

访问 Web 资源

通过 RestTemplate 访问 Web 资源

Spring Boot 中的 RestTemplate

- Spring Boot 中没有自动配置 RestTemplate
- Spring Boot 提供了 RestTemplateBuilder
 - RestTemplateBuilder.build()

常用方法

GET 请求

- `getForObject()` / `getForEntity()`

POST 请求

- `postForObject()` / `postForEntity()`

PUT 请求

- `put()`

DELETE 请求

- `delete()`

```
String result = restTemplate.getForObject(  
    "http://example.com/hotels/{hotel}/bookings/{booking}", String.class, "42", "21");
```

构造 URI

构造 URI

- UriComponentsBuilder

构造相对于当前请求的 URI

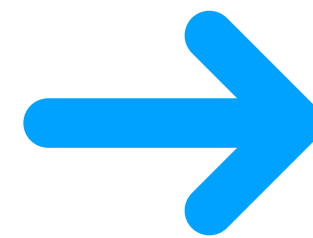
- ServletUriComponentsBuilder

构造指向 Controller 的 URI

- MvcUriComponentsBuilder

构造 URI

```
URI uri = UriComponentsBuilder
    .fromUriString("http://example.com/hotels/{hotel}")
    .queryParams("q", "{q}")
    .encode()
    .buildAndExpand("Westin", "123")
    .toUri();
```



```
URI uri = UriComponentsBuilder
    .fromUriString("http://example.com/hotels/{hotel}?q={q}")
    .build("Westin", "123");
```

```
UriComponents uriComponents = MvcUriComponentsBuilder
    .fromMethodCall(on(BookingController.class).getBooking(21)).buildAndExpand(42);

URI uri = uriComponents.encode().toUri();
```

“Talk is cheap, show me the code.”

Chapter 7 / simple-resttemplate-demo

RestTemplate 的高阶用法

RestTemplate 的高阶用法

传递 HTTP Header

- `RestTemplate.exchange()`
- `RequestEntity<T> / ResponseEntity<T>`

HTTP Header

```
String uriTemplate = "http://example.com/hotels/{hotel}";
URI uri = UriComponentsBuilder.fromUriString(uriTemplate).build(42);

RequestEntity<Void> requestEntity = RequestEntity.get(uri)
    .header(("MyRequestHeader", "MyValue"))
    .build();

ResponseEntity<String> response = template.exchange(requestEntity, String.class);

String responseHeader = response.getHeaders().getFirst("MyResponseHeader");
String body = response.getBody();
```

RestTemplate 的高阶用法

类型转换

- JsonSerializer / JsonDeserializer
- @JsonComponent

解析泛型对象

- RestTemplate.exchange()
- ParameterizedTypeReference<T>

解析泛型对象

```
ParameterizedTypeReference<List<Coffee>> ptr =  
    new ParameterizedTypeReference<List<Coffee>>() {};  
ResponseEntity<List<Coffee>> list = restTemplate  
    .exchange(coffeeUri, HttpMethod.GET, null, ptr);  
list.getBody().forEach(c -> log.info("Coffee: {}", c));
```

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Chapter 7 / complex-resttemplate-demo

简单定制 RestTemplate

RestTemplate 支持的 HTTP 库

通用接口

- `ClientHttpRequestFactory`

默认实现

- `SimpleClientHttpRequestFactory`

RestTemplate 支持的 HTTP 库

Apache HttpComponents

- `HttpComponentsClientHttpRequestFactory`

Netty

- `Netty4ClientHttpRequestFactory`

OkHttp

- `OkHttp3ClientHttpRequestFactory`

优化底层请求策略

连接管理

- PoolingHttpClientConnectionManager
- KeepAlive 策略

超时设置

- connectTimeout / readTimeout

SSL校验

- 证书检查策略

连接复用

```
public class CustomConnectionKeepAliveStrategy implements ConnectionKeepAliveStrategy {
    private final long DEFAULT_SECONDS = 30;

    @Override
    public long getKeepAliveDuration(HttpResponse response, HttpContext context) {
        return Arrays.asList(response.getHeaders(HTTP.CONN_KEEP_ALIVE))
            .stream()
            .filter(h -> StringUtils.equalsIgnoreCase(h.getName(), "timeout")
                && StringUtils.isNumeric(h.getValue()))
            .findFirst()
            .map(h -> NumberUtils.toLong(h.getValue(), DEFAULT_SECONDS))
            .orElse(DEFAULT_SECONDS) * 1000;
    }
}
```

默认实现

- `org.apache.http.impl.client.DefaultConnectionKeepAliveStrategy`

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Chapter 7 / advanced-resttemplate-demo

通过 WebClient 访问 Web 资源

了解 WebClient

WebClient

- 一个以 Reactive 方式处理 HTTP 请求的非阻塞式的客户端

支持的底层 HTTP 库

- Reactor Netty - `ReactorClientHttpConnector`
- Jetty ReactiveStream HttpClient - `JettyClientHttpConnector`

WebClient 的基本用法

创建 WebClient

- `WebClient.create()`
- `WebClient.builder()`

发起请求

- `get()` / `post()` / `put()` / `delete()` / `patch()`

WebClient 的基本用法

获得结果

- `retrieve()` / `exchange()`

处理 HTTP Status

- `onStatus()`

应答正文

- `bodyToMono()` / `bodyToFlux()`

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Chapter 7 / webclient-demo

SpringBucks 进度小结

本章小结

- RestTemplate 的各种用法
- RestTemplate 的简单定制
- WebClient 的基本用法

SpringBucks 进度小结

增加了 **customer-service**

- 通过编码方式查询咖啡
- 通过编码方式创建订单

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Chapter 7 / customer-service