(/)

Setting Example and Description with Swagger

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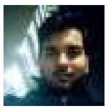

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1. Overview

In this tutorial, we'll demonstrate how to use Swagger annotations to make our documentation more descriptive. First, we'll learn how to add a description to different parts of the APIs, like methods, parameters, and error codes. Then we'll see how to add request/response examples.

2. Project Setup

We'll create a simple Products API that provides methods to create and get products.

To create a REST API from scratch, we can follow this tutorial from Spring Docs to create a RESTful web service using Spring Boot. (https://spring.io/guides/gs/rest-service/)

The next step will be to set up the dependencies and configurations for the project. We can follow the steps in this article for setting up Swagger 2 with a Spring REST API. (https://staging5.baeldung.com/spring-rest-docs-vs-openapi#openapi)

3. Creating the API

Let's create our Products API and check the documentation generated.

3.1. Model

Let's define our *Product* class: (/)

```
public class Product implements Serializable {
    private long id;
    private String name;
    private String price;

    // constructor and getter/setters
}
```

3.2. Controller

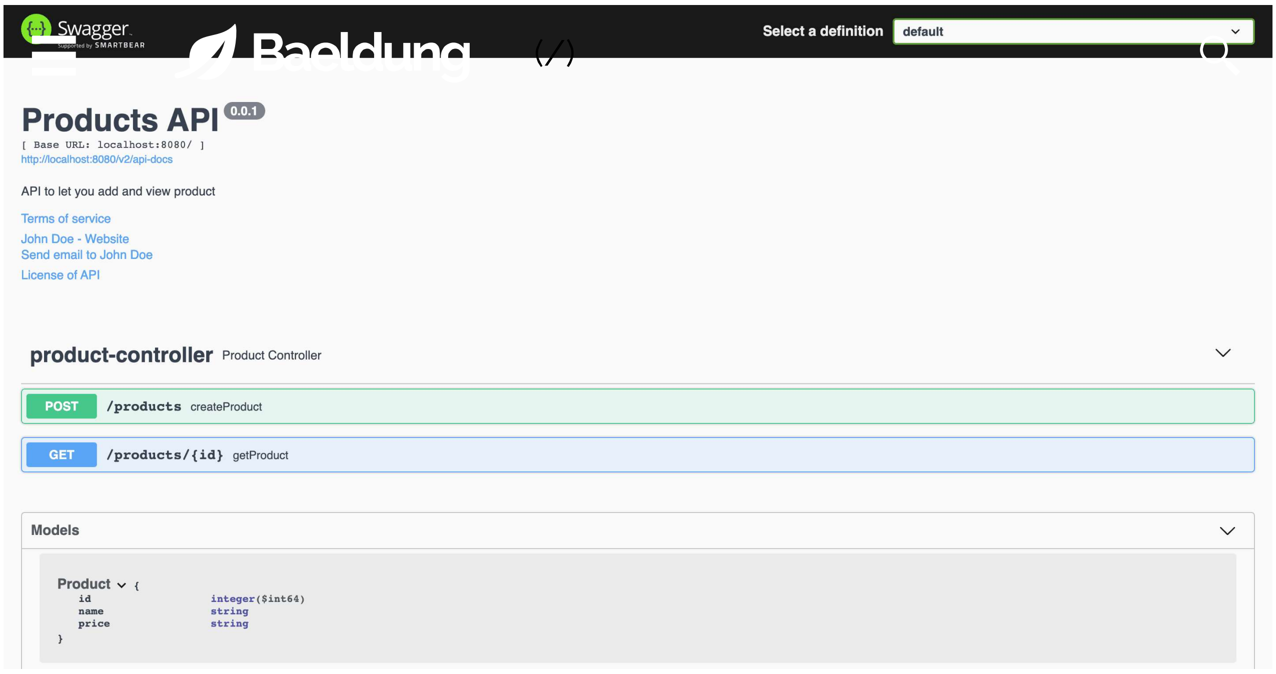
Let's define the two API methods:

```
@RestController
@Tag(name = "Products API")
public class ProductController {

    @PostMapping("/products")
    public ResponseEntity<Void> createProduct(@RequestBody Product
product) {
        //creation logic
        return new ResponseEntity<>(HttpStatus.CREATED);
    }

    @GetMapping("/products/{id}")
    public ResponseEntity<Product> getProduct(@PathVariable Long id) {
        //retrieval logic
        return ResponseEntity.ok(new Product(1, "Product 1",
"$21.99"));
    }
}
```

When we run the project, the library will read all the exposed paths and create corresponding documentation.

Let's view the documentation at the default URL *http://localhost:8080/swagger-ui/index.html*:

(/)



Products API 0.0.1

```
[ Base URL: localhost:8080/ ]
```

http://localhost:8080/v2/api-docs

API to let you add and view product

Terms of service
John Doe - Website
Send email to John Doe
License of API

product-controller Product Controller

POST `/products` createProduct

GET `/products/{id}` getProduct

Models

```
Product {
   id            integer($int64)
   name          string
   price         string
}
```

(/wp-content/uploads/2022/02/Screenshot-2022-01-29-at-1.59.47-PM.png)
We can further expand the controller methods to look at their respective documentation. Next, we'll look at them in detail.

4. Making Our Documentation Descriptive

Now let's make our documentation more descriptive by adding descriptions to different parts of the methods.

4.1. Add Description to Methods and Parameters

Let's look at a few ways to make the methods descriptive. We'll add descriptions to the methods, parameters, and response codes. Let's start with the *getProduct()* method:

```
@Operation(summary = "Get a product by id", description = "Returns a
product as per the id")
@ApiResponses(value = {
        @ApiResponse(responseCode = "200", description = "Successfully
retrieved"),
        @ApiResponse(responseCode = "404", description = "Not found -
The product was not found")
    })
@GetMapping("/products/{id}")
public ResponseEntity<Product> getProduct(@PathVariable("id")
@Parameter(name = "id", description = "Product id", example = "1") Long
id) {
    //retrieval logic
    return ResponseEntity.ok(new Product(1, "Product 1", "$21.99"));
}
```

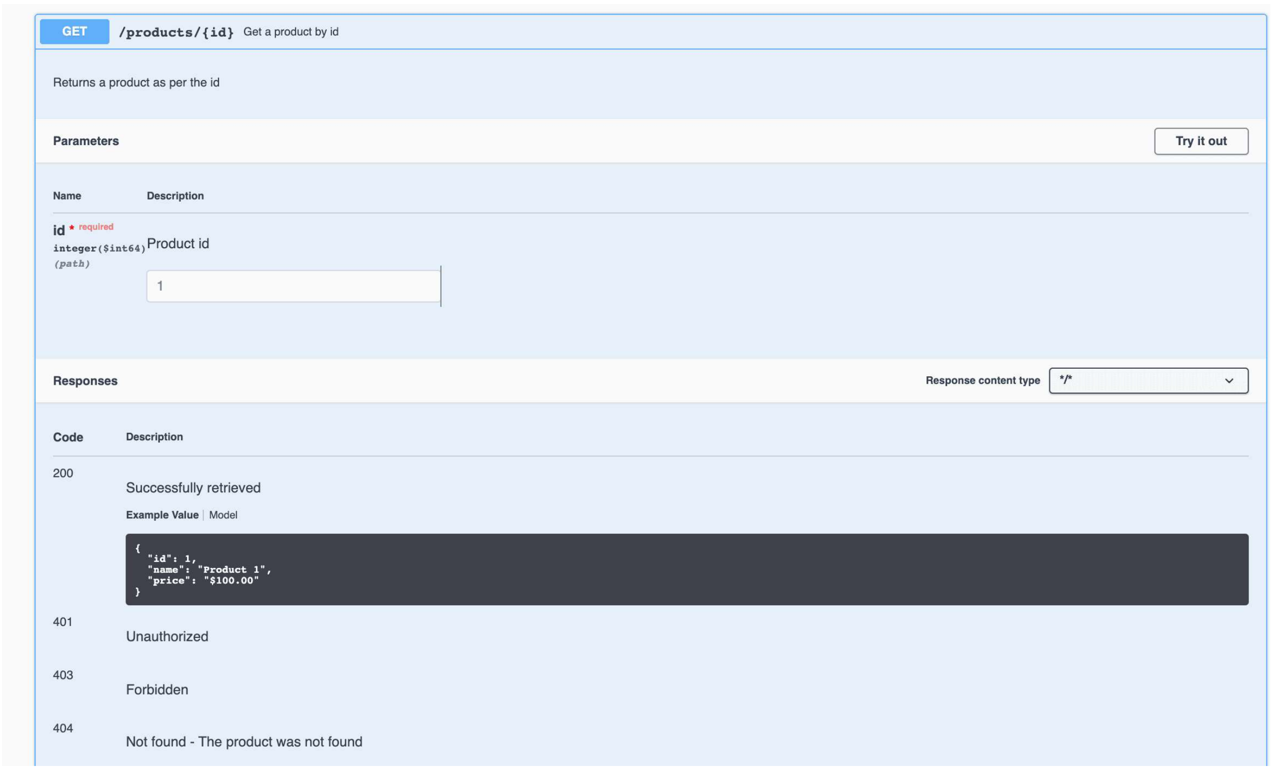
***@Operation* defines the properties of an API method.** We added a name to the operation using the *value* property, and a description using the *notes* property.

@*ApiResponses* is used to override the default messages that accompany the response codes. For each response message we want to change, we need to add an *@ApiResponse* object.

For example, let's say the product isn't found, and our API returns an HTTP 404 status in this scenario. If we don't add a custom message, the original message "Not found" can be hard to understand. The caller may interpret it as the URL is wrong. However, adding a description that "The product was not found" makes it clearer.

***@Parameter* defines the properties of method parameters.** It can be used along with the path, query, header, and form parameters. We added a name, a value (description), and an example for the "id" parameter. If we don't add the customization, the library will only pick up the name and type of the parameter, as we can see in the first image.

Let's see how this changes the documentation:


GET /products/{id} Get a product by id

Returns a product as per the id

Parameters

Name	Description
id * required integer($int64) (path)	Product id 1

Responses — Response content type: */*

Code	Description
200	Successfully retrieved Example Value | Model
401	Unauthorized
403	Forbidden
404	Not found - The product was not found

```
{
  "id": 1,
  "name": "Product 1",
  "price": "$100.00"
}
```

(/wp-content/uploads/2022/02/Screenshot-2022-01-29-at-4.08.45-PM.png)
Here we can see the name "Get a product id" alongside the API path */products/{id}*. We can also see the description just below it. Additionally, in the Parameters section, we have a description and an example for the field *id*. Finally, in the Responses section, we can see how the error descriptions for the 200 and 404 codes have changed.

4.2. Add Description and Examples to the Model

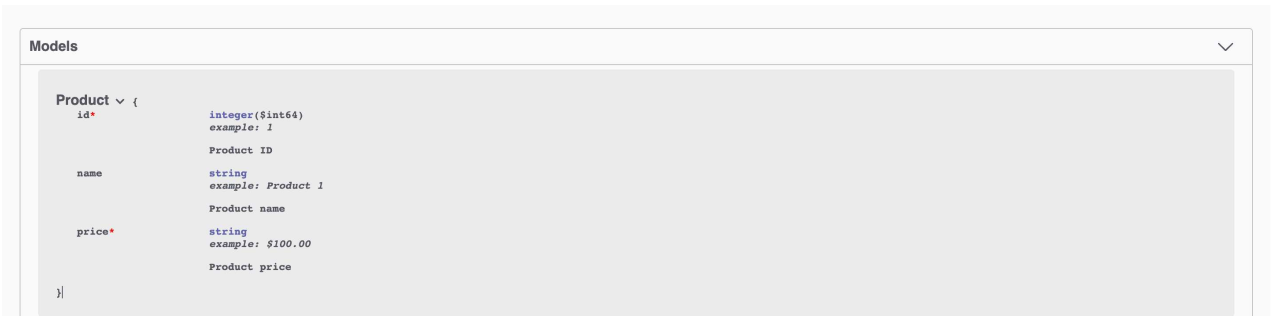
We can make similar improvements in our *createProduct()* method. Since the method accepts a *Product* object, it makes more sense to provide the description and examples in the *Product* class itself.

Let's make some changes in the *Product* class to achieve this:

```
@Schema(name = "Product ID", example = "1", required = true)
private Long id;
@Schema(name = "Product name", example = "Product 1", required = false)
private String name;
@Schema(name = "Product price", example = "$100.00", required = true)
private String price;
```

The @*Schema* annotation defines the properties of the fields. We used this annotation on each field to set its *name*, *example*, and *required* properties.

Let's restart the application and take a look at the documentation of our *Product* model again:



```
Models

Product ∨ {
   id*            integer($int64)
                  example: 1

                  Product ID

   name           string
                  example: Product 1

                  Product name

   price*         string
                  example: $100.00

                  Product price

}
```

(/wp-content/uploads/2022/02/Screenshot-2022-01-29-at-4.07.33-PM.png)
If we compare this to the original documentation image, we'll find that the new image contains examples, descriptions, and red asterisks(*) to identify the required parameters.

By adding examples to models, we can automatically create example responses in every method which uses the model as an input or output. For example, from the image corresponding to the *getProduct()* method, we can see that the response contains an example containing the same values we provided in our model.

Adding examples to our documentation is important because it makes value formats even more precise. If our models contain fields like date, time, or price, an exact value format is necessary. Defining the format beforehand makes the development process more effective for both the API provider and the API clients.

5. Conclusion

In this article, we explored different ways to improve the readability of our API documentation. We learned how to document methods, parameters, error messages, and models using the annotations *@Parameter, @Operation, @ApiResponses, @ApiResponse, and @Schema*.

As always, the code for these examples is available over on GitHub (https://github.com/eugenp/tutorials/tree/master/spring-boot-modules/spring-boot-swagger).

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