

Modern CSS Techniques

Course Objectives

- Understand **CSS language fundamentals** including idioms and best practices
- Use **CSS layouts** to design any page structure
- Create and work with **responsive solutions**
- Understand the uses of a **CSS pre-processing system**
- Utilize techniques for **Progressive Enhancement**

Course Agenda

Day 1

- Web Development Environment
- CSS Foundations
- CSS Box Model

Course Agenda

Day 2

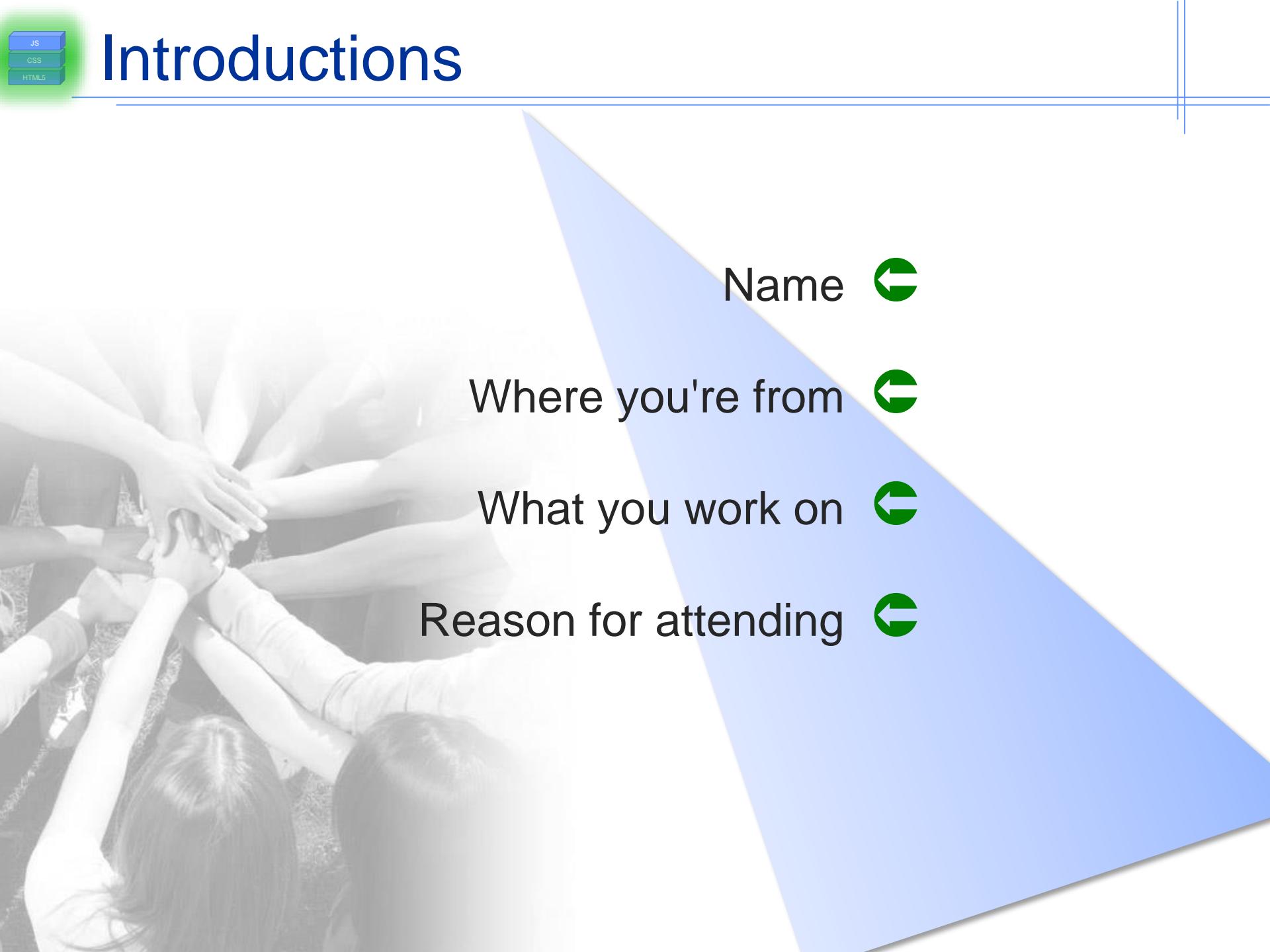
- Page Layout
- CSS3 Features and Progressive Enhancement
- Responsive Design Principles
- Media Queries

Course Agenda

Day 3

- Fluid Grids
- Bootstrap
- Typography & Responsive Images
- Using Pre-processing Systems

Introductions

A grayscale photograph showing multiple hands of different people stacked together in a circle, symbolizing teamwork or community. The hands are positioned in the lower-left quadrant of the slide.

Name ➔

Where you're from ➔

What you work on ➔

Reason for attending ➔

Logistics



*Typical Daily Schedule**

8:30	Start Day
9:45	Morning Break
11:30 – 12:30	Lunch
1:45	Afternoon Break 1
3:00	Afternoon Break 2
4:30	End of Day

* Your schedule may vary

Get the Most from Your Experience

Ask Questions



Chapter 1

The Web Development

Environment

Web Development Considerations
and Practices

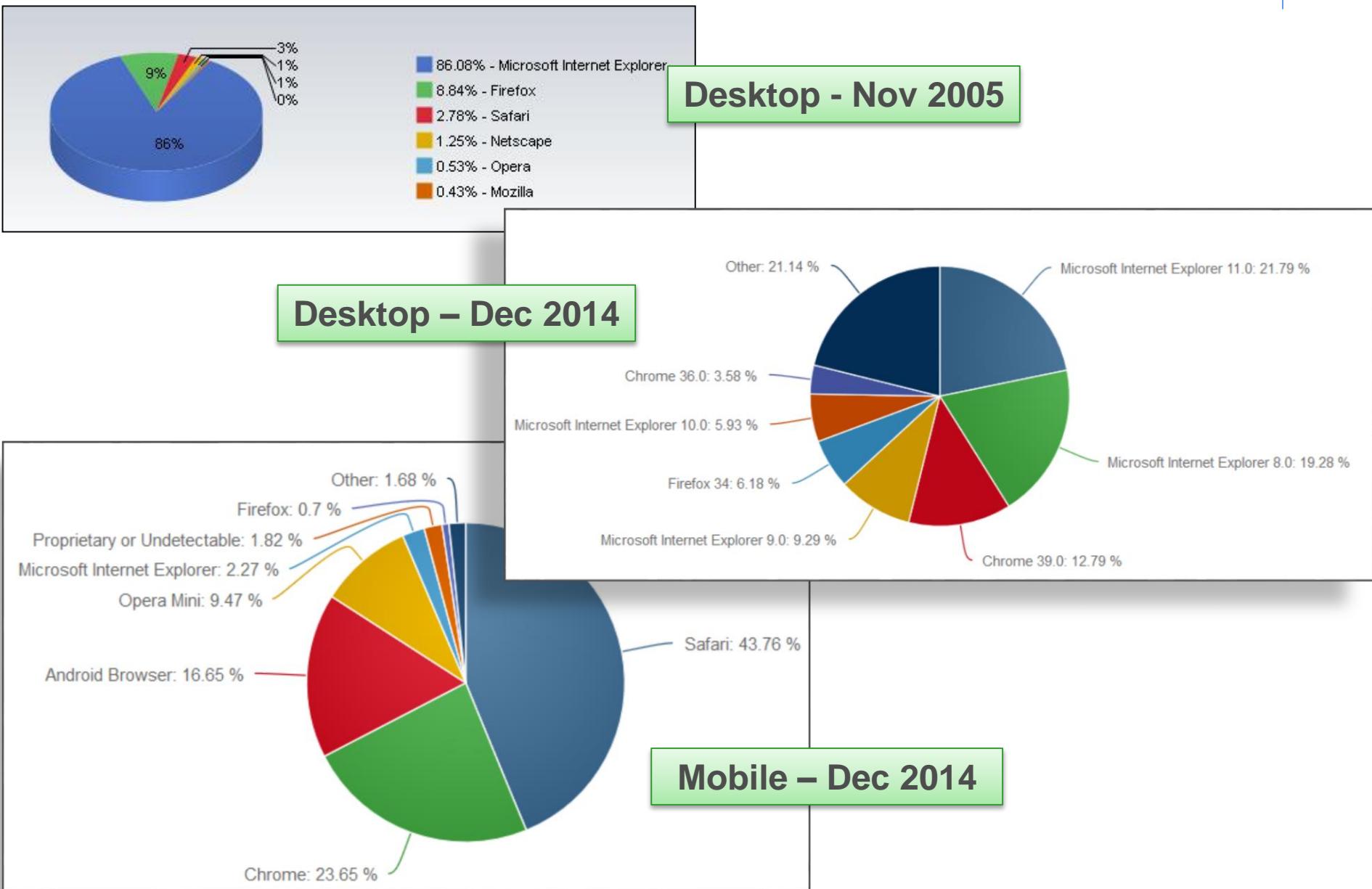
Overview

Introduction

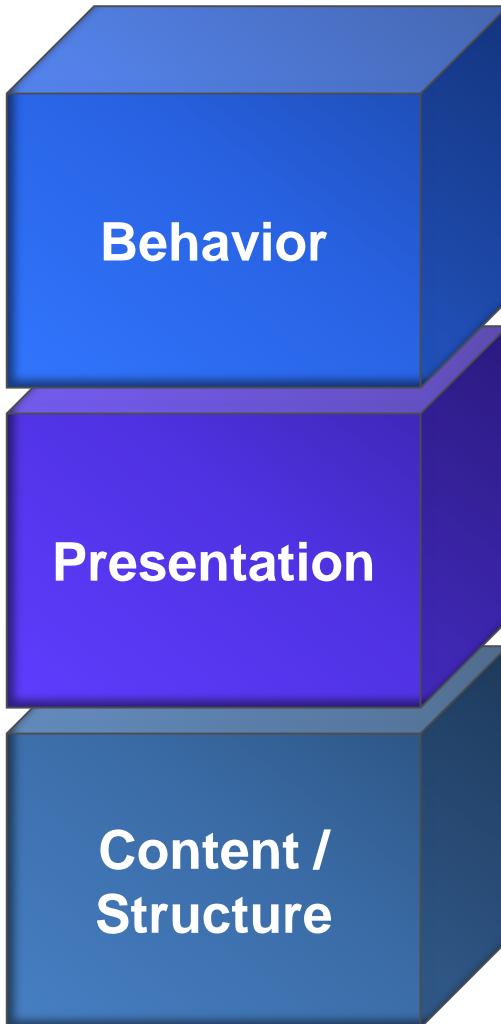
Architecture

Browser Tools

Browser Market Share



A Layered Architecture



JavaScript

CSS

HTML

Layered architectures address the issues encountered when applications become large and complex

Why a Layered Architecture?

- Attempts to **support all user-agents** (browsers)
 - Uses a universally understood markup document
 - Layers additional stylesheets and scripts as supported by the browser
- Allows **modern devices** to take advantage of newer features
- Provides structure for **future design strategies**

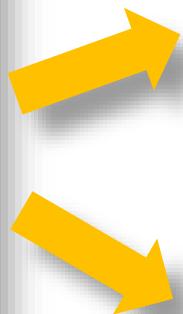
Presentation Layer: CSS

- **Cascading Style Sheets** define the look-and-feel of an application
 - Separation of content and presentation is instrumental in ensuring responsive, maintainable designs

<http://www.csszengarden.com/>

The screenshot shows the CSS Zen Garden homepage with the title "css Zen Garden" and "The Beauty of CSS Design". It features a large text area with various CSS-related tips and links. A green box at the bottom right highlights the "Default CSS" theme.

css Zen Garden
The Beauty of CSS Design
A demonstration of what can be accomplished visually through CSS-based design. Select any style sheet from the list to load it into this page.
Download the sample [html file](#) and [css file](#).
The Road to Enlightenment
Littering a dark and dreary road lay the past relics of browser-specific tags, incompatible DOMs, and broken CSS support. Today, we must clear the mind of past practices. Web enlightenment has been achieved thanks to the tireless efforts of folk like the W3C, WaSP and the major browser creators. The css Zen Garden invites you to relax and meditate on the important lessons of the masters. Begin to see with clarity. Learn to use the (yet to be) time-honored techniques in new and invigorating fashion. Become one with the web.
So What Is This About?
There is clearly a need for us to be taken seriously by graphic artists. The Zen Garden aims to excite, inspire, and encourage participation. To begin, view some of the existing designs in the list. Clicking on any one will load the style sheet into this very page. The code remains the same; the only thing that has changed is the external .css file. Yes, really!
CSS always complements and total control over the style of a hypertext document. The only way this can be illustrated is that gods people existed is by demonstrating what it can truly be, once the reins are placed in the hands of those able to create beauty from structure. To date, most examples of neat tricks and hacks have been demonstrated by enthusiasts and coders. Designers have yet to make their mark. This needs to change.
Participation
Graphic artists only please. You are modifying this page, so strong CSS skills are necessary, but the example files are commented well enough that even CSS novices can use them as starting points. Please see the [CSS Resource Guide](#) for advanced tutorials and tips on working with CSS.
You may modify the style sheet in any way you wish, but not the HTML. This may seem daunting at first if you've never worked this way before, but follow the listed links to learn more, and use the sample files as a guide.
Download the sample [html file](#) and [css file](#) to work on a copy locally. Once you have completed your masterpiece (and please, don't submit half-finished work) upload your .css file to a web server under your control. [Send us a link](#) to the file and we'll choose to set it, we will spider the associated images. Final submissions will be placed on our server.
Benefits
Why participate? For recognition, inspiration, and a resource we can all refer to when making the case for CSS-based design. This is sorely needed, even today. More and more major sites are taking the leap, but not enough. One day this gallery will be a historical curiosity; that day is not today.
Requirements
We would like to see as much CSS3 as possible. CSS2 should be limited to widely-supported elements only. The css Zen Garden is about functional, practical CSS and not the latest bleeding-edge tricks viewable by 2% of the browsing public. The only real requirement we have is that your CSS validates.
Unfortunately, designing this way highlights the flaws in the various implementations of CSS. Different browsers display differently, even completely valid CSS at times, and this becomes maddening when a fix for one leads to a breakage in another. View the [Resources](#) page for information on some of the fixes available. Full browser compliance is still sometimes a pipe dream, and we do not expect you to come up with pixel-perfect code across every platform. But do test in as many as you can. If your design doesn't work in at least IE5+, Win and Mac OS (run by over 99% of the population), chances are we won't accept it.
We ask that you submit original or creative Commons license designs. Creative Commons license details.
Handbooks graciously donated by
CSS Zen Garden Default CSS



CSS Zen Garden
'Under the Sea' Theme

The screenshot shows the CSS Zen Garden homepage with the "Verde Moderna" theme selected. It features a green header and footer with a central image of a forest scene. A green box on the right highlights the "Verde Moderna" theme.

A demonstration of what can be accomplished through CSS-based design. Select any style sheet from the list to load it into this page.
Download the example [html file](#) and [css file](#).
THE ROAD TO ENLIGHTENMENT
Littering a dark and dreary road lay the past relics of browser-specific tags, incompatible DOMs, and broken CSS support. Today, we must clear the mind of past practices. Web enlightenment has been achieved thanks to the tireless efforts of folk like the W3C, WaSP, and the major browser creators. The CSS Zen Garden invites you to relax and meditate on the important lessons of the masters. Begin to see with clarity. Learn to use the time-honored techniques in new and invigorating fashion. Become one with the web.
So WHAT IS THIS ABOUT?
There is a continuing need to show the power of CSS. The Zen Garden aims to excite, inspire, and encourage participation. To begin, view some of the existing designs in the list. Clicking on any one will load the style sheet into this very page. The HTML

The screenshot shows the CSS Zen Garden homepage with the "Verde Moderna" theme selected. It features a green header and footer with a central image of a forest scene. A green box on the right highlights the "Verde Moderna" theme.

CSS Zen Garden
Verde Moderna Design



Behavioral Layer: JavaScript

- Enterprise JavaScript source should be
 - unobtrusive
 - standards-based
 - cross-browser/platform/device capable
 - focused for team development
 - modularized

A **Dependency Management Library**
(requirejs, StealJS, LabJS, ...)

A **JavaScript Library**
(jQuery, Dojo, YUI, ExtJS, Prototype, ...)

An **MV* Framework** (Backbone, JVMC, AngularJS, Knockout, Sammy, ...)

A **Templating System** (Handlebars, Mustache, Underscore Templates, EJS, jquery-tmpl, ...)

Inter-module Communication frameworks
(jquery-pubsub)

Testing Environments
(FuncUnit, qUnit, Selenium, JSUnit, Jasmine, SinonJS)

Concatenation, Minification and Build Systems Tools (Bootstrap, steal.build, steal.clean)

Structural Content Layer: Semantic HTML

- At the heart of a Layered Architecture is *semantic HTML*
 - “Relating to meaning”
 - In practice, using tags that describe the content they contain

Don't confuse Semantic HTML with XHTML, they aren't the same

- Examples:
 - **<h1>** for most important text,
 - **<div>** for content divisions,
 - **<p>** for blocks of text,
 - **<table>** for data only

<table>

<tr id="head"><td>...</td></tr>
<tr id="body"><td>...</td></tr>
<tr id="footer"><td>...</td></tr>

</table>



<div>

<div class="hd">...</div>
<div class="bd">...</div>
<div class="ft">...</div>

</div>



Why Semantic HTML?

- Use of semantic HTML improves:
 - SEO rankings
 - Ease of maintenance (no tag soup)
 - Page size/load time
 - Accessibility
- Semantic HTML forms the basis of “Progressive Enhancement”

Progressive Enhancement

- *Creating the best possible solution for the widest number of users*

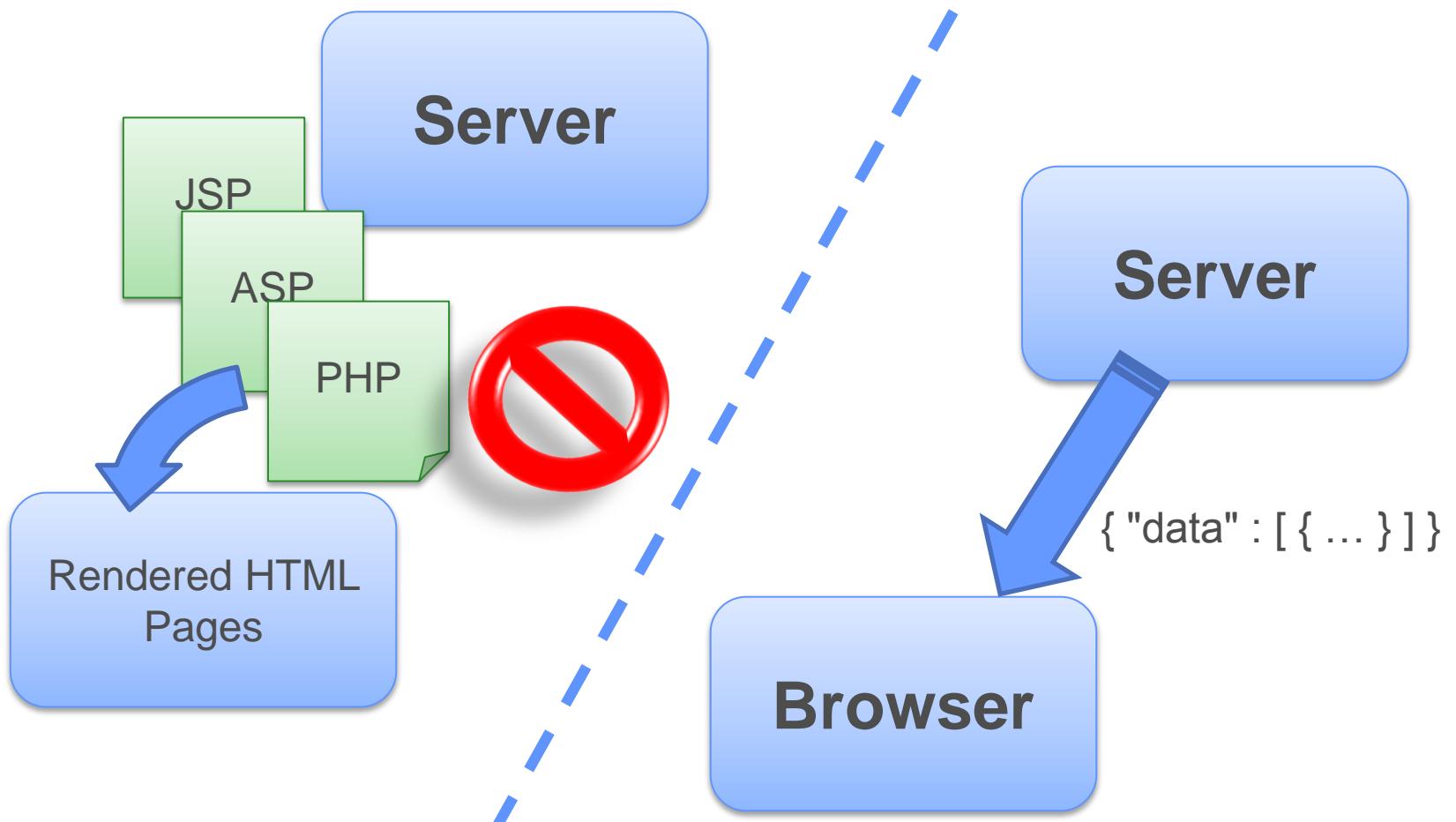
- Approach:

- Develop a base level solution that puts content at the center of the design
- Layer enhancements on top by adding presentational and behavioral features



Modern Front-End Solutions

- Modern browser-based architectures are heavily ***service-driven*** rather than page-oriented



Developer Tools

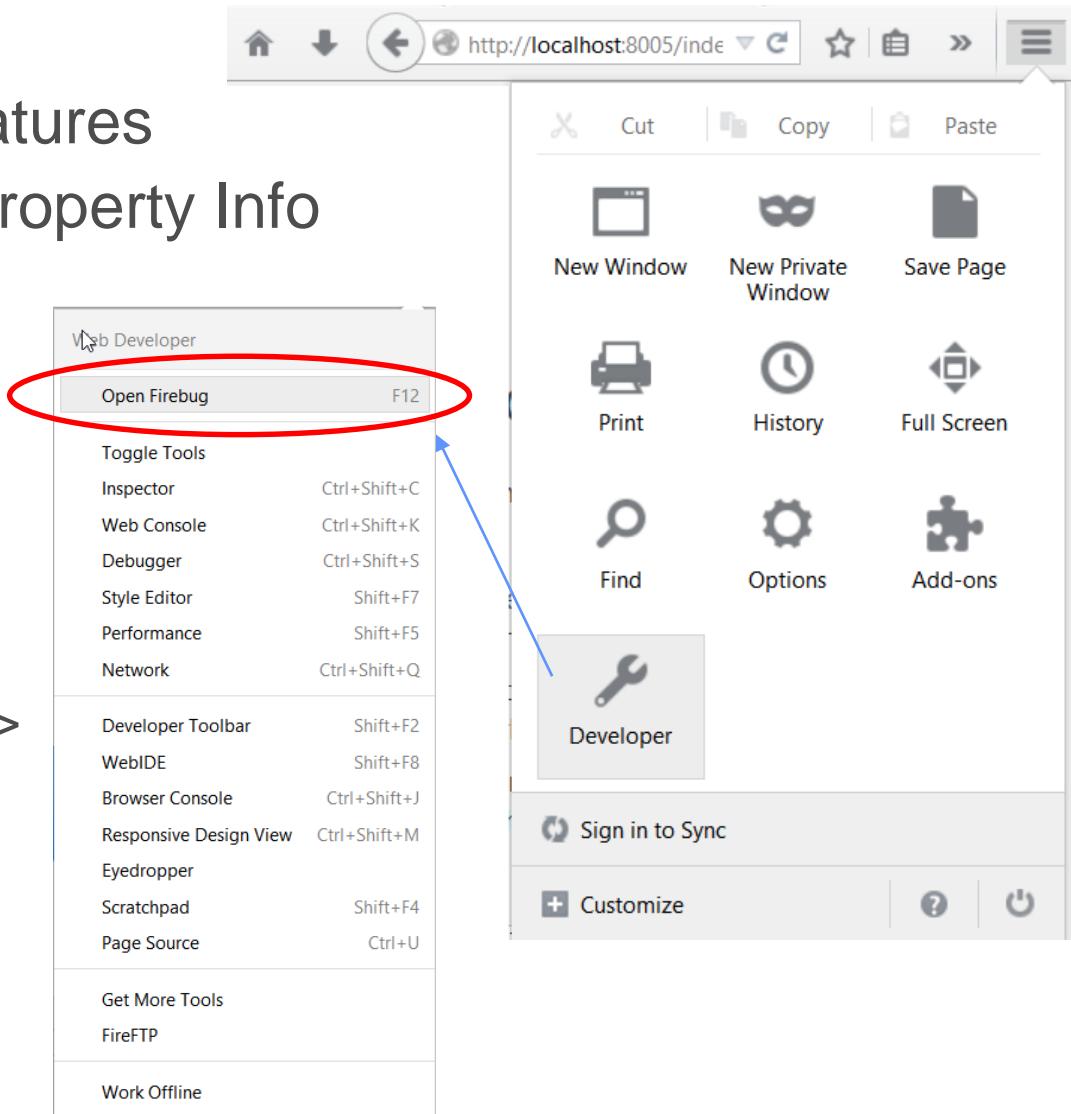
- Developer tools are essential for today's front-end devs:
 - Firebug (3rd Party Firefox plugin)
 - Firefox Developer Tools
 - Chrome Developer Tools
 - IE Developer Tools

While any of these tools may be used to help with development, you should generally **NOT** use IE as your **primary** test tool. It will lead to non-functioning solutions in other browsers

Firebug

- *Firefox plug-in that provides*
 - A Debugger
 - DOM Inspection Features
 - Box Model & CSS Property Info
 - Event Notifications
 - Profiling Info
 - XHR Monitoring
- F12 to launch, or Options Menu > Developer > Open Firebug...

Install from
<http://getfirebug.com>



Firebug - Console

JavaScript Errors

The screenshot shows the Firebug Console panel. At the top, there's a toolbar with tabs for Console, HTML, CSS, Script, DOM, Net, Inline Code Finder, and YSlow. Below the toolbar, there are buttons for Clear, Persist, and Profile. The main area displays JavaScript errors and log output.

JavaScript Errors:

- An error message: "Access to restricted URI denied" code: "1012" (index.html, line 40) with the stack trace: "xhr.send(null);".
- A command prompt: ">>> var x = 10; console.log(x)" followed by the output "10".

Execute JavaScript Snippets: A button in the top right corner of the panel.

Log Output: A green callout pointing to the output area where "10" is displayed.

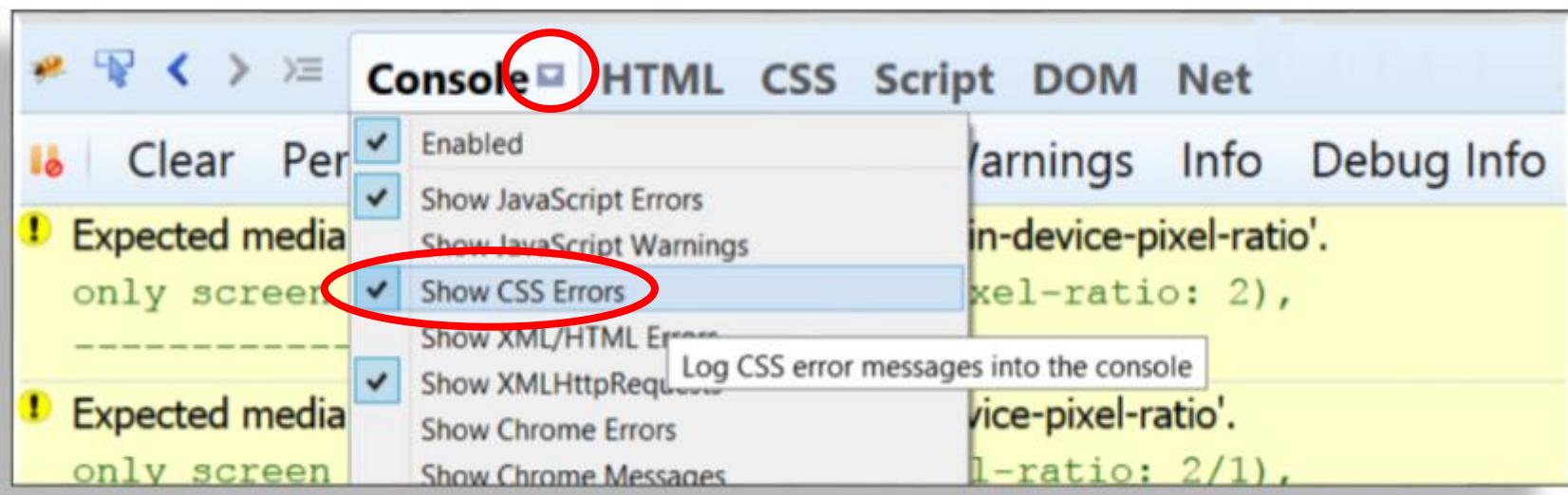
Run JavaScript: A green callout pointing to the "Run" button at the bottom of the panel.

Bottom Panel: Shows status "Done", error count "1 Error", file count "A 1.7K", time "0.199s", and other metrics.

```
var x = 10;
console.log(x)
```

Firebug - Console (*for this class*)

- For this class, it might be useful to turn on CSS Errors (off by default) if you use Firebug:



Firebug - Using the *HTML* Tab

The screenshot shows the Yahoo! homepage. On the left, a sidebar menu includes links for Mail, News, Sports, Finance, Weather (which is highlighted with a blue border), Autos, Homes, Dating, Shopping, and Mail. Below the menu is a URL bar with the address `hsrd.yahoo.com/_ylt=AiQK73zbNCIIImvH46k3lwmbvZx4/RV=1/RE=1422826816/RH=aHNyZC55YWhvby5jb20-/RO=2/RU=aHR0cHM6Ly93ZWFOaGVyLnhaG9vLmNvbS8-/RS=^ADAc`. At the bottom, the Firebug toolbar is visible, showing tabs for Console, HTML (which is circled in red), CSS, Script, DOM, and Net. The HTML tab is currently active, displaying the source code for the sidebar menu items. A blue arrow points from the text "Selecting the 'Inspector Tool' allows for quickly locating the HTML in the source" towards the Firebug toolbar.

YAHOO!

Mail
News
Sports
Finance
Weather
Autos
Homes
Dating
Shopping
Mail

Tampering charges filed against Jets

Jets owner Woody Johnson may find himself in hot water over his comments about Darrelle Revis. [Rivals' off-field war continues »](#)

61 – 65 of 70

hsrd.yahoo.com/_ylt=AiQK73zbNCIIImvH46k3lwmbvZx4/RV=1/RE=1422826816/RH=aHNyZC55YWhvby5jb20-/RO=2/RU=aHR0cHM6Ly93ZWFOaGVyLnhaG9vLmNvbS8-/RS=^ADAc

Console **HTML** CSS Script DOM Net

Edit `a.ell.fz-s > li > ul.navlist > div#defau..._default > div#defau..._default > div.pr-m > div.stick...t-holder`

```
* <li style="" data-suid="14782488">
* <li style="" data-suid="25021262">
* <li style="" data-suid="17986569">
* <li style="" data-suid="93109">
* <li style="" data-suid="63794">
* <a class="all fz-s" href="http://herd...
```

Selecting the 'Inspector Tool' allows for quickly locating the HTML in the source

Firebug - HTML Tab - Style Information

The screenshot shows the Yahoo! homepage with the Firebug toolbar at the bottom. The 'HTML' tab is selected. In the source code list, the fourth item is highlighted with a blue background. The 'Style' dropdown menu is open, circled in red, showing the CSS rules for that element. A blue arrow points from a text box below to the highlighted element in the source code list.

Style ▾ Computed Layout DOM Events

Inherited from `div#default-p_30345789-bd.bd.type_navrail.type_navrail_default.type_navrail {`

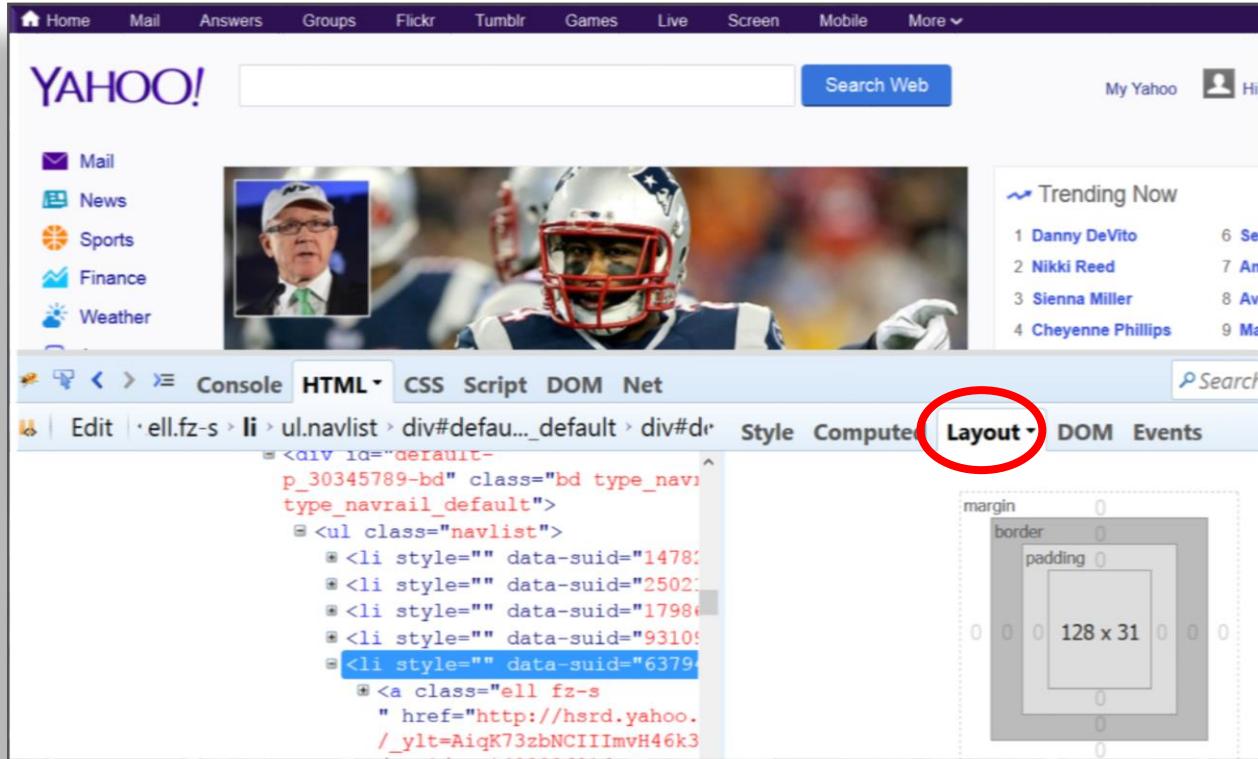
```
list-style-type: none;
```

ell.fz-s > li > ul.navlist > div#defau..._default > div#defau..._default > ol > li > a

-
-
-
- [...](http://hsrd.yahoo.com/_ylt=AiqK73zbNCIIImvH46k3IwmbvZx4)

Selecting an HTML element in the source, Provides the CSS *for that element only*

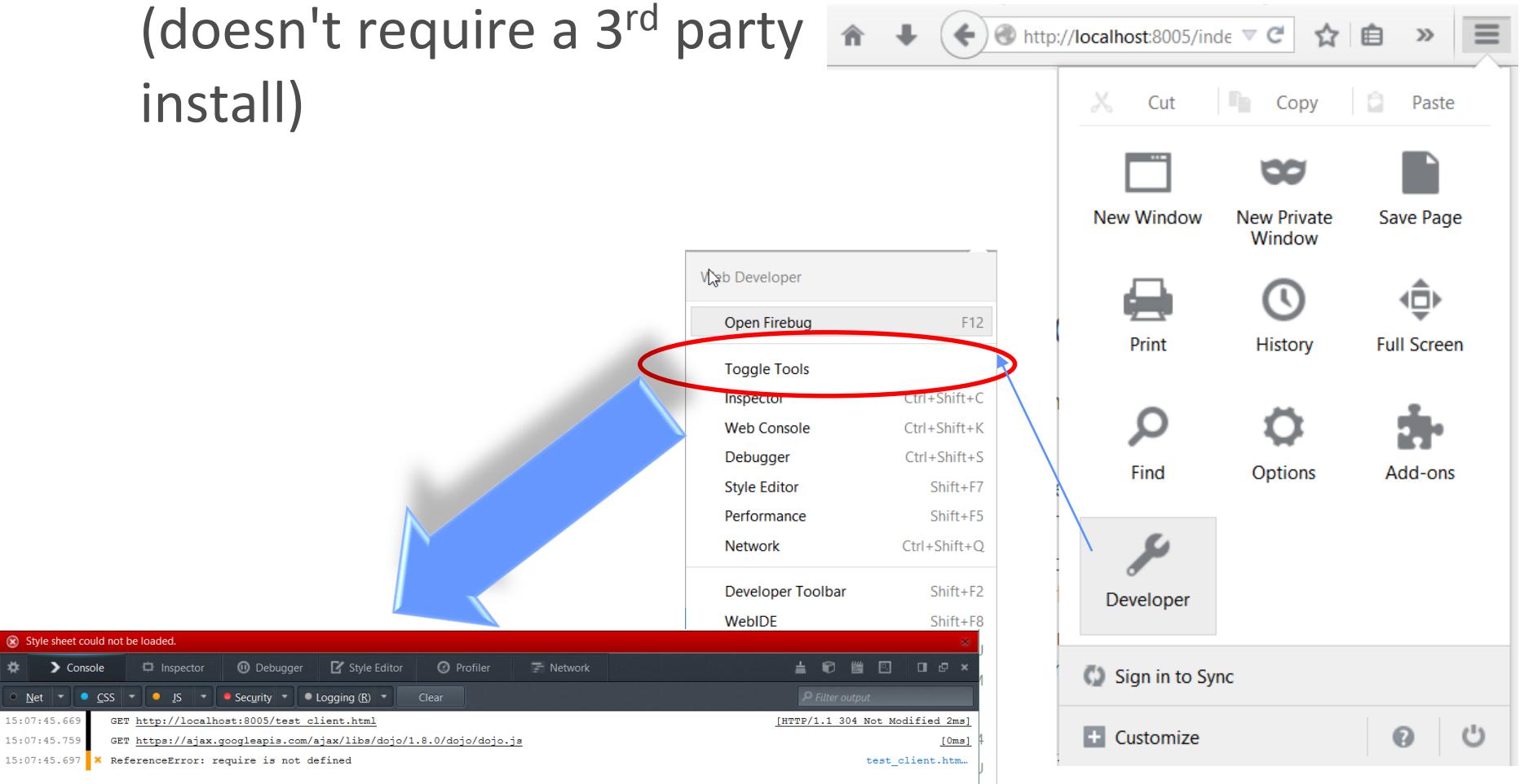
Firebug - HTML Tab - Layout (Box Model)



The **Layout Tab** provides a visual indication of the elements properties

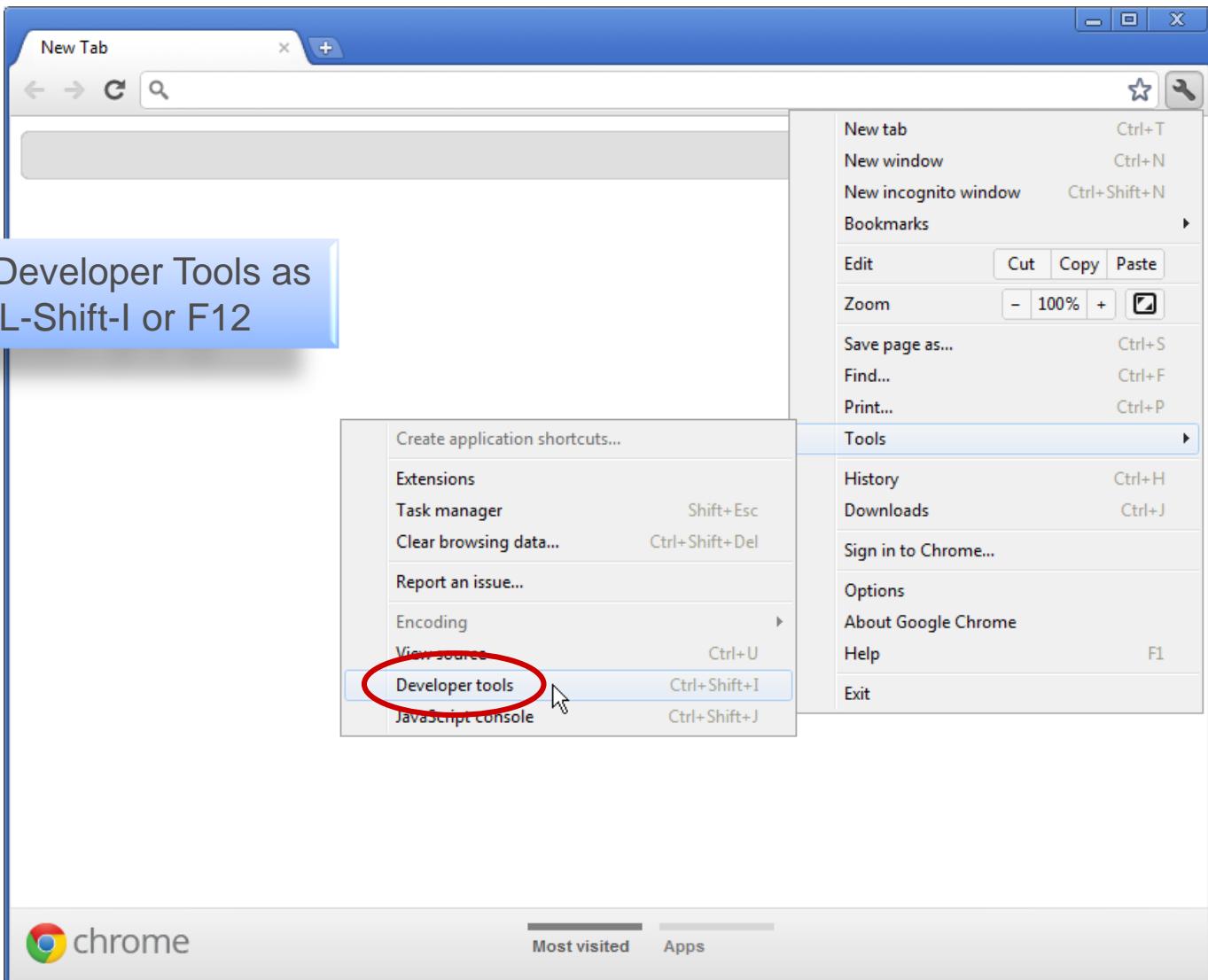
Firefox Developer Tools

- Native browser built-in tools
(doesn't require a 3rd party install)

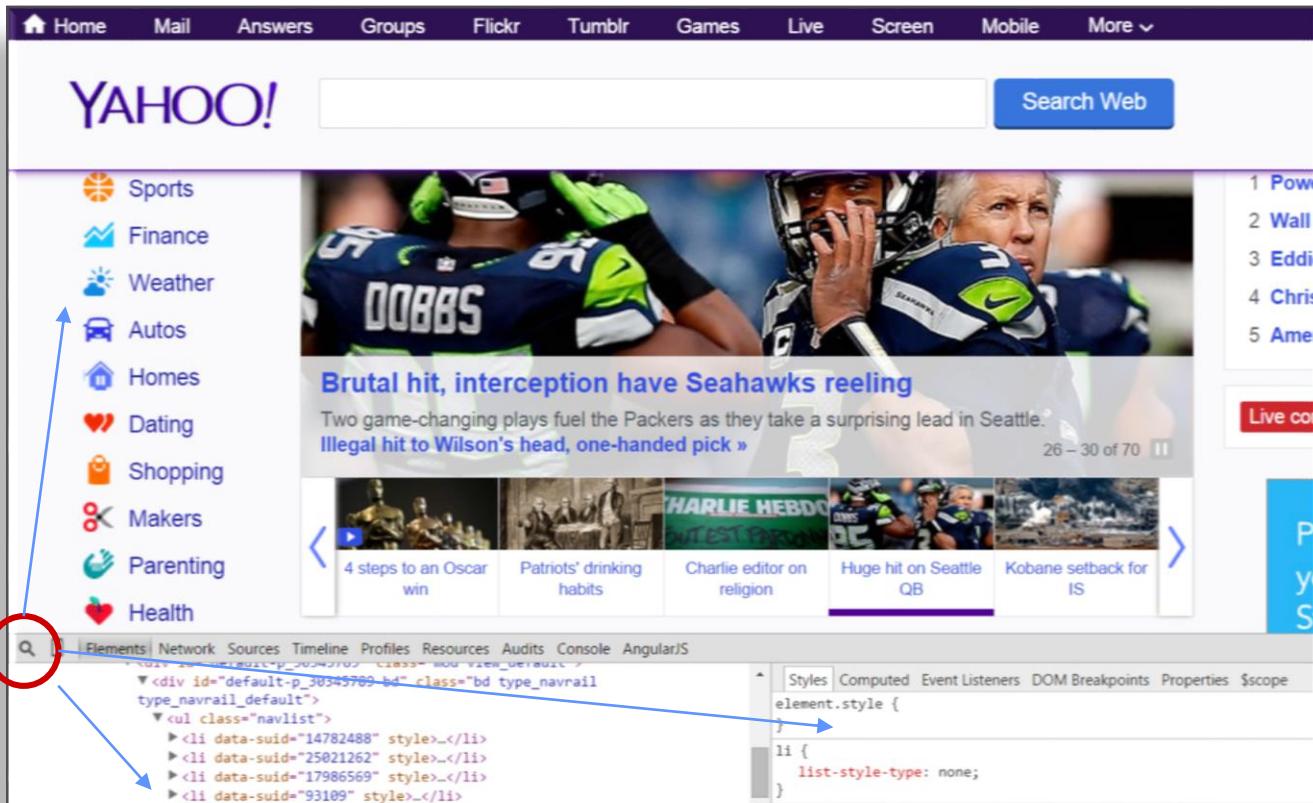


Chrome Developer Tools

Launch Chrome's Developer Tools as shown or use CTRL-Shift-I or F12



Chrome Developer Tools - *The Elements Tab*

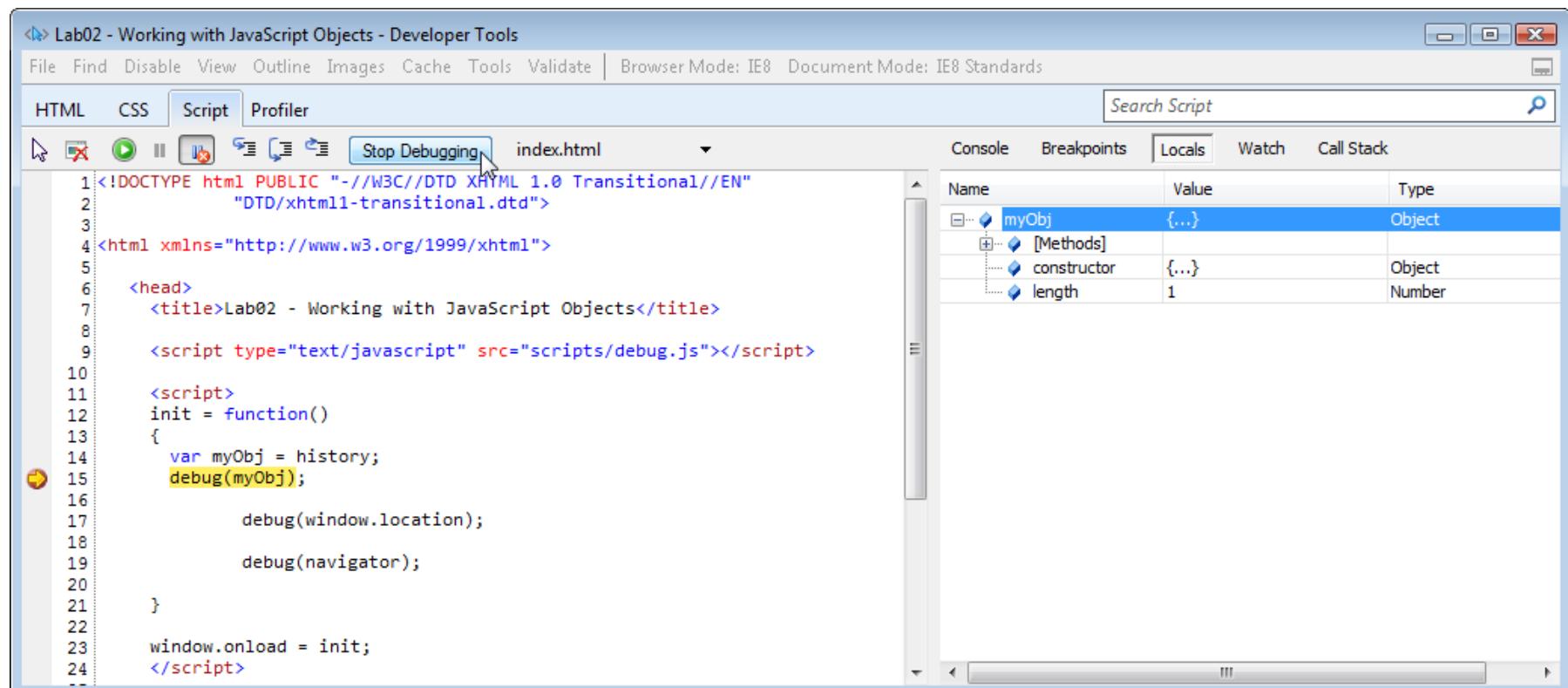


Use the 'Inspector Tool' to select elements on a page, then view the corresponding HTML source below

As with Firebug's HTML Tab, Chrome's Elements Tab serves a similar purpose

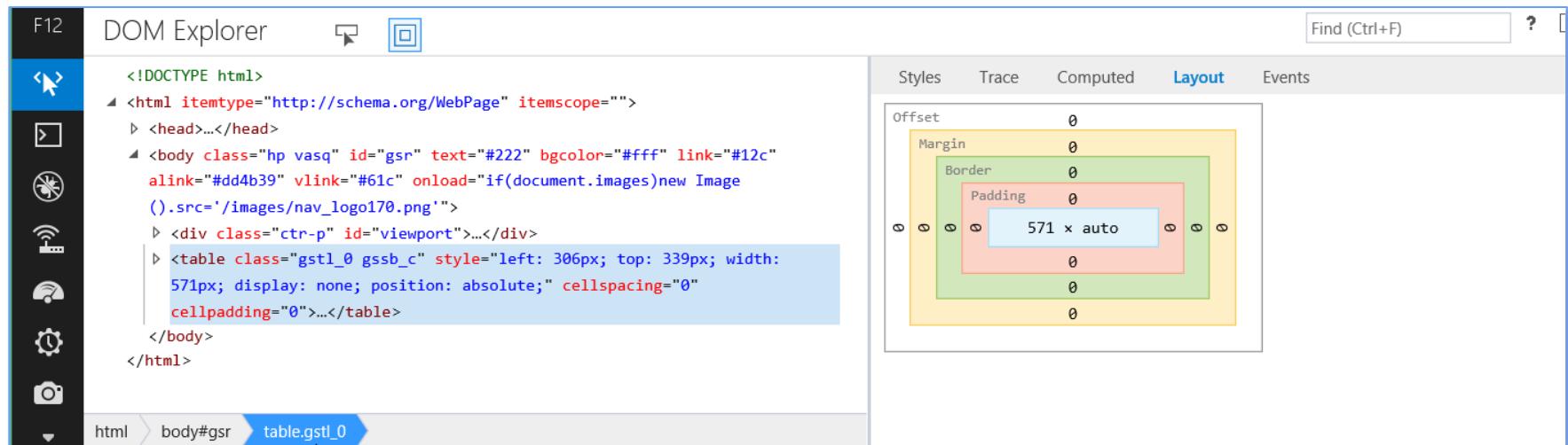
IE 8-10 Developer Tools

- IE 8+ provides a built-in debugger and DOM inspector also
 - Much more crude and limited in capabilities



IE11 Developer Tools

- Use IE11 has improved its developer tools
 - Similar to Firebug in many ways



Frontend IDE Options

- Brackets
 - brackets.io
- JetBrains WebStorm
(commercial license)
 - www.jetbrains.com/webstorm/
- Sublime Text
 - Sublimetext.com
- Komodo IDE
 - www.komodoide.com
- IntelliJIDEA (commercial license)
 - www.jetbrains.com/idea/



Brackets



WebStorm

Sublime Text



Komodo IDE
by ActiveState®



IntelliJIDEA



Cloud9

Spket IDE



aptana®



NetBeans



Exercise 1 - It's Your Turn

Explore ESPN.com using Chrome Developer Tools or Firebug

Perform Exercise 1

Using the Browser Developer Tools



Locate step-by-step instructions for this lab in the back of your manual

Summary

- Modern frontend development should combine several technologies (JavaScript, CSS, HTML) into a *layered architecture*
- Consideration for different browsing environments should be designed at the beginning of the development process
- Use newer tools and IDEs to facilitate the development process

Chapter 2

CSS Foundations

Rules of the Presentation Layer

Overview

Basic Syntax

Rules of Specificity

Browser Normalization

Modern CSS

- *Cascading Style Sheets* provide the presentation content to a layered semantic architecture
- Modern CSS solutions may employ
 - **Layout Systems** (Bootstrap, YUI Grids, Foundation, Skeleton, etc.)
 - **Pre-processing Tools** (LESS, SASS, etc.)
 - **Responsive Designs**
 - **Progressive Enhancement Features**

Brief History

- First proposed in 1994 by Hakon Wium Lie
- Standard maintained by **W3C**
- **CSS 1** standard in **1996**
- **CSS 2** Recommendation status in **1998**
- **CSS 2.1** fixed inconsistencies in CSS2
 - Reached Recommendation status in **2011**
- **CSS 3** is broken in 50+ modules all at various stages of standardization and adoption

How CSS "Hooks" into HTML

- CSS uses selectors to bind to HTML elements
 - This is accomplished in several ways:

ID selectors: #quote1

```
<p id="quote1">No great thing is created suddenly</p>
```

```
<p class="author">Epictetus</p>
```

**Class
selectors:
.author**

```
<div id="quote2">  
  <p class="proverb">Inches make champions
```

```
    <cite>Vince Lombardi</cite>
```

```
  </p>
```

```
</div>
```

HTML selectors: div cite

**Combinations of these selectors:
#quote2 .proverb cite**

CSS Rule Placement

1. **Inline** (within the HTML tag)

```
<p style="padding: 5px">This is...</p>
```



Don't use this approach as it
violates a layered architecture

CSS Rule Placement

2. Embedded

```
<html>
  <head>
    <style type="text/css">
      p { padding: 5px; }
    </style>
  </head>
  <body>
    <p>This is...</p>
```

CSS Rule Placement

3. External (using link tag)

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

absolute or relative path

Relationship between external document and the HTML source

content type

Common CSS Properties

Text

Formatting

color
letter-spacing
text-align
text-decoration
text-indent
text-transform
line-height

Font

Related

font-size
font-family
font-weight
font-style
font-variant
font
white-space

Color and

Background

background-color
background-image
background-position
background-repeat
background-attachment
background
color

Box Model

width
height
border
margin
padding
overflow
float
clear
position
top, left,
bottom, right
display
z-index
visibility

Lists

list-style-image
list-style-position
list-style-type
list-style

Links

a:link, a:visited, a:hover,
a:active

Font Properties

- Some common font properties:

font-family: [family name/generic family]

font-style: [normal|italic|oblique]

font-size: [keyword or unit]

font-weight: [keyword]

font-variant: [normal|small-caps]

- Can be combined into shorthand:

font: italic bold 12px arial sans-serif;

font-style

font-weight

font-size

font-family

Text Properties

- Some common text properties:

`letter-spacing:` [*normal|+ or - value*]

`word-spacing:` [*normal|+ or - value*]

`text-indent:` [*+ or - length or % value*]

`text-align:` [*left|right|center|justify*]

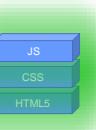
`text-decoration:` [*none|line-through|underline*]

`text-transform:` [*lowercase|uppercase|capitalize*]

`white-space:` [*normal|nowrap|pre*]

`vertical-align:` [*super|top|middle|bottom|sub*]

`line-height:` [*normal|any unit*]



Using Shorthands

The following three rules express the same thing:

```
body {  
    margin-top: 5px;  
    margin-right: 5px;  
    margin-bottom: 5px;  
    margin-left: 5px;  
}
```

```
body { margin: 5px 5px 5px 5px; }
```

```
body { margin: 5px; }
```

Shorthands

- Set or Skip

```
body {  
    padding-right: 5px;  
    padding-bottom: 5px;  
}
```

Browser's default (or inherited value) will apply to missing styles

- Symmetry Shorthand

```
body { padding: 5px 5px; }
```

– top/bottom, left/right

- Side to Side Symmetry

```
body { margin: 5px 5px 5px; }
```

– top, right/left, bottom

Shorthand - Properties

```
div {  
    border-width: 5px;  
    border-style: solid;  
    border-color: #CCC;  
}
```

```
div {  
    border-top-width: 5px;  
    border-right-width: 5px;  
    border-bottom-width: 5px;  
    border-left-width: 5px;  
    border-top-style: solid;  
    border-right-style: solid;  
    border-bottom-style: solid;  
    border-left-style: solid;  
    border-top-color: #CCC;  
    border-right-color: #CCC;  
    border-bottom-color: #CCC;  
    border-left-color: #CCC;  
}
```

```
div { border: 5px solid #CCC; }
```

HTML (Type) Selector

```
p { margin: 5px }
```

```
<body>
  <div>
    <p>Lorem ipsum dolor...</p>
  </div>
```

```
<p class="intro">This is a paragraph</p>
```

Descendant Selector

```
ul em { text-decoration: underline; }
```

```
<body>
```

targets this

```
<ul>
```



```
    <li><em>first</em> item</li>
```

```
    <li>second item</li>
```

```
</ul>
```

```
<p>This is a <em>great</em> paragraph</p>
```



not this

Universal Selector

```
* { margin: 5px; }
```

- Can be combined with other selectors

```
ul * { margin: 5px; }
```

```
div > * { margin: 5px; }
```

Class Selectors

- A form of selector, using the “class” attribute
- Classes can be applied to multiple elements on a page, allowing re-use of declarations
- Uses dot notation within CSS

```
.warning { color: red; }
```

```
<div class="warning"><p>Florida continues to get battered by  
hurricanes.</p></div>
```

```
<p><span class="warning">Beware</span> of the  
hurricanes.</p>
```

Class Selectors

- Can be referenced by a particular type of element

```
.warning { color: red; }  
span.warning { font-weight: bold; }
```

```
<div class="warning"><p>Florida continues to get  
battered by hurricanes.</p></div>
```

```
<p><span class="warning">Beware</span> of the  
hurricanes.</p>
```

span.warning and **span .warning** are different!

Class Selectors

- Elements can declare multiple classes

```
<div class="warning first"><p>Florida continues to  
get battered by hurricanes.</p></div>
```

- UI Libraries use classes extensively

```
<div role="presentation" id="widget_searchInput"  
      class="dijit dijitReset dijitInLine dijitLeft dijitTextBox" widgetid="searchInput">  
  
  <div class="dijitReset dijitInputField dijitInputContainer">  
    <input type="text" autocomplete="off" data-dojo-attach-point="textbox,focusNode"  
          class="dijitReset dijitInputInner" tabindex="0" id="searchInput" value="">  
  </div>  
</div>
```

ID Selectors

- Similar to class selectors, but each ID attribute must be unique on a page
- IDs are case sensitive
- Use hash (#) notation

```
#mainNav { margin: 5px; }  
#mainNav li { float: left; }
```

```
<ul id="mainNav">  
  <li><a href="home.html">Home</a></li>  
  <li><a href="about.html">About</a></li>  
</ul>
```

Before and After Pseudo Classes

- Can be used to insert generated content before or after an element's *content* (not before or after the element itself)

```
p.caution:before { content: "Beware: " }  
p.caution:after { content: "!!!!" }
```

```
<p class="caution">Don't talk to strangers</p>
```

Renders:

“Beware: Don’t talk to strangers!!!”

CSS3 Selectors: Direct Child

- Selects a specified direct child of a parent

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

<body>

target this

<p>This is a great paragraph</p>

<p>This is not a great
paragraph</p>

not this

CSS3 Selectors: Direct Adjacent Siblings

- Selects sibling immediately following a specified element

```
h2 + h3 { margin-top: 10px; }
```

```
<div>
  <h2>Economy Recovers!</h2>
  <h3>Fed is Optimistic</h3>
  <p>Lorem ipsum dolor...</p>
</div>
```

← target this

```
<div>
  <h2>Economy Recovers!</h2>
  <p>Lorem ipsum dolor...</p>
  <h3>Fed is Optimistic</h3>
</div>
```

← not this

CSS3 Selectors: Indirect Adjacent Siblings

- Selects a sibling of a specified node
 - Must be following, but not immediately following

```
.first ~ li { margin-top: 10px; }
```

```
<ul>
  <li class="first">...</li>
  <li>...</li> ←
  <li>...</li>
  <li class="last">...</li>
</ul>
```

target's these

Useful when selecting "a bunch
of items after the first one"

CSS3 Selectors: Attribute Selectors

- Selects elements based on presence or values of attributes

```
img[title] {border: 2px solid #000;}
```

Styles any with a title attribute.

```
img[title="Figure"] {border: 2px solid #000;}
```

Styles any with the title attribute "Figure", symbol = signifies an exact match.

```
img[title~="Figure"] {border: 2px solid #000;}
```

Note the additional “~”. Styles any with a title attribute that includes "Figure" in a space-separated list of words.

```
*[lang|="en"] {color: #CCC;}
```

Styles any element with a lang attribute that begins with "en" in a hyphen-separated list.

:first-child, :last-child, nth-child

- Styles either the first, last child, or nth-child of an element

```
<div>
  <p>Foo (I should be red)</p>
  <p>Foo (I should be green)</p>
  <p>Foo (I should be blue)</p>
</div>
```

Foo (I should be red)
Foo (I should be green)
Foo (I should be blue)

```
p:first-child {color: red;}
p:last-child {color: blue;}
p:nth-child(2) {color: green;}
p:nth-child('odd') { font-style: italic; }
```

- For browsers not supporting these, the fallback is to attach class names manually to HTML elements

Choosing Selectors

- There are a multitude of options for how to construct a given selector

```
<div class="mod">
  <ul id="mainNav">
    <li><a id="homeLink" href="home.html">home</a></li>
    <li><a id="aboutLink" href="about.html">about</a></li>
    <li><a id="careersLink" href="careers.html">careers</a></li>
  </ul>
</div>
```

all
refer
to

a	{ color: white; }
#aboutLink	{ color: blue; }
a#aboutLink	{ color: green; }
#mainNav li #aboutLink	{ color: yellow; }
div.mod ul#mainNav li a#aboutLink	{ color: red; }
.mod #aboutLink	{ color: black; }

What color will this anchor be?

Selector Weight (Specificity)

- Calculated as follows:
 - Count the ID attributes (= a)
 - Count the Class or other attributes (= b)
 - Count the elements (= c)
- Concatenating a+b+c gives you the selector weight or specificity:

```
*          {} /* a=0 b=0 c=0 -> specificity = 0 */
li         {} /* a=0 b=0 c=1 -> specificity = 1 */
ul li      {} /* a=0 b=0 c=2 -> specificity = 2 */
ul ol+li   {} /* a=0 b=0 c=3 -> specificity = 3 */
h1 + *[REL=up] {} /* a=0 b=1 c=1 -> specificity = 11 */
ul ol li.first {} /* a=0 b=1 c=3 -> specificity = 13 */
li.first.level {} /* a=0 b=2 c=1 -> specificity = 21 */
#x34y     {} /* a=1 b=0 c=0 -> specificity = 100 */
```

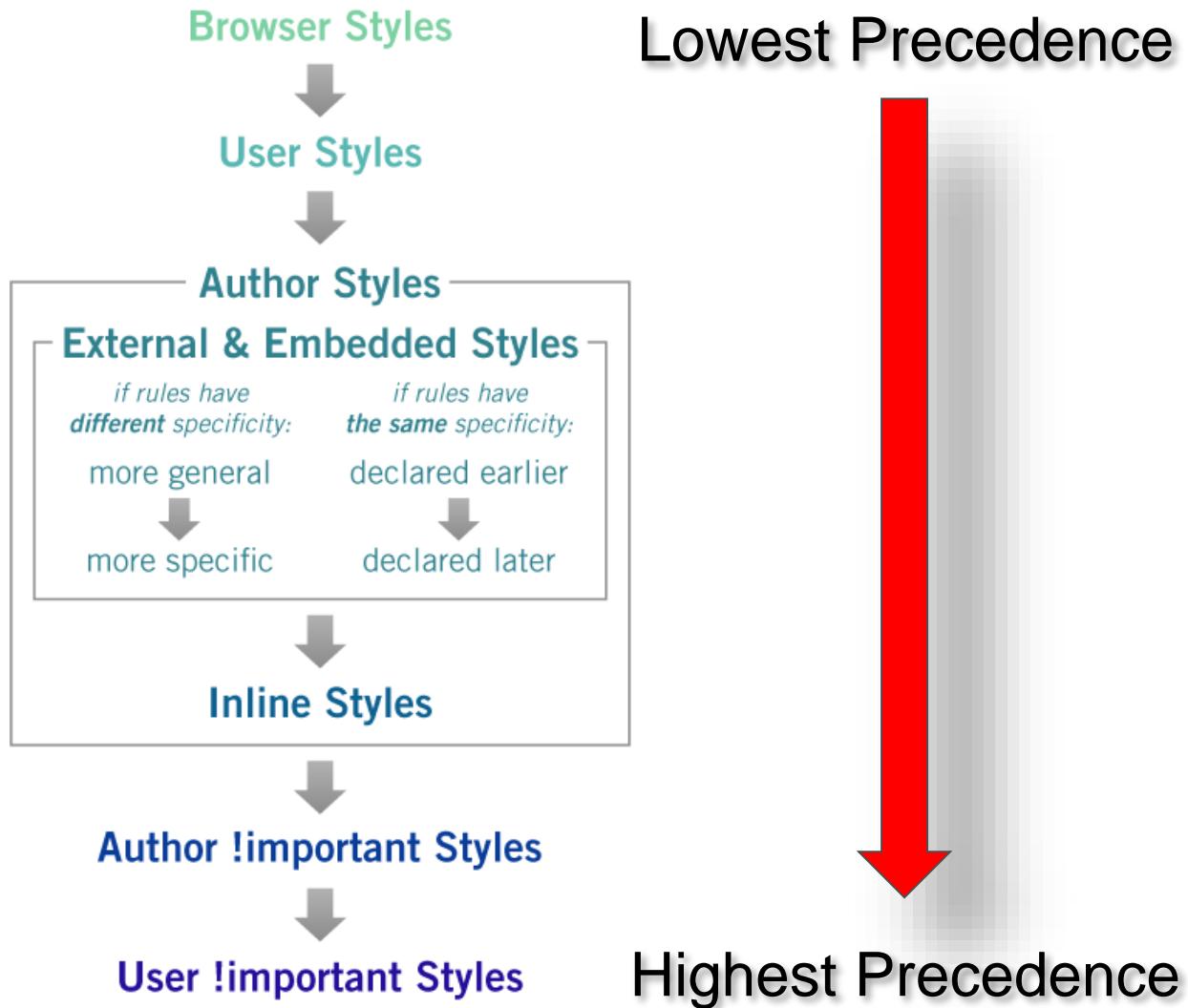
!important

- Takes precedence over all other rules

```
div {  
    font-size: 1.5em;  
    color: #000 !important;  
    padding: 0.2em;  
}
```

Generally, use this for debugging only!

Cascade Precedence



Normalizing Browser Styles

- Browsers yield different default style values
- It's imperative to set a level playing field
- **reset.css**

<http://yui.yahooapis.com/combo?2.7.0/build/reset/reset.css>

```
body,div,dl,dt,dd,ul,ol,li,h1,h2,h3,h4,h5,h6,pre,form,fieldset,  
input,textarea,p,blockquote,th,td {  
    margin:0;  
    padding:0;  
}  
  
table {  
    border-collapse:collapse;  
    border-spacing:0;  
}  
[...]
```

HTML5 Resets

- With the arrival of HTML5, new values will need to be placed into a reset
- HTML5 Doctor has based their reset on Eric Meyer's HTML4 reset

<http://html5resetcss.googlecode.com/files/html5reset-1.6.1.css>

- Others exist as well

<http://html5reset.org/>

<http://html5boilerplate.com/>

HTML5 Doctor Reset CSS

```
html, body, div, span, object, iframe, h1, h2, h3, h4, h5, h6, p, blockquote, pre,  
abbr, address, cite, code, del, dfn, em, img, ins, kbd, q, samp, small, strong, sub,  
sup, var, b, i, dl, dt, dd, ol, ul, li, fieldset, form, label, legend, table, caption, tbody,  
tfoot, thead, tr, th, td, article, aside, canvas, details, figcaption, figure, footer,  
header, hgroup, menu, nav, section, summary, time, mark, audio, video {  
    margin:0; padding:0; border:0; outline:0; font-size:100%;  
    vertical-align:baseline; background:transparent;  
}  
  
article,aside,details,figcaption,figure,footer,header,hgroup,menu,nav,section {  
    display:block;  
}  
  
a {  
    margin:0; padding:0; font-size:100%;  
    vertical-align:baseline; background:transparent;  
}
```

Partial listing of the full reset

Summary

- Typically embed style or externally link stylesheets into solutions
 - The latter approach affords better reusability
- All modern browsers support the newer CSS 3 selectors
 - Use of **Direct Child & Attribute Selectors** should become part of your CSS arsenal
- Remember specificity controls what is rendered, not document order!

Chapter 3

CSS Box Model

Laying Out Your Pages

Overview

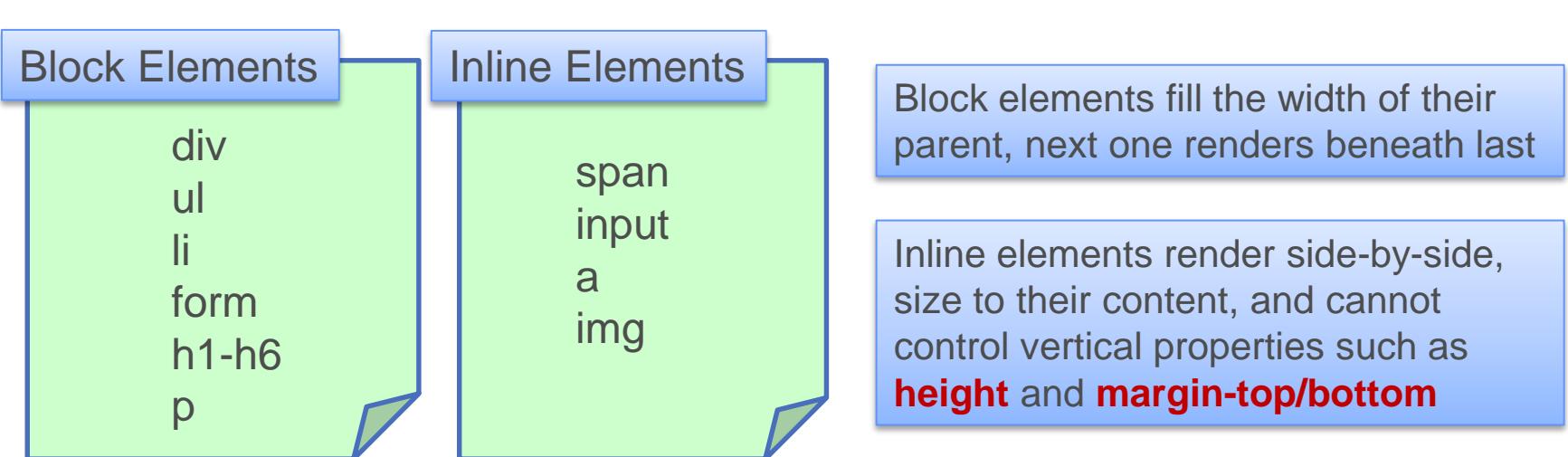
Box Model Properties

Positioning

Floating

CSS Box Model

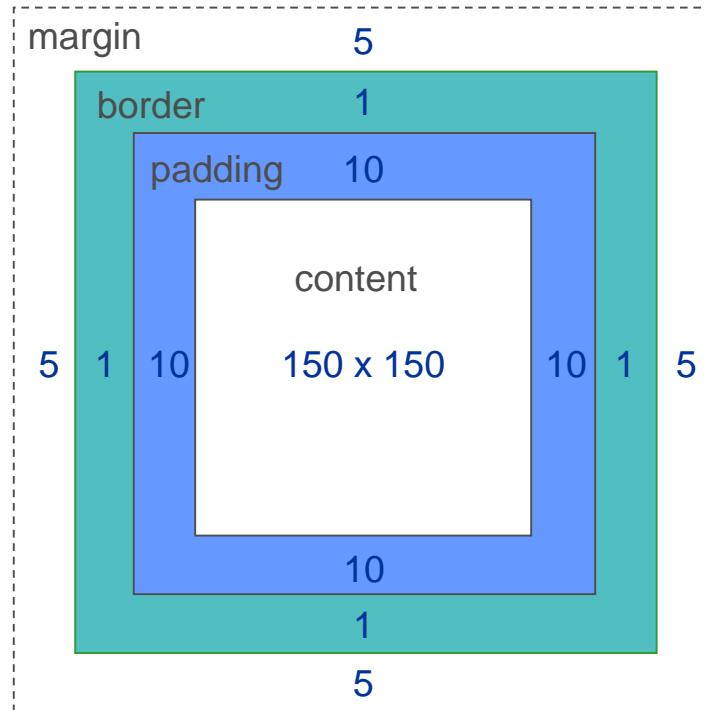
- The CSS box model describes the rectangular boxes generated for *each element* defined in the HTML
- Elements are rendered using box model properties depending on whether an element is a **block** element or an **inline** element



Box Dimensions

- Each box has a **content** area (e.g., text, an image, etc.) and optional surrounding **padding**, **border**, and **margin** areas

```
{  
  height: 150px;  
  width: 150px;  
  padding: 10px;  
  border-width: 1px;  
  margin: 5px;  
}
```



Positioning Schemes

1. Normal Flow

- Content flows from top to bottom, and left to right
- Block-level elements generate line breaks

2. Absolute Positioning

- Content removed entirely from normal flow and positioned with respect to an ancestor element

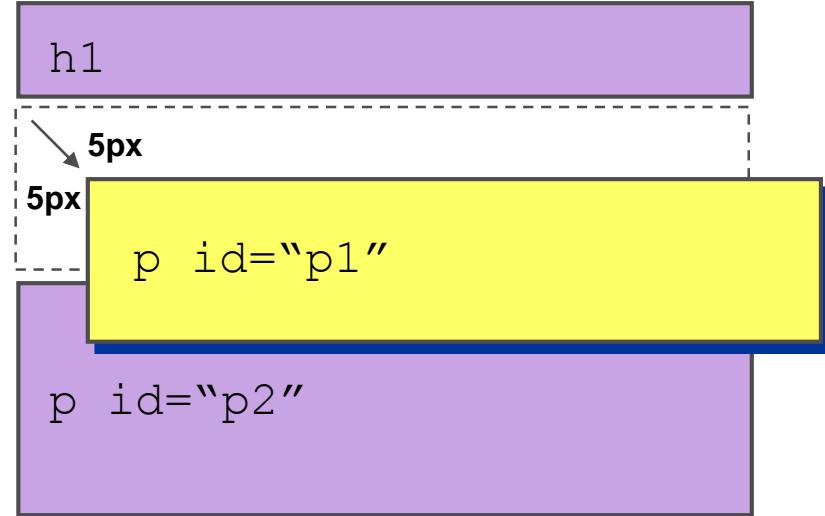
3. Float

- Content first laid out in normal flow, then taken out of flow and shifted as far right or left as possible

Relative Positioning

- Part of the normal flow scheme
- Should really be called “offset positioning”
- Content is laid out according to normal flow, and then offset from its original position

```
<h1></h1>
<p id="p1"></p>
<p id="p2"></p>
[...]
p#p1 {
    position: relative;
    top: 5px;
    left: 5px;
}
```

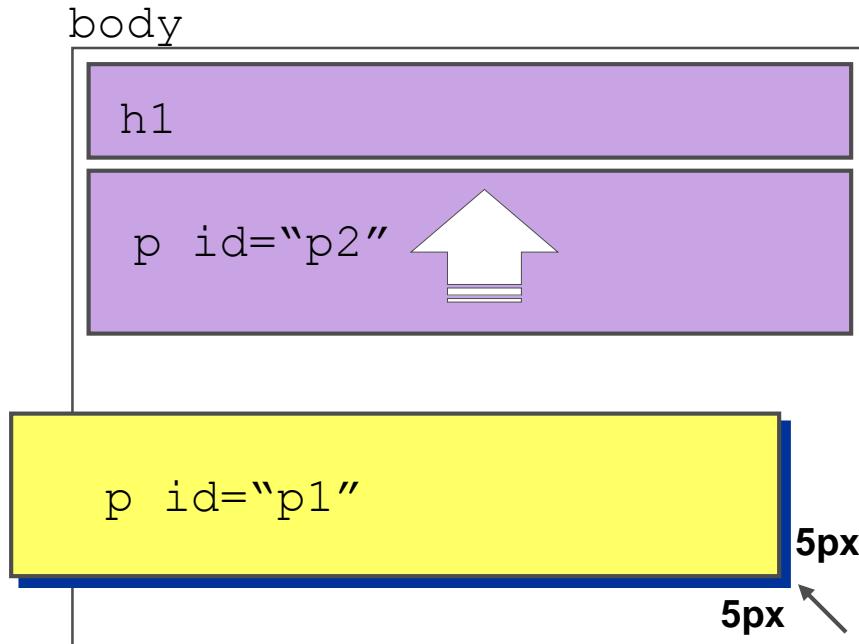


Absolute Positioning

- Removed from normal flow

```
<body>
  <h1></h1>
  <p id="p1"></p>
  <p id="p2"></p>
</body>
[...]
```

```
p#p1 {
  position: absolute;
  bottom: 5px;
  right: 5px;
}
```



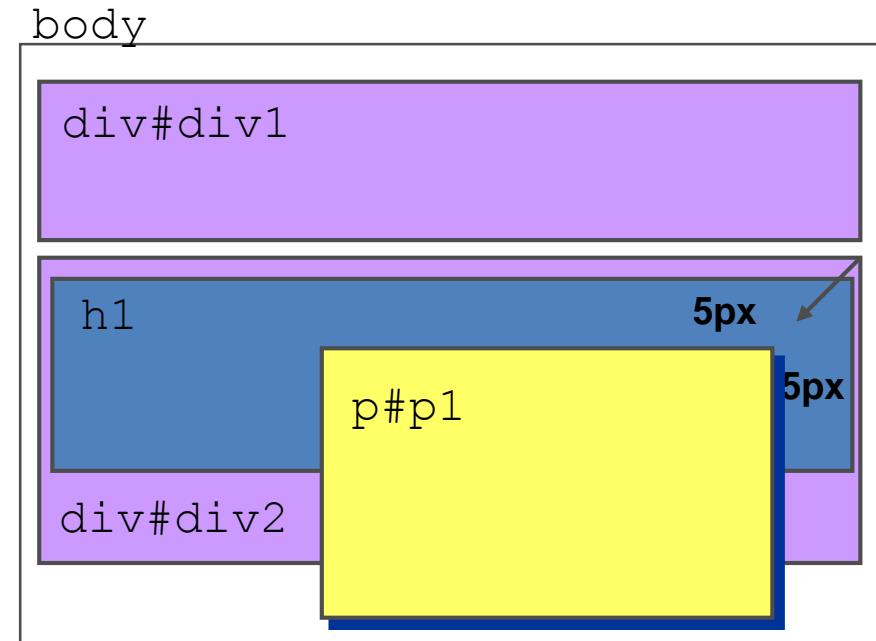
Absolute Positioning

- Positioned with respect to the body or the next highest *positioned* ancestor
 - Travel up the document tree until encountering an element with `position: relative|absolute`

```
<div id="div1"></div>
<div id="div2">
  <h1></h1>
  <p id="p1"></p>
</div>
[...]
```

```
p#p1 {
  position: absolute;
  top: 5px;
  right: 5px;
  width: 50%;
}

div#div2 {
  position: relative;
}
```

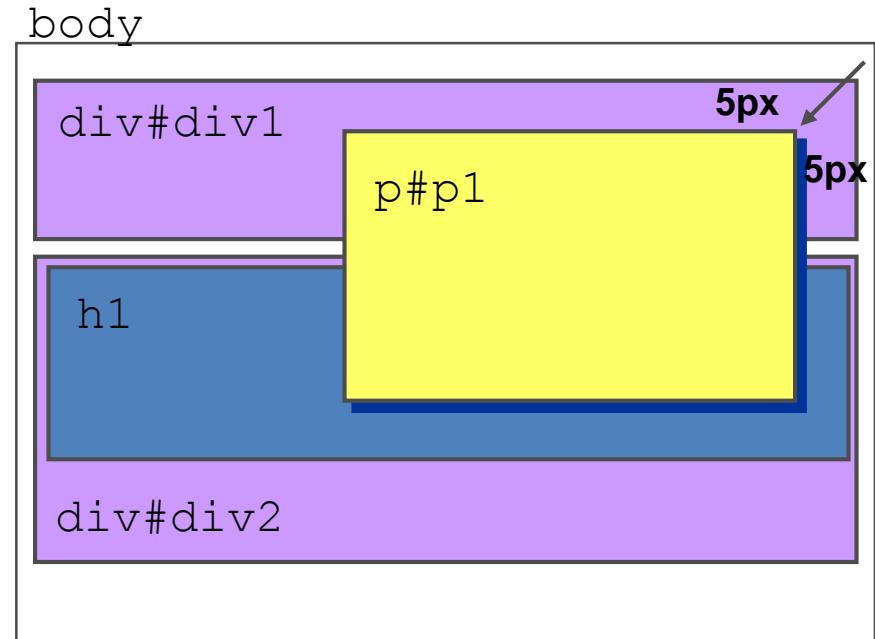


Absolute Positioning

- Positioned with respect to the body or the next highest *positioned* ancestor
 - Travel up the document tree until encountering an element with `position: relative|absolute`

```
<div id="div1"></div>
<div id="div2">
  <h1></h1>
  <p id="p1"></p>
</div>
[...]
```

```
p#p1 {
  position: absolute;
  top: 5px;
  right: 5px;
  width: 50%;
```

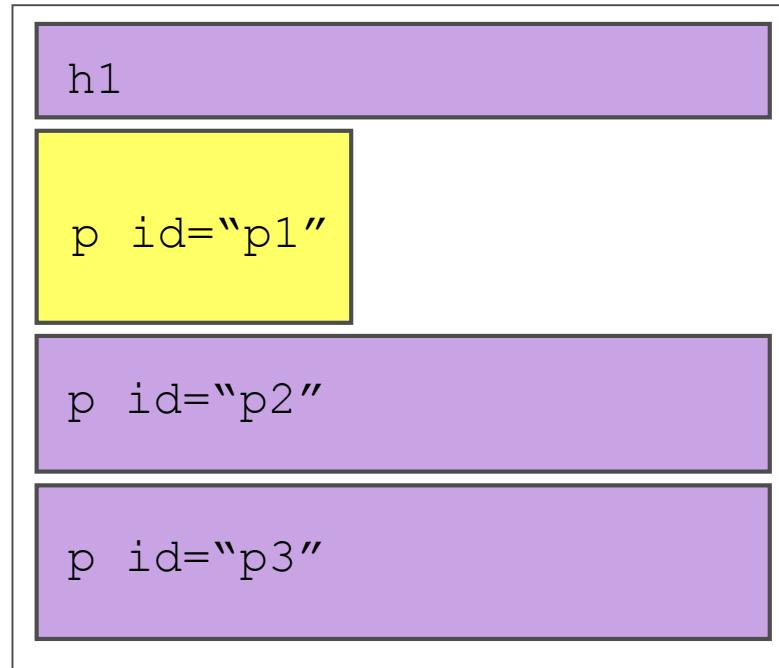


Floated Elements

- First, content is laid out according to normal flow

```
<h1></h1>
<p id="p1"></p>
<p id="p2"></p>
<p id="p3"></p>
[...]
```

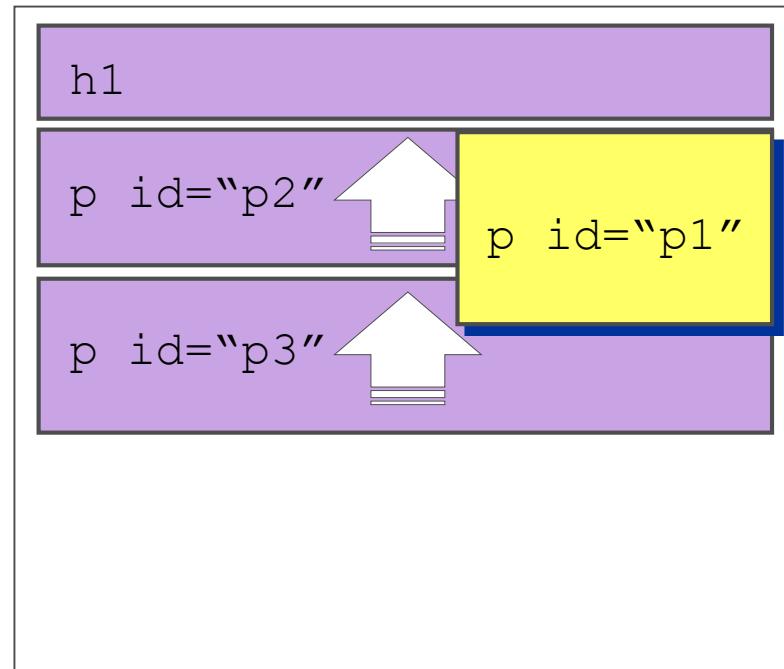
```
p#p1 {
    width: 40%;
```



Rules of Floating (1 of 5)

- Floats shift up then left or right as far as possible
 - Subsequent block elements move up behind floated element

```
<h1></h1>
<p id="p1"></p>
<p id="p2"></p>
<p id="p3"></p>
[...]
p#p1 {
    width: 40%;
    float: right;
}
```

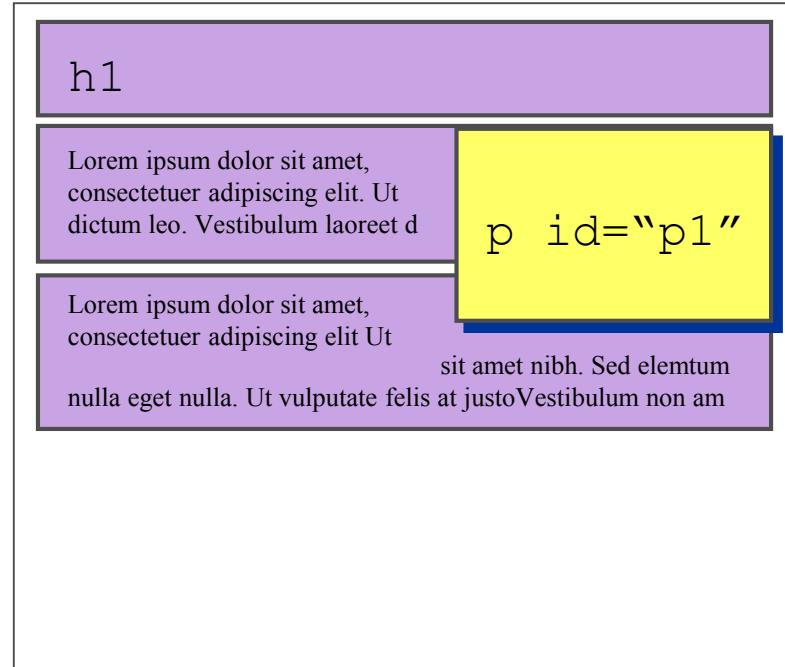


Rules of Floating (2 of 5)

- Inline content (i.e. text) flows *around* floated elements

```
<h1></h1>
<p id="p1">Lorem...</p>
<p id="p2">Lorem...</p>
<p id="p3"></p>
[...]
```

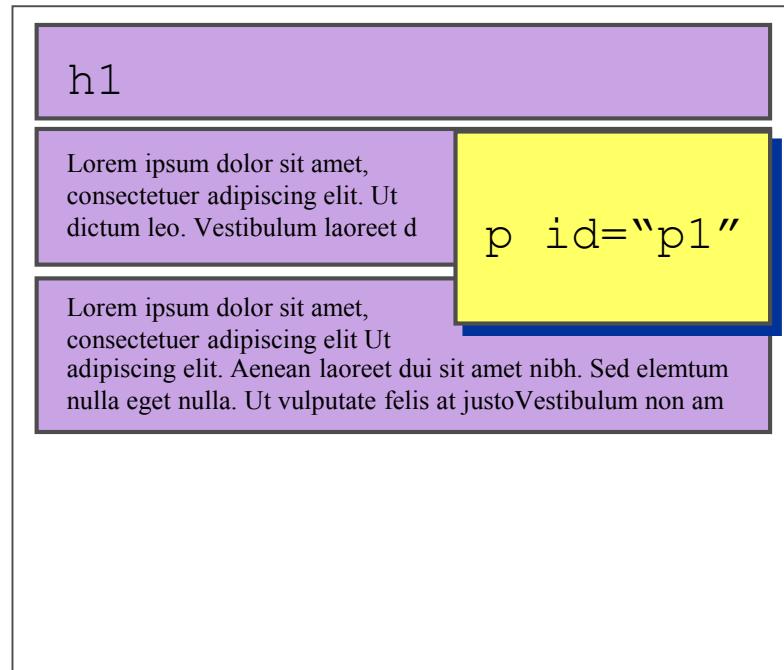
```
p#p1 {
    width: 40%;
    float: right;
}
```



Rules of Floating (3 of 5)

- Floats are block-level elements
 - Will override value of “display” property
 - However, must have an explicit width set, else shrink-to-fit

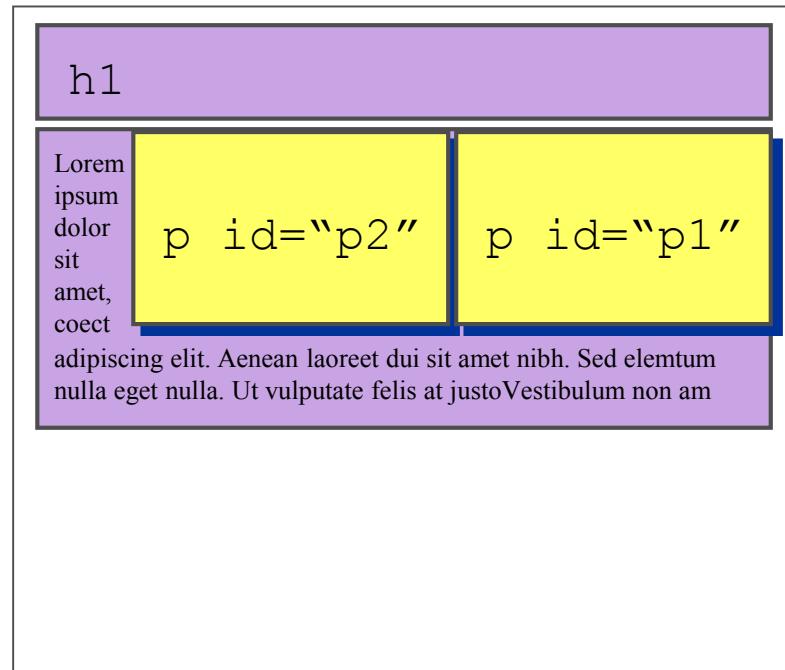
```
p#p1 {  
    width: 40%;  
    float: right;  
}
```



Rules of Floating (4 of 5)

- Floats are shifted left or right until their outer edge touches the containing block edge *or the outer edge of another float*

```
<h1></h1>
<p id="p1">/p>
<p id="p2"></p>
<p id="p3">Lorem...</p>
[...]
p#p1,
p#p2 {
    width: 40%;
    float: right;
}
```

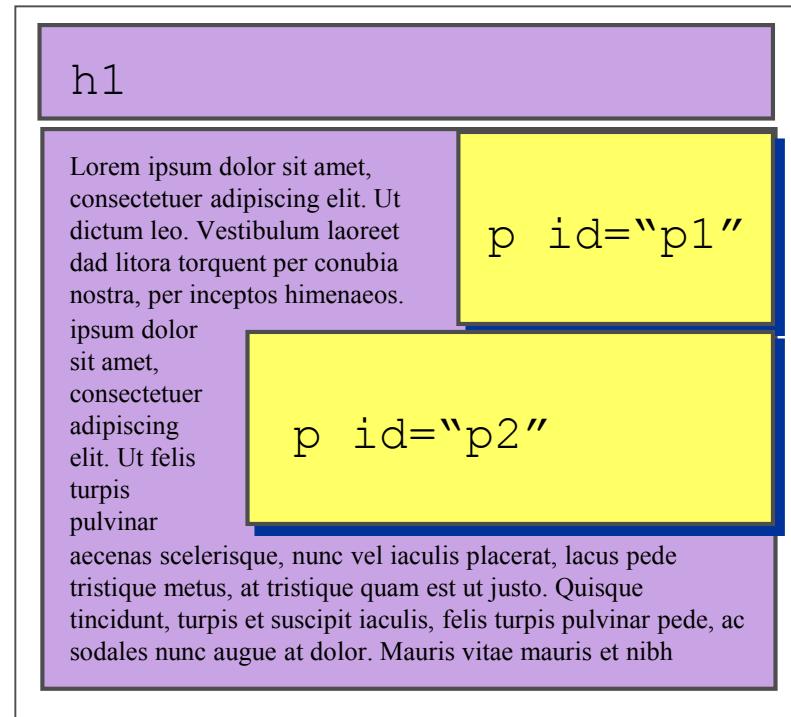


Rules of Floating (5 of 5)

- If there isn't enough horizontal room on the current line for the float, it is shifted downward, line by line, until a line has room for it.

```
<h1></h1>
<p id="p1">/p>
<p id="p2"></p>
<p id="p3">Lorem...</p>
[...]
```

```
p#p1 {
    width: 40%;
    float: right;
}
p#p2 {
    width: 70%;
    float: right;
}
```



Background Properties

background-color:	[keyword hex rgb rgba hsl hsla]
background-image:	[url (path)]
background-repeat:	[no-repeat repeat-x repeat-y]
background-position:	[x-pos y-pos]
background-attachment:	[scroll fixed]
background-size:	[width height contain cover]
background-origin:	[padding-box border-box content-box]
background-clip:	[padding-box border-box content-box]

New in CSS3

Correct Shorthand:

```
background: color position size repeat origin clip attachment image;  
background: pink 10px 50% no-repeat url(smiley.jpg);
```

color

position

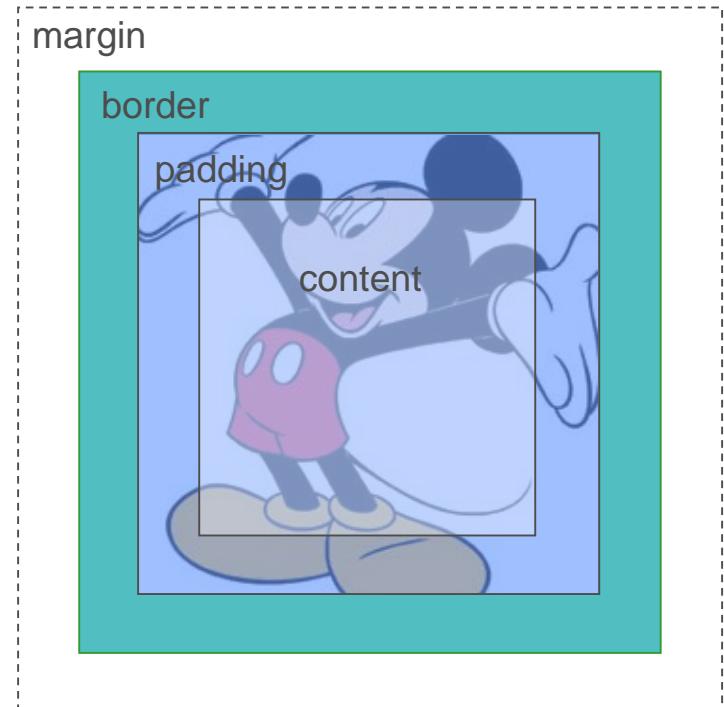
repeat

image

Using the *background* Property

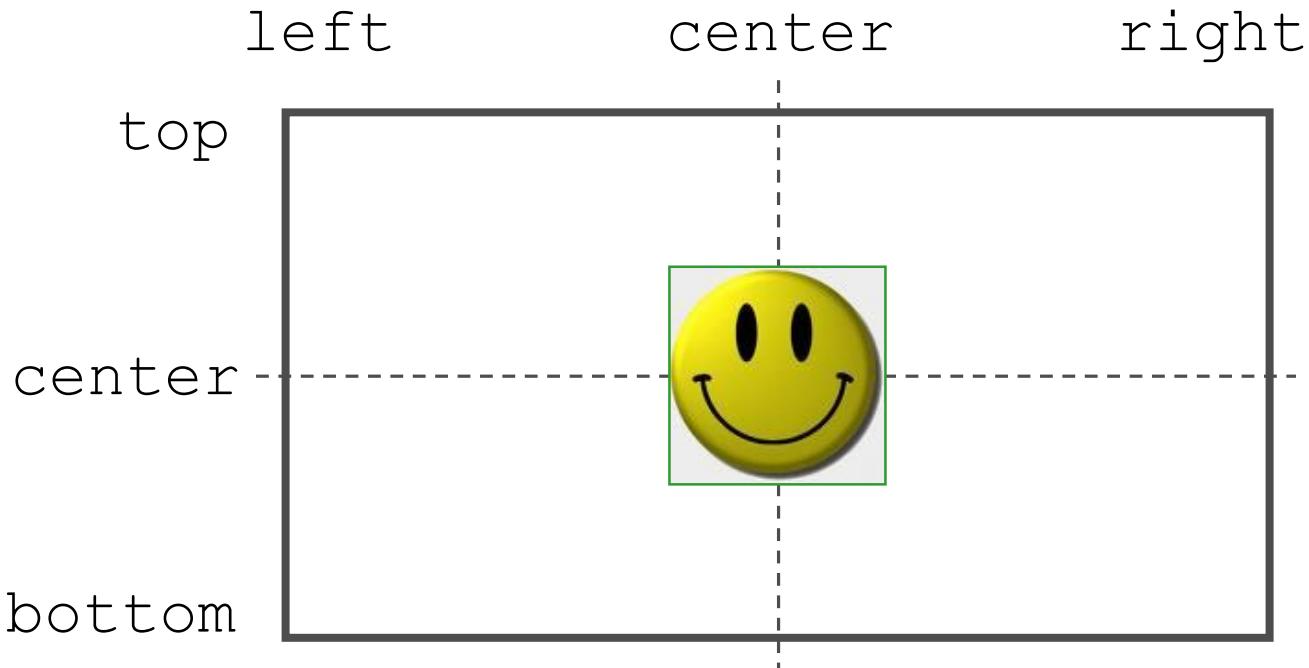
- Any background properties (image, color etc..) will apply to the **content** and **padding** areas.

```
{  
height: 150px;  
width: 150px;  
padding: 10px;  
border-width: 1px;  
margin: 5px;  
background: url(mickey.jpg)  
no-repeat;  
}
```



Background Positioning

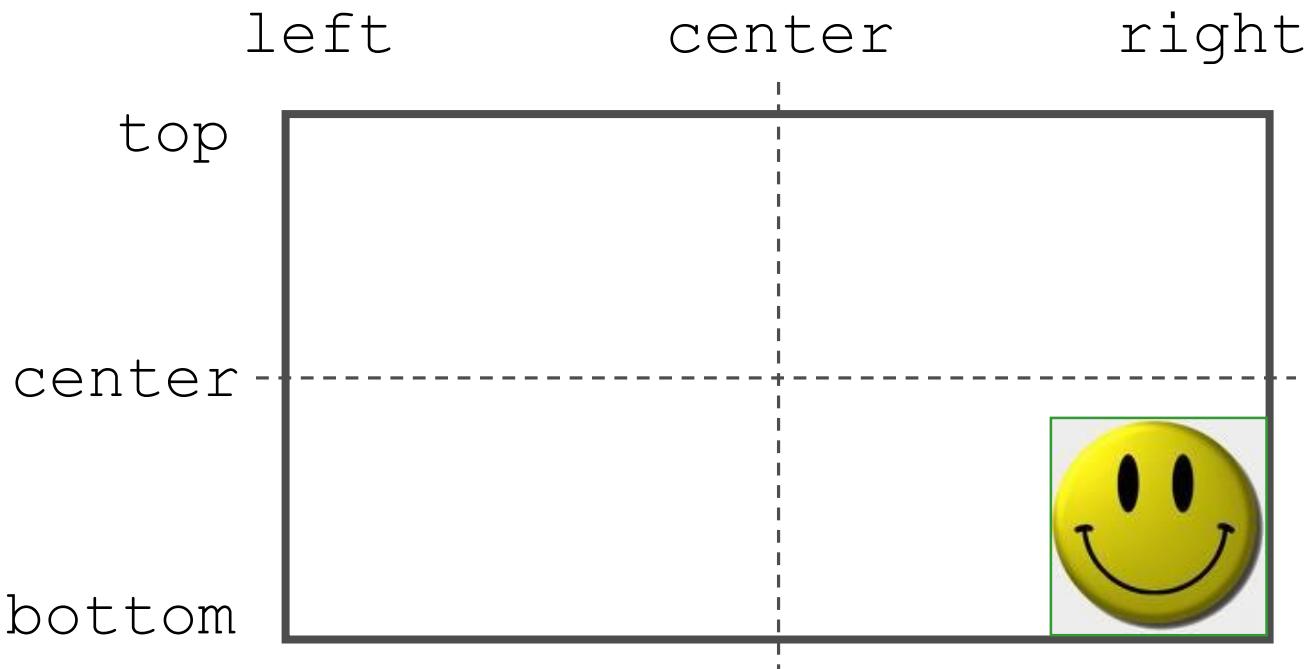
- By keyword



```
background: url(smiley.jpg) no-repeat center center;
```

Background Positioning

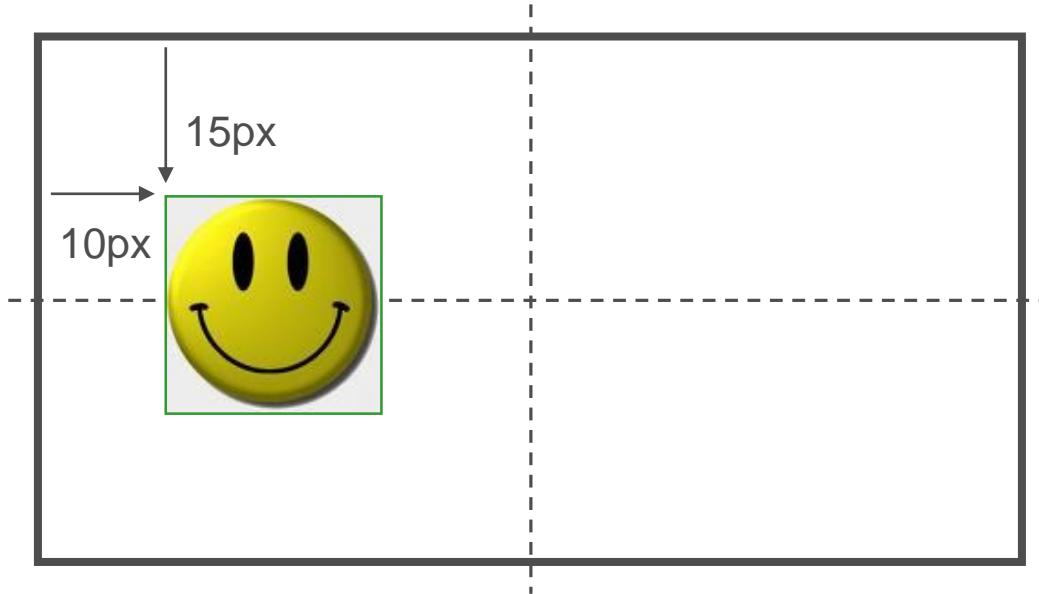
- By keyword



```
background: url(smiley.jpg) no-repeat right bottom;
```

Background Positioning

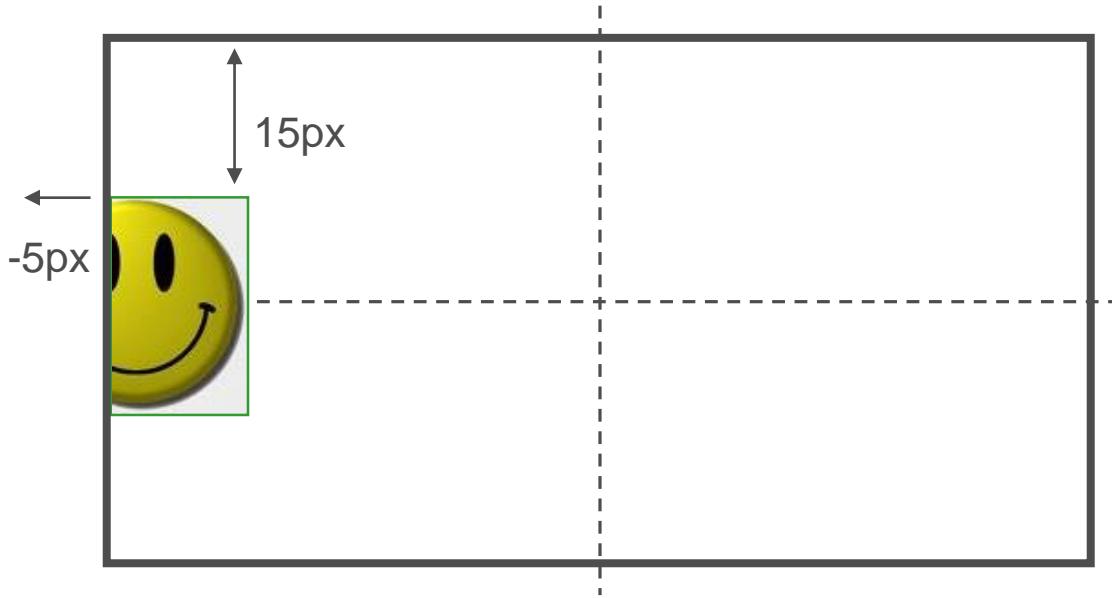
- By **fixed unit**



```
background: url(smiley.jpg) no-repeat 10px 15px;
```

Background Positioning

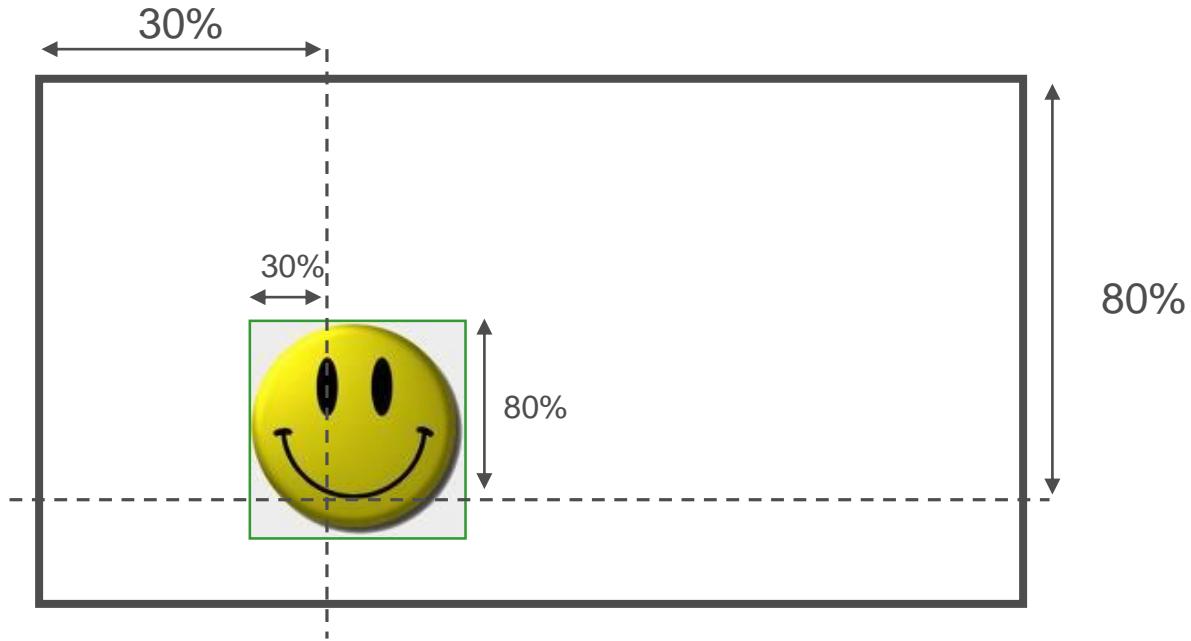
- By **fixed unit**



```
background: url(smiley.jpg) no-repeat -5px 15px;
```

Background Positioning

- By percentage



```
background: url(smiley.jpg) no-repeat 30% 80%;
```

Exercise 2 - It's Your Turn

- Create the following by using CSS (HTML is already provided). Work from the labs/lab02/starter folder.



- Hints:
 - You should only have to complete lab02.css
 - Use floating to make list items stack horizontally
 - Add the background image to each anchor
 - The image is approx. 100 x 75 pixels
 - Hints: The image is on the anchor, to give inline elements a height and width you must make them block elements
 - For this exercise, give the a height

Floating for Layout

- Nearly every modern web page uses floating to control layout:

Header

Col1

Lore ipsum dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut.

Col3

Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed
diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor
sit amet, consectetuer adipiscing elit, sed diam nonummy nibh
euismod tincidunt ut.

Col2

Lore ipsum dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut.

Footer

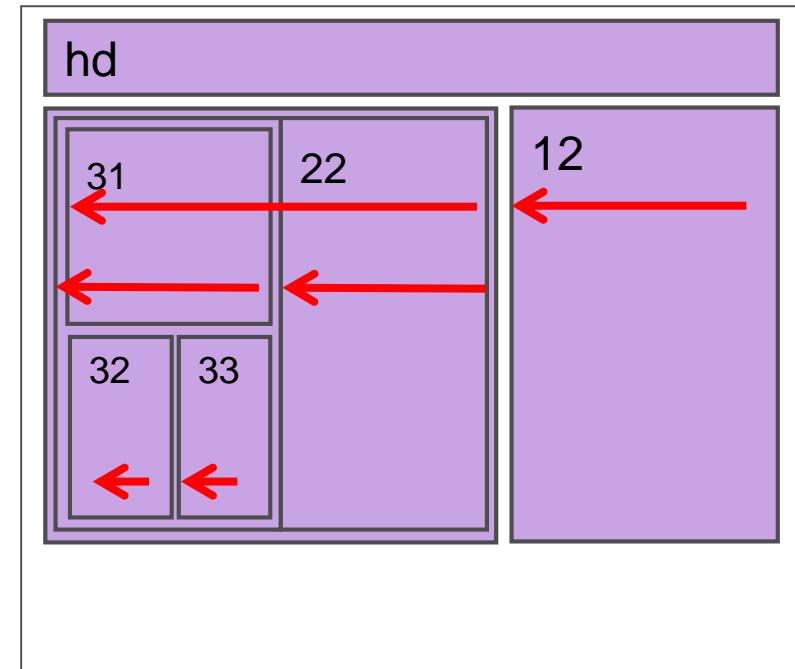
```
<div id="wrapper">
  <div id="header"></div>
  <div id="container">
    <div id="col1"></div>
    <div id="col2"></div>
    <div id="col3"></div>
  </div>
  <div id="footer"></div>
</div>
```

```
#header { background-color: #ffc; }
#col1 { background-color: #fcf;
        float: left;
        width: 25%; }
#col2 { background-color: #fcf;
        float: right;
        width: 25%; }
#col3 { background-color: #acb; }
#footer { background-color: #abc; }
```

Two-Columns

- Many layouts are decomposed into two columns

```
<div id="wrapper">
  <div id="hd"></div>
  <div id="col11">
    <div id="col21">
      <div id="col31"></div>
      <div id="col32"></div>
      <div id="col33"></div>
    </div>
    <div id="col22"></div>
  </div>
  <div id="col12"></div>
</div>
```



```
#col11, #col21, #col32 { width: 55%; float: left; }
#col12, #col22, #col33 { width: 45%; float: left; }
```

Dilemma with Floating

- What happens if floated content gets too large?

Header

Col1

Lore ipsum dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut. Lore ipsum
dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut. Lore ipsum
dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut. Lore ipsum
dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut.

Col3

Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.

Col2

Lore ipsum dolor sit amet,
consectetuer adipiscing elit,
sed diam nonummy nibh
euismod tincidunt ut.

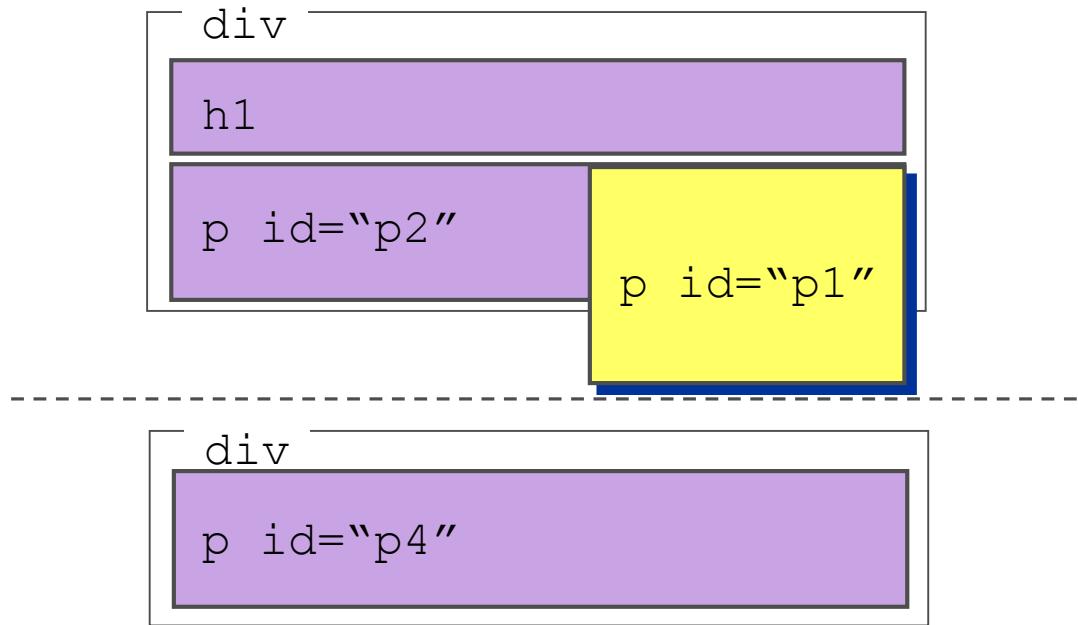
Footer



Floated element extends beyond the footer (successive content)

Solving this Dilemma: Clearing

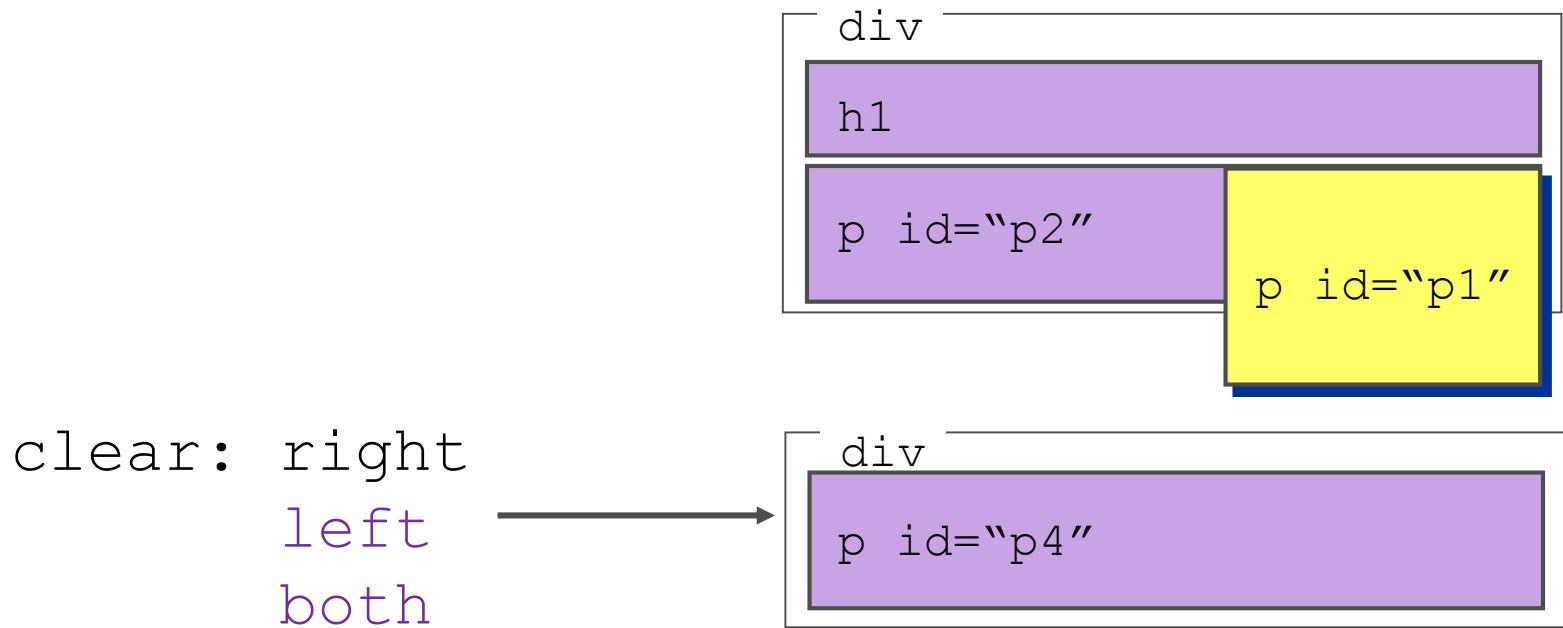
- Often, you want to define a break point where content stops going up behind a float



4 ways to do this...

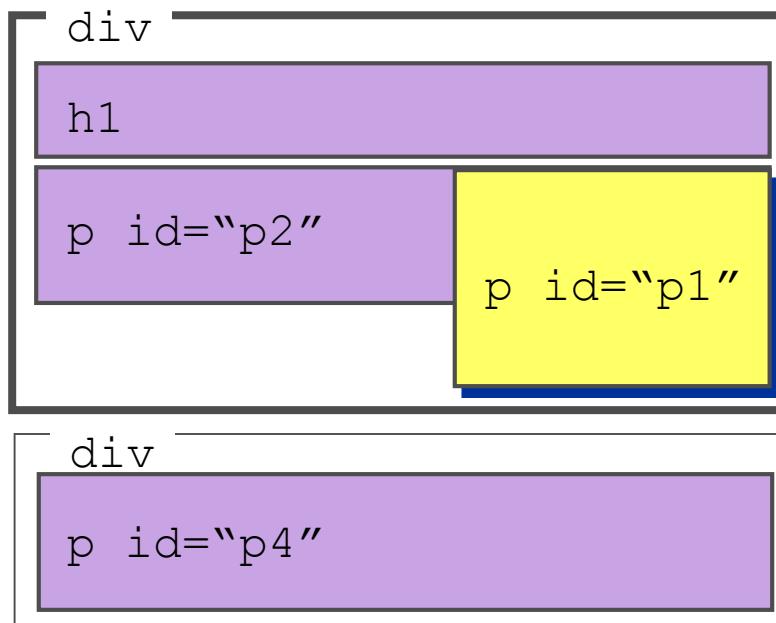
Tactic #1: Clearing Floats

- The “clear” property on the subsequent element

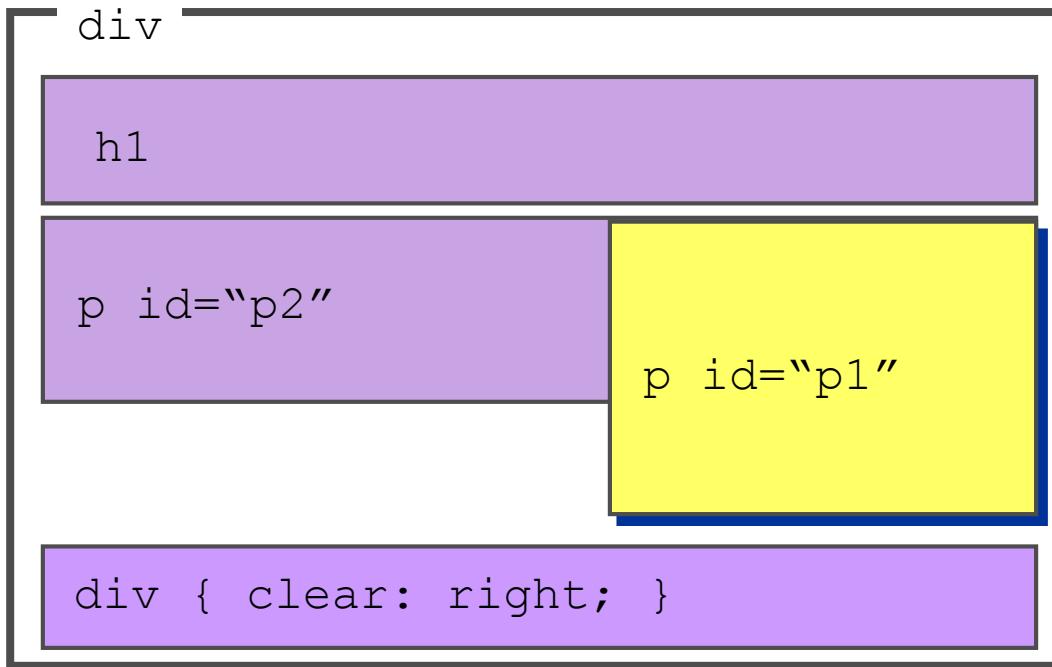


Tactic #2: Clearing Floats

- Force the parent to enclose the float;
"Float nearly everything"



Tactic #3: Self-clearing DIV



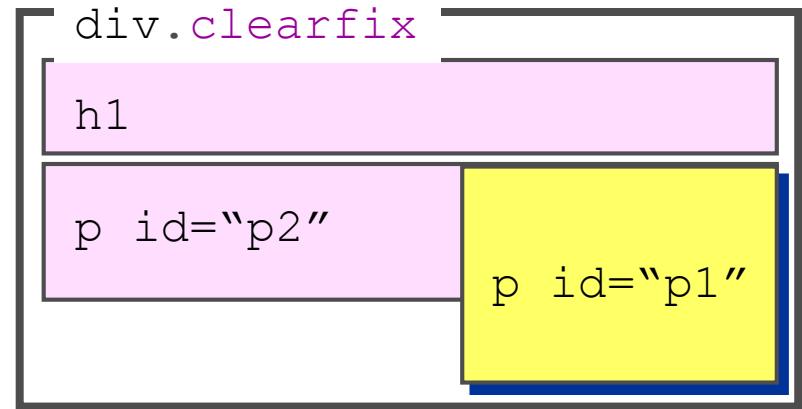
By placing a `<div>` inside the parent of a floated element, but after the floated element, we can give it the `clear` property.

This `<div>` has no height, cannot be seen, but ensures the parent always encapsulates the floated element.

Tactic #4: The Best Technique

- The clearfix technique

```
.clearfix:after {  
    content: "";  
    display: block;  
    clear: both;  
}  
  
.clearfix {  
    zoom: 1; /* IE hack */  
}
```



What is this hack with IE?

clearfix Now Added

- clearfix has been added to the containing element now

Header

Col1

Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.

Col3

Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.

Col2

Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.

Footer

```
#container:after {  
    content: '';  
    display: none;  
    clear: both;  
}  
#container { zoom: 1; }
```

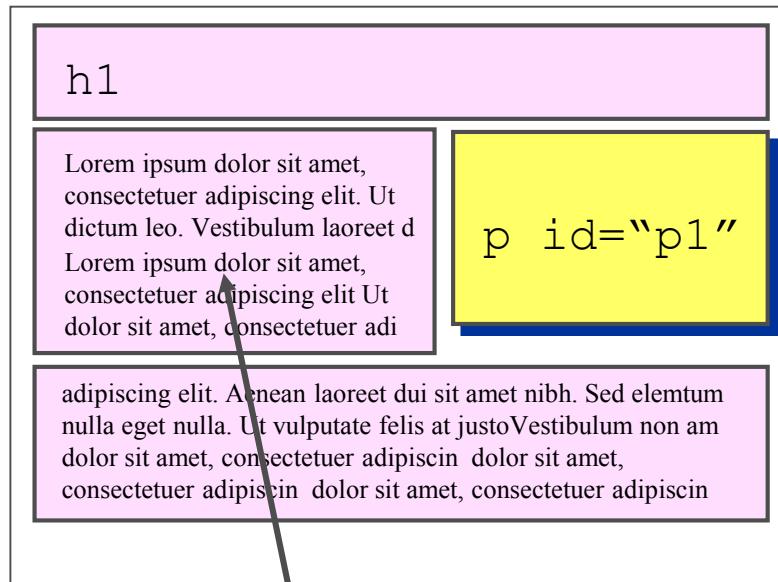
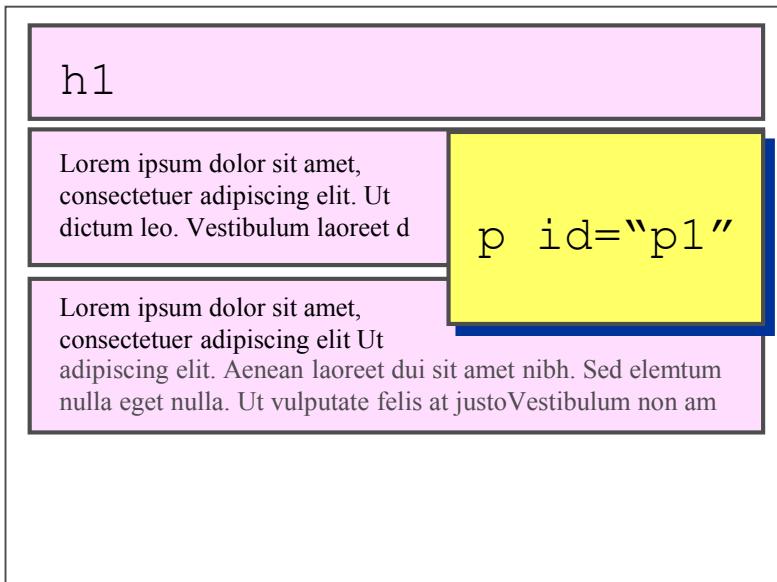
What About My Uneven Column Heights?

- Often CSS will require a little crafty thinking or some trickery
 - Our columns are given the appearance of being the same height

Header	Col1	Col2	Col3
	<p>Col1</p> <p>Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.</p>	<p>Col2</p> <p>Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.</p>	<p>Col3</p> <p>Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lore ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut.</p>
Footer			

Match container background to the column's background

Why zoom:1 for IE?



The need to specify zoom: 1 for IE will disappear if support for IE8 and earlier can be dropped

"hasLayout" answers many of the reasons for IE rendering bugs

Exercise 3 - It's Your Turn

- Return to lab 02 and modify the solution by **removing the 'height'** on the `` or the `<div>` depending on your solution
- Use 'clearfix' technique to force the purple background to remain in tact. Ensure the solution renders as before, this time without the `` or `<div>` height



Exercise 4 - It's Your Turn

Multi-column Layout

Adv. JavaScript and HTML5

Jim Pinkado
2113 Redwood Blvd. Long Beach CA
90314
(204)740-9000 (work)
jpinkman@rocketmail.com
Distribution Manager at Hollywood West Novelties

Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Victors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	dbreal@hotmail.com	Tupelo Industries	Product Manager
502	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
503	Tina O. Range	82 Pine Dr. Lakewood CA 90713	(212)432-0944	home	tornut@besthp.com	Best Holistic Practices	Customer Service Representative
504	Berry Blumenthal	3012 Mahogany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Packaging	Owner
505	Jim Pinkado	2113 Redwood Blvd. Long Beach CA 90314	(204)740-9000	work	jpinkman@rocketmail.com	Hollywood West Novelties	Distribution Manager
506	Alicia Grey	415 Poplar Ct. St. Louis MO 72210	(211)870-6780	home	algrey@blanksystems.com	Blank Systems Inc.	Lead Technical Engineer
507	Violet Waters	821 Ash Way Seattle WA 92230	(302)390-1181	home	waters@medcare.com	Home Medical Services	Regional Account Representative
508	Sandy White	906 Hickory Rd. Phoenix, AZ 83010	(213)221-4143	home	swhite@bricks.com	Bricks and More	Product Sales
509	Kay Black	1241 Maple Pl. Plano TX 72110	(401)322-8728	home	ksb2101@yahoo.com	Certified Signing Authorities	Graphics Artist
510	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
511	Alicia Grey	415 Poplar Ct. St. Louis MO 72210	(211)870-6780	home	algrey@blanksystems.com	Blank Systems Inc.	Lead Technical Engineer
512	Berry Blumenthal	3012 Mahogany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Packaging	Owner

Contact ID	501
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia
Primary Phone	(202)901-2121
Type	home
Email	dbreal@hotmail.com
Company	Tupelo Industries
Job Title	Product Manager

Contact ID: 505

Locate step-by-step instructions for this lab in the back of your manual

Summary

- The CSS Box Model defines numerous properties that help control an element's look
- Lay boxes out using floating and/or absolute positioning
- Some favor the use of **display:inline-block** instead of floating
 - While this alternative approach is okay to use, be aware that **display:inline-block** can cause an undesired space to occur between elements
 - Extra work must then be taken to remove that space if desired

Chapter 4

CSS 3 Features

Enhancing Solutions with Style

Overview

Color Options

Gradients

Rounded Corners

Transforms

The CSS 3 Standard

- CSS 3 standard managed by W3C is so large it has been broken into over 50 modules
- The **selectors** module has been given the highest priority and is already *Recommendation* status
- Most other modules are in working draft status and are subject to change, including:
 - **animations, transformations, transitions**
- Parts of the standard have been around for years

CSS 3 Feature Support

Browser Support for CSS 3

- Browsers currently implement varying support for CSS 3

<http://caniuse.com/>

Cross-Origin Resource Sharing - **Working Draft**

Method of performing XMLHttpRequests across domains

Sources: [Mozilla Hacks blog post](#) [Alternative implementation by IE8](#)

no and script with cross-browser support

Global user stats *:

Support:	48.45%
Partial support:	30.54%
Total:	78.99%

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	6.0	3.0	3.2	7.0	10.5	3.2			2.1
Previous version	7.0	3.5	4.0	8.0	10.6	4.0-4.1			2.2
Current	8.0	3.6	5.0	9.0	11.0	4.2	5.0	10.0	2.3
Near Future (early 2011)		4.0		10.0					
Future (mid/late 2011)	9.0	5.0	6.0	11.0	11.1				

Note: Supported somewhat in IE8 using the XDomainRequest object

Feedback

Show next 20 Show all

Summary

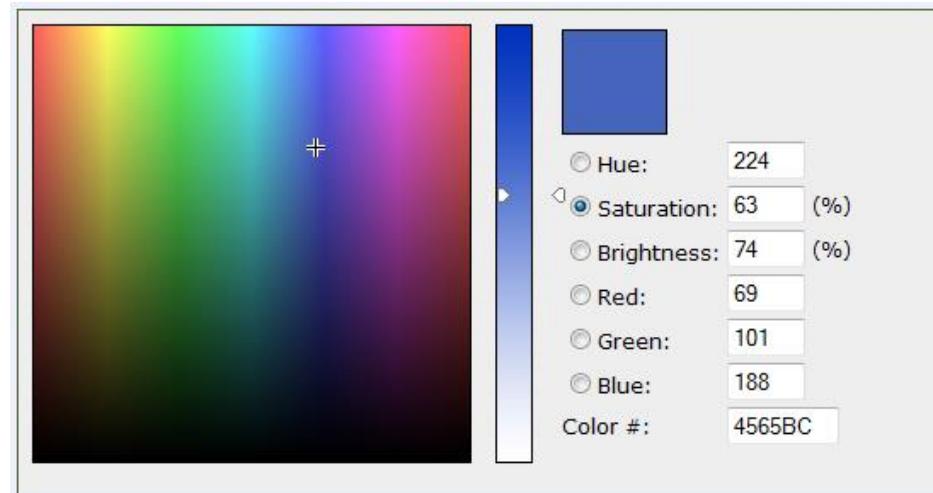
Calculation of support for currently selected criteria

	IE	Firefox	Safari	Chrome	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
Two versions back	6.0: 9%	3.0: 34%	3.2: 48%	7.0: 85%	10.5: 64%	3.2: 58%			2.1: 52%
Previous version	7.0: 15%	3.5: 59%	4.0: 66%	8.0: 89%	10.6: 71%	4.0-4.1: 68%			2.2: 56%
Current	8.0: 29%	3.6: 67%	5.0: 79%	9.0: 89%	11.0: 74%	4.2: 69%	5.0: 39%	10.0: 51%	2.3: 59%
Near Future (early 2011)	8.0: 29%	4.0: 87%	5.0: 79%	10.0: 92%	11.1: 77%				
Future (mid/late 2011)	9.0: 62%	5.0: 87%	6.0: 90%	11.0: 91%	11.1: 77%				

Use this site as a browser support reference

New CSS Color Options

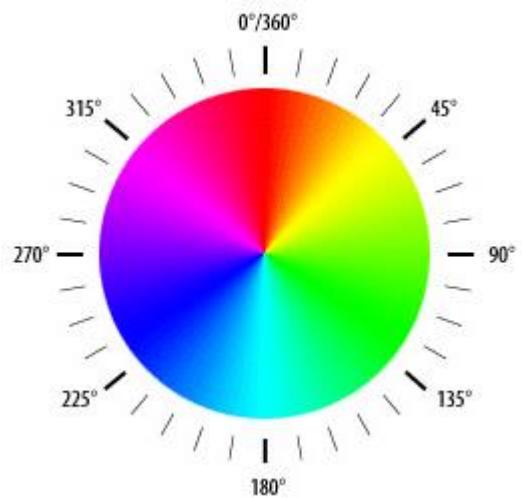
- CSS3 provides additional ways of specifying color selections
 - Classic approach: hex values, RGB percentage/value
 - New approaches:
 - **RGBA**
 - **HSL (Hue/Saturation/
Lightness)**
 - **HSLA**



RGBA & HSLA offer a fourth value: **alpha transparency** where:
0 = fully transparent
1 = completely opaque

How HSL Works

- HSL (Hue / Saturation / Lightness) works as follows:
 - **Hue** is defined as a degree on a color wheel
 - 0 (360) is red
 - 240 is blue
 - 120 is green
 - **Saturation** is a percentage of the full color (0% – 100%)
 - **Lightness** (0% dark – 100% white)



New Color Examples

```
div {  
  color: rgb(0,0,0);  
  background-color: rgb(255,255,255);  
}
```

```
div {  
  color: rgba(0,0,0,0.6);          /* semitransparent black */  
  background-color: rgba(255,255,255,0.6);  /* semitrans. wht */  
}
```

```
div {  
  color: hsl(0,0%,0%);           /* black */  
  background-color: hsl(0,0%,100%);  /* white */  
}
```

```
div {  
  color: hsla(0,0%,0%,0.6);      /* semitransparent white */  
  background-color: hsla(0,0%,100%,0.6);  /* semitrans black */  
}
```

New Color Improvements

- Use a solid background color for IE6-8 as a fallback:

```
selector {  
  background-color: #f00; /*fallback */  
  background-color: rgba(255,0,0, 0.5);  
}
```

IE6-8

All other browsers

Progressive Enhancement with Colors

- Browsers will drop the remaining properties in a rule if they do not recognize one
 - Place more generalized property first to capture all browsers
 - Place the more specialized property last

```
selector {  
  color: #f00; /* fallback */  
  color: rgba(255, 0, 0, 0.5);  
}
```

Newer browsers will be progressively enhanced by taking advantage of the second color property

Rounded Corners

- Rounded corners can be achieved using CSS only
 - No longer requires use of images or markup
 - IE8 and earlier see non-rounded (square) corners

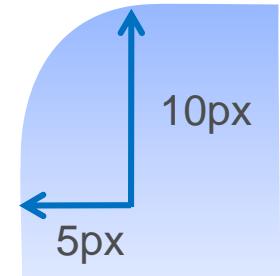


```
div {  
    border-radius: 5px; /* Opera 10.5, IE 9,  
}                                SF5, Chrome, FF4 */
```

Rounded Corners Syntax

- Specific properties can define each corner

```
border-top-left-radius: 5px 10px;  
border-top-right-radius: 10px;  
border-bottom-left-radius: 10px;  
border-bottom-right-radius: 10% 5%;
```



- Shorthand syntax:

```
border-radius: [ <length> | <percentage> ]{1,2,4}  
           [ / [ <length> | <percentage> ]{1,2,4} ]?
```

```
border-radius: 5px 10px 5px 10px / 10px 5px 10px 5px;  
border-radius: 5px;  
border-radius: 5px 10px / 10px;
```

Gradients

- Gradients use the *background-image* property
- For non-supporting browsers:
 - Use solid background color



```
.com-gradient {  
    background-color: #b82cb8;  
    background-image: linear-gradient(to bottom, #b82cb8, #2b29ba);  
    /* Ch26+, FF16+, IE10+ */  
}
```

Why CSS3Please?

```
/*
-----  
CSS3, Please! The Cross-Browser CSS3 Rule Generator  
=====  
  
You can edit the underlined values in this css file,  
but don't worry about making sure the corresponding  
values match, that's all done automagically for you.  
  
Whenever you want, you can copy the whole or part of  
this page and paste it into your own stylesheet.  
----- */  
  
/* [to clipboard] [toggle rule off] */  
.box_round {  
-webkit-border-radius: 12px; /* Saf3-4, iOS 1-3.2, Android ≤1.6 */  
border-radius: 12px; /* Opera 10.5, IE9, Saf5, Chrome, FF4+, iOS 4+ */  
  
/* useful if you don't want a bg color from leaking outside the border: */  
-moz-background-clip: padding; -webkit-background-clip: padding-box; background-clip: padding-box;  
}  
  
/* [to clipboard] [toggle rule off] */  
.box_shadow {  
-webkit-box-shadow: 0px 0px 4px 0px #ffffff; /* Saf3-4, iOS 4+ */  
box-shadow: 0px 0px 4px 0px #ffffff; /* Opera 10.5, IE9+ */  
}
```

CSS3, please!

This element will receive instant changes as you edit the CSS rules on the left.
Enjoy!

Provides:

- 1- Interactive interface
- 2- Rules are in proper fallback order
- 3- Supported browsers are listed
- 4- Easy to copy-and-paste

Transforms

- Transformations such as **skew**, **rotate**, and **scaling**, **matrix**, **translate** can be performed on elements
- Use the standard and vendor-specific versions

```
.scale {  
    left: 25px;  
    -webkit-transform: scale(2.5);  
    -moz-transform: scale(2.5);  
    -o-transform: scale(2.5);  
    -ms-transform: scale(2.5);  
    transform: scale(2.5);  
}
```

Transforms

- Valid functions include:

- **matrix**
- **rotate(deg)**
- **scale(factor)**
- **scaleX(factor)**
- **scaleY(factor)**
- **skew(angle)**
- **skewX(angle)**
- **skewY(angle)**
- **translate(amount)**
- **translateX(amount)**
- **translateY(amount)**

applies a transformation matrix

scales by a factor

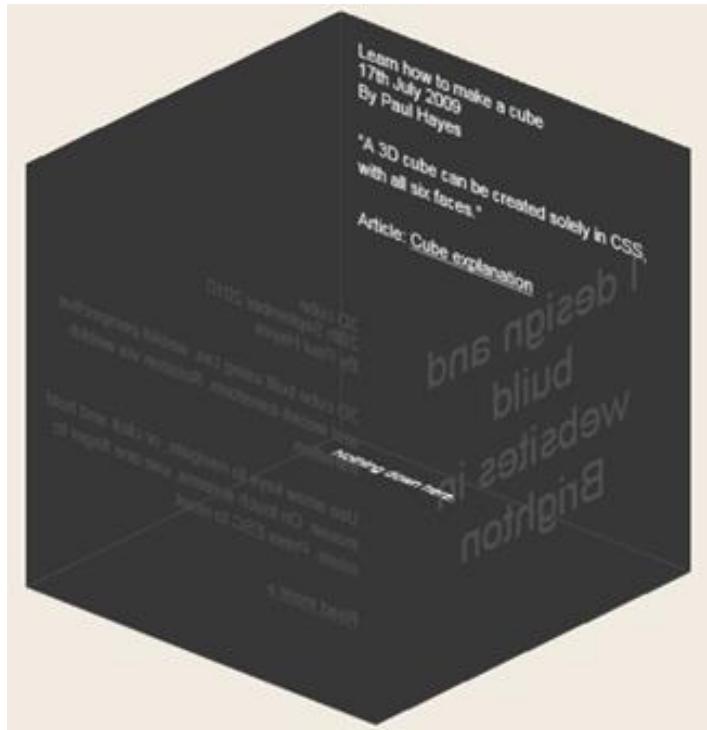
skews on both axes

translates along x and y axis

What Can Transforms Do?

- Check out some cool examples:

<http://www.creativebloq.com/css3/20-stunning-examples-css-3d-transforms-11112759>



Exercise 5 - It's Your Turn

A CSS 3 Dialog Popup

Adv. JavaScript and HTML5

Contact Search

Jim Pinkado
2113 Redwood Blvd. Long Beach CA 90314
(204)740-9000 (work)
jpinkman@rocketmail.com
Distribution Manager at Hollywood West Novelties

Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Vectors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	dbreal@hotmail.com	Tupelo Industries	asdf
502	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
503	Tina O. Range	82 Pine Dr. Lakewood CA 90713	(212)432-0944	home	tomut@besthp.com	Best Holistic Practices	Customer Service Representative
504	Berry Blumenthal	3012 Main Ln. Denver CO 80101	Contact ID:	505	<input type="button" value="Search"/>	<input type="button" value="Search (XML response)"/>	
505	Jim Pinkado	2113 Redwood Blvd. Long Beach CA 90314					
506	Alicia Grey	415 Poplar St. Louis MO 63101					
507	Violet Waters	821 Ash St. Seattle WA 98101					<input type="button" value="Cancel"/>
508	Sandy White	906 Hickory Rd. Phoenix, AZ 83010					
509	Kay Black	1241 Maple Pl. Plano TX 72110					
510	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
511	Alicia Grey	415 Poplar Ct. St. Louis MO 72210	(211)870-6780	home	algrey@blanksystems.com	Blank Systems Inc.	Lead Technical Engineer
512	Berry Blumenthal	3012 Mahogany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Packaging	Owner

Contact ID
Name
Address
Primary Phone
Type
Email
Company
Job Title

Locate step-by-step instructions for this lab in the back of your manual

Summary

- CSS 3 features have become very broadly supported by modern browsers
 - If IE6-8 support is not needed, most CSS 3 features may be implemented
- Older browsers might need proper fallback
- Place properties in a specific order to achieve progressively enhance newer browsers

Chapter 5

Responsive Solutions

Creating single solutions for multiple
devices

Overview

What is Responsive Design?

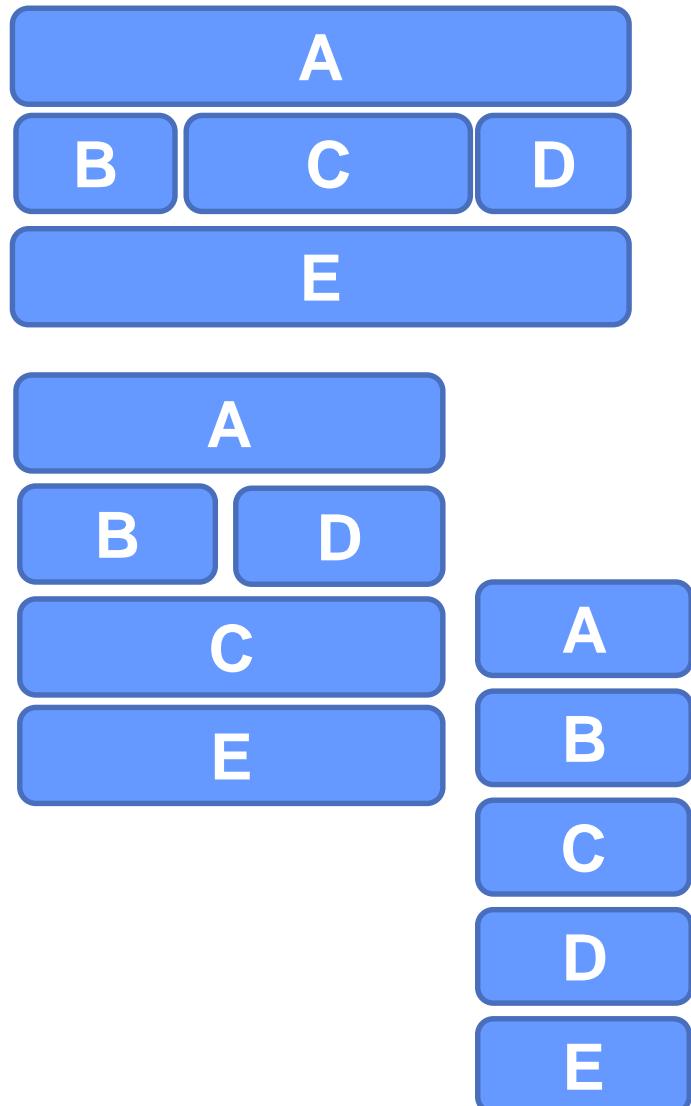
CSS Media Queries

JavaScript and Responsiveness

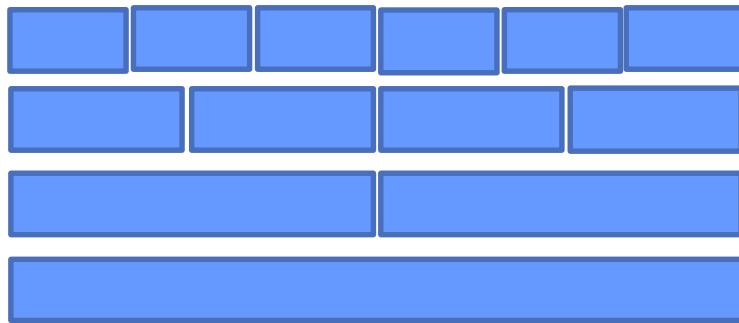
What is Responsive Design?

What is Responsive Design?

Responsive design is the art of developing web applications to *optimize the layout* according to the user's view (screen width and height)



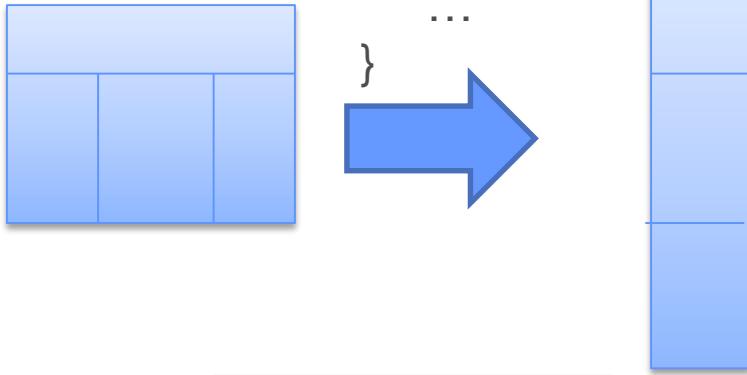
Principles of Responsive Solutions



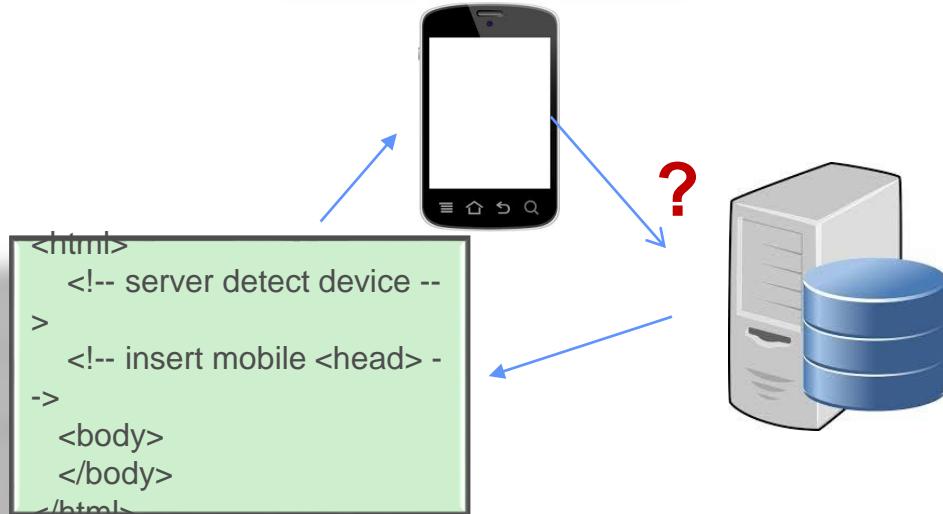
Fluid Grids



Flexible Images



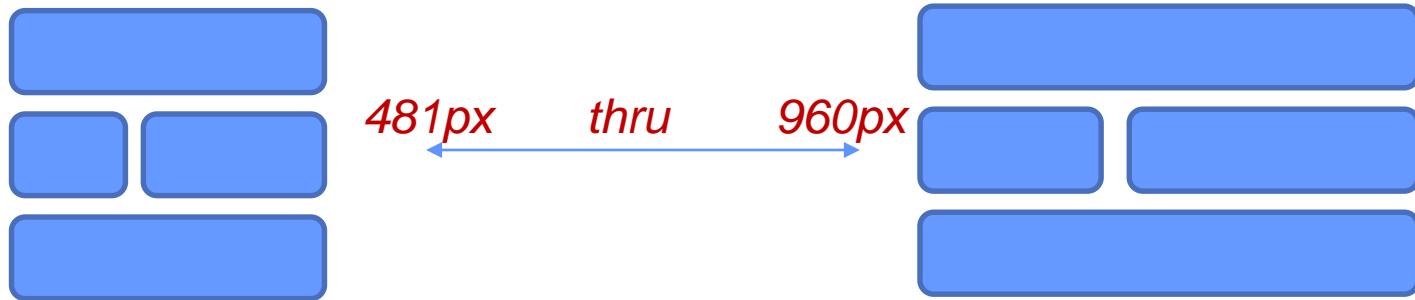
Media Queries



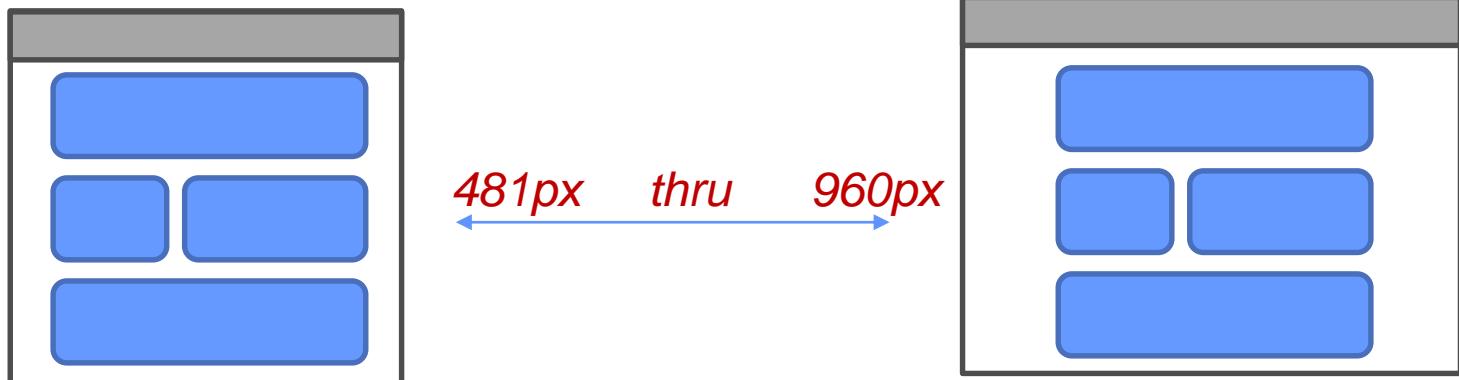
RESS

Responsive vs. Adaptive Design

- Responsive solutions have **fluid** changes
 - Can change element sizes even for a specific layout



- Adaptive solutions are **discrete** (static) changes
 - Think of it as a series of "fixed width" solutions



Responsive Design Considerations

Feature	Issue	Resolution
Tables	Desktop is okay, too wide on mobile	Transform the table. Discussed later.
Multi-columns	3-columns desktop, 1-column mobile	Use Fluid Grids
Images	Hi-res desktop, lo-res mobile	Use Flexible Images: Scalable and adaptive images
Content	Too much for mobile device users to see and read clearly	Reduce to essential content. Move other content to secondary "pages"

Understanding the Viewport

- The viewport meta tag tells the browser how to scale the size of a page

```
<meta name="viewport"  
      content="user-scalable=yes, initial-scale=1.0, minimum-scale=0.5  
              maximum-scale=2.0, width=device-width" />
```

- Commonly used version:

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```



Sets the browser to the device's width and scales it to 100%

Responsive Examples (1 of 3)

The desktop view of the Forefathers website features a header with the brand's name in a stylized font, established in 2011. Below the header are four cards: 'WORKSHOP' (The prodigies of all collective exhibitions), 'SPECIALTIES' (Design of the first water is our cup of tea), 'JOURNAL' (A genuine exposition of our traveling tales), and 'ORIGINS' (How we gathered the force of a freight train). A decorative banner with the word 'BEHOLD!' and 'THE DESIGN FRONTIER' spans the middle of the page. To the left is a cartoon illustration of a chimpanzee dressed as a Gentleman, holding a cane and smoking a pipe. A green button at the bottom left says 'LEARN MORE'. At the bottom right, a green button says 'Desktop'.

forefathersgroup.com

The mobile view of the Forefathers website is presented in a vertical layout. It includes the same header and navigation as the desktop version. The central 'BEHOLD!' banner is visible. The content area is divided into four horizontal sections: 'WORKSHOP', 'SPECIALTIES', 'JOURNAL', and 'ORIGINS', each with its respective text. A green button at the bottom right says 'Mobile'. At the bottom of the page, there is a descriptive paragraph: 'Witness this never before seen revelation of beauty and wonder! Enlivened by mirth, provoking surprise and marvelous feats, the Forefathers design group fashions the world's most electrifying brands, websites and illustrations.'

Responsive Examples (2 of 3)

B BOSTON.COM CARS | JOBS | REAL ESTATE

58° Sunny
WEATHER | TRAFFIC

JOANNE RATH/GOLOBE STAFF

Fertilizer harming Plum Island salt marsh, study finds

A nine-year study in the estuary is the first to show that marshes may be crumbling from the inside out from a massive overload of nutrients.

- Photos of the Plum Island salt marsh



For these rowers, Head of Charles is family time

Four members of the Campbell family of New Canaan, Conn., will be on the river this weekend at the 48th annual Head of the Charles Regatta.

- Tips for watching the Regatta

data from ev.ib-ib.com...



... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

... -

Responsive Examples (3 of 3)

Mobile

The mobile version of the Cisco website features a large "Mobile" label at the top. It includes the Cisco logo, a navigation bar with links like "Products & Services", "Support", "Solutions", "Partners", "How to Buy", "Training", "Events", "News", and "Careers". A prominent feature is the "Cisco Technology Radar" graphic, which is a circular radar chart with various technology trends listed around it. Below the graphic is a "Learn More" button.

Desktop

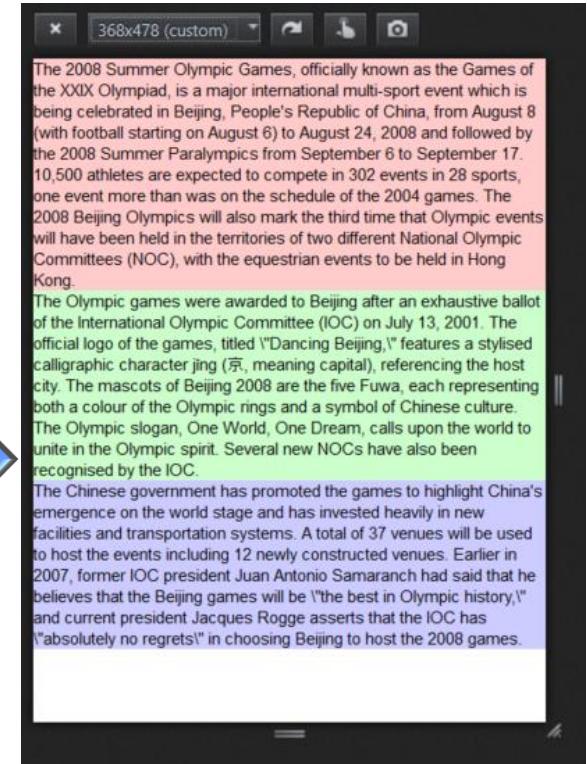
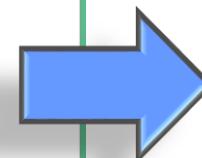
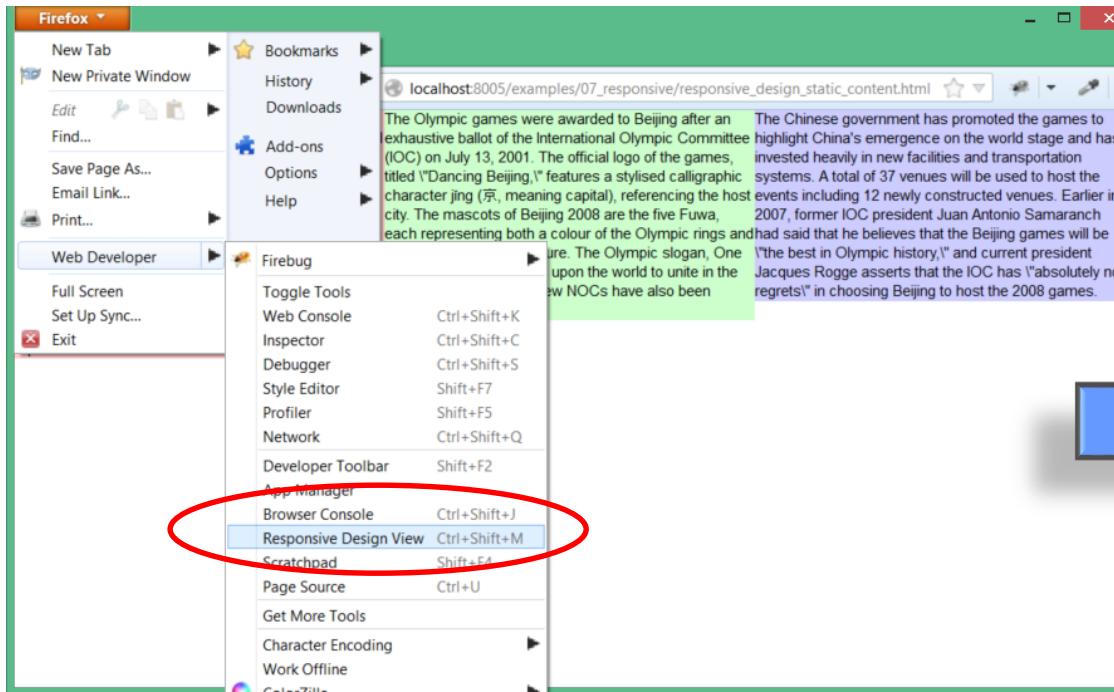
cisco.com

The desktop version of the Cisco website features a large "Desktop" label at the top. It includes the Cisco logo and a navigation bar with links like "Products & Services", "Support", "How to Buy", "Training & Events", and "Partners". A prominent feature is the "Cisco Technology Radar" graphic, which is a circular radar chart with various technology trends listed around it. Below the graphic is a "Learn More" button. The page also includes sections for "Latest News" (Tech Training Breaks Cycle of Poverty - 25 Jun 2014), "Cisco Nexus 7000" (Support cloud functions with programmability and automation features), and "Save Energy, Costs, and Carbon" (Get free EnergyWise Cloud or Management software). The right side of the page shows a sidebar with a "Technology Radar Trends" section and social media links (Twitter, Facebook, LinkedIn) followed by a "Follow Us" button.

Tablet

Firefox Responsive Design View

- Responsive Design View can simulate applications at various sizes



It also rotates from portrait to landscape and simulates touch events

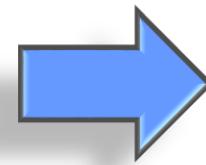
Breakpoints

- *Breakpoints* are pre-defined *pixel widths* at which an application changes occur

The 2008 Summer Olympic Games, officially known as the Games of the XXIX Olympiad, is a major international multi-sport event which is being celebrated in Beijing, People's Republic of China, from August 8 (with football starting on August 6) to August 24, 2008 and followed by the 2008 Summer Paralympics from September 6 to September 17. 10,500 athletes are expected to compete in 302 events in 28 sports, one event more than was on the schedule of the 2004 games. The 2008 Beijing Olympics will also mark the third time that Olympic events will have been held in the territories of two different National Olympic Committees (NOC), with the equestrian events to be held in Hong Kong.

The Olympic games were awarded to Beijing after an exhaustive ballot of the International Olympic Committee (IOC) on July 13, 2001. The official logo of the games, titled "Dancing Beijing," features a stylised calligraphic character jing (京, meaning capital), referencing the host city. The mascots of Beijing 2008 are the five Fuwa, each representing both a colour of the Olympic rings and a symbol of Chinese culture. The Olympic slogan, One World, One Dream, calls upon the world to unite in the Olympic spirit. Several new NOCs have also been recognised by the IOC.

The Chinese government has promoted the games to highlight China's emergence on the world stage and has invested heavily in new facilities and transportation systems. A total of 37 venues will be used to host the events including 12 newly constructed venues. Earlier in 2007, former IOC president Juan Antonio Samaranch had said that he believes that the Beijing games will be "the best in Olympic history," and current president Jacques Rogge asserts that the IOC has "absolutely no regrets" in choosing Beijing to host the 2008 games.



At 600px, this application changes its appearance

The 2008 Summer Olympic Games, officially known as the Games of the XXIX Olympiad, is a major international multi-sport event which is being celebrated in Beijing, People's Republic of China, from August 8 (with football starting on August 6) to August 24, 2008 and followed by the 2008 Summer Paralympics from September 6 to September 17. 10,500 athletes are expected to compete in 302 events in 28 sports, one event more than was on the schedule of the 2004 games. The 2008 Beijing Olympics will also mark the third time that Olympic events will have been held in the territories of two different National Olympic Committees (NOC), with the equestrian events to be held in Hong Kong.

The Olympic games were awarded to Beijing after an exhaustive ballot of the International Olympic Committee (IOC) on July 13, 2001. The official logo of the games, titled "Dancing Beijing," features a stylised calligraphic character jing (京, meaning capital), referencing the host city. The mascots of Beijing 2008 are the five Fuwa, each representing both a colour of the Olympic rings and a symbol of Chinese culture. The Olympic slogan, One World, One Dream, calls upon the world to unite in the Olympic spirit. Several new NOCs have also been recognised by the IOC.

The Chinese government has promoted the games to highlight China's emergence on the world stage and has invested heavily in new facilities and transportation systems. A total of 37 venues will be used to host the events including 12 newly constructed venues. Earlier in 2007, former IOC president Juan Antonio Samaranch had said that he believes that the Beijing games will be "the best in Olympic history," and current president Jacques Rogge asserts that the IOC has "absolutely no regrets" in choosing Beijing to host the 2008 games.

- Breakpoints are determined by the developer
 - These should be based on best look for the application, not based on common device sizes

Creating Responsive Solns

```
<div id="col-1" class="col">The 2008 Summer Olympic Games,...</div>
<div id="col-2" class="col">The Olympic games were ...</div>
<div id="col-3" class="col">The Chinese government has ...</div>
```

```
<style type="text/css" media="screen">
  body { width: 100%; }
  div.col{ width: 33%; float: left; }
  #col-1 { background: #ffcccc; }
  #col-2 { background: #ccffcc; }
  #col-3 { background: #ccccff; }
  body.narrow div.col{ width: 100%; float: none; }
  body.medium div.col{ width: 50%; }
  body.medium div#col-2{ float: right; }
  body.medium div#col-3{ float: right }
</style>
```

Creating Responsive Solns (cont)

```
var LayoutMgr = {
    doLayout: function() {
        var width = $(document).width();
        if(width !== this.lastWidth) {
            var bodyClass = 'narrow';
            if(width > 800)
                bodyClass = 'wide';
            else if(width >= 600 && width <= 800)
                bodyClass = 'medium';

            $('body').removeClass();
            $('body').addClass(bodyClass);
            this.lastWidth = width;
        }
    },
    lastWidth: null
};

$(window).load(LayoutMgr.doLayout);
$(window).resize(LayoutMgr.doLayout);
```

Response.js or **Adapt.js** are popular JavaScript libraries designed to assist in creating responsive solutions

CSS 2.1 Media Types

- CSS 2.1 defined media types

all
braille
embossed
handheld
print
projection
screen
speech
tty
tv

CSS3 Media Queries
is the follow-on to CSS 2.1
media types

```
<link rel="stylesheet" type="text/css" href="main.css" media="screen" />
```

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

Using Media Queries

- **Media Queries** are a CSS 3 feature that allow for targeting classes of devices and obtaining device characteristics

```
<link rel="stylesheet" type="text/css"  
media="screen and (max-device-width: 480px)" href="inner.css" />
```

- Queries can be applied to CSS elements directly

```
@media screen and (max-width: 400px) {  
    .lastChild { padding: 5%; width: 42%; }  
}
```

Media Query Syntax

```
<link rel="stylesheet" type="text/css"  
      media="media_type and (expression)" href="external.css" />
```

Or

```
@import url(external.css) media_type and (expression);
```

Or

```
@media media_type and (expression) {  
  
  /* define embedded rules this way  
  
}
```

Media Queries Syntax (cont.)

- In addition to **and** operations in media queries, **or** operations can be performed:

```
<link rel="stylesheet" type="text/css"
      media="(orientation: landscape), min-width:800px"
      href="enhanced.css" />
```

- Negation may also be used:

```
@media not print and (orientation: portrait) {
    div#main {
        color: blue;
    }
}
```

Media Query Expressions Properties

- All of these are valid expression variables for media queries:

width
height
device-width
device-height
orientation
device-aspect-ratio

color
color-index
monochrome
resolution
scan
aspect-ratio
grid

hover
luminosity
hover
pointer
script
touch
types

Low support,
these are a
part of *Media
Queries Level
4 Spec
(coming)*

```
@media screen and (min-width: 180px) and (max-width: 480px)  
    and (color) {  
    .secondary_col { display: none; }  
}
```

Test your browser here:
<http://www.quirksmode.org/css/tests/mediaqueries/>

Media Query Device Support

CSS3 Media Queries - **Recommendation**

Method of applying styles based on media information. Includes things like page and device dimensions

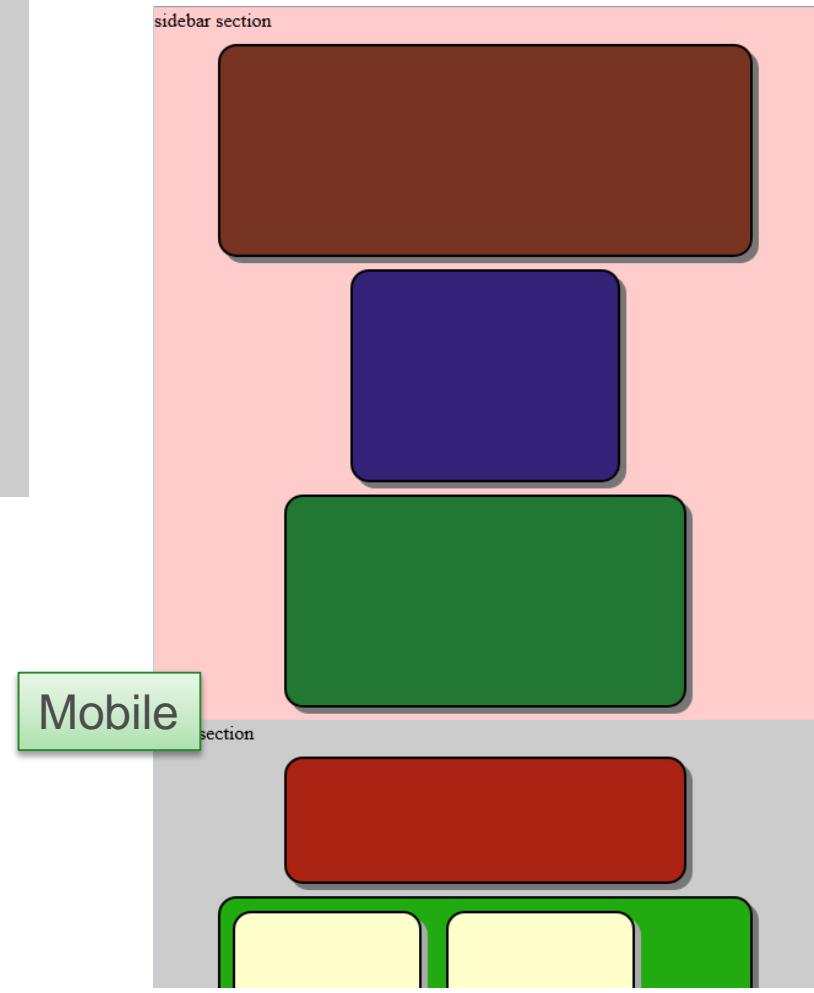
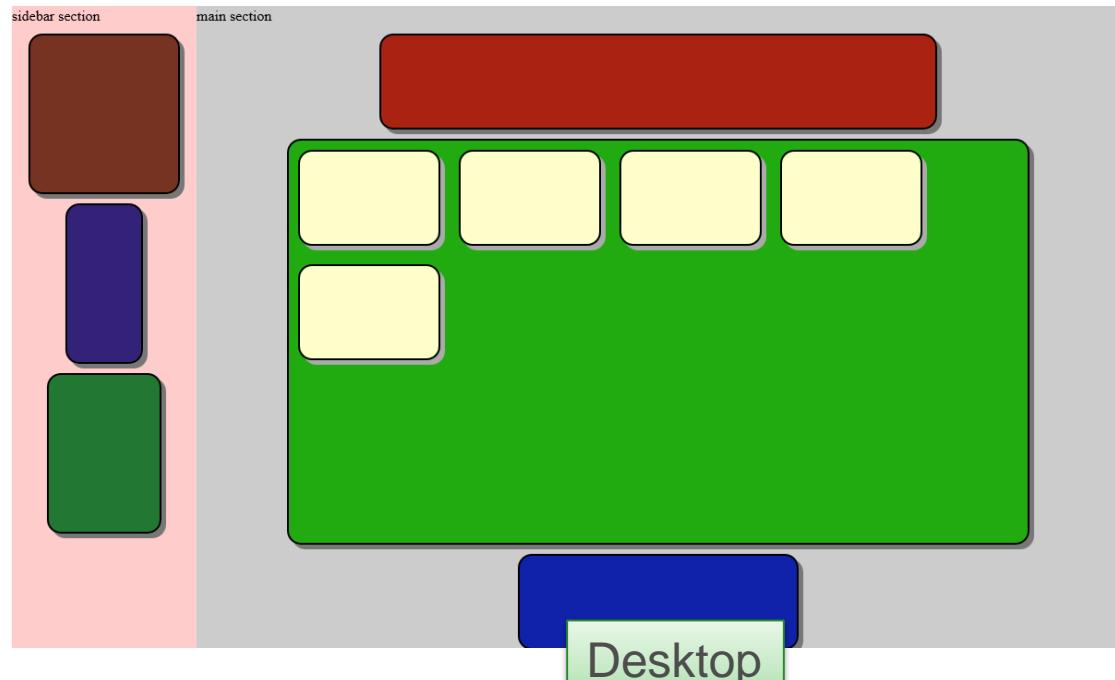
*Usage stats:		Global
Support:		78.34%
Partial support:		0.02%
Total:		78.36%

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
									2.1
						3.2			2.2
	7.0	3.6				4.0-4.1		10.0	2.3
	8.0	12.0				4.2-4.3		11.5	3.0
Current	9.0	13.0	19.0	5.1	12.0	5.0	5.0-6.0	12.0	4.0
Near future	10.0	14.0	20.0	5.2					
Farther future		15.0	21.0						

[Notes](#)
[Known issues \(1\)](#)
[Resources \(4\)](#)
[Feedback](#)

Incomplete support by older webkit browsers refers to only acknowledging different media rules on page reload

Media Queries Example



Media Queries Example

```
#wrapper {  
    width: 80%; margin: 10px auto;  
    max-width: 1200px;  
    min-width: 600px;  
    background-color: #fcc;  
}  
  
#main {  
    margin-left: 200px;  
    background-color: #ccc;  
}  
  
#sidebar { width: 200px;  
    float: left;  
    background-color: #fcc;  
}
```

```
@media screen  
and (max-width: 600px) {  
    #wrapper {  
        width: 570px;  
        margin: 0 auto;  
    }  
  
    #main {  
        margin-left: 0;  
        width: 90%;  
    }  
  
    #sidebar {  
        width: 90%; float: none;  
    }  
}
```

Media Queries Rules

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

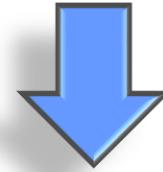
```
article.Lead {  
    color: red;  
}
```

```
@media screen and (max-width: 600px) {  
    .Lead {  
        color: blue;  
    }  
}
```

```
<article class="Lead">  
    Some text to display  
</article>
```

Some text to display

<-- >600px >-->



?

<-- 400px -->

Media Queries Rules - Revised

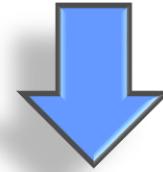
```
article {  
    text-decoration: underline;  
}  
  
.lead {  
    color: red;  
}  
  
@media screen and (max-width: 600px) {  
    .lead {  
        color: blue;  
    }  
}
```

```
<article class="Lead">  
    Some text to display  
</article>
```

The article element name was removed

Some text to display

<-- >600px <-->



?

<-- 400px <-->

Media Queries - Mobile First Approach

- A re-working of the CSS emphasizes the mobile-based implementation instead

Loads for all device types

```
<link rel="stylesheet" type="text/css" href="main.css"  
media="screen, handheld" />
```

```
<link rel="stylesheet" type="text/css" href="enhanced.css"  
media="screen and (min-width: 40.5em)" />
```

This loads in addition to the
above for wide screens

Mobile-First Methodology

```
.lead {  
  color: blue;  
}  
  
@media screen and (min-width: 600px) {  
  .lead {  
    color: red;  
  }  
}
```

Our re-worked version now loads all versions by default

Media Queries "kick-in" only for the larger screens

More Media Queries

```
nav ul li span {  
    background-color: #ffc73d;  
    border: 1px solid #aa5522;  
    padding: 5px;  
    display: block;  
}  
  
.products li {  
    float: left;  
    width: 50%;  
}  
  
@media screen and (min-width: 600px) {  
    .products li {  
        width: 33.3333332%;  
    }  
}  
  
@media screen and (min-width: 800px) {  
    .products li {  
        width: 16.6666667%;  
    }  
}
```

Item 1	Item 2
Item 3	Item 4
Item 5	Item 6

```
<nav id="main-nav">  
    <ul class="products">  
        <li><span>Item 1</span></li>  
        <li><span>Item 2</span></li>  
        <li><span>Item 3</span></li>  
        <li><span>Item 4</span></li>  
        <li><span>Item 5</span></li>  
        <li><span>Item 6</span></li>  
    </ul>  
</nav>
```

Item 1	Item 2	Item 3
Item 4	Item 5	Item 6

Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
--------	--------	--------	--------	--------	--------

Media Queries in JavaScript

- To perform media-queries dynamically within JavaScript use `window.matchMedia()`



Patterns for Media Queries (1 of 3)

- While any combination of patterns can be created using media queries, several *patterns* for layouts have evolved

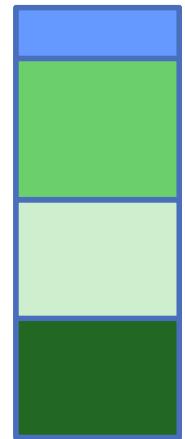
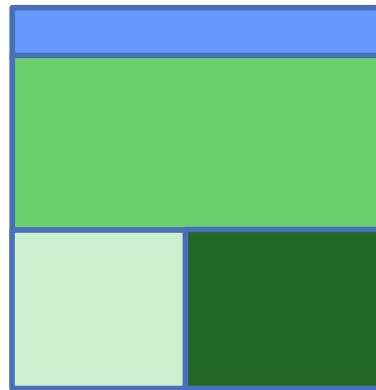
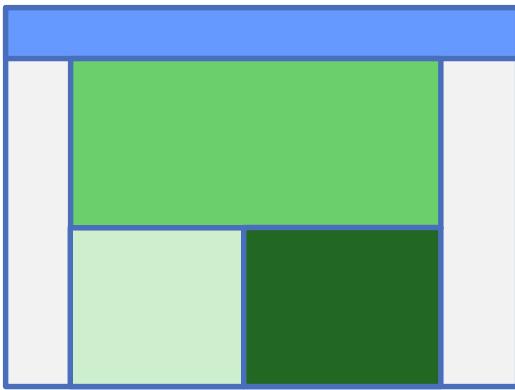
The following site provides the inspiration for these media query patterns:

<http://mediaqueri.es/>

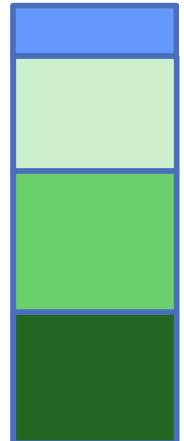
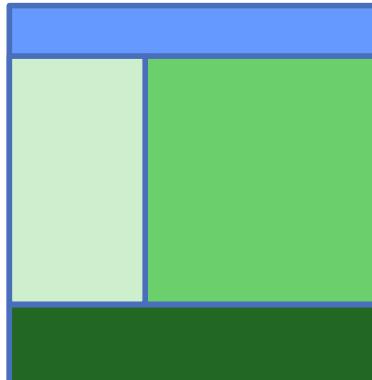
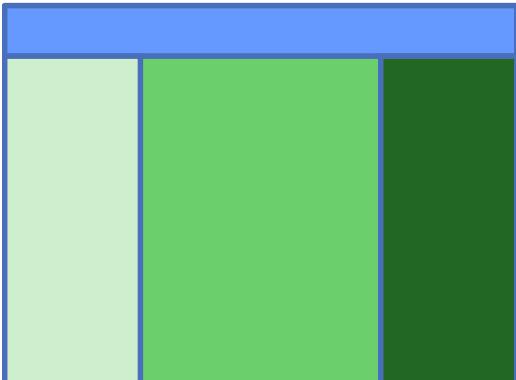
Let's examine these in more detail...

Patterns for Media Queries (2 of 3)

- Mostly Fluid

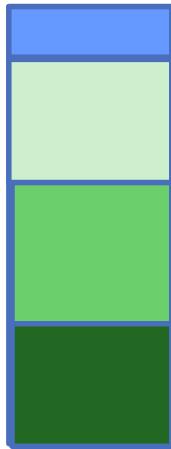
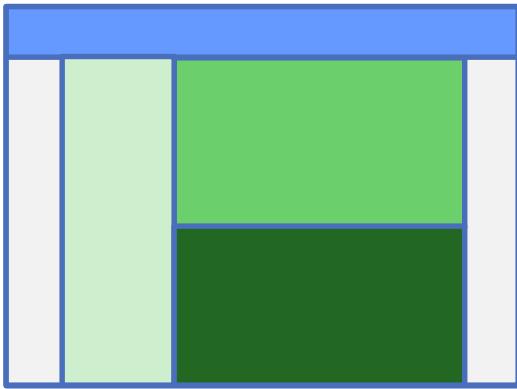


- Column Drop

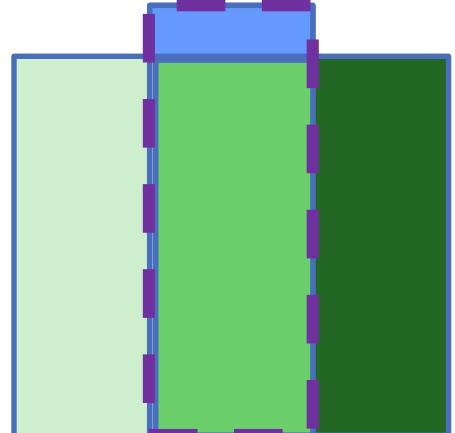
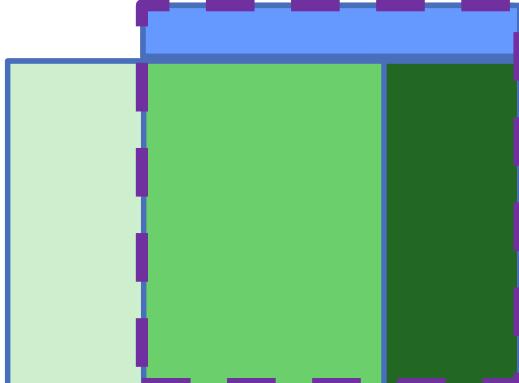
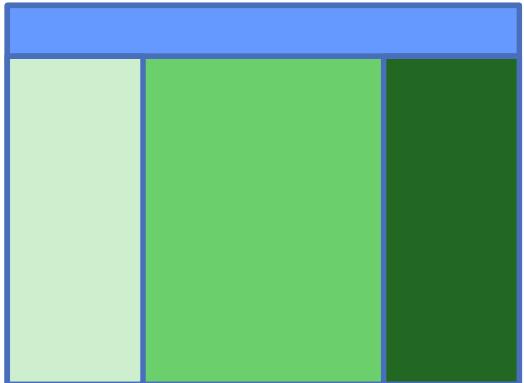


Patterns for Media Queries (3 of 3)

- Layout Shifter



- Off Canvas



Exercise 6 - It's Your Turn

Responsive Solutions

Adv. JavaScript and HTML5

Contact Search

Contact ID	501
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia
Primary Phone	(202)901-2121
Type	home
Email	asdf
Company	Tupelo Industries
Job Title	asdf

[Create](#) [Update](#) [Delete](#)

Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Victors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	asdf	Tupelo Industries	asdf
502	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
503	Tina O. Range	82 Pine Dr. Lakewood CA	(212)432-0944	home	torntu@besthp.com	Best Holistic Customer Practices	Customer Service

Adv. JavaScript and HTML5

Contact Search

Contact ID	501
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia PA 09119
Primary Phone	(202)901-2121
Type	home
Email	asdf
Company	Tupelo Industries
Job Title	asdf

[Create](#) [Update](#) [Delete](#)

Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Victors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	asdf	Tupelo Industries	asdf
502	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites Undertaking LLC	Undertaker
503	Tina O. Range	82 Pine Dr. Lakewood CA	(212)432-0944	home	torntu@besthp.com	Best Holistic Customer Practices	Customer Service
504	Berry	3012 Blumenthalshagany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Packaging	Owner
505	Jim Pekado	2113 Rockwood Blvd. Long Beach CA 90314	(204)740-9000	work	jpinkman@rocketmail.com	Hollywood Distributors West Novelties	Manager
506	Alicia Grey	909 Poplar C1 St. Louis MO 63215	(211)870-8780	home	algrey@blanksystems.com	Lead Test Systems Inc.	Engineer
507	Violet Waters	921 Ash Way Seattle WA 98230	(302)390-1181	home	waters@medcare.com	Home Regions Account Services	Representative
508	Sandy White	909 Hickory Rd. Phoenix AZ 85310	(213)221-4143	home	swwhite@bricka.com	asdf	Product Manager
509	Kay Black	1241 Maple Pl. Plano TX 75210	(401)322-8728	home	kzb2101@yahoo.com	Certified Graphic Signing Services	Administrator
510	John Brown	asdf	(719)421-8875	home	jb6712@gmail.com	Last Rites Undertaking LLC	Undertaker
511	Alicia Grey & Poplar	3012 Blumenthalshagany Ln. Denver CO 80101	(211)870-8780	home	algrey@blanksystems.com	Lead Test Systems Inc.	Engineer
512	Berry	3012 Blumenthalshagany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Packaging	Owner

Instructions for this task are found in labs/lab06/starter/index.html

Handling Tables

- Responsive data tables are a problem because they occupy too much space

100	Fritz	Thompson	76
101	Eric	Colbert	55
102	Stephen	Cheadle	82
103	Anne	Mouvier	61
104	Amy	Hilbert	47
105	Ester	Freeman	93
106	Paul	Cruthers	81
107	Brian	Duvall	53
108	Charles	Simpson	87
109	Juan	Figueroa	61

Horizontally scrolling
the page versus
text that is too small
NEITHER IS IDEAL!

100	Fritz	Thompson	76500
101	Eric	Colbert	55000
102	Stephen	Cheadle	82600
103	Anne	Mouvier	61400
104	Amy	Hilbert	47320
105	Ester	Freeman	93700
106	Paul	Cruthers	81000
107	Brian	Duvall	53200
108	Charles	Simpson	87600
109	Juan	Figueroa	61700

A Vertical Table

- One approach toward handling tables is to convert them to behave vertically in a narrow device



Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Victors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	dbreal@hotmail.com	Tupelo Industries	500
502	John Brown	331 Birch Cir. Black Hills SD 82101	(719)421-8875	home	jb6712@gmail.com	Last Rites LLC	Name
503	Tina O. Range	82 Pine Dr. Lakewood CA 90713	(212)432-0944	home	tornut@besthp.com	Best Holistic Practices	Address
504	Berry Blumenthal	3012 Mahogany Ln. Denver CO 80101	(202)685-2323	home	bleubry@yahoo.com	Roller Heights Pack	Phone Num
505	Jim Pinkado	2113 Redwood Blvd. Long Beach CA 90314	(204)740-9000	work	jpinkman@rocketmail.com	Hollywood West No	Phone Type
506	Alicia Grey	415 Poplar Ct. St. Louis MO 72210	(211)870-6780	home	algrey@blanksystems.com	Blank Systems Inc.	Email
507	Violet Waters	821 Ash Way Seattle WA 92230	(302)390-1181	home	waters@medcare.com	Home Medical Serv	Company
508	Sandy White	906 Hickory Rd. Phoenix, AZ 83010	(213)221-4143	home	swhite@bricks.com	Bricks and More	Position
509	Kay Black	1241 Maple Pl. Plano TX 72110	(401)322-8728	home	ksb2101@yahoo.com	Certified Signing Au	Contact ID

Name	Red Victors
Address	4517 Elm St. Riverside NJ 08075
Phone Num	(301)356-8921
Phone Type	home
Email	fthompson@yahoo.com
Company	ABC Inc.
Job Title	President
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia PA 09119
Phone Num	(202)901-2121
Phone Type	home
Email	dbreal@hotmail.com
Company	Tupelo Industries
Job Title	Product Manager
Name	John Brown
Address	331 Birch Cir. Black Hills SD 82101
Phone Num	(719)421-8875
Phone Type	home
Email	jb6712@gmail.com
Company	Last Rites LLC
Job Title	Undertaker
Name	Tina O. Range
Address	82 Pine Dr. Lakewood CA 90713
Phone Num	(212)432-0944
Phone Type	home
Email	tornut@besthp.com
Company	Best Holistic Practices
Job Title	Customer Service Representative
Name	Berry Blumenthal
Address	3012 Mahogany Ln. Denver CO 80101

Vertical Table CSS

```
@media screen and (max-width: 768px) {  
    table, th, td, tr { display: block; }  
    tr { border: 1px solid #ccc; }  
    tr th { display: none; }
```

```
td {  
    border: none;  
    border-bottom: 1px solid #ccc;  
    position: relative;  
    padding-left: 50%;  
}
```

```
td:before {  
    position: absolute;  
    top: 0;  
    left: 6px;  
    width: 45%;  
    white-space: nowrap;  
}
```

```
}
```

The CSS for our vertical table is handled with a media query.

Hide the header row

Put a line between each row

Position the 'before' content

This is non-semantic, but allows us to present each data item with a header name

```
td:nth-of-type(1):before { content: "Contact ID"; }  
td:nth-of-type(2):before { content: "Name"; }  
td:nth-of-type(3):before { content: "Address"; }  
td:nth-of-type(4):before { content: "Phone Num"; }  
td:nth-of-type(5):before { content: "Phone Type"; }  
td:nth-of-type(6):before { content: "Email"; }  
td:nth-of-type(7):before { content: "Company"; }  
td:nth-of-type(8):before { content: "Position"; }
```

Exercise 6b - It's Your Turn

Responsive Tables

Adv. JavaScript and HTML5

Contact Search

Contact ID	501
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia
Primary Phone	(202)901-2121
Type	home
Email	asdf
Company	Tupelo Industries
Job Title	asdf

Create **Update** **Delete**

Contact Id	Name	Address	Phone Num	Phone Type	Email	Company	Job Title
500	Red Victors	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	fthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	asdf	Tupelo Industries	Product Manager
502	John Brown	123 Main St. New York NY 10001	(718)421-8875	home	jb6712@gmail.com	Last Rites LLC	Undertaker
503	Tina O. Range	82 Pine Dr. Lakewood CA 90712	(212)432-0944	home	tornut@besthp.com	Best Holistic Customer Practices	Customer Service

Instructions for this task are found in [labs/lab06b/starter/index.html](#)

Adv. JavaScript and HTML5

Contact Search

Contact ID	500
Name	Red Victors
Address	4517 Elm St. Riverside NJ 08075
Phone Num	(301)356-8921
Phone Type	home
Email	fthompson@yahoo.com
Company	ABC Inc.
Position	President

Contact ID	501
Name	Bob Green
Address	2101 Eucalyptus Ave. Philadelphia PA 09119
Phone Num	(202)901-2121
Phone Type	home
Email	dbreal@hotmail.com
Company	Tupelo Industries
Position	Product Manager

Contact ID	514
Name	Red Victors
Address	4517 Elm St. Riverside NJ 08075
Phone Num	(301)356-8921
Phone Type	home
Email	fthompson@yahoo.com
Company	ABC Inc.
Position	President

Contact ID

Name

Address

Primary Phone

Type

Email

Company

Job Title

Chapter 6

Responsive Typography and Images

Dealing with images and fonts in a
responsive world

Overview

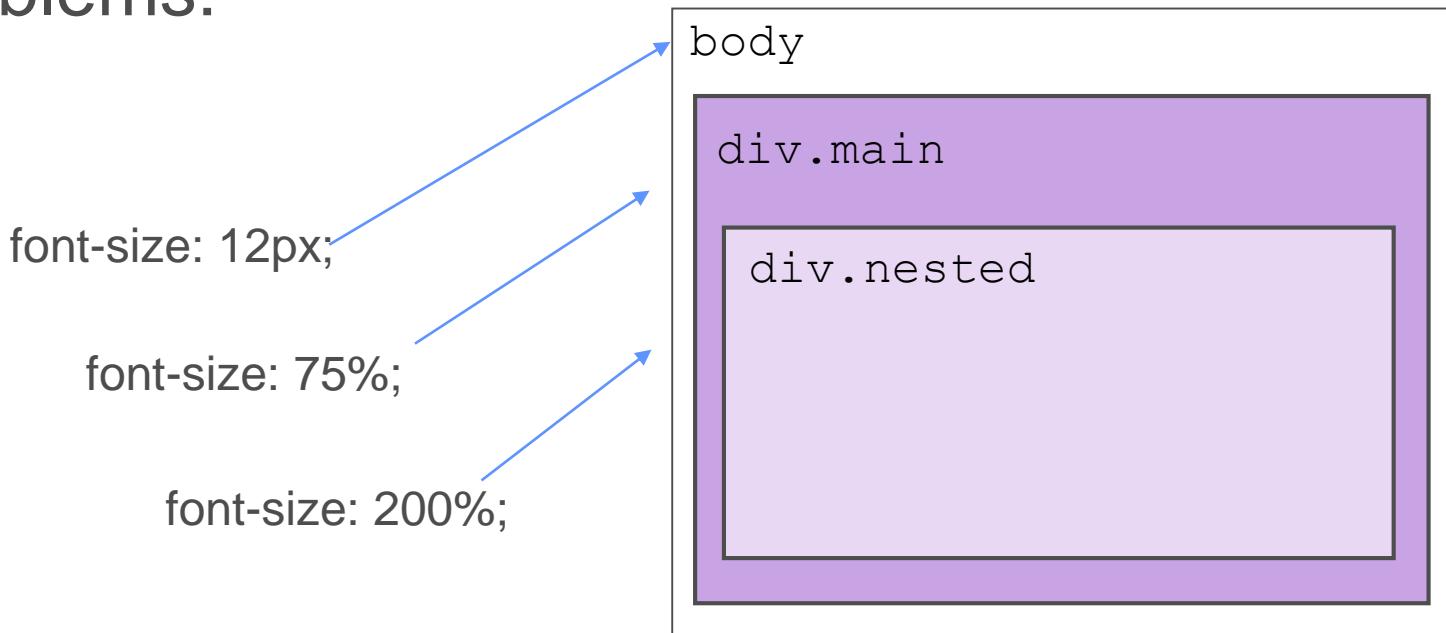
Unit Systems

Creating Responsive Text

Responsive Images

Problems with relative units: em, %

- Generally use relative fonts (percent, ems) when building scalable solutions
- However, these unit systems are not without problems:



What is the font-size of `div.nested`?

Solving this problem with REMs

- A **REM** is a "root-em"
 - All REM values are with respect to the root element

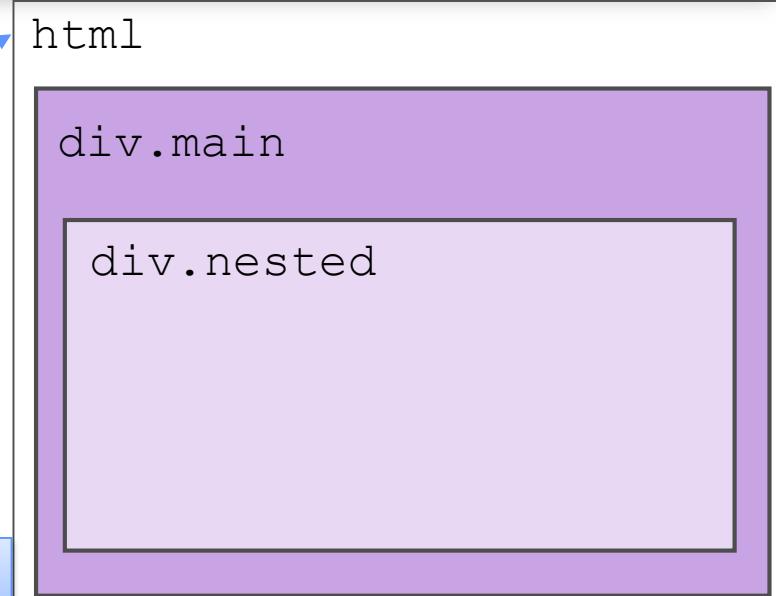


font-size: 12px;

font-size: 0.75rem;

font-size: 2rem;

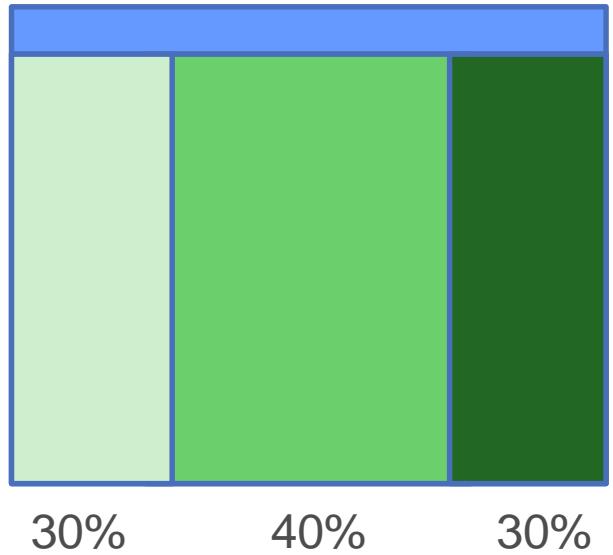
What is the font-size of div.nested?



Additional Problems with Relative Units

- Consider the following issue:

If you want to **add a fixed 10px padding**, this causes the total to grow beyond 100%



Mixing fixed + relative units is tricky!

Viewport-Relative Units

- Rather than relying on a value relative to a parent element, it might make sense to rely on a unit relative to the viewport



```
div.nested {  
    font-size: 10vh;  
    width: 50vw;  
}
```

50% of the viewport width

10% of the viewport height

Making Text Responsive

- Viewport-relative units are not widely supported yet
 - Text can be made scalable still:

```
html{font-size:18px;}
```

```
@media screen and (orientation:portrait){  
    div.nested{ font-size: 2rem; }  
}  
  
@media screen and (orientation:landscape){  
    div.nested{ font-size: 1rem; }  
}
```

Text size changes upon orientation changes



Making Images Flexible

- Images can be **scaled** or **adapted**
- *Scaling* involves controlling the viewport and max-width of the image
- *Adaptive* images will download a different image depending on the device size
 - Usually controlled through a media-query

Scaling Images Fluidly

- Use **max-width** on an image using a relative unit, parent is allowed to scale with viewport

```
<article id="main-article">  
  <p class="article-info">  
    In Amsterdam, ...  
  </p>  
  <section class="details" >  
      
    <p>A Sea of Bikes</p>  
  </section>  
</article>
```

In Amsterdam, bikes outnumber cars! You must take extra precaution when walking—paying particular attention to oncoming traffic. But this traffic is found on the sidewalks and bike paths!



Keeps image from expanding past the parent. Height: auto keeps the aspect-ratio constant

```
.article-info {  
  float: left;  
  width: 47%;  
  padding: 5px;  
}
```

```
section.details {  
  float: left;  
  width: 50%;  
}
```

```
img.scale {  
  max-width: 100%;  
  height: auto;  
}
```

Fluid and Adaptive Images

- Frameworks exist to help load adaptive images
- ResponseJS can manipulate HTML or images
 - jQuery-based framework
 - Simply add custom attributes to HTML elements

```
<body data-responsejs='{"create": [ { "breakpoints": [641],  
          "mode": "src", "prefix": "src" } ]}'>  
  <article id="main-article">  
    <p class="article-info">...</p>  
    <section class="details" >  
        
      <p>A Sea of Bikes</p>  
    </section>  
  </article>  
  <script src="../../libs/response.js"></script>  
</body>
```

Loads hi-res
image if
>640 size is
detected

CSS Picture Elements

- Native support for adaptive images is coming...

```
<picture width="500" height="500">
  <source media="(min-width: 40.5em)" src="hi-res.jpg">
  <source media="(min-width: 20em)" src="med-res.jpg">
  <source src="lo-res.jpg">
  
  <p>Picture of bicycles</p>
</picture>
```

Picture element - **Working Draft**

A responsive images method to control which image resource a user agent presents to a user, based on resolution, media query and/or support for a particular image format

Show all versions	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Blackberry Browser	IE Mobile
										2.1
										2.2
										3.0
										4.0-4.1
										4.2-4.3
										4.0
										5.0-5.1
										4.1
										6.0-6.1
										4.2-4.3
										7.0
Current	11.0	30.0	35.0	7.0	22.0	7.0-7.1	5.0-7.0	4.4	10.0	10.0
Near future		31.0	36.0	8.0	23.0	8.0		4.4.3		
Farther future		32.0	37.0		24.0					
3 versions ahead		33.0	38.0							

[Notes](#) [Known issues \(1\)](#) [Resources \(6\)](#) [Feedback](#) [Edit on GitHub](#)

Supported in Chrome 37+ under the "Experimental Web Platform features" flag. Expected to appear in an early Firefox build soon.

But not yet!



Object-fit

- Object-fit is new, but will scale images within an HTML element

```
img.scale {  
    width: 100%;  
    height: 100%;  
    object-fit: contain;  
}
```



article (parent)

```
img.scale {  
    width: 100%;  
    height: 100%;  
    object-fit: fill;  
}
```



CSS3 object-fit/object-position - Candidate Recommendation										
	Usage stats			Global						
	IE	Firefox	Chrome	Safari	Opera	iOS 5.0+	Opera Mini	Android	BlackBerry	Mobile
8.0								2.1		
9.0	28.0	33.0						2.2		
10.0	29.0	34.0						3.2		
Current	31.0	35.0	36.0	7.0	22.0	7.0-7.1	5.0-7.0	4.4	10.0	10.0
Near future				8.0	23.0	8.0		4.4		
Farther future				32.0	37.0	24.0				
3 versions ahead				33.0	38.0					

```
<article id="main-article">  
      
</article>
```

```
img.scale {  
    width: 100%;  
    height: 100%;  
    object-fit:  
cover;  
}
```



text-size-adjust

- **text-size-adjust** (coming soon) determines if text should enlarge and if so, by how much

```
/* says text on iPhone should not be adjusted, e.g. in an orientation change */  
p { -webkit-text-size-adjust: none; }
```

```
/* says adjust text size downward by half */  
p { -moz-text-size-adjust: 50%; }
```

This property currently requires vendor extensions (until it matures in the standards)



Summary

- Use height:auto, max-width: 100% to scale images fluidly
- Scale fonts using relative units
 - Choose rem`s` to scale according to the root
 - Viewport-relative units are a bit early to use
- Use adaptive image frameworks to serve low-bandwidth images
- Be aware of new properties coming: object-fit, text-adjust-size, and <picture> elements
 - But we can't use these just yet!

Chapter 7

Fluid Layouts and Grid Systems

Implementing Layouts using Pre-built
Frameworks

Overview

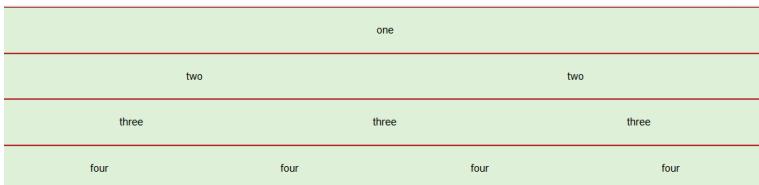
Creating a Fluid Grid Layout

Using a CSS Grid Framework

Building a Fluid Grid

- A flexible grid provides a way for columns to change sizes under different device sizes

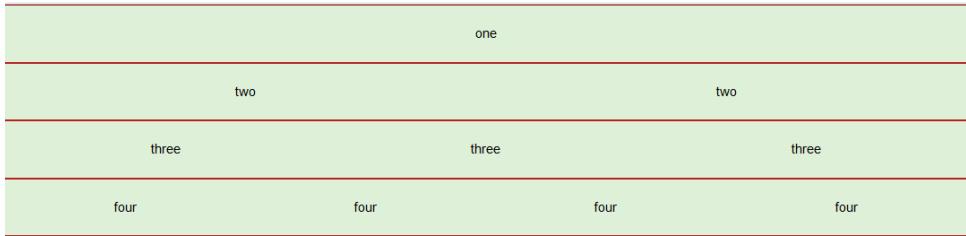
```
[class*='col-'] { float: left; }
[class*='col-']:last-of-type { float: right; }
.grid:after {
  content: "";
  display: table;
  clear: both;
}
.col-1 {width: 8.33333%;}
.col-2 {width: 16.666667%;}
.col-3 {width: 25%;}
.col-4 {width: 33.333333%;}
...
.col-12 {width: 100%;}
```



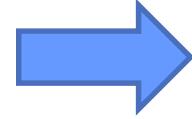
```
<div id="row1" class="grid">
  <div class="col-12">one</div>
</div>
<div id="row2" class="grid">
  <div class="col-6">two</div>
  <div class="col-6">two</div>
</div>
<div id="row3" class="grid">
  <div class="col-4">three</div>
  <div class="col-4">three</div>
  <div class="col-4">three-</div>
</div>
<div id="row4" class="grid">
  <div class="col-3">four</div>
  <div class="col-3">four</div>
  <div class="col-3">four</div>
  <div class="col-3">four</div>
</div>
```

Fluid Grids + Media Queries

- Our fluid grid can also be controlled by media queries



> 480px



< 480px

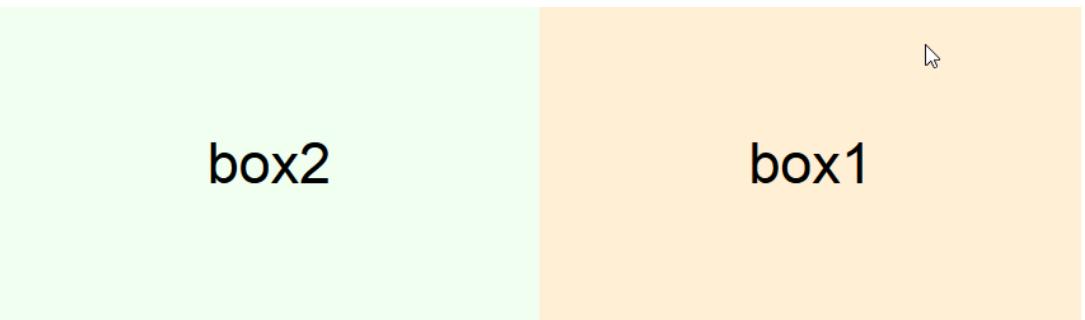
```
@media screen and (max-width: 480px) {  
    .col-1, .col-2, .col-3, .col-4, .col-5, .col-6,  
    .col-7, .col-8, .col-9, .col-10, .col-11, .col-12 { width: 100%; }  
}
```

Flexbox

- Flex-box is a CSS-based way to lay out pages using giving high-level elements resizing capabilities

```
#box1, #box2 {
  width: 50%;
  height: 200px;
}
#box1 { background-color: papayawhip; }
#box2 { background-color: honeydew; }

#flexcontainer {
  display: flex;
  flex-direction: row-reverse;
}
```



```
<div id="flexcontainer">
  <div id="box1">
    box1
  </div>
  <div id="box2">
    box2
  </div>
</div>
```

Layout Frameworks

- CSS Frameworks can provide a faster time-to-production approach than building your own grid system
 - Provide legacy browser hacks
 - Often provide other responsive components
- Twitter's **Bootstrap** is a popular mobile-first, fluid grid layout

Bootstrap Template

```
<!DOCTYPE html>
<html>
  <head>
    <title>Bootstrap Template</title>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link href="../../libs/css/bootstrap/dist/css/bootstrap.css"
          rel="stylesheet" media="screen">

    <!--[if lt IE 9]>
      <script src="../../libs/css/bootstrap/assets/js/html5shiv.js"></script>
      <script src="../../libs/css/bootstrap/assets/js/respond.min.js"></script>
    <![endif]-->

    <script src="../../libs/jquery.js"></script>
    <script src="../../libs/css/bootstrap/dist/js/bootstrap.js"></script>

  </head>
  <body>

    </body>
</html>
```

Bootstrap Class Names

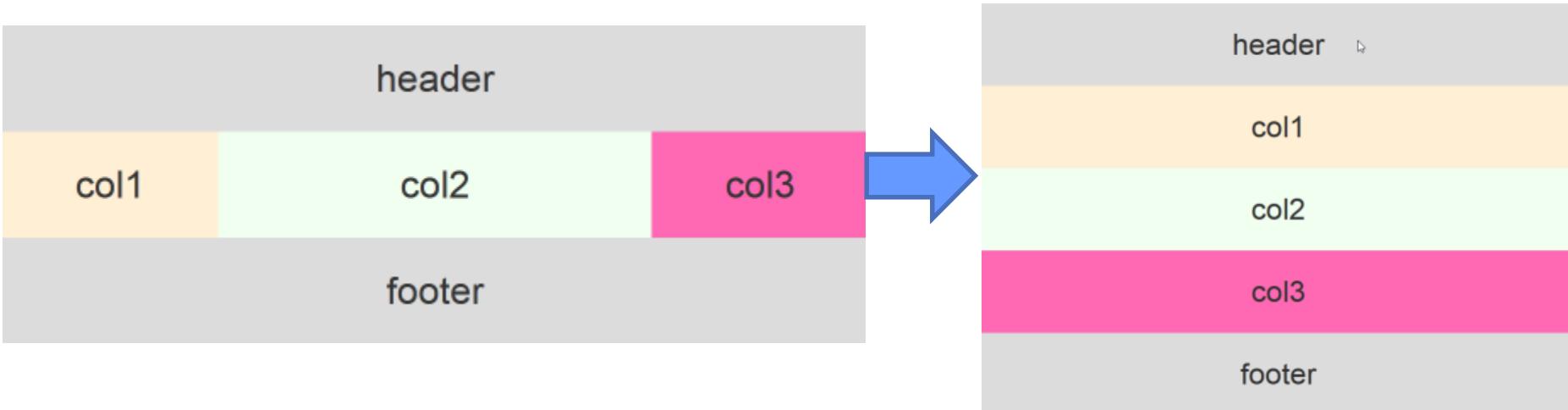
- Bootstrap provides a **12-column grid** that can break at different predefined breakpoints
 - Its behavior is affected by the class names you use:

	Extra Small	Small	Medium	Large Devices
Breakpoint	< 768px	> 768px	> 992px	>1200px
Class Name	<i>.col-xs-</i>	<i>.col-sm-</i>	<i>.col-md-</i>	<i>.col-lg-</i>

To create 3 even columns in a 12-column grid that breaks at 992px use:

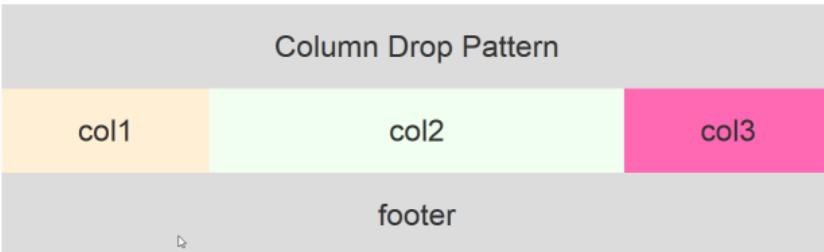
```
<div class="container">
  <div class="row">
    <div class="col-md-4"></div>
    <div class="col-md-4"></div>
    <div class="col-md-4"></div>
  </div>
</div>
```

Bootstrap Layout Example 1

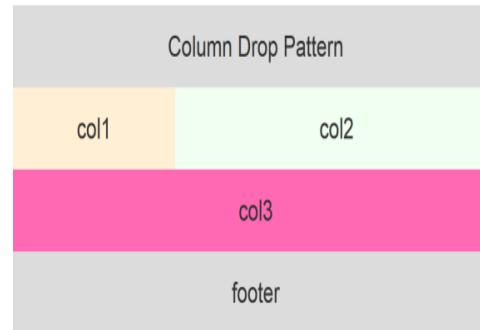


```
<div id="container" class="container">
  <header class="col-md-12">header</header>
  <section class="row">
    <article id="col1" class="col-md-3">col1</article>
    <article id="col2" class="col-md-6">col2</article>
    <article id="col3" class="col-md-3">col3</article>
  </section>
  <footer class="col-md-12">footer</footer>
</div>
```

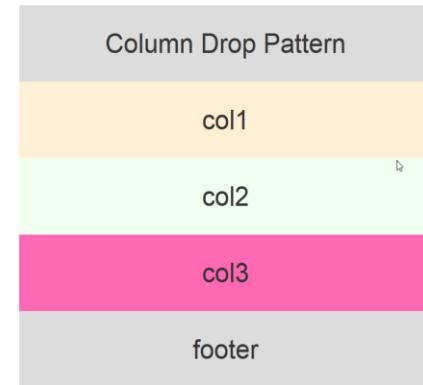
Bootstrap Layout Example 2



> 1200px



768-1200px



< 768px

```
<div id="container" class="container">
  <header class="col-md-12">header</header>
  <section class="row">
    <article id="col1" class="col-md-4 col-lg-3">col1</article>
    <article id="col2" class="col-md-8 col-lg-6">col2</article>
    <article id="col3" class="col-md-12 col-lg-3">col3</article>
  </section>
  <footer class="col-md-12">footer</footer>
</div>
```

Bootstrap's Numerous Classes

- Bootstrap offers *numerous classes* to provide a look-and-feel. These are only a few:

lead	list-inline	img-responsive	btn-info	checkbox-inline
text-left	list-unstyled	help-block	btn-danger	control-label
text-center	table	active	btn-success	has-warning
text-right	table-bordered	success	btn-warning	has-error
text-justify	table-hover	info	btn-lg	has-success
text nowrap	table-condensed	warning	btn-sm	input-lg
text-lowercase	table-responsive	danger	btn-xs	input-sm
text-uppercase	form-group	btn	btn-md	input-md
text-capitalize	form-inline	btn-block	radio	input-xs
initialism	form-control	btn-default	radio-inline	disabled
	form-horizontal	btn-primary	checkbox	

- Bootstrap is compiled using LESS
 - These variables are available:

```
@grid-columns: 12;  
@grid-gutter-width: 30px;  
@grid-float-breakpoint: 768px;
```

Summary

- Building your own fluid grid is not difficult
 - Resulting solution is your own, no external dependencies
- Bootstrap provides a huge number of features yet comes at a small cost
 - It can save a huge amount of time not having to create your own solutions

Exercise 7 - It's Your Turn

Implement the Column Drop Pattern with Bootstrap

Work from labs/lab07/starter/index.html.

Two steps:

1. Add bootstrap to the implementation
2. Set the columns on leading, trailing, main divs to achieve the effect

Adv. JavaScript and HTML5

Contact Search

Sort ID	Name	Address	Phone Num	Type	Email	Company	Job Title
500	Red Victor	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	rthompson@yahoo.com	ABC Inc.	President
501	Bob Green	2101 Eucalyptus Ave. Philadelphia PA 09119	(202)901-2121	home	dbreal@hotmail.com	Tupelo Industries	Product Manager
502	John Brown	331 Birch Cir. Black Hills SD 82101	(719)421-8875	home	jpb712@gmail.com	Last Rites LLC	Undertaker
503	Tina O'Range	82 Pine Dr. Redwood CA 96713	(212)452-0944	home	tormail@redtip.com	Best Holistic Practices	Customer Service Representative
504	Berry	3012 Mahogany Blumenthal Ln. Denver CO 80265	(202)665-2323	home	bleubry@yahoo.com	Rollen Heiders	Owner
505	Jim Pekaske	2113 Redwood Blvd. Long Beach CA 90314	(204)740-9000	work	gwmarr@rocketmail.com	Hollywood Industries	Distribution Manager
506	Alicia Grey	415 Poplar Ct. St. Louis MO 63110	(211)670-6780	home	agrey@blanksystems.com	Blank Systems Inc.	Lead Technical Engineer
507	Violet Waters	821 Ash Way Seattle WA 98101	(302)390-1181	home	waters@mecare.com	Home Medical Devices	Regional Account Representative
508	Sandy White	906 Hickory Rd. Phoenix, AZ 85001	(213)221-4143	home	swhite@bricsx.com	Bricks and More	Product Sales
509	Kay Black	1241 Maple Pl. Piano TX 72110	(401)322-8728	home	kab2101@yahoo.com	Certified Signing Authors	Graphics Artist

Contact ID
Name
Address
Primary Phone
Type
Email
Company
Job Title

Desktop

Adv. JavaScript and HTML5

Contact Search

Mobile

Adv. JavaScript and HTML5

Contact Search

Contact ID	Name	Address	Phone Num	Type	Email	Company	Job Title
500	Red Victor	4517 Elm St. Riverside NJ 08075	(301)356-8921	home	rthompson@yahoo.com	ABC Inc.	President

Contact ID
Name
Address
Primary Phone
Type
Email
Company
Job Title

Tablet

Contact ID Name Address Phone Num Phone Type Email Company Position	500 Red Victor 4517 Elm St. Riverside NJ 08075 (301)356-8921 home rthompson@yahoo.com ABC Inc. President
Contact ID Name Address Phone Num Phone Type Email Company Position	501 Bob Green 2101 Eucalyptus Ave. Philadelphia PA 09119 (202)901-2121 home dbreal@hotmail.com Tupelo Industries Product Manager
Contact ID Name Address	502 John Brown 331 Birch Cir. Black Hills SD 82101

Chapter 8

CSS Pre-processing Systems

Using SASS and LESS to make more

Overview

What is a CSS Pre-processing System?

Implementing with SASS

Using LESS

CSS Pre-processing

- Standard CSS has limitations
 - Not very re-usable
 - Changes must be made throughout the CSS individually
- CSS 3 did little to improve this
- Enter the CSS Pre-processing framework...

Pre-processing Frameworks

CSS Pre-processing Frameworks

SASS

LESS

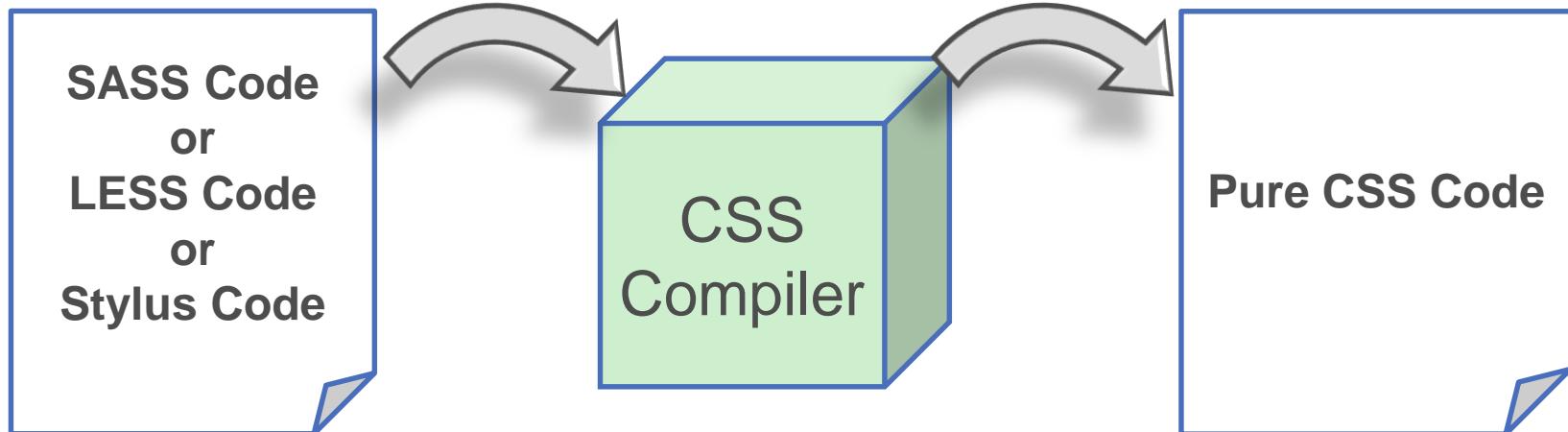
Stylus

Advantages

Less Redundancy
Variables and Mixins

Disadvantages

Updating CSS is
one layer removed



Syntactically Awesome Stylesheets

Homepage: <http://sass-lang.com>

- Requires Ruby to be installed
 - After installing Ruby, issue the command:

```
gem install sass
```

- SASS Stylesheets are written in 2 formats
 - **SCSS – "Sassy CSS" (.scss files) currently used format**
 - **SASS – (.sass files) older format, uses indentation, less encountered now**



SASS can "Watch" and Convert

- Issue the following command to have SASS automatically update your .css files when changes to .scss files occur:

```
sass --watch myfile.scss:myfile.css
```

SASS Nesting (DRY)

```
#empDetails {  
    width: 80%;  
    margin: 0 auto;  
    font: normal 16px Arial;  
}
```

```
#empDetails label, #empDetails input[type="text"] {  
    display: block;  
}
```

```
#empDetails input[type="text"] {  
    margin-bottom: 15px;  
}
```

Take this original CSS...



Sass.

{style with attitude}

SASS Nesting (*continued*)

...the SASS way

```
#empDetails {  
    width: 80%;  
    margin: 0 auto;  
    font: normal 16px Arial;  
  
    label, input[type="text"] {  
        display: block;  
    }  
  
    input[type="text"] {  
        margin-bottom: 15px;  
    }  
}
```

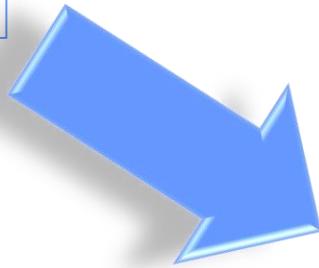


{style with attitude}

SASS Variables

```
$width: 80%;  
  
#wrapper {  
width: $width;  
min-width: 800px;  
margin: 10px auto;  
}
```

emp.scss



```
#wrapper {  
width: 80%;  
min-width: 800px;  
margin: 10px auto;  
}
```

emp.css



SASS Mixins

```
@mixin gradient-mixin {  
background-color: #1d2fcf;  
background-image: -webkit-gradient(linear, left top, left bottom, from(#1d2fcf), to(#faf5fa));  
background-image: -webkit-linear-gradient(top, #1d2fcf, #faf5fa);  
background-image: -moz-linear-gradient(top, #1d2fcf, #faf5fa);  
background-image: -ms-linear-gradient(top, #1d2fcf, #faf5fa);  
background-image: -o-linear-gradient(top, #1d2fcf, #faf5fa);  
background-image: linear-gradient(to bottom, #1d2fcf, #faf5fa);  
}
```

```
#empSearch {  
-webkit-box-shadow: 0px 0px 4px 0px #c23cc2;  
box-shadow: 0px 0px 4px 0px #c23cc2;
```

@include gradient-mixin;

```
a {  
position: absolute;  
bottom: 10px;  
right: 20px;  
}  
}
```



- LESS is another common CSS-Preprocessing framework



- LESS requires **nodejs** to be installed first
- Install LESS using **npm install -g less**
- Run the LESS compiler using
lessc options main.less main.css

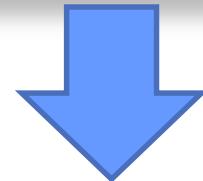
Homepage: <http://lesscss.org/>

LESS Variables

- Like SASS, constants can be created in LESS

```
@company-green: #072;  
@company-green2: @company-green + #040;
```

```
#header {  
    color: @company-green2;  
}
```



```
#header {  
    color: #00bb22;  
}
```

LESS Mixins

- Mixins are handled like classes in LESS:

```
@company-green: #072;  
@company-green2: @company-green + #040;  
.laf {  
    border: 1px solid black;  
    background-color: #855e85;  
    background-image: -webkit-linear-gradient(top, #855e85, #615561);  
    background-image: linear-gradient(to bottom, #855e85, #615561);  
}  
  
#header {  
    color: @company-green2;  
    .laf  
}  
  

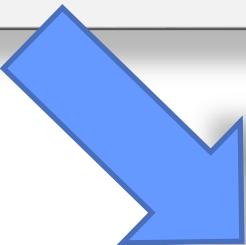

```
#header {
 color: #00bb22;
 border: 1px solid black;
 background-color: #855e85;
 background-image: -webkit-linear-gradient(top, #855e85, #615561);
 background-image: linear-gradient(to bottom, #855e85, #615561);
}
```


```

Nested LESS Rules

- Like SASS, rules may be nested:

```
#header {  
  h1 { font-size: 2rem; }  
  color: @company-green2;  
}
```



```
#header {  
  color: #00bb22;  
  border: 1px solid black;  
  background-color: #855e85;  
  background-image: -webkit-linear-gradient(top, #855e85,  
#615561);  
  background-image: linear-gradient(to bottom, #855e85,  
#615561);  
}  
#header h1 {  
  font-size: 2rem;  
}
```

Nested Media Queries

```
@media screen and (min-width: 450px) {  
  .headercolor {  
    color: #007722;  
  }  
}  
  
@media screen and (min-width: 450px) and (min-width: 768px) {  
  .headercolor {  
    color: #009922;  
  }  
}  
  
@media screen and (min-width: 450px) and (min-width: 960px) {  
  .headercolor {  
    color: #00bb22;  
  }  
}
```



```
.headercolor{  
  @media screen and (min-width: 450px) {  
    color: @company-green;  
    @media (min-width:768px) {  
      color: @company-green + #020;  
    }  
    @media (min-width: 960px) {  
      color: @company-green + #040;  
    }  
  }  
}
```

Summary

- CSS Pre-processing frameworks are becoming more and more popular, particularly in enterprise application development environments
- Neither SASS nor LESS enjoys any particular advantage over the other
- Choice of one of these systems is generally made based on current operating environments (does another framework you are using use SASS or LESS?, do you already use NodeJS?, etc.)

Exercise 8 - It's Your Turn

A Little Bit LESS

Perform Exercise 8 Using LESS

```
#contactDetails {  
    width: 85%;  
    margin: 0 auto;  
    font: normal 16px Arial;  
  
    label, input[type="text"] {  
        display: block;  
        width: 90%;  
    }  
    input[type="text"] {  
        margin-bottom: 15px; padding:  
    }  
    input[type="button"] {  
        font: bold 11px Arial;  
        padding: 2px;  
    }  
}
```

- Convert contacts.css to use LESS
- Install LESS as described in the chapter (npm install -g less)
- Rename your contacts.css file to contacts.less

Compile it:

(**lessc contacts.less contacts.css**)
from a command prompt and test your app to ensure it still works

Nest the header h1 statement inside of the header element. Compile again, verify the CSS is still valid

See if you can find other nestings, such as those for .contactdetails, .contact, or .contactdata

- Compile again and verify it is valid

Course Summary

What Did We Learn?

- Layered Architectures
- Semantic HTML
- Browser Developer Tools
- CSS/CSS3 Selectors
- Specificity
- Absolute/Relative Positioning
- Floating, Clearing
- Laying out Pages
- CSS3 Colors, Gradients,
Rounded Corners, Transforms
- Responsive Web Design
- CSS Media Queries
- Scalable Fonts
- Scalable & Adaptable Images
- Flexible Grids
- Unit Systems (relative, root-em)
- Transforming Tables
- CSS Fluid Grid Systems
- Working with Bootstrap
- CSS Pre-processing Solutions
- SASS and LESS

Evaluations

- Please take the time to fill out an evaluation
- All evaluations are read and considered

Questions

