

Instructor Notes:

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OOJS and Angular 5.0

Lesson 01 : Angular
Fundamentals



Instructor Notes:

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Lesson Objectives

- Introduction of Angular5
- What is node JS?
- Building blocks of Angular5
- What is module-Root Module?
- First Application with Angular5



Instructor Notes:

What is Angular 5?



- Angular5 is a framework for building client applications in HTML and either JavaScript or a language like TypeScript that compiles to JavaScript.
- Angular is a TypeScript-based open-source front-end web application platform led by the Angular Team at Google and by a community of individuals and corporations.
- Angular5 required to build a frontend web or mobile apps, from powerful templates to fast rendering, data management, HTTP services, form handling, and so much more.

Angular is a framework for building client applications in HTML and either JavaScript or a language like TypeScript that compiles to JavaScript. The framework consists of several libraries, some of them core and some optional.

Instructor Notes:

Why is Angular5?



- Simple
- Web Components Oriented architecture
- Better Foundation
- Mobile first
- Speed & Performance
- Productivity
- Component based programming
- Syntax are similar to JAVA

We can write Angular applications by composing HTML *templates* with Angularized markup, writing *component* classes to manage those templates, adding application logic in *services*, and boxing components and services in *modules*.

Angular makes HTML more expressive, It powers up HTML with features such as if conditions, for loops and local variables.

Angular has powerful data binding. We can easily display fields from our data model, track changes and process updates from the user.

Angular promotes modularity by design so that the applications become a set of building blocks making it easier to create and reuse contents.

Angular has built-in support for communication with a backend service this makes it easy for Web applications to integrate with the backend service to GET and POST data or execute server side business logic.

Angular4 was built for speed, It has faster initial loads faster change detection and improved rendering times.

Angular4 is modern it takes advantage of features provided in the latest JavaScript standards such as classes, modules and decorators.

It leverages web component technologies for building reusable user interface widgets.

It supports both modern and legacy browsers like Chrome, Firefox and Internet Explorer back to IE 9.

It has a simplified API. It has fewer built-in directives to learn simple binding and a lower overall concept count.

It enhances productivity to improve day to day workflows

Instructor Notes:

Difference B/W Angular2, Angular4 & Angular 5 ?

Angular 2

- DI
- Decorators
- Child Injectors
- Instance Scopes
- dynamic loading
- templating
- Directives
- Child Routers
- Guards
- Design
- Logging
- Scopes

Angular 4

- Faster and Compact
- View Engine Improvements
- Animation Support
- *ngIf and *ngFor improvements
- Angular Universal
- Typescript 2.1 and 2.2

Angular5

- build optimizer
- Angular Universal and State Transfer
- Compiler Improvements
- Typescript
- Preserve White spaces
- Improved Decorators
- Internationalized Number, Date and Currency Pipes
- Replaced ReflectiveInjector with StaticInjector
- Zone Seed Improvements
- exportAs
- HttpClient
- AngularCli 1.5
- updateOn Blur / Submit
- Rxjs 5.5
- New Router Lifecycle

Angular 5

Angular 5 comes with everything you need to build a complicated frontend web or mobile apps, form handling, data management, HTTP services, and so much more. With a rising popularity and more and more features coming to the core, the Angular team decided to rewrite the original framework, introducing Angular 5.

Angular 5 is based entirely on components – Angular 2 is entirely component based, so that controllers and \$scope are now dead. \$scope will be removed in Angular 5.0 in favor of ES6 classes

Support for TypeScript— you get access to all the advantages, libraries, and technologies associated with TypeScript.

universal server rendering –

Improved Data Binding –

Angular 5

After the release of Angular 2, the next big update for Angular was came i.e. Angular 4, Using angular 4 you can fully take advantage of all those features and start developing awesome applications immediately.

Angular 4 has following new features –

Faster and smaller – Angular 4 is now faster and smaller!

Animations Animations now have their own package i.e. @angular/platform-browser/animations

Templates – template is now ng-template. you should use the ng-template tag

Email Validator – In Angular 2.0, we use an email validator, using pattern option. but in Angular 4.0, there is a validator to validate an email.

Angular Universal: it's possible to render Angular applications outside of the browser.

Instructor Notes:

What is node Js?



- Node.js is an open source server framework
- Node.js uses JavaScript on the server
- Node.js can generate dynamic page content
- Node.js can create, open, read, write, delete, and close files on the server
- Node.js can collect form data
- Node.js can add, delete, modify data in your database
- It's a highly scalable system that uses asynchronous, non-blocking I/O model (input/output), rather than threads or separate processes
- It is not a framework like jQuery nor a programming language like C# or JAVA . It's a new kind of web server like has a lot in common with other popular web servers, like Microsoft's Internet Information Services (IIS) or Apache

Instructor Notes:

What is node JS?



- Node.js is useful for project structuring, module management, dependency installation etc and you need to do manually all this stuffs.
- NPM - Node Package Manager is mainly used to install all the libraries of any framework or all the dependencies configured in json file of the project and it doesn't work without node JS.

Instructor Notes:

Installing and using Angular 5



➤ Install Node

- <https://nodejs.org/en/>

➤ Run commands on command prompt

- `npm -version` --- Check node version
- `git clone https://github.com/angular/quickstart.git` quickstart
- `cd quickstart`
- `npm install` --- install node modules
- `npm start` ---Start node server & run your Application

If you have internet use git otherwise use basic demo

If you have internet use `npm install -g @angular/cli` & use `ng serve`

Instructor Notes:

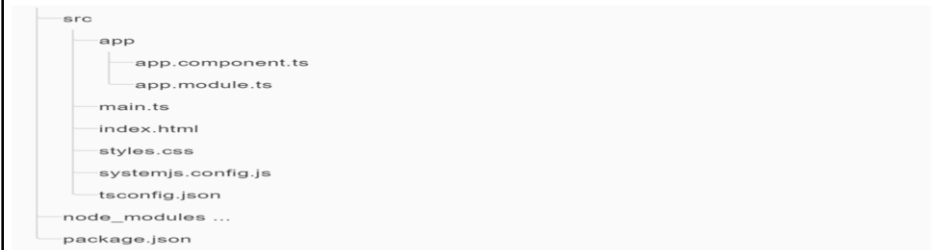
Installing and using Angular 5 (Contd...)



➤ Angular 5 Dependencies

- core-js
- zone.js
- Systemjs
- systemjs.config.js

➤ After creating Projects 3 typescript file created



app/app.component.ts---→

Defines the same AppComponent as the one in the QuickStart playground. It is the root component of what will become a tree of nested components as the application evolves.

app/app.module.ts-→

Defines AppModule, the root module that tells Angular how to assemble the application. Right now it declares only the AppComponent. Soon there will be more components to declare.

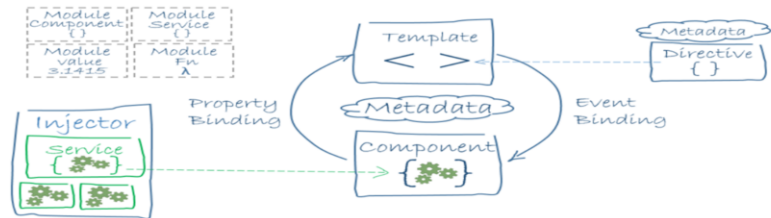
main.ts--→

Compiles the application with the JIT compiler and bootstraps the application's main module (AppModule) to run in the browser. The JIT compiler is a reasonable choice during the development of most projects and it's the only viable choice for a sample running in a *live-coding* environment like Stackblitz. You'll learn about alternative compiling and deployment options later in the documentation.

Instructor Notes:

Blocks of Angular 5

- The architecture diagram identifies the eight main building blocks of an Angular application-



- Modules
- Templates
- Data binding
- Services

- Components
- Metadata
- Directives
- Dependency injection

We can write Angular applications by composing HTML *templates* with Angularized markup, writing *component* classes to manage those templates, adding application logic in *services*, and boxing components and services in *modules*.

Then we launch the app by *bootstrapping* the *root module*. Angular takes over, presenting your application content in a browser and responding to user interactions according to the instructions we have provided.

Then we launch the app by *bootstrapping* the *root module*. Angular takes over, presenting our application content in a browser and responding to user interactions according to the instructions you've provided.

Module

Optional feature

Useful if you are using TypeScript which allows you to use interface or classes

export class AppComponent is like saying that this class is going to be public

Use relative file paths for importing modules

Component class is something you'd export from a module.

Component

Components controls Views

Logic to support the view can be inside a class

Angular creates/destroys components as user moves through UI

Template

A form of HTML that describes how to render the Component. It looks mostly like HTML syntax except if you add Angular keywords in them.

Metadata

Some **@Component** configuration options:

selector: css selector to be applied to that html element

templateUrl: address of the component itself

directives: array of components/directives that this component itself requires to function properly

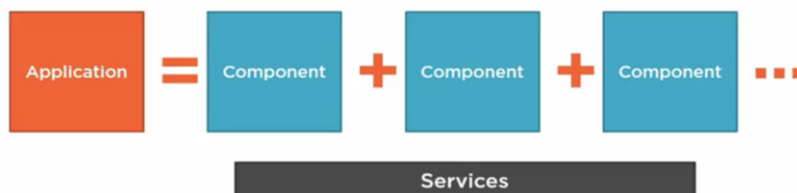
providers: an array of *dependency injection providers* for *services*

Instructor Notes:

A Basic Angular5 Application



- An application is consists of a set of components, and some services, each component is comprised of a template, Classes and metadata.



Angular Application is consists of set of components & some services .An Angular module, whether a *root* or *feature*, is a class with an @NgModule decorator.

Instructor Notes:

A Basic Angular5 Application- Module



- Angular apps are modular and Angular has its own modularity system called *Angular modules* or *NgModules*.
- Every Angular app has at least one Angular module class, the root module, conventionally named AppModule.
- An Angular module, whether a root or feature, is a class with an @NgModule decorator.
- NgModule is a decorator function that takes a single metadata object whose properties describe the module.

Instructor Notes:

A Basic Angular5 Application-Module



➤ Some important properties are

- **declarations** - the view classes that belong to this module. Angular has three kinds of view classes: components, directives, and pipes.
- **exports** - the subset of declarations that should be visible and usable in the component templates of other modules.
- **imports** - other modules whose exported classes are needed by component templates declared in this module.
- **providers** - creators of services that this module contributes to the global collection of services; they become accessible in all parts of the app.
- **bootstrap** - the main application view, called the root component, that hosts all other app views. Only the root module should set this bootstrap property.

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A Basic Angular5 Application-Root Module

- Every application has at least one Angular module, the root module that you bootstrap to launch the application.

```
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';
import { AppComponent } from './app.component';
```

```
@NgModule({
  imports: [ BrowserModule ],
  declarations: [ AppComponent ],
  bootstrap: [ AppComponent ]
})
```

```
export class AppModule { }
```

The export of AppComponent is just to show how to export; it isn't actually necessary in this example. A root module has no reason to *export* anything because other components don't need to *import* the root module.

Launch an application by *bootstrapping* its root module. During development you're likely to bootstrap the AppModule in a main.ts file like this one.

After the import statements, you come to a class adorned with the **@NgModule** *decorator*

The @NgModule decorator identifies AppModule as an Angular module class (also called an NgModule class). @NgModule takes a *metadata* object that tells Angular how to compile and launch the application.

imports — the BrowserModule that this and every application needs to run in a browser.

declarations — the application's lone component, which is also ...

bootstrap — the *root* component that Angular creates and inserts into the index.html host web page.

Instructor Notes:

A Basic Angular5 Application-Root Module



- Launch an application by bootstrapping its root module—main.ts. →
- Angular ships as a collection of JavaScript modules. We can think of them as library modules. Each Angular library name begins with the @angular prefix.
- The application module needs material from within that BrowserModule. To access that material, add it to the @NgModule metadata imports like this.
 - imports: [BrowserModule]

```
import { platformBrowserDynamic
} from '@angular/platform-
browser-dynamic';
import { AppModule } from
'./app/app.module';

platformBrowserDynamic().bootstr
apModule(AppModule);
```

There are many ways to bootstrap an application. The variations depend upon how you want to compile the application and where you want to run it. In the beginning, you will compile the application dynamically with the *Just-in-Time (JIT)* compiler and we run it in a browser.

The recommended place to bootstrap a JIT-compiled browser application is in a separate file in the src folder named src/main.ts

The *bootstrapping* process sets up the execution environment, digs the *root* AppComponent out of the module's bootstrap array, creates an instance of the component and inserts it within the element tag identified by the component's selector.

The AppComponent selector — here and in most documentation samples — is my-app so Angular looks for a <my-app> tag in the index.html

```
<my-app><!-- content managed by Angular --></my-app>
```

Instructor Notes:

Working with Angular5 with Eclipse



➤ Download Eclipse with Angular4 plugin & typescript

- <https://www.eclipse.org/oxygen/>

➤ Steps to run & create Angular projects in Eclipse

- Go to File -> New-> Project->Java & choose java project
- Copy the *angular-quickstart* shared projects with node module
- Open cmd prompt, go till eclipse work space where putted Angular Project
- Run command --> npm start

```
D:\AllDemoAngular\ModuleDemo>npm start
```

```
> angular-quickstart@1.0.0 prestart D:\AllDemoAngular\ModuleDemo
> npm run build
```

```
> angular-quickstart@1.0.0 build D:\AllDemoAngular\ModuleDemo
> tsc -p src/
```


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Demo

➤ Module Demo

Demo

Add the notes here.

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Summary



- Angular4 is a framework for building client applications in HTML.
- The framework consists of several libraries, some of them core and some optional.
- Angular apps are modular and Angular has its own modularity system called *Angular modules* or *NgModules*.



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