



COSC 2206 Internet Tools

CSS Cascading Style Sheets



W3C CSS Reference

- The official reference is here

www.w3.org/Style/CSS/



W3C CSS Validator

- You can upload a CSS file and the validator will check it for you.

<http://jigsaw.w3.org/css-validator/>



Web Design Group

- The Web Design Group has a complete reference for style sheets:

www.htmlhelp.com/

wdgcss/index.html

Offline version



w3schools CSS Tutorial

- Excellent interactive tutorial on CSS

www.w3schools.com/



Other links

- CSS1, CSS2

<http://www.zvon.org/xxl/css1Reference/Output/>

<http://www.w3.org/TR/REC-CSS2>



Style Sheet Advantages (1)

- HTML permits the mixing of document structure and formatting (style).
 - e.g. the infamous `` tag which has now been deprecated and is not part of XHTML.
- Style sheets permit the separation of the logical document structure and content from its style.
- It is possible to give a uniform look and feel to a web site that can easily be customized.



Style Sheet Advantages (2)

- greater control over typography and page layout:
 - specifying font families, styles, and sizes
 - margins, indentation, box layout
 - absolute and relative positioning.
 - no need to use the `` tag every time the font needs to be specified -- can be done once in the style sheet.
 - `` is not part of the XHTML specification



Style Sheet Disadvantages

- browser support is not uniform
 - No support for IE versions < 3
 - No support for Netscape versions < 4
- There are some incompatibilities among later versions too.
- This will change since there is now a W3C standard for CSS1. CSS2 is also a standard and CSS3 will soon become a standard.



Style sheet levels

- CSS Level 1
 - support for fonts and formatting
- CSS Level 2
 - absolute and relative positioning, z-order, many new properties
- CSS Level 3
 - work in progress (2007 - 2008)



CSS1 (1)

- background, background-attribute, background-color, background-image, background-position, background-repeat
- border, border-bottom, border-bottom-width, border-color, border-left, border-left-width, border-right, border-right-width, border-style, border-top, border-top-width, border-width



CSS1 (2)

- clear, color, display, float
- font, font-family, font-size, font-style, font-variant, font-weight
- height, letter-spacing, line-height
- list-style-image, list-style-position, list-style-type
- margin, margin-bottom, margin-left, margin-right, margin-top



CSS1 (3)

- padding, padding-bottom, padding-left, padding-right, padding-top
- text-align, text-decoration, text-indent, text-transform
- white-space, width, word-spacing



CSS2

- background, border, bottom
- clear, clip, color, content, cursor
- direction, display
- float, font, height, left, margin, marks
- orphans, outline, overflow
- padding, page, position, quotes
- right, size, top, visibility, widows, width



Three style types

- Inline styles (least flexible)
 - defined within a tag such as `<p>` using the style attribute
- Embedded (internal) style sheets
 - defined in head of document using `<style>` tag
- External style sheets (most flexible)
 - connected to an HTML document using the `<link>` tag or the `import` directive



Inline style syntax

■ Syntax

`style="property: value; ... property: value;"`

■ Examples:

- `<p style="color: blue"> ... </p>`
- `<h1 style="font-family: arial"> ... </h1>`

■ Disadvantages:

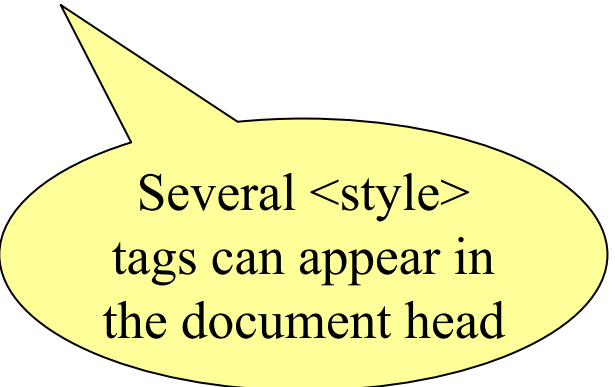
- doesn't separate document structure from formatting so use sparingly, if at all

[examples/inlineStyle.html](#)

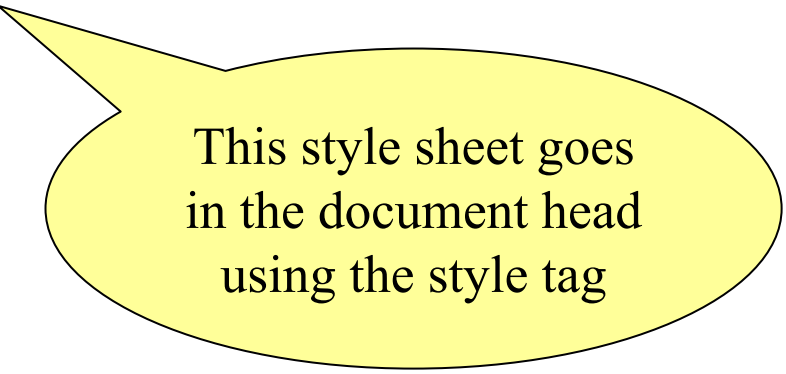


Embedded style sheet syntax

```
<style type="text/css">
selector {property: value; ... property: value;}
selector {property: value; ... property: value;}
...
selector {property: value; ... property: value;}
</style>
```



Several <style>
tags can appear in
the document head



This style sheet goes
in the document head
using the style tag



Types of selectors (1)

- Modify style of an existing HTML element (tag)
 - Example:
 - `h1 {font-family: Arial, sans-serif}`
- Here `h1` is the selector so all `<h1>` element text will appear in a sans-serif style font.
 - Example
 - `<h1>This is a heading</h1>`



Types of selectors (2)

- a class associated with an existing HTML element (tag)
 - Example:
 - `p.indent {margin-left: 2em}`
- Now we can have normal paragraphs and paragraphs that are indented
 - Example:
 - `<p class="indent">This is an indented paragraph</p>`



Types of selectors (3)

- a class not associated with an existing HTML element (tag): use in any tag
 - Example:
 - `.indent {margin-left: 2em}`
- Now we can use this class with any block-level HTML element
 - Example:
 - `<h1 class="indent">This is an indented heading</h1>`



Types of selectors (4)

- a contextual selector applies to elements only if they are inside other elements.
 - Example:
 - `p em {color: #FF0000}`
- Now em tags will display their text in red only if the em tag is inside a paragraph tag
 - Example:
 - `<p>text emphasis</p>`



Embedded style example 1

- Redefining styles for html tags
- Example using sans-serif font for headings

```
<style type="text/css">  
  h1, h2, h3 { font:family: arial, sans-serif;}  
</style>
```

- Note how styles for multiple tags can be defined at once (grouping) by separating them with commas

<examples/embeddedStyle1.html>

Embedded style example 2

```
<style type="text/css">
  h1 { font-family: arial, sans-serif;
    font-size: xx-large;}
  h2 { font-family: arial, sans-serif;
    font-size: x-large;}
  h3 { font-family: arial, sans-serif;
    font-size: large;}
  p.warning {color: #FF0000}
  p.warning code {color: #000000}
</style>
```

style
class

contextual
style class

<examples/embeddedStyle2.html>



Embedded style example 3

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

```
  h1,h2,h3 { font:family: arial, sans-serif; }
```

```
</style>
```

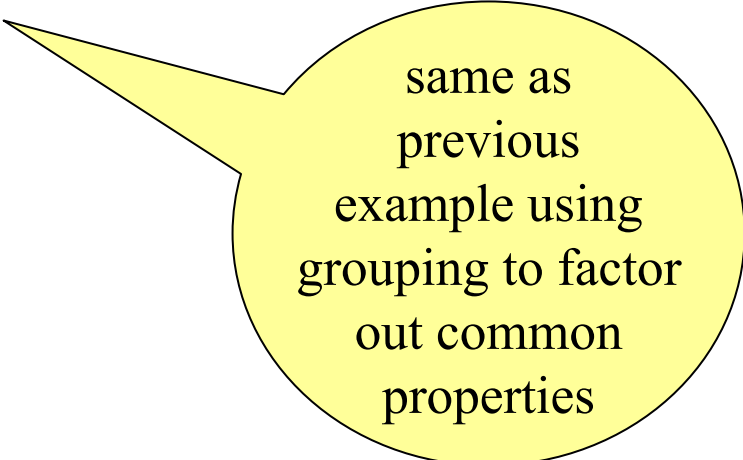
```
<style type="text/css">
```

```
  h1 { font-size: xx-large; }
```

```
  h2 { font-size: x-large; }
```

```
  h3 { font-size: large; }
```

```
</style>
```



same as
previous
example using
grouping to factor
out common
properties

<examples/embeddedStyle3.html>

Embedded style example 4

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

```
.box {border: 1pt; border-color: red;  
      border-style: solid; width: 0%;  
      margin: 1em; padding: 0.5em}
```

```
</style>
```

```
<pre class="box">  
...  
</pre>
```

a box style class
that can be used
inside any element

use it like
this

<examples/embeddedStyle4.html>

External style sheet syntax

selector

```
{  
    property1: value1;  
    property2: value2;  
    . . .  
    propertyN: valueN;  
}
```

/* .. */

style comments
can be included

an external style
sheet is a
sequence of
these rules

External style sheets don't use the style tag



Using an external style sheet

- The `<link>` tag is used in the document head to associate an external style sheet with the document.
- Example:
 - `<link rel="stylesheet" type="text/css" href="timetable.css">`



The block level `<div>` tag

- `<div>` is a special HTML tag that can be used to apply styles at the block level (a block has a line break before and after the block)

- **Example**

```
<div class="...">  
    block level html goes here  
</div>
```

- See online book example later



The inline `` tag

- `` is a special HTML tag that can be used to apply inline styles (no line breaks before and after)

- **Example:**

```
<p>..<span class="red">...</span>
```

```
....
```

```
</p>
```

- See online book example later



Timetable example (1)

- A timetable can be arranged as a table with header rows and cells for the times.
- HTML document

<examples/timetable.html>

- External Style Sheet (next slide)

<examples/timetable.css>



timetable.css (1)

```
/* A stylesheet for a timetable */
```

```
th
```

```
{ width: 20%; font-family: Arial, sans-serif;  
  background-color: #CC99FF }
```

```
.cellSmallEmpty
```

```
{ height: 4em; font-size: x-small; vertical-  
  align: top; background-color: #FFFF99 }
```

```
.cellSmallFull
```

```
{ height: 4em; font-size: x-small; vertical-  
  align: top; background-color: #B7B0FF }
```



timetable.css (2)

`.cellLargeEmpty`

```
{ height: 6em; font-size: x-small; vertical-align: top; background-color: #FFFF99 }
```

`.cellLargeFull`

```
{ height: 6em; font-size: x-small; vertical-align: top; background-color: #B7B0FF }
```

`.mainHeader`

```
{ font-family: Arial, sans-serif; font-size: x-large; background-color: #6666FF; color: #FFFFFF }
```




timetable.css (3)

`.dayHeader`

```
{ font-family: Arial, sans-serif; font-size:  
  large  
}
```

`.center`

```
{ text-align: center  
}
```



Online book example (1)

- A consistent style can be obtained using an external style sheet.

<examples\javaChapter11\example.html>

- External Style Sheet (next slide)

<examples\javaChapter11\java.css>



java.css (1)

```
body {  
    font-family: Garamond, "Times Roman",  
        "Times", serif;  
    font-size: 12pt;  
}  
h1 {  
    font-family: Verdana, Arial, Helvetica,  
        sans-serif;  
    font-weight: bold;  
    font-size: 20pt;  
    background-color: #9999CC;  
    color: #000000;  
}
```



java.css (2)

```
h2 {  
    font-family: Verdana, Arial, Helvetica,  
        sans-serif;  
    font-weight: bold; font-size: 18pt;  
    background-color: #9999CC;  
    color: #000000;  
}
```

```
h3 {  
    font-family: Verdana, Arial, Helvetica,  
        sans-serif;  
    font-weight: bold; font-size: 16pt;  
}
```



java.css (3)

```
code {  
    font-family: "Courier New", Courier,  
    monospace;  
    font-size: 12pt;  
}  
  
.center { text-align: center; }  
  
.finePrint {  
    font-weight: normal;  
    font-size: 6pt;  
}
```



java.css (4)

```
.ChapterHeading {  
    font-family: "Arial Black", Helvetica,  
        sans-serif;  
    font-weight: bold; font-size: 24pt;  
}  
  
.JavaClassHeader {  
    font-family: Verdana, Arial, Helvetica,  
        sans-serif;  
    font-weight: bold; font-size: 16pt;  
    text-align: center; width: 100%;  
    background-color: #FFFF80;  
    color: #000000;  
}
```



java.css (5)

```
.JavaClassListing {  
    font-size: 9pt; text-align: left;  
    border: 1pt; border-color: red;  
    border-style: solid; width: 80%;  
    padding: 0.5em; margin-top: 1em;  
    margin-bottom: 1em;  
}
```

```
.JavaCode {  
    font-size: 10pt; text-align: left;  
    margin-left: 3em; color: #804000;  
    background-color: #FFFFFF;  
}
```



Using java.css (1)

■ Heading for each chapter

```
<div class = "ChapterHeading">
```

```
CHAPTER 11 <span class="finePrint">A chapter from my  
book</span><br>
```

```
Graphical Interface Design<br>
```

```
Graphical applications and applets
```

```
</div>
```


Using java.css (2)

- A java class listing

Doesn't work
in Netscape

```
<div class="center">
<pre class="JavaClassListing">
<div class="JavaClassHeader">
    Class ApplicationTemplate
</div>
    java class listing goes here
</pre>
</div>
```



Using java.css (3)

- Displayed java code

```
<pre class="JavaCode">  
private JLabel prompt;  
private JTextField input;  
private JTextField output;  
</pre>
```



COSC 1046 assignments

- HTML file and alternate style sheets

[examples/assignment1.html](#)

- First Style Sheet

[examples/docsmall.css](#)

- Second Style Sheet

[examples/doc.css](#)



CSS properties

- There are 6 categories
 - Font Properties
 - Color and Background Properties
 - Text Properties
 - Box Properties
 - Classification Properties
- There are also several ways to specify units



Font properties (1)

- **Font family**

- `font-family`: list of values

- Specific font families have names such as Times or Arial. There are 5 generic names:
 - serif
 - sans-serif
 - cursive
 - fantasy
 - monospace



Font properties (2)

■ Examples

- `p {font-family: "Times New Roman", Times, serif;}`
- `p {font-family: Verdana, Arial, Helvetica, sans-serif;}`
 - In these examples the preferred family is the first one listed. If it is not found the next one is chosen and so on. If none of the specific font families is found a generic serif (first example) or sans-serif (second example) family is used.



Font properties (3)

■ Font Style

- **font-style**: value
where value is **normal**, **italic**, or **oblique**

■ Examples

- **h1** {**font-family**: Arial,
 sans-serif; **font-style**: **italic**}
- **p em** {**font-style**: **oblique**}



only for em tags inside a p tag



Font properties (4)

■ Font Variant

- **font-variant:** value
where value is **normal** or **small-caps**

■ Examples

- **ul li** {**font-variant:** **small-caps**}
- **li li** {**font-variant:** **normal**}



contextual
selectors



Font properties (5)

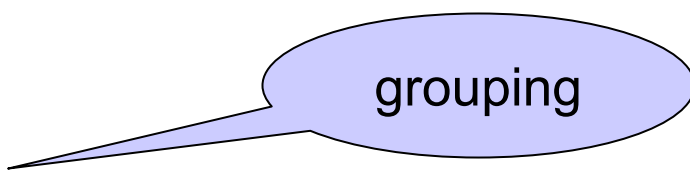
■ Font Weight

- `font-weight: value`
where value is `normal`, `bold`, `bolder`,
`lighter`, 100–900 in steps of 100

■ Example

- `h1, h2, h3`

`{font-family: Arial,
sans-serif;
font-weight: bolder
}`





Font properties (6)

■ Font Size

- **font-size**: **value** where value is an absolute size, relative size, length, percentage.
- Absolute sizes:
 - **xx-small, x-small, small, medium, large, x-large, xx-large.**
- Relative sizes:
 - **larger** and **smaller**
- length or percentage
 - 10pt, 12pt, 150%, 200%, etc.



Font properties (7)

■ Examples

- `h1 {font-size: xx-large}`
- `h1, h2, h3 {font-size: larger}`
- `p {font-size: 200%}`
- `body {font-size: 14pt}`

<examples/font.html>



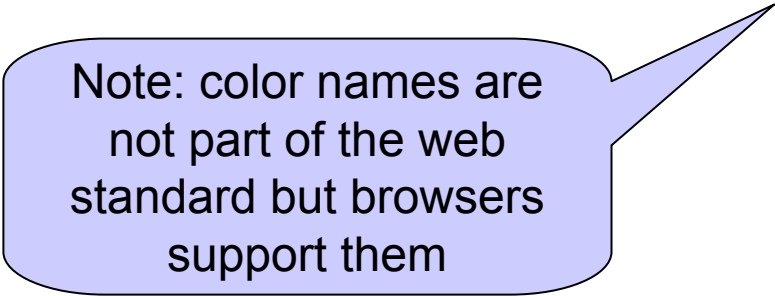
Background properties (1)

■ Background Color

- `background-color: value`
where value is a color or `transparent`

■ Examples

- `body { background-color: white }`
- `h1 { background-color: #808080 }`



Note: color names are not part of the web standard but browsers support them



Background properties (2)

■ Background Image

- **background-image**: value
where value is a url or none

■ Examples

- **body** {**background-image**:
url (/images/back.gif) }
- **body** {**background-image**: **none**}
- There are also **background-repeat**,
background-attachment, and
background-position



Background properties (3)

[examples/background1.html](#)

[examples/background2.html](#)

[examples/background3.html](#)

[examples/background4.html](#)

[examples/background5.html](#)

[examples/background6.html](#)



Text properties (1)

■ Word Spacing

- `word-spacing: length` or
`word-spacing: normal`
- Example: `p.note {word-spacing: -0.2em}`

■ Letter Spacing

- `letter-spacing: length`
- `letter-spacing: normal`
- Example: `body {-0.2 em}`
- Example: `p.note {word-spacing: -0.2em;
letter-spacing: -0.1em}`



Text properties (2)

■ Text Decoration

- `text-decoration: value`

where value is `none`, `underline`, `overline`, `line-through`, or `blink`

■ Example:

- `h1, h2, h3 {text-decoration: underline}`



Text properties (3)

■ Text Alignment

- `vertical-align: value`

■ Value

- `baseline`

- `super, top`

- `sub, bottom`

- `text-top, middle, text-bottom`

- `percentage`



Text properties (4)

- **Text Transformation**

- `text-transform: value`

- **Values**

- `none`
 - `capitalize`
 - `uppercase`
 - `lowercase`



Text properties (5)

- **Text Alignment**

- `text-align: value`

- **Values**

- `left`
 - `right`
 - `center`
 - `justify`



Text properties (6)

■ Text Indentation

- `text-indent: length`
- `text-indent: percentage`

■ Examples

- `p {text-indent: 5em}`
- `p {text-indent: 10%}`



10 percent of
paragraph width



Text properties (7)

■ Line Height

- `line-height: normal`
- `line-height: length`
- `line-height: percentage`

■ Examples

- `p {line-height: 2ex}`
- `p {line-height: 150%}`

[examples/text.html](#)



Box margin properties

■ Top, Right, Bottom, and Left Margin

- `margin-left: value`
- `margin-right: value`
- `margin-top: value`
- `margin-bottom: value`
- `margin: list of values`

■ Examples:

- `.box {margin-left: 3em}`
- `.box {margin: 1em 2em 1em 2em}`



top
right
bottom
left



Box padding properties

■ Top, Right, Bottom, and Left Padding

- `padding-left: value`
- `padding-right: value`
- `padding-top: value`
- `padding-bottom: value`
- `padding: list of values`

■ Examples:

- `.box {padding-left: 3em}`
- `.box {padding: 1em 2em 1em 2em}`



top
right
bottom
left



Box border properties (1)

■ Top, Right, Bottom, and Left Border Width

- `border-left-width: value`
- `border-right-width: value`
- `border-top-width: value`
- `border-bottom-width: value`

■ value:

- `thin, medium, thick`
- `length`

<examples/box.html>



Box border properties (2)

■ **Border Width**

- **border-width:** value

■ **value**

- Corresponding to the four sides specify one to four of the following values
 - **thin, medium, thick, length**
- If only one value is specified it applies to all sides



Box border properties (3)

■ **Border Color**

- **border-color:** value

■ **Value:**

- Corresponding to the four sides specify one to four color values
- If only one value is specified it applies to all sides



Box border properties (4)

■ Border Style

- **border-style**: value

■ Value:

- Corresponding to the four sides specify one to of **none**, **dotted**, **dashed**, **solid**, **double**, **groove**, **ridge**, **inset**, **outset**
- If only one value is specified it applies to all sides

<examples/testBorder.html>



Box width property (5)

■ Width

- `width: value`

■ Value:

- length, percentage, or `auto`
- Specifies the width of a block-level element or an element specified by `img`, `input`, `textarea`, `select`, or `object`
- **Example:** `input.button { width: 5em }`



Box height property (6)

- **Height**

- **height:** value

- **Value:**

- length, or **auto**

- Specifies the height of a block-level element or an element specified by **img**, **input**, **textarea**, **select**, and **object**

- **Example:**

- img.size** {width: 40px; height: 30px}



Box float property (7)

- **Float**

- `float: value`

- **Value:**

- `left, right, or none`

- Used to wrap text around an element

[examples/float.html](#)



Box clear property (8)

- **Clear**
 - `clear: value`
- **Value:**
 - `left, right, both,` or `none`
- Used to specify if an element allows floating elements to its sides



Classification properties (1)

- **Display**

- **display**: value

- **Value:**

- **block, inline, list-item, or none**

- Browser gives a default display value to each element so display can change it.



Classification properties (2)

- **Whitespace**

- `white-space: value`

- **Value:**

- `normal`, `pre`, or `nowrap`

- Specifies how spaces are treated inside an element



Classification properties (3)

■ List Style Type

- `list-style-type`: value

■ Value:

- `disc`, `circle`, `square`, `decimal`, `lower-roman`, `upper-roman`,
`lower-alpha`, `upper-alpha`, `none`

■ Specifies the list item marker to use:

- `ol{list-style-type: upper-alpha}`

- `ol ol {list-style-type: decimal}`



Classification properties (4)

- **List Style Image**

- `list-style-image`: value

- **Value:**

- `url`, `none`

- Specifies an image to use as the list item marker



Classification properties (5)

- **List Style Position**

- `list-style-position: value`

- **Value:**

- `inside, outside`

- Specifies where marker is placed relative to the list item. The value `inside` causes text to wrap under the marker instead of indented under the marker.

<examples/lists.html>



CSS Length Units

- Units are either relative or absolute: relative ones are preferred.
- Relative units
 - **em** height of an elements font
 - **ex** height of the letter "x"
 - **px** pixels
- Absolute units
 - **in, cm, mm, pt** (points, 1pt = 1/72 inch)
 - **pc** (picas, 1pc = 12pt)



CSS percentage units

- Use the % sign
- They are relative to other values such as the elements font size.



CSS color units

- A color name (not part of the HTML 4.01 specification)
- 6 hex digits
 - example `#80A040`
- `rgb(r, g, b)`
 - example: `rgb(96, 160, 64)`
- `rgb(r%, g%, b%)`
 - example: `rgb(10%, 20%, 30%)`



Combining classes

- If you have two or more selectors of the form

```
.one { ... }
```

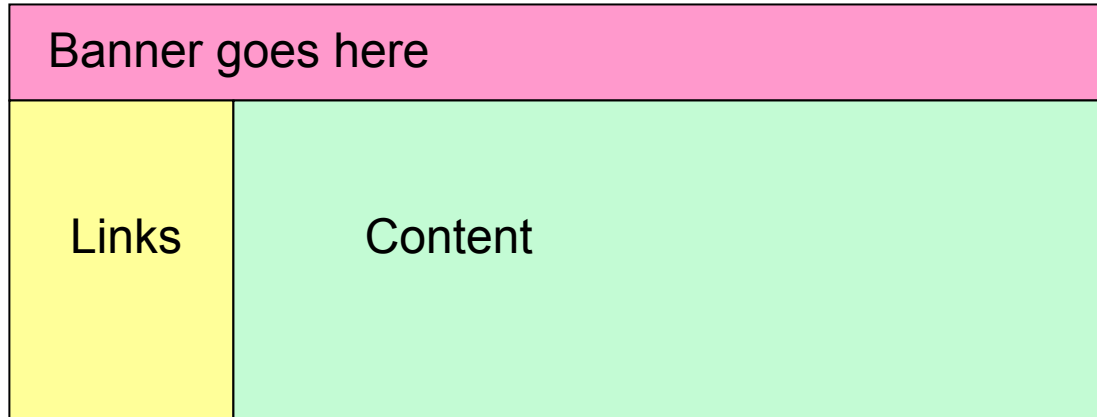
```
.two { ... }
```

they can both be used in the same class

- For example
- `<div class="one two"> ... </div>`

Home page template

- Tables and style sheets can be used to lay out a simple home page. Simple example:



<examples/layout/layout.html>

<examples/layout/layout.css>



W3schools tutorial

- The w3schools tutorial
- (www.w3schools.com) has an excellent interactive css tutorial.
- <http://www.w3schools.com>