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CSS Overview

Cascading Style Sheets


```
#content .article img.left.border {
    padding: 0 9px 9px 0;
    border-right: 1px dotted #999;
    border-bottom: 1px dotted #999; }
#content .article blockquote {
    margin-left: 10px;
    padding-left: 10px;
    border-left: 3px solid #252525; }
#content .article ul {
    padding-left: 1em;
    list-style-type: circle; }
```

CSS Styling

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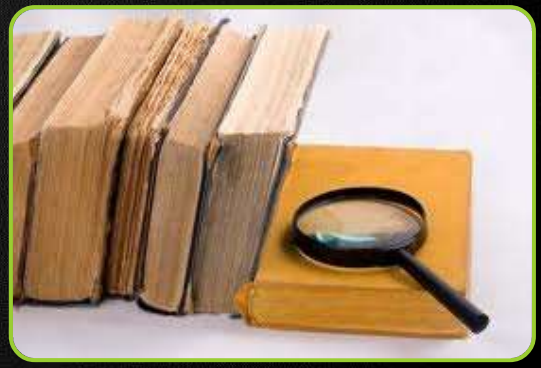

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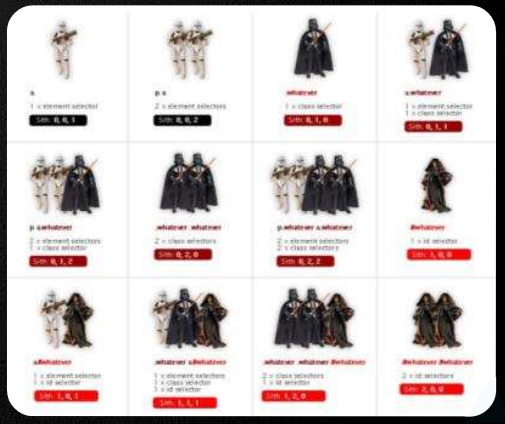
Cascading Style Sheets

Separating Content from Presentation



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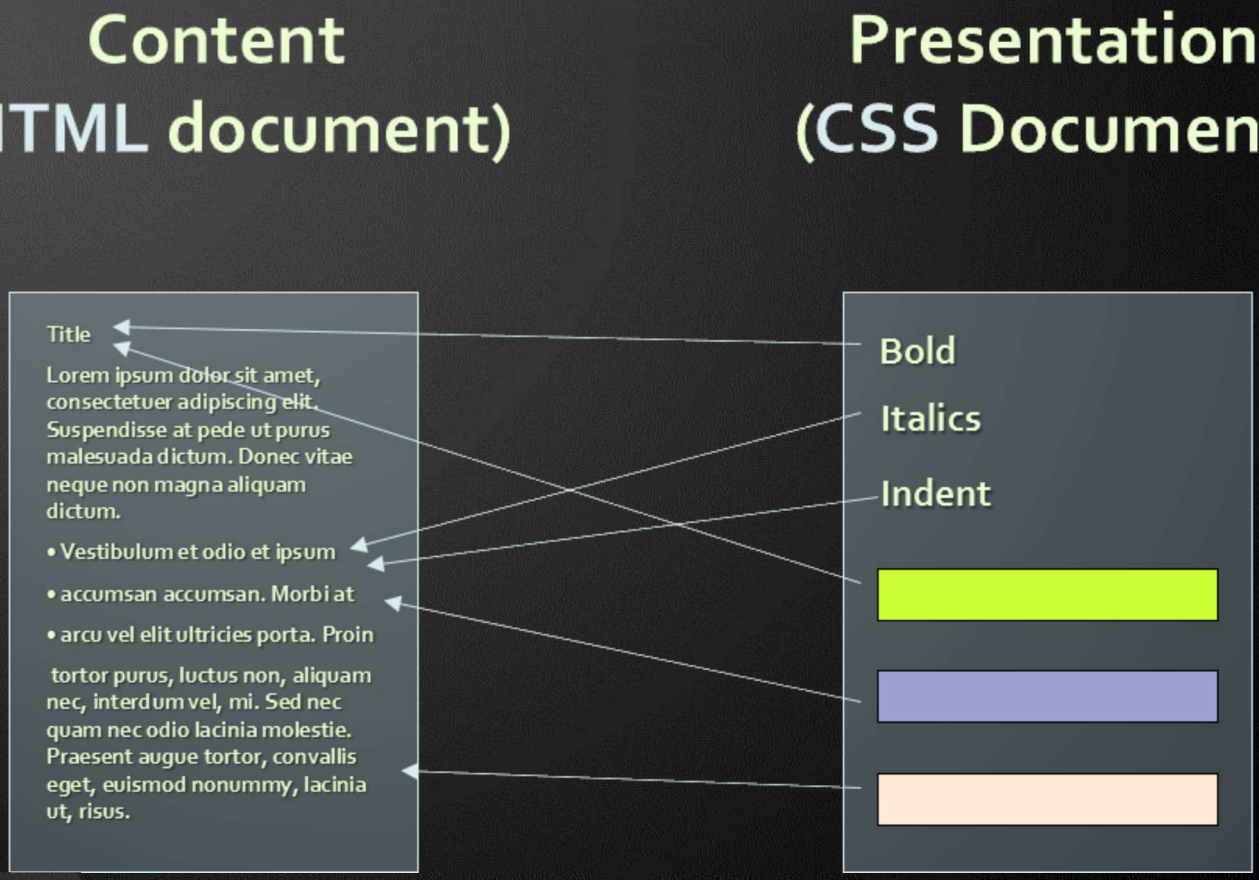
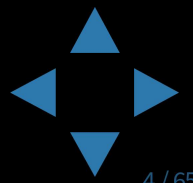
CSS: A New Philosophy

- Separate content from presentation!





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The Resulting Page

Title

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Suspendisse at pede ut purus malesuada dictum. Donec vitae neque non magna aliquam dictum.

- *Vestibulum et odio et ipsum*
- *accumsan accumsan. Morbi at*
- *arcu vel elit ultricies porta. Proin*

Tortor purus, luctus non, aliquam nec, interdum vel, mi. Sed nec quam nec odio lacinia molestie. Praesent augue tortor, convallis eget, euismod nonummy, lacinia ut, risus.

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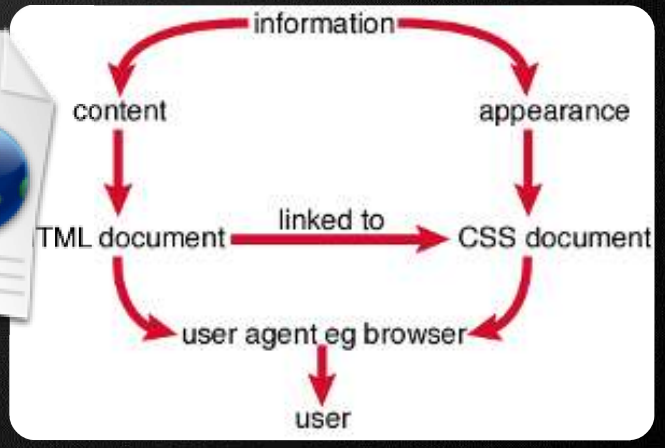
CSS Intro

Styling with Cascading Stylesheets



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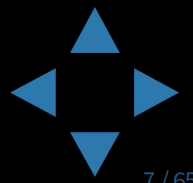
CSS Introduction

- Cascading Style Sheets (CSS)
  - Used to describe the presentation of documents
  - Define sizes, spacing, fonts, colors, layout, etc.
  - Improve content accessibility
  - Improve flexibility
- Designed to separate presentation from content
- Due to CSS, all HTML presentation tags and attributes are deprecated, e.g. font, center, etc.



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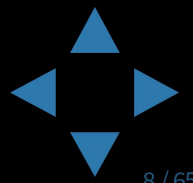
CSS Introduction

- CSS can be applied to any XML document
  - Not just to HTML / XHTML
- CSS can specify different styles for different media
  - On-screen
  - In print
  - Handheld, projection, etc.
  - … even by voice or Braille-based reader



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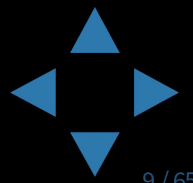
Why "Cascading"?

- Priority scheme determining which style rules apply to element
  - Cascade priorities or specificity (weight) are calculated and assigned to the rules
  - Child elements in the HTML DOM tree inherit styles from their parent
    - Can override them
    - Control via !important rule



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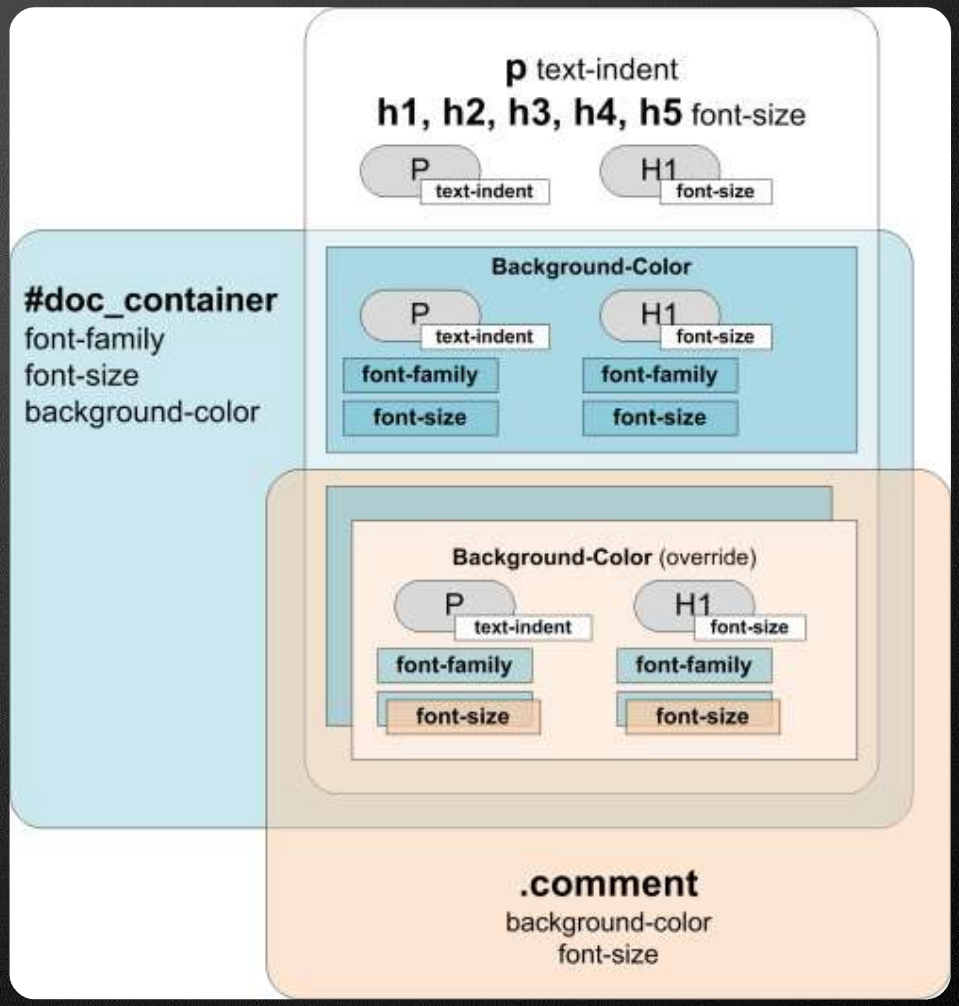
Why "Cascading"?



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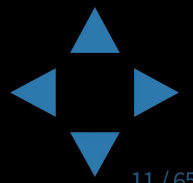
Style Inheritance

- Some CSS styles are inherited and some are not
  - Text-related and list-related properties are inherited: color, font-size, font-family, line-height, text-align, list-style, etc.
  - Box-related and positioning styles are not inherited: width, height, border, margin, padding, position, float, etc
  - <a> elements do not inherit color and text-decoration



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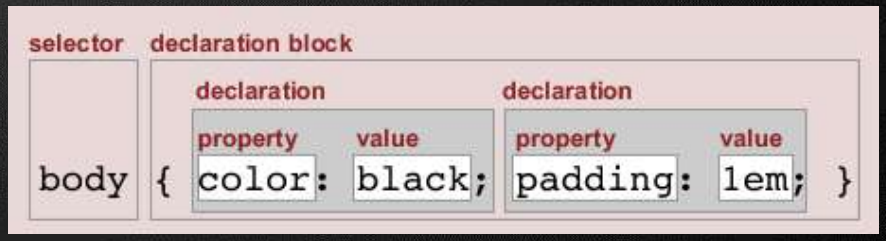
Style Sheets Syntax

- Stylesheets consist of rules, selectors, declarations, properties and values
- Selectors are separated by commas
- Declarations are separated by semicolons
- Properties and values are separated by colons

```
h1,h2,h3 { color: green; font-weight: bold; }
```



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Common Selectors

Select the Elements to Apply a Style

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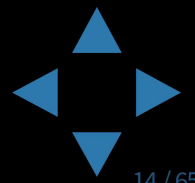
Selectors

- Selectors determine which element the rules apply to:
  - All elements of specific type (`tag`)
  - Those that match a specific attribute (`id`, `class`)
  - Elements may be matched depending on how they are nested in the document tree (HTML)
- *Examples*:

```
.header a { color: green }
```

```
#menu>li { padding-top: 8px }
```

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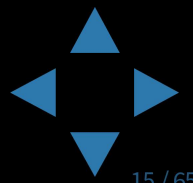
Primary Selectors

- Three primary kinds of selectors:
- By tag (type selector):

```
h1 { font-family: verdana,sans-serif; }
```

- By element id:

```
#element_id { color: #ff0000; }
```



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Primary Selectors

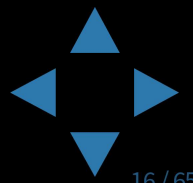
- By element class name (only for HTML):

```
.myClass {border: 1px solid red}
```

- Selectors can be combined with commas:

```
h1, .link, #top-link {font-weight: bold}
```

- This will match <h1> tags, elements with class link, and the element with id top-link



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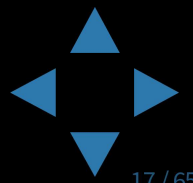
Nested Selectors

- Match relative to element placement:

```
p a {text-decoration: underline}
```

- This will match all <a> tags that are inside of <p>
- * – universal selector (avoid or use with care!):

```
p * {color: black}
```

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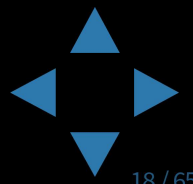
Nested Selectors

- This will match all descendants of <p> element
- + selector – used to match “next sibling”:

```
img + .link {float:right}
```

- This will match all siblings with class name link that appear immediately after <img> tag



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Nested Selectors

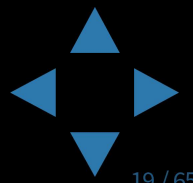
- > selector – matches direct child nodes:

```
p > .error {font-size: 8px}
```

- This will match all elements with class error, direct children of <p> tag
- .class1.class2 (no space!)

```
p.post-text.special {font-weight: bold}
```

- Matches elements with both (all) classes applied at the same time



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Common Selectors

Demo

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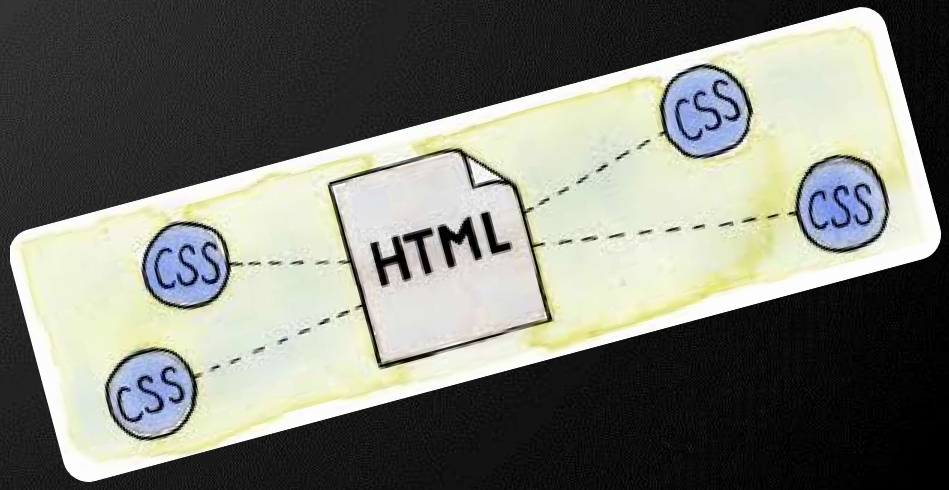
Importing CSS Into HTML

How to Use CSS with HTML?



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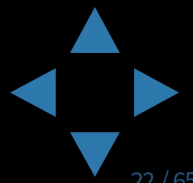
Importing CSS Into HTML

- CSS (presentation) can be imported in HTML (content) in three ways:
  - Inline: the CSS rules in the style attribute
    - No selectors are needed
  - Embedded: in the <head> in a <style> tag
  - External: CSS rules in separate file (best)
    - Usually a file with .css extension
    - Linked via <link rel="stylesheet" href="…"> tag
    - Via @import directive in embedded CSS block



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Linking HTML and CSS

- Using external CSS files is highly recommended
  - Simplifies the HTML document
  - Improves page load speed (CSS file is cached)

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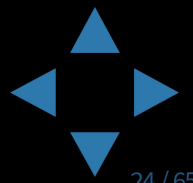
Inline Styles: *Example*

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Inline Styles</title>
</head>
<body>
  <p>Here is some text</p>

<!-- Separate multiple styles with a semicolon -->

  <p style="font-size: 20pt">Here is some
    more text</p>
  <p style="font-size: 20pt;color:
    #0000FF" >Even more text</p>
</body>
</html>
```



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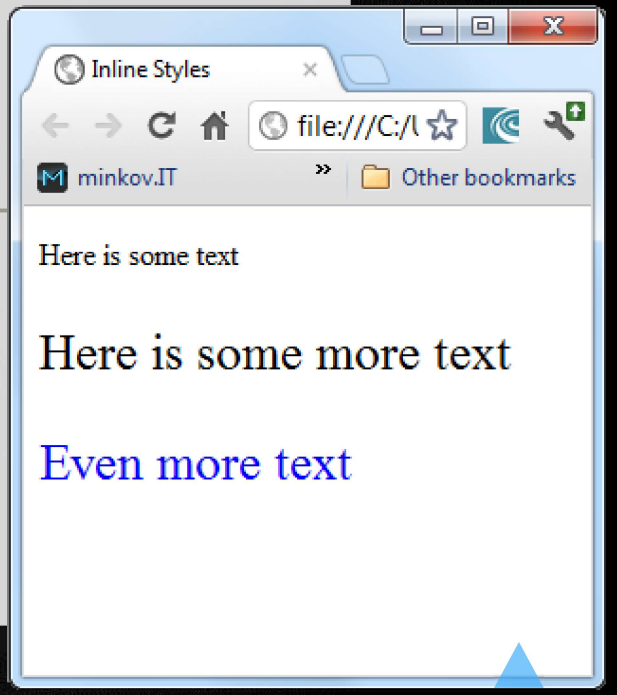
Inline Styles: *Example*

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Inline Styles</title>
</head>
<body>
  <p>Here is some text</p>

<!-- Separate multiple styles with a semicolon -

  <p style="font-size: 20pt">Here is some
    more text</p>
  <p style="font-size: 20pt;color:
    #0000FF" >Even more text</p>
</body>
</html>
```



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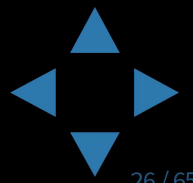
Embedded Styles

- Embedded in the HTML in the <style> tag:
  - The <style> tag is placed in the <head> section of the document
  - type attribute specifies the MIME type
    - MIME describes the format of the content
    - Other MIME types include text/html, image/gif, text/javascript …
    - Not required in HTML5
- Used for document-specific styles

```
<style type="text/css">
```



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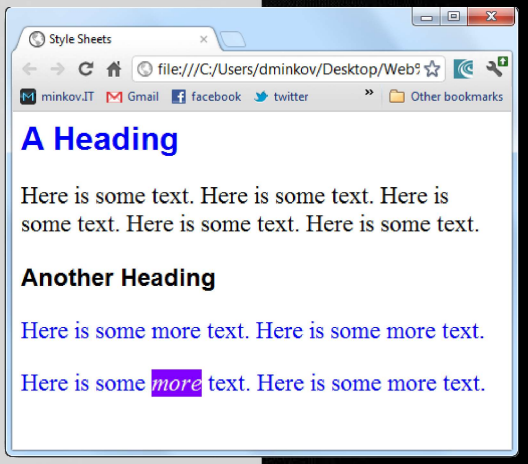
Embedded Styles: *Example*

```
<!DOCTYPE html>
<html>
<head>
  <title>Style Sheets</title>
  <style type="text/css">
    em {background-color:#8000FF; color:white}
    h1 {font-family:Arial, sans-serif}
    p  {font-size:18pt}
    .blue {color:blue}
  </style>
<head>
```

Telerik Academy Embedded Styles: *Example*

```
<body>
  <header>
      <h1 class="blue">A Heading</h1>
  </header>
  <article>
      <p>Here is some text. Here is some text.
        Here is some text. Here is some text. Here
        is some text.
      </p>
      <h1>Another Heading</h1>
      <p class="blue">Here is some more text.
         Here is some more text.</p>
      <p class="blue">Here is some <em>more</em>
         text. Here is some more text.
     </p>
  </article>
</body>
</html>
```



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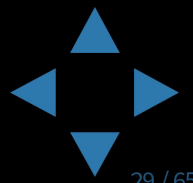
External CSS Styles

- External linking
  - Separate pages can all use a shared style sheet
  - Only modify a single file to change the styles across your entire Web site (see http://www.csszengarden.com)
- link tag (with a rel attribute)
  - Specifies a relationship between current document and another document

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

  - link elements should be in the <head>



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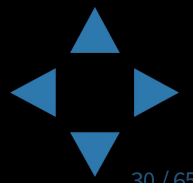
External CSS Styles

- @import
  - Another way to link external CSS files
  - *Example*:

```
<style type="text/css">
@import url("styles.css");  /* same as */
@import "styles.css";
</style>
```

  - Ancient browsers do not recognize @import
  - Use @import in an external CSS file to workaround the IE CSS file limit of 31 files



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External Styles: *Example*

```
/* CSS Document */
a {
    text-decoration: none
}

a:hover {
    text-decoration: underline;
    color: red;
    background-color: #CCFFCC
}

li em {
    color: red;
    font-weight: bold
}

ul {
    margin-left: 2cm
}

ul ul {
    text-decoration: underline;
    margin-left: .5cm
}
```

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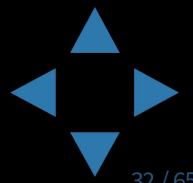
External Styles: *Example*

```
  <li>Bread
    <ul>
      <li>White bread</li>
      <li>Rye bread</li>
      <li>Whole wheat bread</li>
    </ul>
  </li>
  <li>Rice</li>
  <li>Potatoes</li>
  <li>Pizza <em>with mushrooms</em></li>
</ul>
<a href="http://food.com" title="grocery
  store">Go to the Grocery store</a>
</body>
</html>
```

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External Styles: *Example*

```
  <li>Bread
    <ul>
      <li>White bread</li>
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      <li>Whole wheat bread</li>
    </ul>
  </li>
  <li>Rice</li>
  <li>Potatoes</li>
  <li>Pizza <em>with mushrooms</em></li>
</ul>
<a href="http://food.com" title="grocery
  store">Go to the Grocery store</a>
</body>
</html>
```

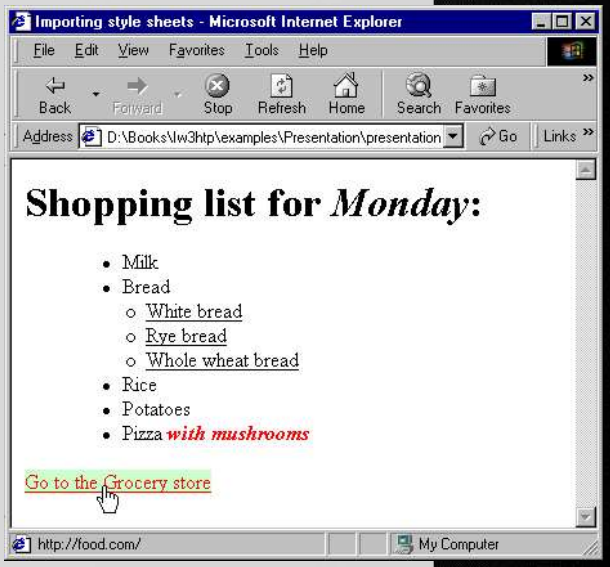

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Attribute Selectors

Picking Elements with Certain Attributes







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Attribute Selectors

- [ ] selects elements based on attributes
  - Element with a given attributeSelects <a> elements with title

```
a[title] {color:black}
```

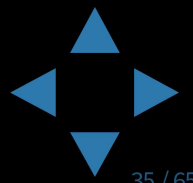
  - Elements with a concrete attribute value
  - Selects <input> elements with type=text

```
input[type=text] { font-family:Consolas}
```

  - Elements whose attribute values contain a word

```
a[title*=logo] {border: none}
```

  - Selects <a> elements whose title attribute value contains logo



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Attribute Selectors

Demo

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Pseudo Selectors

Relative to Element Content or State

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Common Pseudo Selectors

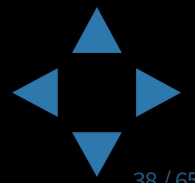
- Pseudo-classes define state
  - `:hover`, `:visited`, `:active` , `:lang`
- Pseudo-elements define element "parts" or are used to generate content
  - `:first-line` , `:before`, `:after`

```
a:hover {
    color: red;
}

p:first-line {
    text-transform: uppercase;
}

.title:before {
    content: "»";
}

.title:after {
    content: "«";
}
```

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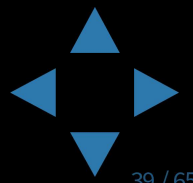
Common Pseudo Selectors

Demo



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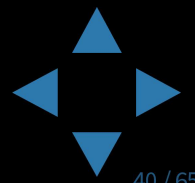
Structural Pseudo-classes

- `:root`
  - The root of the document
- `E:nth-child(n)`
  - An E element, the n-th child of its parent
- `E:nth-last-child(n)`
  - An E element, the n-th child of its parent, counting from the last on
- `E:nth-of-type(n)`
  - An E element, the n-th sibling of its type



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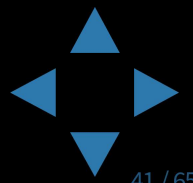
Structural Pseudo-classes

- `E:nth-last-of-type(n)`
  - An E element, the n-th sibling of its type, counting from the last one
- `E:last-child`
  - An E element, last child of its parent
- `E:first-of-type`
  - An E element, first sibling of its type
- `E:last-of-type`
  - An E element, last sibling of its type



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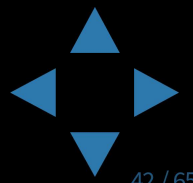
Structural Pseudo-classes

- `E:only-child`
  - An `E` element, only child of its parent
- `E:only-of-type`
  - An `E` element, only sibling of its type
- `E:empty`
  - An `E` element that has no children (including text nodes)
- More detailed descriptions:
- http://www.w3.org/TR/css3-selectors/#structural-pseudos



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Structural Selectors

Demo

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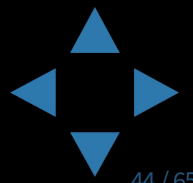
The UI Element States Pseudo-Classes

- `E:enabled`
  - A user interface element E which is enabled
- `E:disabled`
  - A user interface element E which is disabled
- `E:checked`
  - A user interface element E which is checked (for instance a radio-button or checkbox)
  - Currently supported only in Opera and IE10 !



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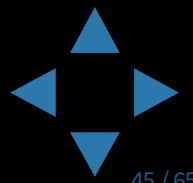
UI Selectors

Demo



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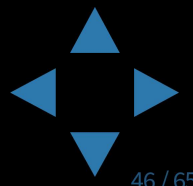
Other CSS 3 Selectors

- `E:target`
  - An E element being the target of the referring URI
- `E:not(s)`
  - An E element that does not match simple selector
- `E~F`
  - An F element preceded by an E element



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Other CSS 3 Selectors

Demo

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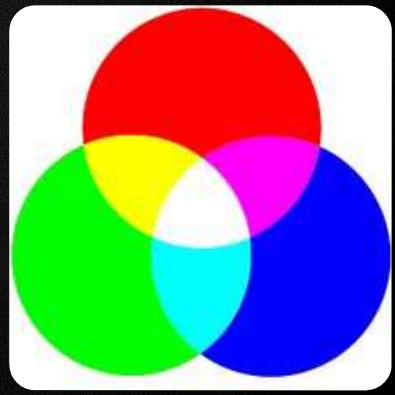
CSS Values



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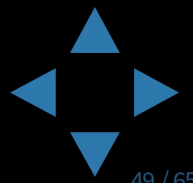
CSS Values

- All values in CSS are strings
  - They can represent values that are not strings
  - I.e. 14px means size 14 pixels
- Colors are set in a red-green-blue format (RGB)
  - Both in hex and decimal

```
li.nav-item {
  color: #44f1e1
}
```

```
li.nav-item {
  color: rgb(68, 241, 255)
}
```



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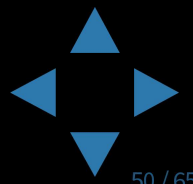
Size Values

- When setting a size (width, height, font-size…) the values are given as numbers
  - Multiple formats / metrics may be used
  - Pixels, ems, e.g. `12px` , `1.4em`
  - Points, inches, centimeters, millimeters
    - E.g. `10pt` , `1in`, `1cm`, `1mm`
  - Percentages, e.g. `50%`
    - Of the size of the container/font size
  - Zero can be used with no unit: `border: 0;`



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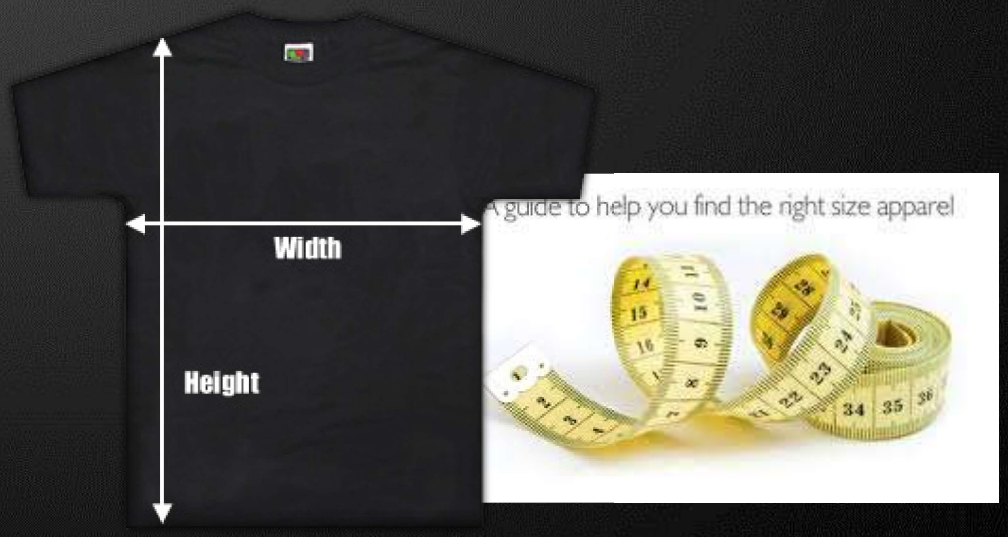
Size Values

Demo



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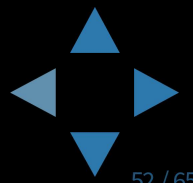
Color Values

- Colors in CSS can be represented in few ways
  - Using red-green-blue
    - Or red-green-blue-alpha

```
color: #f1a2ff
color: rgb(241, 162, 255)
color: rgba(241, 162, 255, 0.1)
```

    - The opacity values are from 0.0 to 1.0
  - Using hue-saturation-light
    - Or hue-saturation-light-alpha

```
color: hsl(291, 85%, 89%);
color: hsl(291, 85%, 89%, 0.1);
```

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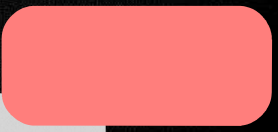
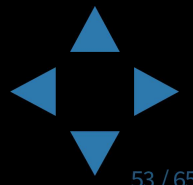
RGB Colors

- RGB colors are defined with values for red, green and blue intensity
- Syntax:
  - `#44fa36` – values are in hex
  - `rgb(<red>, <green>, <blue>)` – decimal values
- The range for red, green and blue is between integers `0` and `255`

```
color: #07f2b3
  <!- or -->
color: rgb (7, 242, 179)
```





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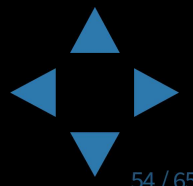
RGBA Colors

- Standard RGB colors with an opacity value for the color (alpha channel)
- Syntax: rgba(<red>, <green>, <blue>, <alpha>)
- The range for red, green and blue is between integers `0` and 255
- The range for the alpha channel is between `0.0` and `1.0`
- *Example*: rgba(255, 0, 0, 0.5)



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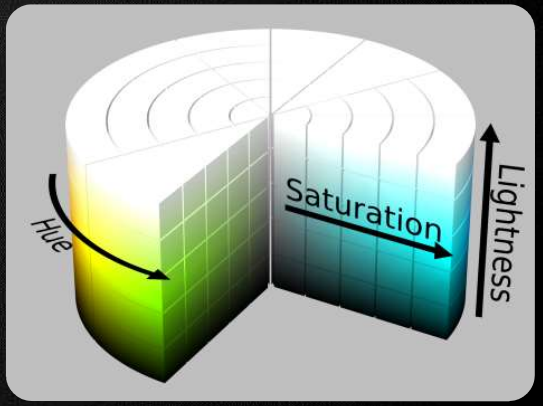
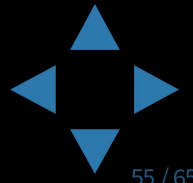
HSL Colors

- Hue is a degree on the color wheel
  - `0` (or `360`) is red, `120` is green, `240` is blue
- Saturation is a percentage value
  - `100%` is the full color
- Lightness is also a percentage
  - `0%` is dark (black)
  - `100%` is light (white)
  - `50%` is the average





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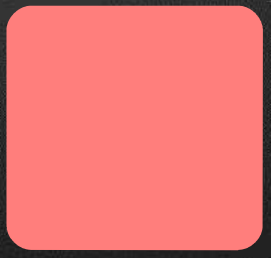
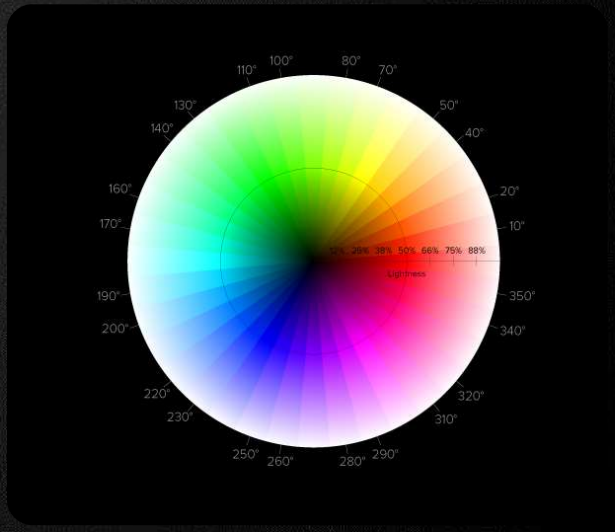
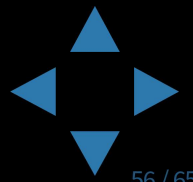
HSLA Colors

- HSLA allows a fourth value, which sets the Opacity (via the Alpha channel) of the element
- As RGBA is to RGB, HSLA is to HSL
- Supported in IE9+, Firefox 3+, Chrome, Safari, and in Opera 10+
- *Example*:
  - hsla(0, 100%, 50%, 0.5)
  - Result:







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Color Values

Demo

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Default Browser Styles

Why Things Look Different on Different Browsers?

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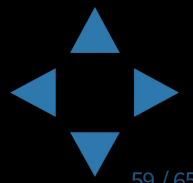
Default Browser Styles

- Browsers have predefined CSS styles
  - Used when there is no CSS information or any other style information in the document
- Caution: default styles differ in browsers
  - E.g. margins, paddings and font sizes differ most often
  - Usually developers reset them

```
* {
    margin: 0;
    padding: 0;
}
```

```
body, h1, p, ul, li {
    margin: 0;
    padding: 0;
}
```

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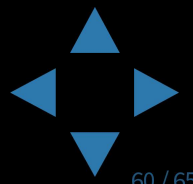
CSS Cascade (Precedence)

- There are browser, user and author stylesheets with "normal" and "important" declarations
  - Browser styles (least priority)
  - Normal user styles
  - Normal author styles (external, in head, inline)
  - Important author styles
  - Important user styles (max priority)

```
a {
    color: red !important;
}
```

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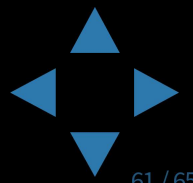
CSS Specificity

- CSS specificity is used to determine the precedence (priority) of the CSS style declarations with the same origin
  - Simple calculation:

```
#id = 100, .class = 10, :pseudo = 10, [attr] = 10, tag = 1, * = 0
```

  - Same number of points? Order matters!
  - See also:
    - CSS Specificity: Things You Should Know
    - CSS Selectors



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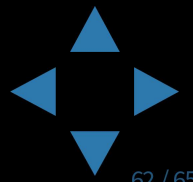
CSS Rules Precedence

Demo



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CSS References

- The CSS documentation at WebPlatform.org:
  - http://docs.webplatform.org/wiki/css
- CSS documentation at MDN
  - https://developer.mozilla.org/en-US/docs/CSS
- CSS3 tutorial
  - http://www.w3schools.com/css3/
- A list of all CSS 2.1 properties is available at http://www.w3.org/TR/CSS2/propidx.html