# SME Explanation: REST - Country Web Service

## 1. What Happens in the Controller Method?

The controller method in a Spring Boot REST service is responsible for handling incoming HTTP requests and returning appropriate responses. In this context, the `@RestController` annotation marks the class as a RESTful controller, meaning all methods within will return data directly in the response body, typically in JSON format.  
  
The method `getCountryIndia()` is mapped to the `/country` URL using the `@RequestMapping` annotation. When a GET request is made to this endpoint, Spring invokes this method. Inside the method, the application context is initialized using `ClassPathXmlApplicationContext`, which loads the XML configuration file `country.xml`. The method retrieves a bean with id `country`, which contains the details of India. This object is returned directly from the method and will be serialized into JSON for the HTTP response.

## 2. How the Bean is Converted into JSON Response?

Spring Boot uses an internal message converter mechanism to handle object-to-JSON conversion. By default, Spring Boot includes the Jackson library as part of the `spring-boot-starter-web` dependency. When a controller method returns a Java object (like the `Country` object), the `MappingJackson2HttpMessageConverter` automatically converts this object into a JSON representation.  
  
The conversion is done by calling the getter methods of the object to extract values for each field, which are then serialized into key-value pairs in the JSON response. This entire process is handled behind the scenes by Spring, requiring no manual configuration.

## 3. Viewing HTTP Headers in Browser Developer Tools

To view the HTTP response headers in a browser:  
1. Open your browser (Chrome or Edge).  
2. Navigate to `http://localhost:8083/country`.  
3. Open Developer Tools (F12 or Ctrl+Shift+I).  
4. Go to the 'Network' tab.  
5. Refresh the page.  
6. Click on the `/country` request listed.  
7. In the 'Headers' section, observe the HTTP response headers.  
  
Typical headers include:  
- `Content-Type: application/json`  
- `Content-Length`  
- `Date`  
- `Server`  
- `Connection: keep-alive`

## 4. Viewing HTTP Headers in Postman

To view the headers in Postman:  
1. Open Postman.  
2. Set the request type to GET and enter the URL `http://localhost:8083/country`.  
3. Click 'Send' to make the request.  
4. Click on the 'Headers' tab below the response section.  
  
This tab displays all headers received from the server, such as:  
- `Content-Type: application/json`  
- `Date`  
- `Content-Length`  
- `Connection`  
- `Server`  
  
These headers provide metadata about the HTTP response and help in understanding how the server processed and delivered the request.