Overview

Defining Routes

Routing Modules

Route Parameters

Guards

Routing Basics

Routing allows our application to navigate between different Components, passing parameters where needed

Routing Then and Now

Angular 1

Angular 2

index.html

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

Define the <base> element

Required for routing to work properly

1

2

3

4

5

Routing, Step by Step

Routing, Step by Step

1

2

3

4

5

1

Import
RouterModule

Routing, Step by Step

1

2

3

4

5

1

Import RouterModule

2

Import @angular/router

Routing, Step by Step

1

2

3

4

5

1

Import RouterModule

2

Import @angular/router

3

Define the routes

Routing, Step by Step

1

2

3

4

5

1
Import RouterModule

2
Import @angular/router

3
Define the routes

4
Declare a <router-outlet>

Routing, Step by Step

1

2

3

4

5

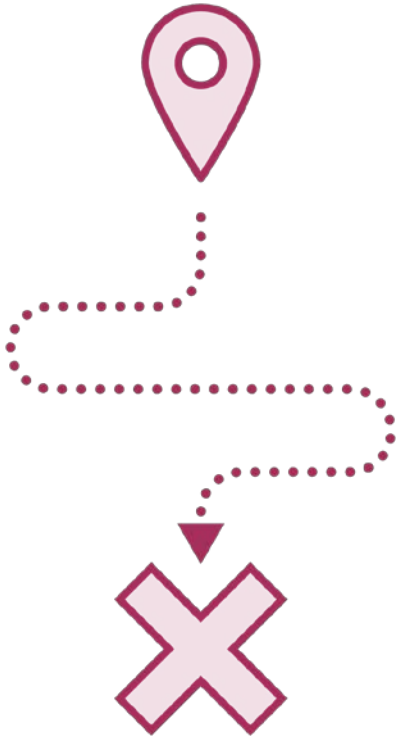
1
Import RouterModule

2
Import @angular/router

3
Define the routes

4
Declare a <router-outlet>

5
Add [routerLink] bindings



Routing

app-routing.module.ts

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

Import routing features

Import RouterModule

RouterModule gives us access to routing features

Routes help us declare or route definitions

app-routing.module.ts

```
const routes: Routes = [
  { path: '', pathMatch: 'full', redirectTo: 'characters', },
  { path: 'characters', component: CharacterListComponent },
  { path: 'character/:id', component: CharacterComponent },
  { path: '**', pathMatch: 'full', component: PageNotFoundComponent }
];
```

Defining Routes

Define the route's path

Indicate parameters with :

Set the component that we'll route to

app-routing.module.ts

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

Only use forRoot() for the root module's routes

Define a Module

Create a routing module using our routes, and import it

Export our new AppRoutingModule

app-routing.module.ts

```
const routes: Routes = [
  { path: '', pathMatch: 'full', redirectTo: 'characters', },
  { path: 'characters', component: CharacterListComponent },
  { path: 'character/:id', component: CharacterComponent },
  { path: '**', pathMatch: 'full', component: PageNotFoundComponent }
];

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

export const routableComponents = [
  CharacterListComponent,
  CharacterComponent,
  PageNotFoundComponent
];
```

Configure routes

Use route to make a NgModule

Create and export an explicitly named NgModule

Export components

Export the Module and the Components

We define a Routing Module, and import it into the App Root or Feature Module

app.module.ts

```
import { AppComponent } from './app.component';
import { AppRoutingModule, routableComponents } from './app-routing.module';

@NgModule({
  imports: [BrowserModule,AppRoutingModule],
  declarations: [AppComponent, routableComponents]
  bootstrap: [AppComponent]
})
export class AppModule { }
```

Import the module

Declare the components

Using Our Routing Module

Import our routing module

Declare the components

Routing in a Template

EXPLORER

OPEN EDITORS

A2-FIRST-LOOK

- router-guard
- router-lazy
  - api
  - app
    - characters
    - vehicles
    - app.component.html
    - app.component.ts
    - app.module.ts
    - app.routing.ts
    - config.ts
    - page-not-found.component.ts
    - rxjs-extensions.ts
  - node_modules
  - typings
  - .editorconfig
  - example-config.json
  - index.html
  - karma-test-shim.js
  - karma.conf.js
  - main.ts

app.component.html

```
<div>
  <header>
    <h1>Storyline Tracker</h1>
    <h3>Lazily Loaded Router Demo</h3>
    <nav>
      <ul>
        <li><a [routerLink]="['/characters']" href="">Characters</a></li>
        <li><a [routerLink]="['/vehicles']" href="">Vehicles</a></li>
      </ul>
    </nav>
  </header>
  <main>
    <section>
      <router-outlet></router-outlet>
    </section>
  </main>
</div>
```

RouterLink

The RouterLink directive navigates to a route path

We define the link parameters array

```
<nav>
  <ul>
    <li><a [routerLink]="['/characters']" href="">Characters</a></li>
    <li><a [routerLink]="['/vehicles']" href="">Vehicles</a></li>
  </ul>
</nav>
```

Define the routerLink

Set the link parameters

app.component.html

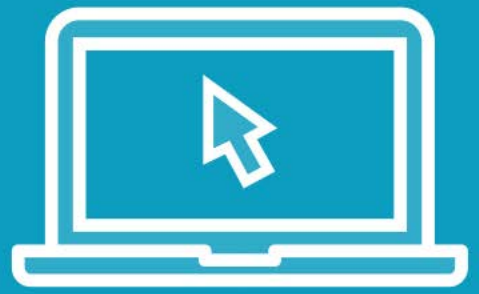
app.component.html

```
<router-outlet></router-outlet>
```

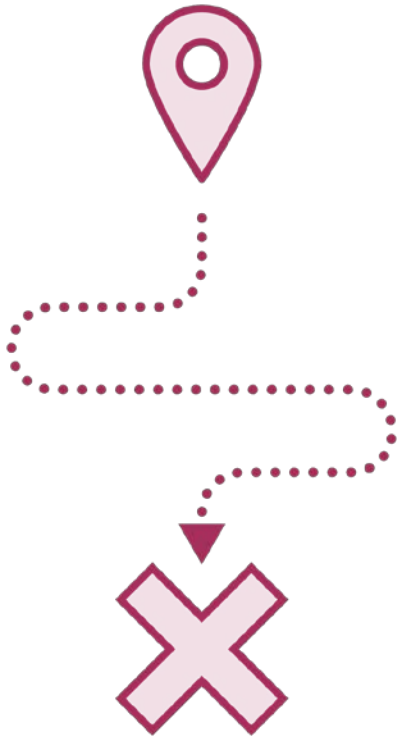
Using the RouterOutlet

Defines where to put the components when we route

Demo



Routing



Routing Parameters

app-routing.module.ts

```
const routes: Routes = [
  { path: '', pathMatch: 'full', redirectTo: 'characters', },
  { path: 'characters', component: CharacterListComponent },
  { path: 'character/:id', component: CharacterComponent },
  { path: '**', pathMatch: 'full', component: PageNotFoundComponent }
];
```

Define the id parameter

Defining Parameters

Indicate parameters with :

Passing Data Through Routing

Snapshot

Easiest, as long as parameter values do not change

Observable

Gets new parameter values when component is re-used

Resolvers

Gets data before a component loads

session.component.ts

```
export class SessionComponent implements OnInit {
  private id: any;

  constructor(private route: ActivatedRoute) { }

  ngOnInit() {
    this.id = parseInt(this.route.snapshot.params['id']);
    this.getSession();
  }
```

Inject the ActivatedRoute

Grab the parameter

Snapshots

Grab the ActivatedRoute

Access the snapshot parameter by name

Easiest, if component is not reused

ActivatedRoute and Observables

route.params is an Observable

Map the response, perform side effects, and subscribe

```
export class SessionComponent implements OnInit {
  private id: any;

  constructor(private route: ActivatedRoute) { }

  ngOnInit() {
    this.route.params.map(params => params['id'])
      .do(id => this.id = parseInt(id))
      .subscribe(id => this.getSession());
  }
```

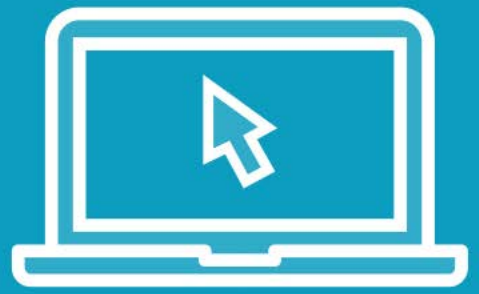
Map each response

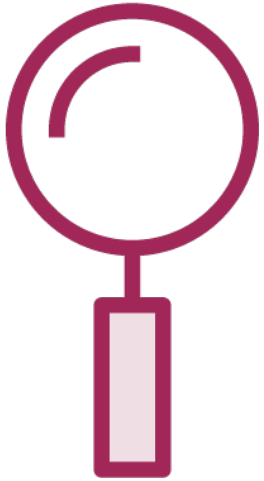
Subscribe to the stream

session.component.ts

Routing Parameters

Demo





Routing Resolvers

Resolvers

Get data prior to traversing the route

vehicle-resolver.service.ts

```
@Injectable()
export class VehicleResolver implements Resolve<Vehicle> {
  constructor(
    private vehicleService: VehicleService,
    private router: Router) { }

  resolve(route: ActivatedRouteSnapshot, state: RouterStateSnapshot) {
    let id = +route.params['id'];
    return this.vehicleService.getVehicle(id)
      .map(vehicle => vehicle ? vehicle : new Vehicle())
      .catch((error: any) => {
        console.log(`${error}. Heading back to vehicle list`);
        this.router.navigate(['/vehicles']);
        return Observable.of(null);
      });
  }
}
```

Grab the route and its parameter

Return the vehicle

Service that operates in the midst of a routing action

app-routing.module.ts

```
{
  path: 'vehicles:id',
  component: VehicleComponent,
  resolve: {
    vehicle: VehicleResolver
  }
},
```

Define one or more resolvers

Resolvers

Defined within the route configuration

Remember to provide the resolver service

vehicle.component.ts

```
this.route.data.subscribe((data: { vehicle: Vehicle }) => this.vehicle = data.vehicle);
```

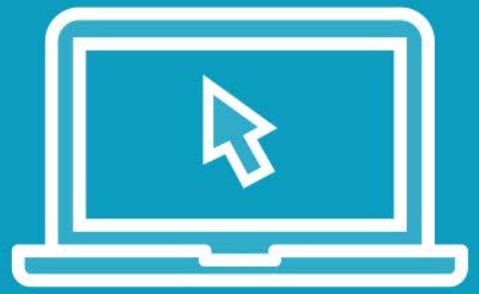
Subscribe to the data

Grab the resolved vehicle

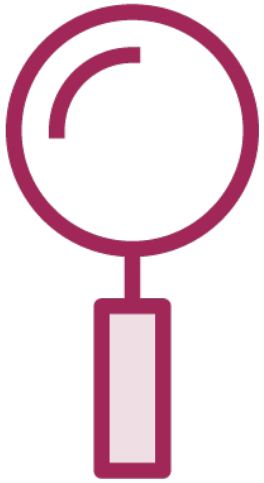
Getting Resolver Data

Subscribe to the data property on the ActivatedRoute

Demo



Routing Resolvers



Routing Guards

Guards

Guards allow us to make a decision at key points in the routing lifecycle and either continue, abort or take a new direction

Types of Router Guards

Types of Router Guards

Resolve

Types of Router Guards

Resolve

CanActivate

Types of Router Guards

- Resolve
- CanActivate
- CanActivateChild

Types of Router Guards

- Resolve
- CanActivate
- CanActivateChild
- CanDeactivate

Types of Router Guards

- Resolve
- CanActivate
- CanActivateChild
- CanDeactivate
- CanLoad

auth-guard.service.ts

```
@Injectable()
export class AuthGuard implements CanActivate {
  constructor(private userProfileService: UserProfileService, private router: Router) { }

  canActivate(next: ActivatedRouteSnapshot, state: RouterStateSnapshot) {
    if (this.userProfileService.isLoggedIn) {
      return true;
    }
    this.router.navigate(['/login'], { queryParams: { redirectTo: state.url } });
    return false;
  }
}
```

Implement the interface

Return true or false

CanActivate Guard

Implement the CanActivate interface

Make a determination if the route should be activated

Can re-navigate elsewhere

app-routing.module.ts

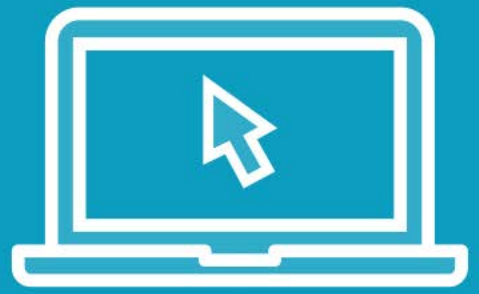
```
{
  path: 'dashboard',
  component: DashboardComponent,
  canActivate: [AuthGuard]
},
```

Apply the guard(s)

Applying a Guard

Apply to the route

Demo



Routing Guards

Child Routes

A Component may define routes for other Components. This creates a series of hierarchical child routes.

app-routing.module.ts

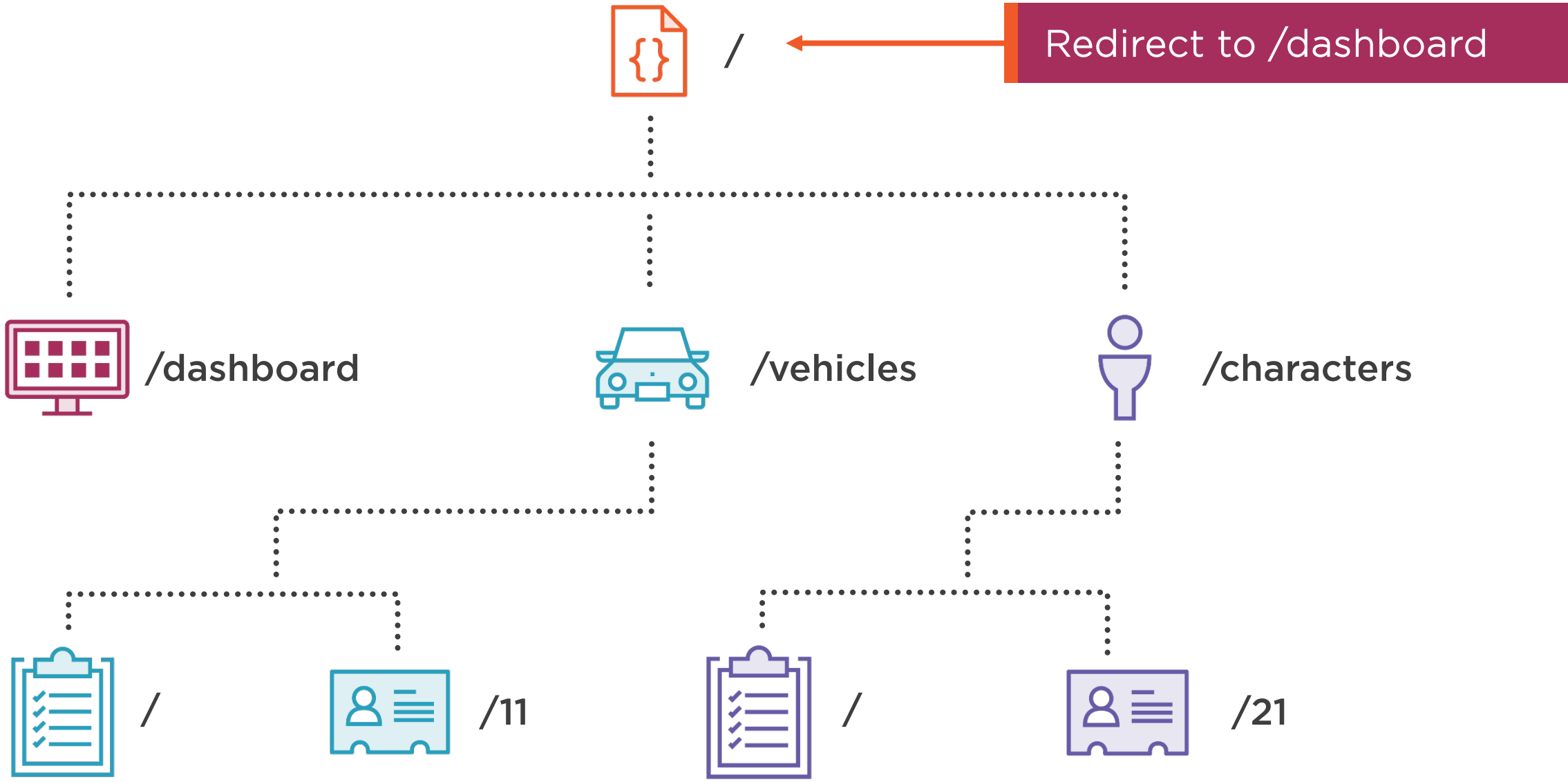
```
const routes: Routes = [
  { path: '', pathMatch: 'full', redirectTo: 'characters', },
  { path: 'login', component: LoginComponent },
  {
    path: 'characters',
    component: CharactersComponent,
    canActivate: [CanActivateAuthGuard],
    children: [
      { path: '', component: CharacterListComponent },
      { path: ':id', component: CharacterComponent },
    ]
  },
```

Child routes

Child Routes

URLs for parent child

e.g. characters/ and characters/72


/
Redirect to /dashboard
/dashboard
/vehicles
/characters
/
/11
/
/21

Notice where we provided?

Module Providers

Provided to the root injector

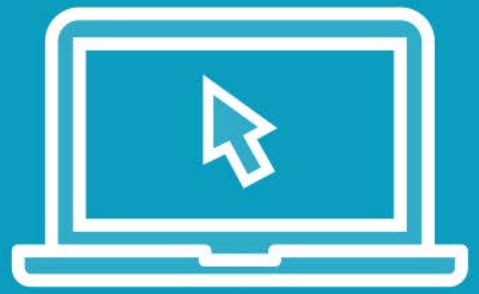
Available everywhere

```
@NgModule({
  imports: […
  ],
  declarations: [AppComponent, routableComponents],
  providers: [
    CanActivateAuthGuard, CharacterService, UserProfileService, VehicleService
  ],
  bootstrap: [AppComponent]
})
export class AppModule { }
```

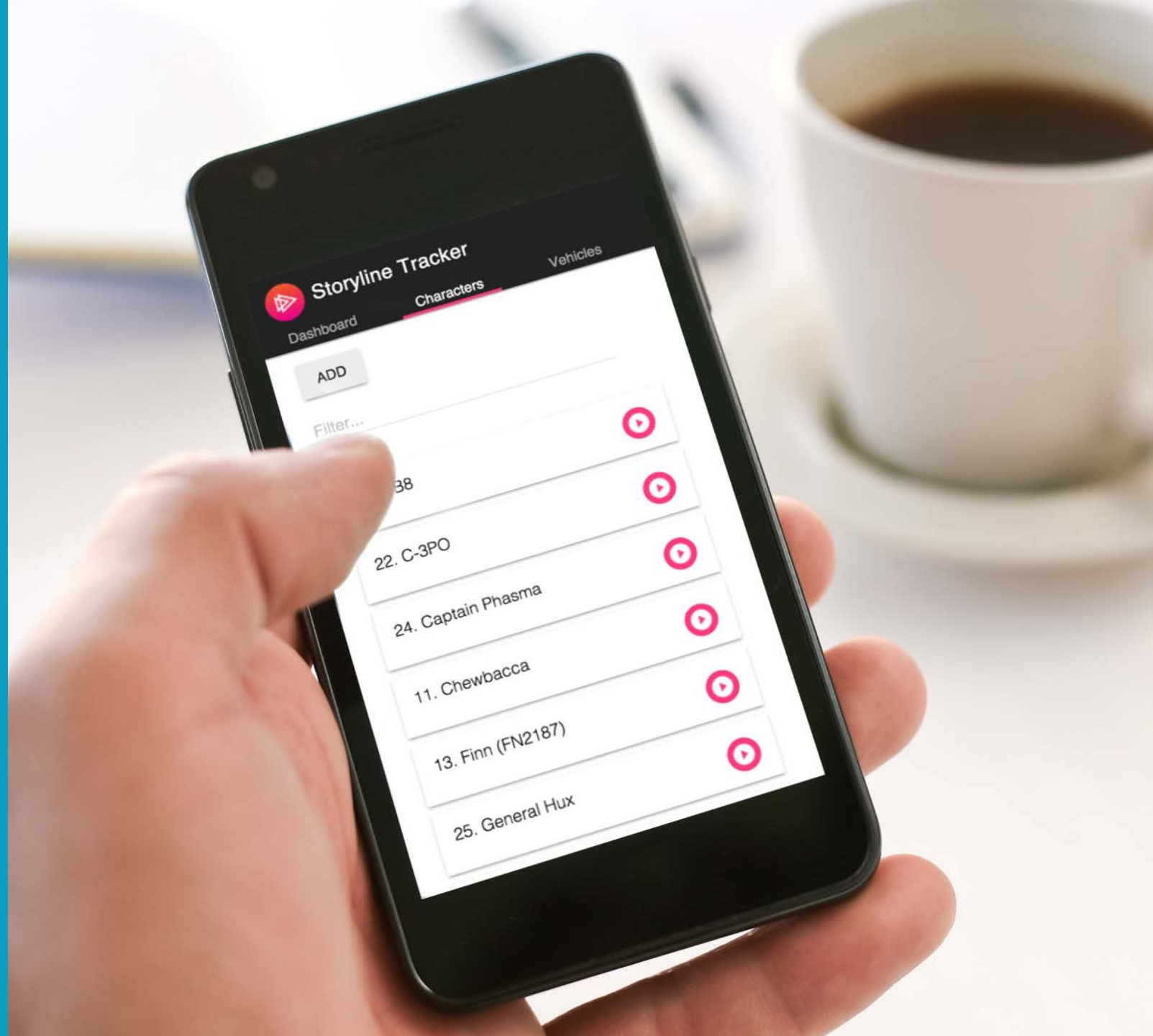
Provide to the root injector

app.module.ts

Demo



Putting It All Together



Routing

Defining Routes

Routing Modules

Route Parameters

Guards

Child Routes