# Angular Fundamentals
# Module 3 – Services

Lendex powered by NIBC

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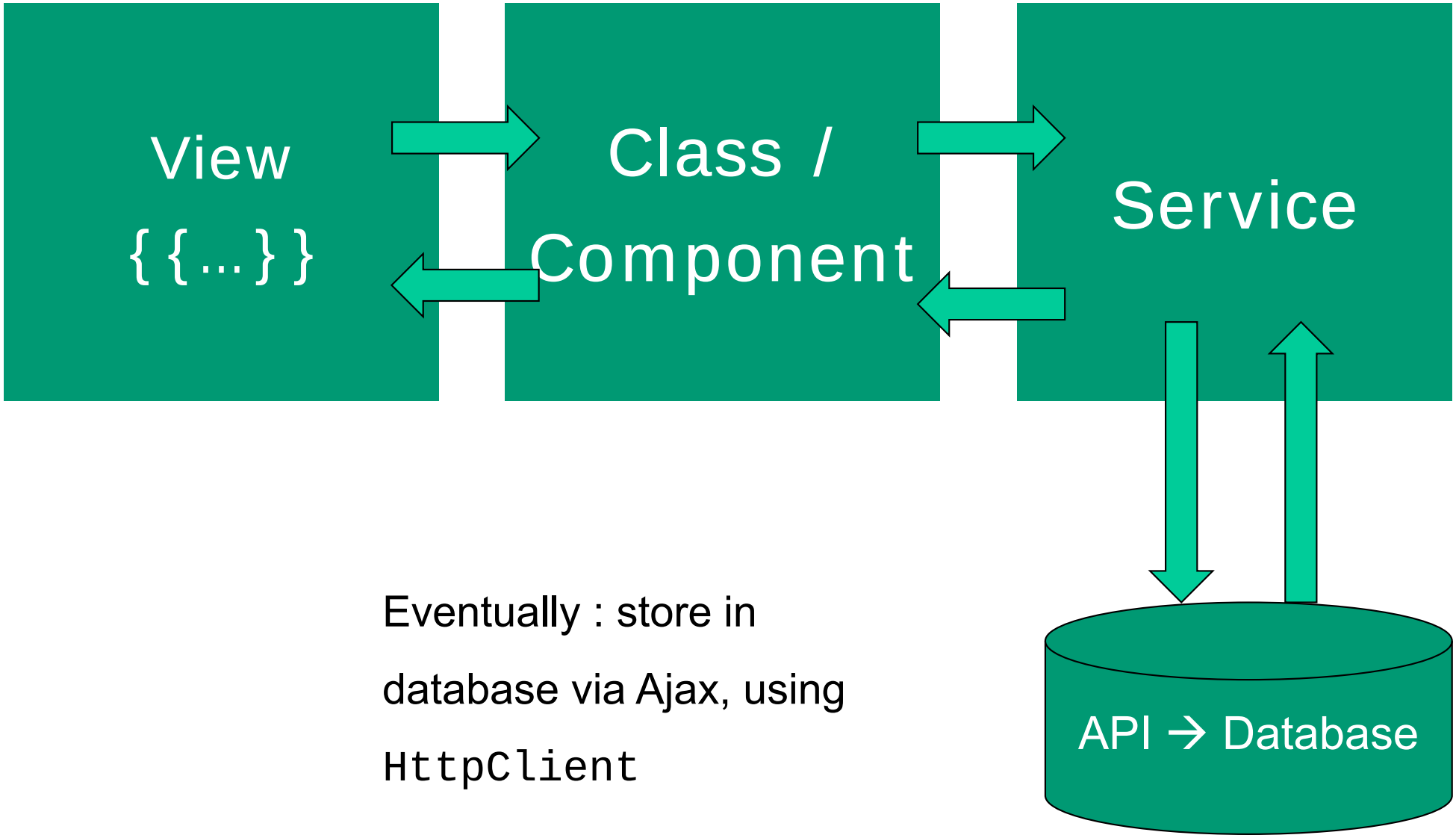
# Services

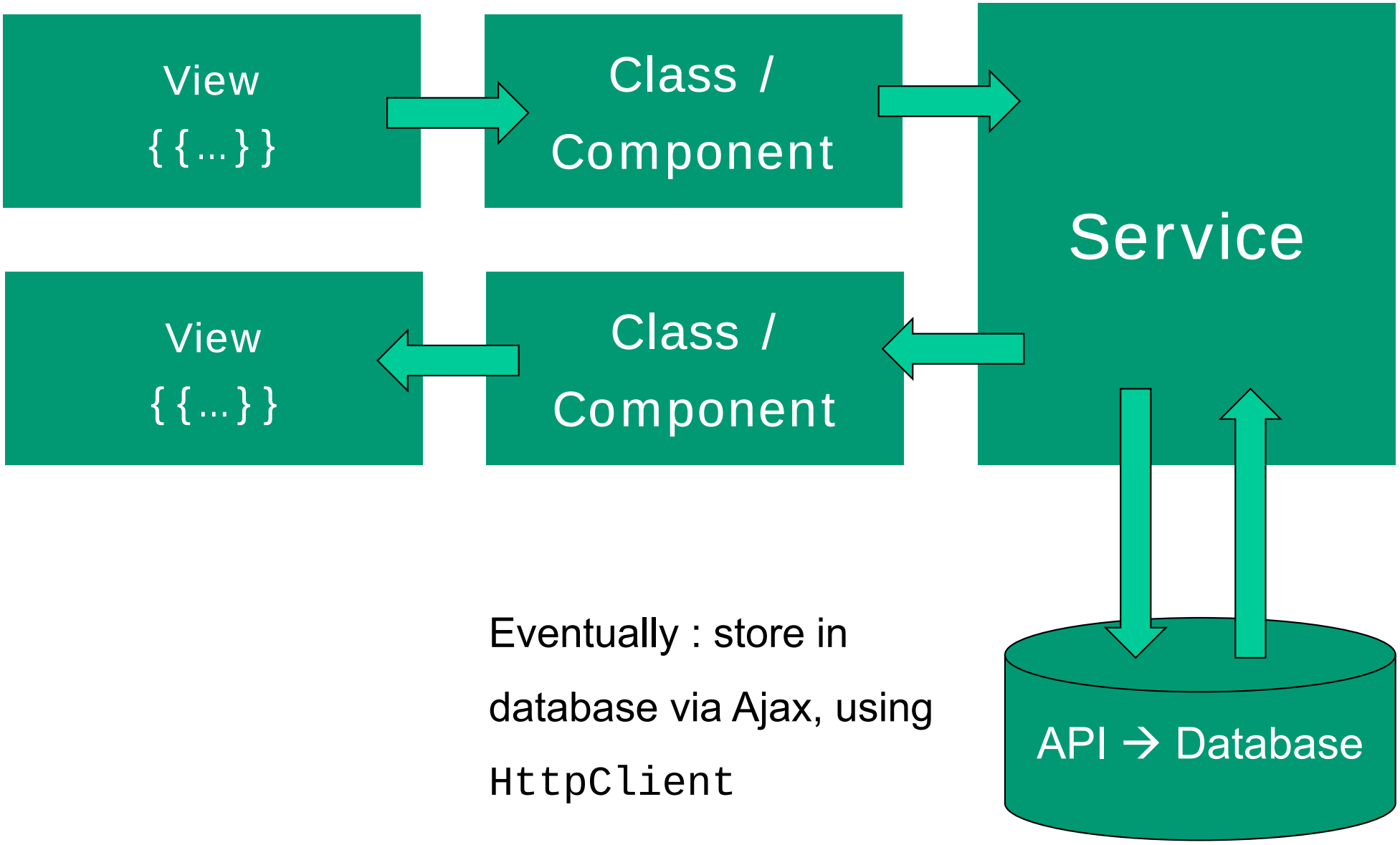
- Goal – *reuse* data functionality over different components
  - Data retrieval
  - Data caching
  - Data Storage,
  - …
- Angular: one option
  - `export class myDataService { … }`

# Data flow




Eventually : store in database via Ajax, using `HttpClient`

# ...and with multiple components




Eventually : store in database via Ajax, using `HttpClient`

# Services in Angular

Data services in Angular 1:

```
angular.module('myApp')
  .service(…)
  .factory(…)
  .provider(…)
```

Data services in Angular 2+:

```
import {Injectable} from '@angular/core';

@Injectable()
export class CityService{
   //....
}
```

# Make sure to use @Injectable

Why? – Dependency Injection (DI) en metadata!

*"TypeScript sees the @Injectable() decorator and emits metadata about our service, metadata that Angular may need to inject other dependencies into this service."*

https://angular.io/docs/ts/latest/tutorial/toh-pt4.html

## But...

*“Our service doesn't have any dependencies at the moment. Add the decorator anyway.*

*It is a best practice to apply the `@Injectable()` decorator from the start both for consistency and for future-proofing”*

# Creating a service

Creating a service in 3 steps

# Creating a service – 3 steps

1. Create/generate your service
2. Consume/inject service into component
3. Make service available in the module

```
ng generate service [name]
```

# Step 1 – create service (static data)

```
import { Injectable } from '@angular/core';
import { City } from './city.model'

@Injectable()
export class CityService {
   private cities:City[] = [
      new City(1, 'Groningen', 'Groningen'),
      …
   ];

   // return all cities
   getCities() {
      return this.cities
   }

   // return city based on id
   getCity(id:number) {
       return this.cities.find(c => c.id === id);
   }
}
```

# Step 2 – Inject/consume service

```
…
import {CityService} from "./city.service";

@Component({
   selector    : 'hello-world',
   templateUrl: 'app/app.component.html',
})

export class AppComponent implements OnInit {
   // Properties for component/class
   currentCity: City;
   cities: City[];
   cityPhoto: string;

   constructor(private cityService: CityService) {
   }

   ngOnInit() {
      this.cities = this.cityService.getCities();
   }

   getCity(city: City) {
      this.currentCity = this.cityService.getCity(city.id);
     ……
 }
}
```

local variables

Constructor: shorthand to instantiate private variable

Details for city on (click) event

# Instantiation?

- Pay attention: no manual new() instance of Service!
  - Services are –mostly- Singletons
  - Are fetched from the Module and/or instantiated in

`constructor()`

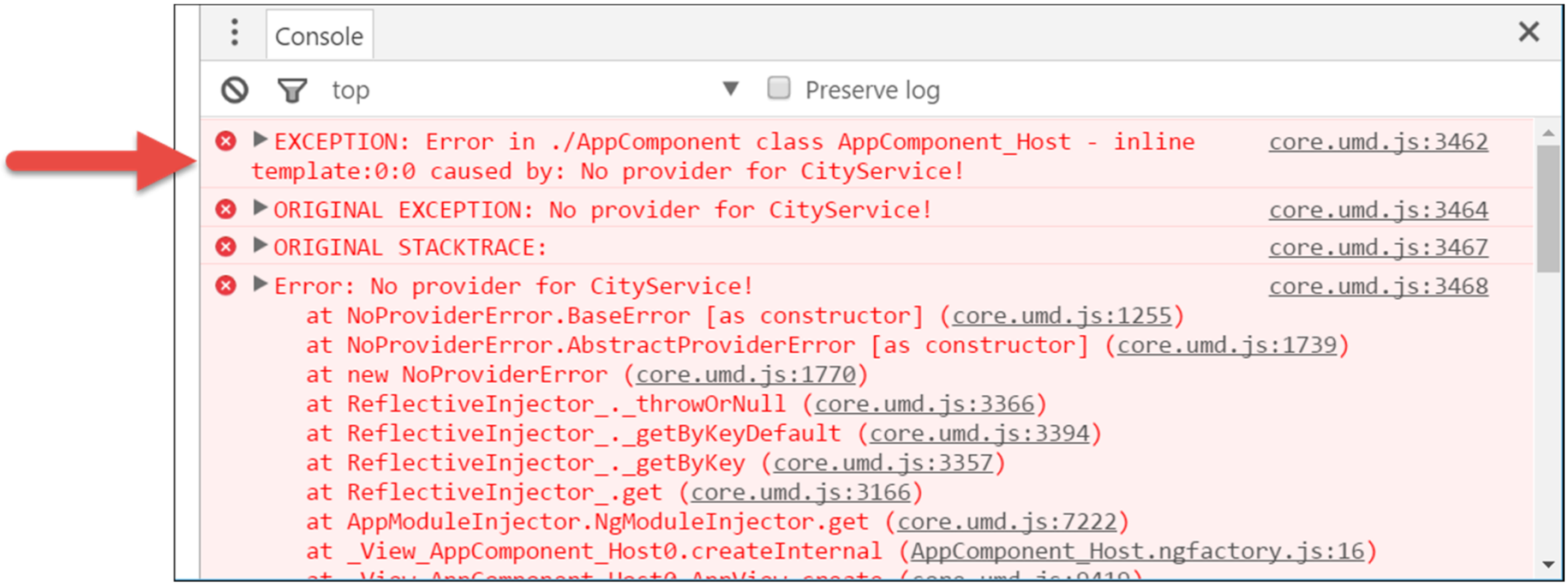
```
constructor(private cityService:CityService) { … }
```

*“The constructor itself does nothing.*

*The parameter simultaneously defines a private cityService property and identifies it as a CityService injection service.”*

# “No provider for CityService”

- Solution: inject in `app.module.ts`



# Step 3, option 1 – Inject service in Module

Only an import/reference to CityService is not sufficient.

Angular has to *inject* the service in the module

Use the annotation `providers: [ … ]`

```
// Module declaration
@NgModule({
    imports      : [BrowserModule],
    declarations: [AppComponent],
    bootstrap    : [AppComponent],
    providers    : [CityService] // DI for service
})
export class AppModule {
}
```

Array with Service-dependencies

# Step 3, option 2 : Angular 6+, use providedIn

- “Tree shakeable providers”
- Don’t tell the Module which services to use, the other way around:
- tell the service in which module it is used

```
@Injectable({
   providedIn: 'root'
})
export class CityService {
      …
}
```

```
@NgModule({
   imports      : [BrowserModule],
   declarations: [AppComponent],
   bootstrap    : [AppComponent],
   // providers    : [CityService]
})
```

https://blog.angular.io/version-6-of-angular-now-available-cc56b0efa7a4

# Singleton?

- Services are (usually) singletons
  - But: it depends where the service is provided/instantiated!
  - Services are singleton for Component/Module and all child components.
  - Using Module/Site-wide? (recommended)
    - Instantiate service in `app.module.ts`

# Checkpoint

- Every service in Angular is a `class`
- Use the `@Injectable()` decorator on service classes
- Import and instantiate in `constructor()` of the component that needs access to the service methods
- Add service to `providers: []` or use `providedIn`
- Exercise `5a) + 5b)`
- Example: `\200-services-static`

**Workshop....**