Web Development
COMP 431 / COMP 531
Lecture 12: Angular SPA

Instructor: Mack Joyner

Department of Computer Science, Rice University

mjoyner@rice.edu

http://www.clear.rice.edu/comp431

Front-End Recap

- HTML, HTML5, Storage, Canvas

- JavaScript and Scope

- Forms, CSS, Events

- jQuery, AJAX, fetch, and promises

- Modern JS, MVC

- Angular Modules, Components, Routing, Services

Homework Assignment 4
(Draft Front-end)
Due Thursday 10/12

In-Class Exercise: Angular Routing

1. Create new Angular app called simple
2. Add 5 components: donate, about, contact, home, list
3. Add an app-routing module and a listing service
4. Set up routing so that URLs (http://localhost:4200/about) don't cause page refresh
   - default page for http://localhost:4200 is http://localhost:4200/home
5. Modify the listing template to use listing service to view each component name and description (app, donate, about, contact, home, list) when visiting http://localhost:4200/list

In-Class Exercise 11- Part 5: List Service

Modify the listing template to use listing service to view each component name and description (app, donate, about, contact, home, list) when visiting http://localhost:4200/list

In-Class Exercise 11- Part 5: List Service

```typescript
list.service.ts
1   import { Injectable } from '@angular/core';
2
3   @Injectable()
4   export class ListService {
5     private siteInfo: Object[];
6
7     constructor() {
8       this.siteInfo = [{name: "donate", description: "give some money"},
9                        {name: "about", description: "learn about us"},
10                       {name: "contact", description: "contact us"},
11                       {name: "home", description: "landing page"},
12                       {name: "app", description: "redirects to home"},
13                       {name: "list", description: "list all components"}];
14    }
15
16    getInfo(): Object[] {
17      return this.siteInfo;
18    }
19
20  }
```

In-Class Exercise 11- Part 5: List Component

```typescript
list.component.ts

1    import { Component, OnInit } from '@angular/core';
2    import { ListService } from './list.service';
3
4    @Component({
5        selector: 'app-list',
6        templateUrl: './list.component.html',
7        styleUrls: ['./list.component.scss']
8    })
9    export class ListComponent implements OnInit {
10       siteCompInfo;
11
12       constructor(private listServ: ListService) { }
13
14       ngOnInit() {
15           this.siteCompInfo = this.listServ.getInfo();
16       }
17
18   }
```

In-Class Exercise 11- Part 5: List Template

```
list.component.html
1    <md-toolbar color="primary">list works!</md-toolbar>
2 ∨  <md-list>
3        <md-list-item *ngFor="let compInfo of siteCompInfo">
4        <h3>name: {{ compInfo["name"] }} </h3>
5        <p> description: {{ compInfo["description"] }}</p>
6        </md-list-item>
7    </md-list>
```

What happens when ListService is removed?

```
list.component.ts
1   import { Component, OnInit } from '@angular/core';
2   import { ListService } from './list.service';
3
4   @Component({
5     selector: 'app-list',
6     templateUrl: './list.component.html',
7     styleUrls: ['./list.component.scss']
8   })
9   export class ListComponent implements OnInit {
10    siteCompInfo;
11
12    constructor(private listServ: ListService) { }
13
14    ngOnInit() {
15      this.siteCompInfo = this.listServ.getInfo();
16    }
17
18  }
```

```
40      ],
41      providers: [ListService],
42      bootstrap: [AppComponent]
43    })
44    export class AppModule { }
```

What happens when ListService is removed?

```
list.component.ts
1   import { Component, OnInit } from '@angular/core';
2   import { ListService } from './list.service';
3
4   @Component({
5     selector: 'app-list',
6     templateUrl: './list.component.html',
7     styleUrls: ['./list.component.scss']
8   })
9   export class ListComponent implements OnInit {
10    siteCompInfo;
11
12    constructor(private listServ: ListService) { }
13
14    ngOnInit() {
15      this.siteCompInfo = this.listServ.getInfo();
16    }
17
18  }
```

```
40        ],
41        providers: [],
42        bootstrap: [AppComponent]
43      })
44      export class AppModule { }
```
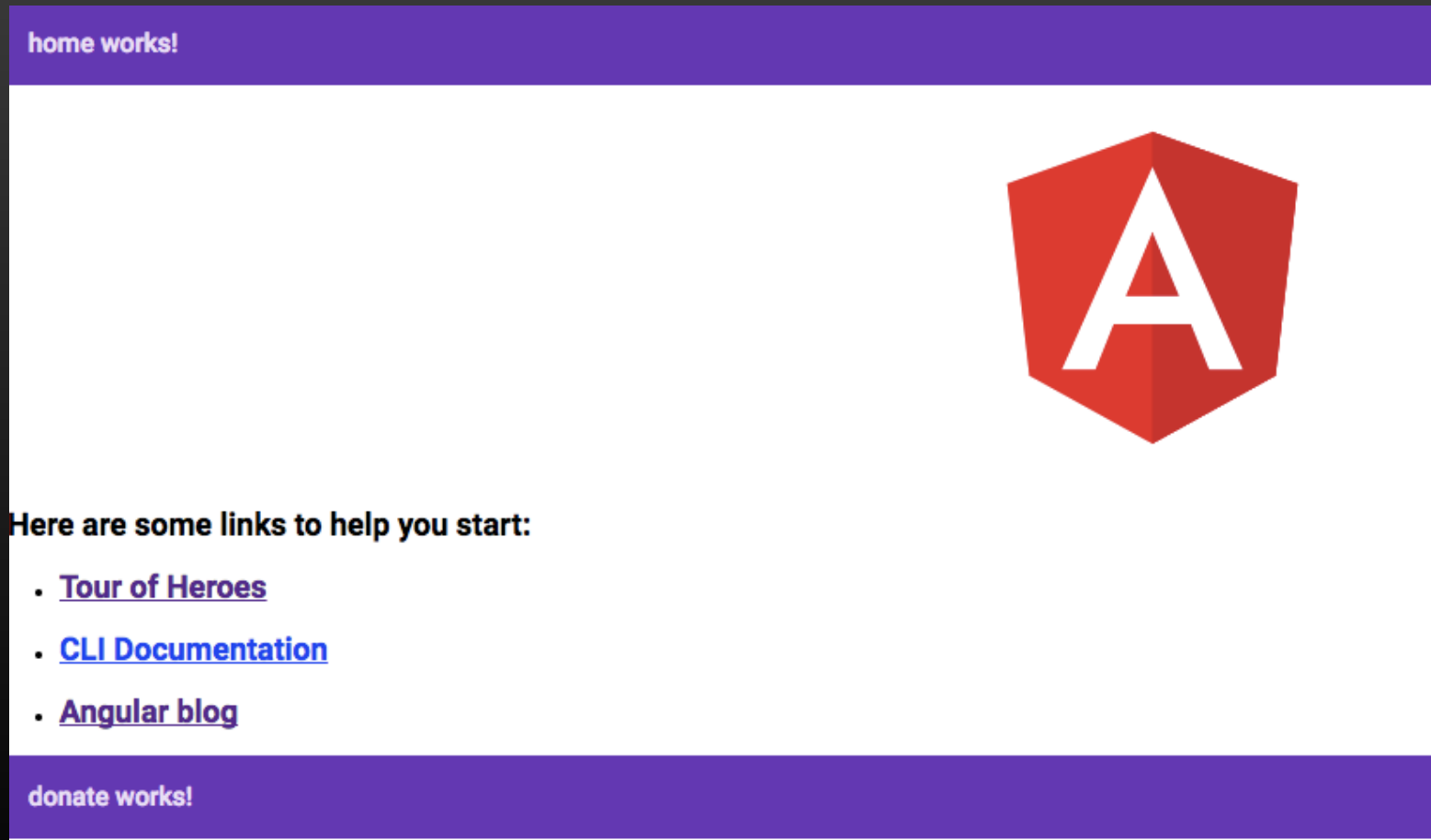
What happens when ListService is removed?

What happens when adding <app-donate>?

```
home.component.html

1    <!--The content below is only a placeholder and can be replaced.-->
2    <div style="text-align:center">
3      <md-toolbar color="primary"> <span> home works!</span> </md-toolbar>
4      <img width="300"
        src="data:image/svg+xml;base64,PHN2ZyB4bWxucz0iaHR0cDovL3d3dy53My5vcmcvMjAwMC9zdmciIHZpZXdCb3g9IjAg
        3IDQwLjl6IiAvPgogIDwvc3ZnPg==">
5    </div>
6    <h2>Here are some links to help you start: </h2>
7    <ul>
8      <li>
9        <h2><a target="_blank" rel="noopener" href="https://angular.io/tutorial">Tour of Heroes</a></h2>
10     </li>
11     <li>
12       <h2><a target="_blank" rel="noopener" href="https://github.com/angular/angular-cli/wiki">CLI Docun
13     </li>
14     <li>
15       <h2><a target="_blank" rel="noopener" href="https://blog.angular.io/">Angular blog</a></h2>
16     </li>
17   </ul>
18   <app-donate></app-donate>
```

What happens when adding <app-donate>?

What happens when DonateComponent is removed?

```
24 ∨    @NgModule({
25 ∨        declarations: [
26             AppComponent,
27             ContactComponent,
28             MenuComponent,
29             AboutComponent,
30             HomeComponent,
31             ListComponent
32         ],
33 ∨        imports: [
34             BrowserModule,
35             BrowserAnimationsModule,
36             MdToolbarModule,
37             FlexLayoutModule,
38             AppRoutingModule
39         ],
40         providers: [ListService],
41         bootstrap: [AppComponent]
42     })
43     export class AppModule { }
```

What happens when DonateComponent is then removed?

```
24 ∨    @NgModule({
25 ∨        declarations: [
26              AppComponent,
27              ContactComponent,
28              MenuComponent,
29              AboutComponent,
30              HomeComponent,
31              ListComponent
32          ],
```

```
⊗ Uncaught Error: Component DonateComponent is not part of any NgModule or the module has not been    compiler.es5.js:27076
  imported into your module.
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._createCompiledHostTemplate (com
  piler.es5.js:27076)
      at compiler.es5.js:27041
      at Array.forEach (<anonymous>)
      at compiler.es5.js:27038
      at Array.forEach (<anonymous>)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileComponents (compiler.es
  5.js:27027)
      at compiler.es5.js:26932
      at Object.then (compiler.es5.js:1683)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileModuleAndComponents (com
  piler.es5.js:26931)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler.compileModuleAsync (compiler.es
  5.js:26860)
```

What happens when DonateComponent is then added here?

```
24 ∨    @NgModule({
25 ∨      imports: [
26          CommonModule,
27          MdToolbarModule,
28          RouterModule.forRoot(routes),
29        ],
30 ∨      exports: [
31          RouterModule
32        ],
33        declarations: [DonateComponent]
34      })
35
36      export class AppRoutingModule { }
```

What happens when DonateComponent is added here?

```
⊗ ▶Uncaught Error: Template parse errors:                          compiler.es5.js:1694
  'app-donate' is not a known element:
  1. If 'app-donate' is an Angular component, then verify that it is part of this module.
  2. If 'app-donate' is a Web Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to
  suppress this message. ("
    </li>
  </ul>
  [ERROR ->]<app-donate></app-donate>
  "): ng:///AppModule/HomeComponent.html@17:0
      at syntaxError (compiler.es5.js:1694)
      at TemplateParser.webpackJsonp.../../../compiler/@angular/compiler.es5.js.TemplateParser.parse (compiler.es5.js:129
  32)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileTemplate (compiler.es5.j
  s:27126)
      at compiler.es5.js:27045
      at Set.forEach (<anonymous>)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileComponents (compiler.es
  5.js:27045)
      at compiler.es5.js:26932
      at Object.then (compiler.es5.js:1683)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileModuleAndComponents (com
  piler.es5.js:26931)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler.compileModuleAsync (compiler.es
  5.js:26860)
```

What happens when DonateComponent is in both modules?

```
24 ⌄    @NgModule({
25 ⌄      imports: [
26          CommonModule,
27          MdToolbarModule,
28          RouterModule.forRoot(routes),
29        ],
30 ⌄      exports: [
31          RouterModule
32        ],
33        declarations: [DonateComponent]
34      })
35
36      export class AppRoutingModule { }
```

```
24    @NgModule({
25      declarations: [
26        AppComponent,
27        ContactComponent,
28        MenuComponent,
29        DonateComponent,
30        AboutComponent,
31        HomeComponent,
32        ListComponent
33      ],
34      imports: [
35        BrowserModule,
36        BrowserAnimationsModule,
37        MdToolbarModule,
38        FlexLayoutModule,
39        AppRoutingModule
40      ],
41      providers: [ListService],
42      bootstrap: [AppComponent]
43    })
44    export class AppModule { }
```

What happens when DonateComponent is in both modules?


```
⊗ ▶ Uncaught Error: Type DonateComponent is part of the declarations of 2 modules: AppRoutingModule  compiler.es5.js:1694
  and AppModule! Please consider moving DonateComponent to a higher module that imports AppRoutingModule and AppModule.
  You can also create a new NgModule that exports and includes DonateComponent then import that NgModule in
  AppRoutingModule and AppModule.
      at syntaxError (compiler.es5.js:1694)
      at
  CompileMetadataResolver.webpackJsonp.../../../compiler/@angular/compiler.es5.js.CompileMetadataResolver._addTypeToModul
  e (compiler.es5.js:15693)
      at compiler.es5.js:15581
      at Array.forEach (<anonymous>)
      at
  CompileMetadataResolver.webpackJsonp.../../../compiler/@angular/compiler.es5.js.CompileMetadataResolver.getNgModuleMeta
  data (compiler.es5.js:15572)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._loadModules (compiler.es5.js:26
  958)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler._compileModuleAndComponents (com
  piler.es5.js:26931)
      at JitCompiler.webpackJsonp.../../../compiler/@angular/compiler.es5.js.JitCompiler.compileModuleAsync (compiler.es
  5.js:26860)
      at PlatformRef_.webpackJsonp.../../../core/@angular/core.es5.js.PlatformRef_._bootstrapModuleWithZone (core.es5.js:
  4536)
      at PlatformRef_.webpackJsonp.../../../core/@angular/core.es5.js.PlatformRef_.bootstrapModule (core.es5.js:4522)
```

Using an md-card

```
<md-card>
    <md-card-title>

    …
    </md-card-title>
    <img md-card-image src="path" alt="path">
    <md-card-content>

    …
    </md-card-content>
</md-card>
```

display text with a title, description, image

Useful when implementing posts in hw assignment

Using a routerLink

`<a md-button routerLink="path"></a>`

Path defined in routes

Connect button to a route (SPA). Relative path normally begins with "/".

Router Parameters

Router Module

{ path: 'donordetail/:id',   component: DonorDetailComponent }

Donor Template

<a md-button *ngFor="let donor of donors" [routerLink]="['/donordetail', donor.id]">

Donor Component

import { Params, ActivatedRoute } from '@angular/router';

...

private route: ActivatedRoute;

...

let id = this.route.snapshot.params['id'];

Router Parameters

Router Module

{ path: 'donordetail/:id',   component: DonorDetailComponent }

Route parameter

Donor Template

<a md-button *ngFor="let donor of donors" [routerLink]="['/donordetail', donor.id]">

1-way parameter binding

Donor Component

import { Params, ActivatedRoute } from '@angular/router';
...
private route: ActivatedRoute;
...
let id = this.route.snapshot.params['id'];

Angular router services injected into component

Grab "id" of current route