Bootstrap

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What is Bootstrap?

- A CSS framework is a pre-created set of CSS classes and other software tools that make it easier to use and work with CSS.

- Bootstrap is a powerful front-end framework for faster and easier web development.
    - Originally developed by Twitter, now an independent open-source framework.
    - Current version is Bootstrap 4

- It includes HTML, CSS and JavaScript based design templates for common user interface components like Typography, Forms Controls, Tables, Navigations, Dropdowns, Alerts, Tabs, Carousel and many other
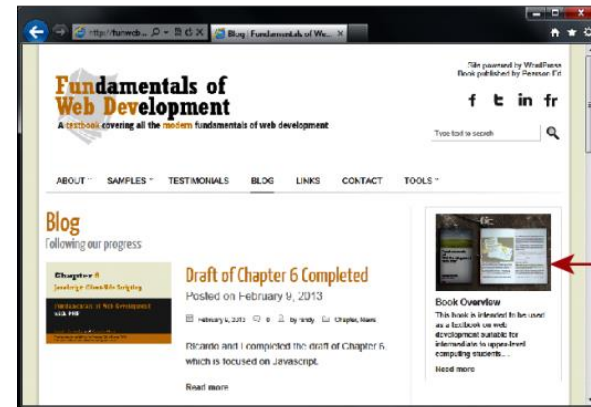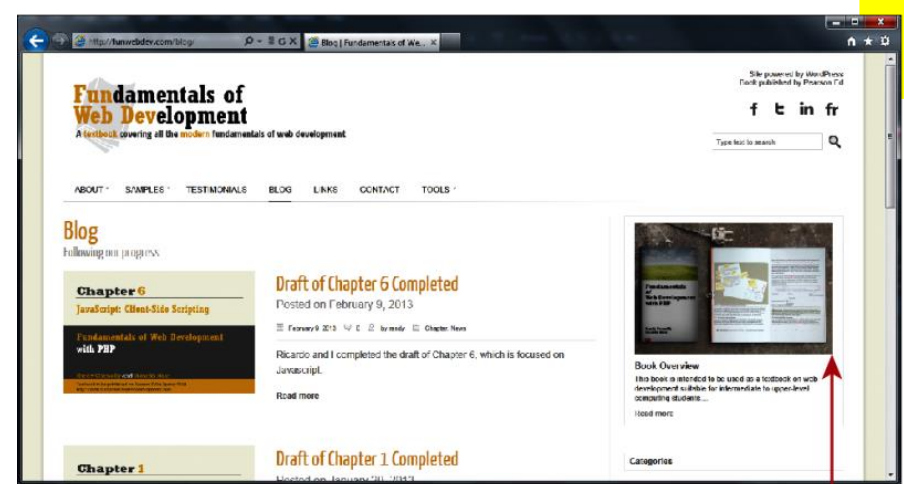
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Advantages of Bootstrap

1. **Save lots of time:** using the Bootstrap predefined design templates and classes and concentrate on other development work.
2. **Responsive features:** web pages to appear more appropriately on different devices and screen resolutions without any change in markup.
3. **Consistent design:** the designs and layouts of your web pages are consistent throughout your development.
4. **Easy to use:** Bootstrap is very easy to use. Anybody with the basic working knowledge of HTML and CSS can start development with Bootstrap.
5. **Compatible with modern browsers**
6. **Open Source:** And the best part is, it is completely free to download and use.

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Responsive Design

- Bootstrap also gives you ability to create **responsive** layout with much less efforts.

- Responsive web design changes the page layout (and some content) for different windows and screen sizes, such as large screens, mobiles, tablets, etc.

Notice how some elements are scaled to shrink as browser window reduces in size.

When browser shrinks below a certain threshold, then layout and navigation elements change as well.

In this case, the <ul> list of hyperlinks changes to a <select> and the two-column design changes to one column.

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What Bootstrap Package Includes?

- **Scaffolding:** Bootstrap provides a basic structure with Grid System, link styles, and background.

- **CSS**: Bootstrap comes with the feature of global CSS settings, fundamental HTML elements styled and enhanced with extensible classes, and an advanced grid system.

- **Components:** Bootstrap contains over a dozen reusable components built to provide iconography, dropdowns, navigation, alerts, pop-overs, and much more.

- **JavaScript Plugins:** Bootstrap contains over a dozen custom jQuery plugins. You can easily include them all, or one by one.

- **Customize:** You can customize Bootstrap's components, LESS variables, and jQuery plugins to get your very own version.

Bootstrap Essentials

1. Add the HTML5 doctype: Bootstrap uses HTML elements and CSS properties that require the HTML5 `doctype` and the needed elements

```html
<!DOCTYPE html>
<html>
<head lang="en">
    <meta charset="utf-8">
```

2. Bootstrap is mobile-first: Bootstrap is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework.

```html
<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
```

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Including Bootstrap

- There are different ways to include Bootstrap framework files into your pages:
  - Download and host the Bootstrap files.
  - Include Bootstrap from a CDN (Content Delivery Network) host. This is faster and easier option for our course.
- To apply the second way, include in the following code in your header:

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Including Bootstrap

v4.1.3

Complete CSS

https://stackpath.bootstrapcdn.com/bootstrap/4.1.3/css/bootstrap.min.css

Click to copy

Complete JavaScript

https://stackpath.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.min.js

Click to copy

Complete JavaScript Bundle

https://stackpath.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.bundle.min.js

Click to copy

Overview (1)

Components and options for laying out your Bootstrap project, including wrapping containers, a powerful grid system, a flexible media object, and responsive utility classes.

- There are two container classes to choose from:
  - The .container class provides a responsive **fixed width container**
  - The .container-fluid class provides a **full width container**, spanning the entire width of the viewport (meaning it's 100% wide all the time)

Overview (2)

.container

.container-fluid

Responsive breakpoints

- Since Bootstrap is developed to be mobile first, we use a handful of media queries to create sensible breakpoints for our layouts and interfaces. These breakpoints are mostly based on minimum viewport widths and allow us to scale up elements as the viewport changes.

- Bootstrap primarily uses the following media query ranges—or breakpoints—in our source Sass files for our layout, grid system, and components.

Grid system

- Bootstrap's grid system is built with flexbox and allows up to 12 columns across the page.

- If you do not want to use all 12 columns individually, you can

One of three columns	One of three columns	One of three columns

```
<div class="container">
  <div class="row">
    <div class="col-sm">
      One of three columns
    </div>
    <div class="col-sm">
      One of three columns
    </div>
    <div class="col-sm">
      One of three columns
    </div>
  </div>
</div>
```

Copy

Grid options

	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				

Auto-layout columns (1)

- Equal-width

  For example, here are two grid layouts that apply to every device and viewport, from xs to xl. Add any number of unit-less classes for each breakpoint you need and every column will be the same width.

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Auto-layout columns (2)

```html
<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>
```

1 of 2	2 of 2

1 of 3	2 of 3	3 of 3

http://jsfiddle.net/aq9Laaew/156613/

Variable width content

- Use **col-{breakpoint}-auto** classes to size columns based on the natural width of their content.

{breakpoint} : sm, md, lg, xl

http://jsfiddle.net/aq9Laaew/156652/

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Responsive classes

- Bootstrap's grid includes five tiers of predefined classes for building complex responsive layouts.

- Customize the size of your columns on extra small, small, medium, large, or extra large devices

```html
<div class = "container">

    <div class = "row">
        <div class = "col-*-*"></div>
        <div class = "col-*-*"></div>
    </div>

    <div class = "row">...</div>

</div>

<div class = "container">
    ....
</div>
```

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```
<!-- Stack the columns on mobile by making one full-width and the other half-width -->
<div class="row">
  <div class="col-12 col-md-8">.col-12 .col-md-8</div>
  <div class="col-6 col-md-4">.col-6 .col-md-4</div>
</div>

<!-- Columns start at 50% wide on mobile and bump up to 33.3% 
<div class="row">
  <div class="col-6 col-md-4">.col-6 .col-md-4</div>
  <div class="col-6 col-md-4">.col-6 .col-md-4</div>
  <div class="col-6 col-md-4">.col-6 .col-md-4</div>
</div>

<!-- Columns are always 50% wide, on mobile and desktop -->
<div class="row">
  <div class="col-6">.col-6</div>
  <div class="col-6">.col-6</div>
</div>
```

xs, sm, lg, xl

.col-12 .col-md-8	
.col-6 .col-md-4	
.col-6 .col-md-4	.col-6 .col-md-4
.col-6 .col-md-4	
.col-6	.col-6

.col-12 .col-md-8	.col-6 .col-md-4
.col-6 .col-md-4	.col-6 .col-md-4	.col-6 .col-md-4

| .col-6 | .col-6 md |

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Alignment (1)

- Vertical alignment for row
  - class="row align-items-start"
  - class="row align-items-center"
  - class="row align-items-end"

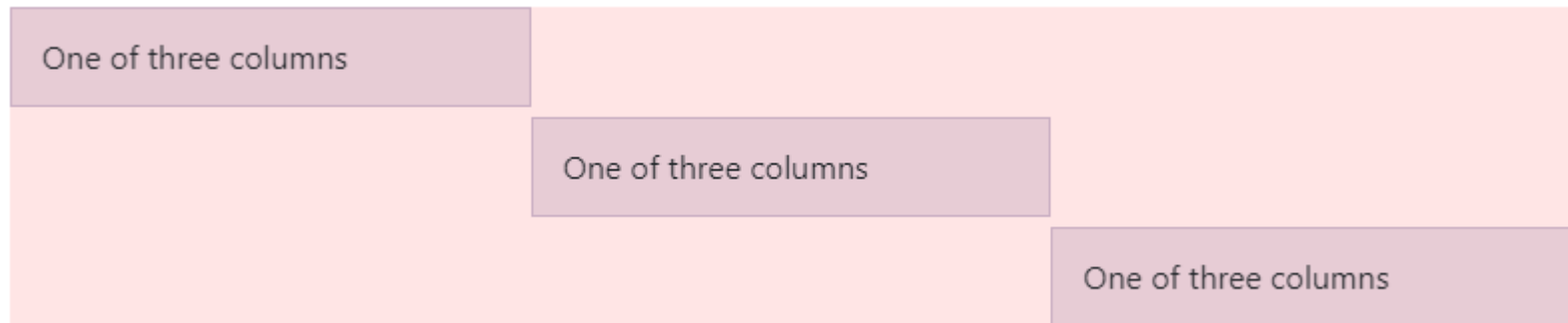| One of three columns	One of three columns	One of three columns

One of three columns	One of three columns	One of three columns

One of three columns	One of three columns	One of three columns

http://jsfiddle.net/aq9Laaew/156711/

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Alignment (2)

- Vertical alignment for column
  - class="col align-self-start"
  - class="col align-self-center"
  - class="col align-self-end"

http://jsfiddle.net/aq9Laaew/160297/

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Alignment (3)

- Horizontal alignment
  - class="row justify-content-start"
  - class="row justify-content-center"
  - class="row justify-content-end"
  - class="row justify-content-around"
  - class="row justify-content-between"

  http://jsfiddle.net/aq9Laaew/160300/

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Column breaks

Breaking columns to a new line in flexbox requires a small hack: add an element with width: 100% wherever you want to wrap your columns to a new line. Normally this is accomplished with multiple .rows, but not every implementation method can account for this.

```
<div class="row">
  <div class="col-6 col-sm-3">.col-6 .col-sm-3</div>
  <div class="col-6 col-sm-3">.col-6 .col-sm-3</div>

  <!-- Force next columns to break to new line -->
  <div class="w-100"></div>

  <div class="col-6 col-sm-3">.col-6 .col-sm-3</div>
  <div class="col-6 col-sm-3">.col-6 .col-sm-3</div>
</div>
```

.col-6 .col-sm-3	.col-6 .col-sm-3
.col-6 .col-sm-3	.col-6 .col-sm-3

Offset classes

- Move columns to the right using **.offset-md-*** classes. These classes increase the left margin of a column by * columns.

For example, .offset-md-4 moves .col-md-4 over four columns.

| .col-md-4 | | .col-md-4 .offset-md-4 |

.col-md-3 .offset-md-3

.col-md-3 .offset-md-3

.col-md-6 .offset-md-3

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Offset classes

```
<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>
```

TYPOGRAPHY, IMAGE, TABLE, FIGURES

Typography (1)

- **.h1** through **.h6** classes are also available, for when you want to match the font styling of a heading but cannot use the associated HTML element.

```
<p class="h1">h1. Bootstrap heading</p>
<p class="h2">h2. Bootstrap heading</p>
<p class="h3">h3. Bootstrap heading</p>
<p class="h4">h4. Bootstrap heading</p>
<p class="h5">h5. Bootstrap heading</p>
<p class="h6">h6. Bootstrap heading</p>
```

- Customizing headings


```
<h3>
  Fancy display heading
  <small class="text-muted">With faded secondary text</small>
</h3>
```

- Traditional heading elements are designed to work best in the meat of your page content. When you need a heading to stand out, consider using a **display heading**—a larger, slightly more opinionated heading style.

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- Blockquotes

  For quoting blocks of content from another source within your document. Wrap <blockquote class="blockquote"> around any HTML as the quote.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer posuere erat a ante.

— Someone famous in *Source Title*

Copy

```
<blockquote class="blockquote text-center">
  <p class="mb-0">Lorem ipsum dolor sit amet, consectetur ad:
  <footer class="blockquote-footer">Someone famous in <cite 1
</blockquote>
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer posuere erat a ante.

— Someone famous in *Source Title*

Copy

```
<blockquote class="blockquote text-right">
  <p class="mb-0">Lorem ipsum dolor sit amet, consectetur ad:
  <footer class="blockquote-footer">Someone famous in <cite 1
</blockquote>
```

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Images

- Responsive images

Images in Bootstrap are made responsive with **.img-fluid**. max-width: 100%; and height: auto; are applied to the image so that it scales with the parent element.

```
<img src="..." alt="..." class="img-thumbnail">
```

Rounded Corners:

Circle:

Thumbnail:

.rounded

.rounded-circle

.img-thumbnail

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Picture

- If you are using the **\<picture>** element to specify multiple **\<source>** elements for a specific **\<img>**, make sure to add the **.img-*** classes to the **\<img>** and not to the **\<picture>** tag.

```
<picture>
  <source srcset="..." type="image/svg+xml">
  <img src="..." class="img-fluid img-thumbnail" alt="...">
</picture>
```

```
srcset= "curiosity-large.jpg  1120w,
         curiosity-medium.jpg 720w,
         curiosity-small.jpg  400w"
```

Figures (1)

- Use the included **.figure** , **.figure-img** and **.figure-caption** classes to provide some baseline styles for the HTML5 **<figure>** and **<figcaption>** elements. Images in figures have no explicit size, so be sure to add the **.img-fluid** class to your **<img>** to make it responsive.

A caption for the above image.

Figures (2)

```
Image Path
```

```
<figure class="figure">
    <img src="…" class="figure-img img-fluid rounded"
        alt="A generic square placeholder image with rounded corners in
        a figure.">
    <figcaption class="figure-caption">A caption for the above
        image.</figcaption>
</figure>
```

class="figure-caption text-right"

A caption for the above image.

http://jsfiddle.net/aq9Laaew/179114/

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Bootstrap (cont.)

COMPONENTS

Components

- Alert
- Dismissing
- Button
- Card
- Carousel
- Collapse
- Navigation

```
<div class="alert alert-primary" role="alert">
 A simple primary alert—check it out! </div>
 <div class="alert alert-secondary" role="alert">
A simple secondary alert—check it out! </div>
<div class="alert alert-success" role="alert">
A simple success alert—check it out! </div>
<div class="alert alert-danger" role="alert">
 A simple danger alert—check it out! </div>
<div class="alert alert-warning" role="alert">
A simple warning alert—check it out! </div>
<div class="alert alert-info" role="alert">
 A simple info alert—check it out! </div>
<div class="alert alert-light" role="alert">
A simple light alert—check it out! </div>
<div class="alert alert-dark" role="alert">
A simple dark alert with <a href="#"
class="alert-link">an example link</a>
</div>
```

A simple primary alert—check it out!

A simple secondary alert—check it out!

A simple success alert—check it out!

A simple danger alert—check it out!

A simple warning alert—check it out!

A simple info alert—check it out!

A simple light alert—check it out!

A simple dark alert with **an example link**

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Dismissing (1)

- Add a dismiss button and the **.alert-dismissible** class, which adds extra padding to the right of the alert and positions the **.close** button.

- On the dismiss button, add the **data-dismiss="alert"** attribute, which triggers the JavaScript functionality. Be sure to use the **<button>** element with it for proper behavior across all devices.

- To animate alerts when dismissing them, be sure to add the **.fade** and **.show** classes.

- Note that closing an alert will remove it from the DOM.

```
<div class="alert alert-warning alert-dismissible fade show" role="alert">
    Click on the "x" symbol to the right to close me.
    <button type="button" class="close" data-dismiss="alert" aria-
    label="Close">
        <span aria-hidden="true">&times;</span>
    </button>
</div>
```

Click on the "x" symbol to the right to close me.   ×

Tip: × (×) is an HTML entity that is the preferred icon for close buttons, rather than the letter "x".

http://jsfiddle.net/aq9Laaew/179342/

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Buttons

```html
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-secondary">Secondary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-info">Info</button>
<button type="button" class="btn btn-light">Light</button>
<button type="button" class="btn btn-dark">Dark</button>

<button type="button" class="btn btn-link">Link</button>
```


http://jsfiddle.net/aq9Laaew/179546/

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Button tags

- When using button classes on **\<a\>** elements that are used to trigger in-page functionality (like collapsing content), rather than linking to new pages or sections within the current page, these links should be given a **role="button"** to appropriately convey their purpose to assistive technologies such as screen readers.

```html
<a class="btn btn-primary" href="#" role="button">Link</a>
<button class="btn btn-primary" type="submit">Button</button>
<input class="btn btn-primary" type="button" value="Input">
<input class="btn btn-primary" type="submit" value="Submit">
<input class="btn btn-primary" type="reset" value="Reset">
```

[Link] [Button] [Input] [Submit] [Reset]

http://jsfiddle.net/aq9Laaew/179546/

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Outline buttons

- In need of a button, but not the hefty background colors they bring? Replace the default modifier classes with the **.btn-outline-* ones** to remove all background images and colors on any button.

```html
<button type="button" class="btn btn-outline-primary">Primary</button>
<button type="button" class="btn btn-outline-secondary">Secondary</button>
<button type="button" class="btn btn-outline-success">Success</button>
<button type="button" class="btn btn-outline-info">Info</button>
<button type="button" class="btn btn-outline-warning">Warning</button>
<button type="button" class="btn btn-outline-danger">Danger</button>
<button type="button" class="btn btn-outline-dark">Dark</button>
<button type="button" class="btn btn-outline-light text-dark">Light</button>
```
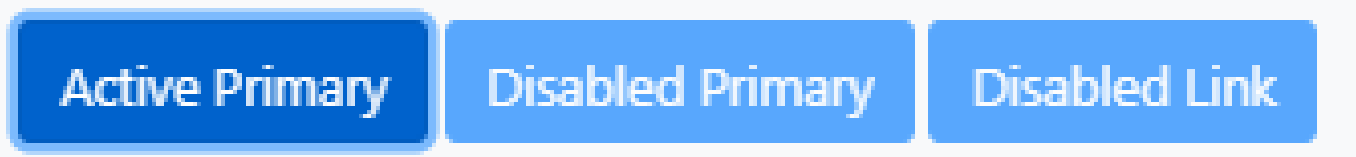
http://jsfiddle.net/aq9Laaew/179546/

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Button Sizes

```html
<button type="button" class="btn btn-primary btn-lg">Large</button>
<button type="button" class="btn btn-primary">Default</button>
<button type="button" class="btn btn-primary btn-sm">Small</button>
```



```html
<button type="button" class="btn btn-primary btn-block">Full-Width Button</button>
```


http://jsfiddle.net/aq9Laaew/179546/

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Active/Disabled Buttons

- The class **.active** makes a button appear pressed, and the **disabled** attribute makes a button unclickable.

- Note that **<a>** elements do not support the disabled attribute and must therefore use the **.disabled** class to make it visually

```
<button type="button" class="btn btn-primary active">Active
Primary</button>
<button type="button" class="btn btn-
primary" disabled>Disabled Primary</button>
<a href="#" class="btn btn-primary disabled">Disabled
Link</a>
```


http://jsfiddle.net/aq9Laaew/179546/

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Button Groups

```html
<div class="btn-group">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <div class="btn-group">
    <button type="button" class="btn btn-primary dropdown-toggle " 
data-toggle="dropdown">
        Sony
    </button>
    <div class="dropdown-menu">
      <a class="dropdown-item" href="#">Tablet</a>
      <a class="dropdown-item" href="#">Smartphone</a>
    </div>
  </div>
</div>
```
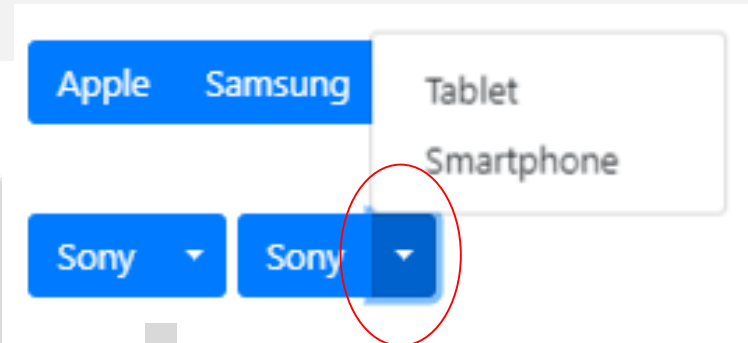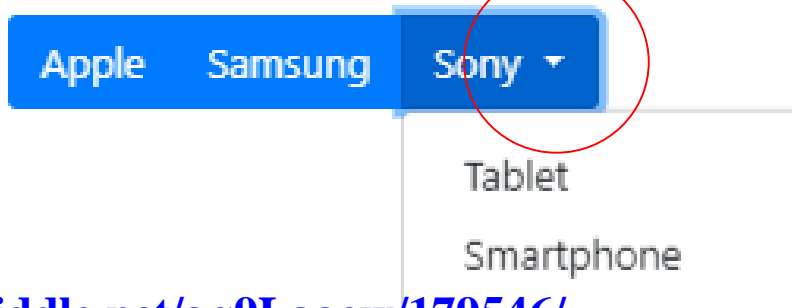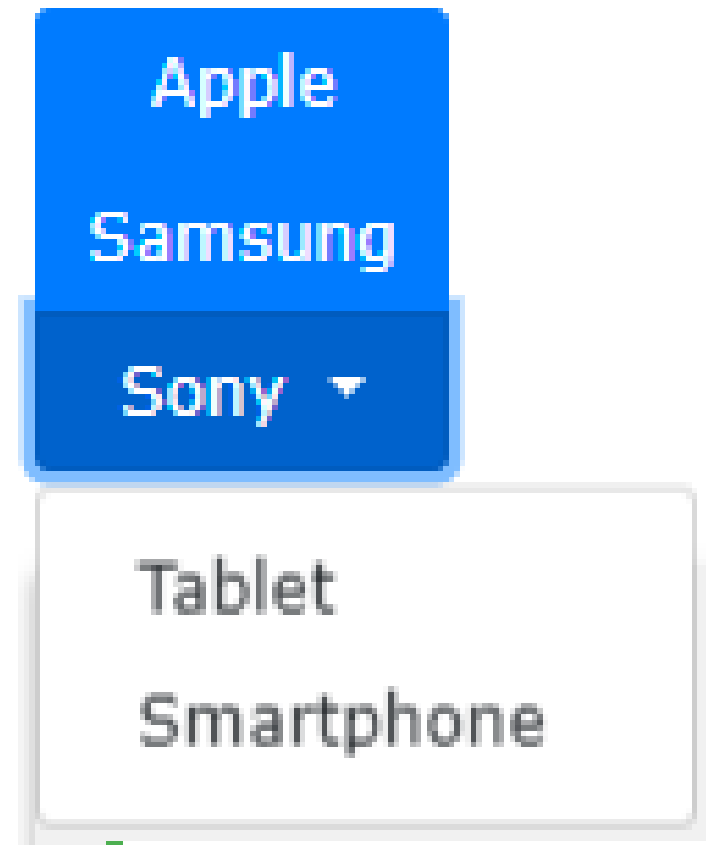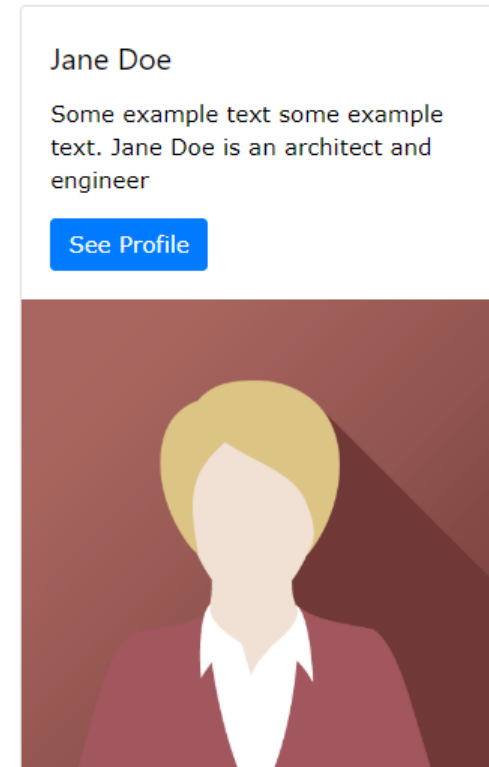
dropdown-toggle-split

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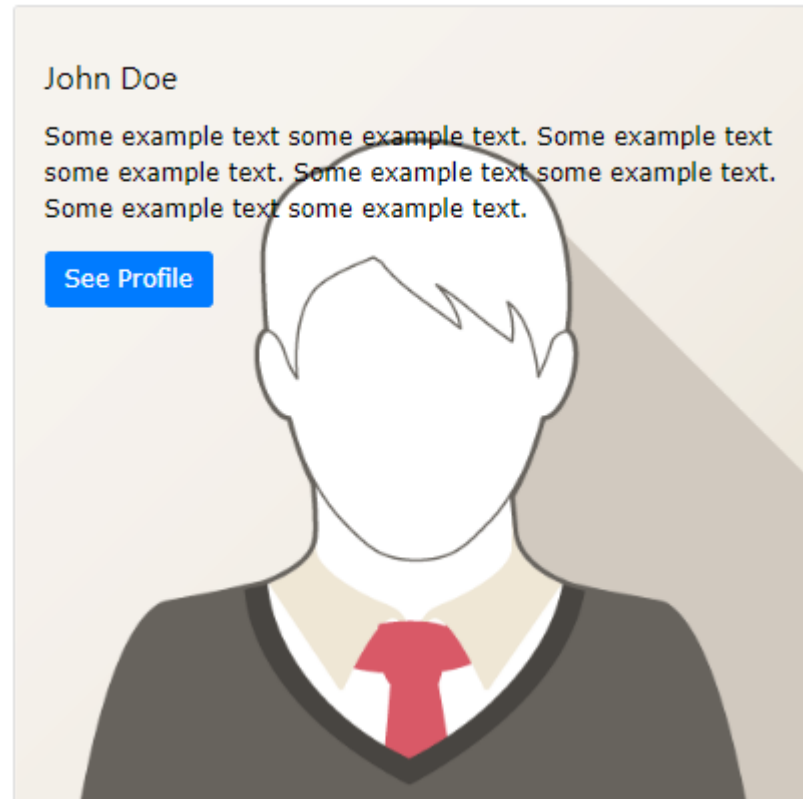
Button Groups

- class="btn-group-vertical"

Cards (1)

- A card in Bootstrap 4 is a **bordered box** with some **padding around its content**. It includes options for **headers, footers, content, colors,** etc.
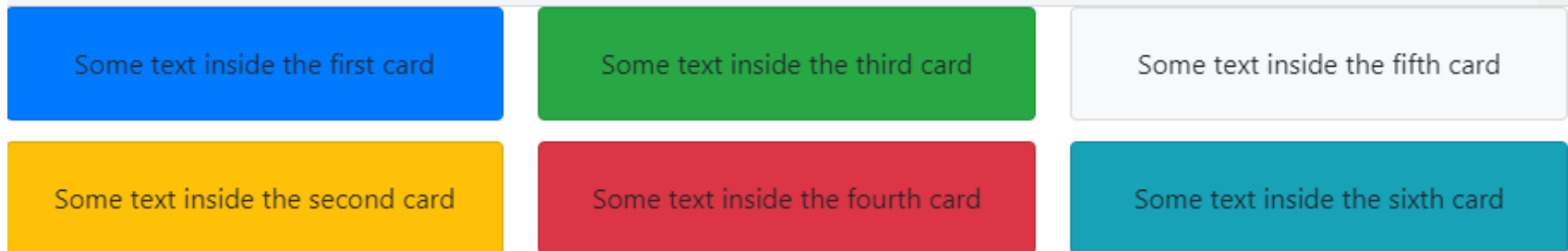

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Cards (2)

- Card Image Overlays

- A basic card is created with the **.card** class, and content inside the card has a **.card-body** class

- The **.card-header** class adds a heading to the card and the **.card-footer** class adds a footer to the card

- To add a background color the card, use contextual classes **(.bg-primary, .bg-success, .bg-info, .bg-warning, .bg-danger, .bg-secondary, .bg-dark and .bg-light)**

- Use **.card-title** to add card titles to any heading element. The **.card-text** class is used to remove bottom margins for a <p> element if it is the last child (or the only one) inside **.card-body**. The **.card-link** class adds a blue color to any link, and a hover effect.

http://jsfiddle.net/a3mvcysu/9/

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Card Columns (1)

- The **.card-columns** class creates a grid of cards. The layout will automatically adjust as you insert more cards.

- **Note:** The cards are displayed vertically on small screens (less than 576px)

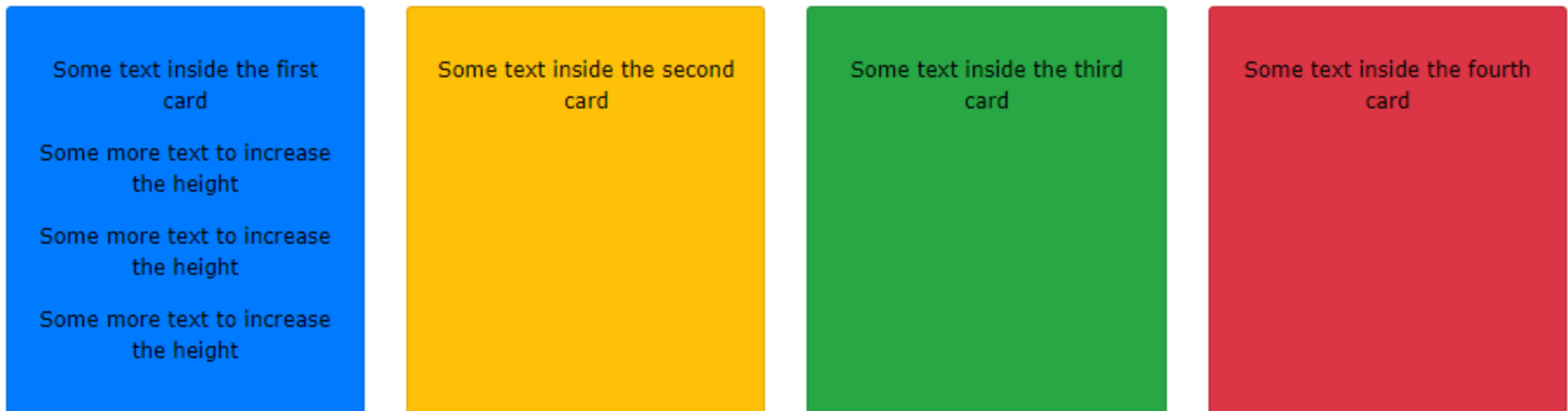|		
Some text inside the first card	Some text inside the third card	Some text inside the fifth card
Some text inside the second card	Some text inside the fourth card	Some text inside the sixth card

Card Columns (2)

- The **.card-deck** class creates a grid of cards that are of equal height and width. The layout will automatically adjust as you insert more cards.

- **Note:** The cards are displayed vertically on small screens (less than 576px)

Card Deck

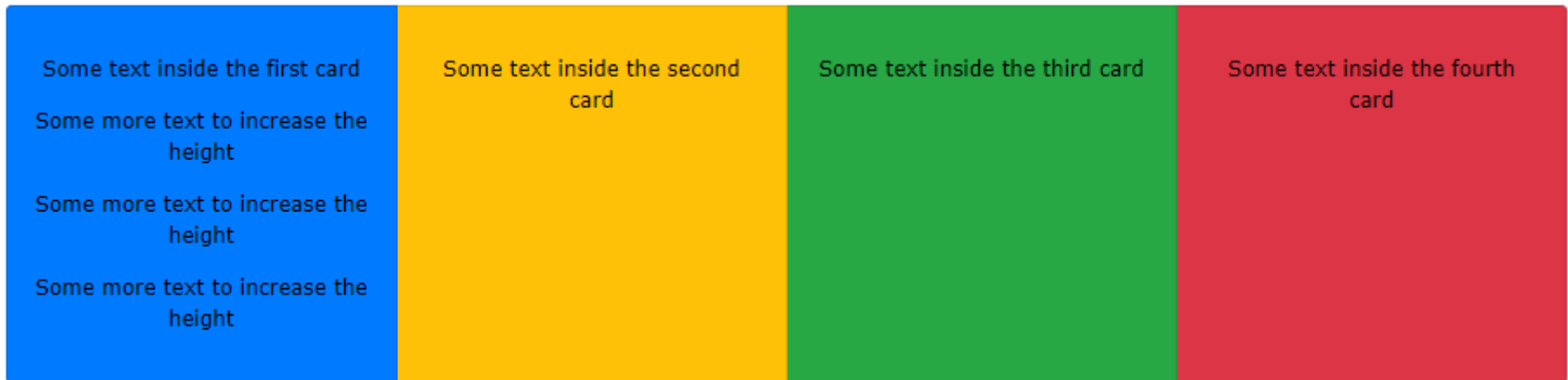|			
Some text inside the first card Some more text to increase the height Some more text to increase the height Some more text to increase the height	Some text inside the second card	Some text inside the third card	Some text inside the fourth card

http://jsfiddle.net/a3mvcysu/11/

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Card Columns (2)

- The **.card-group** class is similar to **.card-deck**. The only difference is that the **.card-group** class removes left and right margins between each card.

- **Note:** The cards are displayed vertically on small screens (less than 576px)

http://jsfiddle.net/aq9Laaew/181844/

Class	Description
.carousel	Creates a carousel
.carousel-indicators	Adds indicators for the carousel. These are the little dots at the bottom of each slide (which indicates how many slides there are in the carousel, and which slide the user are currently viewing)
.carousel-inner	Adds slides to the carousel
.carousel-item	Specifies the content of each slide
.carousel-control-prev	Adds a left (previous) button to the carousel, which allows the user to go back between the slides
.carousel-control-next	Adds a right (next) button to the carousel, which allows the user to go forward between the slides
.carousel-control-prev-icon	Used together with .carousel-control-prev to create a "previous" button
.carousel-control-next-icon	Used together with .carousel-control-next to create a "next" button
.slide	Adds a CSS transition and animation effect when sliding from one item to the next. Remove this class if you do not want this effect

Carousel (1)

- Add elements inside **<div class="carousel-caption">** within each **<div class="carousel-item">** to create a caption for each slide:

```html
<div class="carousel-item">
  <img src="la.jpg" alt="Los Angeles">
  <div class="carousel-caption">
    <h3>Los Angeles</h3>
    <p>We had such a great time in LA!</p>
  </div>
</div>
```

Collapse (1)

- Collapsibles are useful when you want to hide and show large amount of content

- To control (show/hide) the collapsible content, add the **data-toggle="collapse"** attribute to an **<a> or a <button>** element. Then add the **data-target="#id"** attribute to connect the button with the collapsible content **(<div id="demo">**)

- By default, the collapsible content is hidden. However, you can add the **.show** class to show the content by default

- **Note:** For **<a>** elements, you can use the **href** attribute instead of the **data-target** attribute

Collapse (2)

```html
<button data-toggle="collapse" data-target="#demo">Collapsible</button>

<div id="demo" class="collapse">
Lorem ipsum dolor text....
</div>
```

```html
<a href="#demo" data-toggle="collapse">Collapsible</a>

<div id="demo" class="collapse">
Lorem ipsum dolor text....
</div>
```

Navigation (1)

- Nav Menus
  - Basic Navigations
    http://jsfiddle.net/aq9Laaew/181866/
  - Tabs, Pills
    - Turn the nav menu into navigation tabs with the **.nav-tabs** class. Add the **active** class to the active/current link. If you want the tabs to be **togglable**

      http://jsfiddle.net/aq9Laaew/181875/

Navigation (2)

- Navgation Bars
  - With Bootstrap, a navigation bar can extend or collapse, depending on the screen size.
  - A standard navigation bar is created with the **.navbar** class, followed by a responsive collapsing class: **.navbar-expand-xl|lg|md|sm** (stacks the navbar vertically on extra large, large, medium or small screens).
  - To add links inside the navbar, use a **<ul>** element with **class="navbar-nav"**. Then add **<li>** elements with a **.nav-item** class followed by an **<a>** element with a **.nav-link** class
  - When using the **.navbar-brand** class on images, Bootstrap 4 will automatically style the image to fit the navbar vertically.

Navigation (3)

- Navgation Bars
  - When using the **.navbar-brand** class on images, Bootstrap 4 will automatically style the image to fit the navbar vertically.
  - To create a collapsible navigation bar, use a button with **class="navbar-toggler", data-toggle="collapse"** and **data-target="#thetarget".** Then wrap the navbar content (links, etc) inside a div element **with class="collapse navbar-collapse"**, followed by an id that matches the **data-target** of the button: "**thetarget**".

  http://jsfiddle.net/aq9Laaew/181953/

References

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