

访问 Web 资源



扫码试看/订阅  
《玩转 Spring 全家桶》

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

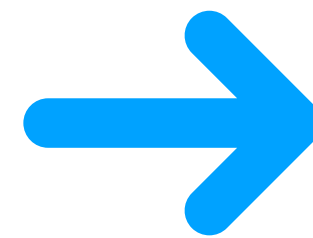
- ServletUriComponentsBuilder

## 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();
```

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*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 HttpClient

- `HttpClientHttpRequestFactory`

## Netty

- `Netty4HttpRequestFactory`

## OkHttp

- `OkHttp3HttpRequestFactory`

# 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

**“Talk is cheap, show me the code.”**

*Chapter 7 / customer-service*



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