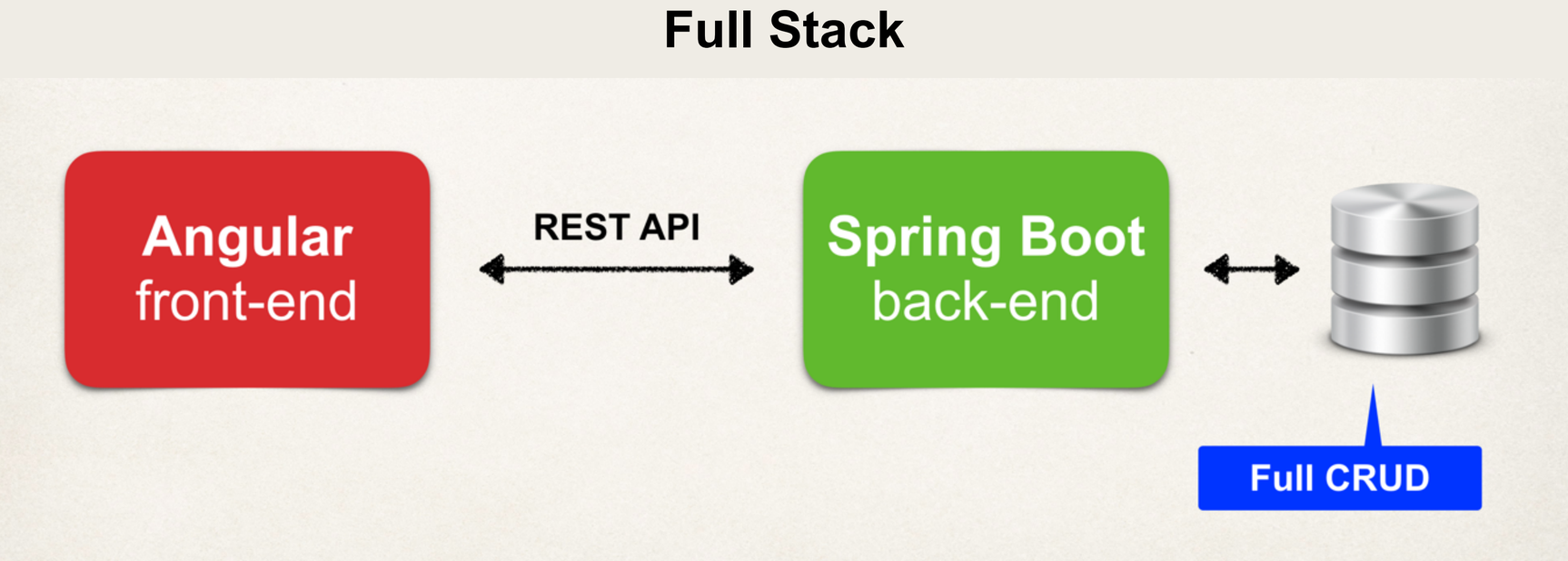
luv2code

Angular Front End

Angular Front End

- Create Angular Front End components
- Retrieve data from Spring Boot REST APIs



Development Process

1. Create Angular project
2. Create Angular component for product-list
3. Develop TypeScript class for Product
4. Create Angular service to call REST APIs
5. Update Angular component to subscribe to data from Angular service
6. Display the data in an HTML page
7. Add CrossOrigin support to Spring Boot app

Step 1: Create Angular project

- Create new project using Angular CLI

```
C:\> ng new angular-ecommerce
```

Step 2: Create Angular component for product-list

- Create new component using Angular CLI

```
C:\> ng generate component components/product-list
```

Generated files placed in sub-directory: components/product-list

Step 3: Develop TypeScript class for Product

- Create new class

Placed in sub-directory: common

```
C:\> ng generate class common/product
```

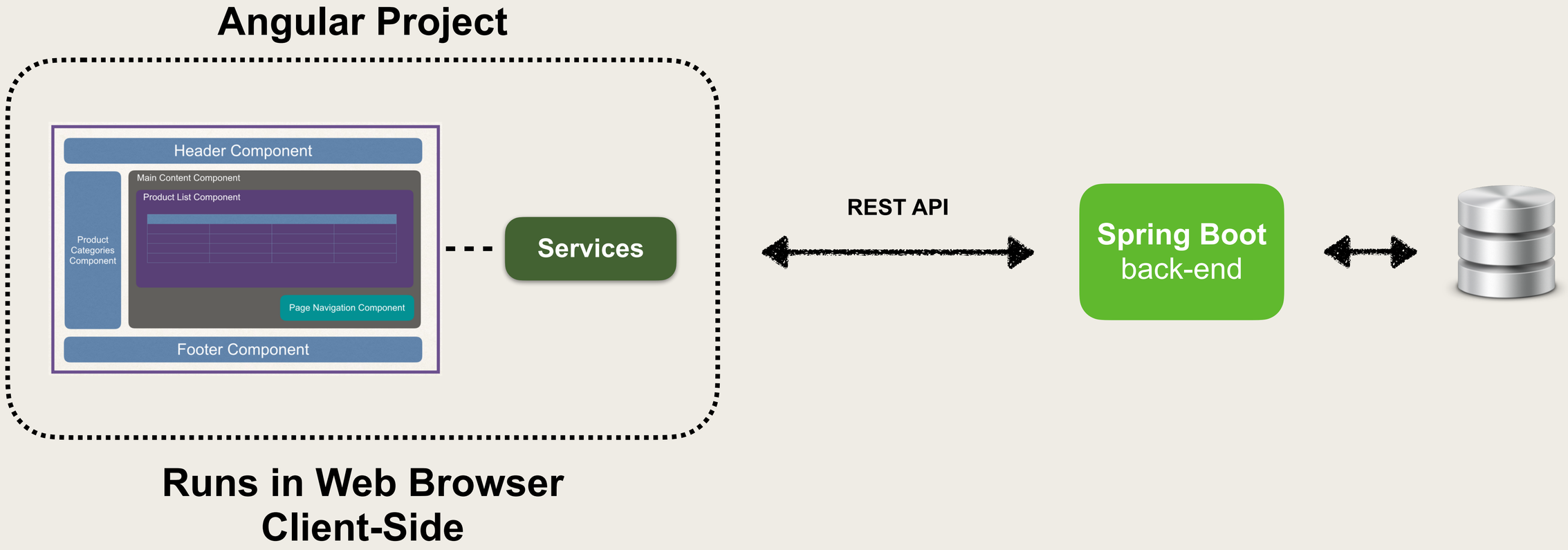
File: src/app/common/product.ts

```
export class Product {
    sku: string;
    name: string;
    description: string;
    unitPrice: number;
    imageUrl: string;
    active: boolean;
    unitsInStock: number;
    dateCreated: Date;
    lastUpdate: Date;
}
```

Step 4: Create Angular service to call REST APIs

- Angular "Service" is code developed in TypeScript
- Service is a helper class that provides desired functionality
- Part of your Angular application and runs in the web browser client-side

Application Interaction



Step 4: Create Angular service to call REST APIs

- REST client provided by Angular:
  - **`HttpClient`** ... part of **`HttpClientModule`**
- Add support in the application module

File: src/app/app.module.ts

```
...
import { HttpClientModule } from '@angular/common/http';

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

Support for HttpClientModule

Step 4: Create Angular service to call REST APIs

File: src/app/services/product.service.ts

```
import { Injectable } from '@angular/core';
import { HttpClient } from '@angular/common/http';
import { Product } from '../common/product';
import { Observable } from 'rxjs';
import { map } from 'rxjs/operators';

@Injectable({
  providedIn: 'root'
})
export class ProductService {

  private baseUrl = 'http://localhost:8080/api/products';

  constructor(private httpClient: HttpClient) { }

  getProductList(): Observable<Product[]> {
    return this.httpClient.get<GetResponse>(this.baseUrl).pipe(
      map(response => response._embedded.products)
    );
  }
}

interface GetResponse {
  _embedded: {
    products: Product[];
  }
}
```

Our service can be injected into other classes / components

Inject httpClient

Unwraps the JSON from Spring Data REST _embedded entry

Returns an observable

Map the JSON data from Spring Data REST to Product array

Step 5: Develop Angular to subscribe to data

File: src/app/components/product-list/product-list.component.ts

```
import { Component, OnInit } from '@angular/core';
import { ProductService } from 'src/app/services/product.service';
import { Product } from 'src/app/common/product';

@Component({
  selector: 'app-product-list',
  templateUrl: './product-list.component.html',
 styleUrls: ['./product-list.component.css']
})
export class ProductListComponent implements OnInit {

  products: Product[];

  constructor(private productService: ProductService) { }

  ngOnInit() {
    this.listProducts();
  }

  listProducts() {
    this.productService.getProductList().subscribe(
      data => {
        this.products = data;
      }
    )
  }
}
```

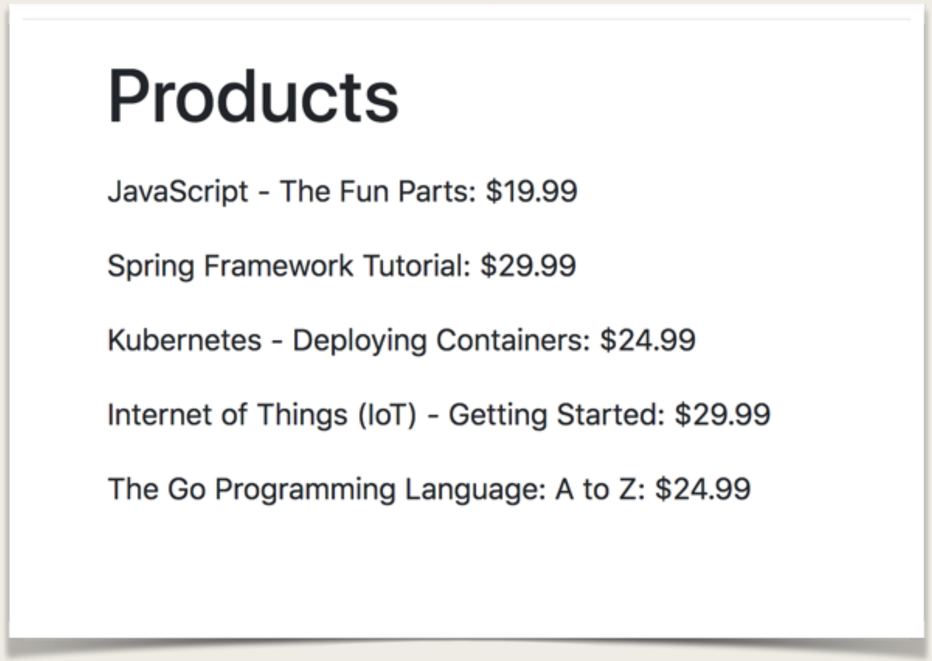
Method is invoked once you "subscribe"

Assign results to the Product array

Step 6: Display the Data in an HTML page

File: src/app/components/product-list/product-list.component.html

```
<p *ngFor="let tempProduct of products">
    {{ tempProduct.name}}: {{ tempProduct.unitPrice | currency:'USD'}}
</p>
```



Step 7: Add CrossOrigin support to Spring Boot

Restrictions are specific to scripts running in a web browser (JavaScript)

- By default, this coding will fail
- Web browsers will not allow script code to call APIs not on same origin
- Known as Same-origin policy
- Same-origin is composed of: scheme/protocol, hostname, port number
- Can relax this by adding "Cross-Origin Resource Sharing (CORS)" on server side application

Add CrossOrigin support to Spring Boot App

File: ProductRepository.java

```
@CrossOrigin("http://localhost:4200")
public interface ProductRepository extends JpaRepository<Product, Long> {

}
```

Multiple

```
@CrossOrigin({"http://localhost:4200", "http://www.mycoolapp.com"})
```

Wildcard (any website)

```
@CrossOrigin
```