



# Bootstrap Layouts and Responsive Designs

Web Development Boot Camp  
Lesson 2.3

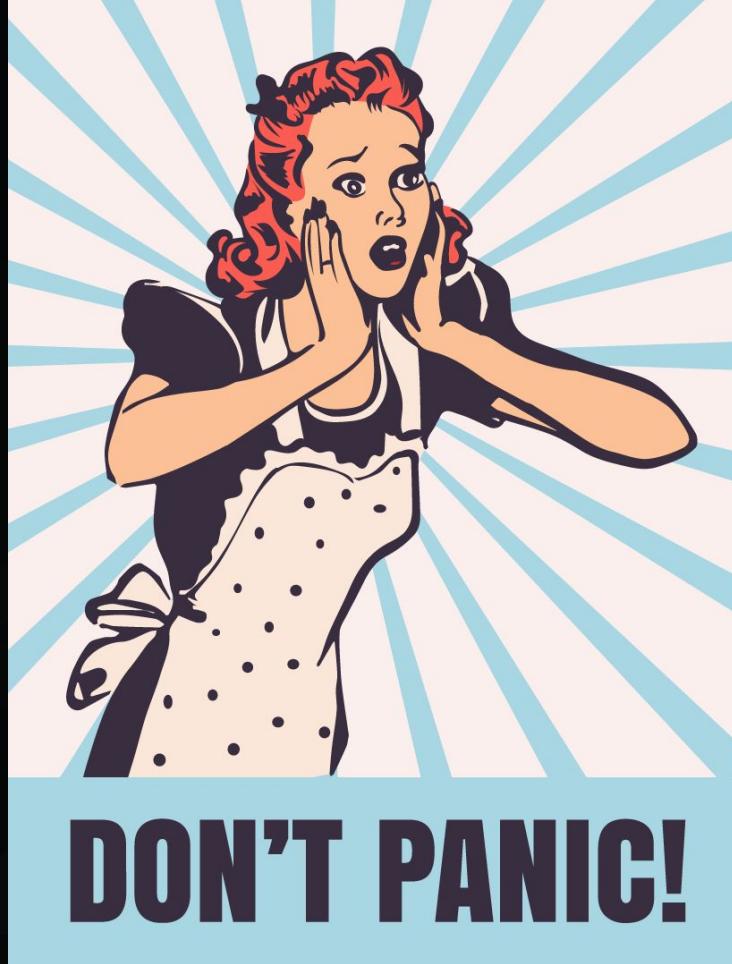


# Admin items

---

- Lynna is out tonight...but luckily we have Ming!
- Didn't get an email? Check your spam
- Jen: Javascript strategies







**YOU  
ARE  
AWESOME!**

# **Today's Class**

# Today's Objectives

---

01

You will use the **Bootstrap CSS Framework** to create layouts.

02

You will learn to use **media queries** for mobile responsive websites.

03

You will learn to use the **meta** tag to make sure all devices are displaying webpages optimally for their **viewport**.



# **Focus!**

This stuff is important.

# Bootstrap Recap

# How You (Probably) Feel About CSS



# But Then Came Bootstrap!



# Powered by Bootstrap

---

## External CSS Link

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <title>My First Website</title>
5      <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/
       bootstrap/3.3.6/css/bootstrap.min.css">
6  </head>
7  <body>
```

## Predefined CSS Class (e.g., “Jumbotron”)

```
<div class="jumbotron">
    <h1 class="text-center"><strong>Awesome Header</strong></h1>
    <h2 class="text-center">Smaller Awesome Header</h2>
    <h3 class="text-center">Even Smaller Header</h3>
    <p class="text-center"><a class="btn btn-danger btn-lg" href="#" role="button">
        <span class="glyphicon glyphicon-envelope"></span> Learn more</a></p>
    </div>
```

# Powered by Bootstrap

The Coding Bootcamp Home About Contact Dropdown ▾

Default Static top Fixed top

## Awesome Header

Smaller Awesome Header

Even Smaller Header

[Learn more](#)

**class="jumbotron"**



Lorem ipsum dolor sit amet, consectetur adipisicing elit. Quis, molestiae modi accusantium animi magnam veniam, impedit asperiores sint consequuntur debitis fugit quibusdam dolor, iusto sed porro ab minus voluptatibus amet.



Lorem ipsum dolor sit amet, consectetur adipisicing elit. Accusamus, maiores, quos. At, animi, facilis. Alias itaque ab minima rerum, eaque animi nesciunt harum nemo est cumque voluptas, qui reprehenderit atque.



Bootstrap gives you  
**PREDEFINED** CSS styles.

# Why Use Bootstrap?

---

## Reason #1: UI Kit



Familiarize yourself with the UI features Bootstrap offers by reading the documentation.



Once Bootstrap is active, you can simply copy snippets from the documentation to save yourself the time of creating elements yourself.



# Why Use Bootstrap?

## Reason #2: Mobile Responsiveness



One of the most compelling reasons to use Bootstrap is the default mobile-responsive quality it provides.



This means that your websites will automatically look “good” when viewed on screens ranging from monitors to tablets to phones.





## **Warm-Up Activity:**

### Bootstrap Component

**Suggested Time:**  
**5 minutes**



# Warm-Up Activity: Bootstrap Component

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01

Like you did in the last class, quickly create an HTML webpage.

02

Add in a Bootstrap component of your choosing.



**Hint:** Copy the Bootstrap CSS link. Then copy the code from any Bootstrap element or CSS.

**Suggested Time:** 5 minutes



## **Next-Phase Bootstrap**

In the last class, we focused on Bootstrap components (like buttons and tables).

Today, we'll be focusing on using Bootstrap to build layouts.

# Sketching / Grid Layouts



## **FOCUS!**

Because in our opinion, these next two sections are some of the **MOST IMPORTANT ONES** in the **ENTIRE** program.

# Difference between UI and UX

---

01

## UX = User Experience

UX designers are interesting in mapping user goals to interface

- Screens
- Layout
- Menus
- Buttons
- Forms
- Links

**Product: Wireframes, sketches and user testing**

02

## UI = User Interface

UI designers are more interested in graphic design, layout, style

- Colors
- Fonts
- Layout
- Pictures

**Product: Design systems and page layouts**

# The Importance of Sketches

---

Every good web design begins with a sketch.

01

Because every aspect of a site's "look" is defined by HTML/CSS, it is crucial to have a detailed sketch going in.

02

Pay particular attention to the location of navigation bars, titles, headers, content, images, footers, etc.

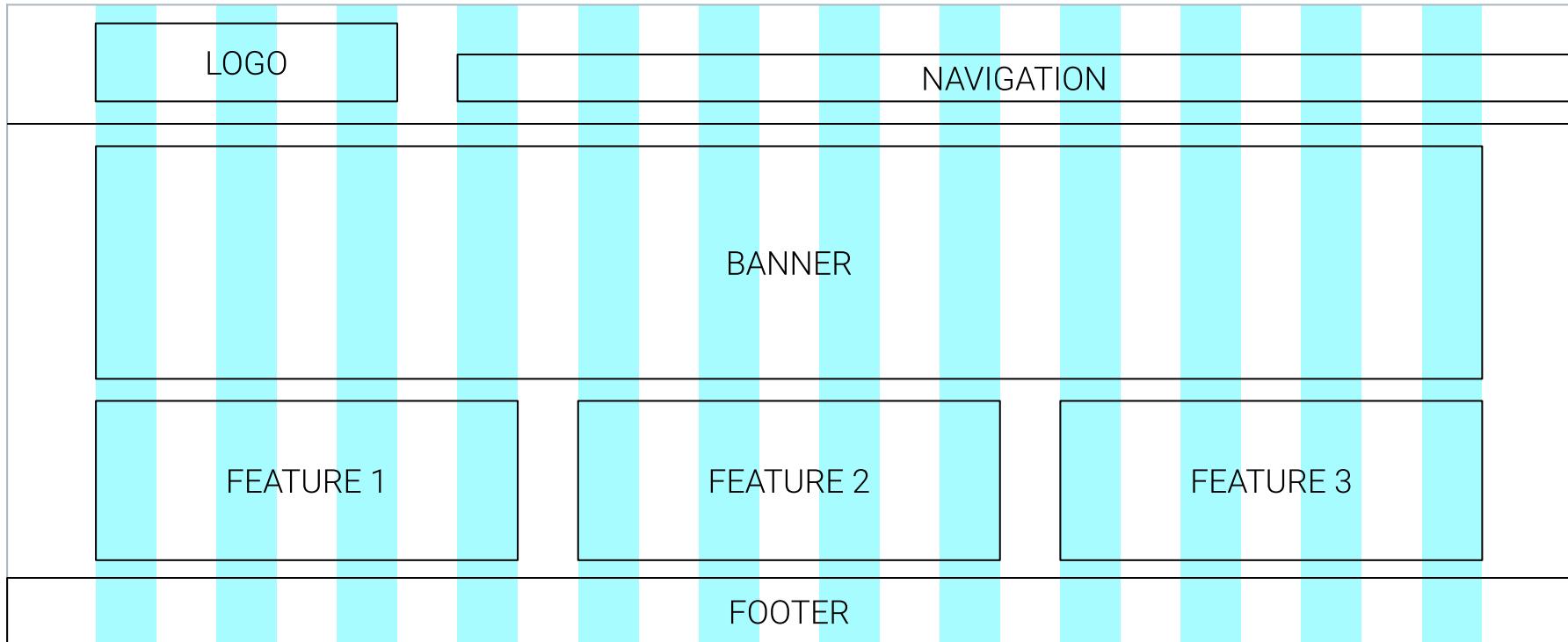
03

When imagining alignments in particular, be mindful of the ***grid***.

# Layout with a Grid in Mind

---

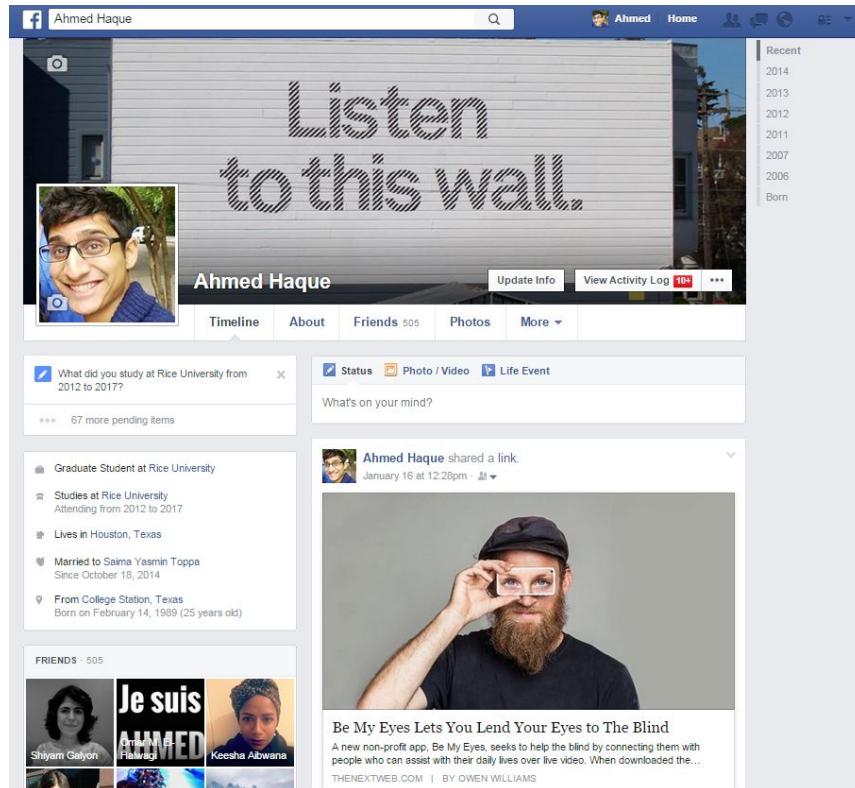
Grids serve to align elements aesthetically.



# Facebook's Grid

Facebook is a perfect example of a website where the grid layout is obvious.

Grids make it easy to have content (text, images, and regions) align in an aesthetically pleasing way.



# A More Complex Grid

Home > Perspectives

## PERSPECTIVES

The Top 10 Cities for Coding Job Growth in the U.S.

Perspectives Trilogy Editors • January 3, 2019

It's no secret that tech jobs are multiplying and spreading across America away from the major tech hubs. But 2018 job growth data signals that the trend is accelerating at a staggering speed. From 2017 to 2018, the country...

[Read more](#)

0

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Impact July 6, 2018

Trilogy Education Acquires Firehouse Project and JobTrack to Expand Learner Access and Opportunity

News October 10, 2018

Techless to Tech Teacher: How Nelly Sugira Used Passion to Land a Career as a Coding Instructor

In the Classroom June 22, 2018

Failing Forward: Jesse Forte's Journey to Coding

Inspiration May 15, 2018

# A More Complex Grid

# Tools for Sketches / Grid Creation

---

## Wireframing Tools:

- Balsamiq\*\*\*: <https://balsamiq.com/>
- Framebox: <http://framebox.org/>
- Figma: <https://www.figma.com/>
- Sketch: <https://www.sketch.com/>
- Pen and paper: your notebook

## Grids for Photoshop / Illustrator:

- 960 GS: <http://960.gs/>
- GuideGuide: <https://guideguide.me/>

## Designing with Grids Guides:

- 960 Grid System Made Easy: <http://bit.ly/1sjYaFC>
- Design by Grid: <http://www.designbygrid.com/>
- Designing with Grid-Based Approach: <http://bit.ly/1CM4Hzo>

# Rows and Columns Workshop

# Fundamentally, Web Design = Wireframes

The Greatest Website Ever Made

Wireframes Home About Contact

Headphones icon

Person at laptop icon

Profile face icon

Text placeholder: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Text placeholder: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

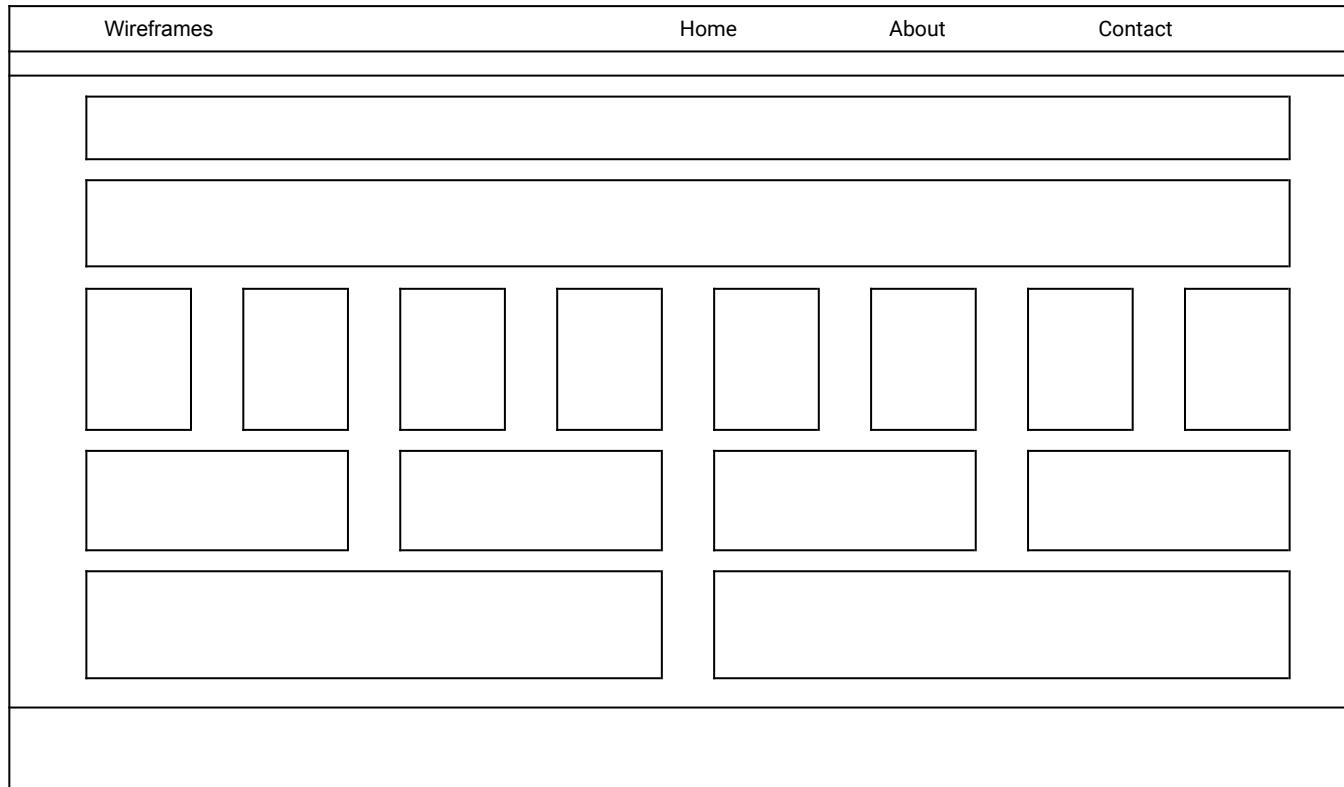
Text placeholder: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

The Greatest Website Ever Made

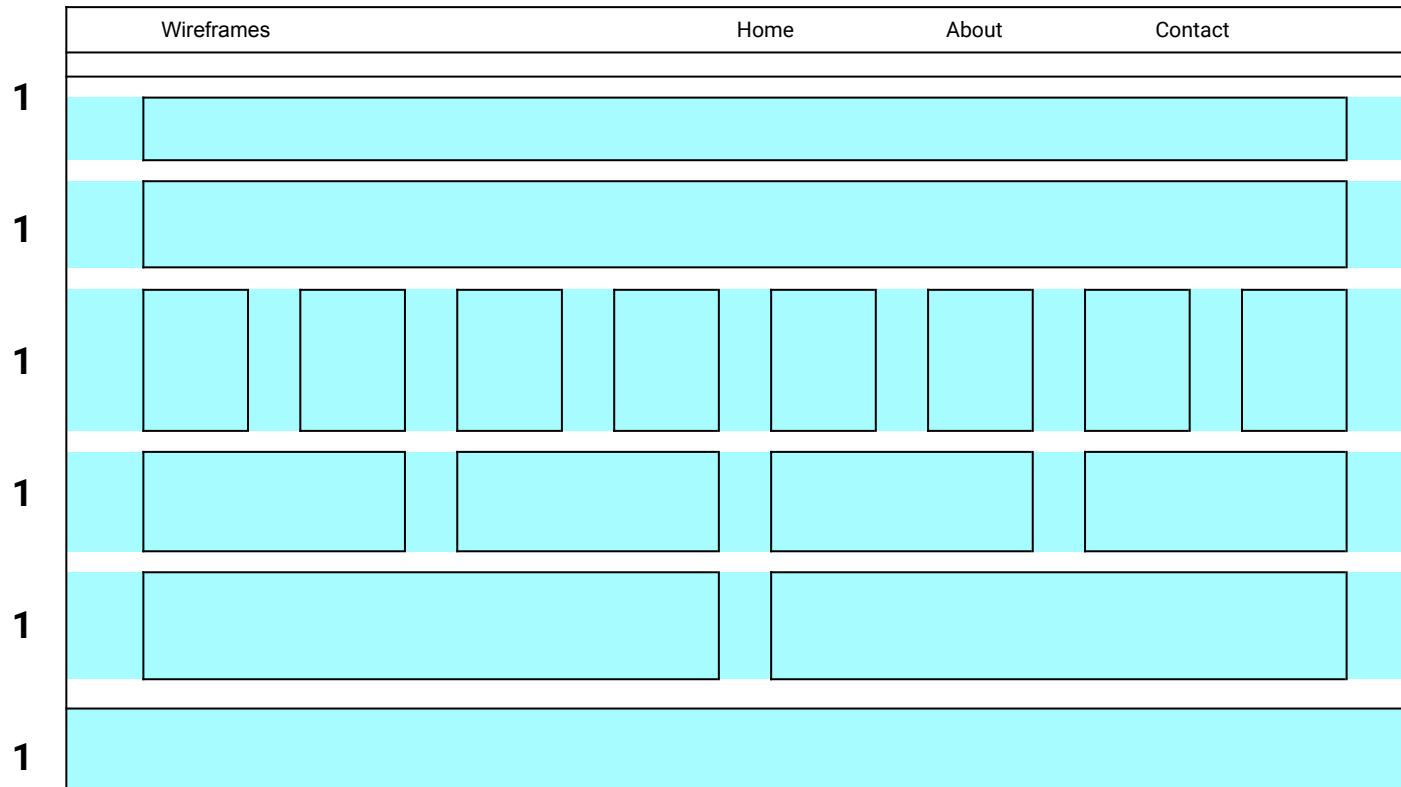
GitHub logo

# How Many Rows and Columns Do You See?

---

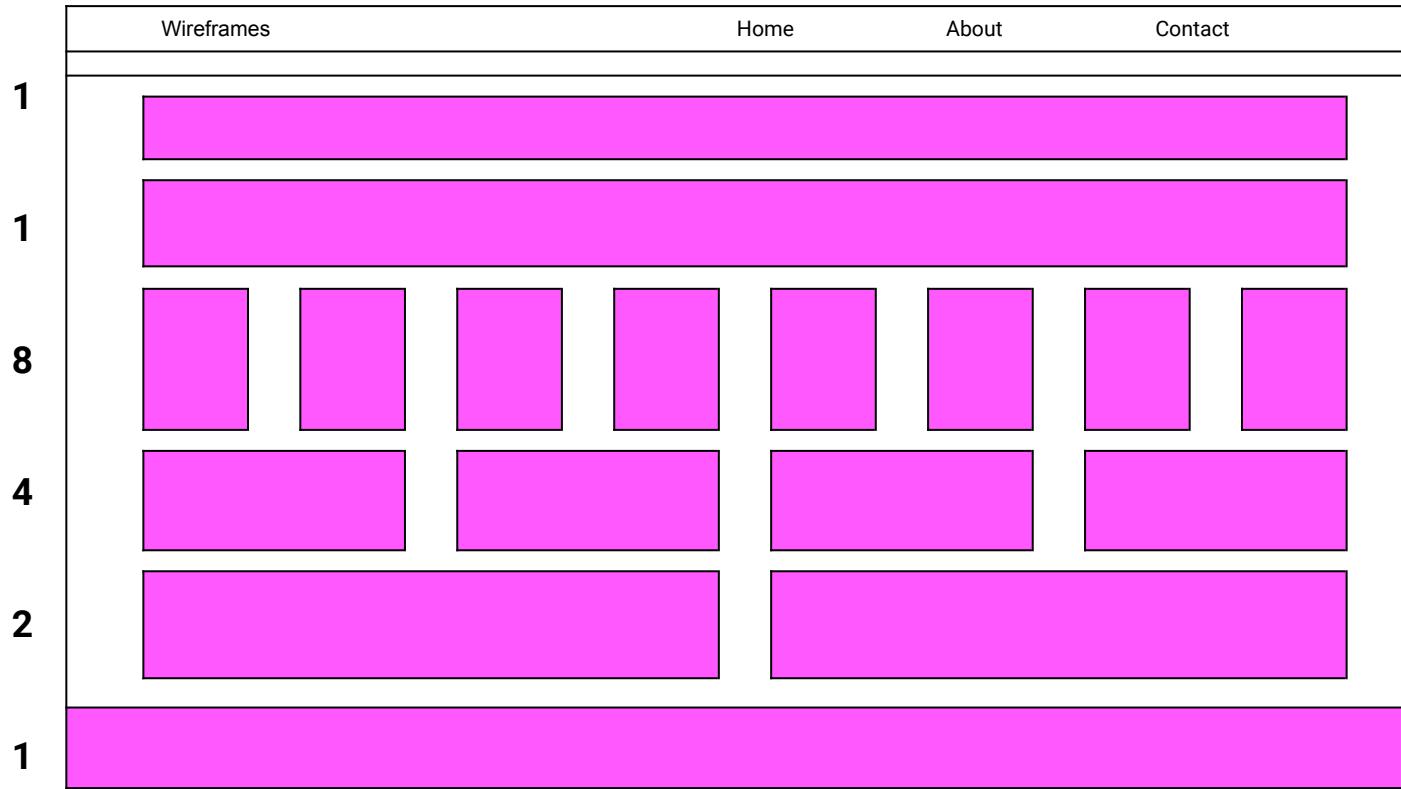


# Total # of Rows: Six



# Total # of Columns: Different for each row

---



# Level Up!

---

Let's make it more challenging.



# How Many Rows and Columns?

---

News      Home      About      Contact

## Awesome Stories



### The Greatest Website Ever Made

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.



### The Greatest Website Ever Made

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.



# Total # of Rows: Four

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	News	Home	About	Contact
1	<h2>Awesome Stories</h2>			
1		<h3>The Greatest Website Ever Made</h3> <p>Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.</p>		
1		<h3>The Greatest Website Ever Made</h3> <p>Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.</p>		
1				

# Total # of Columns: Different for each row

---

	News	Home	About	Contact
1	Awesome Stories			
2		The Greatest Website Ever Made <p>Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.</p>		
2		The Greatest Website Ever Made <p>Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.</p>		
1				

# Level Up!

---

Now for another...



# How Many Rows and Columns?

The Greatest Website Ever Made

Wireframes Home About Contact

The Greatest Website Ever Made

Wireframes Home About Contact

The Greatest Website Ever Made

Wireframes Home About Contact

# Total # of Rows: Four

---

	Wireframes	Home	About	Contact
1		The Greatest Website Ever Made		
1***				
	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	
1		The Greatest Website Ever Made		
1		<p>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>		
1				

# Total # of Columns: Different for each row

---

	Wireframes	Home	About	Contact
1	The Greatest Website Ever Made			
3				
	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>	
1	The Greatest Website Ever Made			
1	<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.</p>			
1				

# Level Up!

---

This final one is tricky.



# How Many Rows and Columns?

# Level Up!

---

Didn't quite work, right? For this one, we need **sub-rows** and **sub-columns**.



# Total # of Rows: Four

---

	Wireframes	Home	About	Contact
1	Awesome Photos			
1***				
1***				
1				

The wireframe diagram illustrates a layout with four rows. Row 1 contains navigation links: Wireframes, Home, About, and Contact. Row 2 is titled "Awesome Photos". Row 3 contains a large central image placeholder and two smaller image placeholders in the top right corner. Row 4 contains a text block and a "Click to view photo" button. Row 5 is a footer bar featuring a GitHub logo.

Wireframes

Home

About

Contact

Awesome Photos

1\*\*\*

1\*\*\*

1

1

Click to view photo

1



46

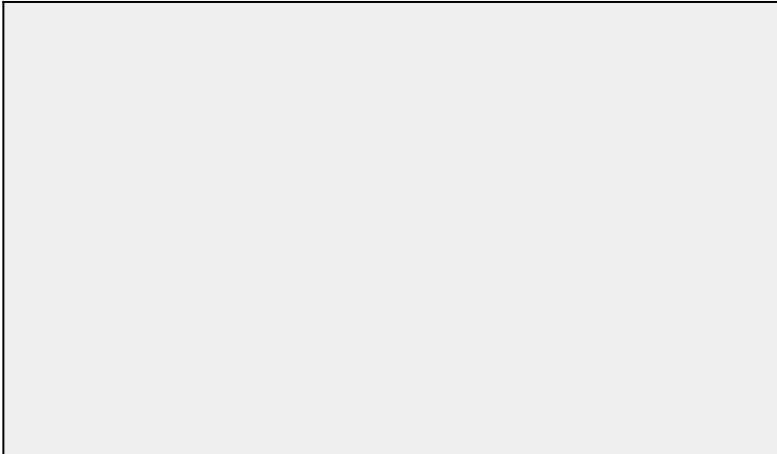
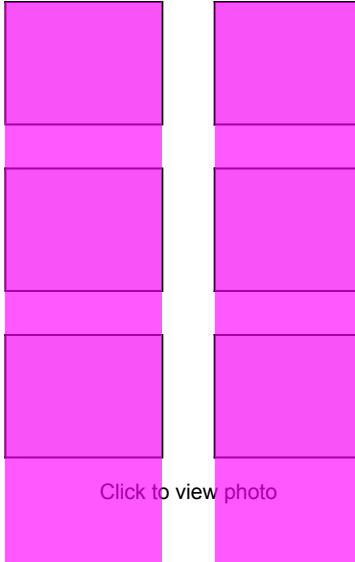
**Total # of Column: Different for each row**

## Total # of Sub-Rows: Four

The wireframe shows a top navigation bar with four items: 'Wireframes', 'Home', 'About', and 'Contact'. Below this is a section titled 'Awesome Photos' containing a large light-gray placeholder box. To its right are three rows of two teal-colored placeholder boxes each. At the bottom left is a paragraph of placeholder text, and at the bottom right is a teal button labeled 'Click to view photo'.

# Total # of Sub-COLUMNS: Two

---

Wireframes	Home	About	Contact
Awesome Photos			
	 <p>Click to view photo</p>		
			

*Ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.*

*Click to view photo*

# Group discussion

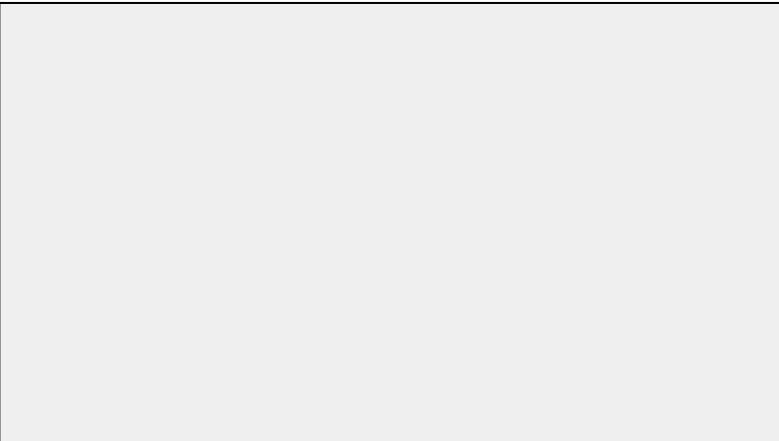
Wireframes

Home

About

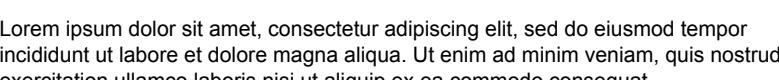
Contact

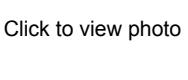
## Awesome Photos

A large rectangular box with a thin black border, representing a placeholder for a main image.


Click to view photo

A large block of placeholder text consisting of a single sentence repeated multiple times, intended to represent the content of the main image area.

A small rectangular button with rounded corners and a thin black border, containing the text "Click to view photo".

# You Made It!



# Grid Design with Bootstrap



## Warning

This is a fairly tricky but  
**VERY IMPORTANT** topic.

# In Bootstrap, all content is organized in rows and columns

---

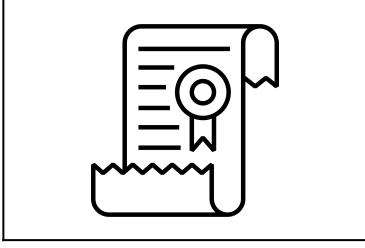
News      Home      About      Contact

## Awesome Stories



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### The Greatest Website Ever Made

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consecetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla.



# Bootstrap Grids

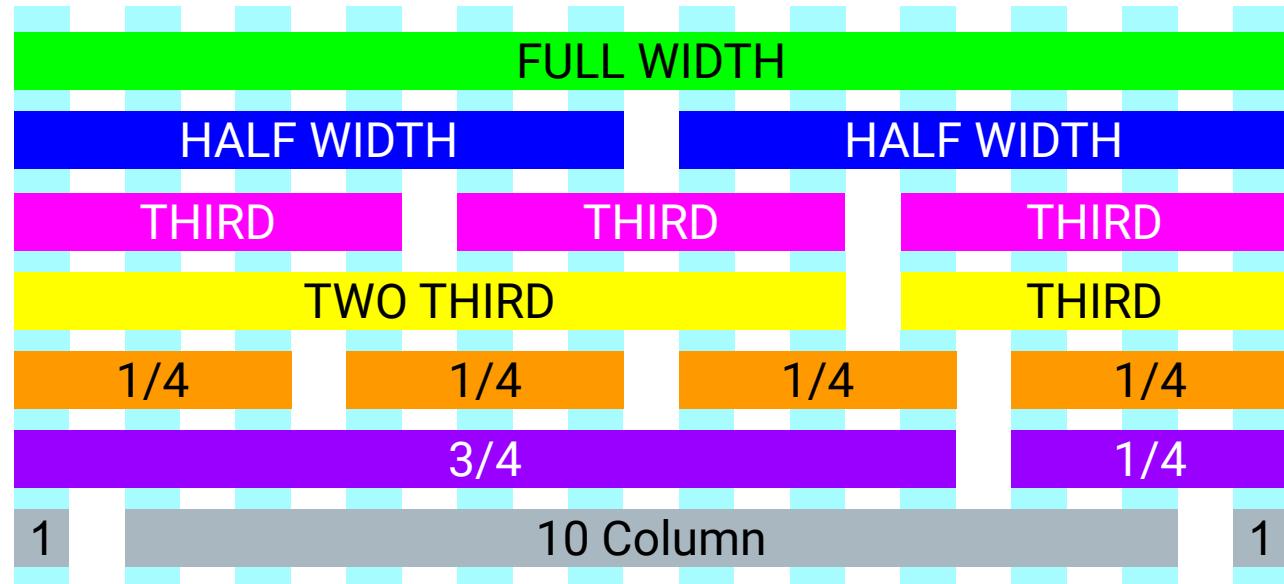
---

Bootstrap lets you organize content based on the number of columns out of 12 that a div spans.

**Example:**

```
<div class="col-md-12">  
(Spans full width)
```

```
<div class="col-md-4">  
(Spans 1/3 of full width)
```



# Bootstrap Grids

---

Every Bootstrap grid is made up of:



**Containers**—wrap around the entire grid



**Rows**—defined first and are just rows



**Columns**—defined within rows and specify the columns. The sum total of all columns within a row **must** add up to 12.

Each of these elements is implemented by creating a `div` with a specific class name.

# Defining Columns

---

Container

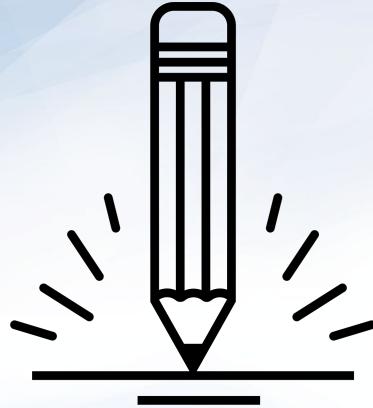
Row #1

Column#1

Column#2

Column#3

Column#4



## **Group Activity** (2 people):

### Containers, Rows, Columns Discussion

Suggested Time:



# Group Activity: Discuss Containers, Rows, and Columns

---

Turn to your neighbor and explain to one another:

01

The relationship between **containers**, **rows**, and **columns**.  
(Draw it out on a piece of paper for them.)

02

The syntax for each.

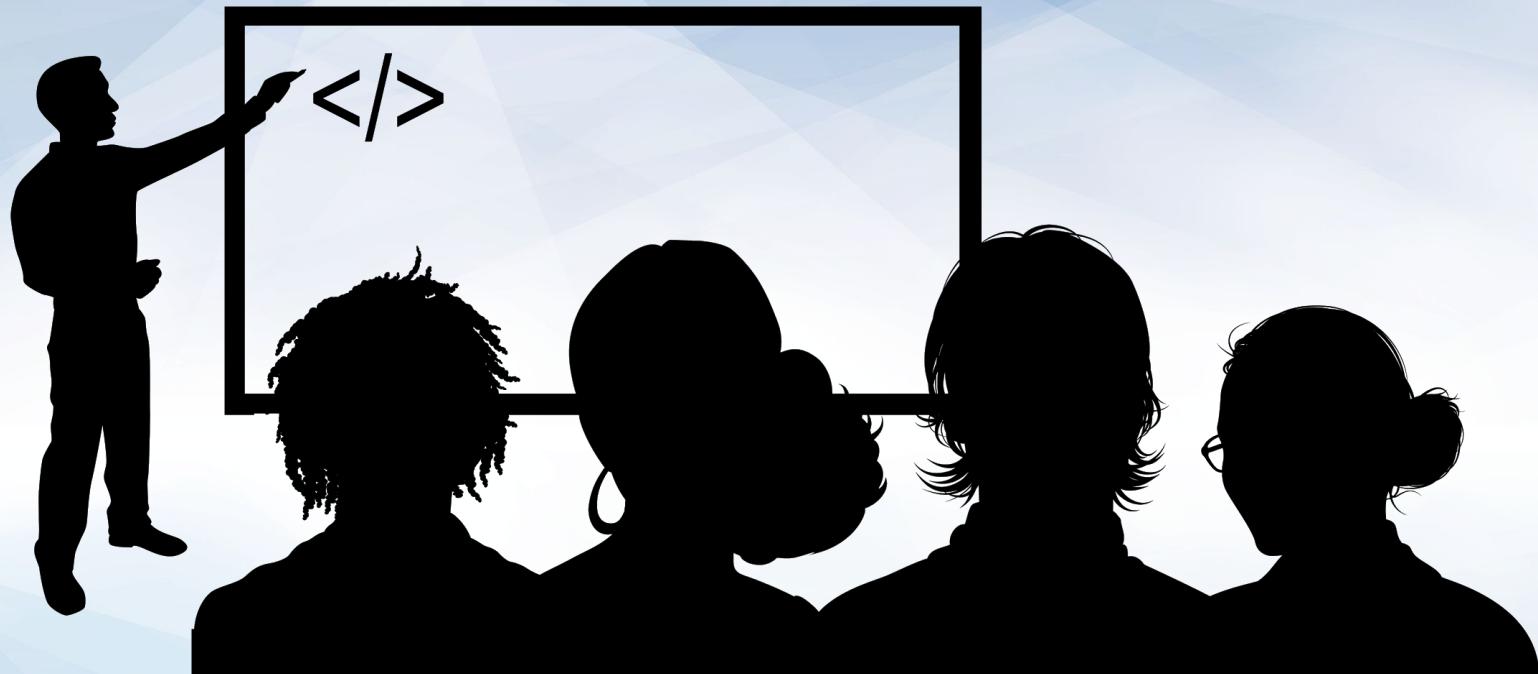
03

The specific syntax details for columns.

Suggested Time: 5 minutes



# Coding Grids



Instructor Demonstration  
Coding Grids

# Bootstrap Grid

---

Note the rows, columns (e.g., col-lg-6), and containers.

```
<!-- Creates the Overall Grid -->
<div class="container">

    <!-- First Row -->
    <div class="row">
        <!-- First (and only column) -->
        <div class="col-lg-12">
            <h1>I'm in Column 1 of 1. I stretch the entire width. And keep going.</h1>
        </div>
    </div>

    <!-- Second Row -->
    <div class="row">
        <!-- First of two columns -->
        <div class="col-lg-6">
            <h1>I'm in Column 1 of 2</h1>
        </div>
        <!-- Second of two columns -->
        <div class="col-lg-6">
            <h1>I'm in Column 2 of 2</h1>
        </div>
    </div>

</div>
```

# Bootstrap Grid

---

Note the rows, columns (e.g., col-lg-6), and containers.



I'm in Column 1 of 1. I stretch the entire width. And keep going.

I'm in Column 1 of 2

I'm in Column 2 of 2

```
<!-- Creates the Overall Grid -->
<div class="container">

    <!-- First Row -->
    <div class="row">
        <!-- First (and only column) -->
        <div class="col-lg-12">
            <h1>I'm in Column 1 of 1. I stretch the entire width. And keep going.</h1>
        </div>
    </div>

    <!-- Second Row -->
    <div class="row">
        <!-- First of two columns -->
        <div class="col-lg-6">
            <h1>I'm in Column 1 of 2</h1>
        </div>
        <!-- Second of two columns -->
        <div class="col-lg-6">
            <h1>I'm in Column 2 of 2</h1>
        </div>
    </div>

</div>
```

# Defining Containers

---

A *container* is the box the entire grid sits inside.

```
<!-- Creates the Container -->
<div class="container">
    <!-- Inside we fill it up with rows and columns -->
</div>
```

# Defining Rows

---

Rows are the rows we talked about earlier.

```
<div class="container">  
    <!-- Defines the row -->  
    <div class="row">  
        <!-- Columns fit inside -->  
        </div>  
    |  
    </div>
```

# Defining Columns

---

Columns fit inside of rows. Syntax: col-sz-#

- **Col**: column
- **sz**: viewing size (in this case, medium)
- #: number of “columns taken” out of 12 (in this case, 4 out of 12)

```
<div class="row">

    <div class="col-md-4">
        <!-- This is column 1 of 3 -->
    </div>
    <div class="col-md-4">
        <!-- This is column 2 of 3 -->
    </div>
    <div class="col-md-4">
        <!-- This is column 3 of 3 -->
    </div>

</div>
```



# Activity:

## Text Layout

Suggested Time:  
20 minutes



# Activity: Text Layout

---

Using Bootstrap, create a layout that looks like the one shown on the next screen.

01

Before you start coding, spend some time drawing the grid layout.

02

Count the number of rows and columns.

03

Use the Bootstrap grid syntax to code it out.

04

Share a screenshot of your page with the class when you are done.

05

You can use the Ipsum Generator ([www.lipsum.com/](http://www.lipsum.com/)) to generate content for your page.

Suggested Time: 20 minutes



# Your Turn

---

## Header

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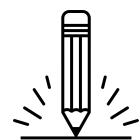
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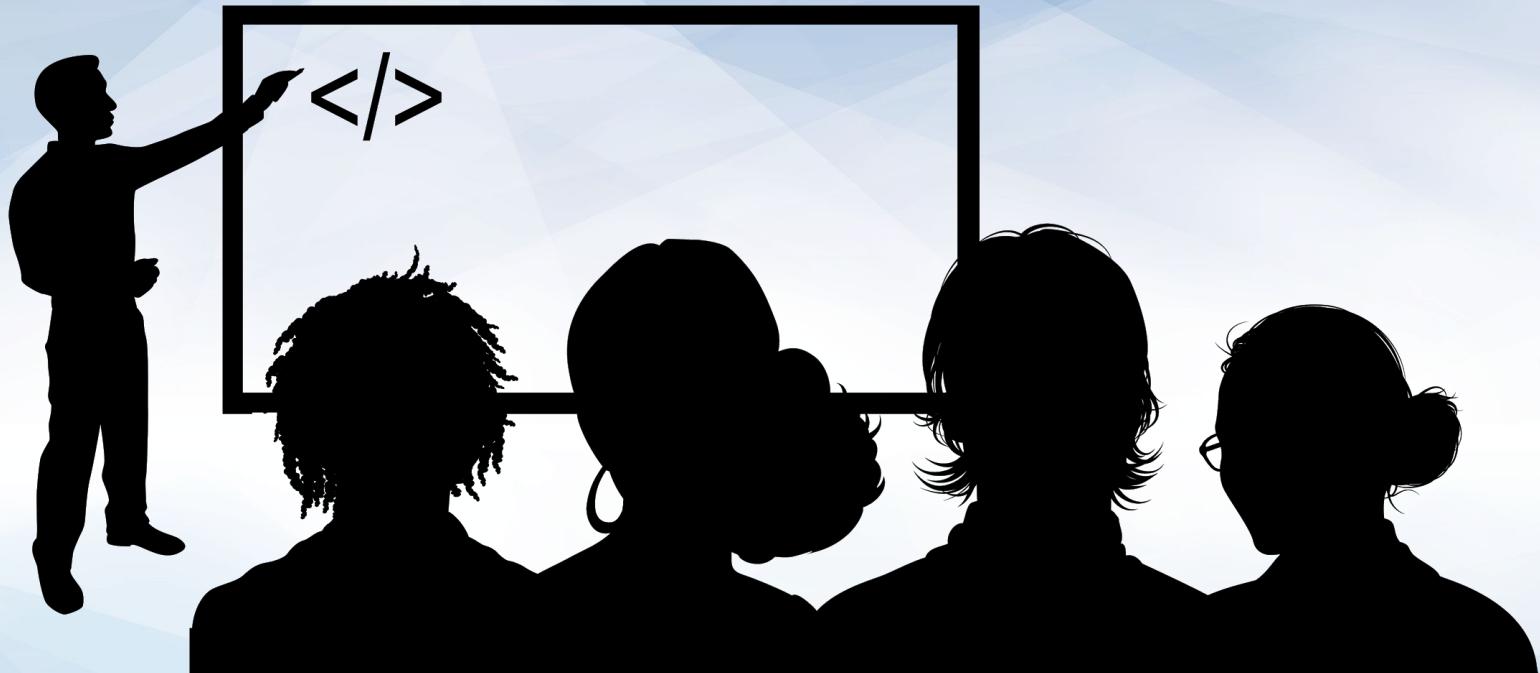
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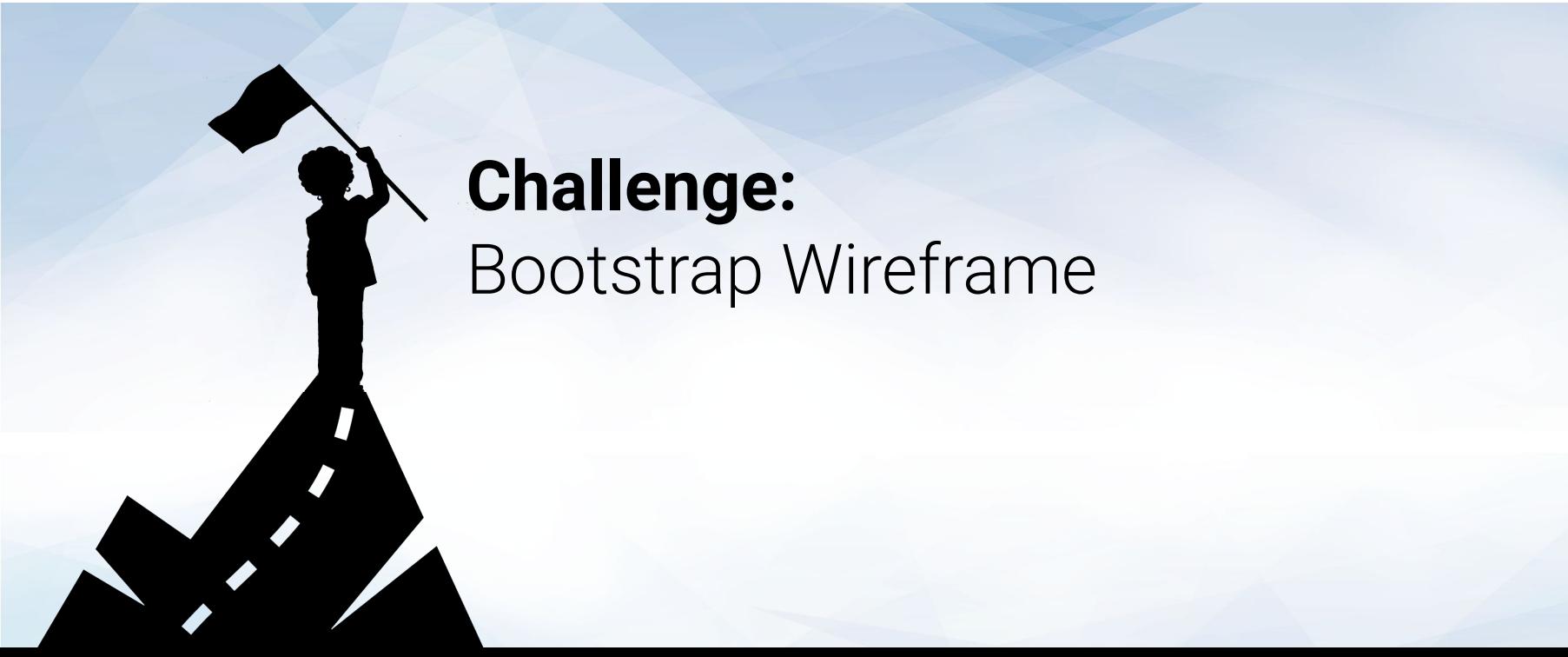
Suggested Time: 20 minutes



# Building Bootstrap Layouts



## Instructor Demonstration Bootstrap Wireframe Layout



# **Challenge:**

## Bootstrap Wireframe

Suggested Time:  
10 minutes



# Challenge: Bootstrap Wireframe

---

Working in pairs, use Bootstrap to wireframe out a design.

**Be sure to include the following elements:**



Grid Layout



Navbar



Sidebar card



Thumbnail



Additional details will be sent to you via Slack.

Suggested Time: 30 minutes



# Challenge: Bootstrap Wireframe

---

## Example:

Navbar About Portfolio Contact

### About Me

150 x 150

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Card title

Card subtitle

Some quick example text to build on the card title and make up the bulk of the card's content.

Suggested Time: 30 minutes



# Common Questions

---



**Can I reverse the order (i.e., rows inside columns)?** Not typically. Columns should go inside of rows. You can create sub-rows inside columns, but they must be inside of a row of their own.



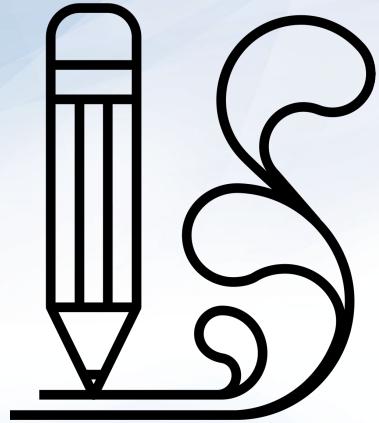
**Can I avoid having a container?** You could, but it will mess things up. Just throw in a container. So, no.



**What if I have more than 12 columns?** Your bootstrap grid won't behave as expected. Don't go past 12.



**What if my columns don't add up to 12?** You will have empty space at the end. Be careful, because the next column you add in the row will fill up the empty space—sometimes without your intention.



## Homework 2:

### Bootstrap Portfolio

**Due Date:**  
**Tuesday September 15**



# Mobile Responsiveness

# Media Queries

---



**Media queries** define how CSS styles are applied in relation to the characteristics of the device viewport.



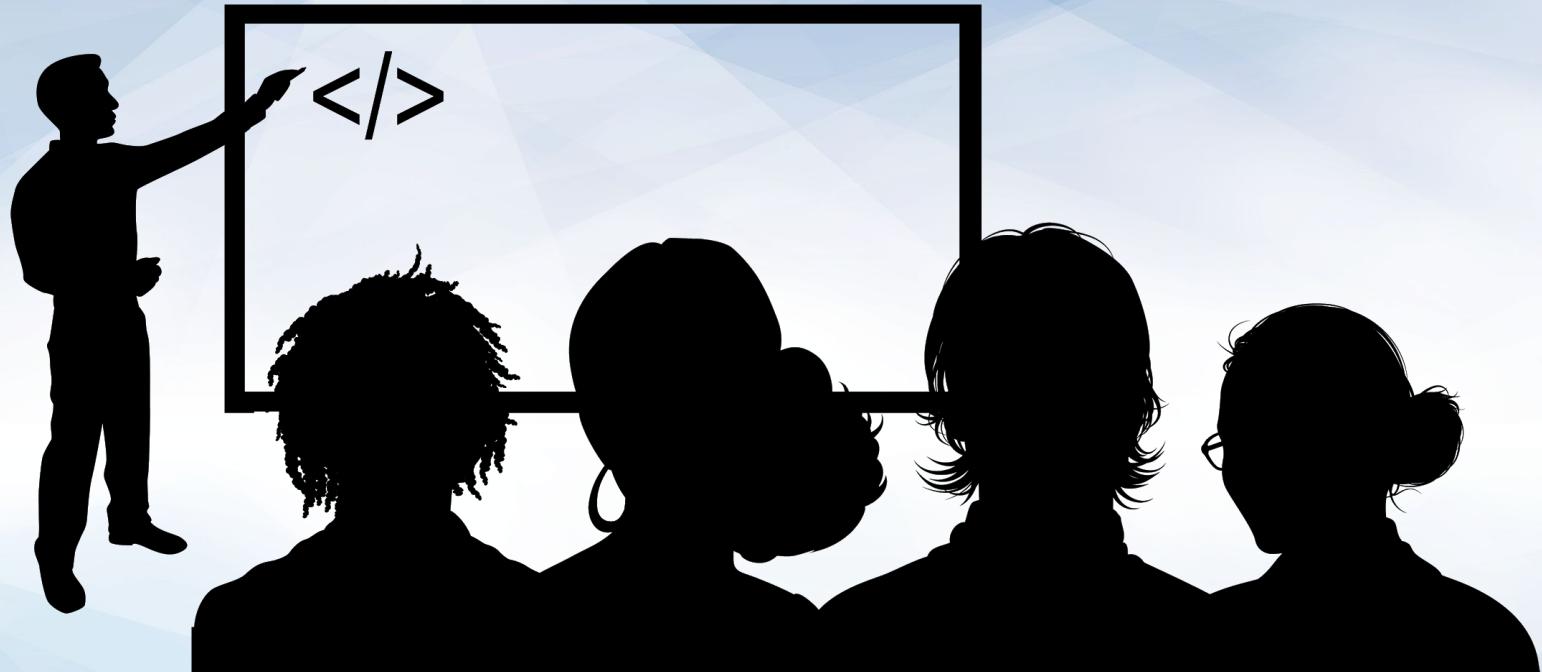
Through media queries, we can change the way a webpage is displayed based on width, height, orientation, and even media type (screen, paper, braille, etc.).



Bootstrap uses media queries extensively to help you create mobile-responsive websites.



But remember! Media queries must be declared last.



## Instructor Demonstration Media Queries

# Activity: Explain Media Queries

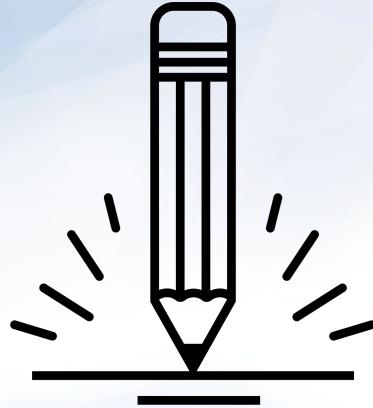
---

Explain to your partner what the following CSS code does:

```
@media screen and (max-width: 768px) {  
    body {  
        background-color: #333;  
    }  
  
    .wrapper {  
        width: 600px;  
    }  
}
```

Suggested Time: 2 Minutes





## **Activity:**

### Build Media Query

(Follow the steps sent to you via Slack)

**Suggested Time:**  
**15 minutes**



# Viewport

---



**Viewport** refers to the display being used to view the website.



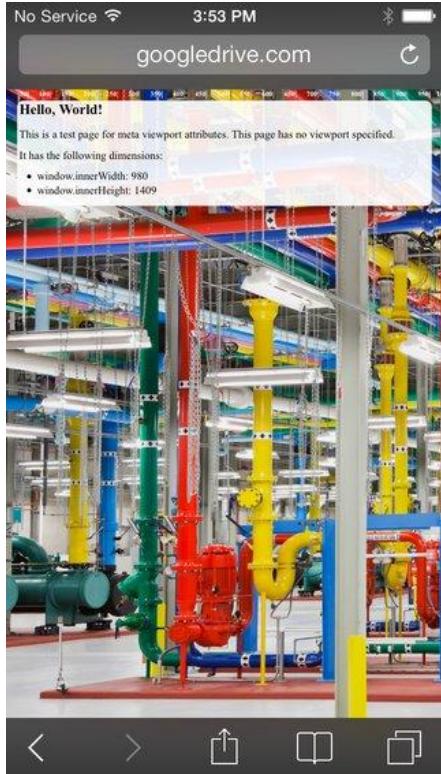
By default, mobile devices with small-screen, high-resolution viewports can render content at a typical desktop screen ratio (scaled down at the smaller screen size).



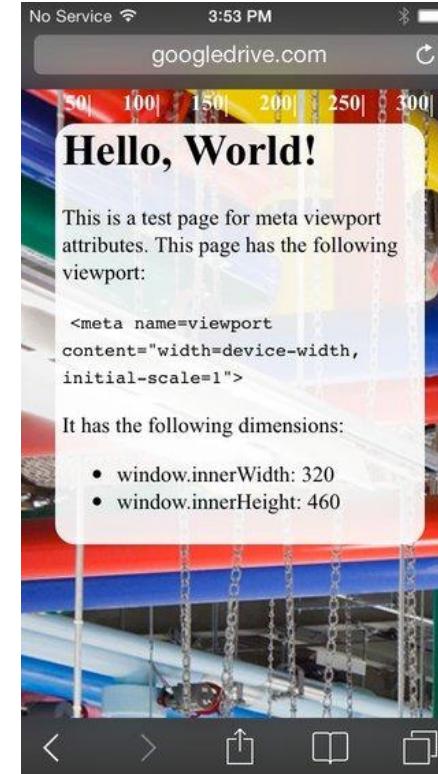
Use a `meta` tag to specify that a webpage should scale its content to the width of its current viewport.

# Viewport

## Without Viewport content scaling



## With Viewport content scaling



# Viewport Inclusion

---

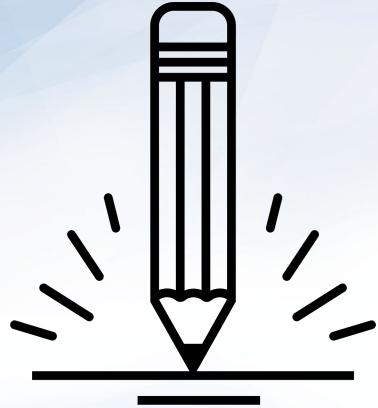
Just include this line in the head

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

And then include a variety of @media queries for various sized screens.

```
@media screen and (max-width: 768px) {
```

```
@media screen and (max-width: 480px) {
```



## Activity: Viewport

Spend the next few moments on the site  
[viewportemulator.com](http://viewportemulator.com) and visit your favorite websites using various viewports.

Notice how the sites' displays change.

Suggested Time:  
5 minutes



**YOU  
ARE  
AWESOME!**

# Questions?