

Cascading Style Sheets

CITS3403 Agile Web Development

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What is CSS?



- CSS stands for *Cascading Style Sheets*
 - stylesheet language for web
 - used to specify the presentation (layout and style) of markup languages
 - can be applied to any XML document as well as HTML5.
 - superceded many HTML attributes that mixed presentation with content

```
body {
    background-color: lightblue;
}
h1 {
    color: white;
    text-align: center;
}
p {
    font-family: verdana;
    font-size: 20px;
}
```

Why CSS?



- Separation of content and presentation
- Advantages for the web
 - Speed stylesheet(s) downloaded once, rather than with each page (if content and style information is intermingled)
 - Maintainability can be "centrally" maintained, easier to update
 - Accessibility can make pages appear similar on different browsers and devices
 - *Portability* eg. printing, porting to new devices
 - *Reduced work* eg. don't have to specify alignment every time an element is used
 - Consistency make an organisation's web pages have consistent "look and feel" - corporate ID, brand (and update as brand updates)
 - eg. UWA...

	Faculty of Science
	Site Search UWA Website 3 GO
IIWA Home > Eaculty of Science > Home	





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offering integrated solutions to the challenges of remote

*

developments.

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The University of Western Australia's vision for a new world-leading engineering zone is moving closer to reality, with approval for the first \$80 million of an estimated \$600 million works to build an engineering hub, known as EZONE UWA

More news

INTER Protection of the second second

Faculty Schools

- Civil, Environmental and Mining Engineering
- Computer Science and Software Engineering
- Electrical, Electronic and Computer Engineering
- Mathematics and Statistics
- Mechanical and Chemical Engineering



CSS3



- Borders
 - border-color
 - <u>border-image</u>
 - border-radius
 - <u>– box-shadow</u>
- Color
 - HSL colors
 - HSLA colors
 - <u>opacity</u>
 - RGBA colors

- Text effects
 - <u>text-shadow</u>
 - <u>text-overflow</u>
 - word-wrap
- **User-interface**
 - <u>box-sizing</u>
 - <u>resize</u>
 - <u>outline</u>
 - nav-top, nav-right, nav-bottom, nav-left

- Selectors
 - attribute selectors
- Basic box model
 - overflow-x, overflow-y
- Generated Content
 - content
- Other modules
 - media queries
 - multi-column layout
 - Web fonts
 - <u>speech</u>

Why "Cascading"?



- There are three levels of style sheets
 - Inline specified for a specific occurrence of a tag and apply only to that tag
 - This is fine-grain style, which defeats the purpose of style sheets uniform style
 - Document-level style sheets apply to the whole document in which they appear
 - *External* style sheets can be applied to any number of documents
- When more than one style sheet applies to a specific tag in a document, the lowest level style sheet has precedence
 - In a sense, the browser searches for a style property spec, starting with inline, until it finds one (or there isn't one)

Why "Cascading"?





- Inline style sheets appear in the tag itself
- Document-level style sheets appear in the head of the document
- External style sheets are in separate files, potentially on any server on the Internet
 - Written as text files with the MIME type text/css



In-line Style Specification Format



- Style specification appears as the value of the style attribute
 - General form:

```
style = "property_1: value_1;
property_2: value_2;...
property_n: value_n"
```

Inline CSS

This is a paragraph.

Internal CSS

<head> <style type = text/css> body {background-color: blue;} p { color: yellow;} </style> </head>

External CSS

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

– Example:

```
   This paragraph will have white text on a purple
   background.
```

Document-level Format

۲



- Style specification appears as a list of rules that are the *content* of a <style>tag
- Contained in the document ٠ <head>
 - General form: <style> rule list </style>
- Form of the rules: **selector** {list of property/values}
 - Each property/value pair has the form: property: value
 - Pairs are separated by semicolons, just as in the value of a <style> tag

```
Example:
<!DOCTYPE html>
<html>
<head>
  <title>My first styled page</title>
  <style>
    body {
      color: purple;
      background-color: #d8da3d
  </style>
</head>
<body>
[etc.]
```

-from: WC3 CSS Tutorial,

http://www.w3.org/Style/Examples/011 /firstcss

Document-level Format



×		<u>]</u>	My first a	styled	l page - Kon	queror ·	<2>			? + I A
<u>L</u> ocat	tion	<u>E</u> dit	<u>V</u> iew	<u>G</u> o	<u>B</u> ookmarks	<u>T</u> ools	<u>S</u> ettings	<u>W</u> indow	<u>H</u> elp	
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*										

External style sheet format



- A <link> tag is used to specify that the browser is to fetch and use an external style sheet file, E.g. Wikipedia style sheet <u>http://en.wikipedia.org//skins-</u> <u>1.5/common/shared.css?165</u>
- External style sheets can be validated http://jigsaw.w3.org/css-validator/
- Form is a list of style rules

```
selector {list of property/values}
```

as in the content of a <style> tag for document-level style sheets

```
<link rel="stylesheet"
  type="text/css"
  href="http://tiny.url/some.css">
  </link>
```

18/	* GENERAL STYLES
2	**/
3 🖬 h	tml, body, form, fieldset, img, img a {
4	margin: 0;
5	padding: 0;
6	border: 0;
7 }	
8 📾 b	ody {
9	color: #414141;
10	background: url(/images/bg.jpg) repeat-x #ebe8df;
11	font-family: Arial, Helvetica, sans-serif;
12	line-height: 120%;
13	font-size: 12px;
14 }	
15	
16 = 0	:link, a:visited {
17	color: #685966;
18	text-decoration: underline;
19 }	
20 = 0	:hover {
21	color: #2b212c;
22 }	
23 .	article_separator {
24	line-height: 5px;
25	height: 5px;
26	font-size: 5px;
27 }	
28 = /	* SITE WIDTH
29	**/
30 .	rht_container {
31	width: 1020px;
32	margin: 0 auto;
33	margin-top: 25px;
32 33	<pre>margin: 0 auto; margin-top: 25px;</pre>

body {
 color: purple;
 background-color: #d8da3d
}

Selector Forms: Simple



There are numerous ways of specifying to which elements style rules apply. Here are examples of some of the more commonly used:

p {color:red}	Every p element
h1,h2,h3 {}	Group selector
strong em {}	Contextual selector
div[secret="yes"] {}	Attribute selector
<pre>span.important {}</pre>	Class selector
p#1234 {}	ID selector

- The selector is a tag name or a list of tag names, separated by commas, eg: h1, h2 {font-size: 24pt}
- Contextual (or descendant) selectors, eg: body b em {font-size: 14pt}

Selector	Matches
*	Any element in the hierarchy
е	The specified element in the hierarchy, where e is the specified element
e1, e2, e3,	The group of elements e1, e2, e3,
e f	The element f when it is a descendant of the element e
e > f	The element f when it is a direct child of the element e
e + f	The element f when it is immediately preceded by the sibling element e

Selector: Any element



р

b

h2

span

b

<html> **Document Tree** <head> body <style type> h2 h1 р * {color:red;} </style> </head> <body> <h1> Heading 1</h1> <h2> Heading 2.a</h2> First paragraph. Second paragraph has a bold and a span with another bold. <h2> Heading 2.b</h2> Third paragraph has a bold also. </body> </html>

Selector: Any element





Any selector example



Example: Selector p





Example: Selector p





Selector p example





р

b

Example: Selector h1,h2,span

<html></html>	
<head></head>	
<style type=""></th><th>h1 h2 snan</th></tr><tr><td>h1,h2,span {color:red;}</td><td>body</td></tr><tr><th></style>	
	h1 h2 p p h2
<body></body>	b span
<h1> Heading 1</h1>	
<h2> Heading 2.a</h2>	
First paragraph.	
Second paragraph has a bold<th>> and a span with</th>	> and a span with
another bold .	
<h2> Heading 2.b</h2>	
Third paragraph has a bold a	also.

Example: Selector h1,h2,span





Selector h1,h2,span example



Example: Selector p b





Example: Selector p b







Example: Selector p>b



h2

span

b

<html> <head> <style type> p > bp>b {color:red;} body </style> </head> h2 <body> <h1> Heading 1</h1> <h2> Heading 2.a</h2> First paragraph. Second paragraph has a bold and a span with another bold. <h2> Heading 2.b</h2> Third paragraph has a bold also. </body> </html>

Example: Selector p>b









Example: Selector h2+p





Example: Selector h2+p





Examples Summary





Class Selectors



- Used to allow different occurrences of the same tag to use different style specifications
- A style *class* has a name, which is attached to a tag name

```
p.narrow {property/value list}
p.wide {property/value list}
```

- The class you want on a particular occurrence of a tag is specified with the class attribute of the tag
- For example:

```
    ...

    ...

    ...
```

Generic Selectors



- A *generic class* can be defined if you want a style to apply to more than one kind of tag
- A generic class name must begin with a period
- Example,

```
.really-big {font-size: 60pt; ...}
```

• Use it as if it were a normal style class

```
<h1 class = "really-big"> ... </h1>
```

```
 ...
```

id Selectors



- An *id* selector allows the application of a style to one specific element
- General form:

#specific-id {property/value list}

• Example:

```
#breadcrumbs {
  top: 60px; width: 100%; height: 23px;
  text-indent: 15px; padding-top: 1px;
  color: white;
```

```
<a href="http://web.csse.uwa.edu.au/">School Home</a> |
        <a href="http://web.csse.uwa.edu.au/current/">Current
        Students</a> |
```

```
<a href="http://undergraduate.csse.uwa.edu.au/units/
CITS4230/">Internet Technologies</a>
```

Pseudo Classes



- Pseudo classes are styles that apply when something happens, rather than because the target element simply exists
- Names begin with colons
 - hover classes apply when the mouse cursor is over the element
 - focus classes apply when an element has focus

```
<html xmlns = "http://www.w3.org/1999/xhtml">
        <head>
        <title> Checkboxes </title>
        <style type = "text/css">
            input:hover {color: red;}
            input:focus {color: green;}
        </style>
        </head>
        <body>
        <form action = "">
             Your name: <input type = "text" /> 
        </form>
        </body>
        </html>
```

Conflict Resolution



- When two or more rules apply to the same tag there are rules for deciding which rule applies
- Document level
 - In-line style sheets have precedence over document style sheets
 - Document style sheets have precedence over external style sheets
- Within the same level there can be conflicts
 - A tag may be used twice as a selector
 - A tag may inherit a property and also be used as a selector
- Style sheets can have different sources
 - The author of a document may specify styles
 - The user, through browser settings, may specify styles
- Individual properties can be specified as important

Precedence Rules



- From highest to lowest
- 1. Important declarations with user origin ({key: value !important;})
- 2. Important declarations with author origin
- 3. Normal declarations with author origin
- 4. Normal declarations with user origin
- 5. Any declarations with browser (or other user agent) origin

Tie-Breakers

- Specificity
 - 1. id selectors
 - 2. Class and pseudo-class selectors
 - 3. Contextual selectors
 - 4. General selectors
- Position
 - Essentially, later has precedence over earlier

CSS Properties



- There are many CSS properties and the list is continually growing.
- The basic ones to know are text, background, borders, the box model, colors, tables and lists.

CSS Property Groups

- <u>Color</u>
- Background and Borders
- Basic Box
- Flexible Box
- <u>Text</u>
- <u>Text Decoration</u>
- Fonts
- Writing Modes

- <u>Table</u>
- Lists and Counters
- Animation
- <u>Transform</u>
- Transition
- <u>Basic User Interface</u>
- <u>Multi-column</u>

- Paged Media
- Generated Content
- <u>Filter Effects</u>
- Image/Replaced Content
- <u>Masking</u>
- Speech
- Marquee

Font Properties



- font-size
 - Possible values: a length number or a name, such as smaller, xx-large, etc.
- font-style
 - italic, oblique (useless), normal
- font-weight degrees of boldness
 - bolder, lighter, bold, normal
 - Could specify as a multiple of 100 (100 900)
- font
 - For specifying a list of font properties
 - font: bolder 14pt Arial Helvetica
 - Order must be: style, weight, size, name(s)
- Examples: <u>fonts.html</u>, <u>fonts2.html</u>
- The text-decoration property
 - line-through, overline, underline, none
 - letter-spacing-value is any length property value

List properties



- On list-style-type applies to just that ٠ list-style-type ٠ item Unordered lists <h3> Some Common Single-Engine Aircraft Bullet can be a disc (default), a square, or a </h3> circle <11]> – Set it on either the or tag style = "list-style-type: disc"> • On , it applies to list items... Cessna Skyhawk style = "list-style-type: square"> <h3> Some Common Single-Engine Aircraft Beechcraft Bonanza </h3> style = "list-style-type: circle"> Piper Cherokee Cessna Skyhawk </11]>
 - > Beechcraft Bonanza
 - > Piper Cherokee

Cessna Skyhawk Beechcraft Bonanza Piper Cherokee Some Common Single-Engine Aircraft

Some Common Single-Engine Aircraft

- Cessna Skyhawk
- Beechcraft Bonanza
- o Piper Cherokee

Colors



Name	Hexadecimal Code	Name	Hexadecimal Code
black	000000	green	008000
silver	C0C0C0	lime	00FF00
gray	808080	olive	808000
white	FFFFFF	yellow	FFFF00
maroon	800000	navy	000080
red	FF0000	blue	0000FF
purple	800080	teal	008080
fuchsia	FF00FF	aqua	00FFFF

• There are three color collections

٠

- 1. There is a set of 16 colors that are guaranteed to be displayable by all graphical browsers on all color monitors
- 2. There is a much larger set, the Web Palette
 - 216 named colors <u>http://www.w3schools.com/html/html_colornames.asp</u>
- 3. Any one of 16 million different colors
 - #000000, #000001, #000002, . . . , #FFFFFE, #FFFFFF

Alignment of Text



- The text-indent property allows indentation
 - Takes either a length or a % value
- The text-align property has the possible values, left (the default), center, right, or justify
- Sometimes we want text to flow around another element the float property
 - The float property has the possible values, left, right, and none (the default)
 - If we have an element we want on the right, with text flowing on its left, we use the default text-align value (left) for the text and the right value for float on the element we want on the right

<img src = "c210.jpg" style = "float: r

Some text with the default alignment - left

This is a picture of a Cessna 210. The 210 is the flagship single-engine Cessna aircraft. Although the 210 began as a four-place aircraft, it soon acquired a third row of seats, stretching it to a six-place plane. The 210 is classified as a high performance airplane, which means its landing gear is retractable and its engine has more than 200 horsepower. In its first model year, which was



1960, the 210 was powered by a 260 horsepower fuel-injected six-cylinder engine that displaced 471 cubic inches. The 210 is the fastest single-engine airplane ever built by Cessna.

Working with the Box Model



The box model is an element composed of four sections:



Padding

Inner Edge

Content



- Borders every element has a border-style property
 - Controls whether the element has a border and if so, the style of the border
 - border-style values: none, dotted, dashed, and double
 - border-width: thin, medium (default), thick, or a length value in pixels
 - border-color: any color
 - − → Example: borders.html

The Box Model



- Margin the space between the border of an element and its neighbor element
- The margins around an element can be set with margin-left, etc. just assign them a length value This is a picture of a

```
<img src = "c210.jpg " style = "float: right;</pre>
  margin-left: 0.35in;
  margin-bottom: 0.35in" />
```



```
horsepower fuel-injected six-cylinder engine that displaced 471 cubic inches. The 210 is the
fastest single-engine airplane ever built by Cessna
```

landing gear is

- Padding the distance between the content of an element and its border ٠
 - Controlled by padding, padding-left, etc.
- → Example: marpads.html
- The background-image property ٠
- → Can also specify background-image
 - Repetition can be controlled
 - background-repeat property
 - Possible values: repeat (default), no-repeat, repeat-x, or repeat-y

The and <div> tags



- One problem with the font properties is that they apply to whole elements, which are often too large
 - Solution: a tag to define an element within a larger element

```
- Use <span> to apply a document style sheet to its content
        <style type = "text/css">
```

```
</style>
```

```
Now is the
```

```
<span class = "bigred"> best time </span> ever!
```

Now is the best time ever!	▲ ▼
🕗 Done	My Computer

Positioning



- *Normal Flow* block formatting of block boxes, inline formatting of inline boxes, relative positioning of block or inline boxes
- Floats laid out according to normal flow, then shifted
- Absolute positioning box is removed entirely from normal flow
- Values: static, relative, absolute, fixed
- Offsets: top, right, left, bottom
- Each CSS box is laid out on the screen (or page) in one of the three ways: in its *normal* position, *relative* position or at an *absolute* position.
- Relative Positioning
 - If no top and left properties are specified, the element is placed exactly where it would have been placed if no position property were given
 - But it can be moved later using JavaScript





Absolute Positioning



- Absolute Positioning
 - The element is positioned relative to its first positioned (not static) ancestor

• If an element is nested inside another element and is absolutely positioned, the top and left properties are relative to the enclosing element

```
<html><head><style type="text/css">
  .one {position:absolute; top: 200px;
  left:300px}
  .two {position:absolute; top: 100px;
  left:200px}
  .three {position:static}
</style></head><body>
This is the text of the first
  paragraph. This is the text of the first
  paragraph. 
This is the text of the second
  paragraph. This is the text of the second
  paragraph. 
This is the text of the third
  paragraph. This is the text of the third
  paragraph. 
</body></html>
```



Vendor Prefix



A positive catalyst for the evolution to exciting technologies

"... force the vendors and the Working Group to work together to devise the tests necessary to determine interoperability. Those tests can then guide those who follow, helping them to achieve interoperable status much faster. They could literally ship the prefixed implementation in one public beta and drop the prefix in the next."

```
.foo {
  -webkit-border-radius: 10px;
  -moz-border-radius: 10px;
  border-radius: 10px;
}
```

i WebKit	-webkit-
🕑 Mozilla	-moz-
Opera	-0-
Konqueror	-khtml-
O Microsoft	-ms-
Chrome	-chrome-