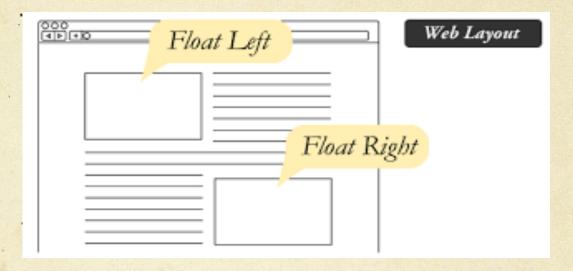
Web Development Fundamentals



ReCap – CSS/Box Model and Creating Page Layout in HTML

Floating elements

Multi-column layouts

Lecturer: Marie Brennan

Autumn 2017

Introduction

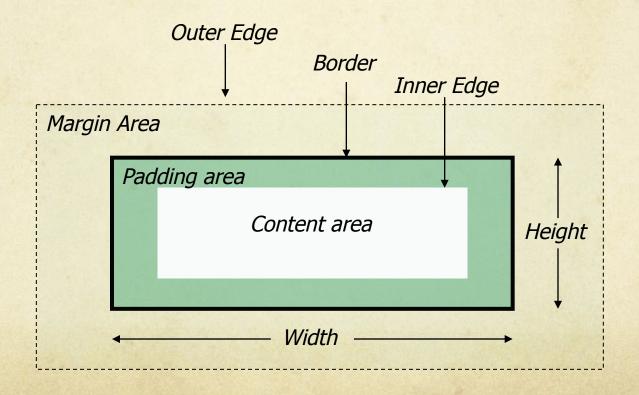
O Every element in a HTML document generates a BOX in which the content is housed.

- O In this lecture we are going to look at:
 - Borders
 - Padding

The Element Box

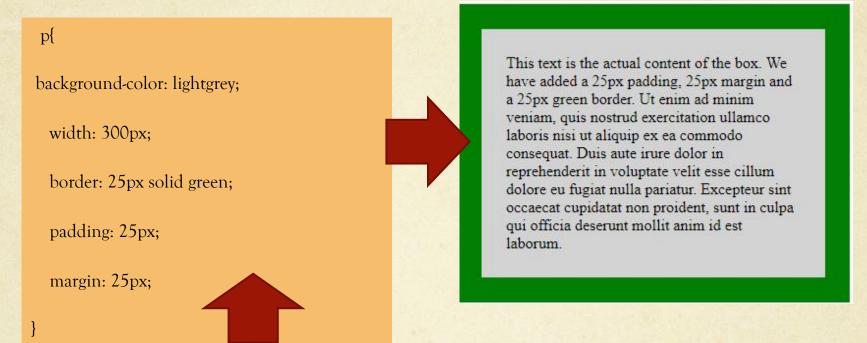
The Element Box

- As we have seen, every HTML element, both block-level or inline generates a rectangular element box.
- The components of this box are shown below.





Example -CSS/html and browser



Lets change some of the css and see what happens

```
div {

background-color: lightgrey;

width: 300px;

border: 25px solid green;

padding: 50px;

margin: 25px;

}
```

```
p{
    background-color:
lightgrey;
    width: 300px;
    border: 25px solid
green;
    padding: 60px;
    margin: 50px;
}
```

```
div {
   background-color: lightgrey;
   width: 300px;
   border: 25px solid green;
   padding: 25px;
   margin: 150px;
}
```

```
p{
    background-color: lightgrey;
    width: 600px;
    border: 25px solid green;
    padding: 25px;
    margin: 150px;
}
```

Padding

Padding

- Padding is space between content area and border
- Rule of thumb seriously consider some padding if element has background colour or a visible border

example

```
p {
    padding: 4em;
    background-color: #D098D4;
}
```

р padding: 4em; background-color: #D098D4; Lecture 8 Example 1 - Mozilla Firefox Tools History Bookmarks Help file:///E:/Data/Tε ▼ 🕨 M Gmail - Inbox Lecture 8 Example 1 padding: 4em; Cabbage when boiled with salt pork, as it is mostly used, is the food for strong and healthy digestive powers; but when eaten in its raw state, served with vinegar and pepper, it is considered one of the most easily digested articles of diet. In the process of cooking, even with the greatest care, a large Using padding this way adds portion of the sweetness is lost. equal amount of padding on all 4 sides

Done

Slide

Cabbages and Cauliflowers:

How to grow them

A Practical Treatise, Giving Full Details on Every Point, Including Keeping and Marketing the Crop by JAMES J. H. GREGORY

Individual padding for all 4 sides can be defined:

```
p {
    padding-top
    padding-right
    padding-bottom: 1em;
    padding-left: 1em;
    padding-right: 1em;
    padding-right: 1em;
    background-color: #D098D4;
}
```

Borders

- O A border is a line drawn around content area and its (optional padding).
- 8 different border styles and border can be any width or colour we want

border-style

```
values: none | dotted | dashed | solid
| double | groove | ridge | inset |
outset | inherit
```

default: none

applies to: all elements

inherits: no



Borders: style

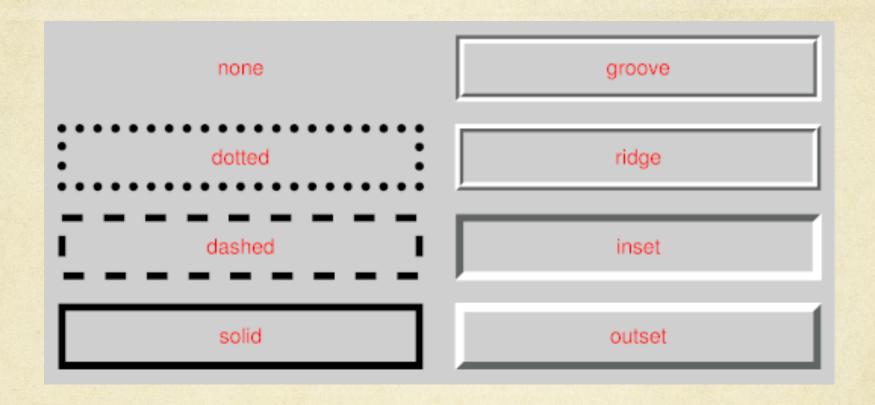


Image above shows result of applying the different options.



Cabbage when boiled with salt pork, as it is mostly used, is the food for strong and healthy digestive powers; but when eaten in its raw state, served with vinegar and pepper, it is considered one of the most easily digested articles of diet. In the process of cooking, even with the greatest care, a large portion of the sweetness is lost.

```
/* another example of adding a border */
p {
    border-style: dashed;
    background-color: #D098D4;
    padding: 2em;
}
```

Borders: style

- You can also specify different border for the top, left, bottom and right of elements.
- O This is not too common but if you want to, you can do it with these properties:

- O border-top-style
- O border-right-style
- O border-bottom-style
- o border-left-style

border-top-style

orem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

```
p {
border-top-style: dashed;
background-color: #FFF9DC;
padding: 2em;
}
```

border-left-style

orem Ipsum is simply dummy text of the printing and typesetting industandard dummy text ever since the 1500s, when an unknown printer to make a type specimen book. It has survived not only five centuries, but remaining essentially unchanged. It was popularised in the 1960s with Lorem Ipsum passages, and more recently with desktop publishing so: versions of Lorem Ipsum.

```
p {
border-left-style: dashed;
background-color: #FFF9DC;
padding: 2em;
}
```

Borders: width

- O Border width can be controlled with the border-width property.
- You can give this a length unit or use predefined keywords thin, medium, or thick. Here are some examples:
- And here is an example of creating a class for formatting...

.banner {
border-width: thin;
border-style: dashed; }

CSS

HTML

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browser

CSS

.help {

border-width: 0.5em;

border-style: solid;

width: 300px;

height: 100px; }



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unchanged.

Borders: color

- O You can set also specify border colour
 - This then overrides the inheritance of the foreground (text) color of the element to have a border)
- O You do this with, you guessed it, the border-color property.
- You can give this an RBG value or one of the predefined colour names we talked about previously
- Also border-top-color etc. properties for specifying different colours for top, right, left and bottom borders.

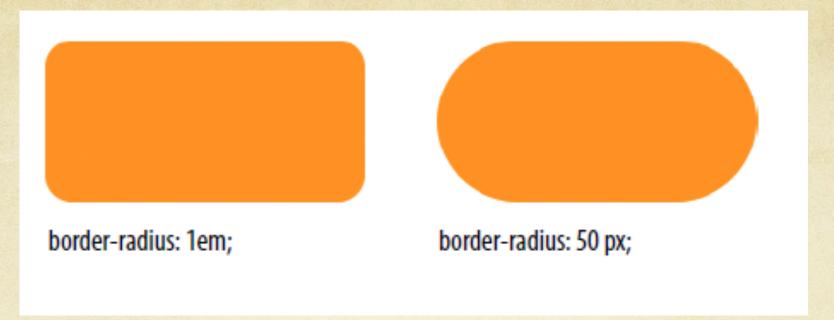
```
.banner {
border-width: thin;
border-style: dashed;
border-top-color: red;
}
```

orem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged.

Borders: shorthand rule

Can set width/style/color in a single declaration: Order does not matter, although most web developers use the order: width style color O E.g. footer { border: 2px solid red; Can also use shorthand rule for individual parts (top, bottom, left, right) of the border, e.g.: a:hover { border-top: 1px dashed red; border-bottom: 1px dashed red;

Border radius (rounded corners ...)



- O A curved radius can be defined
 - O The same for all 4 corners
 - O Differently for each corner individually
- O Length values of EMs, pixels etc. can be used

```
border-radius: 1em; /* subtle rounding */
border-radius: 50px; /* very rounded */
```

```
.help {
border-width: 0.5em;
border-style: solid;
  width: 300px;
border-radius: 1em;
  height: 200px;
}
```

orem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged.

border-top-right-radius: 50 px;

- O Changing just one or two corners can be effective
 - O E.g. for 'tab' effects etc.

border-top-right-radius: 50px;

- Can give 2 values
 - O First for horizontal radius
 - Second for vertical radius

border-top-right-radius: 100px 50px;

border-top-left-radius: 100px 50px;

Here we see less vertical curve, but larger horizontal curve

Width and height

- Width and Height of an Element
- In order to set the width and height of an element correctly in all browsers, you need to know how the box model works.
- Important: When you set the width and height properties of an element with CSS, you just set the width and height of the content area.
- To calculate the full size of an element, you must also add padding, borders and margins.

Assume we want to style a element to have a total width of 350px: Example

<h2>Calculate the total width:</h2>

The picture above is 350px wide. The total width of this
element is also 350px.

Calculate the total width:



The picture above is 350px wide. The total width of this element is also 350px.

```
p {
    width: 320px;
    padding: 10px;
    border: 5px solid
    gray;
    margin: 0;
}
```

Some maths ©

320px (width)
+ 20px (left + right padding)
+ 10px (left + right border)
+ 0px (left + right margin)
= 350px

```
p {
    width: 320px;
    padding: 10px;
    border: 5px solid gray;
    margin: 0;
}
```

The total width of an element should be calculated like this:

Total element width = width + left padding + right padding + left border + right border + left margin + right margin

The total height of an element should be calculated like this:

Total element height = height + top padding + bottom padding + top border + bottom border + top margin + bottom margin

Note for old IE: Internet Explorer 8 and earlier versions, include padding and border in the width property. This problem is fixed by adding the <!DOCTYPE html> to the HTML page.

Add the code to set the width to 200px.

```
div {

background-color: lightblue; Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

width: 200px;
}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

Set the padding of the div to "25px"

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

div {

background-color: lightblue;

width: 200px;

padding:25px;

}

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

Set the border of the div to "25px solid navy"

div {

background-color: lightblue;

width: 200px;

padding:25px;

border:25px solid navy;

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

Summary and Conclusions

The Box Model

We set a width property value of 400 pixels, but the actual width of our element is 492pixels.

- By default the box model is additive
- To determine the actual size of a box we need to take into account padding, borders, and margins for all four sides of the box.
- Our width not only includes the width property value, but also the size of the left and right padding, left and right borders, and left and right margins.
- So far a lot of these properties might not make a whole lot of sense, and that's all right.

To clarify things, let's take a close look at all of the properties—width, height, padding, border, and margin—that go into forming the box model.

Width AND Height

- The default width of an element depends on its display value.
- Block-level elements have a default width of 100%, consuming the entire horizontal space available.
- Inline and inline-block elements expand and contract horizontally to accommodate their content.
- Inline-level elements cannot have a fixed size, thus the width and height properties are only relevant to non-inline elements.
- To set a specific width for a non-inline element, use the width property:

```
div {
    width: 400px;
}

div
{
    height:100px;
}
```

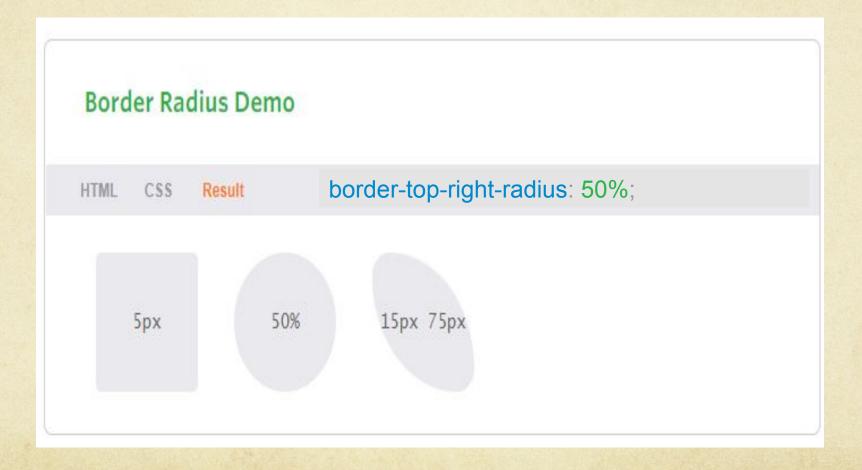
Border, Padding, Margins

O Border-top, border-bottom...left and right

```
div {
border-top-right-radius: 5px; }
```

...And same applies for border-top-left-radius.....etc

Border, Padding, Margins



Border, Padding, Margins

- Margin-top, margin-bottom....left and right
- O Padding-top, bottom, left and right

New

Padding-box

- The padding-box value alters the box model by including any padding property values within the width and height of an element.
- When using the padding-box value, if an element has a width of 400 pixels and a padding of 20 pixels around every side, the <u>actual width will remain 400 pixels</u>.
- As any padding values increase, the content size within an element shrinks proportionately.
- If we add a border or margin, those values will be added to the width or height properties to calculate the full box size.

Padding-box

For example, if we add a border of 10 pixels and a padding of 20 pixels around every side of the element with a width of 400 pixels,the actual full width will become 420 pixels.

div { box-sizing: padding-box; }

So to have this in your site use this code in the css

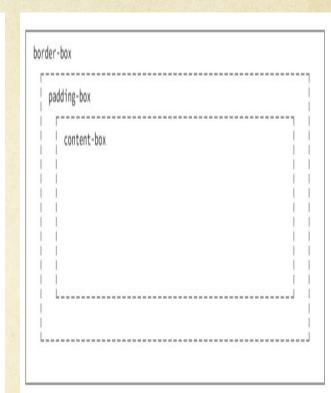
Box Sizing

```
div { -webkit-box-sizing: content-box;
-moz-box-sizing: content-box;
box-sizing: content-box; }
```

- If you set the width of an element to 400 pixels and then add 20 pixels of padding and a border of 10 pixels on every side, the actual full width of the element becomes 460 pixels.
- Remember, we need to add the width, padding, and border property values together to get the actual, full width of an element.
- The box model may, however, be changed to support different calculations.
 CSS3 introduced the <u>box-sizing</u> property, which allows us to change exactly how the box model works and how an element's size is calculated.
- The property accepts three primary values—content-box, padding-box, and border-box—each of which has a slightly different impact on how the box size is calculated.

Border-Box

- Lastly, the <u>border-box</u> value alters the box model so that any border or padding property values <u>are</u> included within the width and height of an element.
- When using the border-box value, if an element has a width of 400 pixels, a padding of 20 pixels around every side, and a border of 10 pixels around every side, the actual width will remain 400 pixels.
- If we add a margin, those values will need to be added to calculate the full box size.
- No matter which box-sizing property value is used, any margin values will need to be added to calculate the full size of the element.



div { box-sizing:
border-box; }

Box Model

- Box model
 - O Spacing and size of elements (div, P, H1, img, UL, OL)
- Padding
 - O Spacing between content and border
 - O Padding on 4 sides (top/bottom/left/right)
- O Borders
 - O Line drawn around (content + padding) rectangle
 - O Can get fancy with new properties like border-radius
- O Design rule of thumb
 - O IF you use border OR background color
 - O THEN define some padding

Separating Content-recap

<div> Element tag

- Useful for dividing parts of the page into sections.
- Creates a "box" with the following attributes:
 - margin
 - padding
 - border
 - height
 - width
 - (..and lots more)
- Primary element used for CSS Layouts (more information in CSS Layouts tutorial)

HTML semantic page elements The magnificent 7 elements

- Main 5 useful new elements:
 - header
 - 0 nav
 - footer
 - o aside
 - section

- Also (less useful), remaining 2 new elements:
 - o article
 - o address

<header> <nav> <section> <aside> <article> <footer>

header	Defines a header for a document or a section
nav	Defines a container for navigation links
section	Defines a section in a document
article	Defines an independent self-contained article
aside	Defines content aside from the content (like a sidebar)
footer	Defines a footer for a document or a section
details	Defines additional details
summary	Defines a heading for the details element

Headers Footers

Headers and footers

<header>

- Headers
 - For <u>introductory</u> material about
 - Page
 - Section/article in a page

<footer>

- Footers
 - For information typically at the end of
 - Page
 - Section/article in a page
 - E.g. author details / copyright etc.

NOTE:

NESTING not permitted

- Headers cannot contain other headers or footers
- O Footers cannot contain other headers or footers

section

Long documents, or parts of

documents,

can benefit by being broken down into sections

<section>

Content in here

</section>

```
<section>
 <h2>Typography Books</h2>
 <l
   </section>
<section>
 <h2>Online Tutorials</h2>
 These are the best tutorials on the web.
 <l
   </section>
```

Aside (sidebars)

Aside (sidebars)

- For content that is related but surrounding content on left/right side of the screen
- Might be for:
 - Pull quotes
 - List of links or references
- Content that is <u>related but not essential</u> to the main document
 - E.g. If aside NOT visible, page still makes sense ...

<aside>

NOTE – do NOT use for main navigation links of the page – use ≤nav> for that ...



```
<h1>Web Typography</h1>
>
Back in 1997, there were competing font formats
and tools for making them...
>
We now have a number of methods for using
beautiful fonts on web pages...
<aside>
  <h2>Web Font Resources</h2>
  <l
    <1i>>
    <a href="http://typekit.com/">Typekit</a>
    <a href="http://www.google.com/webfonts">Google
    Fonts</a> 
</aside>
```

Nav (navigation)

Part of a page that provides primary navigational links

- E.g.
 - Links to important parts of the SITE
- Or to different parts of a long section of article

Not to be used for tangental links (use aside for that)

<nav> </nav>

```
<nav>
 ul>
   <a href="...">Home page</a>/li>
   <a href="...">About</a>
   <a href="...">Contact Us</a>
   <a href="...">Products</a>
   <a href="...">Our customers</a>/li>
 </nav>
```

DIV (division)

Generic block – when no other is appropriate

<div>

<div>

- Tip: The \div \ element is very often used together with CSS, to layout a web page.
- O By default, browsers always place a <u>line break</u> before and after the <div> element.
- O However, this can be changed with CSS.

```
<!-- use of DIV to group 2 blocks >
<div>
    <section>
         main content here
    </section>
    <aside>
         bonus content here
    </aside>
</div>
```

```
<!-- use of DIV to distinguish from section in
footer
- So can target each block in footer
separately in CSS-->
<footer>
    <section>
         some content here
    </section>
    <div>
         other content here
    </div>
</div>
```

Examples of page structure templates ...

HTML

```
<header>
    (logo sand navigation here)
    <nav>
         (list of links here)
    </nav>
</header>
<section class="main">
    (main page content here)
</section>
<footer>
    (copyright information here
</footer>
```

```
<header>
     (logo and navigation here)
</header>
<nav>
     (list of links here
</nav>
<section>
     (main page content here)
</section>
<aside>
     (bonus content here)
</aside>
<footer>(copyright information here
```

</footer>

```
<nav>
     (list of links here)
</nav>
<div>
    <section>
         (column1 content here)
    </section>
    <section>
         (column2 content here)
    </section>
</div>
<footer>
     (copyright information here
</footer>
```

```
<!-- multi-column footer -->
<footer>
    <section>
         (left content here)
    </section>
    <section>
         (middle content here)
    </section>
    <section>
         (right content here)
    </section>
</footer>
```

Conclusion: Page content

- O HTML 5 page content the most useful 5 block elements:
 - header
 - footer
 - O nav
 - o section
 - o aside

• And DIV when the others not enough ...we will cover more divs and spans later...

Layout of web page

- O 2 ways
- O First = divs, ids and classes
- O Second = HTML 5 sections

Divs, ids in HTML

```
<div id = "header">CONTENT of HEADER HERE</div>
<div id = "nav"> NAVIGATION BAR HERE </div>
<div id = "main"> MAIN PAGE CONTENT HERE </div>
<div id = "section"> SOME MORE CONTENT HERE</div>
<div id = "footer"> FOOTER STUFF HERE</div>
```

Formatted in CSS

```
#header { .....}
#nav { .....}
#section { .....}
#main { .....}
```

Html Sections in html

```
<header> </header>
<nav> </nav>
<section> </section>
<main> </main>
<aside> </aside>
<article> </article>
<footer> </footer>
```

HTML sections formatted in css as

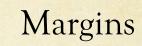
```
header { .....}
nav { .....}
section { .....}
aside {...}
Section {....}
main { .....}
footer { .....}
```

Layout continued

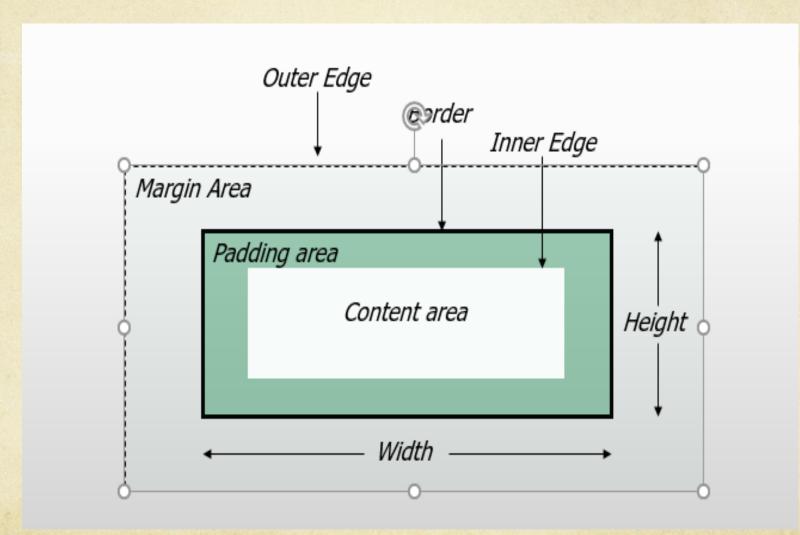
- Next we might want to create a class that will serve as a container for our elements.
- We can use this container class on different elements to set a common width, center the elements on the page, and apply some common horizontal padding.
- Setting a width tells the browser definitively how wide any element with the class of container should be.
- Using a left and right margin of auto in conjunction with this width lets the browser automatically figure out equal left and right margins for the element, thus centering it on the page.
- Lastly, the left and right padding ensures that our content isn't sitting directly on the edge of the element and provides a little breathing room for the content.

```
<div class ="container">
```

```
.container {
margin: 0;
padding-left: 30px;
padding-right: 30px;
width: 960px; }
```



The box model



keep elements from bumping into one another

- Can use them to make space for another column or content
- Margins work similarly padding ...

margin

values: length | percentage | auto | inherit

default: auto

applies to: all elements

inherits: no

margin-top, margin-right, margin-bottom, margin-left

values: length | percentage | auto | inherit

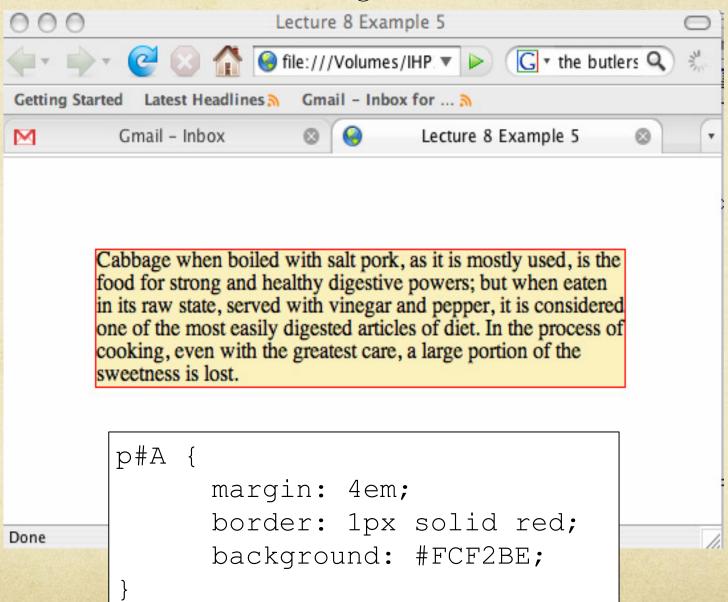
default: auto

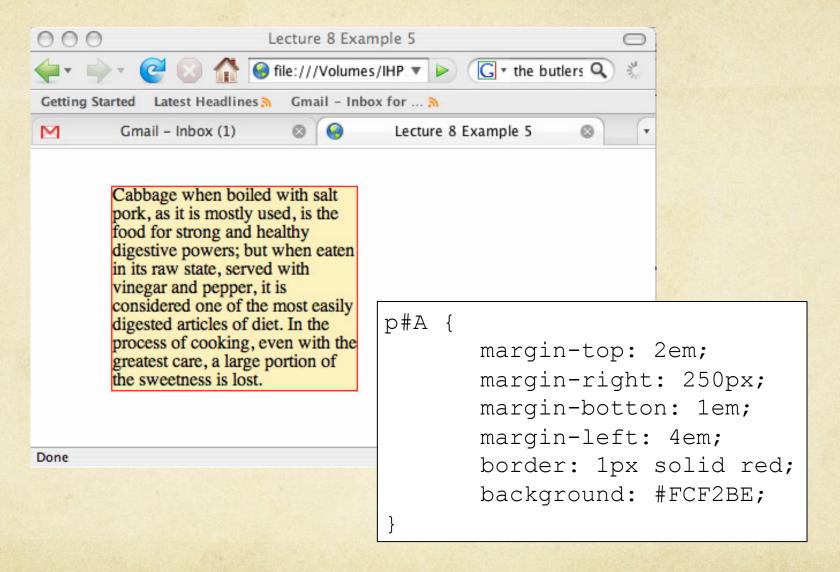
applies to: all elements

inherits: no

- O To add margin just specify an amount
 - In general tend to use **ems** or **pixels** as units of measurement

- If we use margin it adds the same amount on <u>all sides</u>
- O If want different amounts on different sides then use margin-left, margin-top etc.
- Following slides show some examples of adding margins to paragraph elements.



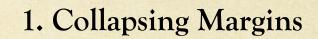


Three things to be aware of with respect to margins:

1. Collapsing Margins

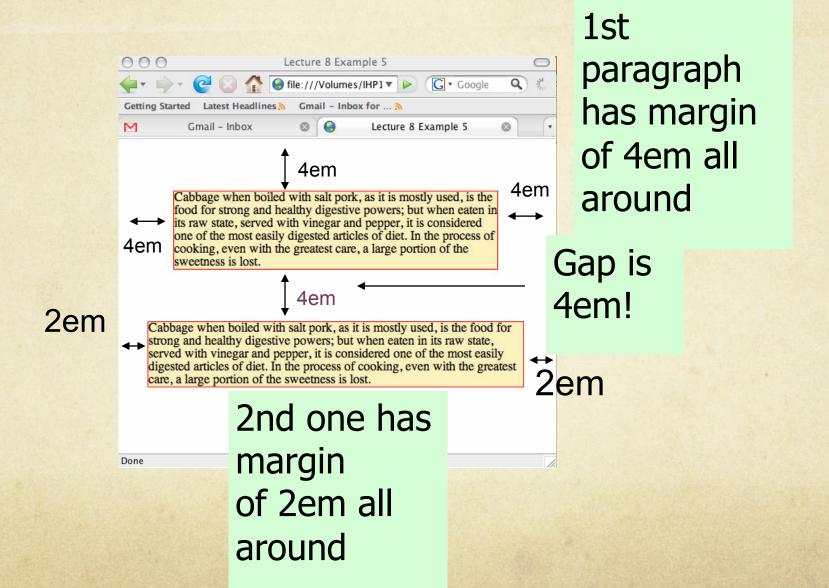
2. Margins on inline elements

3. Negative Margins



1. Collapsing Margins

- The most important one is that neighbouring ones collapse.
- O Suppose you have two adjacent elements that both have margins, for example two paragraphs.
- The gap between the elements will <u>not</u> be the sum of the two margins.
- The gap between the elements is equivalent to the larger margin i.e. they collapse into one another.
- Example on next slide.



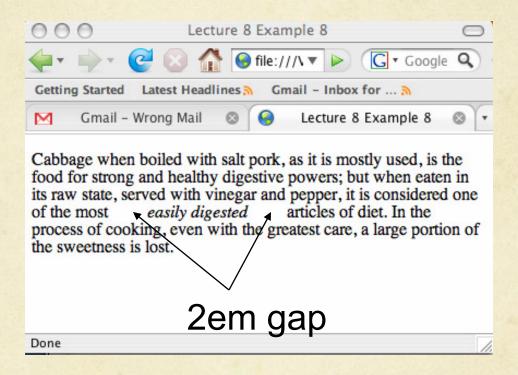
2. Margins on inline elements

2. Margins on inline elements

- These behave a little differently to what you might expect.
- Dasically, applying top and bottom margins will have no effect but applying left and right ones will.
- O So suppose we make a style rule for an **em** element that includes an all round margin.

em { margin: 2em;}

Overleaf shows what happens to an inline **em** element styled in this way.



The exception to this behaviour is that image elements (img) will display margins top and bottom as well and left and right.

display: block; display: inline;

You can CHANGE inline to be block elements and vice versa!!!!!!!!!!

- O Sometimes we want to ensure an element is displayed a particular way
 - E.g. we may wish to define width and height we can only do this if an element is displayed as a BLOCK
 - O So we may need to declare that such elements are displayed as block rather than their default INLINE
 - And vice versa
 - O E.g. a list all on the same line rather than on separate lines

```
p { display: inline; }
em { display: block; }
```

- The following 2 slides illustrate this concept
 - O They are a little advanced
 - O But we'll meet them soon to create nice navigation bars
 - O So it's worth being aware that the BOX MODEL is important in terms of:
 - O Can we set **HEIGHT** (BOX)
 - O Can we have all on same line (INLINE)
 - O Can we float (BOX)
- O It will all make sense (hopefully!)

Display list items inline

```
.list2 li
                 CSS
  /*
  remove bullets from
  list items
  */
  list-style-type: none;
  /*
  make the list items
  display inline
  */
  display: inline;
}
```

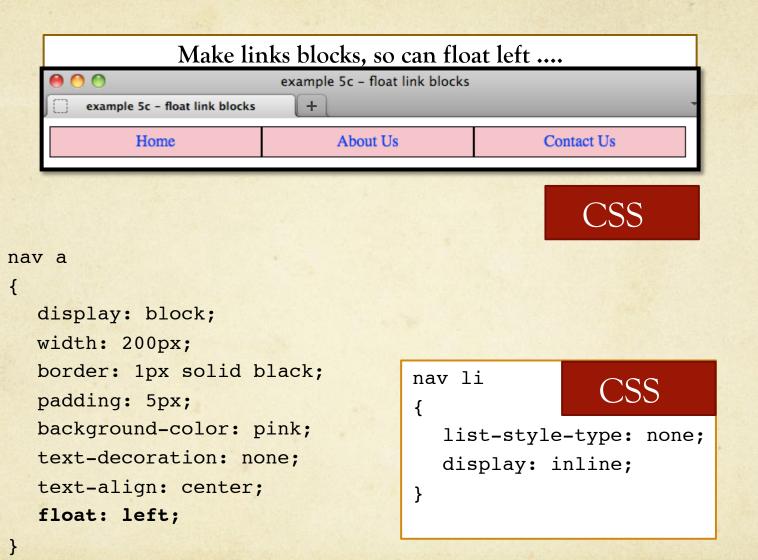
```
example 5a - list items inline
                     +
         file:///Users/matt_smith/Dro

    apples

    pears

    bananas

   apples pears bananas
                 HTML
  apples
  pears
  bananas
apples
  pears
  bananas
                  HTML
```



We will cover more on this next week....

http://www.iteracy.com/resources/build-a-better-website/size-and-layout-of-a-web-page I thought the layout of this site was simple and easy for new developers



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to create

Resources

Troubleshooting

Bluffers guide

Build a better website

Hot topics

Web page size and layout

Most web pages follow a common set of sizes and layouts, which you'll recognise even if you aren't aware of them. For example, did you know that nine out of the top ten most popular websites in the world use a fixed-width, centre-aligned design? Maybe you should too.

Note that this article is now a little old, for more information about modern design standards, check out our Responsive Design page.

Our article on web page size and layout breaks down web design into simple concepts, and helps you decide on a format for your website. To understand what the individual elements of a page are for, and why you need them, read our anatomy of a web page.

But css3 is making life easier for us all the time with:

- O Box-sizing
- O Flex-boxes(later)

What next?

The navigation bar for your sites

Some practice with divs for layout

Some practice with the box model elements...padding, borders, margins and width/height

That's all folks

Next weeks lab:

Linking pages that do down a directory and back up a directory.

Creating another couple of HTML pages and CSS for the Blackgoose Website