# Microservices mit Spring Boot

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## Typische Technische Herausforderungen bei der Entwicklung von Microservices

- Konfigurationsmanagment
- Monitoring & Logging
- Sicherheit
- Service-Discovery
- Deployment & Testing
- Load-Balancing
- Kommunikation zwischen den Services

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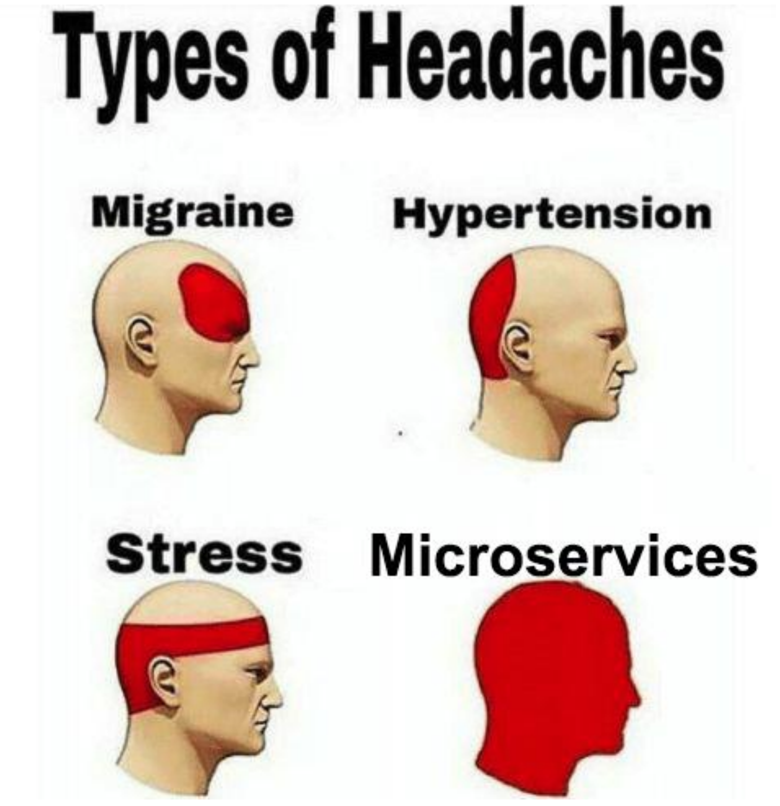
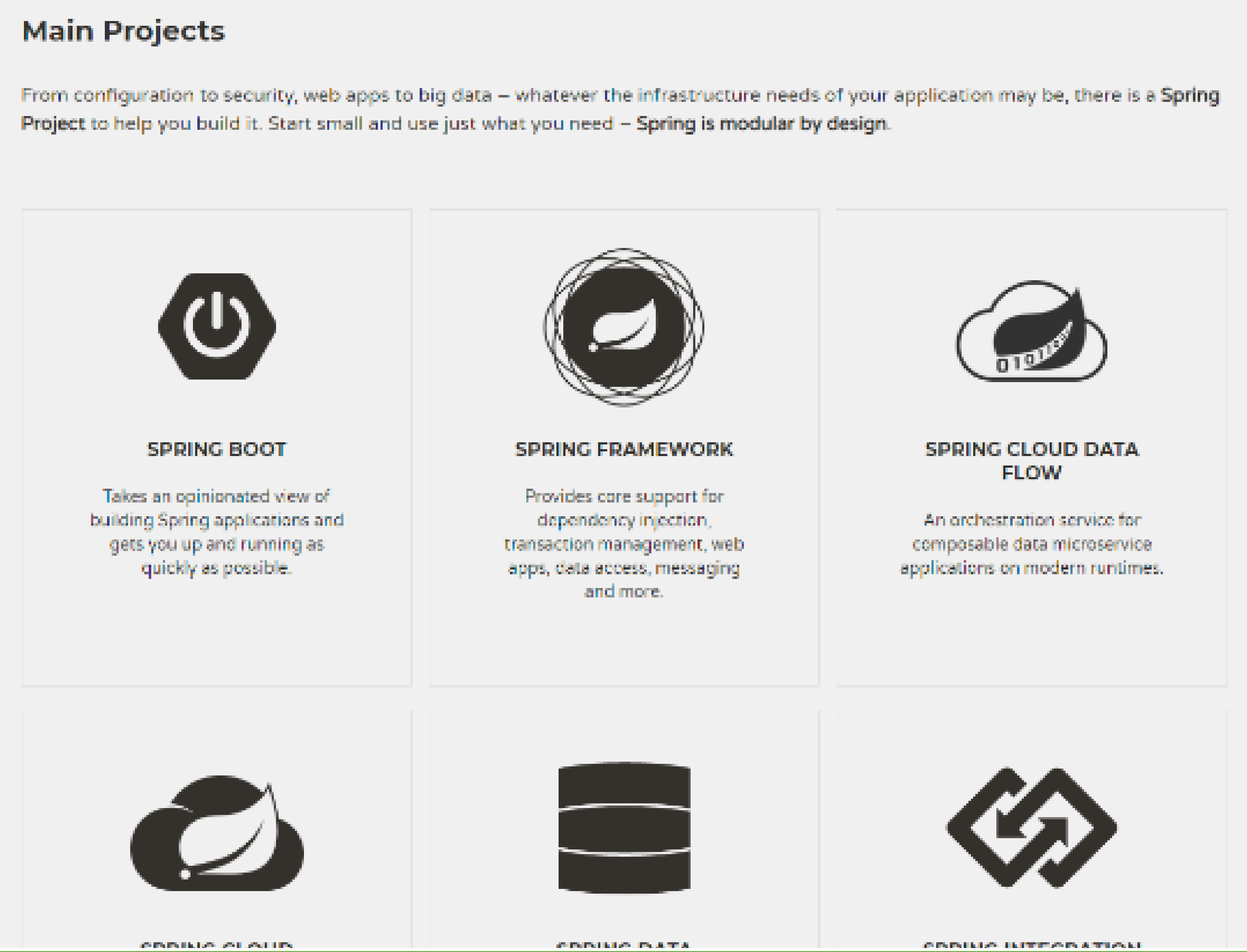


# Microservices mit Spring Boot

## Was ist Spring?

- Großes open source java framework



## Main Projects

From configuration to security, web apps to big data – whatever the infrastructure needs of your application may be, there is a **Spring Project** to help you build it. Start small and use just what you need – **Spring is modular by design.**

**SPRING BOOT**

Takes an opinionated view of building Spring applications and gets you up and running as quickly as possible.

**SPRING FRAMEWORK**

Provides core support for dependency injection, transaction management, web apps, data access, messaging and more.

**SPRING CLOUD DATA FLOW**

An orchestration service for composable data microservice applications on modern runtimes.

## Was ist Spring?

- Großes open source java framework
- Ziel: die Entwicklung mit Java einfacher machen
- Basiert auf den Prinzipien Dependency Injection und AOP
- Ermöglicht ein POJO-basiertes Programmiermodell durch Annotationen
- Umfangreiche Einsatzmöglichkeiten
- Viele Konfigurationsschritte notwendig vor dem ersten Start

# Microservices mit Spring Boot

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”Spring Boot makes it easy to create stand-alone, production-grade Spring-based Applications that you can run.”

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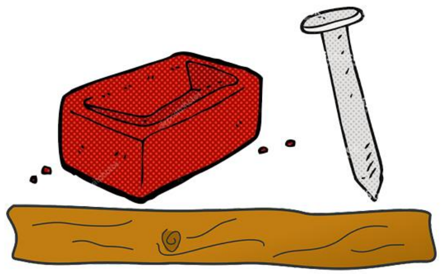
## Was ist Spring Boot?

- Spring Projekt
- Convention-over-configuration Lösung
- Eine Zusammenstellung von Elementen der Spring Plattform und Third-Party libraries
- Voreingestellt mit den „besten“ Konfigurationen für die enthaltenen Elemente


Spring

$\longrightarrow$

Spring Boot

## Was bietet Spring Boot?

- SQL und NoSQL Unterstützung
- Embedded Server (Tomcat, Jetty, Undertow)
- Automatische Konfiguration
- Integrierte Metriken und Health Status
- Ermöglicht fat jar-Erstellung
- Devtools (auto-restart, liveReload)
- Vielzahl an Spring Boot Starter

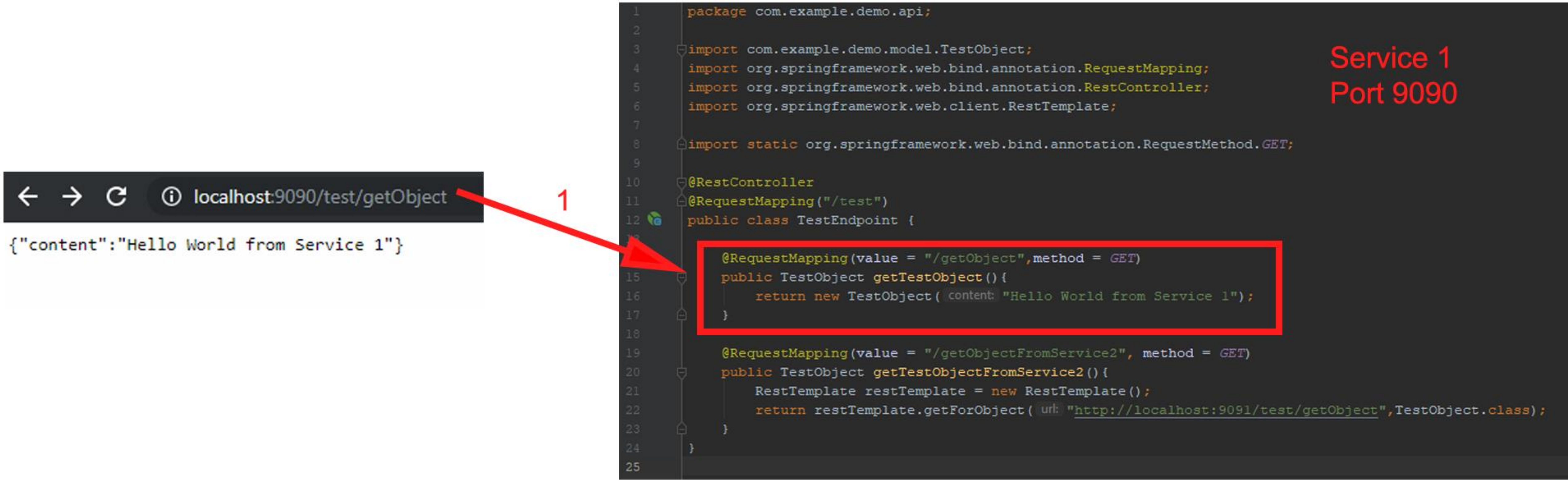
## Was ist ein Spring Boot Starter?

- Spring Boot Lösung für einen typischen Anwendungsfall
- Ad-hoc Skelettprojekt
- Beinhaltet alle notwendigen Dependencies
- Über 60 verschiedene Starter (Data,Logging,Mail,Web,...)
- Mehrere Starter können in einem Service genutzt werden
  -> viele weitere Anwendungsfälle können abgedeckt werden

## Wie erstelle ich ein Spring Boot Projekt?

- Spring Boot Projekte besitzen eine bestimmte Struktur und können von vielen IDE‘s (IntelliJ,Eclipse,…) oder durch den Spring Initializr erstellt werden
- Spring Initializer: https://start.spring.io/

# Wie kann die Kommunikation zwischen Microservices aussehen?



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{"content":"Hello World from Service 1"}
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Benötigte Dependency: Spring Boot Starter Web

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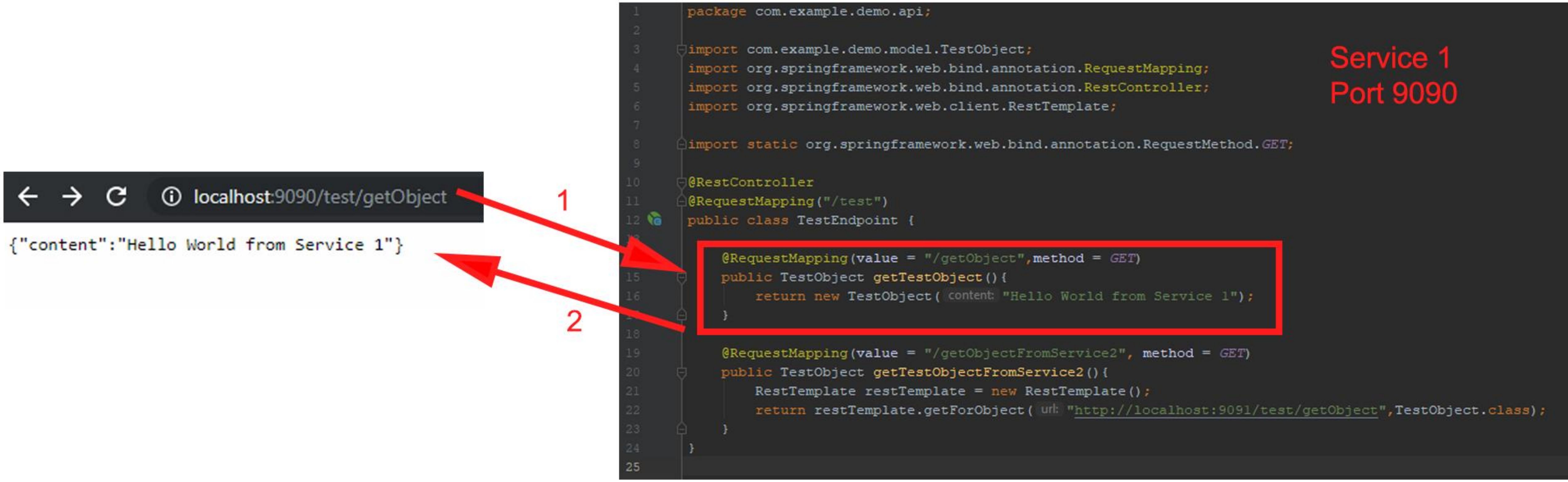

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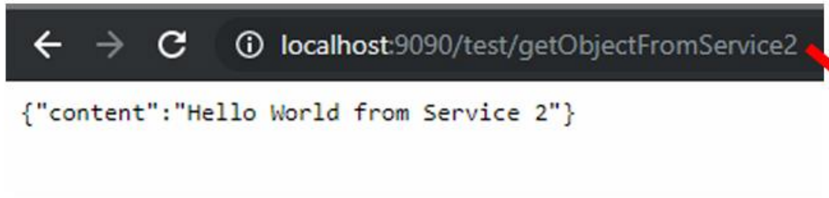

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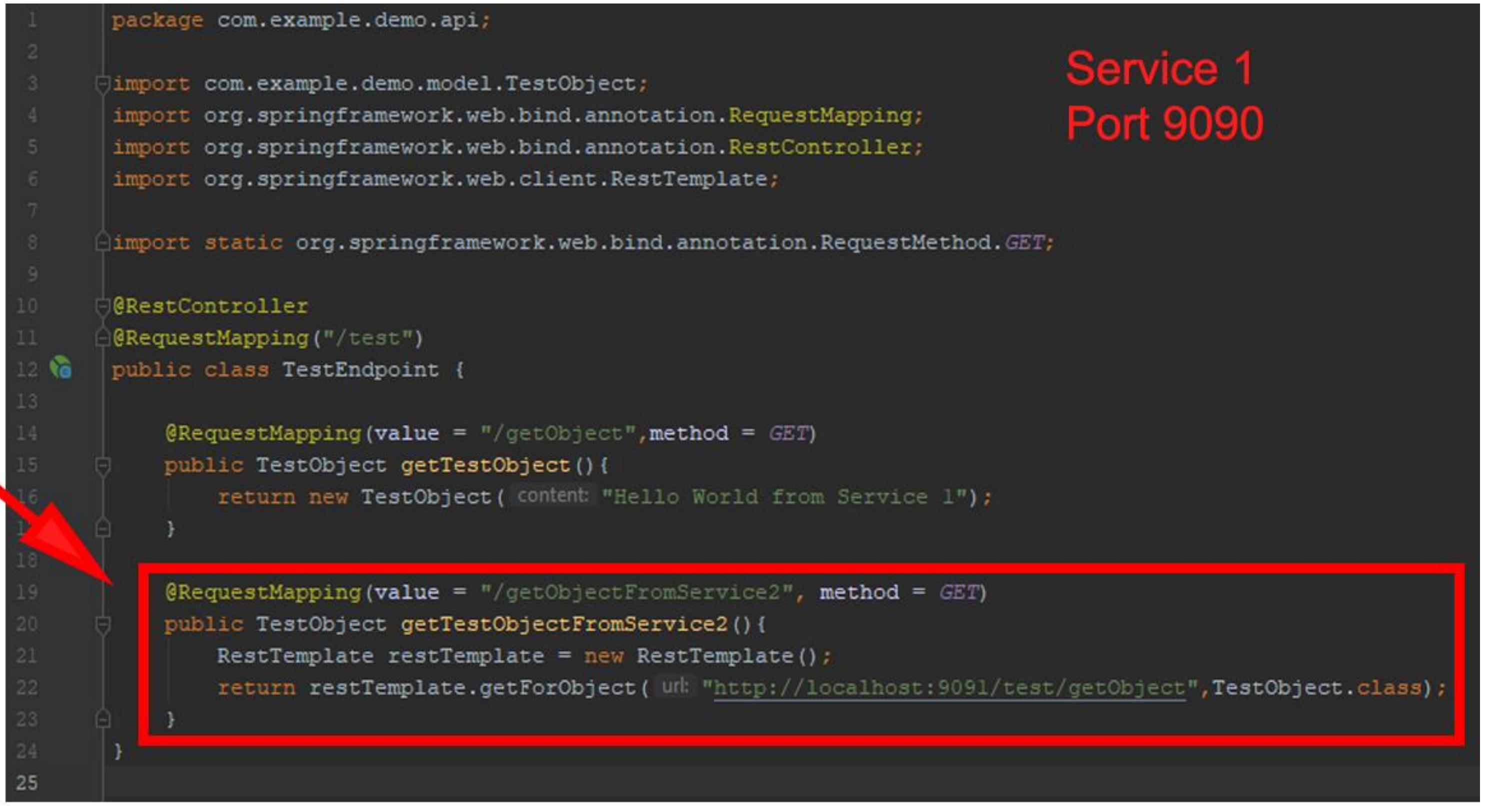

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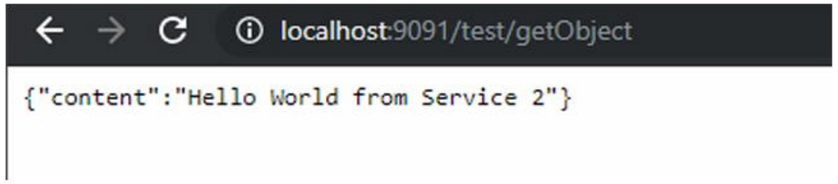

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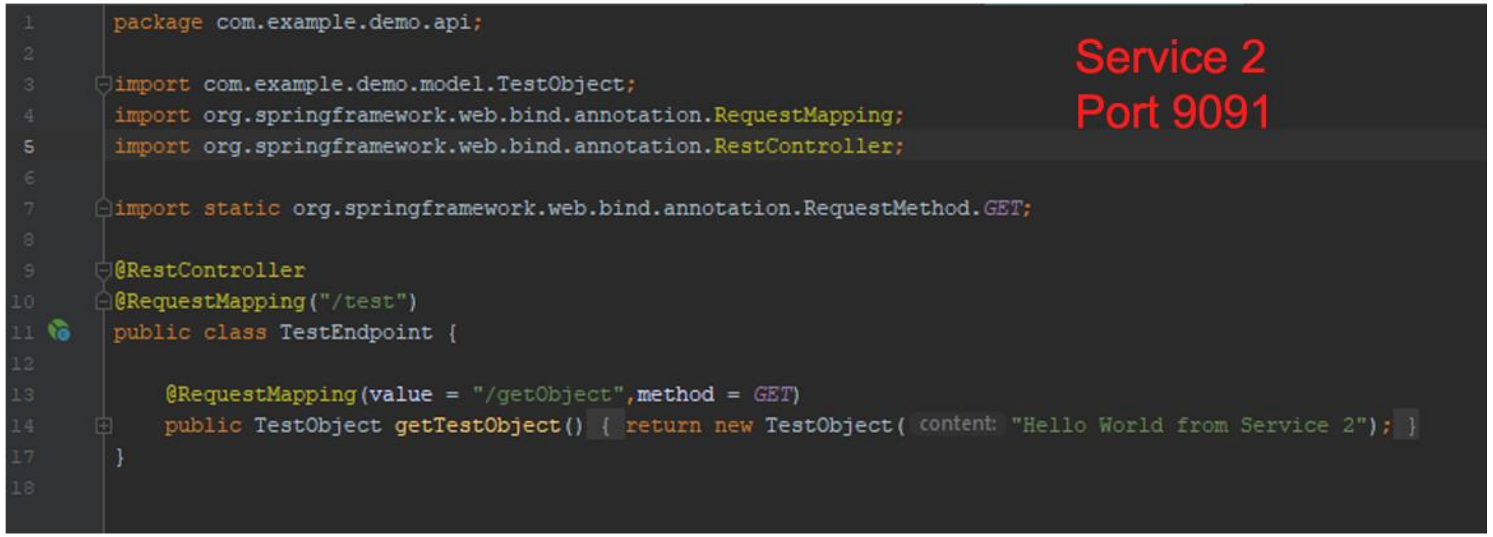

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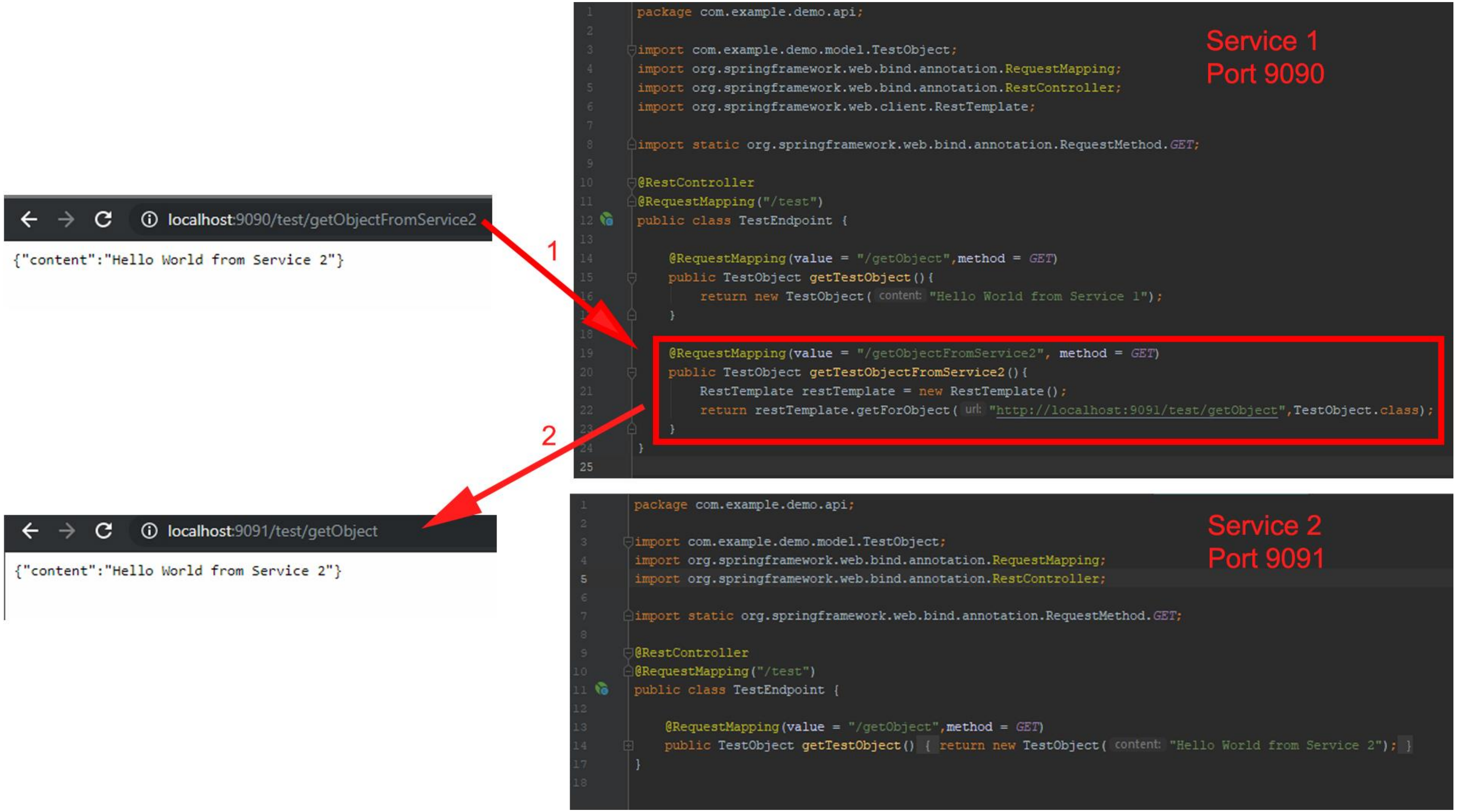

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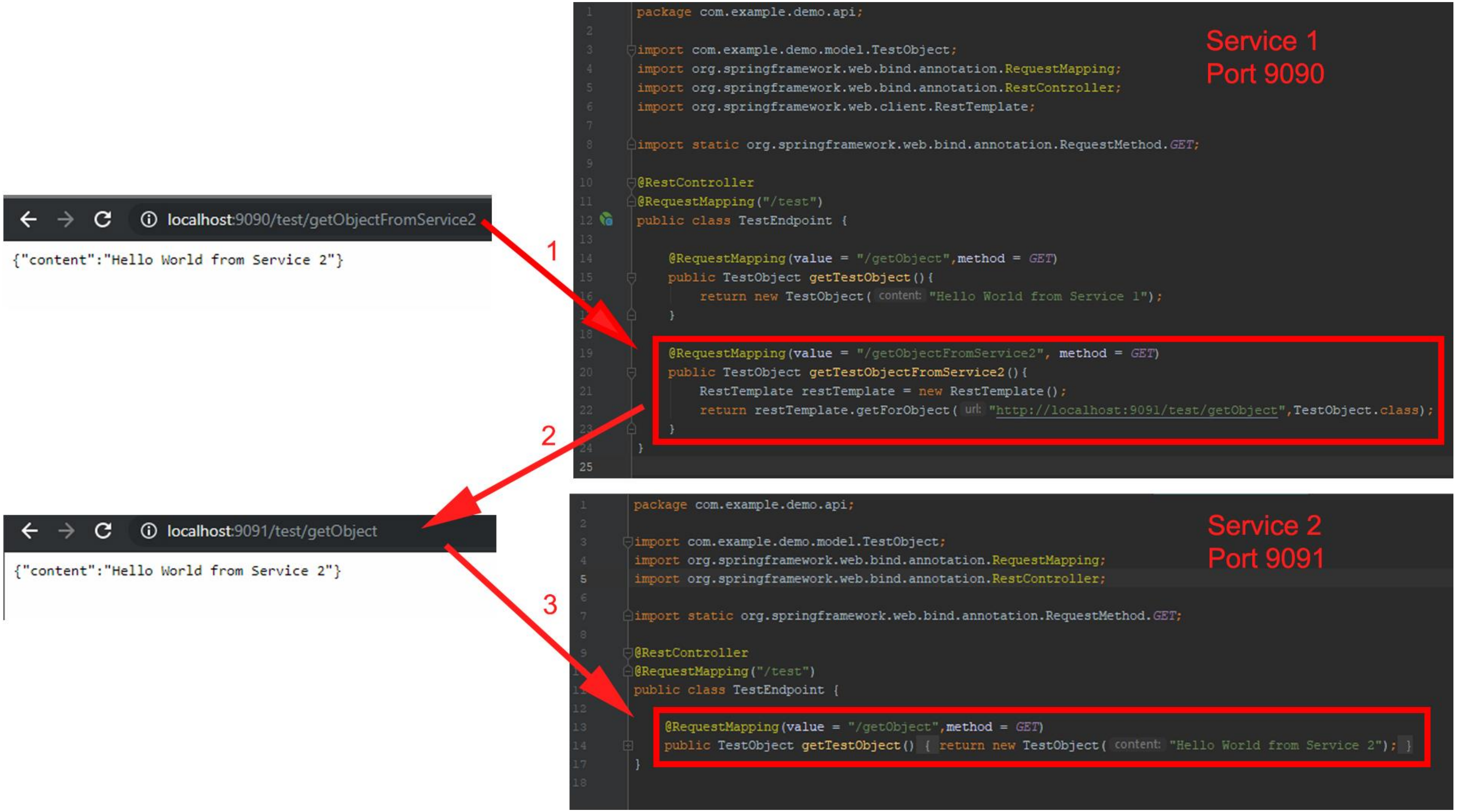

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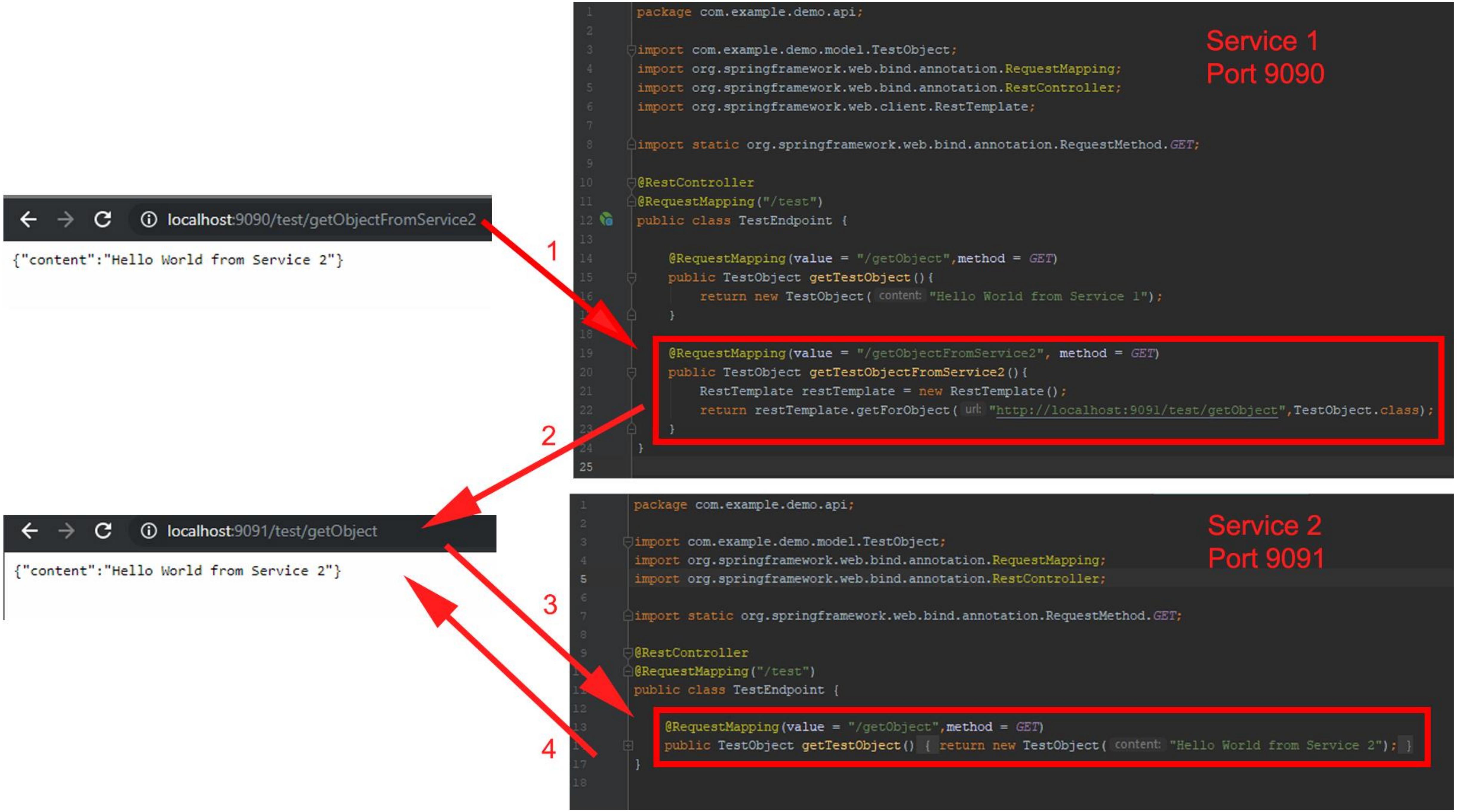

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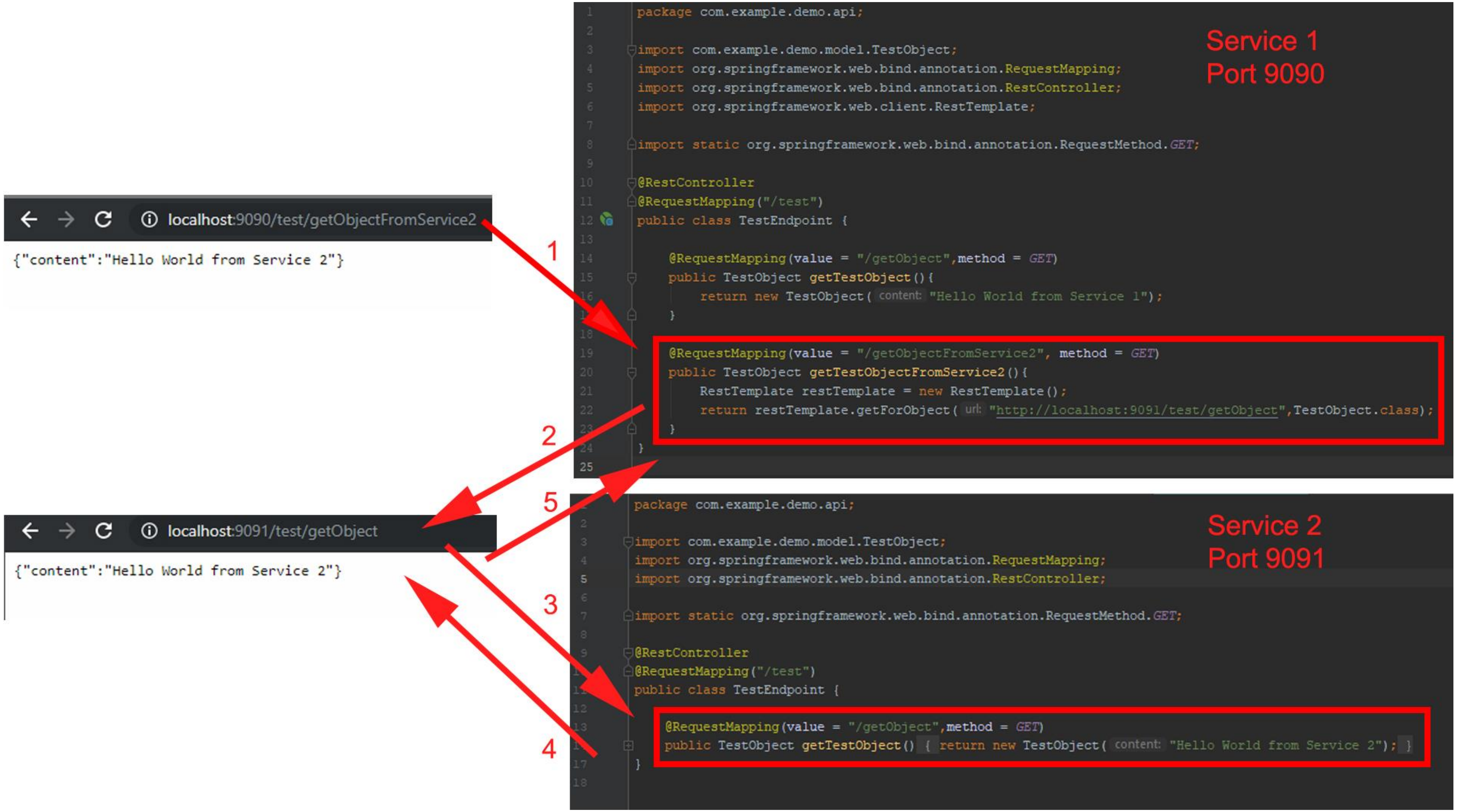

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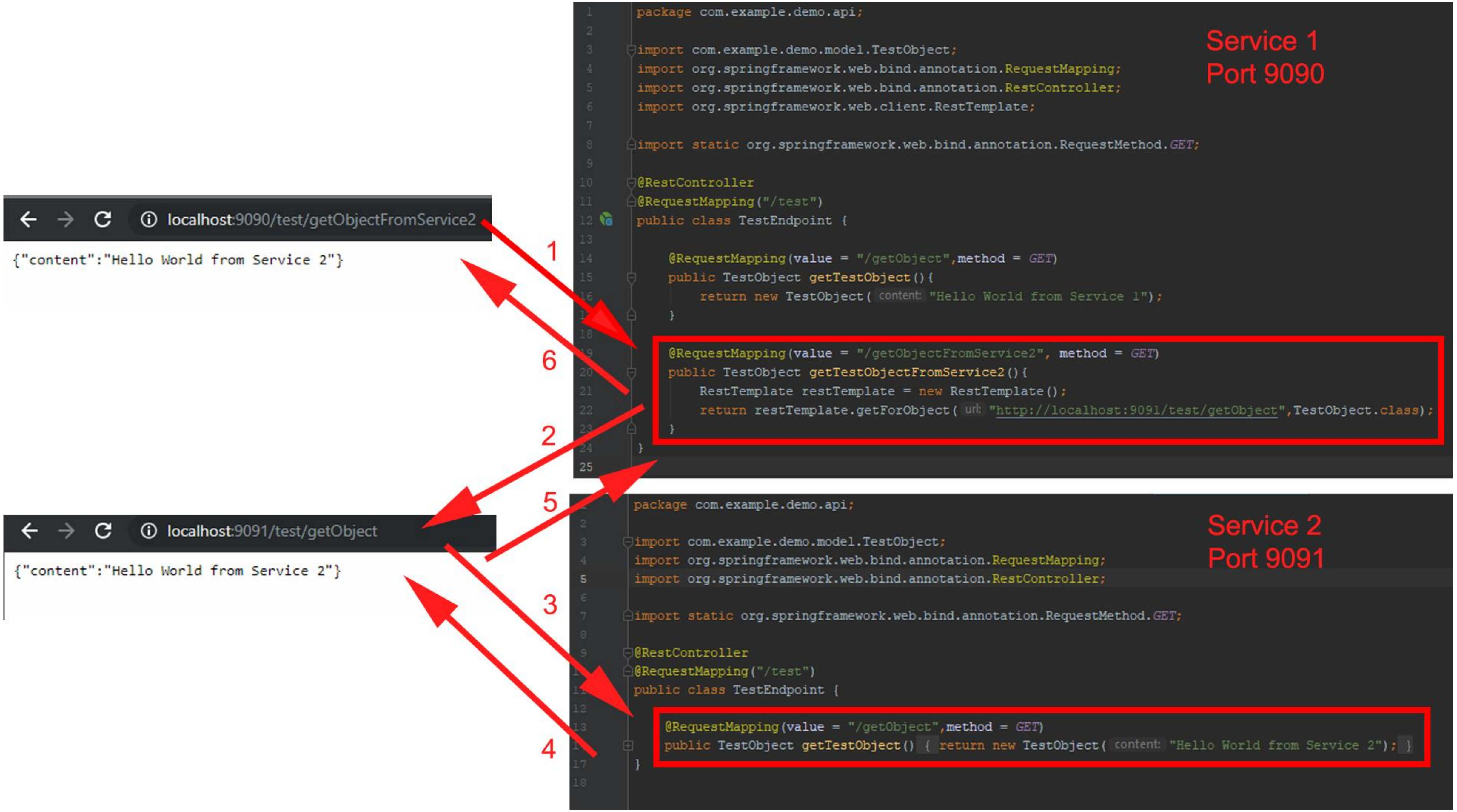

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- Konfigurationsmanagment ✓ erweiterbar durch:  Spring Cloud Config
- Monitoring & Logging ✓ - Spring Boot Actuator & Spring Boot Starter Logging
- Sicherheit ✓ - Spring Boot Starter Security
- Service-Discovery ✓ - Spring Cloud Starter Eureka Client
- Deployment & Testing ✓ - fat jar Erstellung & Spring Boot Starter Test
- Load-Balancing ✓ - Spring Cloud Starter Netflix Ribbon
- Kommunikation zwischen den Services ✓ - Spring Boot Starter Web
  erweiterbar durch: Feign, Hystrix

Fragen oder Anmerkungen?

Präsentation und Code: https://bit.ly/2WsoaIA

## Quellen:

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