Web Design and Programming

Lecture 7:

Cascading Style Sheets

Assoc. Prof.
Ali A. Al-Ani

UNIVERSITY OF DIYALA

Web Document

- *When we examine the elements of the web document construction, it can consist of up to three layers* ***content (HTML)****,* ***presentation (CSS)****, and* ***behavior (JavaScript).***
- ***Note:*** *It's possible to embed all three layers within the same document, but keeping them separate gives us one valuable advantage:* ***we can modify or replace any of the layers without having to change the others.***

5/14/2022
Department of Computer Science
College of Science

Cascading Style Sheets

- ***HTML*** *contain presentational element that specify the appearance of the text, such as* ***<b>*** *and* ***<i>*** *that can be used to control the presentation of text. However, as these types of elements* ***embedded*** *within the* ***HTML layer****, they remove any advantage that may we gained by keeping the* ***layers separated****.*
- ***CSS is a separate language with its own syntax. It is the recommended way to control the presentation layer in a web document. The main advantage of CSS over presentational HTML markup is that the styling can be kept entirely separate from the content.***

UNIVERSITY OF DIYALA

Cascading Style Sheets

- ***Cascading style sheets (CSS)*** *are the modern standard for website presentation. When combined with* ***HTML****,* ***cascading style sheets provide Internet browsers with the information that enables them to present all the visual aspects of a web document.***
- *Cascading style sheets apply things such as* ***borders, spacing between paragraphs, headings or images, control of font faces or font colors, background colors and images, textual effects such as underlined or strike-through text, layering, positioning, and a number of other presentational effects.***

Cascading Style Sheets: Benefits

- ***By externalizing the presentation layer using CSS, CSS offers a number of significant benefits:***

1. *All styling is kept in a limited number of style sheets. This give a positive impact on site maintenance, e.g. editing one style sheet is more efficient than editing 10,000 HTML files!*
2. *Since the style sheet is **cached** after the first request and can be reused for every page on the site, it doesn't have to be downloaded with each web page. Removing all presentational markup from your web pages also reduces their size and bandwidth usage by more than 50% in many documented cases.*

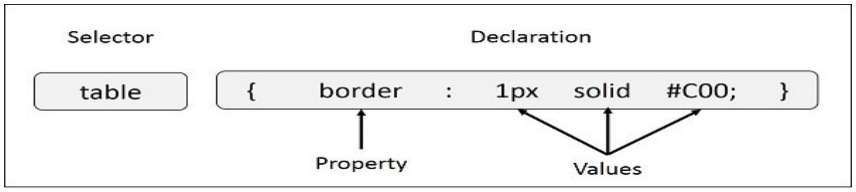
UNIVERSITY OF DIYALA

Cascading Style Sheets: Versions

1. ***level 1 (CSS1)** was came out of W3C as a recommendation in December 1996. This version describes the CSS language as well as a simple visual formatting model for all the HTML tags.*
2. ***level 2 (CSS2)** was became a W3C recommendation in May 1998 and builds on CSS1. This version adds support for media-specific style sheets e.g. printers and aural devices, downloadable fonts, element positioning and tables.*
3. ***level 3 (CSS3)** was became a W3C recommendation in June 1999 and builds on older versions CSS. it has divided into documentations is called as Modules and here each module having new extension features defined in CSS2.*

CSS: Style Rule Syntax

- *A style sheet is made up of **one or more style instructions (called rules)** that describe how an element or group of **elements should be displayed**.*
- *In CSS terminology, the **two main sections** of a rule are the **selector** that identifies the elements to be affected, and the **declaration** that provides the rendering instructions.*
- *The following example shows of a **CSS rule**, which as we can see is made up of two parts:*



UNIVERSITY OF DIYALA

CSS: Style Rule Syntax

1. ***The selector**, which indicates which element or elements the declaration applies to (if it applies to more than one element, we can **separate it using comma.***
2. ***The declaration**, which sets out how the elements should be **styled**. The declaration is also split into two parts, separated by a **colon**:*
   1. ***A property**, which is the property of the selected element(s) that we want to affect, such as **border, font size, font types, etc**.*
   2. ***A value**, which is a specification for this property; such as (**border : 5**).*

CSS: Types of Selectors

- ***A selector**: is to select an element or set of elements in our HTML document. Types of selectors are.*

1. ***Universal Selector:** The universal selector is **merely an asterisk** * acting as a "**wild card**" to select all elements in the document. For example, this rule:*

```
* { color: blue; }
```

would apply a blue foreground (text) color to all elements.

UNIVERSITY OF DIYALA

CSS: Types of Selectors

2. ***Element Selector:** An element selector specified by its **tag name**. This selector is more specific than the universal selector, but it's still not very specific since it targets every occurrence of an element, no matter how many of them there may be. For example, the rule:*

```
em { color: red; }
```

*gives every **em** element the same red foreground color, even if there are thousands of them in a document. **Element selectors are also known as type selectors.***

CSS: Types of Selectors

3. ***Class Selector: A class selector targets any number of elements can belong to the same class.*** *This selector is not extremely specific but is still more specific than an element selector. In CSS, class selectors are preceded by a* ***dot (.)*** *to identify them. For example, this rule*

```
.info { color: black; }
```

will style any elements belonging to the "info" class, ***whatever those elements happen to be.***

UNIVERSITY OF DIYALA

CSS: Types of Selectors

4. ***ID Selector:*** *An ID selector will select only the element carrying the specified identifier.* ***Practically any element can have an id attribute, but that attribute's value may be used only once within a single document.*** *The* ***ID selector*** *targets just one element per page, making it much* ***more specific*** *than a class selector that might target many. ID selectors are preceded by a* ***hash (#).*** *For example:*

```
#introduction { color: green; }.
```

CSS: Types of Selectors

5. ***Pseudo Class Selector:*** *A pseudo-class is somewhat akin to a* ***class selector****, but it selects an element in* ***a particular state****. It's preceded by a* ***colon (:),*** *and only a few pseudo classes are available:*

```
:link { color: blue; }        //The :link pseudo class selects all elements that are hyperlinks.
:visited { color: purple; } //selects hyperlinks whose destination has been previously visited
:active { color: red; }       //selects links in an active state
:hover { color: green; }     // selects element that being "hovered" by a user's pointing device
:focus { color: orange; }   //selects any element in a focused state
```


UNIVERSITY OF DIYALA

CSS: Types of Selectors

6. ***Descendant Selector:*** *One of the most useful and powerful selectors in the CSS. A descendant selector can be assembled from two or more of the basic selector types (****universal****,* ***element****,* ***class****,* ***pseudo class****, and* ***ID****), separated by* ***spaces****, to select elements matching that position in the document tree. For example:*

```
#introduction .info p * { color: red; }
```

would select ***all elements*** *that are descendants of a* ***P element*** *that is a descendant of an element with the* ***class info*** *that is a descendant of the element with the* ***ID introduction****.*

CSS: Types of Selectors

7. ***Grouping Selectors:*** *We can group several selectors together as part of a single rule so the same set of declarations can apply to numerous elements without redundantly repeating them. A* ***comma separates*** *each selector in the rule:* ***p, h1, h2 { color: blue; }.***
8. ***Combining Selectors:*** *We can combine two or more selector types, such as an* ***element and an ID*** *or an* ***ID and a class****. For example:*

p#introduction a.info:active { color: silver; }

This rule would apply only to ***active links*** *(****a elements****) belonging to the* ***info class*** *that are descendants of the* ***paragraph*** *(****P****) with the* ***ID introduction****.*

UNIVERSITY OF DIYALA

CSS: Types of Selectors

9. ***Child Selectors:*** *This selector is very similar to descendants but have different functionality. Consider this example:*

body > p { color: black; }

This rule will render all the paragraphs in black if they are ***direct child*** *of* ***<body>*** *element.*

10. ***Attribute Selectors:*** *we can apply styles to HTML elements with particular attributes. The rule below will match all the* ***input elements*** *having a type attribute with a value of* ***text****:*

input[type = "text"]{ color: red; }

The advantage to this method is that the ***<input type = "submit" />*** *element is* ***unaffected****.*

CSS - Inclusion

- *To style our pages with CSS, we'll need to **connect** our style sheets to our documents. When a browser downloads the HTML document, it will automatically seek out CSS rules to instruct it on how the various elements should be presented. There are **three** ways to **connect** styles with our HTML document, each with its own benefits and some drawbacks.*

1. ***Inline styles:** We can include CSS declarations within the optional **style attribute** of each element in our markup. **Inline styles aren't constructed as rules, and there is no selector because the properties and values are attached directly to the element at hand. For example.***

UNIVERSITY OF DIYALA

CSS - Inclusion

<h2 style="color: red;">Inline styles</h2>.

- *Here we can see that the **properties** are added as the value of the **style attribute**. There is no **need for a selector** (because the style is automatically applied to the element that carries the style attribute), **and there are no curly braces.** We still need to separate each property from its value with a **colon** and each of the property-value pairs from each other with a **semicolon**.*
- ***However, we should avoid using inline styles. inline styles will mix presentation with our structural markup and this will remove one of the primary advantages of using CSS.***

CSS - Inclusion

2. ***Embedded Style Sheets:*** *We can embed style rules within the* ***head element*** *of our document, and those rules will be* ***honored only for the document in which they reside****. An embedded style sheet (sometimes called an* ***internal style sheet****) is contained within the* ***style element.***

```
<html >
<head><title></title>
<style type="text/css">
h2 { color: red; }
p { color: yellow; }
</style> </head>
<body> <h2> embed style </h2> <p> embed style </p>  </body> </html>
```


UNIVERSITY OF DIYALA

CSS - Inclusion

3. ***External style sheets:*** *The third and best option is to place all our CSS rules in a separate, external style sheet, directly connected to our documents. An external style sheet is a plain-text file that we can edit using the same text editing software we use to create our HTML documents, saved with the file extension* ***.css****. This approach completely separates presentation from content and structure—they're not even stored in the same file. A single external style sheet can be linked from and associated with any number of XHTML documents, allowing your entire website's visual design to be controlled from one central file. An HTML document links to an external style sheet via a* ***link element*** *in the document's head.*

CSS - Inclusion

- *The* ***<link />*** ***element*** *can be used to create a link to CSS style sheets. The* ***<link /> element*** *is always an empty element that describes the relationship between two documents.*
- *When used with style sheets, the* ***<link /> element*** *must carry* ***three attributes****:* ***type****,* ***rel****, and* ***href****. Here is an example of the <link /> element finding a CSS file*

<link rel="stylesheet" type="text/css" href="../stylesheets/interface.css" />

- *In addition to the core attributes, the* ***<link /> element*** *can also take the following attributes:* ***Charset dir href hreflang media rel rev style target type***

UNIVERSITY OF DIYALA

CSS - Inclusion

- *There are several advantages to using* ***external CSS style*** *sheets rather than* ***internal style sheets*** *or* ***inline style rules****, including the following:*

1. *The same style sheet can be reused by all of the web pages in our site.*
2. *We can change the appearance of several pages by altering just the style sheet rather than each individual page;* ***this is particularly helpful if we want to change our company's colors, or the font used for a certain type of element wherever that element appears across the whole site.***
3. *The style sheet can act as a* ***style template*** *to help different authors achieve the same style of document without learning all of the individual style settings.*

The Cascade Order

- *We have discussed **three** ways to include style sheet rules in a an HTML document. Here is the **rule to override any Style Sheet Rule**.*

1. *Any inline style sheet takes **highest priority**. So, it will override any rule defined in **<style>...</style>** tags or rules defined in any **external style sheet** file.*
2. *Any rule defined in **<style>...</style>** tags will override rules defined in any **external style sheet file**.*
3. *Any rule defined in external style sheet file takes **lowest priority**, and rules defined in this file will be applied only when above two rules are **not applicable**.*

UNIVERSITY OF DIYALA

CSS: Examples

1. ***Set the Text Color:** This text will be written in red. *
2. ***Set the Text Direction:** The text will be renedered rtl *
3. ***Set the Space between Characters:** This text is having space between letters. *
4. ***Set the Space between Words:** This text is having space between words. *
5. ***Set the Text Indent:** This text will have first line indented by 1cm and this line will remain at its actual position this is done by CSS text-indent property. *

CSS: Examples

6. *Set the Text Alignment:*
   1. `<p style="text-align:right;"> This will be right aligned.</p>`
   2. `<p style="text-align:center;">This will be center aligned.</p>`
   3. `<p style="text-align:left;">This will be left aligned. </p>`
7. *Decorating the Text:*
   1. `<p style="text-decoration:underline;"> This will be underlined </p>`
   2. `<p style="text-decoration:line-through;"> This will be striked through.</p>`
   3. `<p style="text-decoration:overline;">This will have a over line.</p>`

UNIVERSITY OF DIYALA

CSS: Examples

8. *Set the Font Family:* `<p style="font-family:georgia,garamond,serif;“> This text is rendered in either georgia, garamond, or the default serif font depending on which font you have at your system. </p>`
9. *Set the Font Size:*
   1. `<p style="font-size:20px;">This font size is 20 pixels</p>`
   2. `<p style="font-size:small;">This font size is small</p>`
   3. `<p style="font-size:large;">This font size is large</p>`
10. *Shorthand Property:* `<p style="font:italic small-caps bold 15px georgia;"> Applying all the properties on the text at once. </p>`

The End