



Web programming

Cascading Style Sheet (CSS)

Presentation style problems

- HTML tags allows to specify
 - The logical structure of the document (e.g. paragraphs, titles)
 - Some aspects of the presentation (e.g. color, fonts)
- The browser was charged of all the other presentation aspects (e.g. margins, line spacing)
- The necessity to improve the presentation of web pages brought to complex and non standard solutions:
 - Proprietary extension of HTML
 - Massive use of tables, images used for spacing

Cascading Style Sheets - CSS

- Introduced with HTML 4 for
 - Improve the description of the presentation/style
 - Improve the separation between content and presentation
- The specifics for the presentation can be written in different languages
 - The W3C defined the **CSS: Cascading Style Sheet**
 - W3C: World Wide Web Consortium defines the standard technologies that compose the web

Style specifics

- Style specifics can be defined both in the HTML document than in separate files.
- **In-line style:** the style is specified in the HTML tags as element's attribute.
 - **Internal style:** the style is specified in the HTML document in the header section.
 - **External style:** the style is specified in external ".css" files.

In-line style

➤ The style is specified i the HTML elements with the attribute **style**:

```
<html>
  <body>
    <p style="font-size: 12pt; color: red"> Paragrafo di Prova. </p>
  </body>
</html>
```

Paragrafo di Prova.

Internal style

➤ The style can be defined internally to the HTML document in the HEAD section with the element **style**.

```
<html>
  <head>
    <style type="text/css">
      p {font-size: 12pt; color: red;}
    </style>
  </head>
  <body>
    <p> Paragrafo di Prova. </p>
    <p> Paragrafo di Prova2. </p>
  </body>
</html>
```

Paragrafo di Prova.

Paragrafo di Prova2.

External style

- External style is specified in files called style sheets with the “.css” extension. example: mystyle.css

```
mystyle.css x
1
2 p {font-size: 12pt; color: red}
3
```

- The style can be included in the HTML page with the **link** element in the HEADER section
- The **href** attribute allow to specify the path (relative path) to the style sheet.

```
<html>
  <head>
    <link href="resources/mystyle.css" rel=stylesheet type="text/css">
  </head>
  <body>
    <p> Stile Esterno. </p>
  </body>
</html>
```

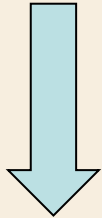
Path

Stile Esterno.

Style hierarchy

➤ The CSS styles are applied with the following hierarchy

External



Internal

1. External style
2. Internal style with tag `<style>`
3. In-line style with the style attribute in each HTML element

➔ In case of conflicts **the most internal rule** is applied

CSS rules

➤ A CSS rule has the following structure

`p {text-alignment:center;color=red}`

Selector Attribute Value

➤ The selector specifies which region of the HTML document should be affected by the style

➤ Rules are contained

- Between `"` if style is defined in-line
- Between `{}` otherwise

➤ Selector for HTML **elements**:

- The style is applied to all the elements with the name specified in the selector (e.g. all the paragraphs **<p>**)

```
mystyle.css x
1
2 p {font-size: 12pt; color: red;}
3
```

```
<html>
  <head>
    <link href="mystyle.css" rel="stylesheet" type="text/css">
  </head>
  <body>
    <p> Stile Esterno. </p>
  </body>
</html>
```

Stile Esterno.

➤ Selector for HTML element **class** :

- The class can be used to identify multiple elements.
- In CSS the class is identified with “.<class-name>”

```
mystyle_class.css x
1
2 .centro {
3   text-align: center;
4   color: blue;
5 }
6

<html>
  <head>
    <link href="mystyle_class.css" rel="stylesheet" type="text/css">
  </head>
  <body>
    <h1 class="centro">Titolo centrato</h1>
    <p class="centro">Capoverso centrato</p>
  </body>
</html>
```

Titolo centrato

Capoverso centrato

CSS rules

➤ Selector for HTML element **ID**:

- The ID is used to identify a specific **element**.
- In CSS the ID is identified with "#<ID-name>"

```
mystyle_id.css x
1
2 #para{ text-align: center; color: blue;}
3
```

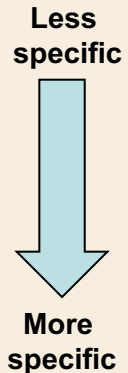
```
<html>
  <head>
    <link href="mystyle_id.css" rel="stylesheet" type="text/css">
  </head>
  <body>
    <p id="para">Ciao a tutti!</p>
    <p>Parte in stile differente</p>
  </body>
</html>
```

Ciao a tutti!

Parte in stile differente

Selector hierarchy

➤ The CSS styles are applied accordingly to the selector with the following hierarchy



1. Element selector
2. Class selector
3. ID selector
4. In-line style

➔ In case of conflicts the most specific rule is applied

Some CSS attributes

➤ background-color

- The color can be specified:
 - With the namees. Red
 - as RGB decimals es. `rgb(255,0,0)`
 - as RGB exadecimals, es. `#FF0000`

Examples:

```
h1 {background-color:#6495ed;}
```

```
p {background-color:#e0ffff;}
```

Some CSS attributes

➤ background-image

- It specifies the image URL to use as background
e.g. `body{background-image:url("logo_poli.png");}`

➤ background-repeat

- It allows to repeat the background vertically or horizontally

e.g. `body {background-image:url("logo_poli.png");background-repeat:repeat-x;}`

Results



Other attributes

➤ Other attributes are

- **text-align**: Specifies the horizontal alignment of text
- **color**: Sets the color of text
- **font-family**: Specifies the font family for text
- **font-size**: Specifies the font size for text
- **height**: Sets the height of an element
- **width** : Sets the width of an element

➤ Others attributes available at :

- <https://www.w3schools.com/css/>

Debugging tools

- Modern browsers integrates tools for HTML, CSS and Javascript debugging for the visualized page
- This debugging tools are useful to identify problems in the HTML page
 - In the HTML of the page
 - In the use of style sheets (CSS)
- Usually they are available with a right click on the page selecting the option “**inspect**”

Debugging tools

Stile Esterno.

Selected elements

Rules in conflict

Styles Computed Event Listeners DOM Breakpoints

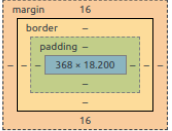
element.style {
color: red;
}

#pluto {
color: orange;
} mystyle_gararchia.css

.pippo {
color: green;
} mystyle_gararchia.css

p {
color: blue;
} mystyle_gararchia.css

p {
display: block;
margin-block-start: 1em;
margin-block-end: 1em;
margin-inline-start: 0px;
margin-inline-end: 0px;
} user agent stylesheet



Style rules

Front-end framework - Bootstrap

➤ Bootstrap is an open-source front-end framework

- It is a collection of CSS classes and JavaScript functions ready to use
 - For: grid layout, tables, forms, typography, panels and more.
- Its components follow the property of responsive designs
 - Responsive Design is about using CSS and HTML to resize, hide, shrink, enlarge, or move the content to make it look good on any screen
- It is extensible and personalizable
- And much more ...

➤ Documentation is available on:

- <https://getbootstrap.com/docs/4.0>
- <https://www.w3schools.com/bootstrap4/>

Front-end framework - Bootstrap

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"></script>
</head>
<body>

<div class="jumbotron text-center">
<h1>My First Bootstrap Page</h1>
<p>Resize this responsive page to see the effect!</p>
</div>

<div class="container">
  <div class="row">
    <div class="col-sm-4">
      <h3>Column 1</h3>
      <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
      <p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
    </div>
    <div class="col-sm-4">
      <h3>Column 2</h3>
      <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
      <p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
    </div>
    <div class="col-sm-4">
      <h3>Column 3</h3>
      <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit...</p>
      <p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...</p>
    </div>
  </div>
</div>
</body>
</html>
```

Import Bootstrap CSS

Bootstrap CSS classes

Result Size: 768 x 815

My First Bootstrap Page

Resize this responsive page to see the effect!

Column 1

Lorem ipsum dolor sit amet, consectetur adipisicing elit...

Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...

Column 2

Lorem ipsum dolor sit amet, consectetur adipisicing elit...

Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...

Column 3

Lorem ipsum dolor sit amet, consectetur adipisicing elit...

Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris...

https://www.w3schools.com/bootstrap4/tryit.asp?filename=trybs_default&stacked=h