

SE 104 Web UI Design and Development

Introduction to Bootstrap

Responsive Web Design

- An approach to web design that provides an optimal viewing experience across a wide range of devices.



2

Responsive Web Design



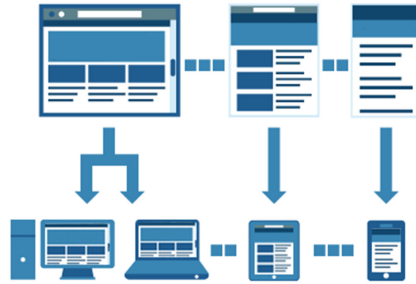
3

Elements of a Responsive Web Design

- Fluid Grid
- Resizable Images
- Media Queries

4

Grid-based Design



http://boatboat001.com/upload/img/responsive_design.png (Accessed Dec 2017)

5

Grid-based Design



<https://blacksaildivision.com/wp-content/uploads/2013/11/responsive.png> (Accessed Dec 2017)

6

Grid and Resizing



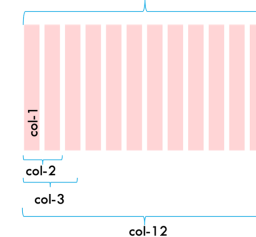
<https://www.igentic.com/responsive-web-design> (Accessed Dec 2017)

7

Implementation

• Fluid Grid

.row of 100% page width

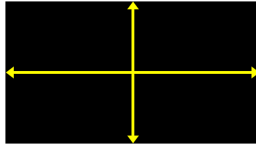


```
<style>
  .row { width:100%;}
  .col-1 { width:8.33%;}
  .col-2 { width:16.66%;}
  .col-3 { width:25%;}
  .col-4 { width:33.33%;}
</style>
```

8

Implementation

- Resizable Image



```
<style>
img {
  max-width:100%;
  height:auto;
}
</style>
```

9

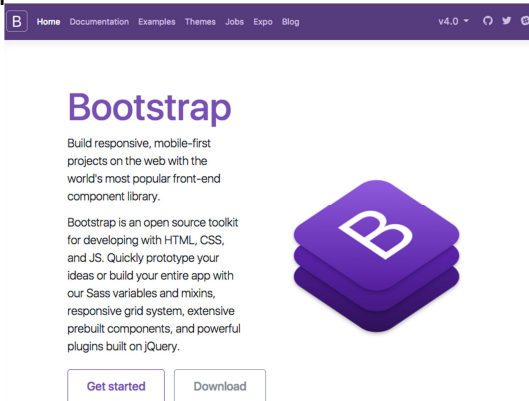
Implementation

- Media Queries

Label	Layout Width
Smartphones	480px and below
Portrait Tables	480px to 768px
Landscape Tablets	768px to 940px
Default	940px and up
Large Screens	1210px and up

10

Bootstrap



<https://getbootstrap.com/> (Accessed Dec 2017)

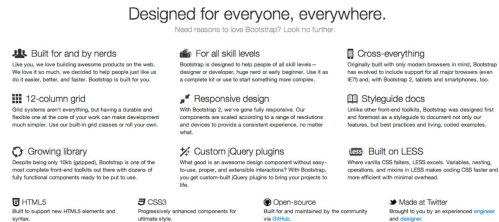
11

Framework Makes Life Much Simpler

- Collections of CSS classes that make page layout easy to implement and configure.
- Main elements for responsive web design, e.g., fluid grid system are included
- Offer more than just a grid (pre-defined styles for typography, tables, buttons, navigation, forms elements, etc.)
- Rich documentations
- Regularly maintained

12

Bootstrap — Features



13

Bootstrap — Support Various Browsers



14

Bootstrap — Glyph Icon Set Provided



15

Bootstrap — Natively Supporting Grid



<https://www.igentic.com/responsive-web-design> (Accessed Dec 2017)

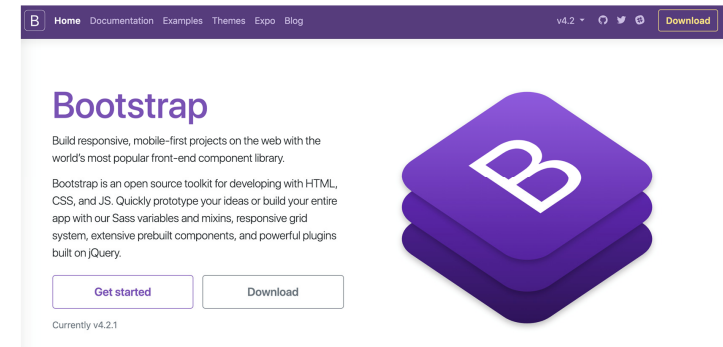
16

Bootstrap — Customizations

Scaffolding	Components	Miscellaneous
<input checked="" type="checkbox"/> Normalize and reset	<input checked="" type="checkbox"/> Button groups and dropdowns	<input checked="" type="checkbox"/> Media object
<input checked="" type="checkbox"/> Body type and links	<input checked="" type="checkbox"/> Navs, tabs, and pills	<input checked="" type="checkbox"/> Wells
<input checked="" type="checkbox"/> Grid system	<input checked="" type="checkbox"/> Navbar	<input checked="" type="checkbox"/> Close icon
<input checked="" type="checkbox"/> Layouts	<input checked="" type="checkbox"/> Breadcrumbs	<input checked="" type="checkbox"/> Utilities
Base CSS	<input checked="" type="checkbox"/> Pagination	<input checked="" type="checkbox"/> Component animations
<input checked="" type="checkbox"/> Headings, body, etc.	<input checked="" type="checkbox"/> Pager	Responsive
<input checked="" type="checkbox"/> Code and pre	<input checked="" type="checkbox"/> Thumbnails	<input checked="" type="checkbox"/> Visible/hidden classes
<input checked="" type="checkbox"/> Labels and badges	<input checked="" type="checkbox"/> Alerts	<input checked="" type="checkbox"/> Narrow tablets and below (<767px)
<input checked="" type="checkbox"/> Tables	<input checked="" type="checkbox"/> Progress bars	<input checked="" type="checkbox"/> Tablets to desktops (767-979px)
<input checked="" type="checkbox"/> Forms	<input checked="" type="checkbox"/> Hero unit	<input checked="" type="checkbox"/> Large desktops (>1200px)
<input checked="" type="checkbox"/> Buttons	<input checked="" type="checkbox"/> Media component	<input checked="" type="checkbox"/> Responsive navbar

17

Let's Begin



18

How to

- Download Bootstrap
- Extract the bootstrap's CSS and JS files into our project folder
- Associate bootstrap css file with a html document using <link> tag

19

Or associate the links to cached CDN

```
<!doctype html>
<html lang="en">
  <head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css" integrity="sha384-Vkoo8x4CGs03+Hhxv8T/Q5PaX6" />

    <title>Hello, world!</title>
  </head>
  <body>
    <h1>Hello, world!</h1>

    <!-- Optional JavaScript -->
    <!-- jQuery first, then Popper.js, then Bootstrap JS -->
    <script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-J6qa4849b1E2+poT4n4Kv5v2ZF5S+Po08Ejw@vKU71mGFAV0wjl1yYf0RSJoZ+n" />
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js" integrity="sha384-Q6E9RHvbIyZFJoft+2mJbHaEml1v101OYyS3zV9zTtr" />
    <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js" integrity="sha384-wfSDF250Y201uUdJ003uMBJnJUD4Ih7YwaYd11qFk" />
  </body>
</html>
```

20

Why Using the Online Version is OK

- Given the level of popularity of Bootstrap, it is very likely that common files are already cached in the user's computer.

21

Containers

- Bootstrap 4 requires a container element to wrap the contents, e.g., `<div class="container">`
 - `.container` class provides a responsive fixed width container
 - `.container-fluid` class provides a full width container, spanning the entire width of the viewport
- [Check](#)



22

Grid

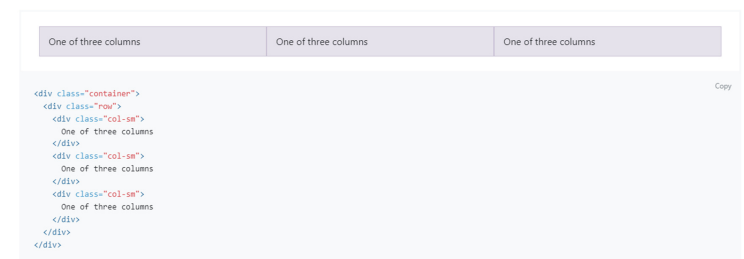
- Bootstrap 4 grid system is built with flexbox of the maximum of 12 columns.
- They will be automatically rearranged with the screen size.

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4				
span 4				span 8								
span 6						span 6						
span 12												

23

Grid

- Series
 - Containers
 - Rows
 - columns



Col size for different devices

	Extra small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	Extra large ≥1200px
Max container width	None (auto)	540px	720px	960px	1140px
Class prefix	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-
# of columns	12				
Gutter width	30px (15px on each side of a column)				
Nestable	Yes				
Column ordering	Yes				

- Will discuss about this later

Auto layout columns

- With class col
 - The columns will try to use the whole row size
- Now row size is regarding to its parent
- col try to utilize the whole width of the screen



```
<div class="container">  
  <div class="row">  
    <div class="col">  
      1 of 2  
    </div>  
    <div class="col">  
      2 of 2  
    </div>  
  </div>  
  <div class="row">  
    <div class="col">  
      1 of 3  
    </div>  
    <div class="col">  
      2 of 3  
    </div>  
    <div class="col">  
      3 of 3  
    </div>  
  </div>  
</div>
```

Row Breaking

- With class w-100



```
<div class="container">  
  <div class="row">  
    <div class="col">col</div>  
    <div class="col">col</div>  
    <div class="w-100"></div>  
    <div class="col">col</div>  
    <div class="col">col</div>  
  </div>  
</div>
```

Setting the column width

- Specified only the number of col width
 - Not exact size
- The other row are autojustified



```
<div class="container">  
  <div class="row">  
    <div class="col">  
      1 of 3  
    </div>  
    <div class="col-6">  
      2 of 3 (wider)  
    </div>  
    <div class="col">  
      3 of 3  
    </div>  
  </div>  
  <div class="row">  
    <div class="col">  
      1 of 3  
    </div>  
    <div class="col-5">  
      2 of 3 (wider)  
    </div>  
    <div class="col">  
      3 of 3  
    </div>  
  </div>  
</div>
```

Or setting the size of all col in the row

col	col	col	col
col-8			col-4

```
<div class="container">
  <div class="row">
    <div class="col">col</div>
    <div class="col">col</div>
    <div class="col">col</div>
    <div class="col">col</div>
  </div>
  <div class="row">
    <div class="col-8">col-8</div>
    <div class="col-4">col-4</div>
  </div>
</div>
```

What will happen if there are more than 12 columns in the rows?

```
<div class="container" style="background-color: aqua;">
  <div class="row">
    <div class="col-3">
      1
    </div>
    <div class="col-5">
      2
    </div>
    <div class="col-2">
      3
    </div>
    <div class="col-6">
      4
    </div>
  </div>
</div>
```

Column Alignments

- What if the col is not fulfil 12 columns?

```
<div class="row">
  <div class="col-2">
    4
  </div>
  <div class="col-4">
    5
  </div>
</div>
```

Setting the alignments

- Use class

One of two columns	One of two columns
One of two columns	One of two columns
One of two columns	One of two columns

```
<div class="container">
  <div class="row justify-content-start">
    <div class="col-4">
      One of two columns
    </div>
    <div class="col-4">
      One of two columns
    </div>
  </div>
  <div class="row justify-content-center">
    <div class="col-4">
      One of two columns
    </div>
    <div class="col-4">
      One of two columns
    </div>
  </div>
  <div class="row justify-content-end">
    <div class="col-4">
      One of two columns
    </div>
    <div class="col-4">
      One of two columns
    </div>
  </div>
</div>
```


Column Alignments

```
<div class="row justify-content-around">
  <div class="col-4">
    One of two columns
  </div>
  <div class="col-4">
    One of two columns
  </div>
</div>
<div class="row justify-content-between">
  <div class="col-4">
    One of two columns
  </div>
  <div class="col-4">
    One of two columns
  </div>
</div>
```



Offsetting Columns

- Place the col from some location

Diagram illustrating column offsets. It shows two rows of columns with offsets. The first row has a .col-md-4 column and a .col-md-4.offset-md-4 column. The second row has a .col-md-3.offset-md-3 column and a .col-md-3.offset-md-3 column. The third row has a .col-md-6.offset-md-3 column.

```
<div class="container">
  <div class="row">
    <div class="col-md-4"> .col-md-4 </div>
    <div class="col-md-4 offset-md-4"> .col-md-4 .offset-md-4 </div>
  </div>
  <div class="row">
    <div class="col-md-3 offset-md-3"> .col-md-3 .offset-md-3 </div>
    <div class="col-md-3 offset-md-3"> .col-md-3 .offset-md-3 </div>
  </div>
  <div class="row">
    <div class="col-md-6 offset-md-3"> .col-md-6 .offset-md-3 </div>
  </div>
</div>
```

More details

- <https://getbootstrap.com/docs/4.4/layout/overview/>

QA

