**Exercise 5: Online Bookstore - Customizing Response Status and Headers**

**Business Scenario**

The goal of this exercise is to customize the HTTP response status codes and add custom headers to the responses for various book management endpoints in the Online Bookstore application.

**Implementation Overview**

**1. Customizing Response Status**

To customize the HTTP response status codes for different endpoints, the @ResponseStatus annotation was used. This annotation allows to specify the HTTP status code that should be returned by the controller method.

* **Example Usage**:
  + The @ResponseStatus(HttpStatus.OK) annotation was applied to methods that successfully retrieve or modify resources, ensuring that a 200 OK status is returned.
  + The @ResponseStatus(HttpStatus.CREATED) annotation was used for methods that add a new resource, ensuring that a 201 Created status is returned.

**2. Adding Custom Headers**

To add custom headers to the response, the ResponseEntity class was used. ResponseEntity allows for full control over the HTTP response, including status codes and headers.

* **Example Usage**:
  + Custom headers like Srijoni'sBOOKSTORE-APP and RESPONSE-TIME were added to the response of the addBook method, which handles the creation of new book records. These headers provide additional context and metadata about the response.

**Detailed Breakdown**

**1. Response Status Customization**

* **Method**: @GetMapping("/")
  + **Purpose**: Retrieve a list of books.
  + **Response Status**:
    - 200 OK if books are found.
    - 204 No Content if no books are found.
* **Method**: @PostMapping("/add")
  + **Purpose**: Add a new book to the system.
  + **Response Status**:
    - 201 Created indicating successful creation of a new resource.
* **Method**: @PutMapping("/edit/{id}")
  + **Purpose**: Update an existing book record.
  + **Response Status**:
    - 200 OK for successful update.
* **Method**: @DeleteMapping("/delete/{id}")
  + **Purpose**: Delete a book from the system.
  + **Response Status**:
    - 204 No Content indicating successful deletion with no response body.

**2. Custom Headers**

* **Method**: @PostMapping("/add")
  + **Purpose**: Add a new book.
  + **Custom Headers**:
    - Srijoni'sBOOKSTORE-APP: Indicates the application that processed the request.
    - RESPONSE-TIME: Captures the timestamp of when the response was generated, providing insight into when the request was processed.
* **Method**: @GetMapping("/{id}")
  + **Purpose**: Retrieve a book by its ID.
  + **Response Status**:
    - 200 OK if the book is found.

**Conclusion**

This exercise demonstrated how to enhance the Online Bookstore application's RESTful API by customizing the HTTP response status codes and adding custom headers. These improvements ensure that the API responses are more informative and follows RESTful best practices.