



# RESPONSIVE WEB DESIGN WITH OPEN SOURCE FRAMEWORKS

Formerly Open Source Design Patterns

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Fall 2017

# Introductions

- I am a web developer and online marketing professional with extensive experience in HTML, CSS, JavaScript, PHP, MySQL. Focusing on custom PHP, Drupal, Wordpress, SEO/SMM trends and helping small businesses grow their online presence.
- Best way to contact me:
  - [teresa@tmhardy.com](mailto:teresa@tmhardy.com)
- *If you don't get a reply in 48 hours something is wrong.*

- **Course Objectives**

- Patterns
- Frameworks
- Libraries
- Expectations
- **Slack** – introduce yourself
  - Post for feedback and development
- **Canvas** - Post for grades
- New Grading policy – Syllabus update
- **Digital Millennium Copyright Act, 1998**
  - Is it open source? Creative Commons? GNU or MIT License?
  - Do you have explicit permission to use it
  - For educational purposes only.



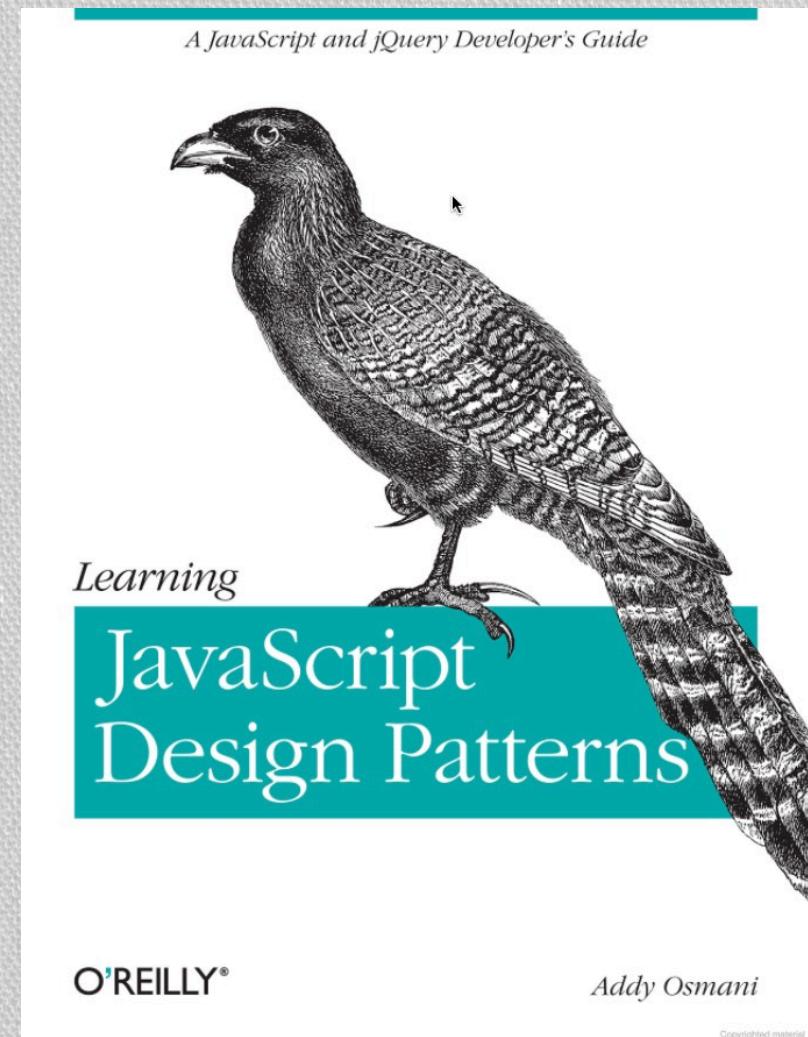
# WEEK 1

Learn fundamentals of Design Patterns and their value.  
Create webpage from wireframe provided by instructor.  
Use page layout design pattern pattern as discussed in class.

This will be Project A.

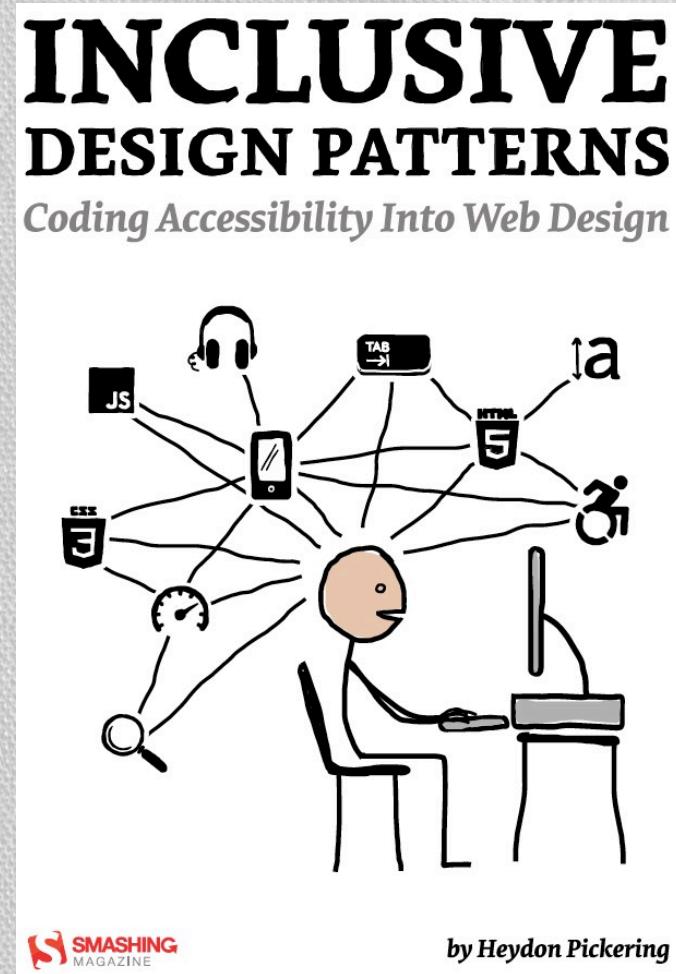
# Free from Google Books

- Patterns are proven solutions
- Patterns can be easily reused
- Patterns can be expressive
  - As in, just a symbol in the right location and you know what it means
- Design patterns can be traced back to the early work of an architect named Christopher Alexander.



# Newest Find on Design Patterns

- INCLUSIVE Design Patterns,  
Coding Accessibility Into Web  
Design by Heydon Pickering, Pub  
Smashing Magazine, 2016



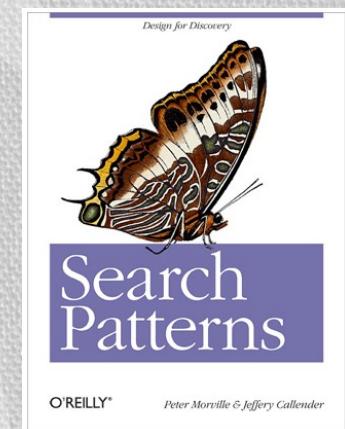
# Definition of Design Pattern

- This terminology has a deep history in software development
- Elements of reusable Object-Oriented Software
  - According to the “Gang of Four”
  - Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides -published 1995
- **Time-tested solutions to recurring design problems.**
  - Four essential elements of a Design Pattern
    - Pattern Name, Problem, Solution, Consequences
  - How would you explain an iPhone to someone who never touched a smart phone?

# Design Patterns in Web Design

- The notion of a rolodex for early navigation
  - <http://www.telegraph.co.uk/technology/internet/10663451/The-early-days-of-25-websites.html>
- The early days and YUI as a history lesson
  - “YUI was founded by Thomas Sha of Yahoo in 2005 and formed the basis of Yahoo’s new Ajax-ified webmail application. The free, open source library was made [available to the public](#) in February 2006.”  
(Wikipedia)
- More reading on patterns <http://ui-patterns.com/>

- 
- Advanced:
  - Peter Moreville – well-known for his early best seller “Information Architecture for the World Wide Web” and its impact on website structures
    - <http://www.slideshare.net/morville/search-patterns-design-for-discovery?ref=http://searchpatterns.org/index.php>



# Design Patterns for HTML/CSS

- As simple as cross-browser horizontal navigation solutions
- Or a new off-canvas pattern

## Compatibility

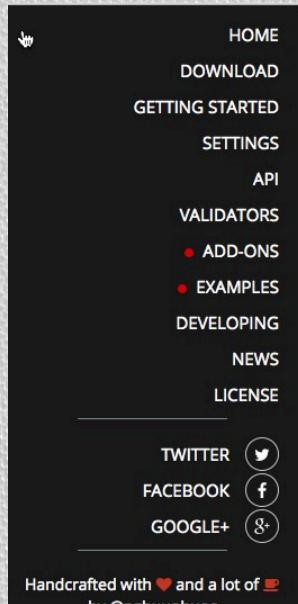
In order to make FormValidation work together with other plugin, you s

1. **Don't exclude the field if the plugin changes the field visibility**  
Some plugins hide your field and create new elements to change fields will not be validated. Therefore, you need to set `excluded:` information.  
Example: [Bootstrap Button](#)
2. **Revalidate the field if the plugin changes its value dynamically**  
Most plugins trigger an event after changing the field value. By us FormValidation to revalidate the field.

```
$(field)
  .nameOfPlugin(pluginOptions)
  .on(pluginChangedEvent, function() {
    $(form)
      .data('formValidation') // Get the val
      .revalidateField(field); // Revalidate

    // It is equivalent to use
    // $(form).formValidation('revalidateField', field);
  });
}

Look at the revalidateField() method for more details.
```



## Compatibility

In order to make FormValidation work tog

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      .data('formValidation')
      .revalidateField(field)

    // It is equivalent to use
    // $(form).formValidation('re
  });
}

Look at the revalidateField() method
```

# Our Work Environment

- Browser add-ons
  - Chrome developer tools
  - Firefox developer tools
- Server space
  - Every once in a while some widget won't run from the file structure because it needs http
  - Server space so we can share project ideas
- Where to put data files
  - PHP must be either htdocs or public\_html
  - JavaScript can run anywhere but be organized.
- Your IDE (Integrated Development Environment)
  - Text editors – Notepad, BBEdit, TextWrangler, Komodo, Coda, Sublime, etc.
  - <http://lifehacker.com/five-best-text-editors-1564907215>

# Simple Responsive HTML Exercise 1

- Three ways to align blocks
  - Simple float
  - Display: inline-block
  - Display: table-cell

```
1  <!DOCTYPE html>-
2  <html lang="en">-
3  ...<head>-
4  ....<meta charset="utf-8">-
5  ....<meta http-equiv="X-UA-Compatible" content="IE=edge">-
6  ....<meta name="viewport" content="width=device-width, initial-scale=1">-
7  <title>Display-Responsive</title>-
8  <link rel='stylesheet' href='CSSReset/eric-meyer-reset.min.css' type='text/css'-
... media='all'->-
9  <link rel='stylesheet' href='float.css' type='text/css' media='all'>-
10 <!--link rel='stylesheet' href='inline-block.css' type='text/css' media='all'-->-
11 <!--link rel='stylesheet' href='display-table.css' type='text/css' media='all'-->-
12 </head>-
13 <body>-
14 <div class="row">-
15 <h1>Responsive · Three · Ways</h1>-
16 </div>-
17 <div class="row red">-
18 > ...<div class="one · box" style="background-color: red;"></div>-
19 > ...<div class="two · box" style="background-color: green;">Box · Two</div>-
20 > ...<div class="three · box" style="background-color: blue;">Box · Three</div>-
21 > ...<div class="four · box" style="background-color: orange;">Box · Four</div>-
22 </div>-
23 <div class="row" style="background-color: yellow;">-
24 > ...<div class="cred" style="background-color: yellow;"><p>&copy; 2017 · UCSC · Extension · Responsive · Web · Design, · Teresa · Hardy ·-
25 </div>-
26 </body>-
27 </html>-
```

# Float

```
1 html {font-size: 100%;}
2 .row {width: 93.75%; margin: 0 auto; background: #fafafa; }
3 .box {
4   float: left;
5   width: 25%;
6   margin: 0;
7   padding: 0;
8   color: #fff;
9 }
10 .one {background: #efefef; color: #333; }
11 .two {background: #fafafa; color: #333; }
12 .three {background: #8a8a8a; }
13 .four {background: #545454; }
14 h1 {font-size: 180%; font-weight: bold; line-height: 1.8em; }
15 h2 {font-size: 120%; font-weight: bold; line-height: 1.5em; text-align: center; }
16 h3 {font-size: 110%; font-weight: bold; line-height: 1.8em; }
17 p {padding: 10px; line-height: 1.4em; text-align: left; }
18 .cred {width: 100%; margin: 0; }
19 △ background: #AAA; float: left; }
20 .cred p {padding: 1em; }
21 a {color: #000; }
22 .row:after {△△△△ /*important-replaces-extra-markup*/;
23 visibility: hidden; }
24 display: block; }
25 content: ""; }
26 clear: both; }
27 height: 0; }
28 }
29 * html .row {zoom: 1; } /* IE6 */
30 *:first-child+html .row {zoom: 1; } /* IE7 */
31 /* 768px */
32 @media only screen and (max-width: 48em) {
33 .boxes {
34   width: 100%; }
35 .box {
36   width: 90%; }
37   float: none; }
38   margin: 0 auto; }
39 }
40 h1, h2, p {margin-left: 5%; width: 90%; }
41 }
42 }
```

## Responsive Three Ways

Box One      Box Two      Box Three      Box Four

### For Simple Float

Note the need for a clear because the outer block won't center if it is floated. Test what happens if the outer div, the row isn't floated.

### For Display Block

Note the gap on some browsers because of the display:block bug. You can calculate around this because often your boxes have margins or you can simply use a float:left if you aren't planning on shuffling the order for mobile. Remove the comments from box one before moving to the next step.

### Display Table and Table Cell

This allows you to shuffle the order of the boxes.

©2017 UCSC Extension Responsive Web Design, Teresa Hardy

# Display: inline-block

- No clearing
- Beware of bug
- Beware of vertical alignment

```
1  html {~  
2    .font-size: 100%;~  
3  }~  
4  .row {~  
5    .width: 93.75%; ~margin: 0 auto; ~background: #fafafa; }~  
6  .box {~  
7    .display: inline-block; ~  
8    .width: 24%; /*note the wiggle room for the bug*/~  
9    .margin: 0;~  
10   .padding: 0;~  
11   .min-height: 15em; /*beware of using height*/~  
12   .vertical-align: top; /*default is bottoms aligned*/~  
13   .color: #fff; ~  
14 }~  
15 .one {~  
16   .background: #efefef; ~color: #333; ~  
17 }~  
18 .two {~  
19   .background: #afafaf; ~color: #333; ~  
20 }~  
21 .three {~  
22   .background: #8a8a8a; ~  
23 }~  
24 .four {~  
25   .background: #545454; ~  
26 }~  
27 h1 {~  
28   .font-size: 180%; ~font-weight: bold; ~line-height: 1.8em; ~  
29 }~  
30 h2 {~  
31   .font-size: 120%; ~font-weight: bold; ~line-height: 1.5em; ~text-align: center; ~  
32 }~  
33 h3 {~  
34   .font-size: 110%; ~font-weight: bold; ~line-height: 1.8em; ~  
35 }~  
36 p {~  
37   .padding: 10px; ~line-height: 1.4em; ~text-align: left; ~  
38 }~  
39 .cred {~  
40   .width: 100%; ~margin: 0; ~background: #AAA; ~  
41 }~  
42 .cred p {~  
43   .padding: 1em; ~  
44 }~  
45 a {~  
46   .color: #000; ~  
47 }~  
48 /* 768px */~  
49 @media only screen and (max-width: 48em) {~  
50   .row {~  
51     .width: 100%; ~  
52   }~  
53   .box {~  
54     .display: block; ~  
55     .width: 100%; ~  
56   }~  
57   .h1, .h2, .p {~  
58     .margin-left: 5%; ~width: 90%; ~  
59   }~  
60 }
```

# Display: table-cell

- Allows re-ordering
- Consistent height with inconsistent content
- Test that!

```
1  .row { width:93.75%; margin:0 auto; }
2  △   background: #fafafa; display: table; }
3  .box { ...
4    display:table-cell; ...
5    width:24.5%; ...
6    height:15em; ...
7    text-align:center; ...
8    /*line-height:15em; */
9    color:#fff; ...
10 }
11 .one { background:#efefef; color:#333 ... }
12 .two { background:#afafaf; color:#333; ... }
13 .three { background:#8a8a8a; ... }
14 .four { background:#545454; ... }
15 h1 { font-size: 180%; font-weight:bold; line-height:1.8em; }
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19 .cred { width:100%; margin:0; background:#AAA; ... }
20 .cred p { padding: 1em; ... }
21 a { color: #000; ... }
22 /* 768px */
23 @media only screen and (max-width:48em) { ...
24   .row { ...
25     width:100%; ...
26   }
27   .box { ...
28     width:100%; ...
29   }
30   .three { display:table-caption; ... }
31   .four { display:table-header-group; ... }
32   .one { display:table-footer-group; ... }
33   h1, h2, p { margin-left: 5%; width: 90%; ... }
34 }
```

# Table Flexibility

- Shuffle the order of the boxes for mobile view

```
27 @media (max-width: 480px) {  
28   .box {  
29     display: block;  
30     width: 100%;  
31     min-height: 8em;  
32     line-height: 8em;  
33   }  
34  
35   .three { display:table-caption; }  
36   .four { display:table-header-group; }  
37   .one { display:table-footer-group; }  
38 }
```

iPhone 6 ▾ 375 × 667 100% ▾

## Exercise 1

**Display: table; with shuffle**

Box Three

Box Four

Box Two

Box One

Basic responsive example with full width footer.



# RESPONSIVE WEB DESIGN

More than just flexible width...  
Directly from Ethan Marcotte's  
book, see syllabus.



# Viewable on all devices & sizes

Flexible Grid, Media Queries, Typography, Images, Interaction

- Viewport <meta>
- Width on .container is not fixed pixels
- Collapsing and expanding navigation bar
- Grid classes for each viewport, xs, sm, md, lg

# Responsive Web Design

- The term was coined by Ethan Marcotte in article published on *A List Apart*
- “Rather than creating spaces that influence the behavior of people that pass through them, responsive designers are investigating ways for a piece of architecture and its inhabitants to mutually influence and inform each other.”
  - Ethan Marcotte , Responsive Web Design, 2<sup>nd</sup> ed.
- According to Ethan it takes three core ingredients,
  - A flexible, grid-based layout
  - Flexible images and media
  - Media queries, a module from CSS3 specification

# An Event Apart SF 2017



**Ethan Marcotte**

Author, *Responsive Web Design*

**Design Beyond Our Devices** | [Close](#)

In this age of device diversity, we've been focusing less on pages, and more on *patterns*: reusable bits of design and content we stitch together into responsive design systems. But those patterns bring puzzles: how should they adapt, and why? And how do we, well, *design* with them? Let's look at a few answers to those questions, and start moving our design practices beyond the screens in front of us.

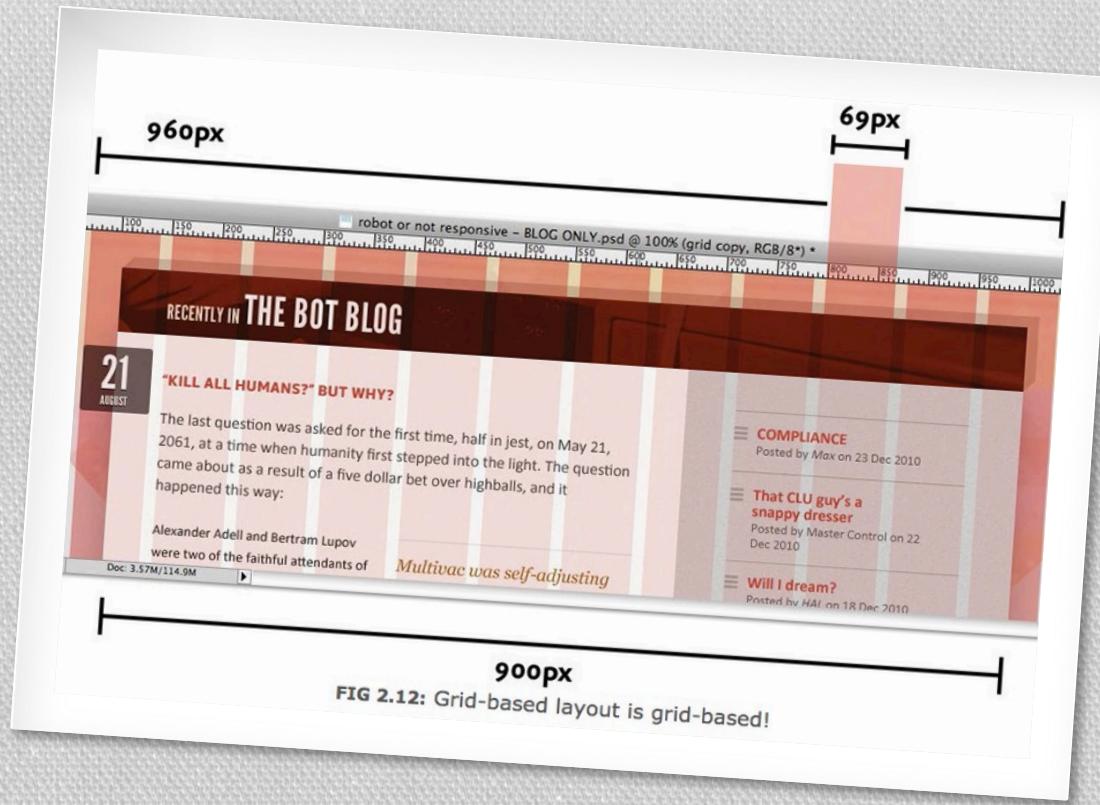


## START WITH A GOOD DESIGN – THE GRID

We are pattern makers. Group information in appropriate chunks and avoid information overload.

# Mobile First

- “If you design mobile first, you create agreement on what matters most. You can then apply the same rationale to the desktop/laptop version of the web site. We agreed that this was the most important set of features and content for our customers and business—why should that change with more screen space?” - Luke Wroblewski
- What it really means to your design
  - Looking at mobile helps you prioritize the blocks of information for any viewport!
  - Are you starting with mobile CSS and scaling up with media queries or >1200px CSS and then scaling down?



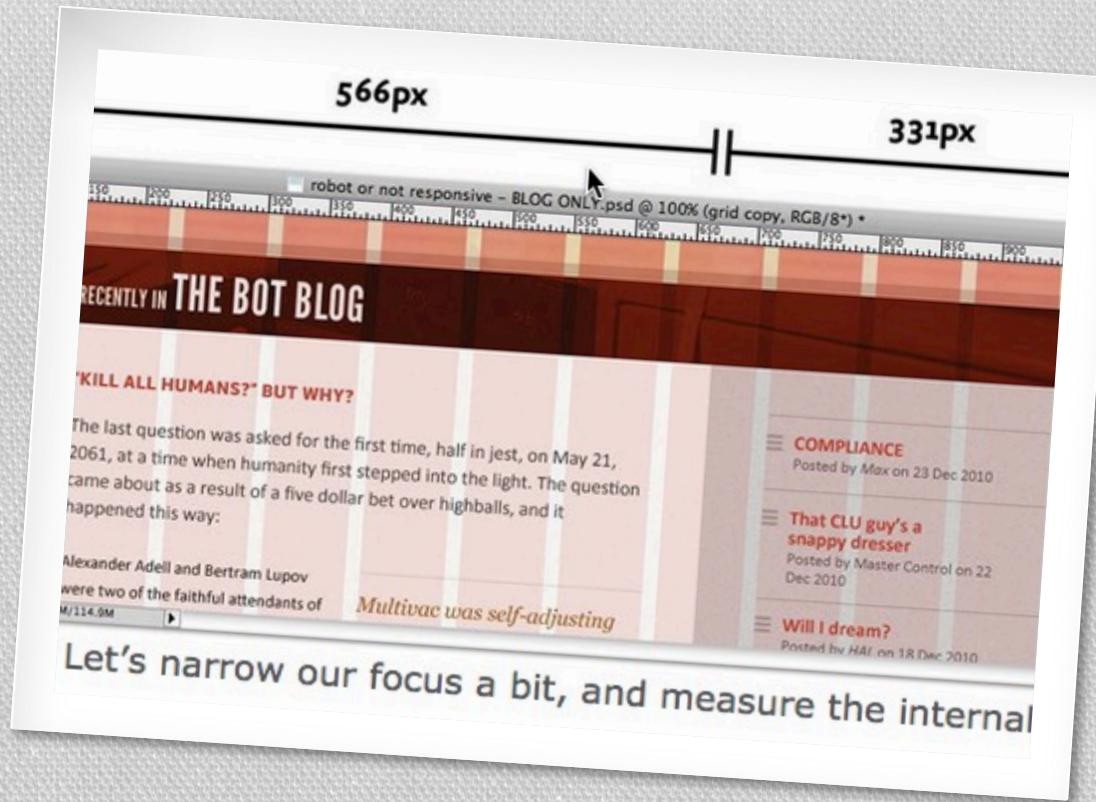
**FIG 2.12:** Grid-based layout is grid-based!

# Converting Grid in Pixels to Percent

Convert to percent with the same equation target/context = result

$$900/960 = 0.9375 \text{ or } 93.75\%$$

$$566/900 = 62.89\% \text{ for left column} \quad 331/900 = 36.78\% \text{ for right}$$



# Drill down to the column sizes

You can guess it is more or less 60% and 30%

$$566/900 = 62.89\%$$

$$331/900 = 36.78\%$$

# Example Layout - Responsive Grid

The screenshot shows a responsive website layout. At the top is a header bar with the PCS Premier Cleaning Solutions logo, a navigation menu with links to Home, Services, Staff, Clients, and Contact for Quote, and a large image of a modern office lobby. Below the header is a main content area featuring a headline "Your clean business is our business.", a sidebar with a list of services, and a "Free Quote" button. The main content area is divided into three columns: "Office Cleaning", "Window Washing", and "Stripping & Waxing", each with a brief description and a "View details" button. At the bottom are footer sections for address, phone number, serving areas, and social media links.

**PCS PREMIER**  
CLEANING SOLUTIONS

[Home](#)   [Services](#)   [Staff](#)   [Clients](#)   [Contact for Quote](#)

Your clean business is our business.

- Office Cleaning
- Window Cleaning
- General Cleaning
- Carpet Cleaning
- Commercial Buildings
- Floor Stripping & Waxing

[Free Quote »](#)

**Office Cleaning**  
Make the best first impression with a clean, fresh lobby and a work environment that is healthy and comfortable for your employees and your customers.  
[View details »](#)

**Window Washing**  
Let your customers and visitors see the best view of your workspace with regular window cleaning. Professional window cleaning makes a difference.  
[View details »](#)

**Stripping & Waxing**  
A deep clean maintains beautiful high-traffic areas and will protect a vinyl floor to extend the life of it. Hire a professional who knows how to do this right.  
[View details »](#)

32108 Alvarado Blvd #312 Union City, CA 94587  
510-441-2427  
Serving the SF Bay Area including San Francisco, San Mateo, Oakland, Berkeley, Fremont, Newark, Mountain View and the surrounding areas.

© 2016 Premier Cleaning Solutions

[f](#) [in](#) [g](#)

The screenshot shows a responsive mobile view of the website. The layout is compressed into a single column. The top features the PCS Premier Cleaning Solutions logo and a menu icon. Below is a large image of the office lobby. The main headline "Your clean business is our business." is followed by the service list and a "Free Quote" button. The three service sections from the desktop version are collapsed into a single "Office Cleaning" section with a detailed description and a "View details" button. The footer contains the address, phone number, serving areas, and social media links.

**PCS PREMIER**  
CLEANING SOLUTIONS

[Home](#)

Your clean business is our business.

- Office Cleaning
- Window Cleaning
- General Cleaning
- Carpet Cleaning
- Commercial Buildings
- Floor Stripping & Waxing

[Free Quote »](#)

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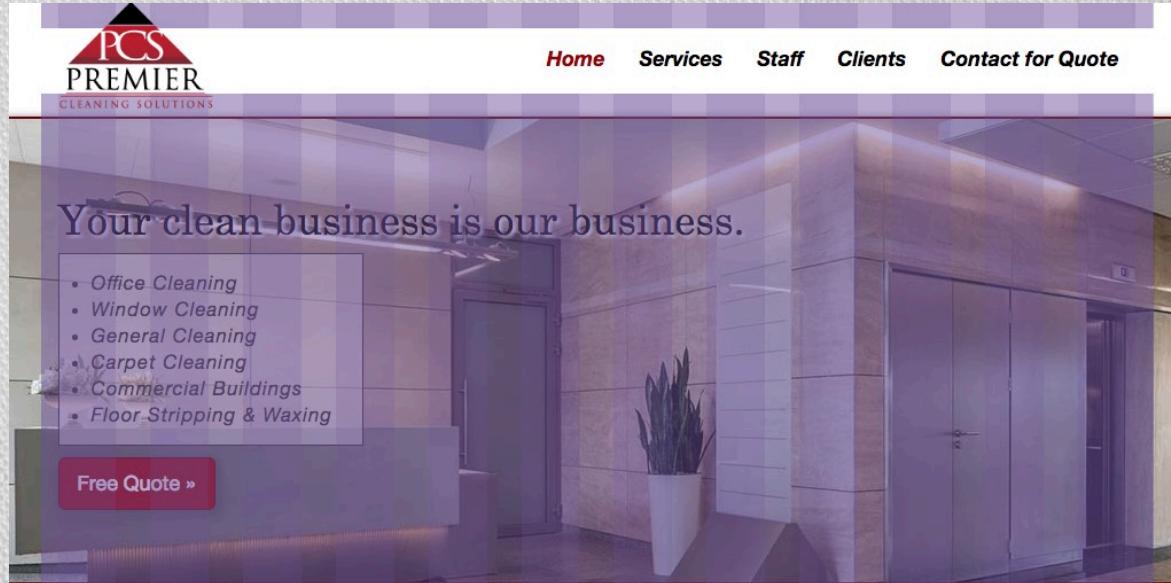
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# Example Layout - Responsive Grid



PCS  
**PREMIER**  
CLEANING SOLUTIONS

Your clean business is our business.

- Office Cleaning
- Window Cleaning
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- Carpet Cleaning
- Commercial Buildings
- Floor Stripping & Waxing

[Free Quote »](#)

## Office Cleaning

Make the best first impression with a clean, fresh lobby and a work environment that is healthy and comfortable for your employees and your customers.

[View details »](#)

## Window Washing

Let your customers and visitors see the best view of your workspace with regular window cleaning. Professional window cleaning makes a difference.

[View details »](#)

## Stripping & Waxing

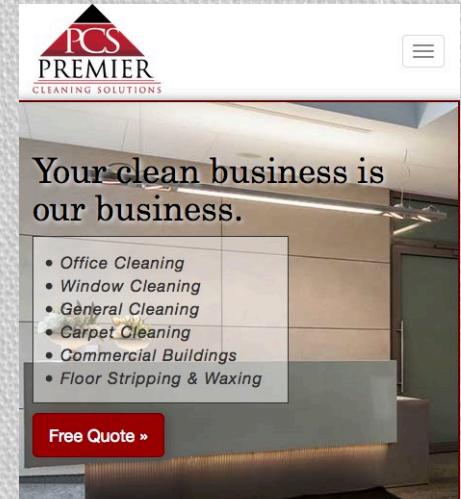
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[Free Quote »](#)

## Office Cleaning

Make the best first impression with a clean, fresh lobby and a work environment that is healthy and comfortable for your employees and your customers.

[View details »](#)

## Window Washing

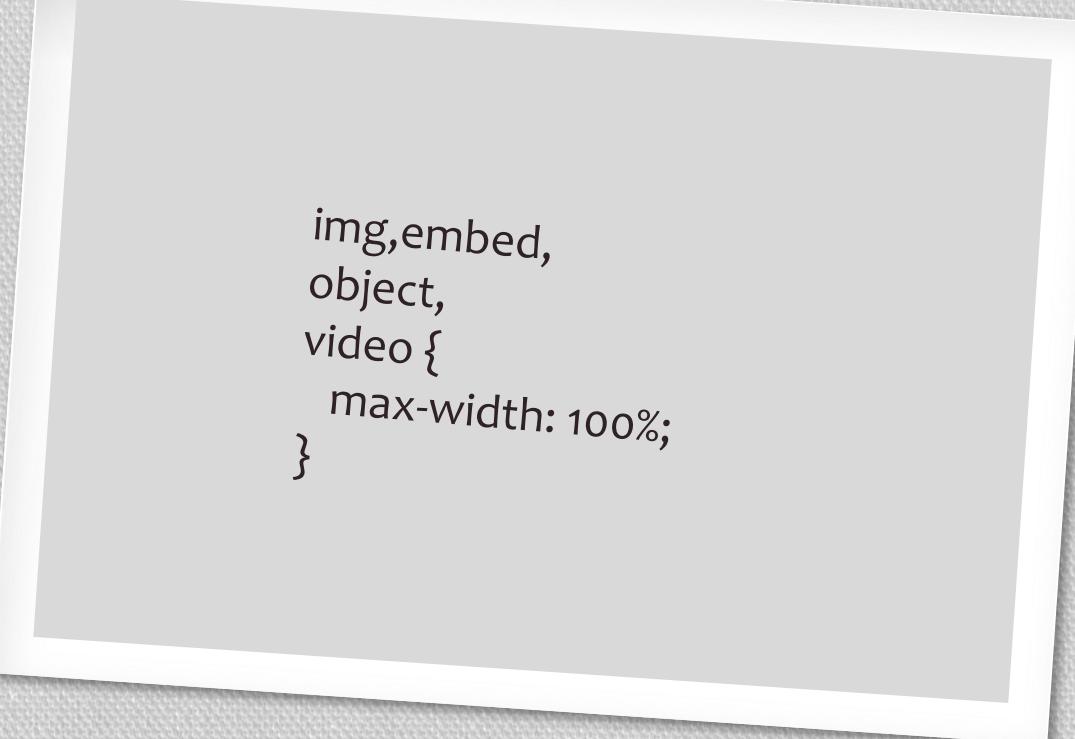
Let your customers and visitors see the best view of your workspace with regular window cleaning. Professional window cleaning makes a difference.

[View details »](#)



# FLUID IMAGES RESPONSIVE IMAGES

Images that size into the space available for any viewport



```
img, embed,  
object,  
video {  
    max-width: 100%;  
}
```

# How to Make Fluid Image

CSS...    `img { max-width: 100%; }`

What about other media?

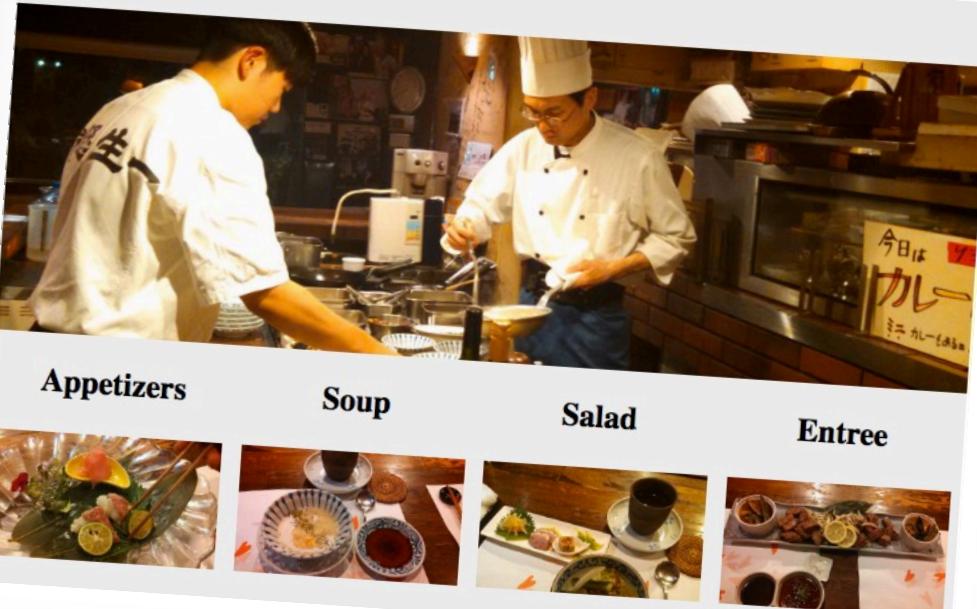
This will not work for IE6 or below. See RWD for a shim.

```
.feature {  
    overflow: hidden;  
}  
  
.feature img {  
    display: block;  
    max-width: auto;  
}
```

## Alternative with Fixed Image

Read more from Richard Rutter's experiments at  
<http://bkaprt.com/rwd2/13/>

## Dinner in Kobe



# Add images to Exercise 1

Add the image in a div

Create a style to keep in the div

Test responsive behavior

My style...

```
img { max-width: 92%; margin: 4%; }  
img.hero { max-width: 100%; margin: 0; }
```



# When Not to Use an Image

Icons should be rendered in SVG or special fonts like Font Awesome or Halflings (see Bootstrap components)



# Assignment

Finish styles and replace images with your own.

Add a second media query for two-up images.

Read and type ahead.