

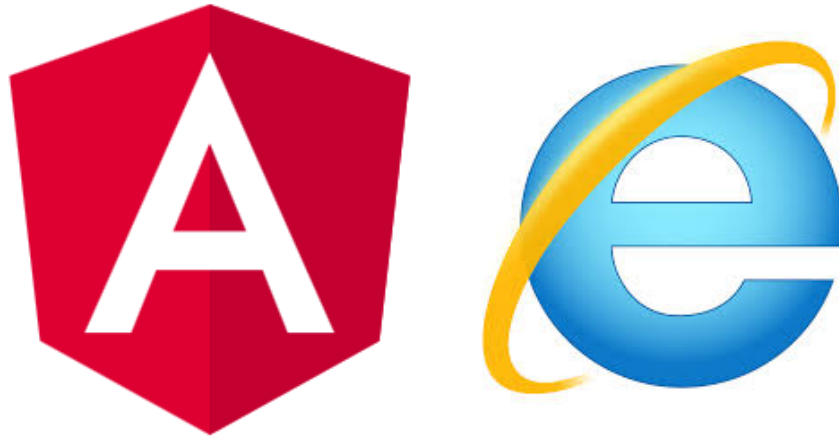
# Angular and Internet Explorer

## Supporting Internet Explorer in an Angular CLI application



Todd Palmer [Follow](#)

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Yes Angular CLI applications can support Internet Explorer

You installed the Angular CLI and used it to generate your new application. But, when you try to view it in **Internet Explorer (IE)**, you see nothing. Now what?

The **bad news**:

**Angular CLI** applications require a few more steps in order to support **Internet Explorer**.

The **good news**:

It's really simple: un-comment a few **imports** and install a couple of **npm** packages.

In this article I will show you:

- Getting started with an **Angular CLI** application
- The error in Internet Explorer
- What actually causes the error
- The two steps necessary to support Internet Explorer

If you just want to make it work and **don't care about the details**, you can scroll down to the section: **The Cure**.

**Note:**

This article has been updated to reflect Angular 7. However, it works exactly the same for Angular 5 and 6. Although, you may see some minor differences in the comments of the file `polyfills.ts`.

## Getting Started

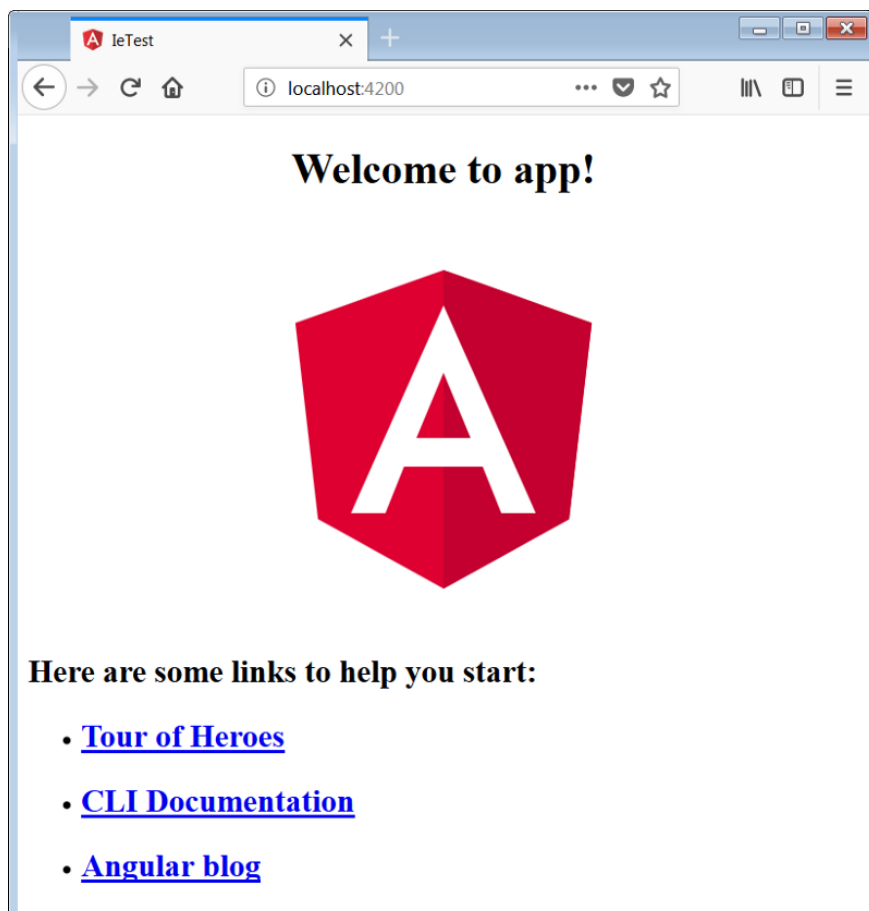
First use **Angular CLI** and have it generate and serve a starter application:

```
ng new ie-test
cd ie-test
ng serve
```

Point basically any browser **except Internet Explorer** at:

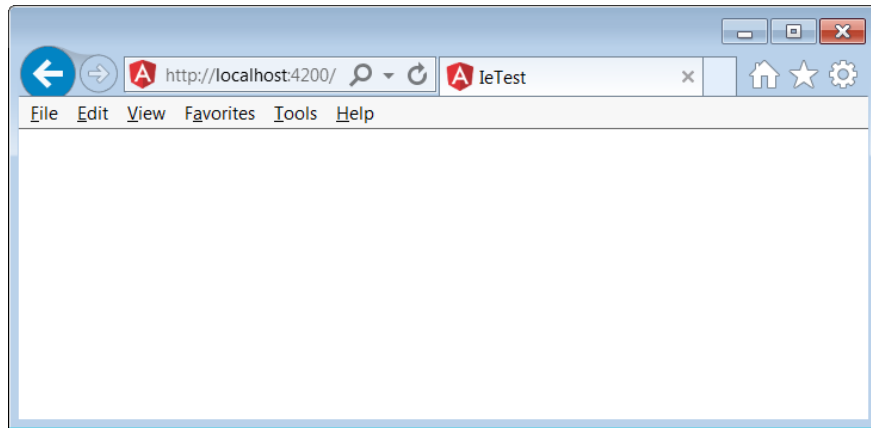
`http://localhost:4200` and you will see your application working.

For example, in Chrome it looks like this:

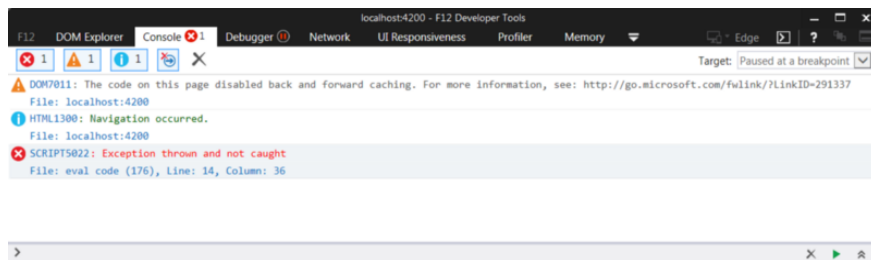


# The Symptom

However, if we try to use Internet Explorer, we see:



Well, it seems to be doing something because the title is at least correct. If we open the Browser Console and re-load the page, we see an error in `_for-of.js` that says: **Exception thrown and not caught**






















So you are probably asking, “Todd, what causes this error?” Good question. The answer is...


## The Disease


We see this error because there are a lot of commonly used parts of JavaScript that Internet Explorer just doesn’t support. This is especially true for array functions.


For example, look at the Mozilla Developer Network JavaScript Reference. You have it book marked in your Favorites Bar right? Specifically, let’s look at `for...of` under **Statements & declarations**. Scroll down to the bottom to the Browser Compatibility section.

															
															
Basic support	38	12	13 *	No	25	8	5.1	Yes	12	14 *	25	8	?	Yes	
Closing iterators	51	Yes	53	No	Yes	Yes	Yes	Yes	Yes	53	Yes	Yes	?	Yes	

 Full support

 Compatibility unknown

 No support

 See implementation notes.

We can see that IE doesn't support **for..of**. Hence, it throws an error when the core Angular code tries to use it.

However, there's no need to panic. Angular uses the core-js library by Denis Pushkarev (zloirock) to provide polyfills for all the stuff that Angular needs but IE doesn't support. We just need to import it.

So now that we know the problem, let's fix it!

## The Cure

To get IE working there are basically two steps we need to do:

1. Un-comment some imports in the **polyfill.ts** file.
2. Install a couple of **npm** packages.

## Polyfill Imports

First open the file in your IDE or text editor: `ie-test\src\polyfills.ts`

Un-comment all the import lines in there. For me, the easy way is just to replace all

```
// import
```

with

```
import
```

After that mine looks like this:

```

1  /**
2   * This file includes polyfills needed by Angular and
3   * You can add your own extra polyfills to this file.
4   *
5   * This file is divided into 2 sections:
6   *   1. Browser polyfills. These are applied before lo
7   *   2. Application imports. Files imported after Zone
8   *      file.
9   *
10  * The current setup is for so-called "evergreen" brow
11  * automatically update themselves. This includes Safa
12  * Edge >= 13 on the desktop, and iOS 10 and Chrome on
13  *
14  * Learn more in https://angular.io/guide/browser-supp
15  */
16
17  /*****
18   * BROWSER POLYFILLS
19   */
20
21  /** IE9, IE10 and IE11 requires all of the following p
22  import 'core-js/es6/symbol';
23  import 'core-js/es6/object';
24  import 'core-js/es6/function';
25  import 'core-js/es6/parse-int';
26  import 'core-js/es6/parse-float';
27  import 'core-js/es6/number';
28  import 'core-js/es6/math';
29  import 'core-js/es6/string';
30  import 'core-js/es6/date';
31  import 'core-js/es6/array';
32  import 'core-js/es6/regexp';
33  import 'core-js/es6/map';
34  import 'core-js/es6/weak-map';
35  import 'core-js/es6/set';
36
37  /**
38   * If the application will be indexed by Google Search
39   * Googlebot uses a renderer based on Chrome 41.
40   * https://developers.google.com/search/docs/guides/re
41   */
42  import 'core-js/es6/array';
43
44  /** IE10 and IE11 requires the following for NgClass s
45  import 'classlist.js'; // Run before install

```

```
45 import 'classlist.js'; // Run npm install --save cla
46
47 /** IE10 and IE11 requires the following for the Refle
48 import 'core-js/es6/reflect';
49
50 /**
51 * Web Animations `@angular/platform-browser/animation
```

## Install npm Pacackages

Notice there are some **npm install** commands in the comments. If you are using an early version of Angular CLI, there may also be a third one. For Angular CLI versions 7, 6, and 1.7 you need to run:

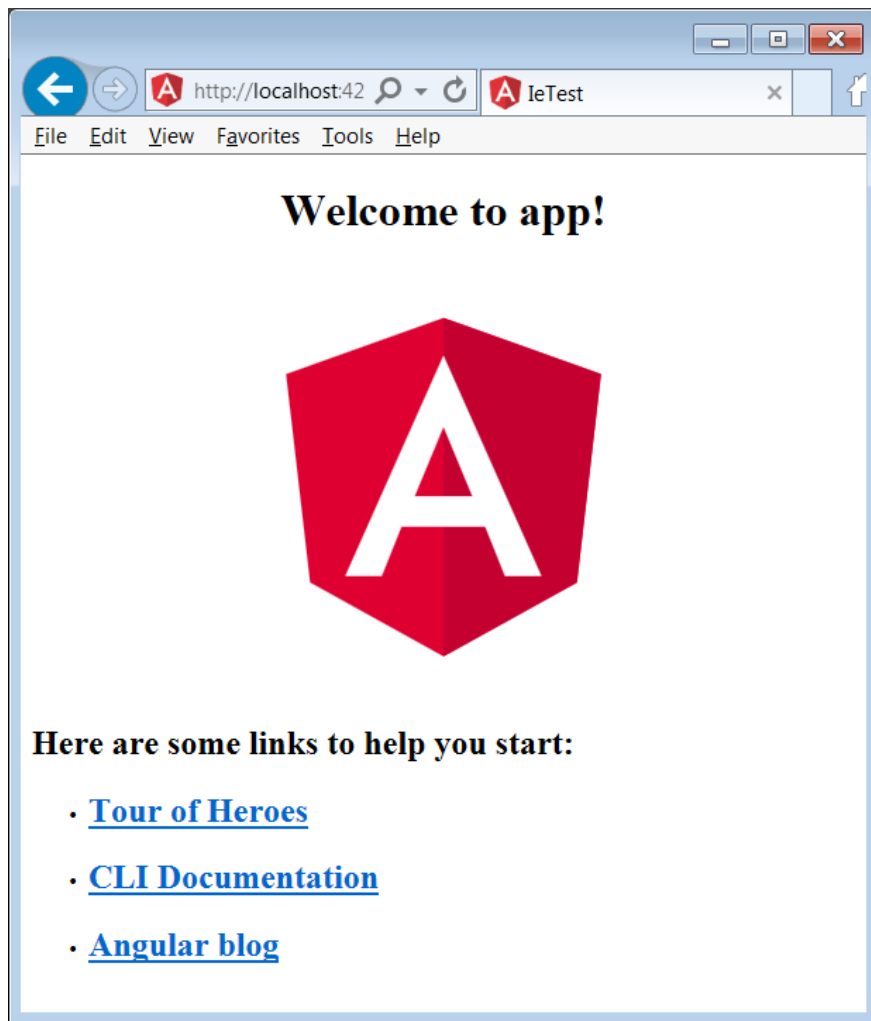
```
npm install --save classlist.js
npm install --save web-animations-js
```

## Success

Now in the root of your project just run:

```
ng serve
```

Point **Internet Explorer** at: `http://localhost:4200` and you will see your application working.



## Summary

Supporting Internet Explorer in Angular is easy if you just remember where to find that **polyfills.ts** file.

Finally, take a minute to stop by the core-js GitHub project and give it a star.

