Spring Data REST in Spring Boot

Spring Data JPA

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Hmmm …

Can this apply to REST APIs?

The Problem

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@RestController
@RequestMapping("/api")
public class EmployeeRestController {

    private EmployeeService employeeService;

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    // expose "/employees" and return list of employees
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    public List<Employee> findAll() {
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    }

    // add mapping for GET /employees/{employeeId}

    @GetMapping("/employees/{employeeId}")
    public Employee getEmployee(@PathVariable int employeeId) {

        Employee theEmployee = employeeService.findById(employeeId);

        if (theEmployee == null) {
            throw new RuntimeException("Employee id not found - " + employeeId);
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- We saw how to create a REST API for **`Employee`**

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public interface EmployeeService {

    public List<Employee> findAll();

    public Employee findById(int theId);

    public void save(Employee theEmployee);

    public void deleteById(int theId);

}
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  - **`Customer`**, **`Student`**, **`Product`**, **`Book`** …
- Do we have to repeat all of the same code again???

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Give me all of the basic REST API CRUD features for free

Spring Data REST - Solution

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- Leverages your existing **`JpaRepository`**

- Spring will give you a REST CRUD implementation for FREE …. like MAGIC!!
  - Helps to minimize boiler-plate REST code!!!
  - No new coding required!!!

REST API

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- Spring Data REST will expose these endpoints for free!

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More on plural forms in later video

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Development Process

Step-By-Step

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That's it!!!

Absolutely NO CODING required

Step 1: Add Spring Data REST to POM file

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We already have these two

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Only item that is new

Application Architecture

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Minimized Boilerplate Code

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Before Spring Data REST

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https://spring.io/understanding/HATEOAS

HATEOAS

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- Spring Data REST response using HATEOAS

HATEOAS

Get single employee

- Spring Data REST response using HATEOAS
- For example REST response from: **`GET /employees/3`**

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Response

```
{
    "firstName": "Avani",
    "lastName": "Gupta",
    "email": "avani@luv2code.com",
    "_links": {
        "self": {
            "href": "http://localhost:8080/employees/3"
        },
        "employee": {
            "href": "http://localhost:8080/employees/3"
        }
    }
}
```

HATEOAS

Get single employee

- Spring Data REST response using HATEOAS
- For example REST response from: **`GET /employees/3`**

Response

```
{
    "firstName": "Avani",
    "lastName": "Gupta",
    "email": "avani@luv2code.com",
    "_links": {
        "self": {
            "href": "http://localhost:8080/employees/3"
        },
        "employee": {
            "href": "http://localhost:8080/employees/3"
        }
    }
}
```

Employee data

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    "email": "avani@luv2code.com",
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        "self": {
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        },
        "employee": {
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Employee data

Response meta-data
Links to data

HATEOAS

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- For a collection, meta-data includes page size, total elements, pages etc

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Get list of employees

Response

```
{
    "_embedded": {
        "employees": [
            {
                "firstName": "Leslie",
                ...
            },
            ...
        ]
    },
    "page": {
        "size": 20,
        "totalElements": 5,
        "totalPages": 1,
        "number": 0
    }
}
```

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JSON Array of employees

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JSON Array of employees

Response meta-data
Information about the page

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JSON Array of employees

Response meta-data
Information about the page

More on configuring page sizes later

HATEOAS

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- For details on HATEOAS, see

https://spring.io/understanding/HATEOAS

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Advanced Features

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  - Pagination, sorting and searching

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https://spring.io/projects/spring-data-rest