

Building the User Interface



Agenda

- Introduction
- Using Angular & Bootstrap
- Using Angular & Material 2
- Using 3rd Party Components

Introduction

Global Styles

- Can be linked to app.component.html
- Can be registered in .angular-cli.json – styles section ****prefered****
- style.css is your default global style sheet

```
"styles": [  
  "./node_modules/bootstrap/dist/css/bootstrap.min.css",  
  "styles.css"  
],
```

External / Inline CSS

- Angular allows inline css as well as external css in Components

```
@Component({  
  selector: 'app-demos',  
  templateUrl: './demos.component.html',  
  styleUrls: ['./demos.component.css']  
})  
export class DemosComponent implements OnInit {
```

```
@Component({  
  selector: 'app-inline-style',  
  templateUrl: './inline-style.component.html',  
  styles: [`h1 {  
    text-decoration: underline;  
  }`]  
})  
export class InlineStyleComponent implements OnInit {
```

Class / Style Binding

- Class binding ist the process where an (additional) class will be bound if a funtion / pro evaluates to true

Class Binding

```
<div class="section">  
<h4>Class Binding</h4>  
<button class="myButton" [class.extraClass]="addClass">Call to Action</button>  
</div>
```

Style Binding

```
<div class="section">  
<h4>Style Binding</h4>  
<button class="my-btn" [style.border]="addStyle ? '5px solid yellow' :  
'none'">Call to Action 2</button>  
</div>
```

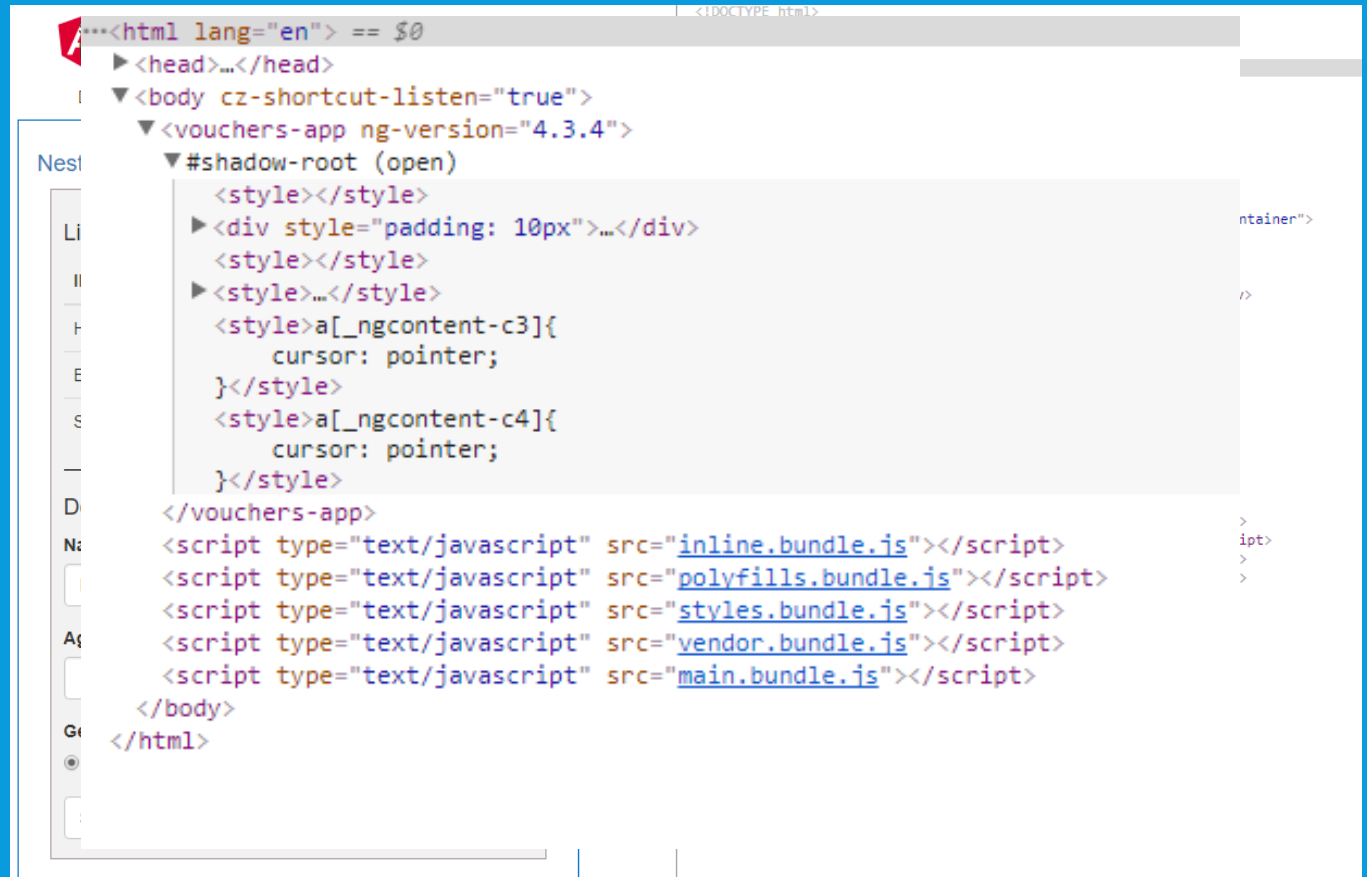
View Encapsulation

Shadow DOM

- Allows style encapsulation by providing scoped styles to elements
- @moment only supported by
 - Chrome 53+
 - Safari 10+
- Emulation is default

```
@Component({
  selector: 'app-nested',
  templateUrl: './nested.component.html',
  styleUrls: ['./nested.component.css'],
  encapsulation: ViewEncapsulation.
})
export class NestedComponent implements
```

Emulated
Native
None



Using Sass

Syntactically Awesome Style Sheets

- Sass is a CSS Preprocessor – configured by Angular CLI
- Two Syntax versions
 - Sass
 - Scss – Sassy CSS -> most modern projects use this syntax
- Features:
 - CSS compatible
 - Support Variables & Nesting
 - Partials / Import
 - Mixins



Using Sass in Angular Projects

- For new projects
 - `ng new project-name --style scss | sass |`
- For existing projects
 - `npm install node-sass --save-dev`
 - `ng set defaults.styleExt scss`

Variables & Nesting

- Allows definition of Variables using \$
- Support Nesting of Classes



```
$primary-color: #323333;  
$margin: 0;  
$padding: 8px;  
  
body {  
  color: $primary-color;  
}
```

```
nav {  
  ul {  
    margin: $margin;  
    padding: $margin;  
    list-style: none;  
  }  
  
  a {  
    display: block;  
    padding: $padding;  
    text-decoration: none;  
  }  
}
```

Partials / Import

- Partials allow splitting larger CSS into smaller chunks
- Import allow consumption of Partials

```
// _reset.scss
```

```
html,  
body,  
ul,  
ol {  
  margin: 0;  
  padding: 0;  
}
```



```
// base.scss
```

```
@import 'reset';  
  
body {  
  font: 100% Helvetica, sans-serif;  
  background-color: #efefef;  
}
```

Imports - Use Global SaSS Variables in Components

- [Create folder for SaSS ...]
- Create folder for global SaSS
- Add „stylePreprocessorOptions“ to angular-cli.json
- Add @import statement to *.scss where you want to use

```
"styles": [  
  "scss/styles.scss"  
],  
"stylePreprocessorOptions": {  
  "includePaths": [  
    "scss"  
  ]  
},
```

```
▲ scss  
🔗 style-vars.scss  
🔗 styles.scss
```

```
@import 'style-vars';
```

Mixing's

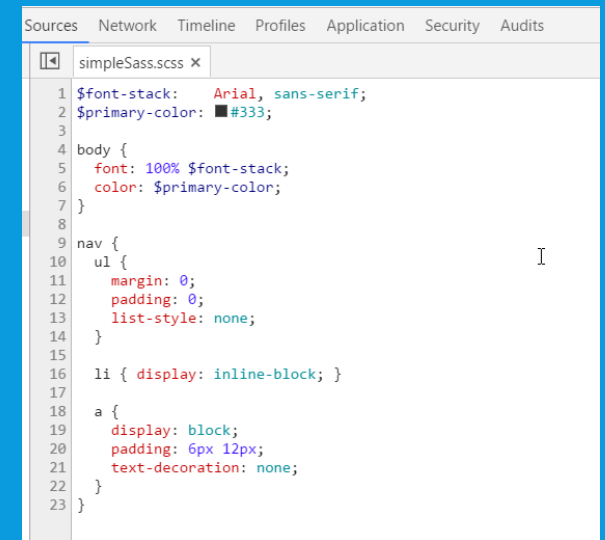
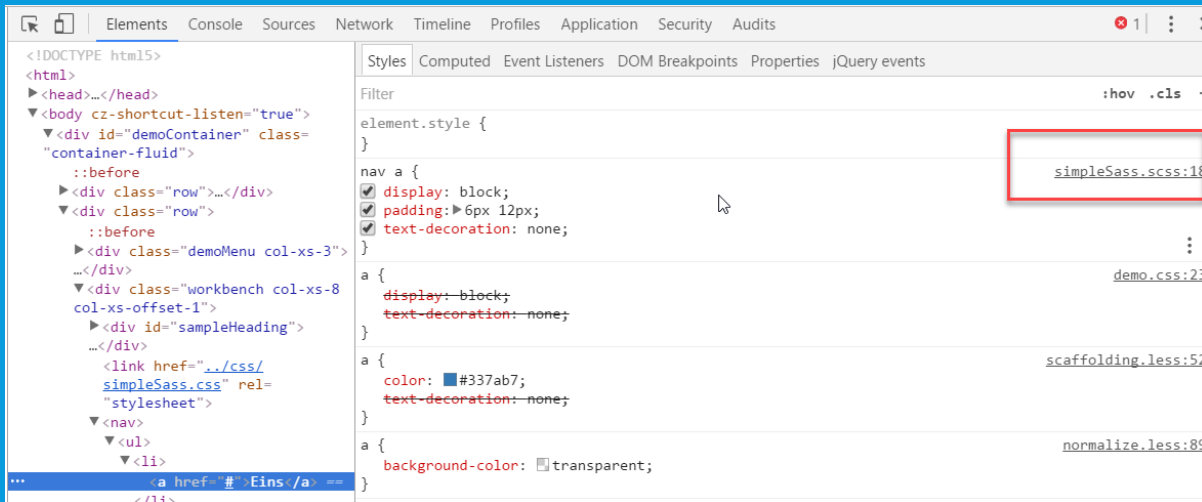
- A mixin lets you make groups of CSS declarations that you want to reuse
- Mixins can accept Parameters

```
@mixin big-font{  
  font-size: 18px  
}  
  
@mixin box{  
  padding: 10px;  
  margin: 10px;  
}  
  
.sectionPanelBlue{  
  @include big-font();  
  @include box();  
  background-color: lightblue;  
}
```

```
@mixin grid($flex) {  
  @if $flex {  
    @include flex;  
  } @else {  
    display: block;  
  }  
}
```

Source Maps

- Source maps allow debugging *.sass Files instead of *.css
- Enable CSS Source Maps in Chrome
- <https://www.sitepoint.com/using-source-maps-debug-sass-chrome/>



Bootstrap Jump Start

What is Bootstrap?

- UI framework (set of JavaScript, CSS, and images)
- Open Source project
- Supports HTML5 and CSS3
- Supported by all major browsers



Bootstrap Features

- Grid System
- Controls / Components
- JavaScript API
- Ready to use CSS
- Prototyping / Speed
- Very Easy to Use
- Cross Browser Compatibility

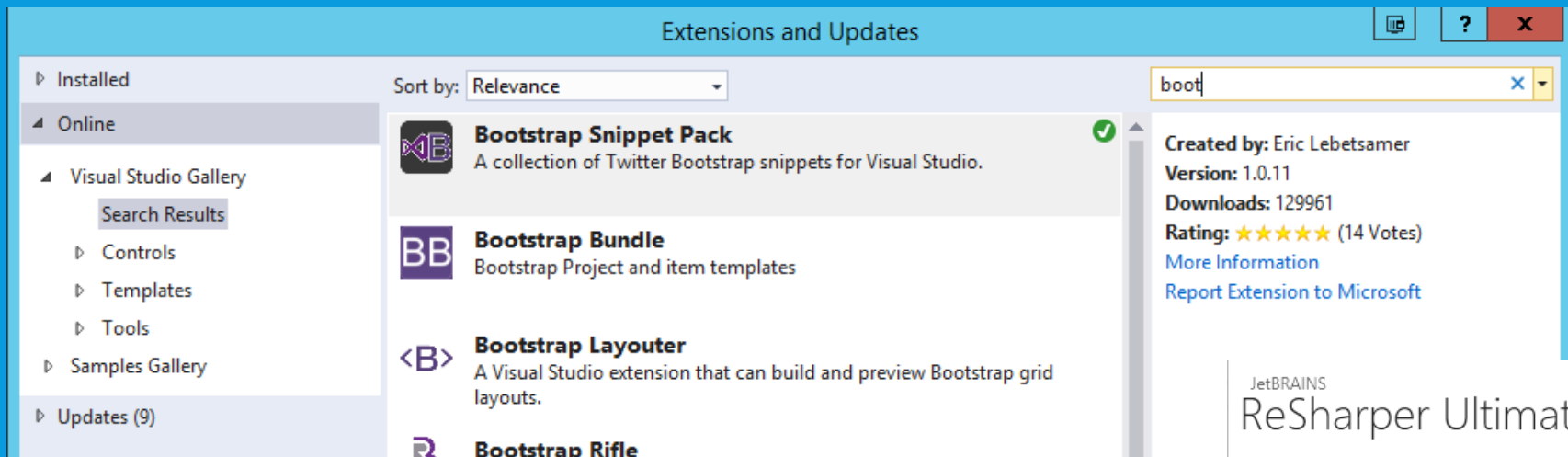
Bootstrap Requirements

- Base functionality consists of
 - CSS file reference
 - Js file reference
- Docu at <http://bootstrapdocs.com/v3.o.3/docs/>
- Lots of addons - <http://startbootstrap.com/bootstrap-resources/>

```
<link rel = "stylesheet" href="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.6/css/bootstrap.min.css">  
<script src = "http://maxcdn.bootstrapcdn.com/bootstrap/3.3.6/js/bootstrap.min.js"></script>
```

Bootstrap Extensions

- <https://github.com/olsh/resharper-bootstrap-templates>

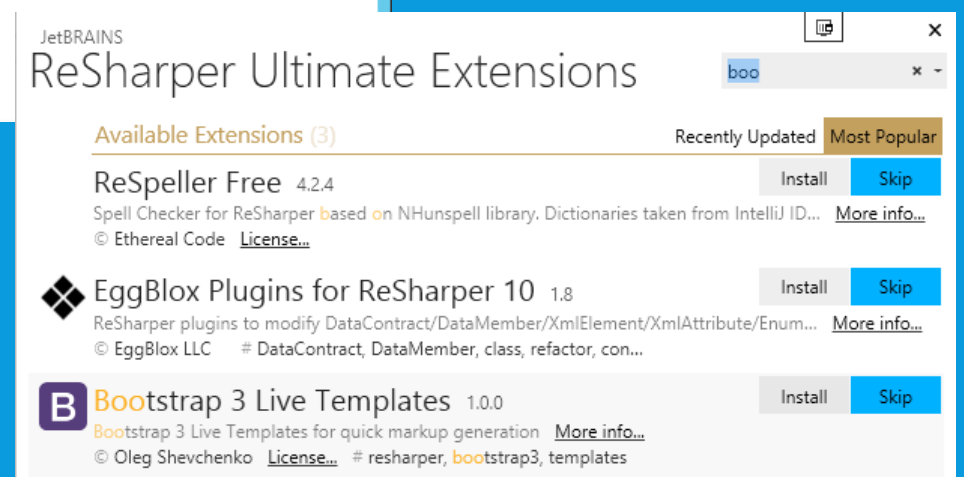


The screenshot shows the Visual Studio 'Extensions and Updates' window. The search bar contains 'boot'. The left sidebar shows the 'Online' tab selected, with 'Visual Studio Gallery' expanded. The main pane lists search results:

- Bootstrap Snippet Pack** (icon: ME) - A collection of Twitter Bootstrap snippets for Visual Studio. (Status: Installed)
- Bootstrap Bundle** (icon: BB) - Bootstrap Project and item templates
- Bootstrap Layouter** (icon:) - A Visual Studio extension that can build and preview Bootstrap grid layouts.
- Bootstrap Rifle** (icon: R)

The right pane shows details for the selected extension, 'Bootstrap Snippet Pack':

- Created by:** Eric Lebitsamer
- Version:** 1.0.11
- Downloads:** 129961
- Rating:** ★★★★★ (14 Votes)
- [More Information](#)
- [Report Extension to Microsoft](#)

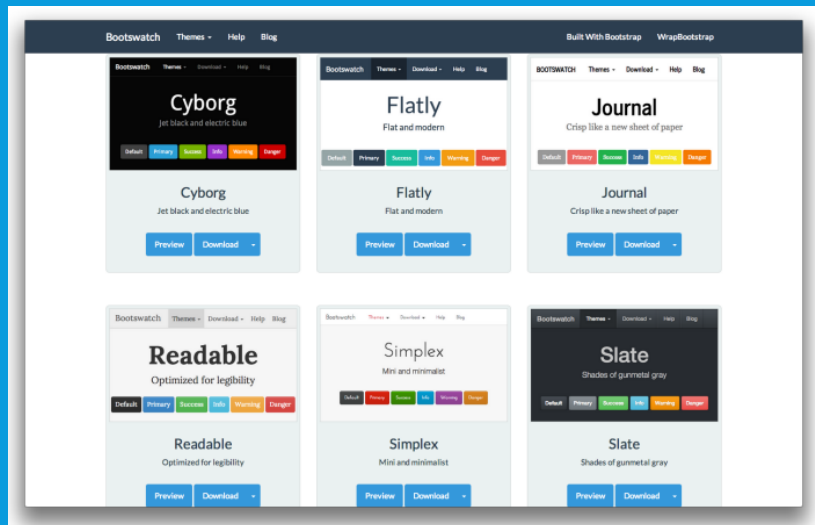


The screenshot shows the 'ReSharper Ultimate Extensions' window. The search bar contains 'boo'. The window displays a list of available extensions:

Available Extensions (3)	Recently Updated	Most Popular
ReSpeller Free 4.2.4 Spell Checker for ReSharper based on NHunspell library. Dictionaries taken from IntelliJ ID... © Ethereum Code License...	Install	Skip
EggBlox Plugins for ReSharper 10 1.8 ReSharper plugins to modify DataContract/DataMember/XmlElement/XmlAttribute/Enum... © EggBlox LLC # DataContract, DataMember, class, refactor, con...	Install	Skip
Bootstrap 3 Live Templates 1.0.0 Bootstrap 3 Live Templates for quick markup generation More info... © Oleg Shevchenko License... # resharper, bootstrap3, templates	Install	Skip

Bootstrap Themes

- Many free themes available
 - <http://startbootstrap.com/template-overviews/>
 - Bootswatch – <http://bootswatch.com>



Bootstrap Components

- Bootstrap offers a variety of ready to use
 - Components
 - CSS
 - Javascript-Components

ScrollSpy scrollspy.js

Example in navbar

The ScrollSpy plugin is for automatically updating nav targets based on scroll position. Scroll the area below the navbar and watch the active class change. The dropdown sub items will be highlighted as well.

EXAMPLE

Project Name

@fat

@mdo

Dropdown ▾

Veniam marfa mustache skateboard, adipisicing fugiat velit pitchfork beard. Freegan beard aliqua cupidatat mcsweeney's vero. Cupidatat four loko nisi, ea helvetica nulla carles. Tattooed cosby sweater food truck, mcsweeney's quis non freegan vinyl. Lo-fi wes anderson +1 sartorial. Carles non aesthetic exercitation quis gentrify. Brooklyn adipisicing craft beer vice keytar deserunt.

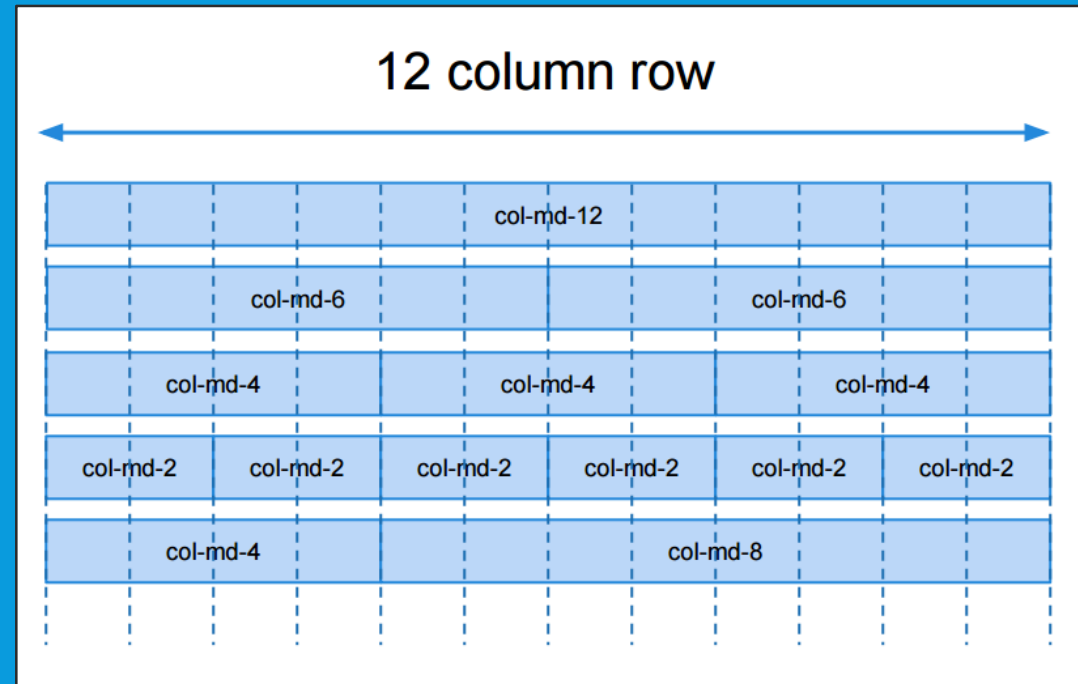
one

Occaecat commodo aliqua delectus. Fap craft beer deserunt skateboard ea. Lomo bicycle rights adipisicing banh mi, velit ea sunt next level locavore single-origin coffee in magna veniam. High life id vinyl, echo park consequat quis aliquip banh mi pitchfork. Vero VHS est adipisicing. Consectetur nisi DIY minim messenger bag. Cred ex in, sustainable delectus consectetur fanny pack iphone.

Grid System

- Bootstrap's grid system is used for laying out pages & allows up to 12 columns
- The Bootstrap grid system has four classes:
 - xs (for phones)
 - sm (for tablets)
 - md (for desktops)
 - lg (for larger desktops)

```
<!-- every row must have 12 columns -->
<div class="row">
  <div class="col-md-4">
    <!-- content -->
  </div>
  <!-- need to complete 8 more columns -->
</div>
```



Grid options

	Extra small <544px	Small ≥544px	Medium ≥768px	Large ≥992px	Extra large ≥1200px
Grid behavior	Horizontal at all times	Collapsed to start, horizontal above breakpoints			
Container width	None (auto)	576px	720px	940px	1140px
Class prefix	.col-xs-	.col-sm-	.col-md-	.col-lg-	.col-xl-
# of columns	12				
Gutter width	1.875rem / 30px (15px on each side of a column)				
Nestable	Yes				
Offsets	Yes				
Column ordering	Yes				

Bootstrap CSS - Buttons

- Provides ready to use CSS classes to enhance your web applicaiton ie. Buttons
 - Colors
 - Sizes
 - Active / Disabled

Class	Description
.btn	Adds basic styling to any button
.btn-default	Indicates a default/standard button
.btn-primary	Provides extra visual weight and identifies the primary action in a set of buttons
.btn-success	Indicates a successful or positive action
.btn-info	Contextual button for informational alert messages
.btn-warning	Indicates caution should be taken with this action

Buttons

- Buttons can either be button elements, links or input elements.
- They will all look like buttons.
 - For simple links, use the element and add button styling if needed.
 - For forms or dynamic buttons, use the button element.

```
<button class="btn btn-primary">Primary</button>  
<a href="btn btn-success">Success</a>
```

Tables

- Bootstrap provides a clean layout for building tables.
- Some of the table elements supported by Bootstrap
- Addons for paging & sorting, ... available @ <http://www.bootply.com/lxaoFF9yhwh>

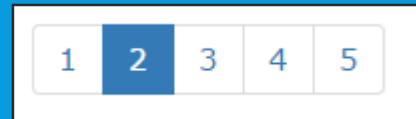
#	Table heading	Table heading	Table heading	Table heading	Table heading	Table heading
1	Table cell	Table cell	Table cell	Table cell	Table cell	Table cell
2	Table cell	Table cell	Table cell	Table cell	Table cell	Table cell
3	Table cell	Table cell	Table cell	Table cell	Table cell	Table cell
4	Table cell	Table cell	Table cell	Table cell	Table cell	Table cell

1 2 3 »

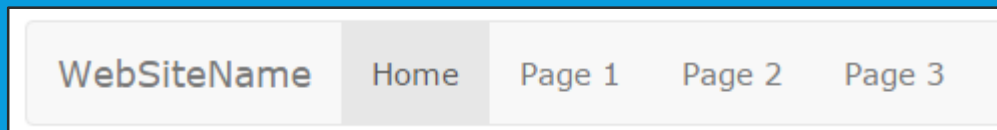
Navigation

- Bootstrap has several components supporting navigation
 - Pagination

```
<ul></  
  <li><a href="#">1</a></li>  
  <li class="active"><a href="#">2</a></li>  
  <li><a href="#">3</a></li>  
  <li><a href="#">4</a></li>  
  <li><a href="#">5</a></li>  
</ul>
```



- Navbar

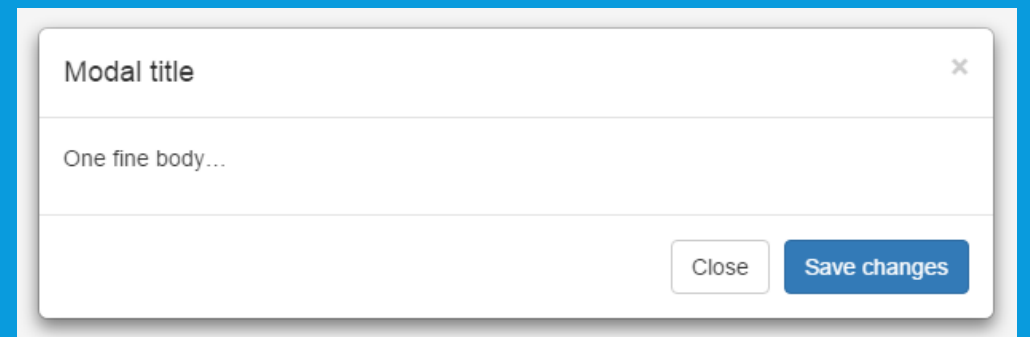


```
<nav class="navbar navbar-default">  
  <div class="container-fluid">  
    <div class="navbar-header">  
      <a class="navbar-brand" href="#">WebSiteName</a>  
    </div>  
    <ul class="nav navbar-nav">  
      <li class="active"><a href="#">Home</a></li>  
      <li><a href="#">Page 1</a></li>  
      <li><a href="#">Page 2</a></li>  
      <li><a href="#">Page 3</a></li>  
    </ul>  
  </div>  
</nav>
```

Modal

- Modals are streamlined, but flexible, dialog prompts with the minimum required functionality and smart defaults.
- Multiple open modals not supported

```
$('#myModal').on('shown.bs.modal', function () {  
    $('#myInput').focus()  
})
```



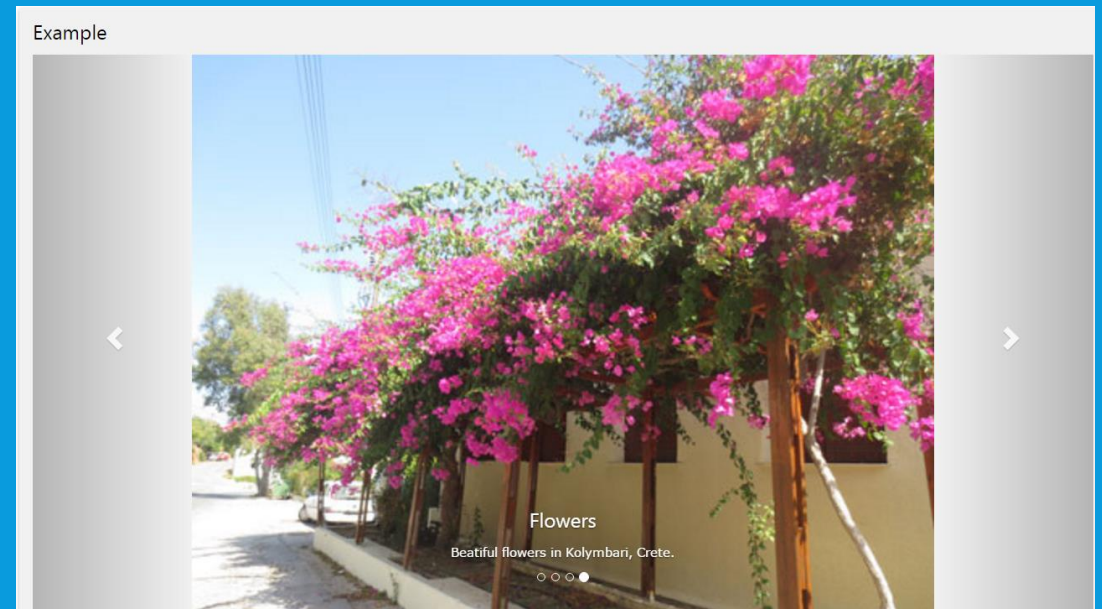
Forms

- Bootstrap provides three types of form layouts:
 - Vertical form (this is default)
 - Horizontal form
 - Inline form

```
<form class="form-horizontal" role="form">
<div class="form-group">
  <label class="control-label col-sm-2" for="email">Email:</label>
  <div class="col-sm-10"><input type="email" class="form-control" id="email" placeholder="Enter email">
  </div>
</div>
```

Bootstrap JS Carousel

- The Carousel plugin is a component for cycling through elements, like a carousel (slideshow)
- Can be built / controlled using HTML / JS
- Supports Methods and Events



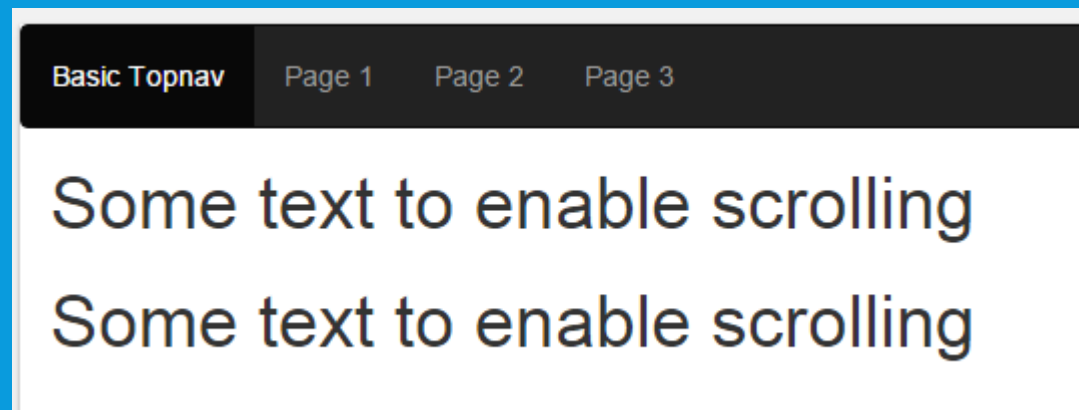
Bootstrap JS Carousel

Class	Description
.carousel	Creates a carousel
.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-indicators	Adds indicators for the carousel. These are the little dots at the bottom of each slide
.carousel-inner	Adds slides to the carousel
.item	Specifies the content of each slide
.left carousel-control	Adds a left button to the carousel, which allows the user to go back between the slides
.right carousel-control	Adds a right button to the carousel, which allows the user to go forward between the slides
.carousel-caption	Specifies a caption for the carousel

JS Affix

- The Affix plugin allows an element to become affixed (locked) to an area on the page
- Can be used for "sticky" navigation items

```
<nav class ="navbar navbar-inverse" data-spy="affix" data-offset-top="197">
```



JS Tabs

- Tabs are used to separate content into different panes where each pane is viewable one at a time

```
<ul class="nav nav-tabs">
    <li class="active"><a data-toggle="tab" href="#home">Home</a></li>
    <li><a data-toggle="tab" href="#menu1">Menu 1</a></li>
</ul>
<div class="tab-content">

    <div id="home" class="tab-pane fade in active">
        <h3>HOME</h3>
        <p>Some content.</p>
    </div>
    <div id="menu1" class="tab-pane fade">

        <h3>Menu 1</h3>
        <p>Some content in menu 1.</p>
    </div>
</div>
```

Dynamic Tabs

Home Menu 1 Menu 2 Menu 3

HOME

Lorem ipsum dolor sit amet, consectetur adipiscing elit, s

Using Angular & Bootstrap

Installation

- Easy to use – just reference Bootstrap Styles in angular-cli.json

```
"styles": [  
  "../node_modules/bootstrap/dist/css/bootstrap.min.css",  
  "styles.css"  
],
```

- Bootstrap Components depends on jQuery -> Encapsulate jQuery
- Alternative: use spin offs like ng-bootstrap
- ng-bootstrap covered in 3rd party topic later this module

Adding jQuery & Bootstraps JS

- Some Bootstrap functionality (Components) rely on bootstrap.min.js
- For a Angular CLI Project add jQuery, Bootstrap to Script & Styles section in angular-cli.json

```
"styles": [  
  "../node_modules/bootstrap/dist/css/bootstrap.min.css",  
  "styles.css"  
],  
"scripts": [  
  "../node_modules/moment/min/moment.min.js",  
  "../node_modules/jquery/dist/jquery.min.js"  
  "../node_modules/bootstrap/dist/js/bootstrap.min.js"  
],
```

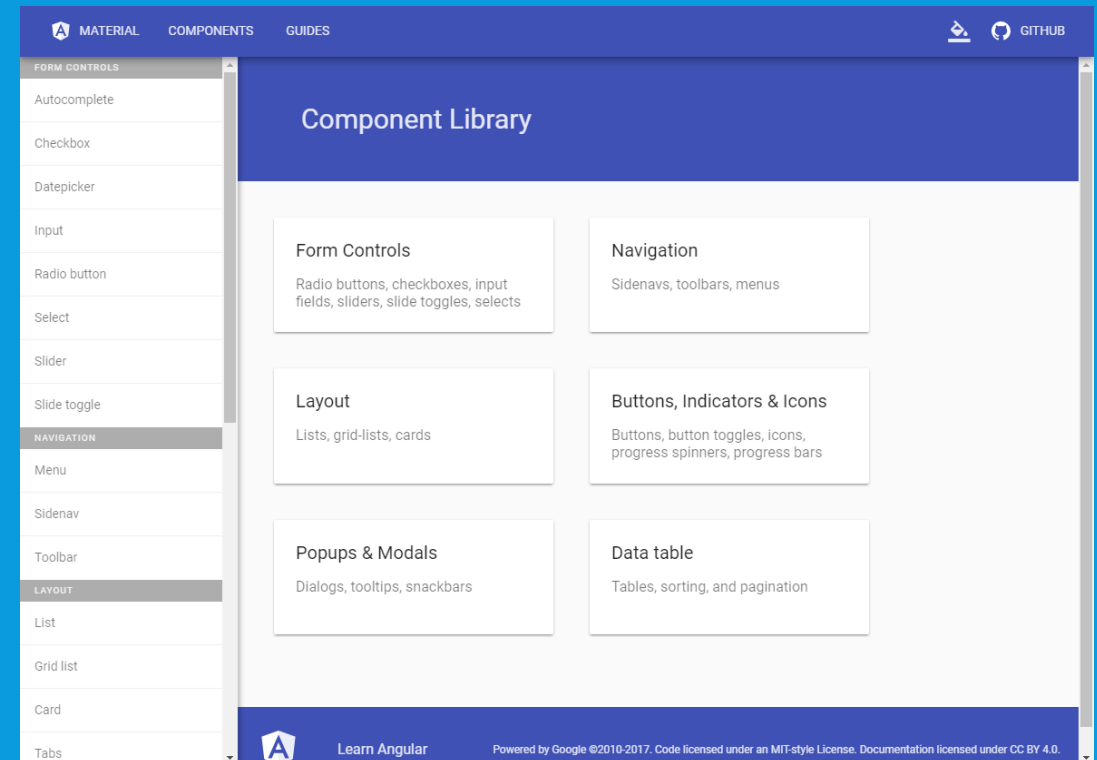
Bootstrap 4

- Currently in Beta @ <https://getbootstrap.com/>
- Some Differences:
 - Uses SCSS instead of LESS
 - Grid System xs, sm, md, lg, xl instead of xs, sm, md, lg
 - ...
- Very nice overview @ https://www.quackit.com/bootstrap/bootstrap_4/differences_between_bootstrap_3_and_bootstrap_4.cfm

Material 2 Jump Start

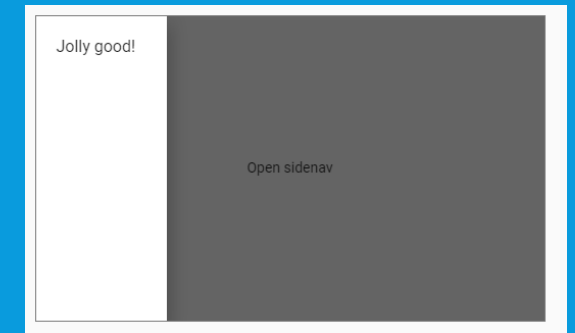
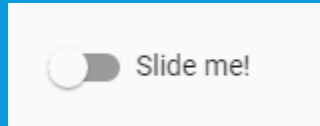
What is Angular Material

- UI Framework just like Bootstrap
- Documentation @ <https://material.angular.io/>
- Why use?
 - Fast
 - Mobile optimized
 - Optimized for Angular



Component Overview

- @ <https://material.angular.io/components/menu/overview>
- Includes
 - Datepicker
 - Nav
 - Grid List
 - Table
 -



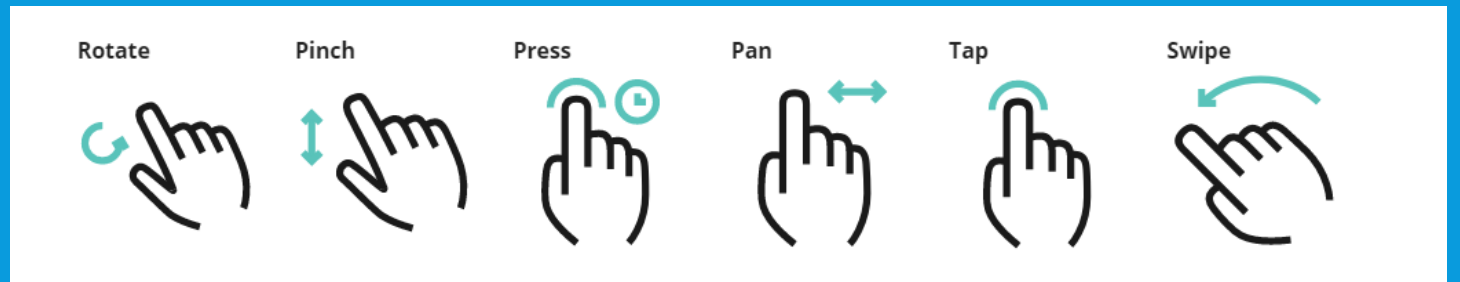
ID	Name	Progress	Color
1	Isla T.	8%	olive
2	Amelia T.	31%	green
3	Charlotte T.	27%	teal
4	Asher C.	74%	purple
5	Mia T.	3%	black
6	Isabella V.	100%	aqua
7	Oliver M.	20%	lime
8	Isabella J.	35%	black

Items per page: 25 1 - 25 of 100

Gesting Support using HammerJS

- An independent framework supporting Gestures that can be combined with Angular
- Installation:
 - `npm install --save hammerjs`
- Usage:

```
import 'hammerjs';
```



Using Material 2 with Angular

Requirements

- Material Core Libs
 - `npm install --save @angular/material @angular/cdk`
- Angular Animations
 - `npm install --save @angular/animations`
- Hammer.js – Needed by some components
 - `npm install --save hammerjs`
 - `npm install --save-dev @types/hammerjs`
- Doku @ <https://github.com/angular/material2/blob/master/guides/getting-started.md>

Animations

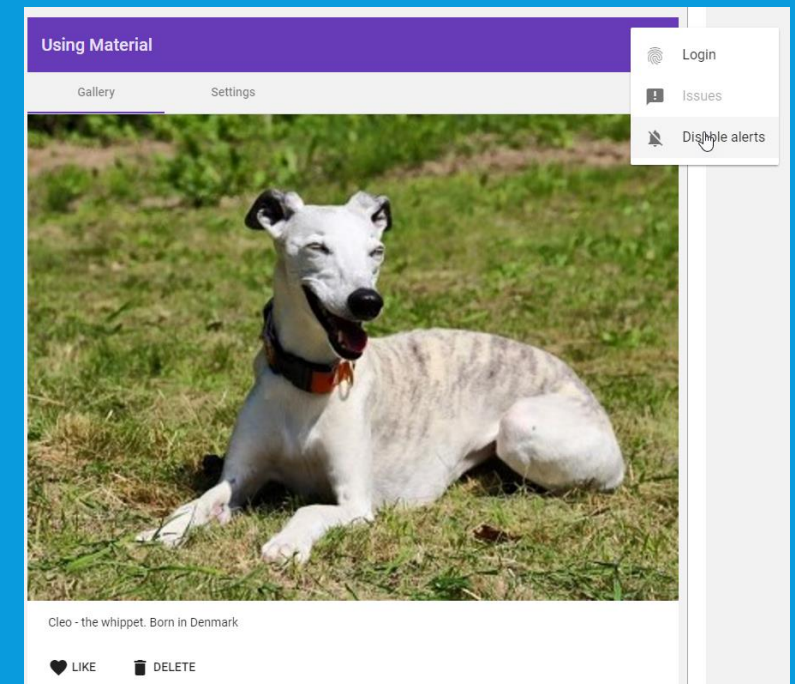
- Included in @angular/animations module
- If you don't want Animations import NoopAnimationsModule

```
import { BrowserAnimationsModule } from '@angular/platform-browser/animations';  
....  
[BrowserAnimationsModule]
```

Using Material

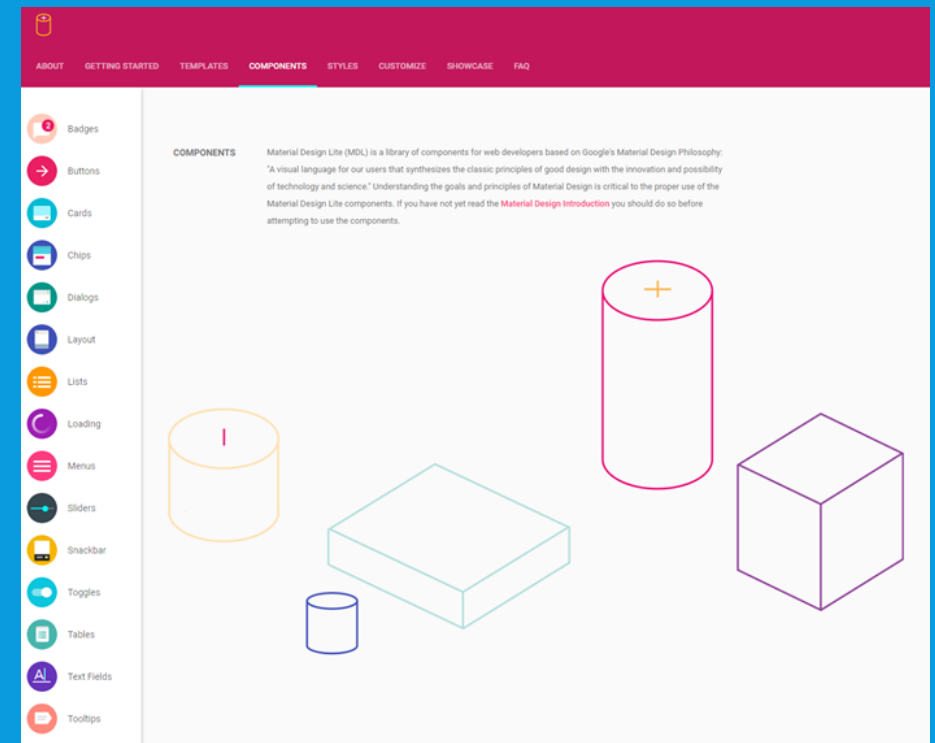
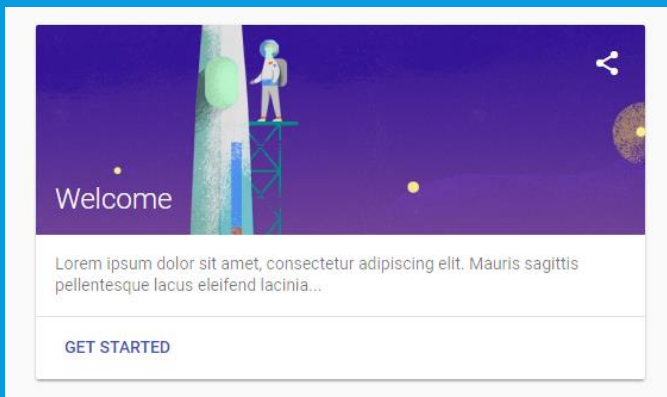
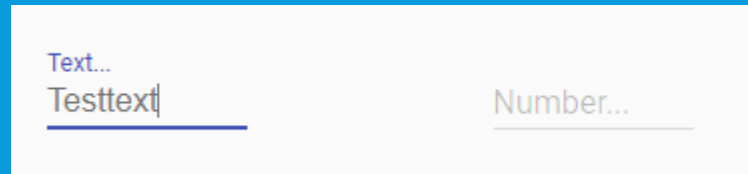
- Reference Material Icons in index.html
- Add MaterialModule to app.module.ts
- Import MaterialModule to Component

```
<md-card *ngFor="let dog of dogs; let i = index" >
  
  <md-card-content>
    <p>{{ dog.description }}</p>
  </md-card-content>
  <md-card-actions>
    <button md-button (click)="likeMe(i)">
      <i class="material-icons md-18" [class.red-color]="dog.liked == '1'">favorite</i> LIKE
    </button>
    <button md-button (click)="deleteMe(i)">
      <i class="material-icons md-18">delete</i> DELETE
    </button>
  </md-card-actions>
</md-card>
```



Material Design Light

- If Material Design is to "overloaded" for you – consider using MDL Light
- Published @ <https://getmdl.io/started/index.html>



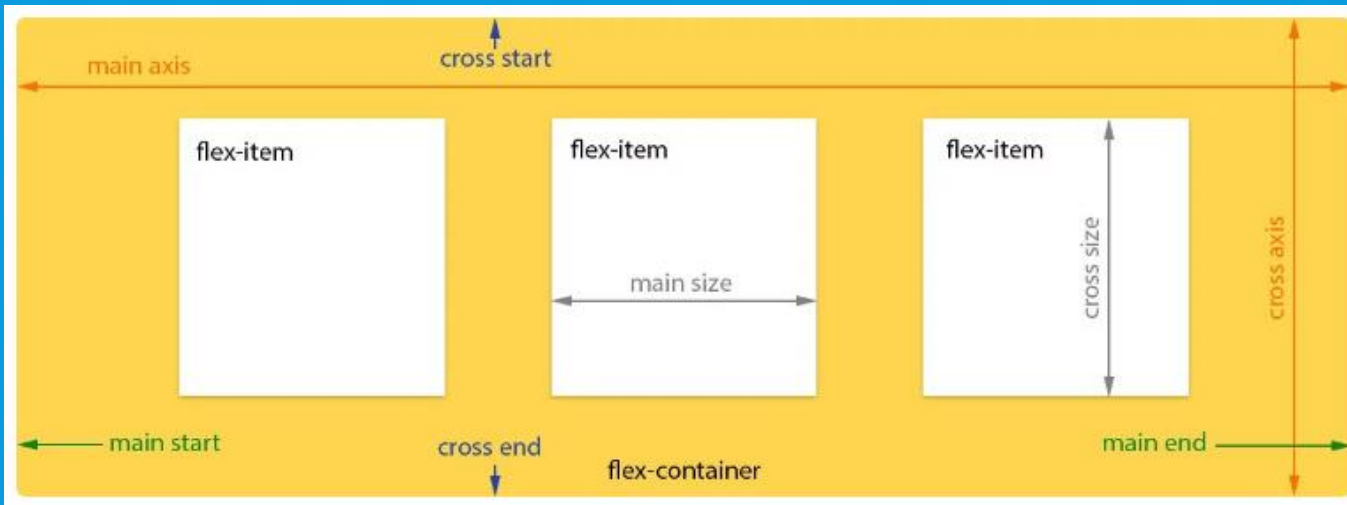
Flexbox

What is Flexbox

- Flexbox is a layout mode used responsive websites, that provides for a better arrangement of all of the page elements that behave in a predictable mode.
- „Replacement“ for Bootstrap Grid System
 - Why replace Bootstrap? Maybe you want to get rid of jQuery!
- Googles implementation Angular Flex Layout

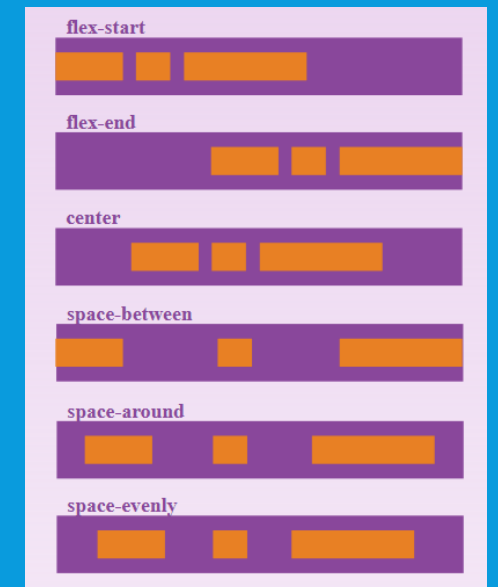
Flexbox Basic Terms

- The flex layout is constituted of parent container referred as *flex container*
- Its immediate children which are called *flex items*
- Visual Guide @ <https://css-tricks.com/snippets/css/a-guide-to-flexbox/>



Properties for Container

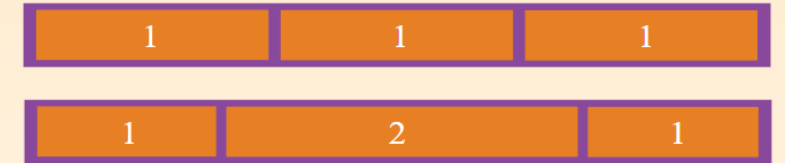
- Use following Styles to Format the Container
- `display: flex | inline-flex`
- `justify-content: flex-start | flex-end | center | space-between | space-around | space-evenly;`
- `flex-direction: row | row-reverse | column | column-reverse;`
- `flex-wrap: nowrap | wrap | wrap-reverse;`
- `flex-flow: shorthand flex-direction and flex-wrap`



Properties for Item

- Use following Styles to Format the Item
- `order: <integer>; /* default is 0 */`
- `flex-grow: <number>; /* default 0 */`
- `flex-shrink: <number>; /* default 1 */`
- `flex-basis: <length> | auto; /* default auto */`
- `flex`: shorthand for `flex-grow`, `flex-shrink` and `flex-basis`

flex-grow



```
.item flex none | [ <'flex-grow'> <'flex-shrink'>? || <'flex-basis'> ]
```

Browser Compatibility

- Supported by all newer Browsers
- Source: <https://caniuse.com/#feat=flexbox>
- Vendor prefixing to support the most browsers possible

IE	Edge *	Firefox	Chrome	Safari	iOS Safari *	Opera Mini *	Chrome for Android
			49				
			61		9.3		
			62		10.2		
	15	57	63	10.1	10.3		
11	16	58	64	11	11.2	all	64

```
SCSS

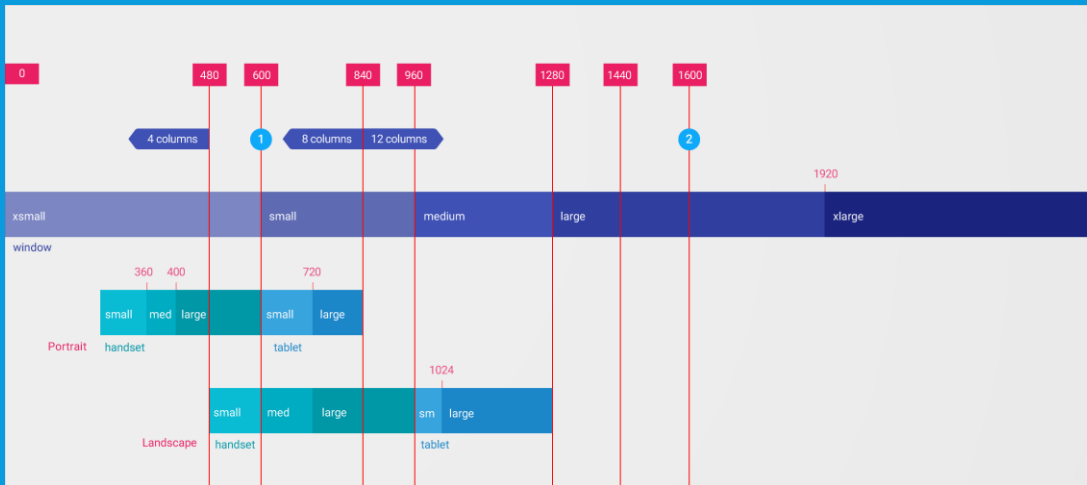
@mixin flexbox() {
  display: -webkit-box;
  display: -moz-box;
  display: -ms-flexbox;
  display: -webkit-flex;
  display: flex;
}

@mixin flex($values) {
  -webkit-box-flex: $values;
  -moz-box-flex: $values;
  -webkit-flex: $values;
  -ms-flex: $values;
  flex: $values;
}

@mixin order($val) {
  -webkit-box-ordinal-group: $val;
  -moz-box-ordinal-group: $val;
  -ms-flex-order: $val;
  -webkit-order: $val;
  order: $val;
}
```

Angular Flex Layout

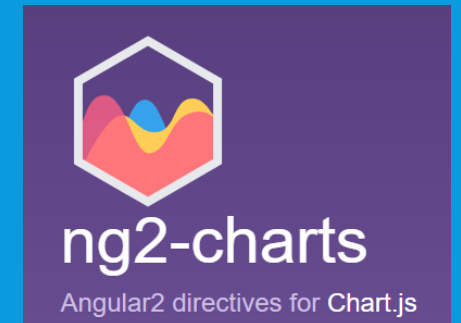
- Published as @angular/flex-layout – currently in beta 12
- Includes Responsive API for different Devices
- Documentation @ <https://github.com/angular/flex-layout>



3rd Party Components

Sources for 3rd Party

- npmJS
 - <https://www.npmjs.com/search?q=angular2>
- Bootstrap for Angular 2
 - <https://github.com/valor-software/ngx-bootstrap>
- Charting
 - <https://github.com/valor-software/ng2-charts>
- Handsontable
 - <https://github.com/valor-software/ng2-handsontable>
- ...



	ID	Country	Code	Currency	Level	Units	Date	Change
1	1		EUR	Euro	0.9033	EUR / USD	08/19/2015	0.26%
2	2		JPY	Japanese Yen	124.3870	JPY / USD	08/19/2015	0.01%
3	3		GBP	Pound Sterling	0.6396	GBP / USD	08/19/2015	0.00%
4	4		CHF	Swiss Franc	0.9775	CHF / USD	08/19/2015	0.08%
5	5		CAD	Canadian Dollar	1.3097	CAD / USD	08/19/2015	-0.05%
6	6		AUD	Australian Dollar	1.3589	AUD / USD	08/19/2015	0.20%
7	7		NZD	New Zealand Dollar	1.5218	NZD / USD		
8	8		SEK	Swedish Krona	8.5280	SEK / USD		
9	9		NOK	Norwegian Krone	8.2433	NOK / USD		
10	10		BRL	Brazilian Real	3.4806	BRL / USD		
11	11		CNY	Chinese Yuan	6.3961	CNY / USD		
12	12		RUB	Russian Rouble	65.5980	RUB / USD		
13	13		INR	Indian Rupee	65.3724	INR / USD		
14	14		TRY	New Turkish Lira	2.8689	TRY / USD		
15	15		THB	Thai Baht	35.5029	THB / USD		
16	16		IDR	Indonesian Rupiah	13.8300	IDR / USD		
17	17		MYR	Malaysian Ringgit	4.0949	MYR / USD	08/19/2015	0.10%
18	18		MXN	Mexican New Peso	16.4309	MXN / USD	08/19/2015	0.17%

August 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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23	24	25	26	27	28	29
30	31					