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ANGULAR 4

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About the Tutorial

Angular 4 is a JavaScript framework for building web applications and apps in JavaScript, html, and TypeScript, which is a superset of JavaScript. Angular provides built-in features for animation, http service, and materials which in turn has features such as auto-complete, navigation, toolbar, menus, etc. The code is written in TypeScript, which compiles to JavaScript and displays the same in the browser.

Audience

This tutorial is designed for software programmers who want to learn the basics of Angular 4 and its programming concepts in a simple and easy manner. This tutorial will give you enough understanding on the various functionalities of Angular 4 with suitable examples.

Prerequisites

Before proceeding with this tutorial, you should have a basic understanding of HTML, CSS, JavaScript, TypeScript, and Document Object Model (DOM).

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1. ANGULAR 4 – OVERVIEW

There are three major releases of Angular. The first version that was released is Angular1, which is also called AngularJS. Angular1 was followed by Angular2, which came in with a lot of changes when compared to Angular1.

The structure of Angular is based on the components/services architecture. AngularJS was based on the model view controller. **Angular 4** released in March 2017 proves to be a major breakthrough and is the latest release from the Angular team after Angular2.

Angular 4 is almost the same as Angular 2. It has a backward compatibility with Angular 2. Projects developed in Angular 2 will work without any issues with Angular 4.

Let us now see the new features and the changes made in Angular 4.

Why Angular4 and Not Angular3?

The Angular team faced some versioning issues internally with their modules and due to the conflict they had to move on and release the next version of Angular – the Angular4.

Let us now see the new features added to Angular 4:

ngIf

Angular2 supported only the **if** condition. However, Angular 4 supports the **if else** condition as well. Let us see how it works using the ng-template.

```
<span *ngIf="isavailable; else condition1">Condition is valid.</span>  
<ng-template #condition1>Condition is invalid</ng-template>
```

as keyword in for loop

With the help of **as** keyword you can store the value as shown below:

```
<div *ngFor="let i of months | slice:0:5 as total">  
  Months: {{i}} Total: {{total.length}}  
</div>
```

The variable total stores the output of the slice using the **as** keyword.

Animation Package

Animation in Angular 4 is available as a separate package and needs to be imported from @angular/animations. In Angular2, it was available with @angular/core. It is still kept the same for its backward compatibility aspect.

Template

Angular 4 uses **<ng-template>** as the tag instead of **<template>**; the latter was used in Angular2. The reason Angular 4 changed **<template>** to **<ng-template>** is because of the name conflict of the **<template>** tag with the html **<template>** standard tag. It will deprecate completely going ahead. This is one of the major changes in Angular 4.

TypeScript 2.2

Angular 4 is updated to a recent version of TypeScript, which is 2.2. This helps improve the speed and gives better type checking in the project.

Pipe Title Case

Angular 4 has added a new pipe title case, which changes the first letter of each word into uppercase.

```
<div>
  <h2>{{ 'Angular 4 titlecase' | titlecase }}</h2>
</div>
```

The above line of code generates the following output – **Angular 4 Titlecase**.

Http Search Parameters

Search parameters to the http get api is simplified. We do not need to call **URLSearchParams** for the same as was being done in Angular2.

Smaller and Faster Apps

Angular 4 applications are smaller and faster when compared to Angular2. It uses the TypeScript version 2.2, the latest version which makes the final compilation small in size.

2. ANGULAR 4 – ENVIRONMENT SETUP

In this chapter, we will discuss the Environment Setup required for Angular 4. To install Angular 4, we require the following:

- Nodejs
- Npm
- Angular CLI
- IDE for writing your code

Nodejs has to be greater than 4 and npm has to be greater than 3.

Nodejs

To check if nodejs is installed on your system, type **node -v** in the terminal. This will help you see the version of nodejs currently installed on your system.

```
C:\>node -v  
v6.11.0
```

If it does not print anything, install nodejs on your system. To install nodejs, go the homepage <https://nodejs.org/en/download/> of nodejs and install the package based on your OS.

The homepage of nodejs will look like the following:

Downloads

Latest LTS Version: v6.11.2 (includes npm 3.10.10)

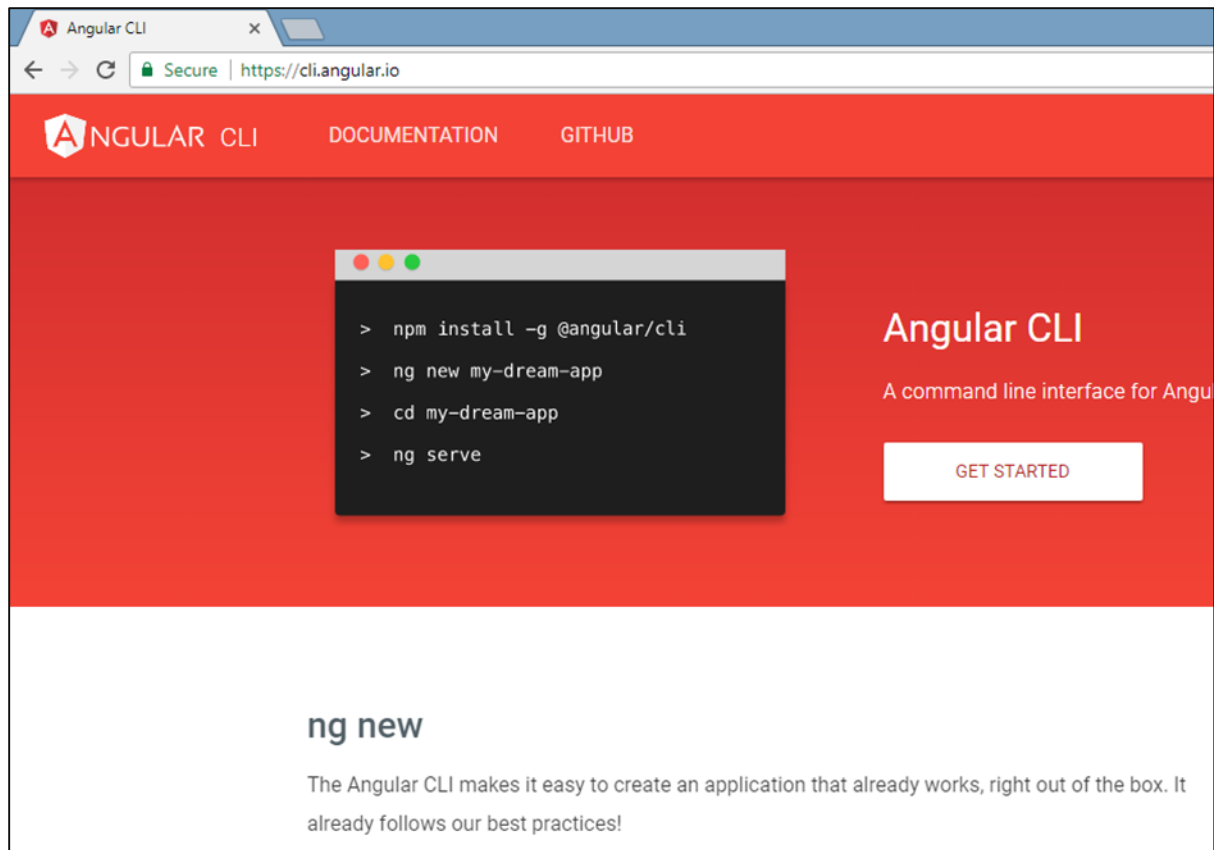
Download the Node.js source code or a pre-built installer for your platform, and start developing today.

LTS Recommended For Most Users	Current Latest Features	
Windows Installer <small>node-v6.11.2-win9x.msi</small>	Macintosh Installer <small>node-v6.11.2.pkg</small>	Source Code <small>node-v6.11.2.tar.gz</small>
Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.zip)	32-bit	64-bit
macOS Installer (.pkg)	64-bit	
macOS Binaries (.tar.gz)	64-bit	

Based on your OS, install the required package. Once nodejs is installed, npm will also get installed along with it. To check if npm is installed or not, type **npm -v** in the terminal. It should display the version of the npm.

```
C:\>npm -v
5.3.0
```

Angular 4 installations are very simple with the help of angular CLI. Visit the homepage <https://cli.angular.io/> of angular to get the reference of the command.



The screenshot shows the Angular CLI website in a browser window. The browser's address bar displays "Secure | https://cli.angular.io". The website has a red header with the Angular CLI logo and navigation links for "DOCUMENTATION" and "GITHUB". The main content area features a dark terminal window with the following commands:

```
> npm install -g @angular/cli
> ng new my-dream-app
> cd my-dream-app
> ng serve
```

To the right of the terminal, the text "Angular CLI" is displayed in a large font, followed by the subtitle "A command line interface for Angular". Below this is a white button labeled "GET STARTED".

Below the main content area, the heading "ng new" is shown, followed by the text: "The Angular CLI makes it easy to create an application that already works, right out of the box. It already follows our best practices!"

Type **npm install -g @angular/cli**, to install angular cli on your system.

```

Command Prompt
+-- extglob@0.3.2
+-- filename-regex@2.0.1
+-- normalize-path@2.1.1
+-- remove-trailing-separator@1.0.2
+-- object.omit@2.0.1
+-- for-own@0.1.5
+-- parse-glob@3.0.4
+-- glob-base@0.3.0
+-- is-dotfile@1.0.3
+-- regex-cache@0.4.3
+-- is-equal-shallow@0.1.3
+-- is-primitive@2.0.0
+-- serve-index@1.9.0
+-- batch@0.6.1
+-- http-errors@1.6.1
+-- sockjs@0.3.18
+-- faye-websocket@0.10.0
+-- websocket-driver@0.6.5
+-- websocket-extensions@0.1.1
+-- uuid@2.0.3
+-- sockjs-client@1.1.2
+-- eventsource@0.1.6
+-- original@1.0.0
+-- url-parse@1.0.5
+-- querystringify@0.0.4
+-- faye-websocket@0.11.1
+-- json3@3.3.2
+-- url-parse@1.1.9
+-- querystringify@1.0.0
+-- spdy@3.4.7
+-- handle-thing@1.2.5
+-- http-deceiver@1.2.7
+-- select-hose@2.0.0
+-- spdy-transport@2.0.20
+-- detect-node@2.0.3
+-- hpack.js@2.1.6
+-- obuf@1.1.1
+-- wbuf@1.7.2
+-- minimalistic-assert@1.0.0
+-- yargs@6.6.0
+-- camelcase@3.0.0
+-- cliui@3.2.0
+-- string-width@1.0.2
+-- is-fullwidth-code-point@1.0.0
+-- string-width@1.0.2
+-- is-fullwidth-code-point@1.0.0
+-- yargs-parser@4.2.1
+-- webpack-merge@2.6.1
+-- zone.js@0.8.12

npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@^1.0.0 (node_modules\@a
ngular\cli\node_modules\chokidar\node_modules\fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@
1.1.2: wanted {"os":"darwin","arch":"any"} <current: {"os":"win32","arch":"x64"}
>
C:\project#4>

```

You will get the above installation in your terminal, once Angular CLI is installed. You can use any IDE of your choice, i.e., WebStorm, Atom, Visual Studio Code, etc.

The details of the project setup is explained in the next chapter.

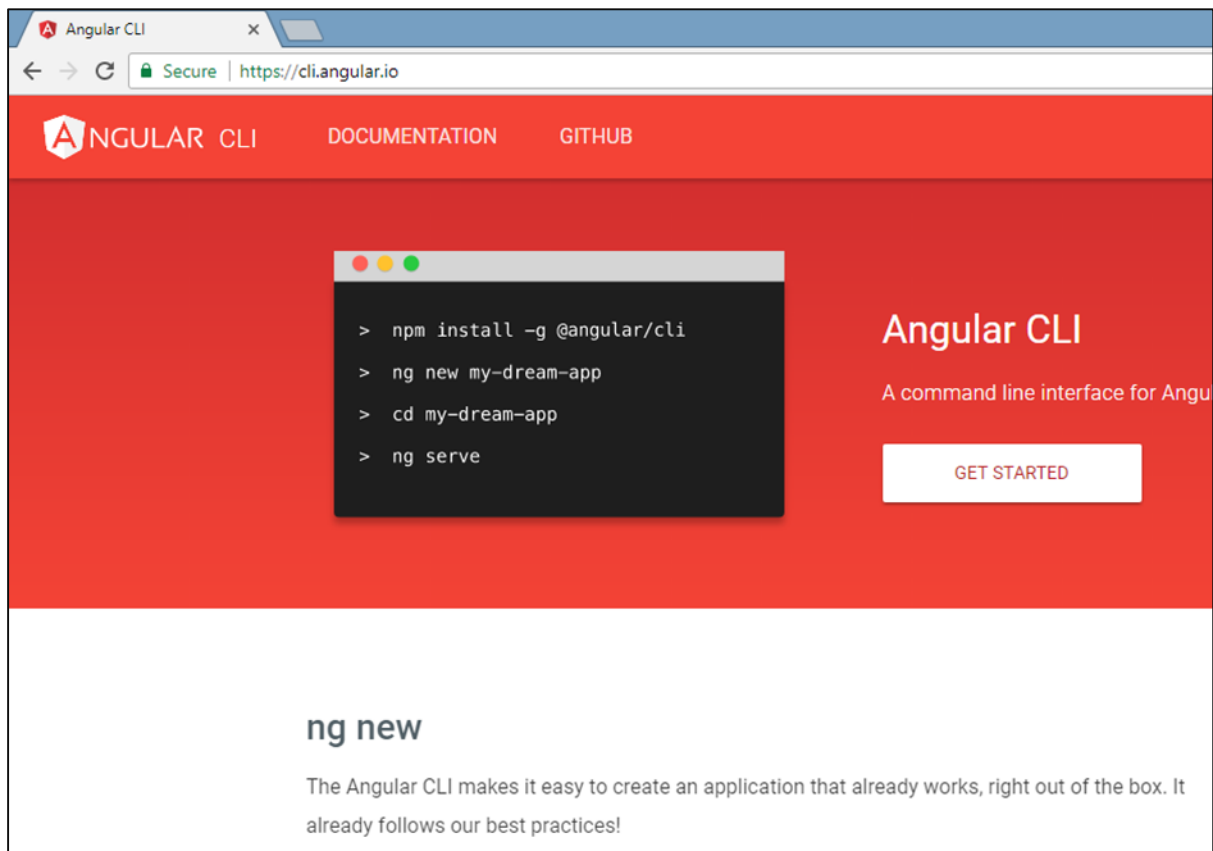
3. ANGULAR 4 – PROJECT SETUP

AngularJS is based on the model view controller, whereas Angular 2 is based on the components structure. Angular 4 works on the same structure as Angular2 but is faster when compared to Angular2.

Angular4 uses TypeScript 2.1 version whereas Angular 2 uses TypeScript version 1.8. This brings a lot of difference in the performance.

To install Angular 4, the Angular team came up with Angular CLI which eases the installation. You need to run through a few commands to install Angular 4.

Go to this site <https://cli.angular.io> to install Angular CLI.



To get started with the installation, we first need to make sure we have nodejs and npm installed with the latest version. The npm package gets installed along with nodejs.

Go to the nodejs site <https://nodejs.org/en/>.



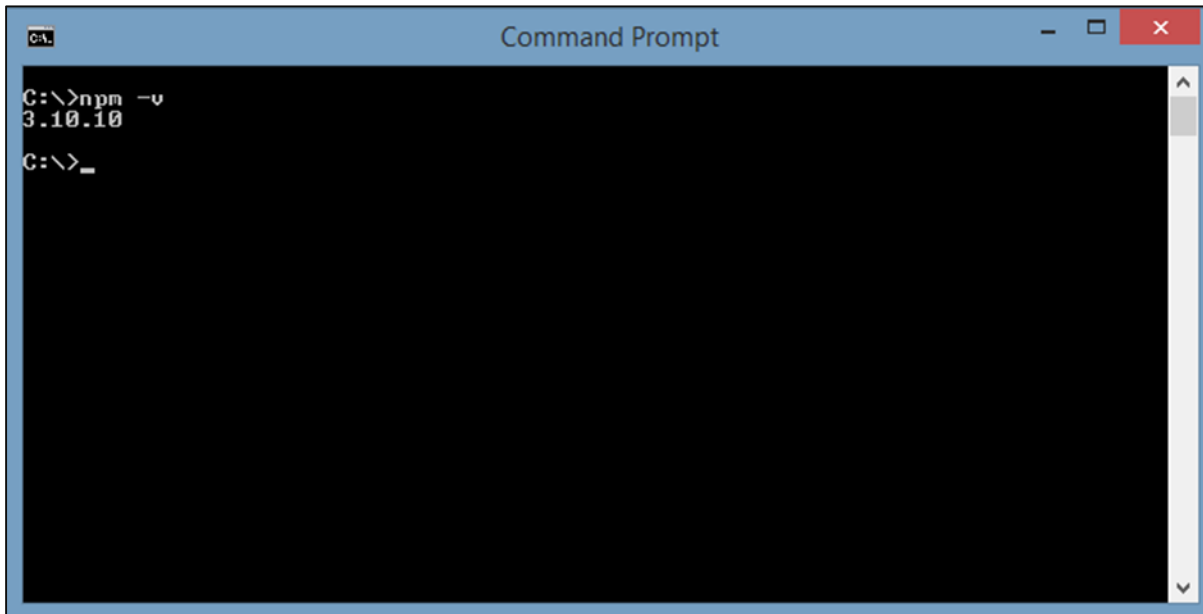
The latest version of Node.js v6.11.0 is recommended for users. Users who already have Node.js greater than 4 can skip the above process. Once Node.js is installed, you can check the version of Node.js in the command line using the command, `node -v`, as shown below:

A screenshot of a Windows Command Prompt window. The title bar reads 'Command Prompt'. The command prompt shows the following text:

```
C:\>node -v
v6.11.0
C:\>
```

The command prompt shows v6.11.0. Once Node.js is installed, npm will also get installed along with it.

To check the version of npm, type command **npm -v** in the terminal. It will display the version of npm as shown below.



```
C:\>npm -v
3.10.10
C:\>_
```

The version of npm is 3.10.10. Now that we have nodejs and npm installed, let us run the angular cli commands to install Angular 4. You will see the following commands on the webpage:

```
npm install -g @angular/cli    //command to install angular 4

ng new  Angular 4-app    // name of the project

cd my-dream-app

ng serve
```

End of ebook preview
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