Responsive Web Design

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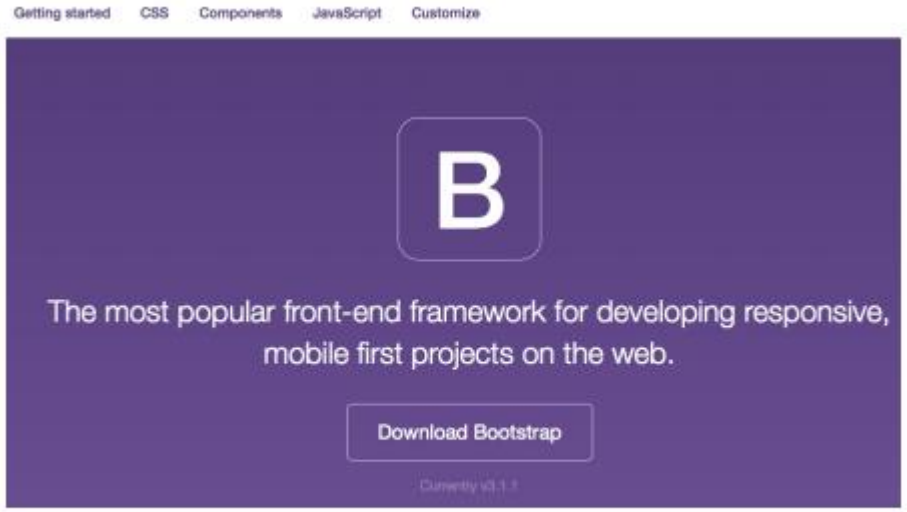
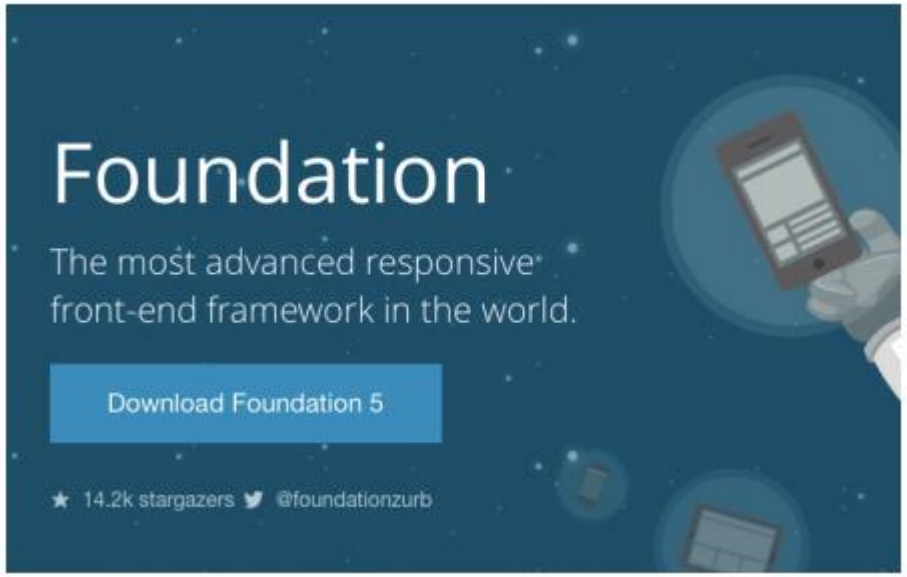


- Responsive Web Design
- Media Queries
- Viewport Scaling
- Responsive HTML Frameworks
- Bootstrap



Responsive Web Design

"Responsive web design is about crafting web sites to provide an optimal viewing experience across a wide range of devices, from small mobile phone screens to large PC monitors."

[Wikipedia]

- Note: responsiveness usually refers to how fast an application responds to user input, but not in the context of responsive web design!

Media Queries

- One approach to handling different devices is to use different CSS files for different device categories.
- CSS2 supports a media attribute when linking to a stylesheet, allowing different stylesheets to be used for different media.
- Some example media values are:
  - all
  - handheld
  - screen
  - print
- CSS3 introduces the concept of media queries which allows for finer grained distinction of device characteristics.
- A CSS3 media query:

media="screen and (max-device-width: 480px)"

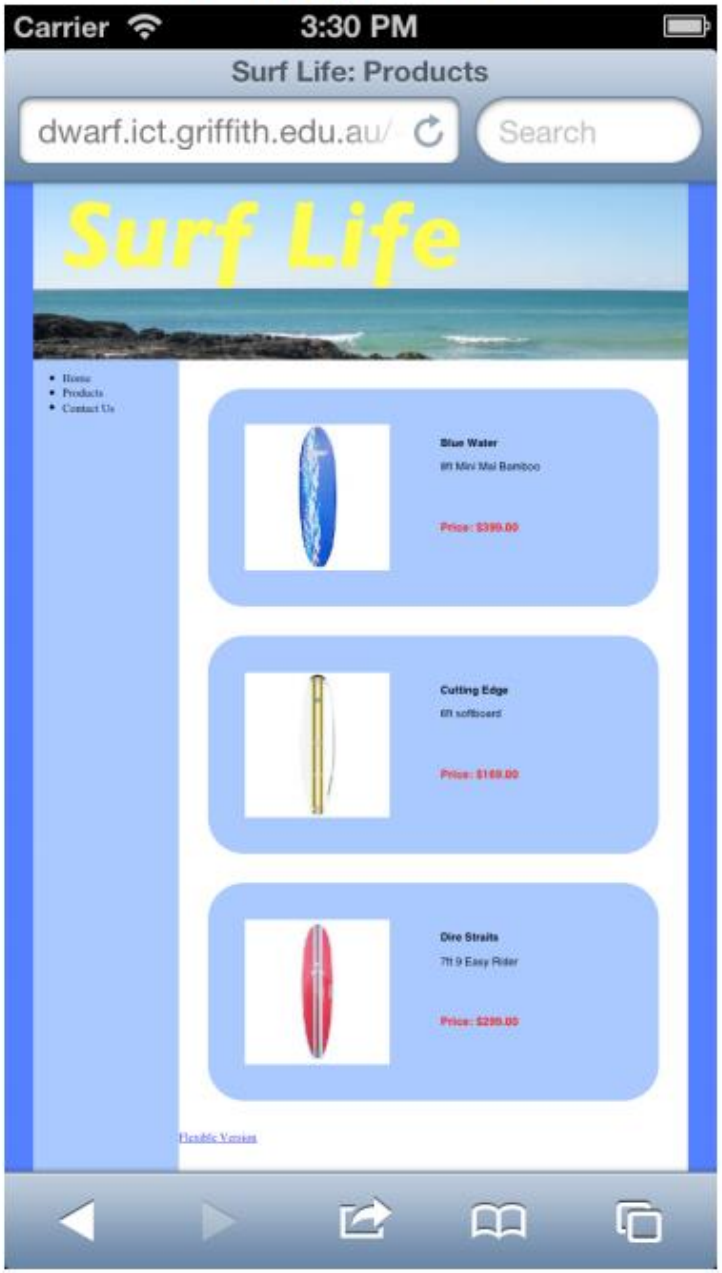
- Some CSS2 examples:

```
<link rel="stylesheet" type="text/css" media="all" href="styles/basic.css">
<link rel="stylesheet" type="text/css" media="handheld" href="styles/
handheld.css">
<link rel="stylesheet" type="text/css" media="screen" href="styles/
screen.css">
<link rel="stylesheet" type="text/css" media="print" href="styles/
print.css">
```

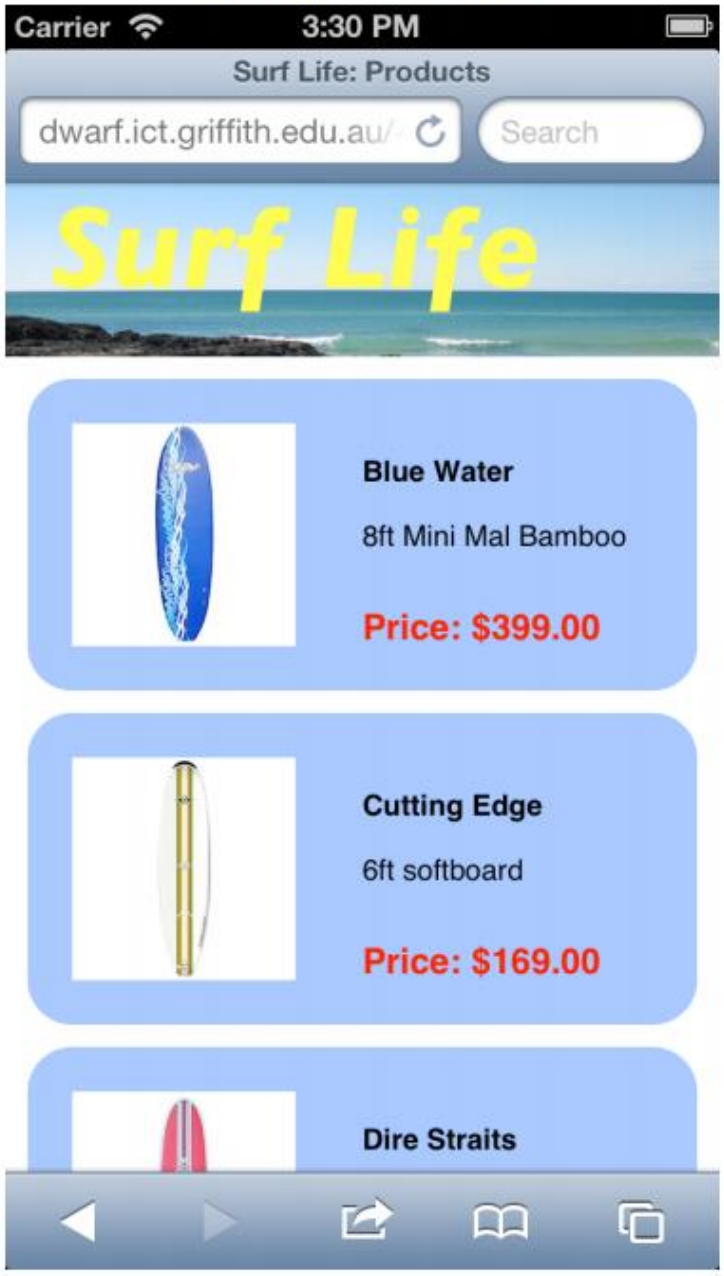
- Some CSS3 examples:

```
<link rel="stylesheet" type="text/css" media="screen and (max-device-width:
480px)"  href="shetland.css" />
<link rel="stylesheet" type="text/css" media="screen and (max-device-width:
480px) and (resolution: 163dpi)" href="orkney.css" />
```

Desktop version:



Mobile Version:



Responsive HTML Frameworks

- Frameworks provide common structures so that developers do not have to reinvent the structure from scratch and can reuse the code provided.
- There are existing client-side framework for building responsive web client:
  - Bootstrap (http://getbootstrap.com/)
  - Foundations (http://foundation.zurb.com/)
  - Skeleton (http://www.getskeleton.com/)

- These frameworks can be used to speed up the process of building responsive web clients

Bootstrap

- Bootstrap is a client side framework.
- Bootstrap was developed by Twitter.
- Like jQuery UI, Bootstrap also provides UI widgets, e.g. button groups, breadcrumbs, alerts, progress bars, tooltip, pop over, etc.
- On top of that, it also provide:
  - CSS for various html elements, e.g. headings, body, code, tables, forms, buttons images etc.
  - a grid based systems for doing responsive page layout.
  - See http://getbootstrap.com/gettingstarted/ for more info.

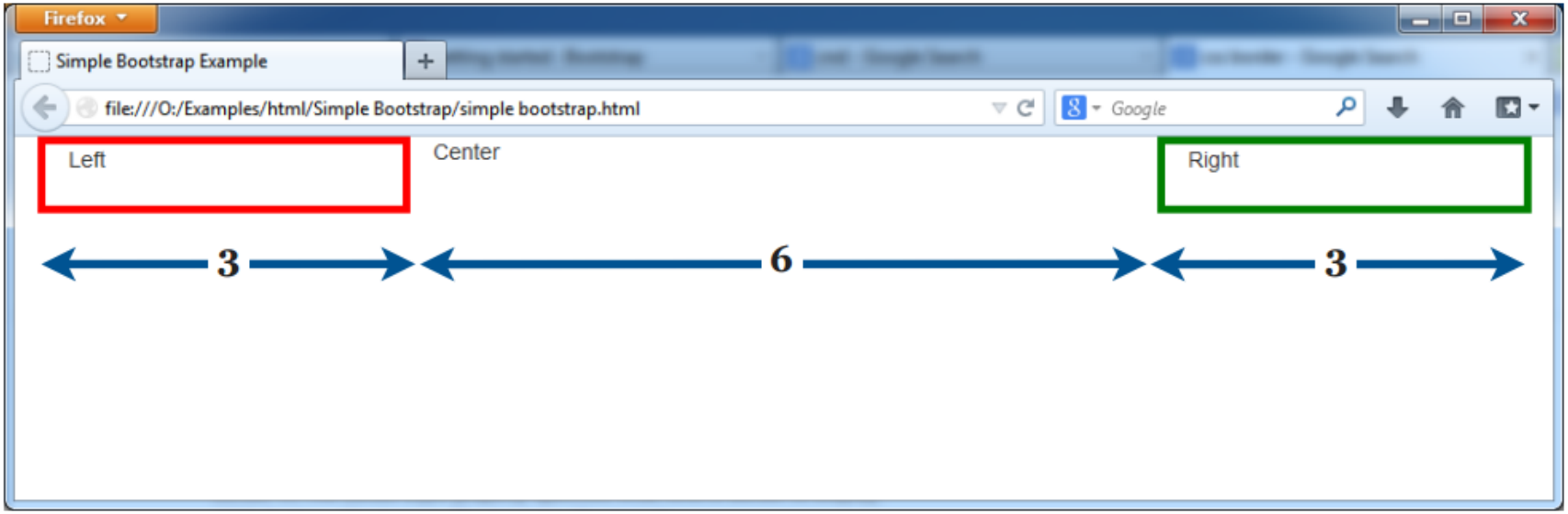
Bootstrap Grid Layout

- Bootstrap provides a **12 columns** grid systems for layout.
- In creating a multi-column layout, one specifies how many bootstrap columns are used for one column in the web page.
- Columns need to be contained within a which in turn needs to be within a ** ** which in turn needs to be within a ** **
- The total number of bootstrap columns specified within a row need to add up to 12.
- To specify a column use a bootstrap grid class (e.g. col-md-*) inside a div with class row.

A simple Bootstrap example with 3 columns:

```
<div class="container">
   <div class = "row">
      <div class="col-md-3" id="left">
         Left <br><br>
      </div>
      <div class="col-md-6">
         Center <br><br>
      </div>
      <div class="col-md-3" id="right">
```

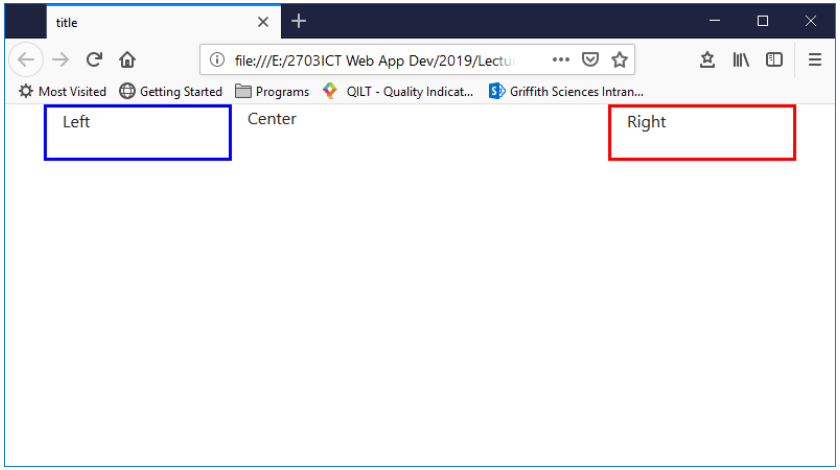
```
        Right <br><br>
      </div>
    </div>
</div><!-- /.container -->
```



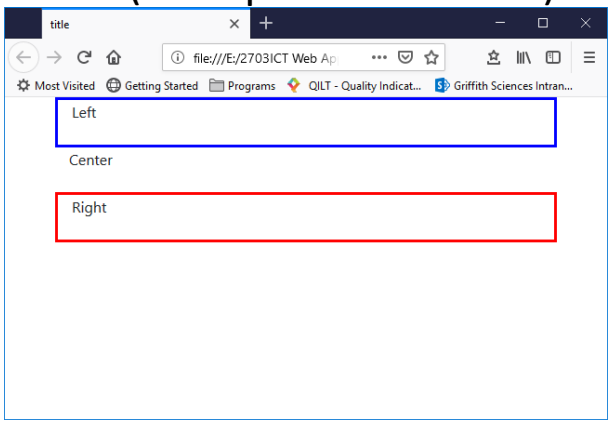
Bootstrap Grid Classes

- To provide responsiveness for different screen sizes, bootstrap defines 5 grid classes:
  - **col-*** for screen width < 576px
  - **col-sm-*** for screen width >= 576px
  - **col-md-*** for screen width >= 768px
  - **col-lg-*** for screen width >= 992px
  - **col-xl-*** for screen width >= 1200px
- Bootstrap will display the specified columns, unless the screen size is less than grid class width, in which case Bootstrap will display them in a single column.

- E.g. in the previous example **md** was used, so at screen size >= 768px, there will be 3 columns.



- But if the screen size is smaller than 720px, the 3 columns will collapse into one (on top of each other).

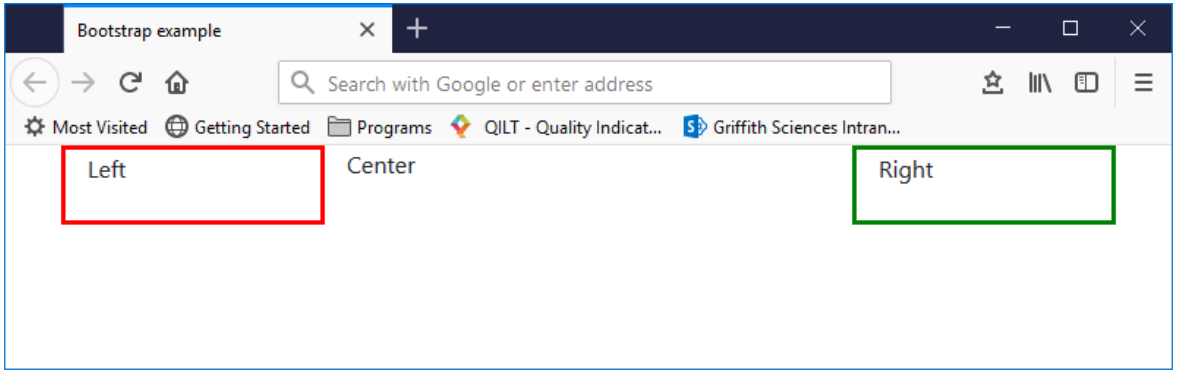


Using Multiple Grid Classes

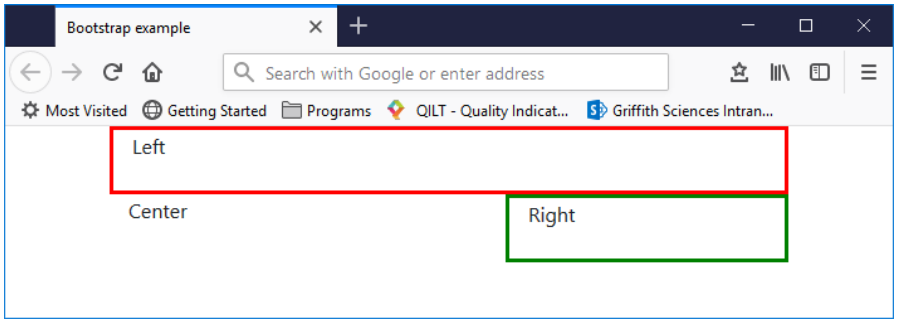
- Multiple grid classes can be used for defining layout for various screen sizes.
- Example below use *both* **md** and **sm**.
  - If screen size > 768px, **md** applies, and three column is displayed.
  - If screen size < 768px, **sm** takes over, and two column is displayed, with the left column moved to the top.
  - If screen size < 567px, only one column is displayed

```
<div class="container">
   <div class = "row">
      <div class="col-md-3" id="left">
         Left <br><br>
      </div>
      <div class="col-md-6 col-sm-7">
         Center <br><br>
      </div>
      <div class="col-md-3 col-sm-5" id="right">
         Right <br><br>
      </div>
   </div>
</div><!-- /.container -->
```

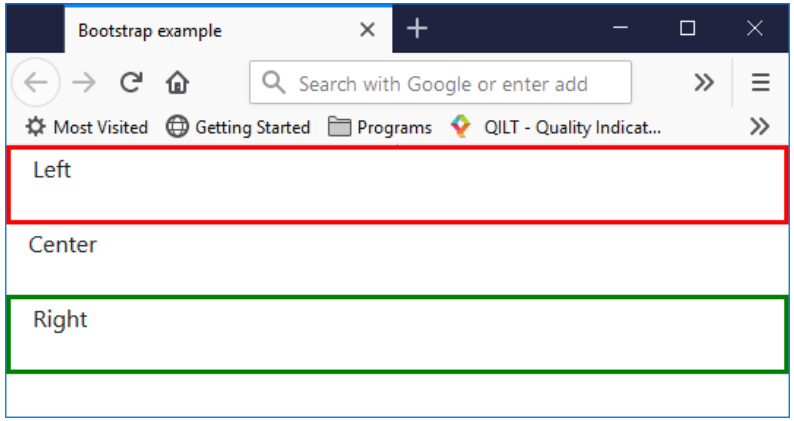
> 768px



< 768px



< 567px



Using Bootstrap

- To use Bootstrap, include the following the html document:
  - jQuery JavaScript. Bootstrap relies on jQuery.
  - Bootstrap CSS.
  - Bootstrap JavaScript.
- You can either download jQuery and Bootstrap (CSS and JS) and include the local version or you can link them to a copy in the Content Delivery Network (CDN).
- See lecture video for demonstration.

Exercise

- Create a responsive web page for a social networking website using Bootstrap.
- There should be a navigation menu at the top. The navigation menu should contain links for login/logout, home, friends, and photos.
- For the main content should be in a two columns layout. One column is for displaying posts, the other column should contain a form for user to make a new post.