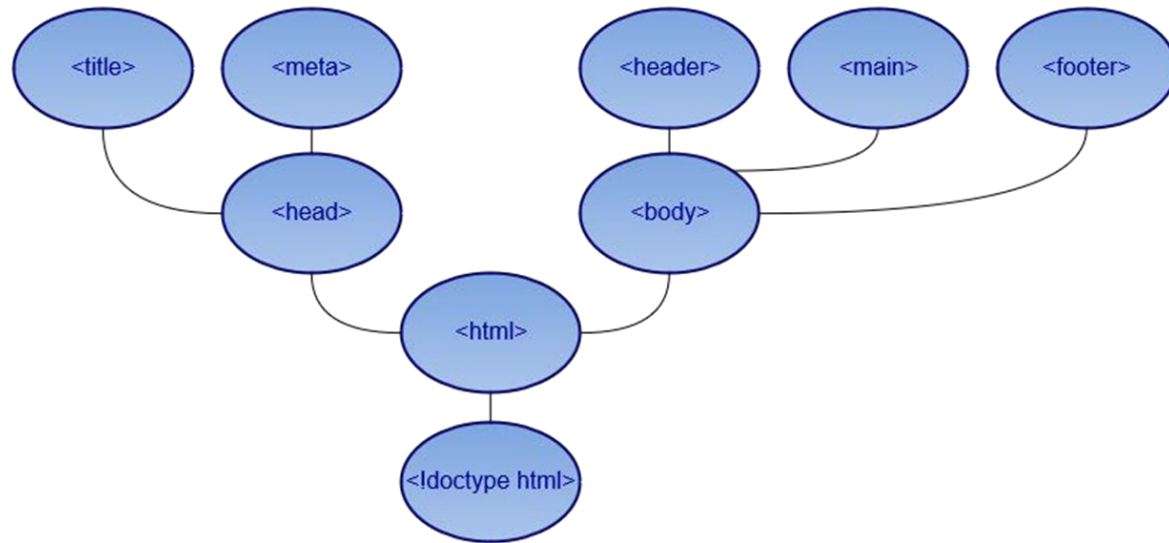An operational client-server architecture execute the next operations:

- The client **request** a web page through a network-enabled device.

- The web server receives and processes the request.

- The web server send a **response (html code)** to the client to show in the browser.

index.html

html code

Client

Server

The Document Object Model

The Document Object Model

The Document Object Model (DOM) is a cross-platform and language-independent interface that treats an XML or HTML document as a tree structure wherein each node is an object representing a part of the document.

The DOM represents a html document with a logical tree. Each branch of the tree ends in a node, and each node contains objects.

HTML tags

HTML tags are like keywords which defines that how web browser will format and display the content. HTML tags contain three main parts: opening tag, content and closing tag. But some HTML tags are unclosed tags.

https://www.w3.org/TR/2012/WD-html-markup-20121025/elements.html

Texts

There are different tags to include text and manipulated. These are some examples:

A paragraph is marked up as follows:

```html
<p>This is some text in a paragraph.</p>
```

We can manipulate words using some tags:

```html
<b> Bold Tag </b>
```

```html
<i> Italic Tag </i>
```

```html
<u> Underline Tag </u>
```

We can insert single line breaks in a text::

```html
<p>To force<br> line breaks<br> in a text,<br> use the br<br> element.</p>
```

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Introduction to web programing

Lists

HTML lists allow web developers to group a set of related items in lists. There are 2 types of lists: (1) unordered; and (2) ordered.

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An unordered list starts with the <ul> tag. Each list item starts with the <li> tag.

An unordered HTML list:

- Coffee
- Tea
- Milk

```
<p>An unordered HTML list:</p>

<ul>

    <li>Coffee</li>

    <li>Tea</li>

    <li>Milk</li>

</ul>
```

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Lists

HTML lists allow web developers to group a set of related items in lists. There are 2 types of lists: (1) unordered; and (2) ordered.

An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.

An ordered HTML list:

1. Coffee
2. Tea
3. Milk

```
<p>An ordered HTML list:</p>

<ol>

    <li>Coffee</li>

    <li>Tea</li>

    <li>Milk</li>

</ol>
```

Tables

HTML tables allow web developers to arrange data into rows and columns.

```
<table>
  <tr>
    <th>Student</th>
    <th>Degree</th>
    <th>Country</th>
  </tr>
  <tr>
    <td>Diego romero</td>
    <td>Computer Science</td>
    <td>Germany</td>
  </tr>
  <tr>
    <td>Marta Cifuentes</td>
    <td>Business and Technology</td>
    <td>Spain</td>
  </tr>
</table>
```

Student	Degree	Country
Diego romero	Computer Science	Germany
Marta Cifuentes	Francisco Chang	Spain

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Links

The <a> tag defines a hyperlink, which is used to link from one page to another. The most important attribute of the <a> element is the href attribute, which indicates the link's destination. Links has a general style which define how they are show in all browsers:

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

```
<a href="https://www.ufv.es">Visit Universidad Francisco de Vitoria</a>
```

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HTML attribute

HTML attributes are special words which provide additional information about the elements or attributes are the modifier of the HTML element. Each element or tag can have attributes (pair id:value).