Angular 6+ deploy to Apache server by solving 404 Not found error on page refresh

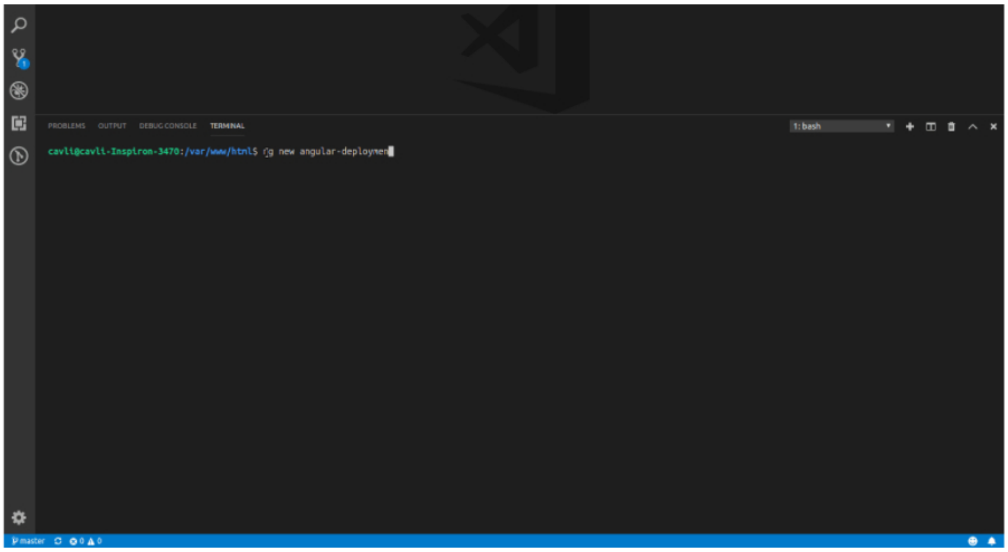
30 NOVEMBER 2018 on Angular, Angular 6, Apache, Angular7, Angular6+, Angular-404-not-found

This article will hep you to deploy **angular 6+** application on apache server also to solve **404 not found** error on page refresh.

Getting Started

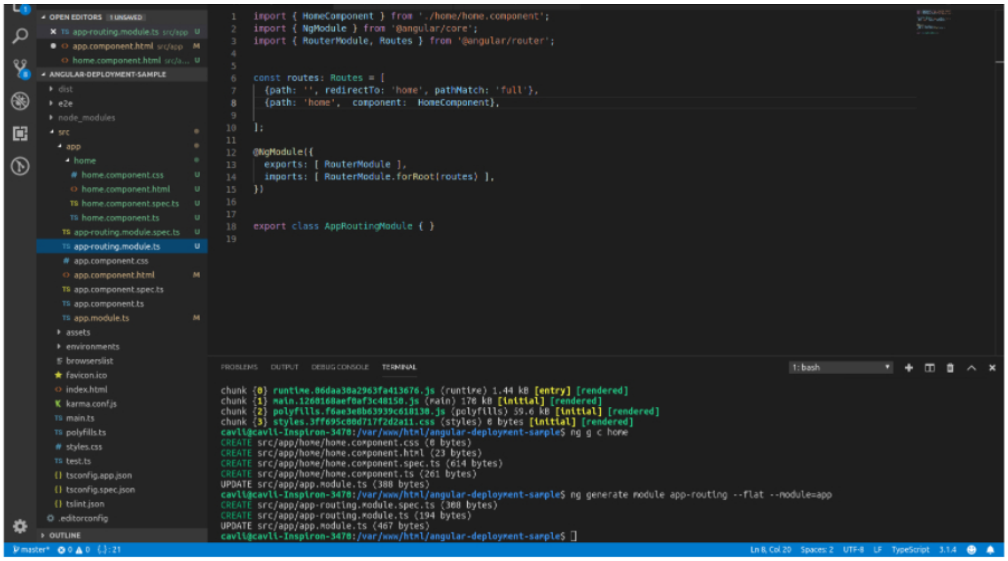
For now let's hope you have already setup a new Angular6+ project or has an existing Angular6+ project.Here we are considering working with an existing Angular6+ App. I have named my project as angular-deployemnt-sample.

The project was scaffolded using Angular cli which can be used to generate basic app structure for your projects.



```
cavli@cavli-Inspiron-3470:/var/www/html$ ng new angular-deploymen
```

After generating the basic app using `Cli` and setting up basic routing module and a home component the project structure looks something like this



```
import { HomeComponent } from './home/home.component';
import { NgModule } from '@angular/core';
import { RouterModule, Routes } from '@angular/router';


const routes: Routes = [
  {path: '', redirectTo: 'home', pathMatch: 'full'},
  {path: 'home',  component:  HomeComponent},

];

@NgModule({
  exports: [ RouterModule ],
  imports: [ RouterModule.forRoot(routes) ],
})


export class AppRoutingModule { }
```

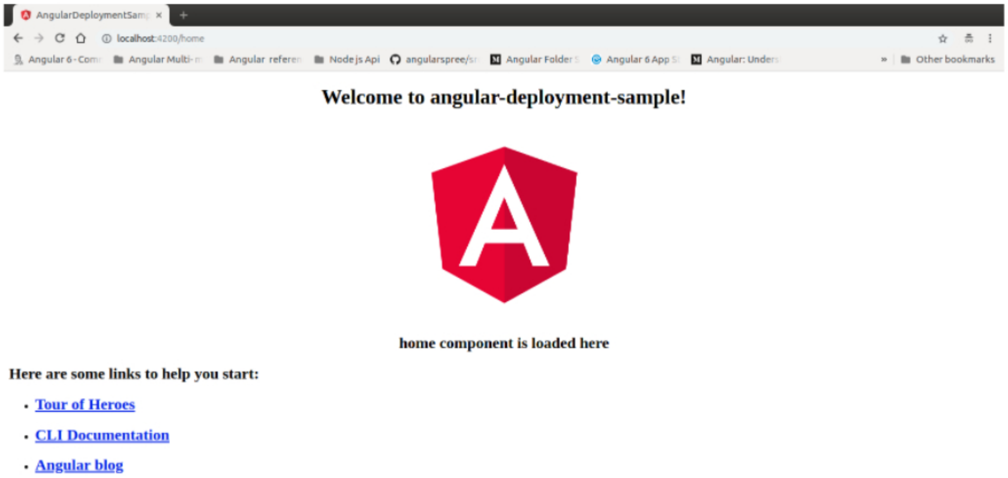
```
chunk {0} runtime.86daa38a2963fa413676.js (runtime) 1.44 kB [entry] [rendered]
chunk {1} main.1268168aef0af3c48158.js (main) 178 kB [initial] [rendered]
chunk {2} polyfills.f6ae3e8b63939c618138.js (polyfills) 59.6 kB [initial] [rendered]
chunk {3} styles.3ff695c80d717f2d2a11.css (styles) 0 bytes [initial] [rendered]
cavli@cavli-Inspiron-3470:/var/www/html/angular-deployment-sample$ ng g c home
CREATE src/app/home/home.component.css (0 bytes)
CREATE src/app/home/home.component.html (23 bytes)
CREATE src/app/home/home.component.spec.ts (614 bytes)
CREATE src/app/home/home.component.ts (261 bytes)
UPDATE src/app/app.module.ts (388 bytes)
cavli@cavli-Inspiron-3470:/var/www/html/angular-deployment-sample$ ng generate module app-routing --flat --module=app
CREATE src/app/app-routing.module.spec.ts (308 bytes)
CREATE src/app/app-routing.module.ts (194 bytes)
UPDATE src/app/app.module.ts (467 bytes)
cavli@cavli-Inspiron-3470:/var/www/html/angular-deployment-sample$ 
```

if you want to run the same in local just use the command

```
ng serve --open
```

The above command will start serving the project at the url

```
http://localhost:4200/
```



Welcome to angular-deployment-sample!

home component is loaded here

Here are some links to help you start:

- Tour of Heroes
- CLI Documentation
- Angular blog

Build app for production

Before deploying to the apache server we need to build the project and optimise it for production.

```
ng build --prod
```

Setting our Base

Setting our Base

To link around your application using relative links, you will need to set a `<base>` in the `<head>` of your document. while setting base you will have to consider where the projects resides in the server

In **angular 6+** cli allows you to set the base automatically while building the project.if your project files is placed in the `/var/www/html` folder (that is project files copied from dist folder after ng build --prod to root folder of your server) or you are running on ng serve (while under development in local) then your base should be

```
<base href="/">
```

if your project files resides in some folder somefolder then base should be

```
<base href="/somefolder/">
```

To set the base during build to root folder `/var/www/html` you can use the regular command

```
ng build --prod
```

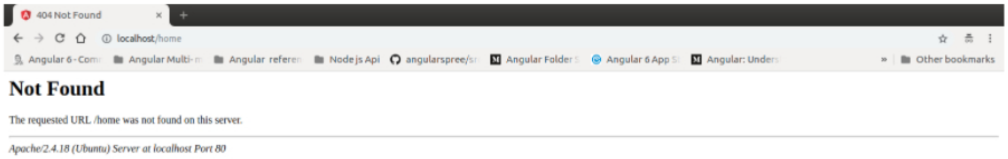
To set the base during build when your project files resides in some folder somefolder then use

```
ng build --prod  --base-href somefolder
```

Now after you copying the files from your `dist` folder to apache servers root folder `/var/www/html` the project will work until you refresh the page

404 Not found error on page refresh

Now that you have deployed the project to server, and everything seems ok until you try to refresh the page . You will find that your app throws a **404 Not found** error



Not Found

The requested URL /home was not found on this server.

Apache/2.4.18 (Ubuntu) Server at localhost Port 80

Solution

To solve this there are two approaches or strategy

- PathLocationStrategy (or html5Mode)
- HashLocationStrategy

We will use PathLocationStrategy

The default strategy used in Angular is the `PathLocationStrategy` so we need to do nothing to enable it. And this will be the statergy that we are going to use here

It takes advantage of a relatively new HTML5 API called pushstate (from the HTML5 history API).

By using pushstate we can change the `URL` and not have the browser request the page from the server and without needing to use a hash fragment.

Unfortunately it has one big downside, if we then reloaded the page or bookmarked and opened it later the browser would make a request to the server

By using a hash fragment the server never needs to know about any application `URL`, it will only ever get asked for the root page and it will only ever return the root page.

But by using a `PathLocationStrategy` the server needs to be able to return the main application code for every `URL`, not just the `root URL`.

So with `PathLocationStrategy` we need to co-operate with a server side that supports this functionality, it's possible and quite easy to implement a server side like this but it does require some effort and cooperation.

When you have `html5Mode` enabled, the `#` character will no longer be used in your `URLs`. The `#` symbol is useful because it requires no server side configuration. Without `#`, the `URL` looks much nicer, but it also requires server side rewrites.

Configuring Apache Server

we need to configure the server for rewrites, and this involve following steps

- Activate `mod_rewrite`
- Edit Apache configuration file
- Restart Apache
- Setting Up `.htaccess`

First we need to activate `mod_rewrite`. It's available but not enabled with a clean `Apache 2` installation

You can use the following command

```
sudo a2enmod rewrite
```

This will activate the module or alert you that the module is already enabled.

By default, Apache prohibits using an `.htaccess` file to apply rewrite rules, so first you need to allow changes to the file. Open the default Apache configuration file using nano or your favourite text editor.

```
sudo nano /etc/apache2/sites-available/000-default.conf
```

Inside that file, you will find a `<VirtualHost *:80>` block starting on the first line. Inside of that block, add the following new block so your configuration file looks like the following. Make sure that all blocks are properly indented.

```
<VirtualHost *:80>
    <Directory /var/www/html>
        Options Indexes FollowSymLinks MultiViews
        AllowOverride All
        Require all granted
    </Directory>

</VirtualHost>
```

Now Save and close the file .To put these changes into effect, `restart Apache`

```
sudo systemctl restart apache2
```

`mod_rewrite` is now fully enabled. In the next step we will set up an `.htaccess` file in the root folder `/var/www/html` where our angular files are placed and we we'll use it to define rewrite rules for redirects

```
 RewriteEngine on

# Don't rewrite files or directories
RewriteCond %{REQUEST_FILENAME} -f [OR]
RewriteCond %{REQUEST_FILENAME} -d
RewriteRule ^ - [L]

# Rewrite everything else to index.html to allow html5 state links
RewriteRule ^ index.html [L]
```

Also since we need to increase SEO points, i like to add some more code to .htaccess to `enable compression` and `leverage browser Caching`

```
RewriteEngine on

# Don't rewrite files or directories
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RewriteRule ^ - [L]

# Rewrite everything else to index.html to allow html5 state links
RewriteRule ^ index.html [L]



# Enable Compression
<IfModule mod_deflate.c>
  AddOutputFilterByType DEFLATE application/javascript
  AddOutputFilterByType DEFLATE application/rss+xml
  AddOutputFilterByType DEFLATE application/vnd.ms-fontobject
  AddOutputFilterByType DEFLATE application/x-font
  AddOutputFilterByType DEFLATE application/x-font-opentype
  AddOutputFilterByType DEFLATE application/x-font-otf
  AddOutputFilterByType DEFLATE application/x-font-truetype
  AddOutputFilterByType DEFLATE application/x-font-ttf
  AddOutputFilterByType DEFLATE application/x-javascript
  AddOutputFilterByType DEFLATE application/xhtml+xml
  AddOutputFilterByType DEFLATE application/xml
  AddOutputFilterByType DEFLATE font/opentype
  AddOutputFilterByType DEFLATE font/otf
  AddOutputFilterByType DEFLATE font/ttf
  AddOutputFilterByType DEFLATE image/svg+xml
  AddOutputFilterByType DEFLATE image/x-icon
  AddOutputFilterByType DEFLATE text/css
  AddOutputFilterByType DEFLATE text/html
  AddOutputFilterByType DEFLATE text/javascript
  AddOutputFilterByType DEFLATE text/plain
</IfModule>
<IfModule mod_gzip.c>
  mod_gzip_on Yes
  mod_gzip_dechunk Yes
  mod_gzip_item_include file .(html?|txt|css|js|php|pl)$
  mod_gzip_item_include handler ^cgi-script$
  mod_gzip_item_include mime ^text/.*
  mod_gzip_item_include mime ^application/x-javascript.*
  mod_gzip_item_exclude mime ^image/.*
  mod_gzip_item_exclude rspheader ^Content-Encoding:.*gzip.*
</IfModule>

# Leverage Browser Caching
<IfModule mod_expires.c>
  ExpiresActive On
  ExpiresByType image/jpg "access 1 year"
  ExpiresByType image/jpeg "access 1 year"
  ExpiresByType image/gif "access 1 year"
  ExpiresByType image/png "access 1 year"
  ExpiresByType text/css "access 1 month"
  ExpiresByType text/html "access 1 month"
  ExpiresByType application/pdf "access 1 month"
  ExpiresByType text/x-javascript "access 1 month"
  ExpiresByType application/x-shockwave-flash "access 1 month"
  ExpiresByType image/x-icon "access 1 year"
  ExpiresDefault "access 1 month"
</IfModule>
<IfModule mod_headers.c>
  <filesmatch "\.(ico|flv|jpg|jpeg|png|gif|css|swf)$">
  Header set Cache-Control "max-age=2678400, public"
  </filesmatch>
  <filesmatch "\.(html|htm)$">
  Header set Cache-Control "max-age=7200, private, must-revalidate"
  </filesmatch>
  <filesmatch "\.(pdf)$">
  Header set Cache-Control "max-age=86400, public"
  </filesmatch>
  <filesmatch "\.(js)$">
  Header set Cache-Control "max-age=2678400, private"
  </filesmatch>
</IfModule>
```
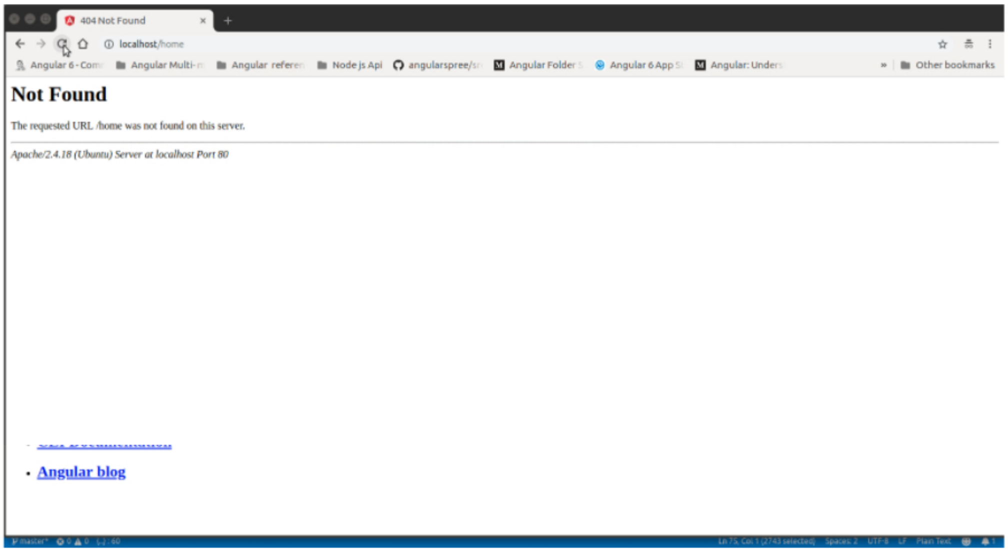

Now if you refresh your app in browser the app will work fine



Not Found

The requested URL /home was not found on this server.

Apache/2.4.18 (Ubuntu) Server at localhost Port 80

- Angular blog

Joel Joseph

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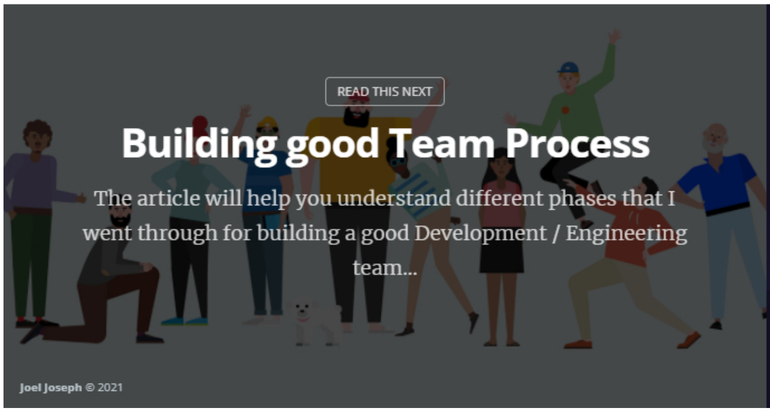

READ THIS NEXT

Building good Team Process

The article will help you understand different phases that I went through for building a good Development / Engineering team...

YOU MIGHT ENJOY

AngularJs remove # (hash) from url or setup Pretty URL

This article will help you to setup Pretty URL in AngularJs, that is to remove # from url. AngularJS applications...