

Comp 424 - Client-side Web Design

Fall Semester 2016 - Week 4

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Contents

- CSS
 - *intro*
 - *basics*
 - *core*

CSS Basics - intro

- CSS allows us to define stylistic characteristics for our HTML
 - *helps us define how our HTML is displayed and rendered*
 - *colours used, font sizes, borders, padding, margins, links...*
- CSS can be stored
 - *in external files*
 - *added to a `<style>` element in the `<head>`*
 - *or embedded as inline styles per element*
- CSS not intended as a replacement for encoding semantic and stylistic characteristics with elements
- add a link to our CSS stylesheet using the `<style>` element.

```
<link rel="stylesheet" type="text/css" href="style.css" />
```

- change will replicate throughout our site wherever the stylesheet is referenced
- embed styles per element using **inline** styles
 - *limitations and detractors for this style of CSS*
 - *helped by the growth and popularity of React...*

CSS Basics - pros

Pros

- inherent option and ability to abstract styles from content
- isolating design styles and aesthetics from semantic markup and content
- cross-platform support offered for many aspects of CSS
 - *CSS allows us to style once, and apply in different browsers*
 - *a few caveats remain...*
- useful frameworks include
 - *Bootstrap*
 - *Pure.css*
 - *many more...*
- support many different categories of device
 - *mobile, screen readers, print, TVs...*
- accessibility features

CSS Basics - cons

Cons

- still experience issues as designers with rendering quirks for certain styles
 - *border styles, wrapping, padding, margins...*
- everything is global
 - *CSS matches required selectors against the whole DOM*
 - *naming strategies can be awkward and difficult to maintain*
- CSS can become a mess very quickly
 - *we tend to add to CSS instead of deleting*
 - *can grow very large, very quickly...*

CSS Basics - intro to syntax

- simple, initial concepts for CSS syntax
- follows a defined syntax pattern, e.g.
- selector
 - e.g. *body* or *p*
- declaration
 - *property and value pairing*

```
body {  
  color: black;  
  font-family: "Times New Roman", Georgia, Serif;  
}
```

- *body* is the selector, *color* is the property, and *black* is the value.

CSS Basics - rulesets

- a CSS file is a group of rules for styling our HTML documents
- rules form **rulesets**, which can be applied to elements within the DOM
- rulesets consist of the following,
 - a selector - *p*
 - an opening brace - *{*
 - a set of rules - *color: blue*
 - a closing brace - *}*
- for example,

```
body {  
  width: 900px;  
  color: #444;  
  font-family: "Times New Roman", Georgia, Serif;  
}
```

- [HTML Colour Picker](#)

CSS Basics - comments

- add comments to help describe the selector and its properties,

```
/* color can be set to a named value or HEX value (e.g. #444) */  
p {  
  color: blue;  
  font-size: 14px;  
}
```

- comments can be added before the selector or within the braces

Image - CSS Syntax

Selector

```
|-----|  
|  p  |  
|-----|
```

Declaration

```
|-----|  
| { font-size: 14px; } |  
|-----|  
      ^           ^  
      |           |  
property       value
```

CSS Syntax

CSS Basics - display

- display HTML elements in one of two ways
 - *inline* - e.g. `<a>` or ``
 - *displays content on the same line*

```
<div class="content">
  <p>
    <a href="...">Philae</a> - <span>Ptolemaic</span> era...
  </p>
</div>
```

- more common to display elements as `block-level` instead of `inline` elements
- element's content rendered on a new line outside flow of content
- a few sample block elements include,
 - `<article>`, `<div>`, `<figure>`, `<main>`, `<nav>`, `<p>`, `<section>`...
- *block-level* is not technically defined for new elements in HTML5

CSS Basics - inline elements

Current inline elements include:

- `b` | `big` | `i` | `small` | `tt`
- `abbr` | `acronym` | `cite` | `code` | `dfn` | `em` | `kbd` | `strong` | `samp` | `var`
- `a` | `bdo` | `br` | `img` | `map` | `object` | `q` | `script` | `span` | `sub` | `sup`
- `button` | `input` | `label` | `select` | `textarea`

Source - [MDN - Inline Elements](#)

CSS Basics - block-level elements

Current block-level elements include:

- address | article | aside | blockquote | canvas | dd | div | dl
- fieldset | figure | figcaption | footer | form
- h1 | h2 | h3 | h4 | h5 | h6
- header | hgroup | hr | main | nav | noscript
- ol | output | p | pre | section | table | tfoot | ul | video

Source - [MDN - Block-level Elements](#)

CSS Basics - HTML5 content categories - part I

- **block-level** is not technically defined for new elements in HTML5
- now have a slightly more complex model called **content categories**
- includes three primary types of content categories

These include,

- **main content categories** - describe common content rules shared by many elements
- **form-related content categories** - describe content rules common to form-related elements
- **specific content categories** - describe rare categories shared by only a small number of elements, often in a specific context

CSS Basics - HTML5 content categories - part 2

- **Metadata content** - modify presentation or behaviour of document, setup links, convey additional info...
 - `<base>`, `<command>`, `<link>`, `<meta>`, `<noscript>`, `<script>`, `<style>`, `<title>`
- **Flow content** - typically contain text or embedded content
 - `<a>`, `<article>`, `<canvas>`, `<figure>`, `<footer>`, `<header>`, `<main>`...
- **Sectioning content** - create a section in current outline to define scope of `<header>` elements, `<footer>` elements, and *heading* content
 - `<article>`, `<aside>`, `<nav>`, `<section>`
- **Heading content** - defines title of a section, both explicit and implicit sectioning
 - `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`, `<hgroup>`

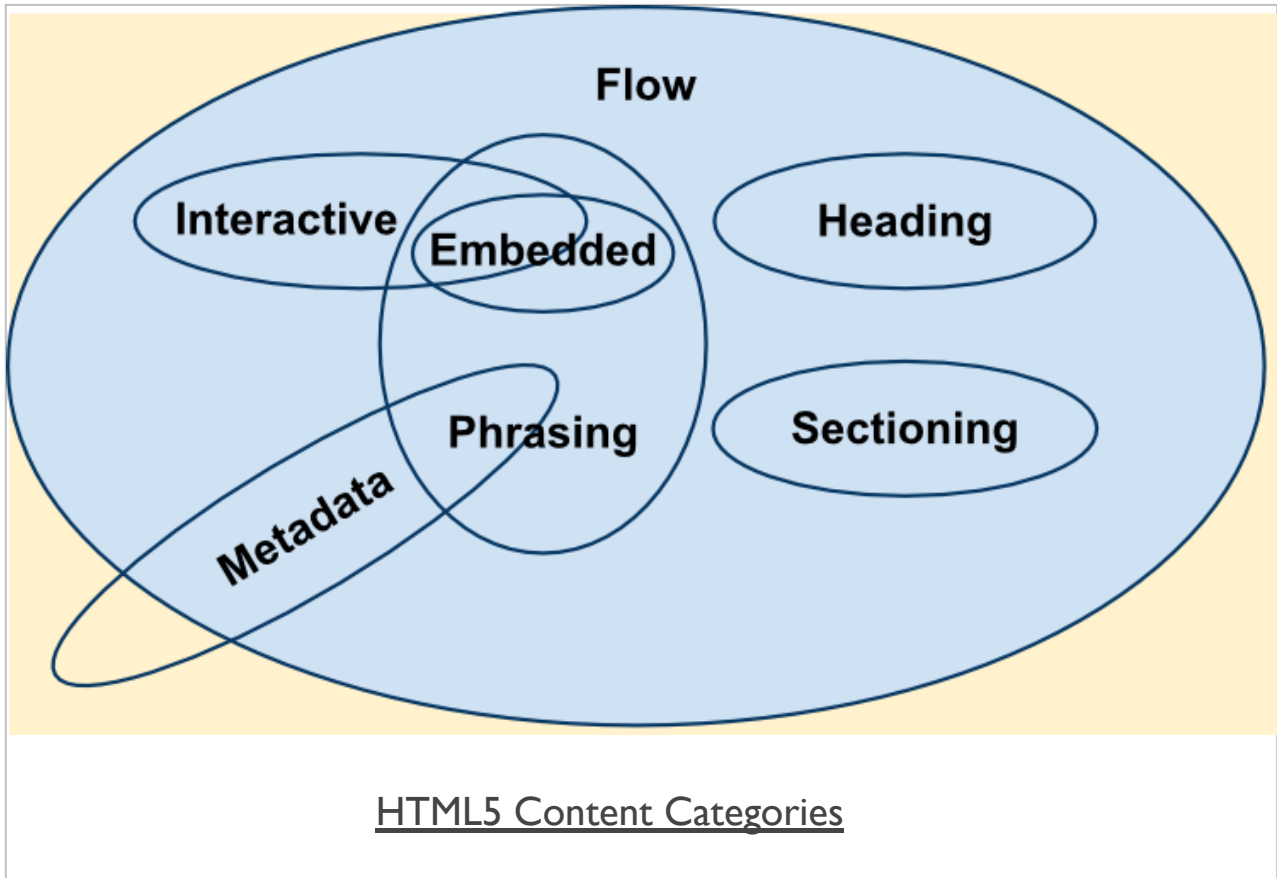
Source - MDN Content Categories

CSS Basics - HTML5 content categories - part 3

- **Phrasing content** - defines the text and the mark-up it contains
 - `<audio>`, `<canvas>`, `<code>`, ``, `<label>`, `<script>`, `<video>`...
 - *other elements can belong to this category if certain conditions are met. e.g. `<a>`*
- **Embedded content** - imports or inserts resource or content from another mark-up language or namespace
 - `<audio>`, `<canvas>`, `<embed>`, `<iframe>`, ``, `<math>`, `<object>`, `<svg>`, `<video>`
- **Interactive content** - includes elements that are specifically designed for user interaction
 - `<a>`, `<button>`, `<details>`, `<embed>`, `<iframe>`, `<keygen>`, `<label>`, `<select>`, `<textarea>`
 - *additional elements, available under specific conditions, include*
 - `<audio>`, ``, `<input>`, `<menu>`, `<object>`, `<video>`
- **Form-associated content** - elements contained by a form parent element
 - `<button>`, `<input>`, `<label>`, `<select>`, `<textarea>`...
 - *there are also several sub-categories, including listed, labelable, submittable, resettable*

Source - MDN Content Categories

Image - HTML5 Content Categories



Source - MDN - Content Categories

CSS Basics - box model - part I

- consideration of the CSS box model
- a document's attempt to represent each element as a rectangular box
- boxes and properties determined by browser rendering engine
- browser calculates size, properties, and position of these required boxes
- properties can include, for example,
 - *colour, background features, borders, width, height...*
- box model designed to describe an element's required space and content
- each box has a series of edges,
 - **margin** edge
 - **border** edge
 - **padding** edge
 - **content** edge

CSS Basics - box model - part 2

Content

- box's **content area** describes element's actual content
- properties can include `color`, `background`, `img...`
 - *apply inside the **content** edge*
- dimensions include **content width** and **content-height**
- content size properties (assuming that the `box-sizing` property remains default) include,
 - *width, min-width, max-width, height, min-height, max-height*

Demo - CSS Box Model

- Demo - CSS Box Model

CSS Basics - box model - part 3

Padding

- box's **padding area** includes the extent of the padding to the surrounding border
- background, colour etc properties for a content area extend into the padding
 - *we often consider the padding as extending the content*
- padding itself is located in the box's **padding edge**
- dimensions are the width and height of the **padding-box**.
- control space between padding and content edge using the following properties,
 - *padding-top, padding-right, padding-bottom, padding-left*
 - *padding (sizes calculated clock-wise)*

Demo - CSS Box Model - Padding

- [JSFiddle - CSS Box Model](#)

CSS Basics - box model - part 4

Border

- **border area** extends **padding area** to area containing the borders
- it becomes the area inside the **border edge**
- define its dimensions as the width and height of the **border-box**
- calculated area depends upon the width of the border we set in the CSS
- set size of our border using the following properties in CSS,
 - *border-width*
 - *border*

Demo - CSS Box Model - Border

- [JSFiddle - CSS Box Model](#)

CSS Basics - box model - part 5

Margin

- **margin area** can extend this border area with an empty area
 - *useful to create a defined separation of one element from its neighbours*
- dimensions of area defined as width and height of the **margin-box**
- control size of our margin area using the following properties,
 - *margin-top, margin-right, margin-bottom, margin-left*
 - *margin (sizes calculated clock-wise)*

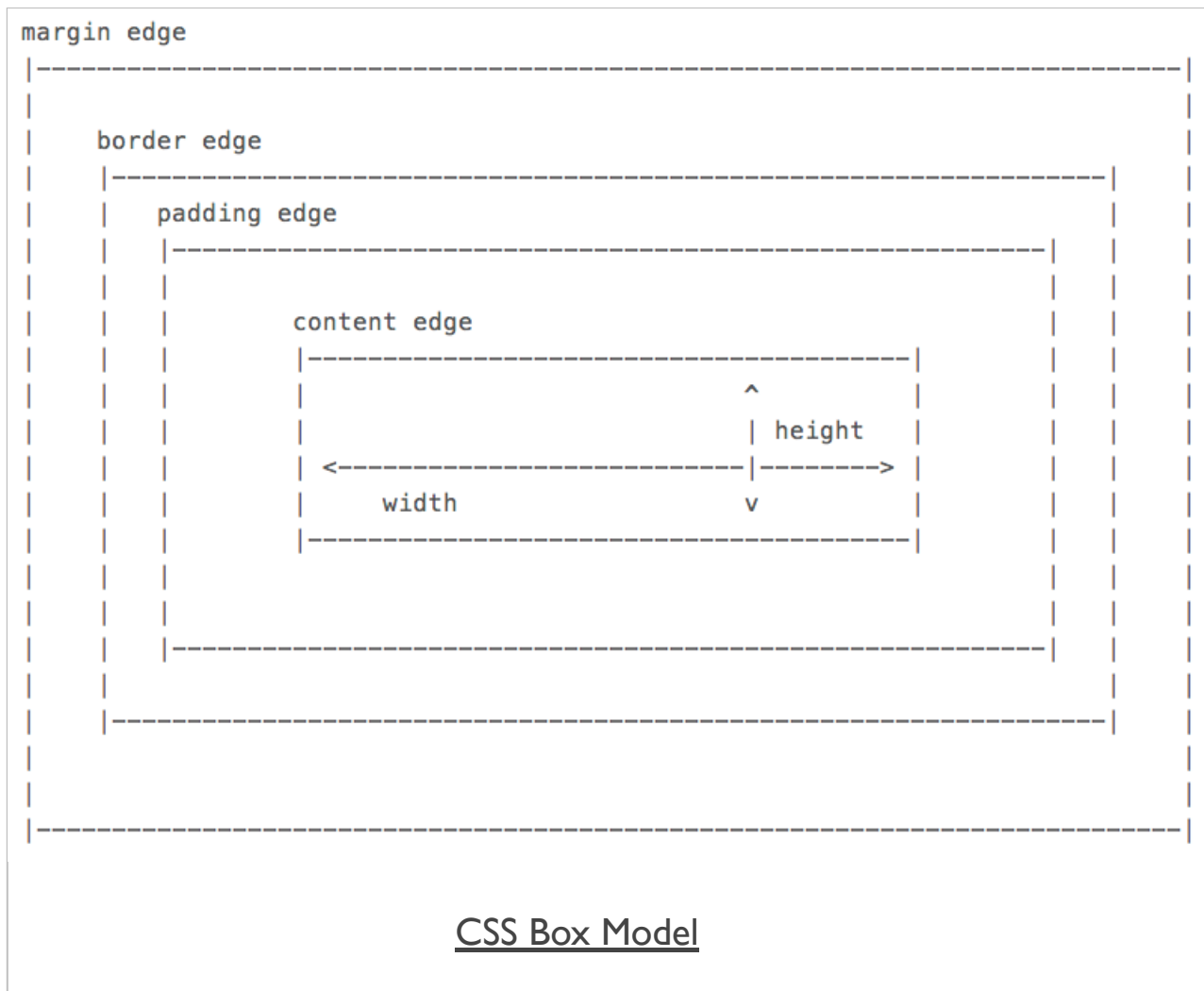
Demo - CSS Box Model - Margin

- [JSFiddle - CSS Box Model](#)

Demo - CSS Box Model

- Demo - CSS Box Model

Image - CSS Box Model



Source - MDN - CSS Box Model

CSS Basics - selectors

- **selectors** are a crucial part of working with CSS, JS...
- basic selectors such as

```
p {  
  color: #444;  
}
```

- above ruleset adds basic styling to our paragraphs
 - *sets the text colour to HEX value 444*
- simple and easy to apply
 - *applies the same properties and values to all paragraphs*
- specificity requires classes, pseudoclasses...

CSS Basics - classes

- add a **class** attribute to an element, such as a `<p>`
 - *can help us differentiate elements*
- also add a **class** to any DOM element
 - e.g. *add different classes to multiple `<p>` elements*

```
<p class="p1">paragraph one...</p>
<p class="p2">paragraph two...</p>
```

- we can now select our paragraphs by class name within the DOM
- then apply a **ruleset** for each class
- style this class for a specific element

```
p.p1 {
  color: #444;
}
```

- style all elements with the class p1, and not just `<p>` elements

```
.p1 {
  color: #444;
}
```

CSS Basics - pseudoclasses

- add a class to links or anchors, styling all links with the same ruleset
- we might also want to add specific styles for different link states
- styling links with a different colour
 - e.g. *whether a link has already been used or not*

```
a {  
  color: blue;  
}  
  
a:visited {  
  color: red;  
}
```

- visited is a CSS **pseudoclass** applied to the <a> element
- browser implicitly adds this pseudoclass for us, we add style

```
a:hover {  
  color: black;  
  text-decoration: underline;  
}
```

- pseudoclass for link element, <a>, hover

CSS Basics - complex selector - part I

- our DOM will often become more complicated and detailed
- depth and complexity will require more complicated selectors as well
- lists and their list items are a good example

```
<ul>
  <li>unordered first</li>
  <li>unordered second</li>
  <li>unordered third</li>
</ul>
<ol>
  <li>ordered first</li>
  <li>ordered second</li>
  <li>ordered third</li>
</ol>
```

- two lists, one unordered and the other ordered
- style each list, and the list items using rulesets

```
ul {
  border: 1px solid green;
}
ol {
  border: 1px solid blue;
}
```

Demo - Complex Selectors - Part I

- Demo - Complex Selectors Part I

CSS Basics - complex selector - part 2

- add a ruleset for the list items, ``
- applying the same style properties to both types of lists
- more specific to apply a ruleset to each list item for the different lists

```
ul li {  
    color: blue;  
}  
ol li {  
    color: red;  
}
```

- also be useful to set the background for specific list items in each list

```
li:first-child {  
    background: #bbb;  
}
```

- pseudoclass of `nth-child` to specify a style for the second, fourth etc child in the list

```
li:nth-child(2) {  
    background: #ddd;  
}
```

Demo - Complex Selectors - Part 2

- Demo - Complex Selectors Part 2

CSS Basics - complex selector - part 3

- style odd and even list items to create a useful alternating pattern

```
li:nth-child(odd) {  
  background: #bbb;  
}  
li:nth-child(even) {  
  background: #ddd;  
}
```

- select only certain list items, or rows in a table etc
 - e.g. *every fourth list item, starting at the first one*

```
li:nth-child(4n+1) {  
  background: green;  
}
```

- for **even** and **odd** children we're using the above with convenient shorthand
- other examples include
 - *last-child*
 - *nth-last-child()*
 - *many others...*

Demo - CSS Complex Selectors - Part 3

- Demo - Complex Selectors Part 3

CSS Basics - cascading rules - part I

- CSS, or cascading style sheets, employs a set of **cascading** rules
- rules applied by each browser as a ruleset conflict arises
 - e.g. issue of ***specificity***

```
p {  
  color: blue;  
}  
p.p1 {  
  color: red;  
}
```

- the more specific rule, the class, will take precedence
- issue of possible duplication in rulesets

```
h3 {  
  color: black;  
}  
  
h3 {  
  color: blue;  
}
```

- **cascading** rules state the later ruleset will be the one applied
 - *blue heading instead of black...*

CSS Basics - cascading rules - part 2

- simple styling and rulesets can quickly become compounded and complicated
- different styles, in different places, can interact in complex ways
- a powerful feature of CSS
 - *can also create issues with logic, maintenance, and design*
- three primary sources of style information that form this cascade
 1. default styles applied by the browser for a given markup language
 - *e.g. colours for links, size of headings...*
 2. styles specific to the current user of the document
 - *often affected by browser settings, device, mode...*
 3. styles linked to the document by the designer
 - *external file, embedded, and as inline styles per element*
- basic cascading nature creates the following pattern
 - *browser's style will be default*
 - *user's style will modify the browser's default style*
 - *styles of the document's designer modify the styles further*

CSS Basics - inheritance

- CSS includes inheritance for its styles
- descendants will inherit properties from their ancestors
- style an element
 - *descendants of that element within the DOM inherit that style*

```
body {  
  background: blue;  
}  
p {  
  color: white;  
}
```

- p is a descendant of body in the DOM
 - *inherits background colour of the body*
- this characteristic of CSS is an important feature
 - *helps to reduce redundancy and repetition of styles*
- useful to maintain outline of document's DOM structure
- most styles follow this pattern but not all
- margin, padding, and border rules for block-level elements **not inherited**

CSS Basics - fonts - part I

- Fonts can be set for the body or within an element's specific ruleset
- we need to do specify our font-family,

```
body {  
font-family: "Times New Roman", Georgia, Serif;  
}
```

- value for the font-family property specifies preferred and fall-back fonts
 - *Times New Roman, then the browser will try Georgia and Serif*
 - *" " - quotation marks for names with spaces...*

n.b. " " added due to CSS validator requesting this standard - it's believed to be a legacy error with the validator...

CSS Basics - fonts - part 2

- useful to be able to modify the size of our fonts as well

```
body {  
  font-size: 100%;  
}  
h3 {  
  font-size: x-large;  
}  
p {  
  font-size: larger;  
}  
p.p1 {  
  font-size: 1.1em;  
}
```

- set base font size to 100% of font size for a user's web browser
- scale our other fonts relative to this base size
 - CSS absolute size values, such as *x-large*
 - font sizes relative to the current context, such as *larger*
 - *em* are meta-units, which represent a multiplier on the current font-size
 - relative to current element for required font size
 - 1.5em of 12px is effective 18px
- *em* font-size scales according to the base font size
 - modify base font-size, *em* sizes adjust
- try different examples at
 - [W3 Schools - font-size](#)

Demo - CSS Fonts

- [Demo - CSS Fonts](#)
- [JSFiddle - CSS Fonts](#)

CSS Basics - fonts - part 3

- rem unit for font sizes
- size calculated against root of document

```
body {  
  font-size: 100%;  
}  
p {  
  font-size: 1.5rem;  
}
```

- element font-size will be root size * rem size
 - e.g. *body font-size is currently 16px*
 - *rem will be 16 * 1.5*

CSS Basics - custom fonts

- using fonts and CSS has traditionally been a limiting experience
- reliant upon the installed fonts on a user's local machine
- JavaScript embedding was an old, slow option for custom fonts
- web fonts are a lot easier
- **Google Fonts**
 - *from the font options, select*
 - *required fonts*
 - *add a `<link>` reference for the font to our HTML document*
 - *then specify the fonts in our CSS*

```
font-family: 'Roboto';
```

Demo - CSS Custom Fonts

- [Demo - CSS Custom Fonts](#)
- [JSFiddle - CSS Custom Fonts](#)

CSS Basics - reset options

- help us reduce browser defaults, we can use a CSS reset
- often considered a rather controversial option
- reset allows us to start from scratch
- customise aspects of the rendering of our HTML documents in browsers
- considered controversial for the following primary reasons
 - *accessibility*
 - *performance*
 - *redundancy*
- use resets with care
- notable example of resets is Eric Meyer
 - *discussed reset option in May 2007 blog post*
- resets often part of CSS frameworks...

Demo - CSS Reset - Before

Browser default styles are used for

- `<h1>`, `<h3>`, and `<p>`
- Demo - CSS Reset Before

Demo - CSS Reset - After

Browser resets are implemented using the Eric Meyer stylesheet.

- Demo - CSS Reset After

Demos - CSS

- Demo - CSS Box Model
- Demo - Complex Selectors Part 1
- Demo - Complex Selectors Part 2
- Demo - Complex Selectors Part 3
- Demo - CSS Fonts
- Demo - CSS Custom Fonts
- Demo - CSS Reset Before
- Demo - CSS Reset After

CSS - test and try out

- [JSFiddle - CSS Box Model Padding](#)
- [JSFiddle - CSS Fonts](#)
- [JSFiddle - CSS Custom Fonts](#)

References - CSS

- [CSS Tricks - nth child recipes](#)
- [JSFiddle - CSS Basics](#)
- [MDN - CSS](#)
- [CSS box model](#)
- [Perishable Press - Barebones Web Templates](#)
- [W3 CSS](#)
- [W3 Schools - CSS](#)
- [W3 Schools - HTML Colour Picker](#)
- [W3 Web Style Sheets - Even & Odd](#)