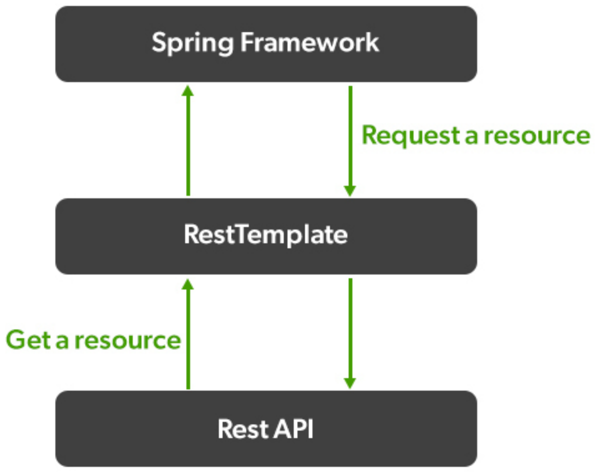
RestTemplate

To interact with REST, the client needs to create a client instance and request object, execute the request, interpret the response, map the response to domain objects, and also handle the exceptions. It is common for the Spring framework to both create an API and consume internal or external application's APIs. This advantage also helps us in the development of microservices. To avoid such boilerplate code Spring provides a convenient way to consume REST APIs – through 'RestTemplate'.



- RestTemplate is a synchronous REST client provided by the core Spring Framework
- It provides a total of 41 methods for interacting with REST resources. But there are only a dozen of unique methods each overloaded to form a complete set of 41 methods.
- Except for TRACE, RestTemplate has at least one method for each of the standard HTTP methods. execute() and exchange() provide lower-level, general-purpose methods for sending requests with any HTTP method
- Spring RestTemplate class is part of spring-web, introduced in Spring 3.
- We can use RestTemplate to test HTTP based restful web services, it doesn't support HTTPS protocol.
- The HTTP client library takes care of all the low-level details of communication over HTTP while the RestTemplate adds the capability of transforming the request and response in JSON or XML to Java objects.

Some Useful Methods of RestTemplate

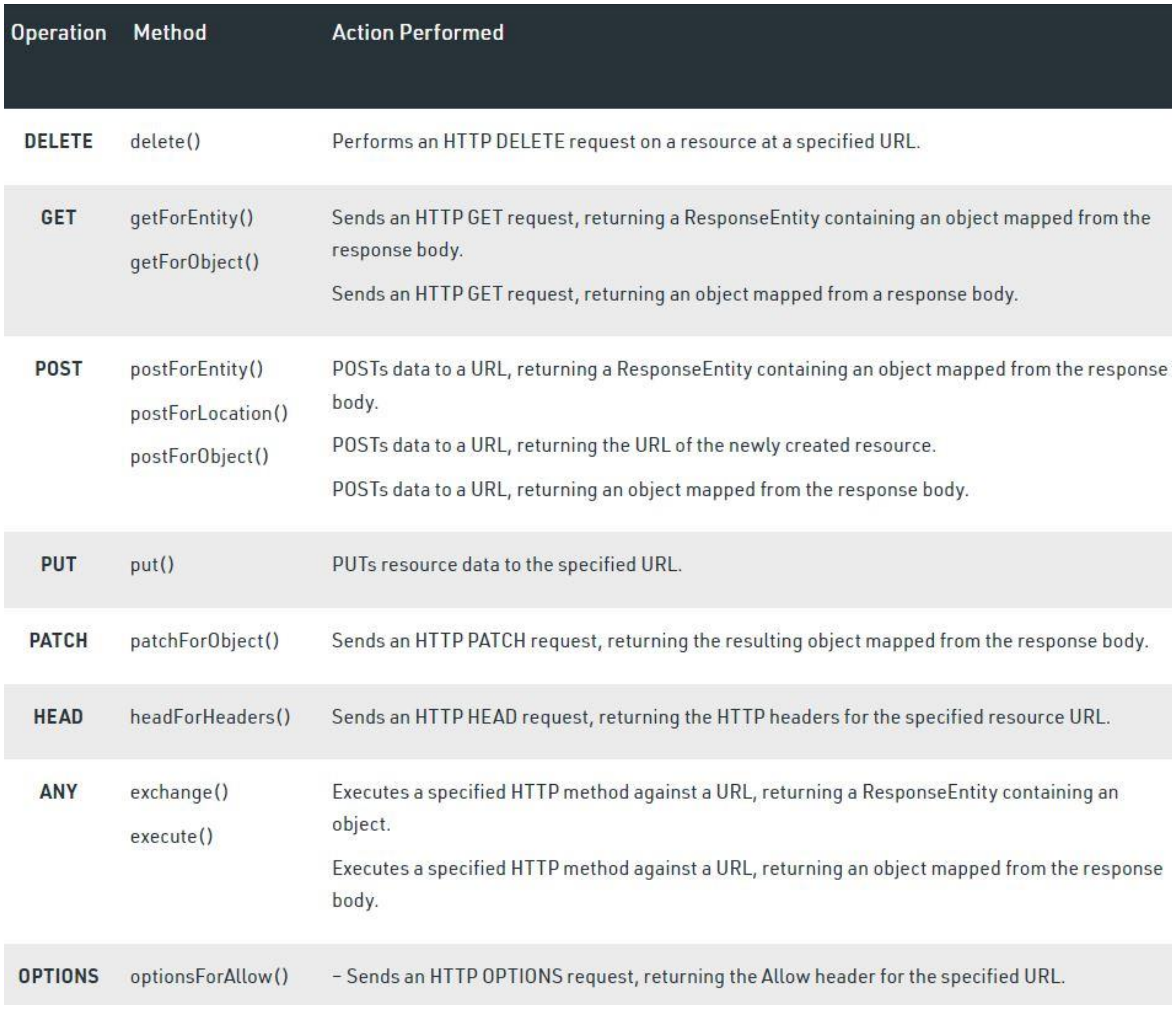
Before looking at the examples, it will be helpful to take a look at the important methods of the RestTemplate class.

RestTemplate provides higher-level methods for each of the HTTP methods which make it easy to invoke RESTful services.

The names of most of the methods are based on a naming convention:

- the first part in the name indicates the HTTP method being invoked
- the second part in the name indicates returned element.

For example, the method getForObject() will perform a GET and return an object.



Operation	Method	Action Performed
DELETE	delete()	Performs an HTTP DELETE request on a resource at a specified URL.

GET	getForEntity()
	getForObject()
		Sends an HTTP GET request, returning a ResponseEntity containing an object mapped from the response body.
		Sends an HTTP GET request, returning an object mapped from a response body.

POST	postForEntity()
	postForLocation()
	postForObject()
		POSTs data to a URL, returning a ResponseEntity containing an object mapped from the response body.
		POSTs data to a URL, returning the URL of the newly created resource.
		POSTs data to a URL, returning an object mapped from the response body.

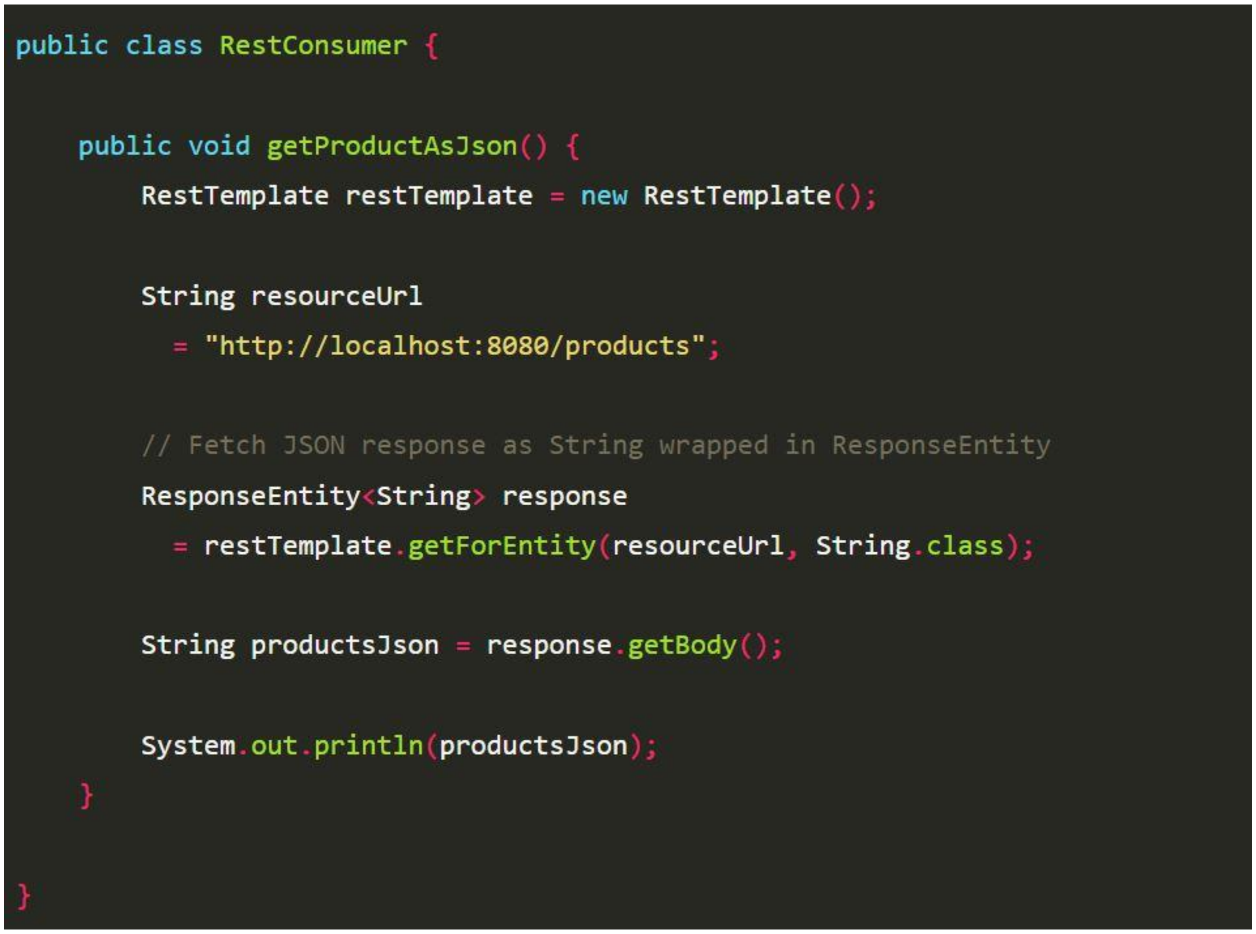
PUT	put()	PUTs resource data to the specified URL.
PATCH	patchForObject()	Sends an HTTP PATCH request, returning the resulting object mapped from the response body.
HEAD	headForHeaders()	Sends an HTTP HEAD request, returning the HTTP headers for the specified resource URL.

ANY	exchange()
	execute()
		Executes a specified HTTP method against a URL, returning a ResponseEntity containing an object.
		Executes a specified HTTP method against a URL, returning an object mapped from the response body.

OPTIONS	optionsForAllow()	– Sends an HTTP OPTIONS request, returning the Allow header for the specified URL.

Making an HTTP GET Request to Obtain the JSON Response

The simplest form of using RestTemplate is to invoke an HTTP GET request to fetch the response body as a raw JSON string as shown in this example:



```
public class RestConsumer {

    public void getProductAsJson() {
        RestTemplate restTemplate = new RestTemplate();

        String resourceUrl
          = "http://localhost:8080/products";

        // Fetch JSON response as String wrapped in ResponseEntity
        ResponseEntity<String> response
          = restTemplate.getForEntity(resourceUrl, String.class);

        String productsJson = response.getBody();

        System.out.println(productsJson);
    }

}
```

Resources:

https://www.geeksforgeeks.org/spring-resttemplate/

https://www.tutorialspoint.com/spring_boot/spring_boot_rest_template.html

https://spring.io/blog/2009/03/27/rest-in-spring-3-resttemplate

https://springframework.guru/using-resttemplate-in-spring

https://reflectoring.io/spring-resttemplate/

https://www.digitalocean.com/community/tutorials/spring-resttemplate-example