

# Cascading Style Sheets

Overview.....	2
Creating a Style Rule.....	2
Location of Styles.....	2
Which Style Wins! .....	3
What does cascading mean? .....	5
CSS Versions .....	5

## Overview

Cascading Style Sheets (CSS for short) allow styling like fonts, colours, margins and padding to be added to HTML documents. In the words of the W3C, “Cascading Style Sheets (CSS) is a simple mechanism for adding style (e.g., fonts, colors, spacing) to Web documents.” CSS can be used to style other types of documents including SVG (Scalable Vector Graphic which are XML-based vector images).

CSS was designed to separate the document’s content from its presentation. Having both in the same file was fine when the amount of styling options was limited but as styling improved, the HTML page became very complex with content, mark-up and styling all together. The current view is that a basic HTML page should contain content and html mark-up only. Styling should be kept to a separate file or stylesheet which uses the extension `.css`.

The styling of the page is handled through CSS. In the words of the W3C, “The separation of HTML from CSS makes it easier to maintain sites, share style sheets across pages, and tailor pages to different environments.”

## Creating a Style Rule

The two parts are the *Selector* and the *Declaration*. Examples of *Selectors* are tags like `<div>` and `id`.

The *Selector* tells us which element(s) the style is being applied to. For example a selector for paragraphs would use `p` as the selector. A selector for elements with a class=`“fourCol”` would use `.fourcol` as the selector.

The *Declaration* consists of a property and value separated by a colon:

- |             |            |
|-------------|------------|
| i) property | color      |
| ii) colon   | :          |
| iii) value  | rgb(0,0,0) |

If there are multiple declarations in a block, a semi-colon (;) is inserted to separate each declaration. An example of a CSS style for `“p”` elements is:

Selector:	p
Margin declaration:	margin: 2pt solid, #000
Text alignment declaration:	text-align: right

```
Gives:  p {
        margin: 2pt solid #000;
        text-align: right;
    }
```

## Location of Styles

Styles are best located in a separate file, e.g. `styles.css`. This is referred to as an “External” stylesheet. Good house-keeping would mean keeping all styles sheets in a separate folder like `“\css”`.

Style sheets are linked to the HTML document using the `<link>` tag. An example of this for a css file called `styles` located in a folder called `css` is:

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

This link is placed in the head of the html document.

Aside from linking, stylesheets can be imported into a document using *@import*. They are added in the `<style>` tag in the `<head>` of the document as shown:

```
<style type="text/css">
    @import url("styles.css") tv, print;
</style>
```

The *@import* can also be used in an external stylesheet. The following line could be added at the top of a stylesheet called *styles.css*, just after the opening:

```
@import url('typography.css');
```

This would mean that the styles in the stylesheet, *typography.css* are now available within the stylesheet *styles.css*. In the HTML document, a link to *styles.css* would mean that all styles in *styles.css* and those in *typography.css* are available to the HTML document.

### Alternative locations:

Styles can be located “Inline” in the *HTML* file using the *style* attribute of a tag. An example of this for the paragraph tag is:

```
<p style="color: rgb(150,150,150)">
```

This style would make the paragraph text a light grey colour.

Styles can also be located in the `<head>` tag of the *HTML* file. When located there they are placed inside the `<style>` tag.

```
<style type="text/css">
    p {color: rgb(150,150,150)}
</style>
```

It is better practice to reference both stylesheets using multiple `<link>` elements in the main HTML page `<head>` section, as both can be downloaded at the same time.

## Which Style Wins!

Where there are multiple styles applying to one element/tag, what is the priority that determines which style is applied?

In short, the browser:

- 1) gathers all rules that apply to the selector
- 2) sorts them by origin (inline, internal, external, browser) and importance
- 3) sorts by the *Specificity* of the CSS selector
- 4) sorts by order specified e.g. line 99 or 100

It then applies the appropriate rule.

The priority of one rule over another is determined by a number of factors.

- i. First, the browser looks for all style declarations for the assigned media type (screen, print, etc) that apply to the element.
- ii. It checks where each rule was declared? Browsers own styling carries the least importance in the pecking order. The following lists the sources of CSS from least to greatest importance:
  1. user-agent:
    - a. the browsers (user-agent) styles
    - b. user style which some browsers allow users create
  2. author:
    - a. external style sheets
    - b. internal style sheets in the head of the HTML document
    - c. inline styling using the style attribute of a tag in the body of the HTML document
  3. all of the above groups can be overridden by the use of the keyword “!important” when declaring a property, e.g.
 

```
color: rgb(0,0,0)!important;
```

    - a. Author style with “!important”
    - b. User style with “!important”

See: <http://www.w3.org/TR/CSS21/cascade.html#cascading-order>

iii. Specificity:

1. Where a tag like <div> has an ID and Class applied e.g.
 

```
<div class=" fourCol" id="narrowbox">
```

 the properties of the ID take precedence over the properties of the Class because of *Specificity*.
2. Some refer to Specificity as weighting. The follow table is used to determine the weighting. It is the “tie-breaker”. The item with the biggest weighting is the “Inline Style”.

Item	Value
Element, Pseudo Element	(0,0,0,1)
<u>Class</u> , Pseudo class, Attribute	(0,0,1,0)
<u>ID</u>	(0,1,0,0)
Inline Style	(1,0,0,0)

If a tag has both a Class and an ID and font colour is declared in both, the font colour declared in the ID is applied because of *Specificity*.

3. Where rules have the same specificity the one declared last in the style sheet gets priority. In other words the one on line 100 will take priority over the one on line 99.

The following table shows how the rendering engine weighs up styles:

	Lowest Importance	----->		Highest Importance
<b>Ownership</b>	Browser Defaults	Reader's Style Sheet		Author's Style Sheet
<b>Location</b>	Linked Style Sheet	Embedded Style Sheet		Inline Styles
<b>Specificity</b>	Element	Class	ID	Inline style

## What does cascading mean?

Styles applied to HTML pages are located in a variety of places like browsers, external style sheet and styles declared in the HTML document.

They are "Cascading" in the sense that more than one *Stylesheet* rule could apply to a particular piece of HTML, so there has to be a way of determining which specific stylesheet rule to apply to which piece of HTML.

The rule used is chosen by cascading down from the more general rules to the specific rule required. The most specific rule is chosen.

To quote an article on the W3C site, "A fundamental feature of CSS is that more than one style sheet can influence the presentation of a document. This feature is known as cascading because the different style sheets are thought of as coming in a series."

Source: <http://www.w3.org/Style/LieBos2e/enter/>

## CSS Versions

### CSS 1

Author: Håkon Wium Lie, Bert Bos

Published: December 1996

The first CSS specification described a simple formatting model for screen-based presentations. It had around 50 properties including:

Property	Elements applied to
margin-top	Block level
padding	Block level
height	Block-level
list-style	Elements with 'display' value 'list-item'

It enabled styling with properties for:

- Typeface (Font choice) and emphasis (bold, italics)
- Color of text, backgrounds, and other elements
- Spacing between words, letters, and lines of text
- Alignment of text, images, tables and other elements
- Margin, border, padding

and the ability to positioning elements using properties like margin, padding, float and 'background-position.

The W3C no longer maintains the CSS 1 Recommendation.

## CSS 2

Author: Bert Bos, Håkon Wium Lie, Chris Lilley, Ian Jacobs

Published: May 1998

CSS2 included all CSS1 properties and it added around 70 of its own.

New in CSS2 were capabilities included:

Property	Elements applied to
positioning	All elements but not to generated content
z-index	Positioned elements
page-break-before	Block level elements
shadows	All elements

It added the styling properties of:

- absolute, relative, and fixed positioning of elements
- z-index
- font shadows

and the concept of media types.

The W3C no longer maintains the CSS 2 recommendation.

## CSS 2.1

Author: Bert Bos, Tantek Çelik, Ian Hickson, Håkon Wium Lie

Published: June 2011

This version of CSS:

- fixed errors in CSS 2
- removed poorly supported or not fully interoperable features
- added already-implemented browser extensions to the specification

<b>Property</b>	<b>Elements applied to</b>
font-family	All elements
font-style	All elements
color	All elements
background-image	All elements

### [CSS 3](#)

CSS 3 is divided into modules each of which progress individually and can become recommended individually. There is no longer an expectation of publishing a single paper on CSS. Because of this,

Due to the modularization, different modules have different stability and statuses. There are currently (May 2014), over sixty CSS modules published from the CSS Working Group, and seven of have been published as formal recommendations. Four examples are:

- Color
  - Editors: Tantek Çelik, Chris Lilley, L. David Baron
  - Additional Authors: Steven Pemberton, Brad Pettit
  - Elements applied to: All elements
- Style Attributes
  - Editors: Tantek Çelik, Erika J. Etemad (Mozilla)
  - Previous Authors: Bert Bos, Marc Attinasi
  - Elements applied to: Most elements
- View Mode
  - Editors: Robin Berjon, RobinekoMarcos Cáceres
  - Elements applied to: -
- Media Queries

- Editors: Florian Rivoal
- Previous Authors: Håkon Wium Lie, Tantek Çelik, Daniel Glazman, Anne van Kesteren
- Elements applied to: -

**Sources:**

- <http://www.blooberry.com/indexdot/history/css.htm>
- <http://www.w3.org/Style/LieBos2e/history/Overview.html>
- <http://www.w3.org/TR/REC-CSS1/>
- <http://www.w3.org/TR/2008/REC-CSS2-20080411/>
- <http://www.w3.org/TR/CSS2/>
- <http://www.w3.org/Style/CSS/current-work>
- <http://www.w3.org/Style/CSS/members>
- [http://en.wikipedia.org/wiki/Cascading\\_Style\\_Sheets](http://en.wikipedia.org/wiki/Cascading_Style_Sheets)