Lifecycle Hooks & Routing

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- Routing
- Child Routes
- RouteParams
- Guards

Content

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- Component Lifecycle Hooks
- Child Routes
- Route Params
- Guards

View Queries

- Angular provides the decorators @ViewChild, @ViewChildren, @ContentChild, @ContentChildren to get element references
- ViewChild can be used to capture elements in the component template
- ContentChild can be used to capture elements present in the opening and closing tags of a component
- Angular allows us to create template references by adding a local variable #name to the HTML element
- Template references can be used with ViewChild and ContentChild in order to get the element reference (ElementRef) in component
- We can access and modify the native element properties through the element reference provided by ViewChild or ContentChild

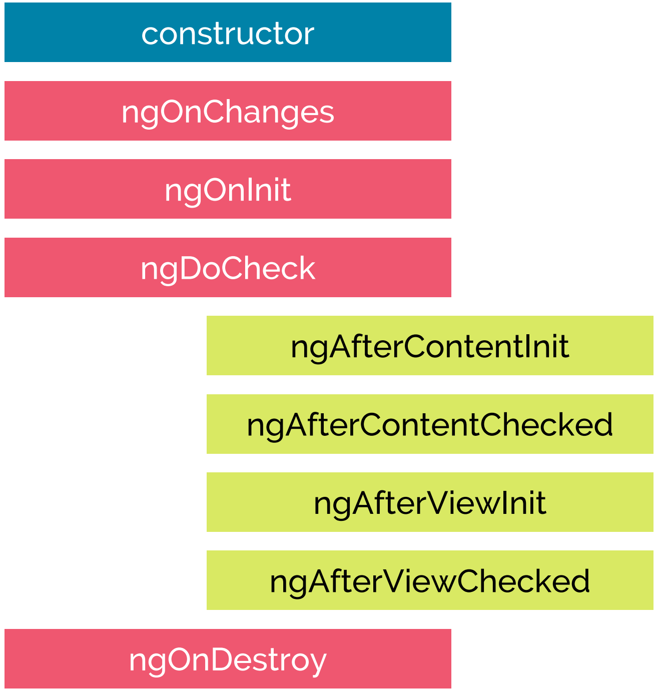
Content Projection

- Content Projection is the rendering of html specified within the component tags, inside the component html
- This is achieved by adding the tags “<ng-content> </ng-content>” within the component html
- The <ng-content> tags get replaced by the html enclosed within the component tags
- We can project a particular element using the select property as: <ng-content select="elmName.class"> </ng-content>
- We can apply styles to the projected content using the syntax: :(colon)host ::(double colon)ng-deep elmName
- The projected content can be accessed through the component using @contentChild()

View Encapsulation

- View Encapsulation, in simple terms is the ability to create a closure around a view or component DOM.
- This enables us to emulate a shadow DOM and scoped styles
- Angular by default adds [_ngcontent-*] and [_nghost-*] attributes to the template and styles, making them unique selectors with scoped styles
- View encapsulation takes the properties:
  - ViewEncapsulation.None: No Shadow DOM at all
  - ViewEncapsulation.Emulated: No Shadow DOM but emulated style encapsulation
  - ViewEncapsulation.Native: Native Shadow DOM
- If encapsulation is set to None, the styles are applied to all elements in the document

Component Lifecycle Hooks

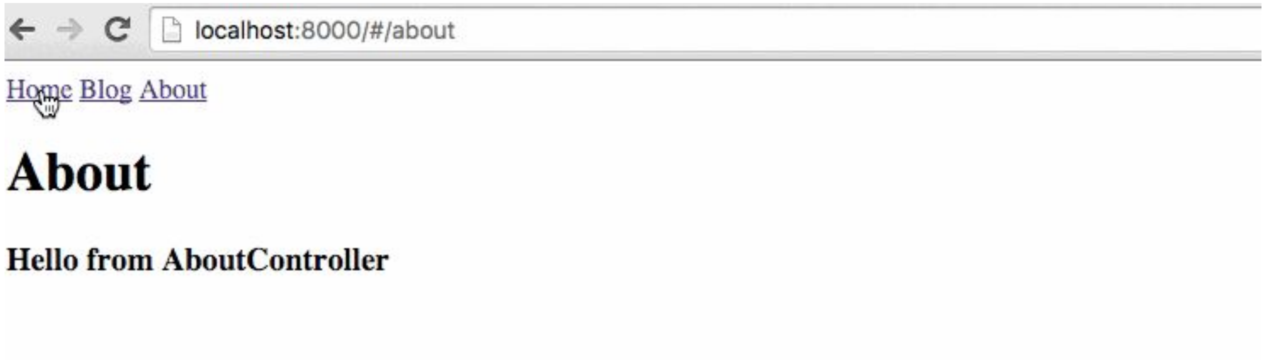


Lifecycle Hooks Continued

- constructor: When Angular creates a component or directive by calling new on the class.
- ngOnChanges: Every time there is a change in one of the input properties of the component.
- ngOnInit: When given component has been initialized. Only called once after the first ngOnChanges.
- ngDoCheck: When the change detector of the given component is invoked. Allows us to implement our own change detection algorithm for the given component.
- ngOnDestroy: Just before Angular destroys the component. Use this hook to unsubscribe observables and detach event handlers to avoid memory leaks.
- ngAfterContentInit: After Angular performs any content projection into the components view
- ngAfterContentChecked: Each time the content of the given component has been checked by the change detection mechanism of Angular.
- ngAfterViewInit: When the component's view has been fully initialized.
- ngAfterViewChecked: Each time the view of the given component has been checked by the change detection mechanism of Angular.

Routing - The Basics

- In Single Page Applications(SPAs), when there's a need for some new content, the whole page never changes. Only the content on that particular page changes. This gives the App a more Desktop Application like feeling.



localhost:8000/#/about

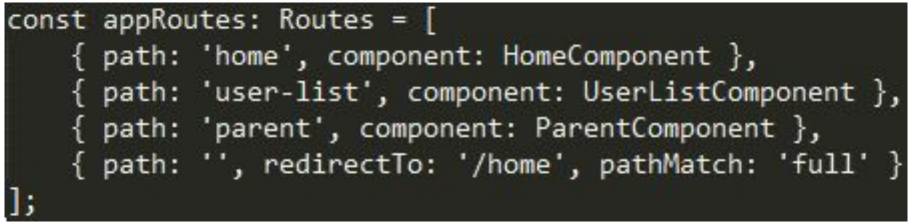
About

Hello from AboutController

- SPAs are faster as compared to normal Web Apps for the same reason.
- Routing is an Important Part of this behavior that SPAs exhibit.

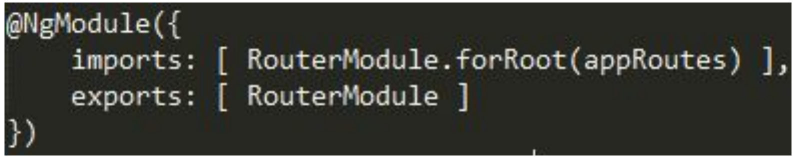
Routing - How To?

1. Create a separate module for routing.
2. Import RouterModule, Routes in your AppRoutingModule.
   import { Routes, RouterModule } from '@angular/router';
3. Create a Routes Config.



```
const appRoutes: Routes = [
    { path: 'home', component: HomeComponent },
    { path: 'user-list', component: UserListComponent },
    { path: 'parent', component: ParentComponent },
    { path: '', redirectTo: '/home', pathMatch: 'full' }
];
```

4. Call RouterModule.forRoot() and give it the Routes config that you just created.
5. Export this Module into your RootModule.

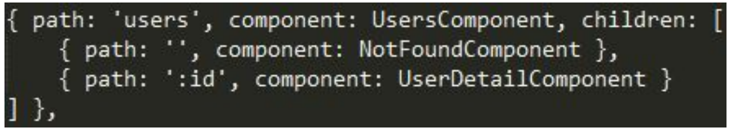


```
@NgModule({
    imports: [ RouterModule.forRoot(appRoutes) ],
    exports: [ RouterModule ]
})
```

6. Place a <router-outlet></router-outlet> tag in your template where you want to perform it.
7. Place links that will take your user to those routes and use routerLink attribute to give them links.

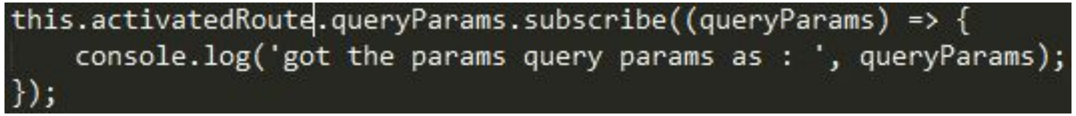
Child Routes & Params

1. Add a children property to a route, the value of it would be an array of routes.
2. Each child route in the children will again contain a path property and a component property.



```
{ path: 'users', component: UsersComponent, children: [
    { path: '', component: NotFoundComponent },
    { path: ':id', component: UserDetailComponent }
] },
```

3. If you want to show the component content in some content that's already present in <router-outlet>, you'll have to add another router outlet in its parent's template.
4. You can configure a route to take params as well. Do that by supplying a colon(:) in front of the param name.
5. You can get the value of the current route params or route query params using ActivatedRoute as a dependency.
6. ActivatedRoute exposes a params Observable you can subscribe to, to get the params on the current route.
7. ActivatedRoute also exposes a queryParams Observable you can subscribe to, to get the query params on the current route.



```
this.activatedRoute.queryParams.subscribe((queryParams) => {
    console.log('got the params query params as : ', queryParams);
});
```

Types of Route Paths

1. Absolute Path: Has '/' in the front. Takes you to hostname:port/name-of-the-supplied-path.
2. Relative Path: Has './' or nothing in front. Takes you to the current route followed by the route name provided. Eg: hostname:port/path-on/path-provided.
3. Parent Path: Has '../' in front. Takes you one level up in the route structure. Eg, if you're on hostname:port/level1/level2, it will take you to hostname:port/level1.

“If Westeros has the Wall, Angular routes have Guards”

Sworn Brothers of the Night's Watch

ROUTE GUARDS BE LIKE:
YOU SHALL NOT PASS!!

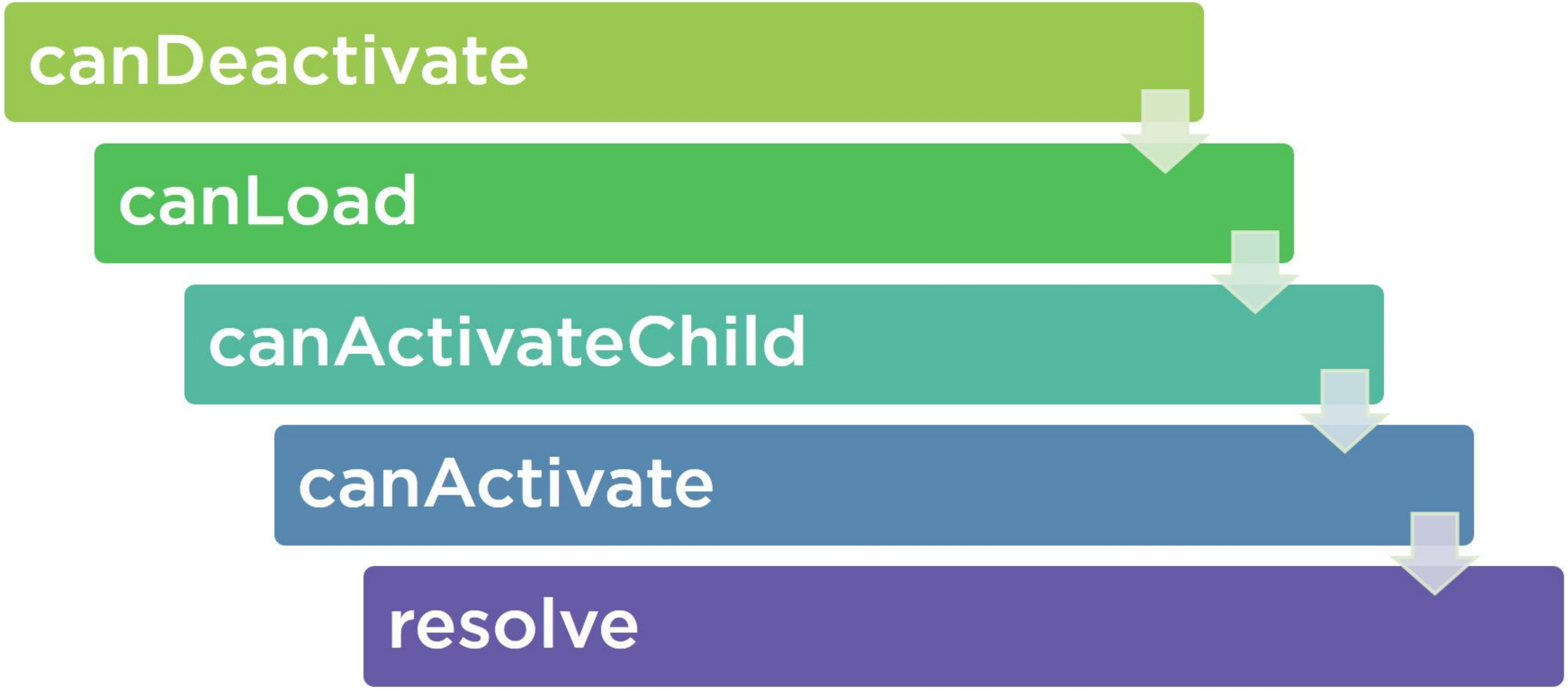
Guards

- Guards are a way of performing checks before we start navigating to or from different routes in our application
- They allow us to restrict access to certain routes in our application to certain users
- They allow us to validate/confirm before navigating out of routes
- Guards themselves are simple classes, which can have dependencies injected into them
- Guard functions return booleans, or Observables and Promises which resolve booleans
- Navigation is carried out if boolean returned is true, else it is prevented
- A single route can have multiple guards, and they are checked in the order of injection

Types of Guards

- CanActivate: Checks to see if a user can visit a route
- CanActivateChild: Checks to see if a user can visit a routes children
- CanDeactivate: Checks to see if a user can exit a route
- CanLoad: Checks to see if lazy-loaded modules should be loaded
- Resolve: Performs route data retrieval before route activation

Guard Processing



CanActivate/CanActivateChild

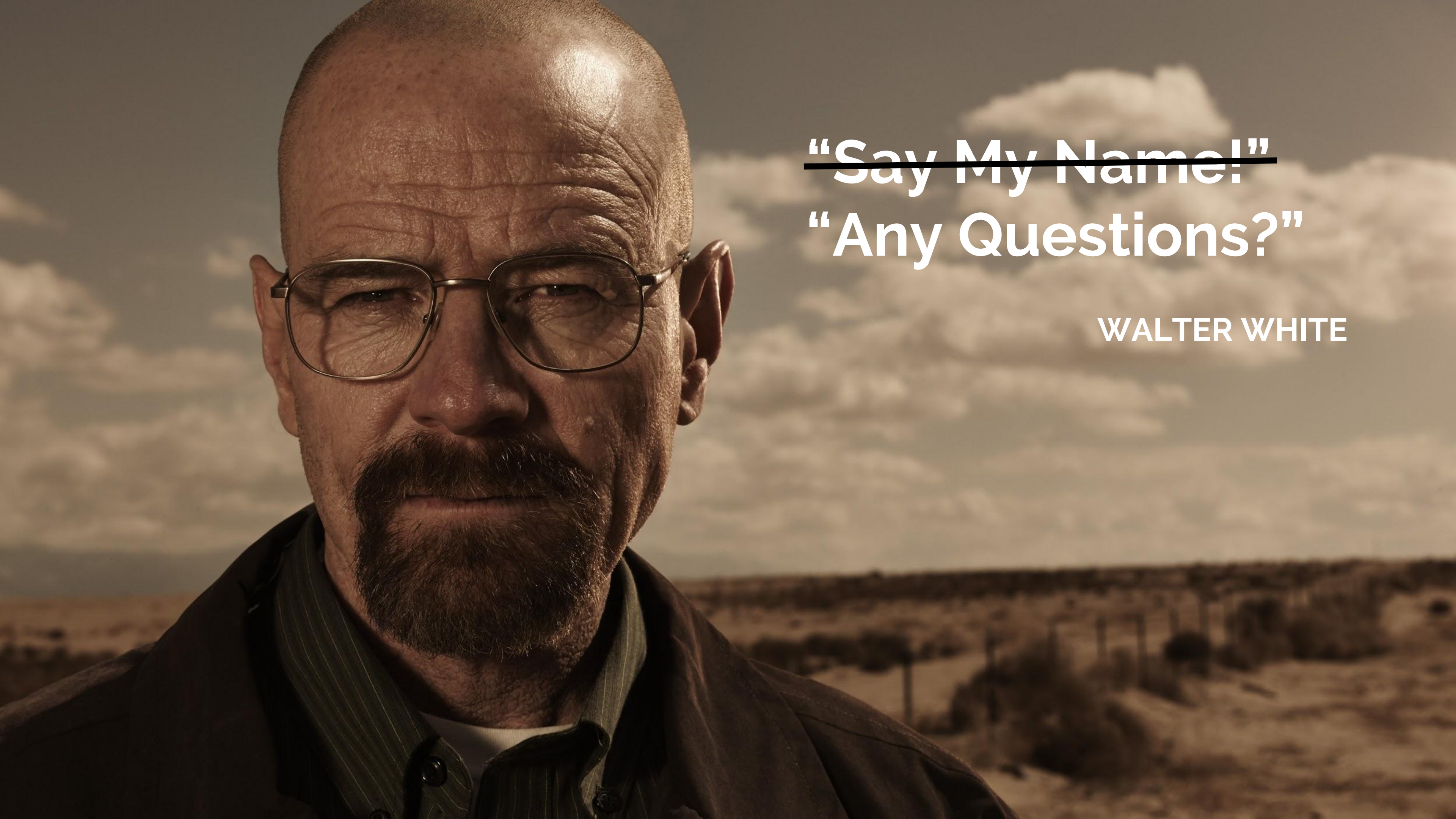
- CanActivate checks to see if a user can visit a route
- CanActivateChild checks to see if a user can visit a routes children
- Class which implements CanActivate/CanActivateChild interface from @angular/router
- Accepts the arguments:
  - route: ActivatedRouteSnapshot - Future route. Contains params
  - state: RouterStateSnapshot - Future RouterState. Contains URL
- Needs to be registered on the providers array of module
- Added to the canActivate/canActivateChild Array of route
- Most commonly used to check if user is logged in or has sufficient previledges

CanDeactivate

- CanDeactivate checks to see if a user can exit a route
- Class which implements CanDeactivate interface from @angular/router
- Accepts the arguments:
    - component: Component - The current component
    - route: ActivatedRouteSnapshot - Future route. Contains params
    - state: RouterStateSnapshot - Future RouterState. Contains URL
- Needs to be registered on the providers array of module
- Added to the canDeactivate Array of route
- Most commonly used to check if user is navigating out of a route without saving some changes

Resolve

- Resolve performs route data retrieval before route activation
- Class which implements Resolve interface from @angular/router
- Accepts the arguments:
  - route: ActivatedRouteSnapshot - Future route. Contains params
  - state: RouterStateSnapshot - Future RouterState. Contains URL
- Needs to be registered on the providers array of module
- Added to the resolve Object of route with a data key
- Accessed in component as route.snapshot.data['key']
- Used to load necessary data before loading a route, often to set flags or prevent undefined/nulls



~~“Say My Name!”~~

“Any Questions?”

WALTER WHITE