


Web Programming

Engr. Abdul-Rahman Mahmood

DPM, MCP, QMR(ISO9001:2000)



 armahmood786@yahoo.com


 alphapeeler.sf.net/pubkeys/pkey.htm

 pk.linkedin.com/in/armahmood

 www.twitter.com/alphapeeler

 www.facebook.com/alphapeeler

 abdulmahmood-sss  alphasecure


 armahmood786@hotmail.com


 <http://alphapeeler.sf.net/me>



 alphasecure@gmail.com

 <http://alphapeeler.sourceforge.net>

 <http://alphapeeler.tumblr.com>

 armahmood786@jabber.org

 alphapeeler@aim.com

 mahmood_cubix  48660186

 alphapeeler@icloud.com

 <http://alphapeeler.sf.net/acms/>

Cascading Style Sheets

Bad practice

```
<p>  
<font face="Arial">Shashdot.</font>  
News for <b>nerds!!</b> You will <i>never</i>, <u>EVER</u>  
be  
<font size="+4" color="red">BORED</font> here!  
</p>
```

HTML

Shashdot. News for **nerds!!** You will *never*, EVER be **BORED**
here!

output

- ❑ Tags such as **b**, *i*, u, and **font** are discouraged in strict XHTML
- ❑ Why is this bad?

Cascading Style Sheets (CSS)

- HTML describes **the content** of the page
- CSS Describes the appearance, layout, and presentation of information on a web page
- Describes how info is displayed, not *what* is being displayed
- Can be embedded in HTML document or placed into separate .css file

Basic CSS rule syntax

```
selector {  
property: value;  
property: value;  
...  
property: value;  
}
```

CSS

```
p {  
font-family: sans-serif;  
color: red;  
}
```

CSS

- A CSS file consists of one or more **rules**
- Each rule starts with a **selector**
- A selector specifies an HTML element(s) and then applies style **properties** to them
 - ▣ a selector of * selects all elements

Attaching a CSS file <link>

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

HTML

```
<link href="style.css" type="text/css" rel="stylesheet" />
<link href="http://www.google.com/uds/css/gsearch.css"
rel="stylesheet" type="text/css" />
```

HTML

- A page can link to multiple style sheet files
 - In case of a conflict (two sheets define a style for the same HTML element), the latter sheet's properties will be used

Embedding style sheets: <style>

```
<head>
<style type="text/css">
p { font-family: sans-serif; color: red; }
h2 { background-color: yellow; }
</style>
</head>
```

HTML

- ❑ CSS code can be embedded within the head of an HTML page
- ❑ *Bad style* and should be avoided when possible (why?)

Inline styles: the style attribute

```
<p style="font-family: sans-serif; color: red;">  
This is a paragraph</p>
```

HTML

This is a paragraph

output

- ❑ Higher precedence than embedded or linked styles
- ❑ Used for one-time overrides and styling a particular element
- ❑ *Bad style* and should be avoided when possible (why?)

CSS properties for colors

```
p {  
  color: red;  
  background-color: yellow;  
}
```

CSS

This paragraph uses the style above

output

property	description
color	color of the element's text
background-color	color that will appear behind the element

Specifying colors

```
p { color: red; }  
h2 { color: rgb(128, 0, 196); }  
h4 { color: #FF8800; }
```

CSS

This paragraph uses the first style above

This h2 uses the second style above.

This h4 uses the third style above.

output

- ❑ color names: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, purple, red, silver, teal, white (white), yellow
- ❑ RGB codes: red, green, and blue values from 0 (none) to 255 (full)
- ❑ Hex codes: #XX XX XX in base-16 from 00 (0, none) to FF (255, full)

Grouping styles

```
p, h1, h2 {  
  color: green;  
}  
h2 {  
  background-color: yellow;  
}
```

CSS

This paragraph uses the above style.

This h2 uses the above styles.

output

- A style can select multiple elements separated by commas
- The individual elements can also have their own styles

CSS comments `/*...*/`

```
/* This is a comment.  
It can span many lines in the CSS file. */  
p {  
color: red; background-color: aqua;  
}
```

CSS

- ❑ CSS (like HTML) is usually not commented as rigorously as programming languages such as Java
- ❑ The `//` single-line comment style is NOT supported in CSS
- ❑ The `<!-- ... -->` HTML comment style is also NOT supported in CSS

CSS properties for fonts

property	description
font-family	Times, Helvetica, serif, sans-serif, "Courier New"; monospace, cursive, fantasy, Georgia
font-size	medium xx-small x-small small large x-large xx-large smaller larger <i>length</i>
font-style	normal italic oblique initial
font-weight	normal bold bolder lighter

http://www.w3schools.com/cssref/pr_font_font-family.asp

http://www.w3schools.com/cssref/pr_font_font-style.asp

http://www.w3schools.com/cssref/pr_font_weight.asp

http://www.w3schools.com/cssref/pr_font_font-size.asp

font-family

```
p {  
  font-family: Georgia;  
}  
h2 {  
  font-family: "Courier New";  
}
```

CSS

This paragraph uses the first style above.

This h2 uses the second style above.

output

- ❑ Enclose multi-word font names in quotes

More about font-family

```
p {  
  font-family: Garamond, "Times New Roman", serif;  
}
```

CSS

This paragraph uses the above style.

output

- We can specify multiple fonts from highest to lowest priority
- Generic font names:
 - ▣ serif, sans-serif, arial, **FANTASY**, monospace
- If the first font is not found on the user's computer, the next is tried
- Placing a generic font name at the end of your font-family value, ensures that every computer will use a valid font

font-size

```
p {  
    font-size: 24pt;  
}
```

CSS

This paragraph uses the style above.

output

- units: pixels (**px**) vs. point (**pt**) vs. m-size (**em**)

16px, 16pt, 1.16em

- vague font sizes: xx-small, x-small, small, medium, large, x-large, xx-large,
smaller, **larger**

- percentage font sizes, e.g.: 90%, **120%**

font-size

```
p {  
    font-size: 24pt;  
}
```

CSS

This paragraph uses the style above.

output

- **pt** specifies number of point, where a point is $1/72$ of an inch onscreen
- **px** specifies a number of pixels on the screen
- **em** specifies number of m-widths, where 1 em is equal to the font's current size
- **ex** express sizes that must be related to the x-height of a font.

font-weight, font-style

```
p {  
  font-weight: bold;  
  font-style: italic;  
}
```

CSS

This paragraph uses the style above.

output

- Either of the above can be set to normal to turn them off (e.g. headings)

CSS properties for text

property	description
text-align	left right center justify
text-decoration	none underline overline line-through
line-height, word-spacing, letter-spacing	gaps between the various portions of the text normal <i>length</i>
text-indent	indents the first letter of each paragraph

[Complete list of text properties](http://www.w3schools.com/cssref/default.asp) <http://www.w3schools.com/cssref/default.asp>

text-align

```
blockquote { text-align: justify; }  
h2 { text-align: center; }
```

CSS

Little Red Riding Hood

Once upon a time there lived in a certain village a little country girl, the prettiest creature who was ever seen. Her mother was excessively fond of her; and her grandmother doted on her still more. This good woman had a little red riding hood made for her. It suited the girl so extremely well that everybody called her Little Red Riding Hood.

output

- `text-align` can be `left`, `right`, `center`, or `justify`

text-decoration

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

CSS

This paragraph uses the style above.

output

- **can also be** overline, ~~line-through~~, blink, or none
- **effects can be combined:**

```
text-decoration: overline underline;
```

The list-style-type property

```
ol { list-style-type: lower-roman; }
```

CSS

□ Possible values:

i. none : No marker

ii. disc (default), circle, square

iii. Decimal: 1, 2, 3, etc.

iv. decimal-leading-zero: 01, 02, 03, etc.

v. lower-roman: i, ii, iii, iv, v, etc.

vi. upper-roman: I, II, III, IV, V, etc.

vii. lower-alpha: a, b, c, d, e, etc.

viii. upper-alpha: A, B, C, D, E, etc.

x. lower-greek: alpha, beta, gamma, etc.

others: hebrew, armenian, georgian, cjk-ideographic, hiragana...

Body styles

```
body {  
  font-size: 16px;  
}
```

CSS

- Applies a style to the entire body of your page
- Saves you from manually applying a style to each element

Cascading Style Sheets

- Properties of an element cascade together in this order:
 - ▣ browser's default styles
 - ▣ external style sheet files (in a `<link>` tag)
 - ▣ internal style sheets (inside a `<style>` tag in the page's header)
 - ▣ inline style (the style attribute of the HTML element)

Inheriting styles

```
body { font-family: sans-serif; background-color: yellow; }  
p { color: red; background-color: aqua; }  
a { text-decoration: underline; }  
h2 { font-weight: bold; text-align: center; }
```

CSS

This is a heading

A styled paragraph. Previous slides are available on the website.

- A bulleted list

output

- when multiple styles apply to an element, they are inherited
- a more tightly matching rule can override a more general inherited rule

Styles that conflict

```
p, h1, h2 { color: blue; font-style: italic; }  
h2 { color: red; background-color: yellow; }
```

CSS

This paragraph uses the first style above.

This heading uses both styles above.

output

- when two styles set conflicting values for the same property, the latter style takes precedence

W3C CSS Validator

```
<p>
Validators:
    <a href="http://validator.w3.org/check?uri=referer">
        W3C HTML Validator
    </a>—<a href="http://jigsaw.w3.org/css-
validator/check/referer?profile=css3">
        W3C CSS Validator
    </a>
</p>
```

CSS

- ❑ <https://jigsaw.w3.org/css-validator/>
- ❑ checks your CSS to make sure it meets the official CSS specifications

CSS properties for backgrounds

property	description
background-color	color to fill background <i>color</i> transparent
background-image	image to place in background <i>url</i> none
background-position	placement of bg image within element left top, left center, left bottom, right top, right center, right bottom, center top, center center, center bottom <i>x%</i> <i>y%</i>
background-repeat	whether/how bg image should be repeated
background-attachment	whether bg image scrolls with page
background	shorthand to set all background properties

background-image

```
body {  
  background-image: url("images/draft.jpg");  
}
```

CSS

This is the first paragraph

This is the second paragraph...

It occupies 2 lines

- background image/color fills the element's content area

background-repeat

```
body {  
background-image: url("images/draft.jpg");  
background-repeat: repeat-x;  
}
```

CSS

This is the first paragraph

This is the second paragraph...

It occupies 2 lines

- can be repeat (default), repeat-x, repeat-y, or no-repeat

background-position

```
body {  
background-image: url("images/draft.jpg");  
background-repeat: no-repeat;  
background-position: 370px 20px;  
}
```

CSS

This is the first paragraph

This is the second paragraph...
It occupies 2 lines



- ❑ value consists of two tokens, each of which can be top, left, right, bottom, center, a percentage, or a length value in px, pt, etc.
- ❑ value can be negative to shift left/up by a given amount

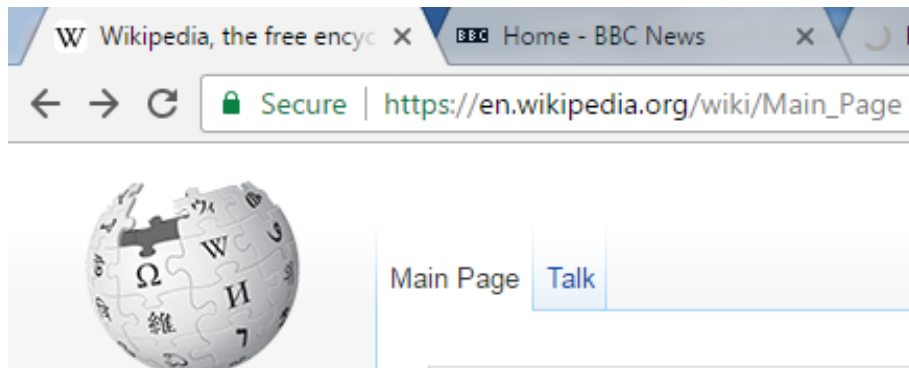
Aside: Favorites icon ("favicon")

```
<link href="filename" type="MIME type" rel="shortcut icon" />
```

HTML

```
<link href="yahoo.gif" type="image/gif" rel="shortcut icon" />
```

HTML



- The link tag, placed in the HTML page's head section, can specify an icon
 - ▣ this icon will be placed in the browser title bar and bookmark/favorite

HTML id attribute

```
<p>Coding Horror! Coding Horror!</p>  
<p id="mission">Our mission is to combine programming and  
<q>human</q> factors with geekiness!</p>
```

HTML

Coding Horror! Coding Horror!

Our mission is to combine programming and “human” factors with geekiness!

output

- ❑ A unique ID for an element on a page
- ❑ Each ID must be unique; can only be used once in the page

CSS ID selectors

```
#mission {  
font-style: italic;  
font-family: "Garamond", "Century Gothic", serif;  
}
```

CSS

Coding Horror! Coding Horror!

Our mission is to combine programming and “human” factors with geekiness!

output

- Applies style only to the paragraph that has the ID of mission

HTML class attribute

```
<p class="shout">Coding Horror! Coding Horror!</p>  
<p class="special">See our special deal on Droids!</p>  
  
<p class="special">Today only!</p>
```

HTML

Coding Horror! Coding Horror!

See our special deal on Droids!

Today only!

output

- A way to group some elements and give a style to only that group
- Unlike an id, a class can be reused as much as you like on the page

CSS class selectors

```
.special {  
background-color: yellow;  
font-weight: bold;  
}  
p.shout {  
color: red;  
font-family: cursive;  
}
```

CSS

Coding Horror! Coding Horror!

See our special deal on Droids!

Today only!

output

CSS class selectors

```
<p class="shout">Coding Horror! Coding Horror!</p>
<p class="special">See our special deal on
Droids!</p>
<p class="special shout">Today only!</p>
```

HTML

Coding Horror! Coding Horror!

See our special deal on Droids!

Today only!

output

CSS ID selectors

```
a:link { color: #FF0000; } /* unvisited link */  
a:visited { color: #00FF00; } /* visited link */  
a:hover { color: #FF00FF; } /* mouse over link */
```

CSS

Buy Early Buy Often!

output

CSS ID selectors

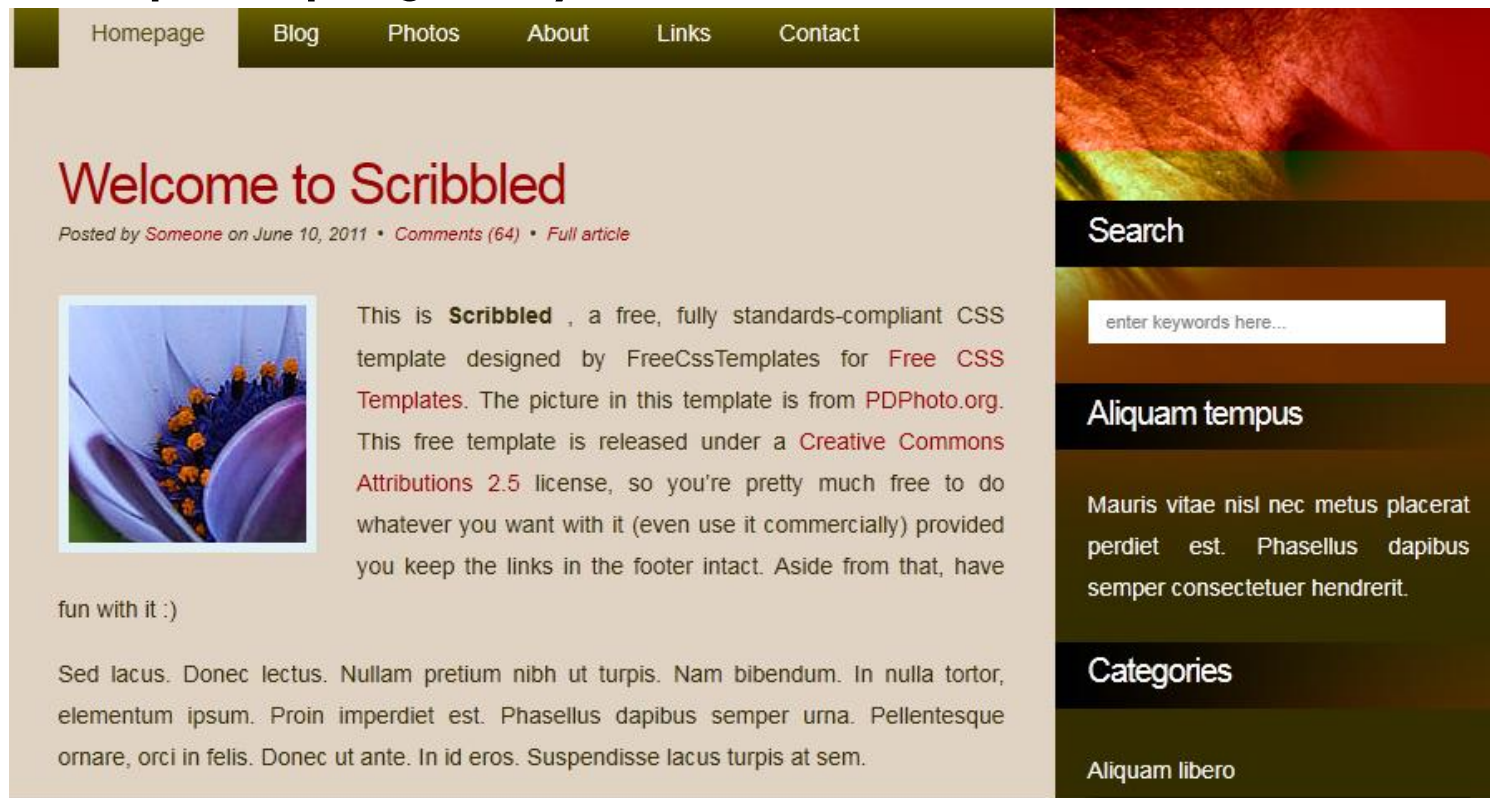
class	description
:active	an activated or selected element
:focus	an element that has the keyboard focus
:hover	an element that has the mouse over it
:link	a link that has not been visited
:visited	a link that has already been visited
:first-letter	used to add a style to the first letter of the specified selector.
:first-line	the first line of text inside an element
:first-child	used to select the specified selector, only if it is the first child of its parent.



Styling Page Sections

Why do we need page sections?

- Style individual elements, groups of elements, sections of text or of the page
- Create complex page layouts



Sections of a page <div>

```
.special {    background-color: yellow;
              font-weight: bold;
}
.shout {      color: red;
              font-family: cursive;
}
```

CSS

```
<div class="shout">
<h2>Coding Horror! Coding Horror!</h2>
<p class="special">See our special deal on Droids!</p>
<p>We'll beat any advertised price!</p>
</div>
```

HTML

Coding Horror! Coding Horror!

See our special deal on Droids!

We'll beat any advertised price!

output

- Tag used to indicate a logical section or area of a page
- Has no appearance by default, but you can apply styles to it

Inline Sections

```
<h2>Coding Horror! Coding Horror!</h2>
<p>See our <span class="special">spectacular</span>
deal on Droids!</p>
<p>We'll beat <span class="shout"> any advertised
price</span>!</p>
```

HTML

Coding Horror! Coding Horror!

See our **spectacular** deal on Droids!

We'll beat **any advertised price!**

output

- has no onscreen appearance, but you can apply a style or ID to it, which will be applied to the text inside the span

CSS context selectors

```
selector1 selector2 {  
  properties  
}
```

CSS

- applies the given properties to selector2 only if it is inside a selector1 on the page

```
selector1 > selector2 {  
  properties  
}
```

CSS

- applies the given properties to selector2 only if it is *directly* inside a selector1 on the page

Context selector example

```
<p>Eat at <strong>Mamoo's Burger</strong>...</p>
<ul>
<li>The <strong>greasiest</strong> burgers in town!</li>
<li>Yummy and greasy at the same time!</li>
</ul>
```

HTML

```
li strong { text-decoration: underline; }
```

CSS

Eat at **Mamoo's Burger...**

- The **greasiest** burgers in town!
- Yummy and greasy at the same time!

output

The CSS Box Model

□ Every element composed of:

- content
- a border around the element
- padding between the content and the border
- a margin between the border and other content



The CSS Box Model (cont.)

- $\text{width} = \text{content width} + \text{L/R padding} + \text{L/R border} + \text{L/R margin}$
- $\text{height} = \text{content height} + \text{T/B padding} + \text{T/B border} + \text{T/B margin}$
- IE8 doesn't do this right

IE 8 doesn't recognize border-box on elements with min/max-width or min/max-height (this used to affect Firefox too, but it was fixed in 2012). IE 7 and below do not recognize box-sizing at all,



The CSS Box Model (cont.)

← → ↻ ⓘ www.w3schools.com/css/tryit.asp?filename=trycss_boxmodel



```
<!DOCTYPE html>
<html>
<head>
<style>
div {
  background-color: lightgrey;
  width: 300px;
  border: 25px solid green;
  padding: 25px;
  margin: 25px;
}
</style>
</head>
<body>

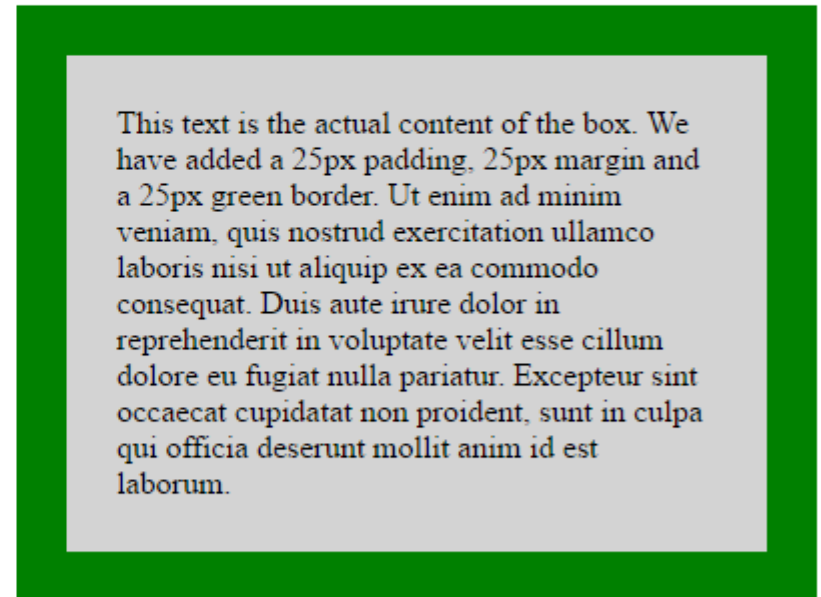
<h2>Demonstrating the Box Model</h2>

<p>Line 1: AlphaPeeler.</p>

<div>This text is the actual content of the box. We
have added a 25px padding, 25px margin and a 25px
green border. Ut enim ad minim veniam, quis nostrud
exercitation ullamco laboris nisi ut aliquip ex ea
commodo consequat. Duis aute irure dolor in
reprehenderit in voluptate velit esse cillum dolore
eu fugiat nulla pariatur. Excepteur sint occaecat
cupidatat non proident, sunt in culpa qui officia
deserunt mollit anim id est laborum.</div>
```

Demonstrating the Box Model

Line 1: AlphaPeeler.



http://www.w3schools.com/css/css_boxmodel.asp

CSS properties for borders

```
h2 { border: 5px solid red; }
```

CSS

This is a heading.

property	description
border	thickness/style/size of border on all 4 sides

- **Thickness:** px, pt, em, or thin, medium, thick
- **Style:** none, hidden, dotted, dashed, double, groove, inset, outset, ridge, solid
- **color**

https://www.w3schools.com/css/css_border.asp

CSS properties for borders

A dotted border.

A dashed border.

A solid border.

A double border.

A groove border. The effect depends on the border-color value.

A ridge border. The effect depends on the border-color value.

An inset border. The effect depends on the border-color value.

An outset border. The effect depends on the border-color value.

No border.

A hidden border.

A mixed border.

More border properties

property	description
border-color, border-width, border-style	specific properties of border on all 4 sides
border-bottom, border-left, border-right, border-top	all properties of border on a particular side
border-bottom-color, border-bottom-style, border-bottom-width, border-left-color, border-left-style, border-left-width, border-right-color, border-right-style, border-right-width, border-top-color, border-top-style, border-top-width	properties of border on a particular side

[Complete list of border properties](http://www.w3schools.com/css/css_reference.asp#border)

http://www.w3schools.com/css/css_reference.asp#border

Another border example

```
h2 {  
border-left: thick dotted #CC0088;  
border-bottom-color: rgb(0, 128, 128);  
border-bottom-style: double;  
}
```

CSS

•
•
•
•
•
This is a heading.

output

- each side's border properties can be set individually
- if you omit some properties, they receive default

CSS properties for padding

property	description
padding	padding on all 4 sides
padding-bottom	padding on bottom side only
padding-left	padding on left side only
padding-right	padding on right side only
padding-top	padding on top side only
Complete list of padding properties http://www.w3schools.com/css/css_reference.asp#padding	

Padding example 1

```
p { padding: 20px; border: 3px solid black; }  
h2 { padding: 0px; background-color: yellow; }
```

CSS

This is a first paragraph.

This is a second paragraph.

This is a heading

output

Padding example 2

```
p {  
padding-left: 200px; padding-top: 30px;  
background-color: fuchsia;  
}
```

CSS

This is a first paragraph

This is a second paragraph

output

- each side's padding can be set individually
- notice that padding shares the background color of the element

CSS properties for margins

property	description
margin	margin on all 4 sides
margin-bottom	margin on bottom side only
margin-left	margin on left side only
margin-right	margin on right side only
margin-top	margin on top side only
Complete list of margin properties http://www.w3schools.com/css/css_reference.asp#margin	

Margin example 1

```
p {  
margin: 50px;  
background-color: fuchsia;  
}
```

CSS

This is a first paragraph

This is a second paragraph

output

- notice that margins are always transparent

Margin example 2

```
p {  
margin-left: 8em;  
background-color: fuchsia;  
}
```

CSS

This is a first paragraph

This is a second paragraph

output

- each side's margin can be set individually

CSS properties for dimensions

```
p { width: 350px; background-color: yellow; }  
h2 { width: 50%; background-color: aqua; }
```

CSS

This paragraph uses the first style above

An h2 heading

output

property	description
width, height	how wide or tall to make this element (block elements only)
max-width, max-height, min-width, min-height	max/min size of this element in given dimension