

Université de Bordeaux
Licence Parcours International

Initiation au développement Web

HTML 5/CSS 3/Javascript

Marie Beurton–Aimar, Florent Grélard

`florent.grelard@u-bordeaux.fr`

`https://fgrelard.github.io/#teaching`

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Aim

- 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

Plan: CSS

1 HTML

2 CSS

- CSS3 Syntax
- Principles
- Selectors
- A few properties
- An example

CSS

Définition (CSS)

CSS (*Cascading Style Sheets*) is a language to stylize and format HTML pages.

Standard developed by W3C.

CSS is incremented by **levels** and not by versions

- Current level 3 reuses and extends levels 1 and 2

CSS

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CSS (*Cascading Style Sheets*) is a language to stylize and format HTML pages.

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CSS is incremented by **levels** and not by versions

- Current level 3 reuses and extends levels 1 and 2
- Different from HTML! (HTML versions are different from previous ones)

Principle : separating content from style

Principle

The idea is to separate the content (HTML) from the style (CSS).

CSS stylesheets shape HTML pages. They can be reused for different HTML webpages.

Good practices

A well-designed HTML site should not contain any style information in HTML code.

Plan: CSS

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- An example

Simple example

HTML :

```
...  
<h1>Happy Together</h1>  
<p>Wong Kar-Wai movie  
directed in 1997</p>  
...
```

CSS sheet :

```
body {  
    color: #000080;  
}  
  
h1 {  
    font-weight: bold;  
    font-style: italic;  
    color: red;  
    font-size: 24px;  
}
```

Displays :

Simple example

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Displays :

Happy Together

Wong Kar-Wai movie directed in 1997

General syntax for a CSS stylesheet

Selector

```
h1 {  
    font-weight: bold;  
  
    font-family: Times New Roman, Times, serif;  
}
```

Diagram illustrating the general syntax for a CSS stylesheet:

- Selector**: `h1`
- Property**: `font-weight`
- Value**: `bold`
- Property**: `font-family`
- Values**: `Times New Roman, Times, serif`

Remarques :

- File extension : `.css`
- CSS : no header or body
- Syntax is not sensitive to line breaks or adding spaces
 - ▶ Nevertheless, **indentation is strongly recommended** !

Style inside or outside HTML ? (1/2)

Bad :

```
<h1 style="color:red">Happy Together</h1>
```

Less bad :

```
<head>
...
  <style type="text/CSS" >
    h1 {color:red;}
  </style>
...
</head>
<body>
  <h1>Happy Together</h1>
</body>
```

Style inside or outside HTML ? (2/2)

Good :

```
<head>
...
<link rel="stylesheet" type="text/css"
      media="screen" href="mystyle.css" />
...
</head>

<body>
  <h1>Happy Together</h1>
</body>
```

...where `mystyle.css` is a **separate file** defining properties of `<h1>` (in this case).

Comments

Comments are CSS code which are not executed ; they are **not taken into account by the web browser**

Syntax : `/* Commented text */`

```
body {  
  color: #000080; /* the main text color */  
  /* text-decoration: line-through; */  
}
```

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```

Warning

Comments are still visible in the **source code** of the CSS file, and by the user.

- Beware not to leave confidential information (passwords, address...)

W3C validator

Just like for HTML, W3C and Mozilla designed a CSS3 code validator.

<http://jigsaw.w3.org/css-validator/>

Plan: CSS

1 HTML

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- CSS3 Syntax
- Principles
- **Selectors**
- A few properties
- An example

Selectors

A selector is a pattern used to **select the HTML elements** you want to style.

- The targetted HTML elements are the **subject** of the selector.
- Can be based on **various rules** : tag, attributes, identifier, class, (pseudo-class) or any combination of those...

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Tags

- HTML : ` some text `
- CSS : `span { ... }`
- All `` HTML tags are affected

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Tags

- HTML : ` some text `
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- All `` HTML tags are affected

Attributes

- HTML : ` `
- CSS : `a[href] { ... }`
- Affects all `<a>` tags with `href` attribute.

Identifiers and classes

Identifiers

- HTML : `<h1 id="title">`
- CSS : `h1 #title { ... }`
- **Unique** : only one `id=titre` identifier in the HTML page

Classes

- HTML : `<h1 class="title">`
- CSS : `h1 .title { ... }`
- **Multiple** classes are allowed : different HTML tags can share the same class.

Identifiers and classes : example

HTML :

```
<h2 id="first">As Tears Go By</h2>
<h2>Wild years</h2>
<h2 class="blue">Ashes of Time</h2>
<h2>Chungking Express</h2>
<h2 class="blue">Fallen Angels</h2>
```

CSS stylesheet :

```
h2 {
  font-style: italic;
}
#first {
  color: red;
}
.blue {
  color: blue;
}
```

Identifiers and classes : display

As Tears Go By

Wild years

Ashes of Time

Chungking Express

Fallen Angels

Inheritance

CSS properties are inherited from **parent properties**.

Inheritance by listing properties :

- `h2 #first` inherits from `h2`
- `h2 .blue` inherits from `h2` (but not from `h2 #first`)

Inheritance by parent properties in the HTML document :

- `h2` inherits from `body`

Selector combination

Different syntax can be applied to combine various rules.

Selectors can be tags, classes, identifiers or attributes :

- `selector1, selector2` : select all `selector1` and `selector2` elements.
- `selector1.class1` : select `selector1` which have a class `class1`.
- `selector1 selector2` : select `selector2` which are descendants of `selector1`.
- `selector1 > selector2` : select `selector2` which are direct children of `selector1`.
- `selector1 + selector2` : select `selector2` which are adjacent siblings to `selector1`.
- `selector1 ~ selector2` : select `selector2` which are general siblings to `selector1`.

Selector combination : example

HTML :

```
<h1> Loch Ness Monster </h1>
<h2 class="subsection"> Story
  </h2>
  <div>
    <p class="desc">
      Some text that I want to
      <span id="emph"> highlight
        : </span>
      <a class="desc">link</a>
    </p>
  </div>
  <div>
    <p> Another paragraph </p>
  </div>
```

CSS stylesheet :

```
h2.subsection {
  font-style: italic;
}
.desc {
  color: black;
}
div > .desc {
  color: blue;
}
h2 + div {
  text-align: center;
}
p#emph {
  color: orange;
}
```

Selector combination : display

Displays :

Loch Ness Monster

Story

Some text that I want to highlight: [link](#)

Another paragraph

Specificity

Specificity is the algorithm used to determine **which rule to apply to each element** in the HTML page.

For each CSS rule it counts three parameters, **from more to less important** :

- 1 number of ids
- 2 number of classes, attributes and pseudo-classes
- 3 number of tags

Example : the rule `div > p.frontpage #intro` converts to 1 - 1 - 2.

To choose which rule applies, the numbers are compared from left to right, until a difference is found. **The greater number wins.**

Pseudo-classes and pseudo-elements

Pseudo-classes and **pseudo-elements** are CSS selectors which help to qualify CSS elements based **on their state** or **hierarchy** in the HTML page.

CSS : **a: hover** {...}

This allows to stylize links differently when the cursor is over it.

A few useful pseudoclasses : **:first-child**, **:nth-child()**, **:hover**

A few useful pseudoelements : **::before**, **::after**, **::first-letter**,
::first-line

Plan: CSS

1 HTML

2 CSS

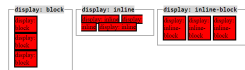
- CSS3 Syntax
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Display

The **display** property controls how the element and its children are rendered in the webpage.

It can take the following values :

- **none** : the element is not visible
- **inline** : align without linebreaks, cannot change width
- **block** : align with line breaks, can change width
- **inline-block** : align without linebreaks, can change width
- **grid** : displays all children inside a grid.



Properties : styles

- Property **font-size**
 - ▶ Predefined absolute values : **xx-small**, **x-small**, **medium**, **large**, **x-large**, **xx-large**
 - ▶ Predefined relative values : **smaller**, **larger**
 - ▶ Numerical value : x units, where $\text{unit} \in \{\text{pt}, \text{px}, \text{em}, \%\}$
- Property **font-weight** : controls how thick the font appears
 - ▶ Predefined values : **lighter**, **normal**, **bold**, **bolder**
 - ▶ Numerical values : $x \in [0; 1000]$ (1000 being the “boldest” typography)
- Property **font-style** : **slanting of the font**
 - ▶ Predefined values : **normal**, **italic**, **oblique**
- Property **text-decoration** : **font decoration (underline, overline...)**
 - ▶ Predefined values : **underline**, **overline**, **line-through**, **none**

Properties : font

- Property `font-family` :
 - ▶ Families : serif, sans-serif, `mono`, `monospace`
 - ▶ Font name : `Arial`, `Courier New`, `Courier`, `Helvetica`, `Times New Roman`, `Times`, and many others

Quick brown fox	Quick brown fox	Quick brown fox
serif	sans-serif	monospace

Good font practices

- 1 Titles are often displayed in `sans-serif`, and body in `serif`.
- 2 The number of fonts used in a document should be limited (1-2).

Properties : units

- **Absolute** units : cm, mm, in, pt, px
 - ▶ $1\text{in} = 2.54\text{cm} = 25.4\text{mm} = 72\text{pt}$
 - ▶ **px** : relative to the viewing device : $1\text{px} = \text{size of one dot in the viewing device.}$

Properties : units

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 - ▶ 1in = 2.54cm = 25.4mm = 72pt
 - ▶ **px** : relative to the viewing device : 1px = size of one dot in the viewing device.
- **Relative** units : em, vh, vw, %.
 - ▶ **em** : relative to the parent font size : 1em = 100% of the parent font size.
 - ▶ **vw, vh** (viewport width/height) : relative to the width of the viewing device : 1vw : 1% of the viewport width.
 - ▶ **%** : relative to the parent element size

Properties : units

- **Absolute** units : cm, mm, in, pt, px
 - ▶ $1\text{in} = 2.54\text{cm} = 25.4\text{mm} = 72\text{pt}$
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 - ▶ **vw, vh** (viewport width/height) : relative to the width of the viewing device : $1\text{vw} : 1\%$ of the viewport width.
 - ▶ **%** : relative to the parent element size

Good practices

- In most cases, **relative units** are used.
- For **font sizes**, use **em**.
- For **spacing**, use **%**, **vh** and **vw**.

Properties : colors

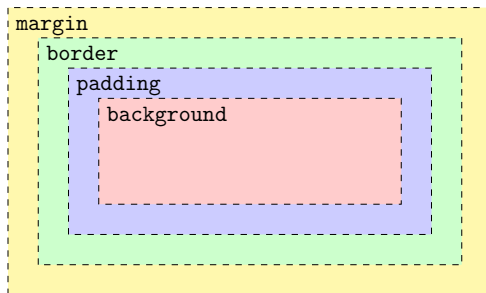
- Property `color` : text color

- ▶ Predefined colors : `red`, `blue`, `green`, `orange`, etc.
 - ★ Detailed list at : web-color.aliasdmc.fr/
- ▶ User-defined values :
 - ★ Hexadécimal : `#RRGGBB`
 - ★ RGB : `rgb(r, g, b)` with values ranging from 0 to 255
 - ★ RGB : `rgb(r%, g%, b%)` with values ranging from 0 to 100
 - ★ RGB + alpha : `rgba(r, g, b, a)` with values ranging from 0 to 255, and transparency (`a`) from 0 and 1
 - ★ HSL (hue / saturation / light) : `hsl` et `hsla`
- ▶ Gradients : `linear-gradient(color1 0%, color2 100%)`. Use e.g. <https://cssgradient.io/> for ease of use.

Margin and borders

Every HTML element is contained inside a **box**, which is defined by :

- content area (**background**)
- internal area (**padding**)
- the border (**border**)
- the exterior margin (**margin**)



Margins and borders : example

`<p class="orangebox">`This small example comes from the Wikibook on CSS (Cascading Style Sheets)`</p>`

```
p .orangebox {  
  border: 1px dotted black;  
  padding-top: 1em;  
  padding-right: 2em;  
  padding-bottom: 3em;  
  padding-left: 4em;  
  background-color: #fc9;  
  width: 10em;  
  text-align: justify  
}
```

This small example
comes from the
Wikibook on CSS
(Cascading Style Sheets)

Recap : commonly used properties

- `display` : to change how elements are distributed inside the page.
- `font-style`, `font-family`, `font-weight` : font styling
- `text-align` : align the text inside the parent element (values=left, right, center, justify.)
- `width` : specify the width (in units) of a HTML element
- `color` : text color
- `background-color` : background color
- `padding/margin` : spacing (in units)
- `border` : syntax : *size style color*

Recap : commonly used properties

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- `color` : text color
- `background-color` : background color
- `padding/margin` : spacing (in units)
- `border` : syntax : *size style color*

Further reading...

CSS has a lot of capabilities : use the CSS documentation to find out about other properties. <https://www.w3schools.com/cssref>

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Without CSS

Mount Fuji



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- [Description](#)
- [Hiking trails](#)

Location

[Google Maps](#)

Description

Mount Fuji (富士山, Fujisan), or Fugaku, located on the island of Honshū, is the highest mountain in Japan, with a summit elev (after Mount Kerinci on the island of Sumatra), and seventh-highest peak of an island on Earth. Mount Fuji is an active strato

The mountain is located about 100 km (62 mi) southwest of Tokyo and is visible from there on clear days. Mount Fuji's except used as a cultural icon of Japan and it is frequently depicted in art and photography, as well as visited by sightseers, hikers a

Hiking trails

Trail	Opening period	Remarks
Yoshida trail	July 1 - September 10	The descending trail will remain open until September 11 morning
Subashiri trail		
Gotemba trail		
Fujinomiya trail		

Same example with CSS

Mount Fuji



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Location



Description

Mount Fuji (富士山, Fujisan), or Fugaku, located on the island of Honshū, is the highest mountain in Japan, with a summit elevation of 3,776.24 m (12,389 ft 3 in). It is the second-highest volcano located on an island in Asia (after Mount Kerinci on the island of Sumatra), and **seventh-highest peak** of an island on Earth. Mount Fuji is an active stratovolcano that last erupted from 1707 to 1708.

The mountain is located about 100 km (62 mi) southwest of Tokyo and is visible from there on clear days. Mount Fuji's exceptionally symmetrical cone, which is covered in snow for about five months of the year, is commonly used as a **cultural icon of Japan** and it is frequently depicted in art and photography, as well as visited by sightseers, hikers and mountain climbers.

Hiking trails

Trail	Opening period	Remarks
Yoshida trail		The descending trail will remain open until September 11 morning
Subashiri trail	July 1 - September 10	
Gotemba trail		
Fujinomiya trail		

References

References

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