Angular Course

In this course you will get a hands-on of the major features of Angular

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23th January, 2018

Why Angular?

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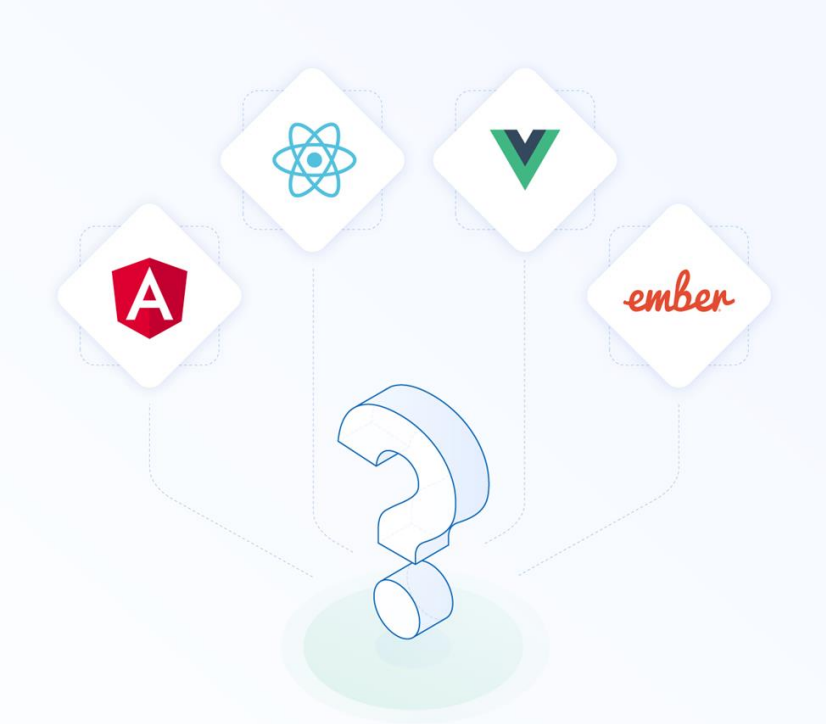
- Availability of Learning Resources
- Popularity
- Core Features
- Usability
- Ease of Integration (with Other Libraries)
- Outputs: Web, Mobile, Desktop



[https://thehappymindset.com/choose-best-front-end-framework/] toptal

Angular Basics

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- Components
- Forms
- Directives
- Pipes
- Services
- Routing
- Observables

Angular Non-Basics

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- App_Initializer
- Redux in Angular
- Unit Testing
- The mechanics of DOM updates in Angular (View encapsulation)
- Analyze an Angular App’s Bundle Size
- Etc.

TypeScript

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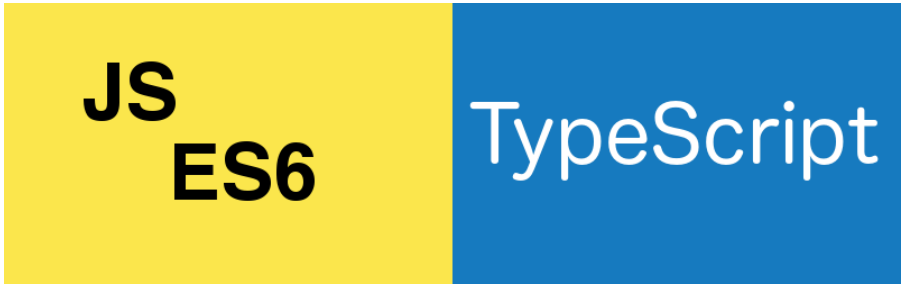
```
function doSomething(someData)
{
    // do something
}
```



Type and Properties of someData?

Node JS + NPM

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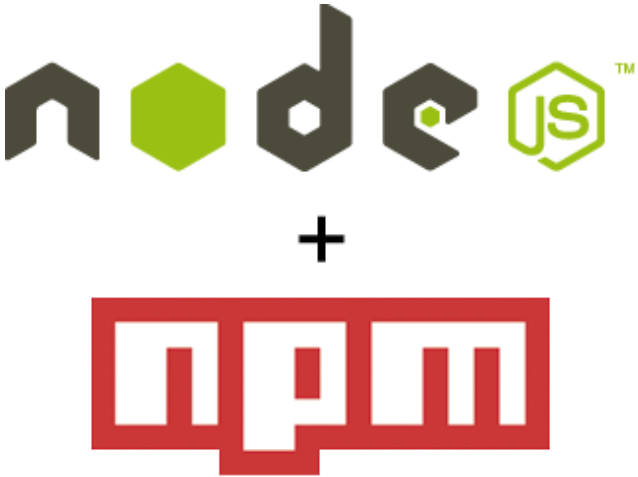
Node JS

Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.



NPM

Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world.

Webpack

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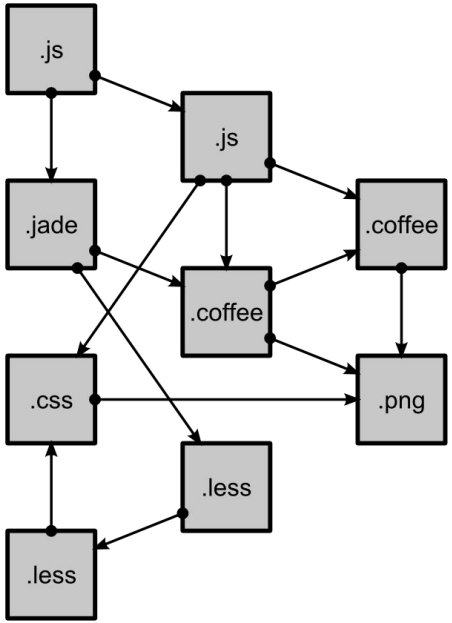
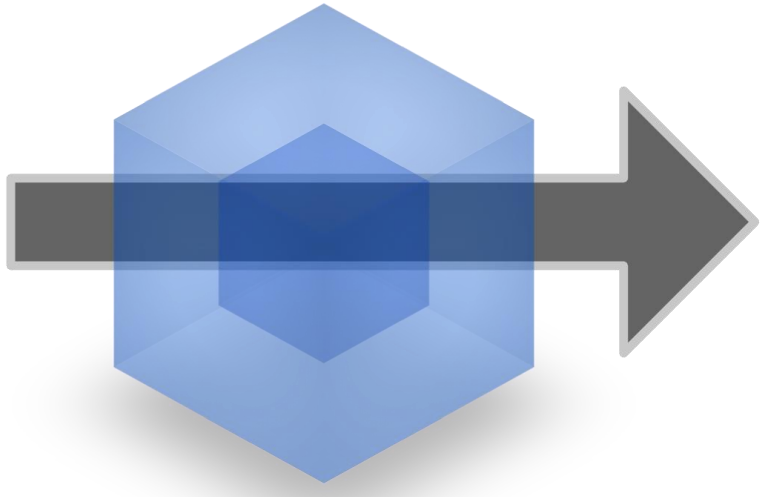
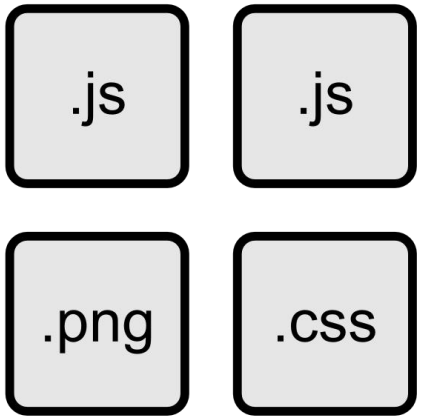


modules
with dependencies



webpack
MODULE BUNDLER



static
assets

Angular CLI

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The Angular CLI is a tool to initialize, develop, scaffold and maintain Angular applications

npm install -g @angular/cli

ng new hccpt
cd hccpt
ng serve

Navigate to http://localhost:4200/.
The app will automatically reload if you change any of the source files.

Angular Solution File Structure

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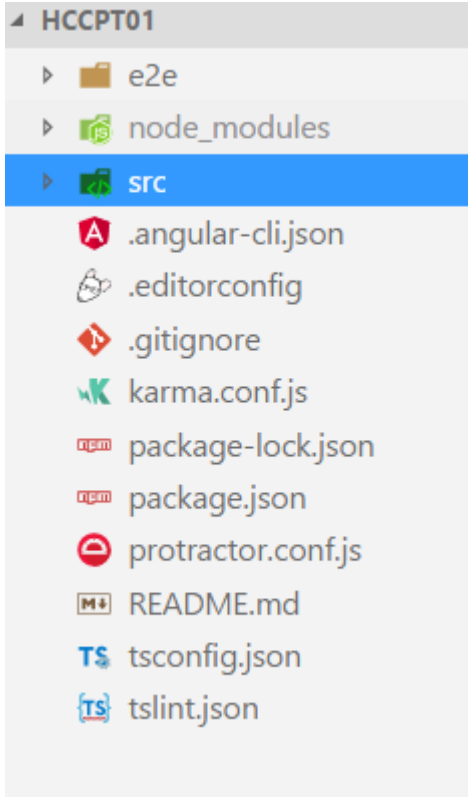

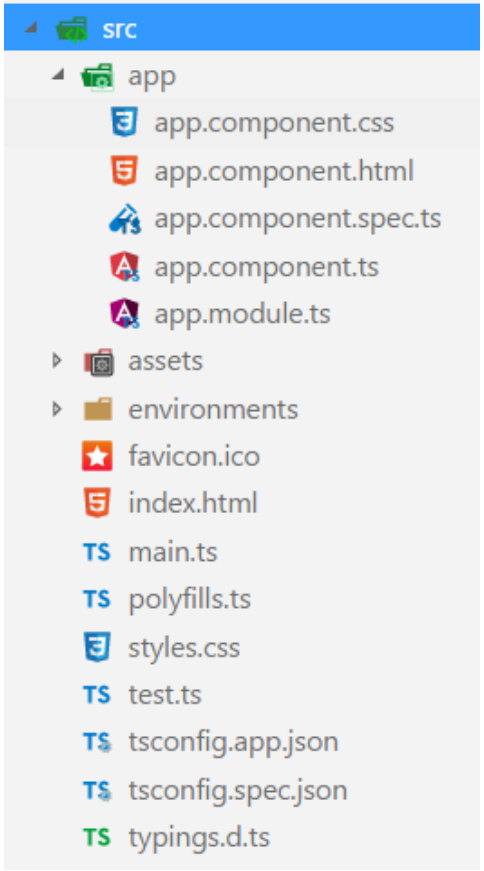

Angular Architecture Overview

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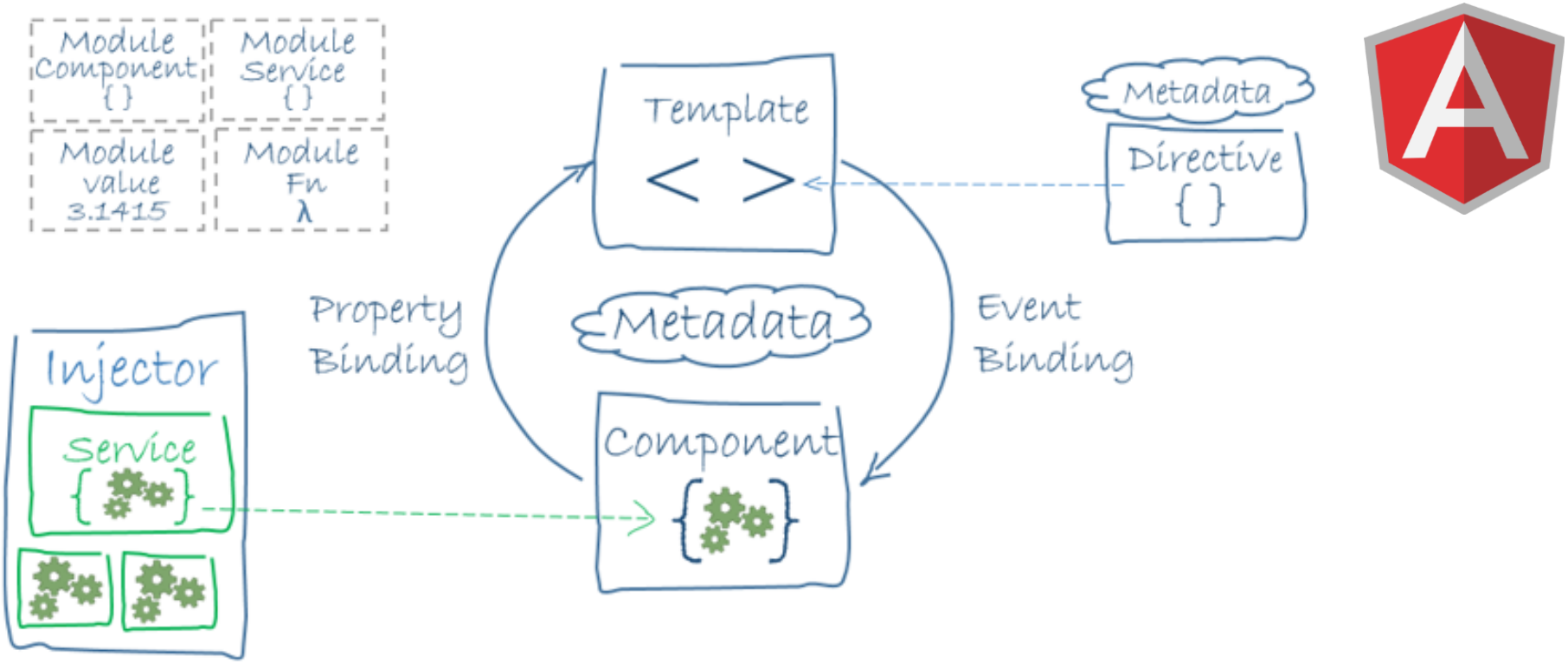

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Our App to build with Angular

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We will build an application to manage a Condominium Administration with the following features:

- Add/Edit Contacts (Owners and Suppliers)
- Add/Edit Payments
- Dashboard with Charts about Payments

Create Application

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https://github.com/davidoliveira/AngularCourse

ng new KondominioApp --routing --style=scss

cd KondominioApp

npm install bootstrap@next --save

npm install --save @ng-bootstrap/ng-bootstrap

ng serve

https://github.com/angular/angular-cli/wiki/generate

https://github.com/angular/angular-cli/wiki/stories

Angular Modules

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

https://angular.io/guide/ngmodules

https://angular.io/guide/ngmodule-vs-jsmodule

declarations—this application's lone component.

imports—import BrowserModule to have browser specific services such as DOM rendering, sanitization, and location.

providers—the service providers.

bootstrap—the *root* component that Angular creates and inserts into the index.html host web page.

A declarable can only belong to one module, so only declare it in one @NgModule. When you need it elsewhere, import the module that has the declarable you need in it.

Angular Modules

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ng g component Login

ng g module Contacts --routing

- ng g component Index
- ng g component Detail

ng g module Payments --routing

- ng g component Index
- ng g component Detail

Angular Routing

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https://angular.io/guide/router

https://angular.io/guide/lazy-loading-ngmodules

```
const routes: Routes = [
  { path: 'login', component: LoginComponent },
  {
    path: 'contacts',
    loadChildren: 'app/contacts/contacts.module#ContactsModule'
  },
  {
    path: 'payments',
    loadChildren: 'app/payments/payments.module#PaymentsModule'
  }
];

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

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Resume

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Last Week

- Setup our App to manage a Condominium
- Add Modules and Components for each Module
- Setup Routing

Angular CLI

Scaffold	Usage
Component	`ng g component my-new-component`
Directive	`ng g directive my-new-directive`
Pipe	`ng g pipe my-new-pipe`
Service	`ng g service my-new-service`
Class	`ng g class my-new-class`
Guard	`ng g guard my-new-guard`
Interface	`ng g interface my-new-interface`
Enum	`ng g enum my-new-enum`
Module	`ng g module my-module`

Our App Structure

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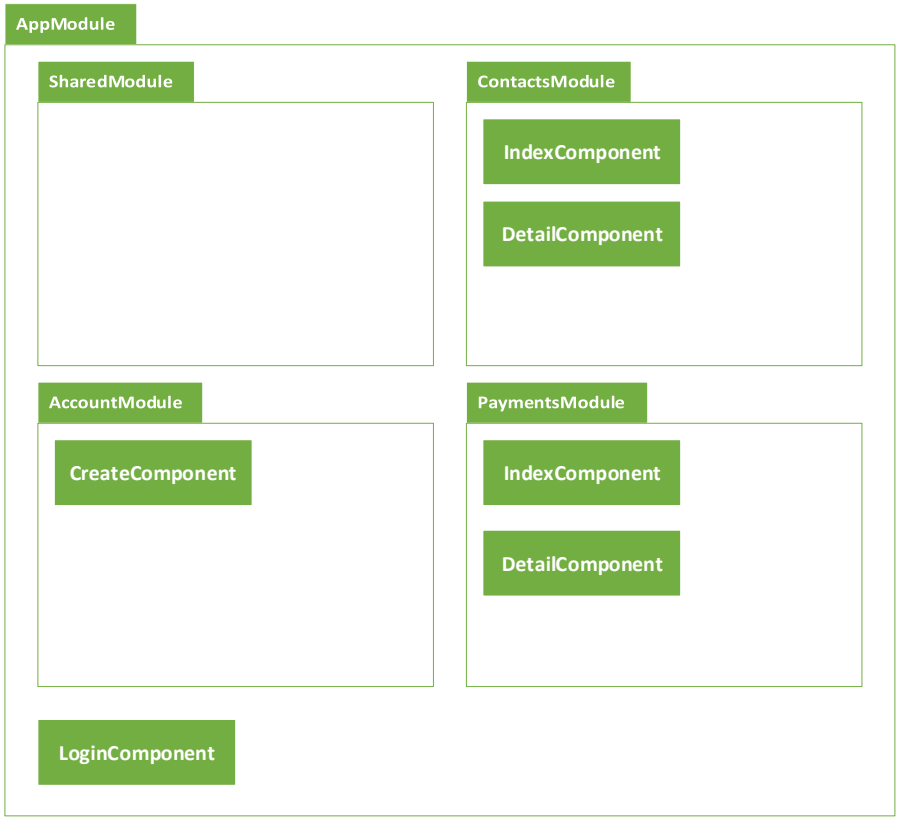


```
const routes: Routes = [
  { path: 'login', component: LoginComponent },
  {
    path: 'account',
    loadChildren: 'app/account/account.module#AccountModule'
  },
  {
    path: 'contacts',
    loadChildren: 'app/contacts/contacts.module#ContactsModule'
  },
  {
    path: 'payments',
    loadChildren: 'app/payments/payments.module#PaymentsModule'
  }
];
```

Routing configuration to navigate through our application.
Check Angular documentation about it:

https://angular.io/guide/feature-modules
https://angular.io/guide/lazy-loading-ngmodules

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Secure our App

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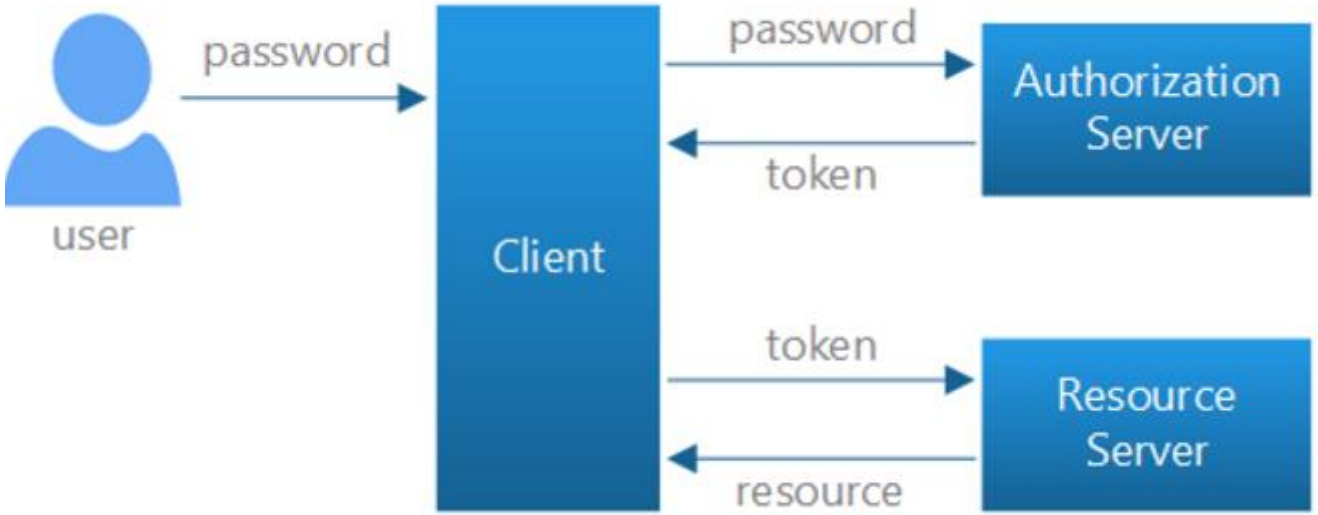

Secure our App: Route Guards

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Angular's route guards are interfaces which can tell the router whether or not it should allow navigation to a requested route. They make this decision by looking for a true or false return value from a class which implements the given guard interface. There are five different types of guards and each of them is called in a particular sequence.

- **CanActivate** to mediate navigation *to* a route.
- CanActivateChild to mediate navigation *to* a child route
- CanDeactivate to mediate navigation *away* from the current route.
- CanLoad to perform route data retrieval *before* route activation.
- Resolve to mediate navigation *to* a feature module loaded *asynchronously*.

https://angular.io/guide/router#milestone-5-route-guards

Secure our App: Http Interceptor

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Intercepts HttpRequest and handles them.

Any interceptor that we want to create needs to implement the HttpInterceptor interface. This means that our new class must have a method called intercept with HttpRequest and HttpHandler parameters. Using interceptors is all about changing outgoing requests and incoming responses, but we can't tamper with the original request–it needs to be immutable. To make changes we need to clone the original request.

The interceptor needs to be added to the HTTP_INTERCEPTORS array. This is done by making the existing HTTP_INTERCEPTORS array use the new class we've created. Add this in the providers array for our application's module.

https://angular.io/api/common/http/HttpInterceptor

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ReactiveX

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ReactiveX is a library for composing asynchronous and event-based programs by using observable sequences.

It extends the observer pattern to support sequences of data and/or events and adds operators that allow you to compose sequences together declaratively while abstracting away concerns about things like low-level threading, synchronization, thread-safety, concurrent data structures, and non-blocking I/O.

Why Use Observables?

The ReactiveX Observable model allows you to treat streams of asynchronous events with the same sort of simple, composable operations that you use for collections of data items like arrays. It frees you from tangled webs of callbacks, and thereby makes your code more readable and less prone to bugs.

http://reactivex.io/intro.html
https://hackernoon.com/understanding-creating-and-subscribing-to-observables-in-angular-426dbf0b04a3

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Component Interaction

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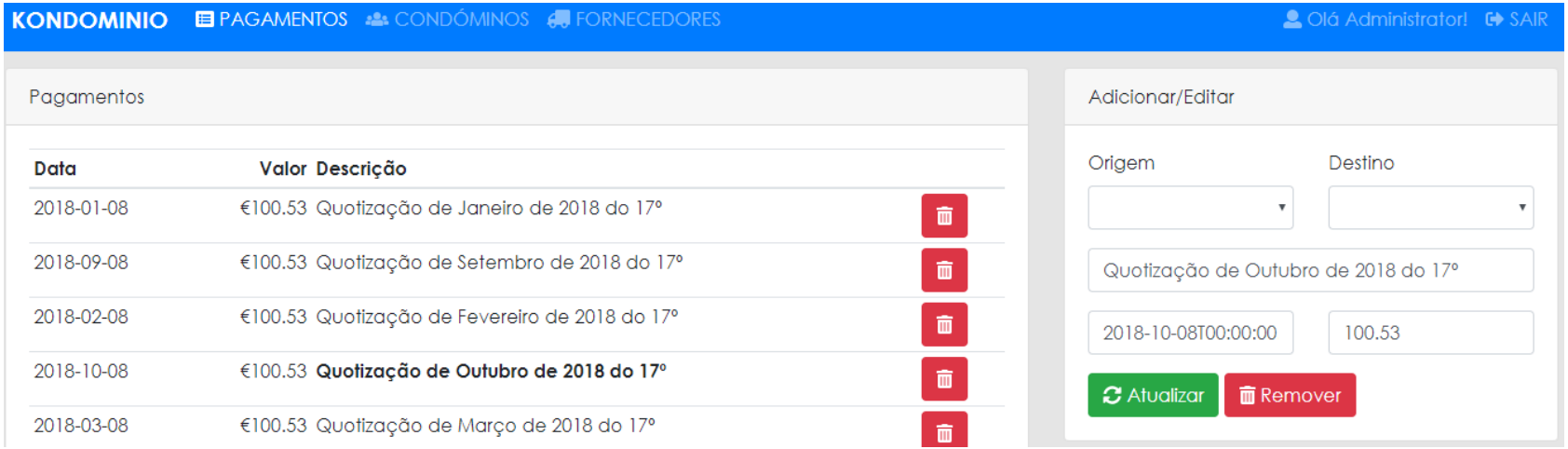
- Pass data from parent to child with input binding
- Intercept input property changes with a setter
- Intercept input property changes with ngOnChanges()
- Parent listens for child event
- Parent interacts with child via local variable
- Parent calls an @ViewChild()
- Parent and children communicate via a service

https://angular.io/guide/component-interaction#component-interaction

Componets Interaction: Exercise



- Develop the remove action at Payments page, at Index and Detail component
- Despite of the source, the payment should be deleted from the list at Index component
- API https://kondominioapi.herokuapp.com/explorer/

Questions and Discussion

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