

Université de Bordeaux
Master Bioinformatique

Initiation au développement Web

HTML 5/CSS 3/Javascript

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Goals

- Know how to write and to edit Web pages in a formatted language.
- Know how to modify the presentation attributes of a Web page.
- Design couleurstyle sheets

Partie 1: Web – Plan

1 HTML

Plan: HTML

1 HTML

- HTML story
- Structure d'un document HTML5
 - Principe des balises
 - En-tête
- HTML5 syntax
 - Page structure
 - Text styling
 - Lists
 - Tables
 - Forms
 - Médias

HTML

Définition (HTML)

HTML (HyperText Markup Language), is a standard language used to describe web pages.

HyperLink : allows to jump from one document to another one.

Today HTML is *de facto* the unique language to describe web pages.

Plan: HTML

1 HTML

- HTML story
- Structure d'un document HTML5
- HTML5 syntax

At the beginning : the text

The 80s : needs to publish, to share and to recover documents.

```
My document title
```

```
A paragraph in my document.
```

```
An another paragraph which mentions another web page.
```

Hypertext Links

End of the 80s : the **hypertext links/anchors**

- Allow to point out to **another page**

```
My document title
```

```
A paragraph in my document.
```

```
An another paragraph which mentions
```

```
<A HREF="http://www.cern.fr">another Web page</A>.
```

(This code is not correct considering the current HTML standard.)

The Tags

1991 : proposition of Tags

```
<TITLE> My document title</TITLE>
```

A paragraph in my document.

```
<P>
```

Un autre paragraphe qui mentionne une

```
<A HREF="http://www.cern.fr">autre page Web</A>.
```

(This code is not correct considering the current HTML standard.)



Tim Berners-Lee

HTML Specifications

- 1995 : specification of HTML 2.0 by **IETF**
 - ▶ *Internet Engineering Task Force* build the Internet standards.
- 1996 : **W3C** (World Wide Web Consortium) manages the standards.
 - ▶ Consortium (421 organisations belong to it in 2016) which create all Web standards.
- 1997-1999 : HTML 4.0 : style sheets design.
- 2008 : publication by W3C of the **first draft** of HTML5 specification.
 - ▶ Beginning of writing of Web pages following the HTML5 pre-specification.
- 2011 : **last call** to contribute to the specification.
- 28th october 2014 : publication of **HTML5 standard** as W3C recommendation.

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HTML Code Validation

Good news/bad news : no respect of HTML syntax don't block your displaying in the browser - at the opposite of a lot of programming languages.

In general, your browser will display something (not specified) or nothing, but never **displays an error**.

HTML Code Validation

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In general, your browser will display something (not specified) or nothing, but never **displays an error**.

Validation


It is mandatory to **validate** your HTML code before to publish it.

Validating by W3C

A necessary tool

- the W3C and Mozilla foundation **validator**.

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

 Markup Validation Service
Check the markup (HTML, XHTML, ...) of Web documents

[Jump To:](#) [Notes and Potential Issues](#) [Congratulations · Icons](#)

This document was successfully checked as HTML5!

Result: Passed, 2 warning(s)

Source:

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Le titre de mon document</title>
  </head>
  <body>
    Ce document est constitué d'une seule phrase.
  </body>
</html>
```

Encoding: utf-8

Doctype: HTML5

Root Element: html



[Try now the W3C Validator Suite™](#) premium service that checks your entire website and evaluates its conformance with W3C open standards to quickly identify those portions of your website that need your attention.

Language with Tags

HTML is based on **tags**.

Two types of tags :

- 1 Tags which are opened then closed and enclose **contents**
 - ▶ Example : `italic stuff`
- 2 Tags which are opened and closed at the same time.
 - ▶ Example : ``

```
<h1>Example of title</h1>
<hr />
<div>
  <p>
    <b>bold</b> text then <em>italic</em> one,
    then <b><em>bold and italic</em></b>.
  </p>
  
</div>
```

Tags and attributes

Some tags can possess **attributes**.

Examples :

- `<meta charset="utf-8" />`
- ``
- `<p style="text-align: right">`
Text right align.
`</p>`

Tags and hierarchy

Tags are structured into a **hierarchy**

Each tag **inherits** properties from the highest level – except if they redefine them.

```
<p>this text is <b>only in bold</b>.</p>  
<p>this text is <b>seulement in bold <i>and  
  this part is in bold and in  italic</i></b>.</p>
```

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this part is in bold and in italic</i></b>.</p>
```

Closing order

It is mandatory to close the tags in the inverse order than they have been open - like parentheses in math.

Comments

Comments are HTML code which are not executed, so **not visible in the browser**.

Syntax : `<!-- Text between comments -->`

```
<h1>A title (which will be display)</h1>
```

```
<p>This sentence will be display in the browser
```

```
  <!-- But this one not-->
```

```
</p>
```

Comments

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```
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```
<p>This sentence will be display in the browser
```

```
  <!-- But this one not-->
```

```
</p>
```

Attention

Comments remain visible in the **source** code of the Web page, which is available from the client part.

- Careful not to leave confidential information inside !

Structure of an HTML document

Two main parts :

- **Header** : definition of the title, coding, key-words, etc.
 - ▶ Information dedicated to the machines (browser, robots, etc.)
- **Body** : Web page contents.
 - ▶ Information dedicated to human beings (and machines)

```
<!DOCTYPE html>
<html>
  <head>
    <!-- Here, the head -->
  </head>

  <body>
    <!-- Here, the body page -->
  </body>
</html>
```

A minimal example (syntax in accordance to HTML5)

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" />
    <title>The title of my document</title>
  </head>

  <body>
    <p>This document contains only one sentence.</p>
  </body>
</html>
```

Document Type Definition

A document compliant to **HTML5** syntax begins always with

```
<!DOCTYPE html>
```

The tag `title` (1/2)

Placed in the document **header**

- between the tags `<head>` and `</head>`

This is the only one mandatory **tag** in header part.

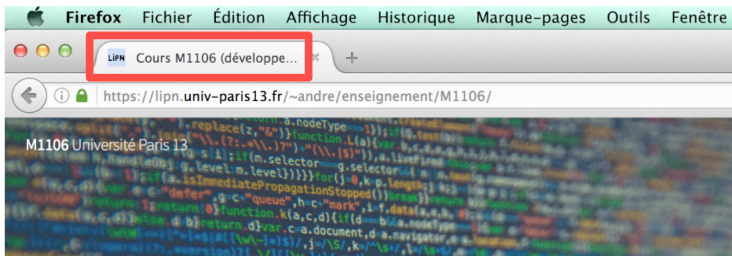
Syntax :

```
...  
  <head>  
    <title>The  title  of my Web page</title>  
  </head>  
...
```


The tag `title` (2/2)

Its content defines the document title

- Previously always displayed in the browser or tab window title.
- Today, less and less
- Improve a lot the referencing



Meta tags

Placed in the **header** of the document

- between `<head>` `</head>` tags

Order is not specified

Allow to give informations to the **browser** and to **search engines**

- Characters coding
- Author, description, key-words of the page

Never displayed on the page directly.

Character Coding

Syntaxe :

```
<meta charset="Coding_Name" />
```

Possible Values

- `utf-8` : unicode (recommended)

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

- `iso-8859-1` : latin alphabet
- and so much

Presence of this tag is not a W3C requirement, but **very strongly recommended** (understand : mandatory).

Complète liste of values :

<https://www.iana.org/assignments/character-sets/character-sets.xhtml>

Description, keywords, author

Syntaxe :

```
<meta name="description" content="Introduction  
to Web development" />  
<meta name="keywords" content="Lecture ,HTML, Licence Parcours  
International" />  
<meta name="author" content="The teacher" />
```

Description, keywords, author

Syntaxe :

```
<meta name="description" content="Introduction  
to Web development" />  
<meta name="keywords" content="Lecture ,HTML, Licence Parcours  
International" />  
<meta name="author" content="The teacher" />
```

Important

Filling these fields is important, not for the user, but for referencing by search engine.

An example of Header

```
<!DOCTYPE html>
<html lang="fr">
  <head>
    <meta charset="utf-8" />
    <meta name="description" content="Une page Web" />
    <meta name="keywords" content="Lecture ,HTML, Licence
      Parcours International" />
    <meta name="author" content="The teacher" />
    <title>Title of my Web page</title>
  </head>

  <body>
    ...
  </body>
</html>
```

Header : good practices

Good practices

In addition to the `<title>` tag, it is strongly advised to specify :

- the encoding (utf-8...),
- the name of the author,
- a short description,
- keywords.

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Sections

`<div>` tag : structuring element in the page

Good practices

The webpage is structured around nested `<div>`

```
<div>  
  <div>  
    <!-- A first part -->  
  </div>  
  <div>  
    <!-- A second part -->  
  </div>  
</div>
```

Paragraphs

`<p>` tag : paragraph

`
` or `
` tags : line breaks

Good practices

The paragraph tags (`<p>`) are preferred over using line breaks (`
`).

```
<div>
  <p>A first paragraph.</p>
  <p>A second paragraph.</p>
</div>
```

Spaces

Spaces in HTML will be displayed on the browser

- Beware not to multiply spaces !

Line breaks in the editor become spaces in the browser.

- Use `<p />` or `
` for line breaks

```
<p>This sentence is displayed on  
one line.<br />This sentence is below.</p>
```

This sentence is displayed on one line.

This sentence is below.

Some special characters

Some characters are **forbidden** in HTML (out of tags)

They require special encoding :

- **<** : `<`
- **>** : `>`
- **&** : `&`

Example :

R&D department

R&D department

Titles

Syntax :

- `<h1>` : first-level title
- `<h2>` : second-level title
- ...
- `<h6>` : sixth-level title

Good practices

It is common to have only one title of level `<h1>`, and to respect the ascending order of levels.

Titles : example

```
<h1>General title</h1>
<h2>A first section</h2>
<p>Introductory text</p>
<h3>A subtitle in the first section</h3>
<h3>Another subtitle in the first section</h3>

<h2>A second section</h2>
```

affichera

General title

A first section

An introductory text

A subtitle in the first section

Another subtitle in the first section

A second section

External hyperlinks

Syntax :

- `Text to display`

Displays :

[Text to display](#)

Two types of hyperlinks :

- **Relative** links

- ▶ Local paths

- ▶ `Text`

Points to the [index.html](#) webpage located in the current directory

- **Absolute**

- ▶ Absolute paths

- ▶ `Text`

Internal hyperlinks

It is possible to link to **another part of the same document**

Syntax to define the place in the document (=destination)

- With the **id** attribute
- Example : `<h2 id="mytarget">My favourite movies</h2>`

Syntax to define the hyperlink :

- `Go back to favourite movies`

Displays :

My favourite movies

...

[Go back to my favourite movies](#)

A more common and detailed example

```
<!DOCTYPE html>
<html>
  <head>
    <title>Document title</title>
    <meta charset="utf-8" />
    <meta name="author" content="Author's name" />
  </head>

  <body>
    <h1>My title</h1>
    <p>A sentence with <a href="index.html">a link</a>.</p>
    <h2>A section</h2>
    <p>Another sentence.</p>
    <h2>A second section</h2>
    <p>Yet another sentence.</p>
  </body>
</html>
```

Colors

Syntax :

- `style="color:COLOR"` attribute
- Used with the `` tag inside a paragraph

▶ `The Big Blue`

- Can be used with `<p>`, `<div>`, etc.

▶ `<p style="color:green">Tabu</p>`

Colors

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Color values :

- **Predefined** : green, blue, red, etc.

▶ See the complete list on :

<http://www.standardista.com/css3/cssnamed-hsl-and-rgb-colors/>

- **Hexadecimal** : `#RRGGBB` format (red green blue)

▶ Example : `#FFFF00` =

Colors

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- `style="color:COLOR"` attribute
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- Can be used with `<p>`, `<div>`, etc.

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Color values :

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<http://www.standardista.com/css3/cssnamed-hsl-and-rgb-colors/>

- **Hexadecimal** : `#RRGGBB` format (red green blue)

▶ Example : `#FFFF00` = yellow

Text styling : CSS

Good practices

In general, text formatting is handled by a separate file : a **CSS stylesheet**.
(explained later)

Lists

Syntax :

```
<p>I like &nbsp; ;:</p>  
<ul>  
  <li>HTML</li>  
  <li>CSS</li>  
</ul>
```

Displays :

Lists

Syntax :

```
<p>I like &nbsp;    </p>  
<ul>  
  <li>HTML</li>  
  <li>CSS</li>  
</ul>
```

Displays :

I like :

- HTML
- CSS

(Default styling for bullets can vary across browsers)

Lists

To note

- 1 Lists can be **nested**.
- 2 Styling for lists can be customized using **CSS stylesheets**.
- 3 It is common to use lists to create **menus** (even though they do not natively resemble lists).

Tables : example (1/2)

Syntax :

```
<table border="1">
  <tr>
    <th>Movie title</th>
    <th>Release date</th>
  </tr>
  <tr>
    <td><em>Drive</em></td>
    <td>2011</td>
  </tr>
  <tr>
    <td><em>The Neon Demon</em></td>
    <td>2016</td>
  </tr>
</table>
```

Tables : example (2/2)

Displays :

Movie title	Release date
<i>Drive</i>	2011
<i>The Neon Demon</i>	2016

A more complex table : syntax (1/2)

Syntax :

```
<table border="1">
  <thead>
    <tr>
      <th colspan="2">Wong Kar-Wai movies</th>
    </tr>
    <tr>
      <th>Year</th>
      <th>Title</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td rowspan="2">1994</td>
      <td><em>Ashes of Time</em></td>
    </tr>
```

A more complex table : syntax (2/2)

```
<tr>
  <td><em>Chungking Express</em></td>
</tr>
<tr>
  <td>2000</td>
  <td><em>In the Mood for Love</em></td>
</tr>
</tbody>
</table>
```

A more complex table : display

Displays :

Wong Kar-Wai movies	
Year	Title
1994	<i>Ashes of Time</i>
	<i>Chungking Express</i>
2000	<i>In the Mood for Love</i>

Forms principle

Aim

To pass information from the current webpage to **another webpage**.

Forms principle

Aim

To pass information from the current webpage to **another webpage**.

Examples :

- Input of username and password

Forms principle

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To pass information from the current webpage to **another webpage**.

Examples :

- Input of username and password
- Search

Forms principle

Aim

To pass information from the current webpage to **another webpage**.

Examples :

- Input of username and password
- Search
- Sending messages on social networks

Form example

```
<form action="process.php">
  <fieldset>
    <legend>Your personal data</legend>
    <p><label for="name">Name</label>
      <input type="text" name="name" id="name" placeholder="
        Your name"></p>

    <p><label for="ddn">Birth place</label>
      <input type="date" name="ddn" id="ddn"></p>

    <p><label for="psd">Password</label>
      <input type="password" name="psd" id="psd" placeholder="
        Your password"></p>

    <p><button type="submit" role="button" aria-disabled="
      false">Send</button></p>

  </fieldset>
</form>
```

Form example : display

Displayed in Mozilla Firefox 109.0.1 (without spreadsheet)

Your personal data

Name

Birth place 

Password

Forms : good practices

- It is recommended to add a `label` to each field in the form
- The `for` attribute from `label` refers to the `id` of the corresponding field
- These identifiers should not contain any spaces. They are not displayed in the webpage.
- The `placeholder` attribute contains the default text and can be modified
- The `<fieldset>` tag allows for a more pleasant rendering

Forms : capabilities

Numerous fields are available :

- Check boxes (`checkbox`), radio buttons (`radio`), text areas (`textarea`), selections (`select`), button bars (`toolbar`), files to download/upload (`file`), etc.
- Alternatives to `text` : `tel`, `email`, `url`, `date`, `color`, etc.

See for instance :

<http://dmouronval.developpez.com/> (CC BY)

Images

Syntax :

```

```

Most image extensions are compatible with HTML5 : (.jpg, .png, .gif, etc.).

Example :

```

```

Attention : texte de remplacement

Alternative text (alt attribute) is mandatory.

It is displayed by the browser if the image is not found (missing file), or in certain specific instances (Web browser for visually-impaired people).

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