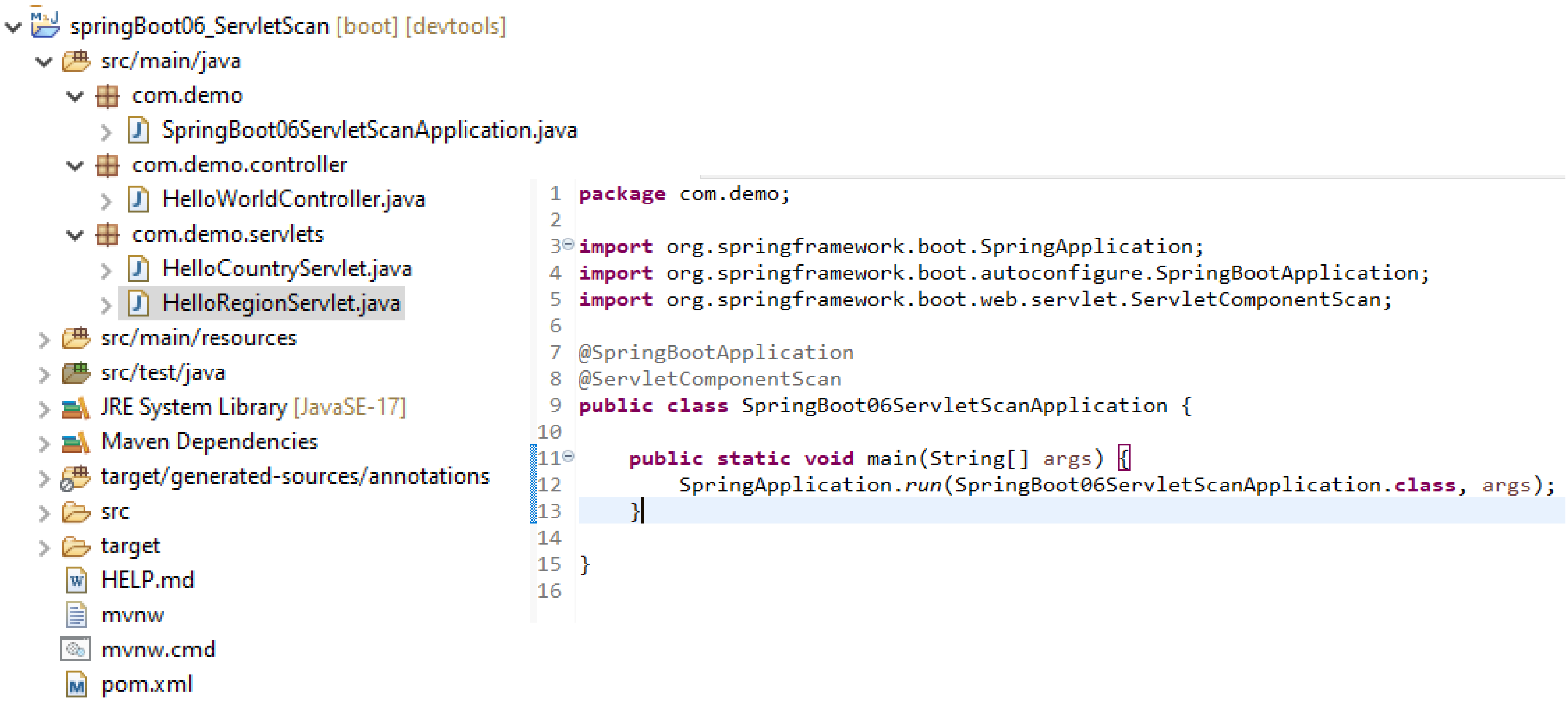
Spring Boot Servlet Mapping

Springboot06, springboot07

Spring Boot Servlet

- La radice di Spring Boot Web e Spring MVC è la **DispatcherServlet**
- Tutte **le richieste HTTP** vengono intercettate e smistate verso le view opportune
- Spring Boot fornisce il supporto per utilizzare servlet in modo **nativo**, gestendo le chiamate HTTP direttamente, come in qualsiasi applicazione Java EE
- Con Spring Boot si possono gestire le servlet in due modi:
  - Marcando la classe che estende HTTPServlet con ***@WebServlet*** *e con* ***@ServletComponentScan*** allo startup dell'applicazione
  - Registrando la classe che estende HTTPServlet come un **bean** Spring usando **ServletRegistrationBean**

Spring Boot Servlet Component Scan

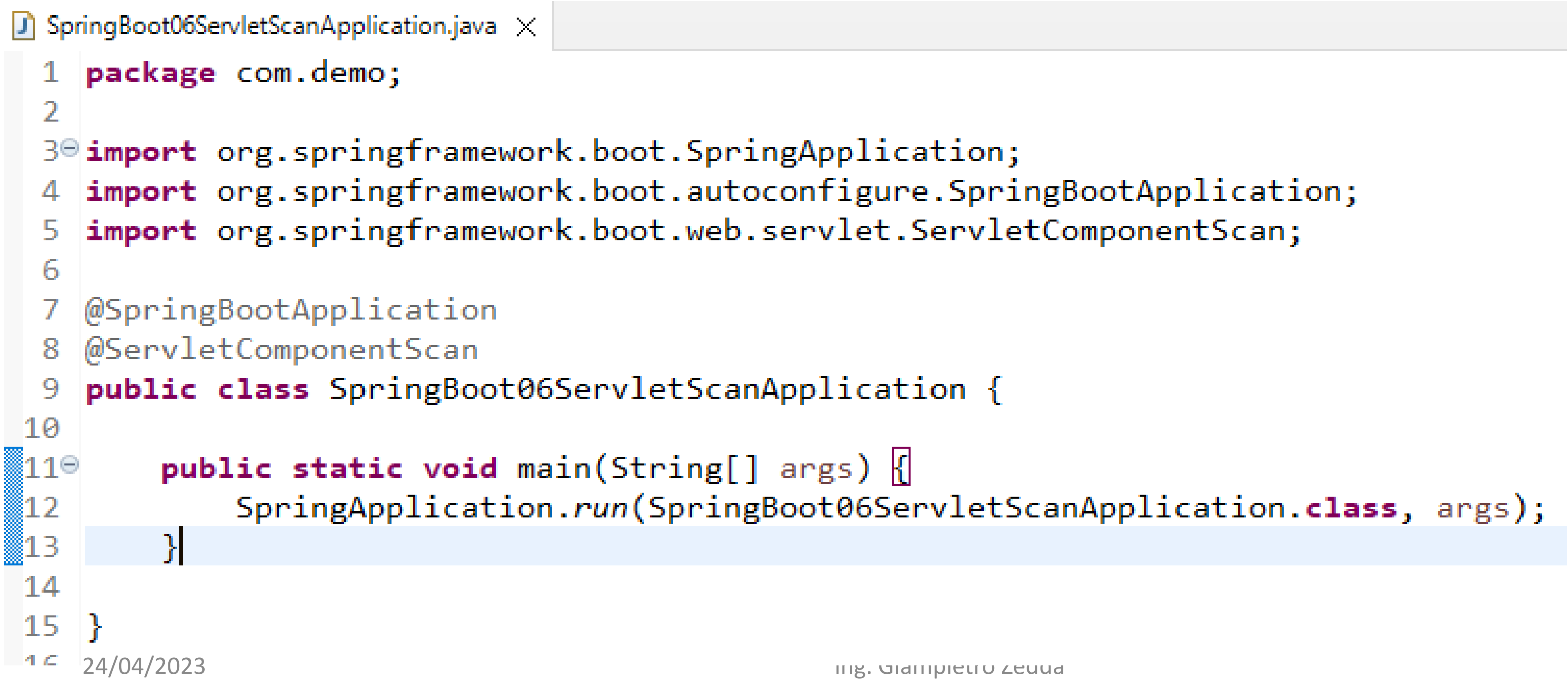


```
springBoot06_ServletScan [boot] [devtools]
    src/main/java
        com.demo
            SpringBoot06ServletScanApplication.java
        com.demo.controller
            HelloWorldController.java
        com.demo.servlets
            HelloCountryServlet.java
            HelloRegionServlet.java
    src/main/resources
    src/test/java
    JRE System Library [JavaSE-17]
    Maven Dependencies
    target/generated-sources/annotations
    src
    target
    HELP.md
    mvnw
    mvnw.cmd
    pom.xml
```

```java
package com.demo;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.boot.web.servlet.ServletComponentScan;

@SpringBootApplication
@ServletComponentScan
public class SpringBoot06ServletScanApplication {

    public static void main(String[] args) {
        SpringApplication.run(SpringBoot06ServletScanApplication.class, args);
    }

}
```

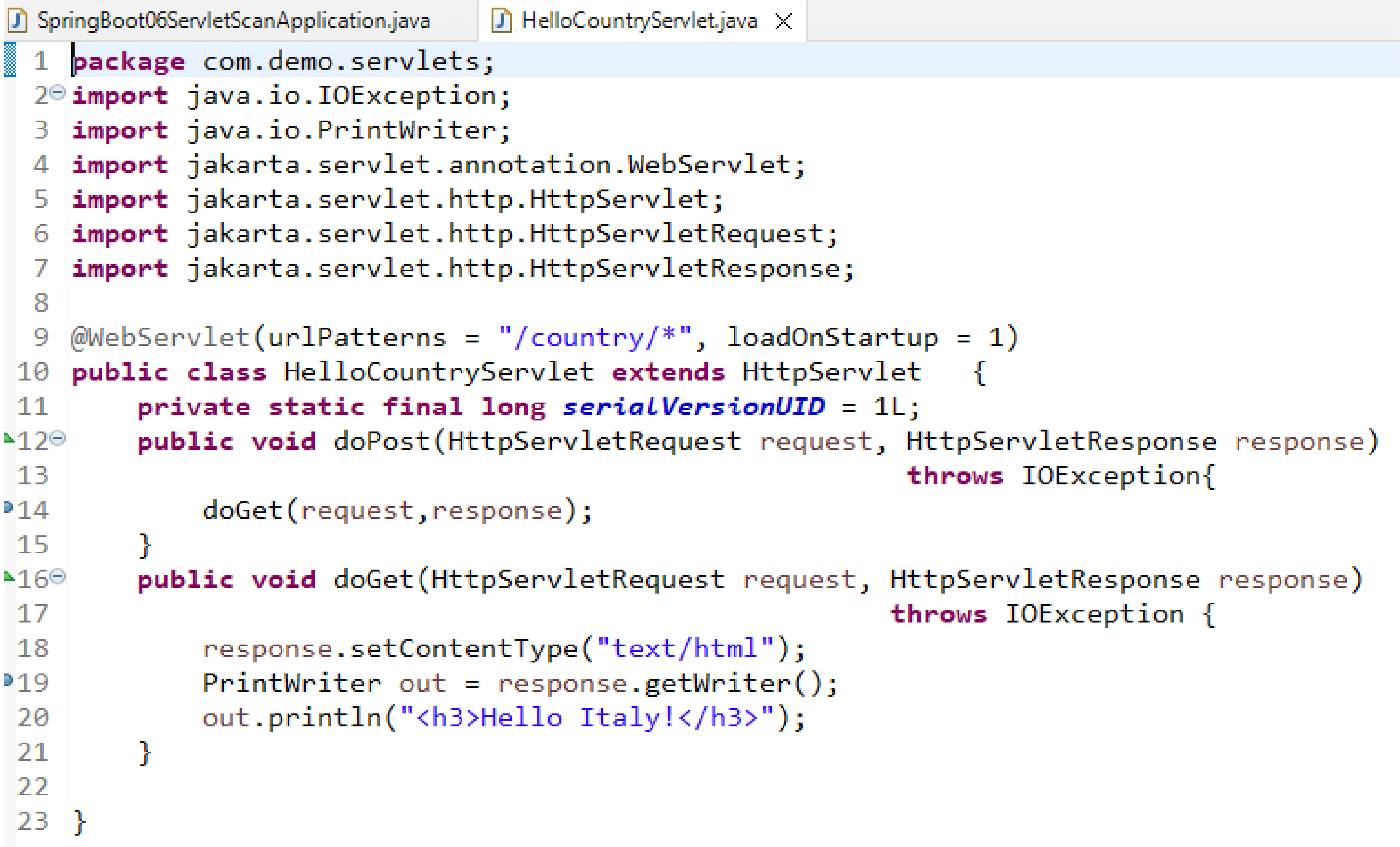
Spring Boot Servlet Component Scan

- ❑ ***@ServletComponentScan*** effettua scan di Servlets annotate con ***@WebServlet*** Filtri annotati con ***@WebFilter***, Listener annotati con ***@WebListener***
- ❑ ***@ServletComponentScan*** cerca Servlets, Filters e Listeners solo usando embedded web servers



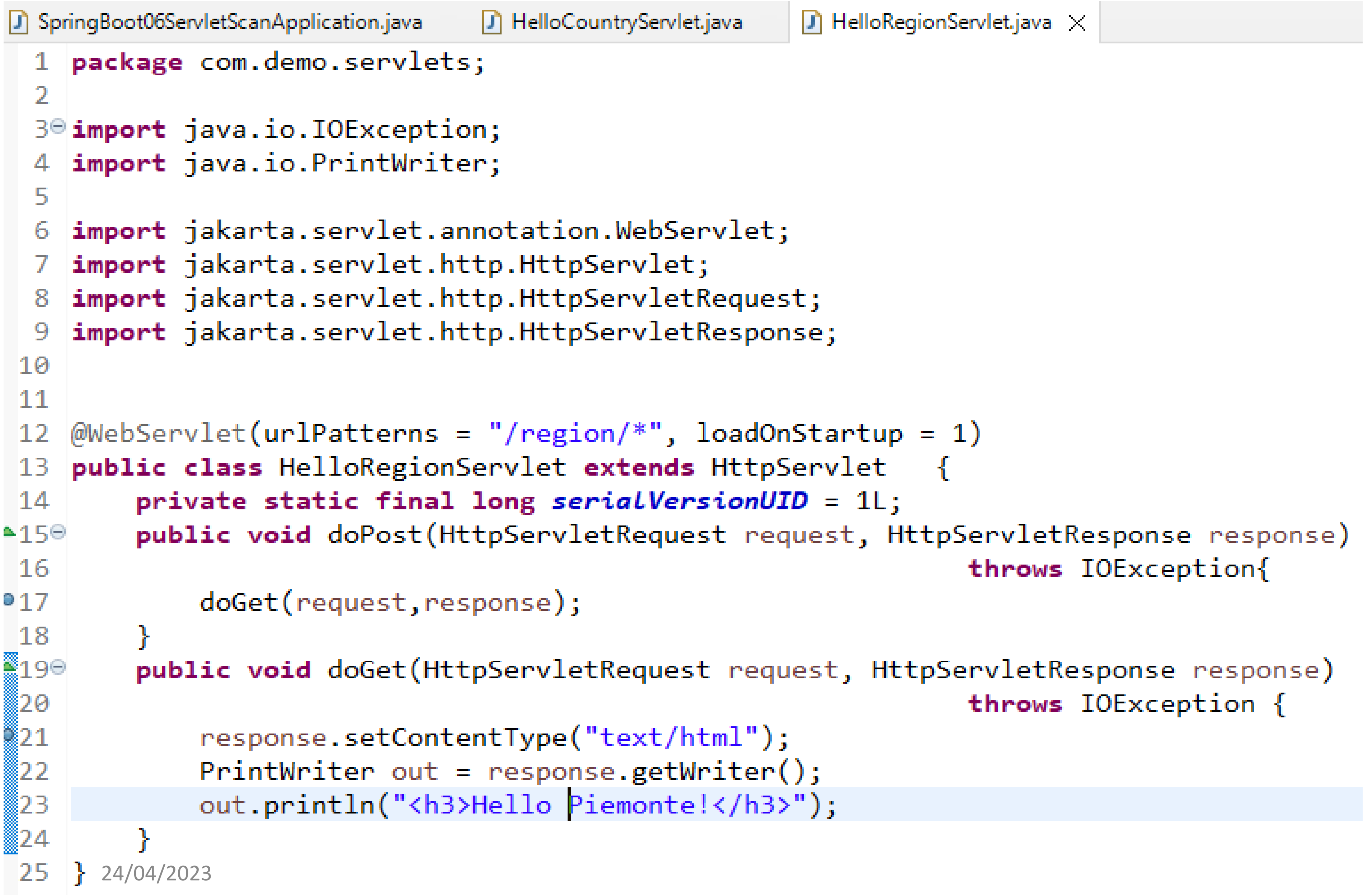
```java
package com.demo;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.boot.web.servlet.ServletComponentScan;

@SpringBootApplication
@ServletComponentScan
public class SpringBoot06ServletScanApplication {

    public static void main(String[] args) {
        SpringApplication.run(SpringBoot06ServletScanApplication.class, args);
    }

}
```

Spring Boot Servlet Component Scan



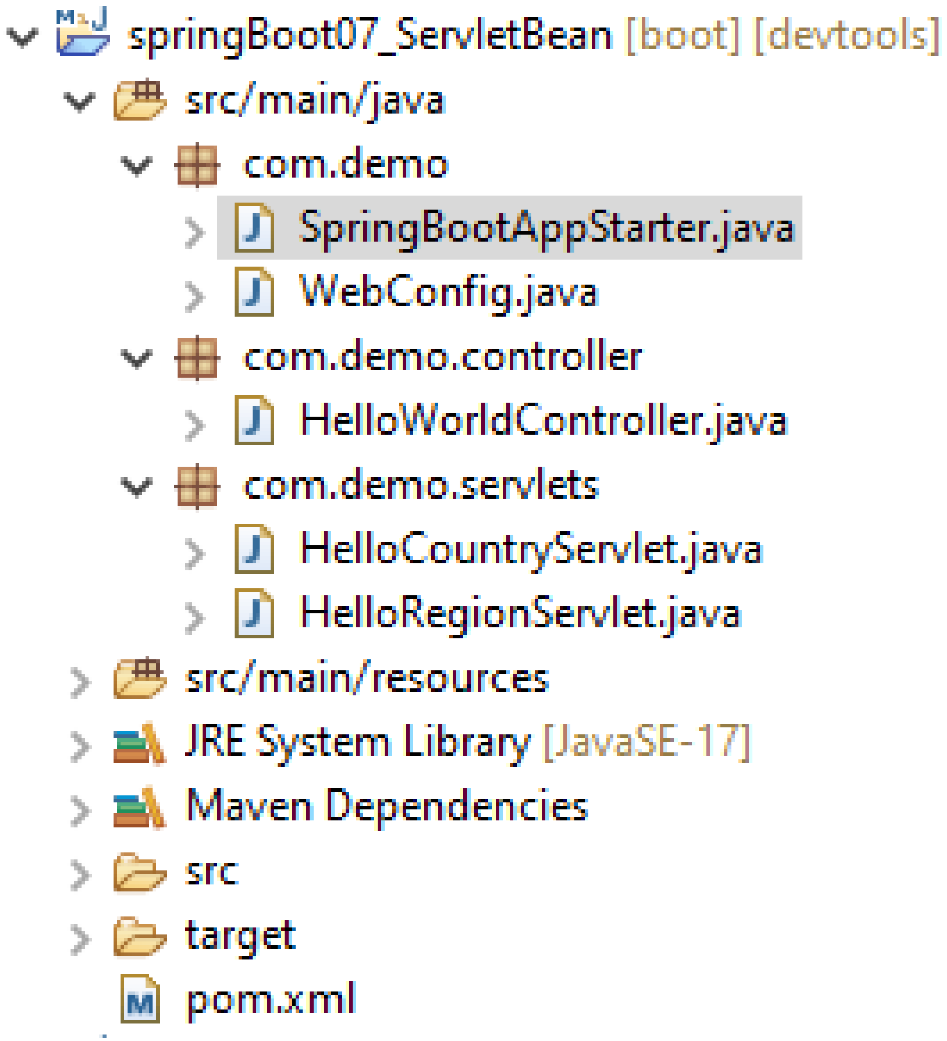
```java
package com.demo.servlets;
import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;

@WebServlet(urlPatterns = "/country/*", loadOnStartup = 1)
public class HelloCountryServlet extends HttpServlet   {
    private static final long serialVersionUID = 1L;
    public void doPost(HttpServletRequest request, HttpServletResponse response)
                                                   throws IOException{
        doGet(request,response);
    }
    public void doGet(HttpServletRequest request, HttpServletResponse response)
                                                  throws IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<h3>Hello Italy!</h3>");
    }

}
```

Spring Boot Servlet Component Scan

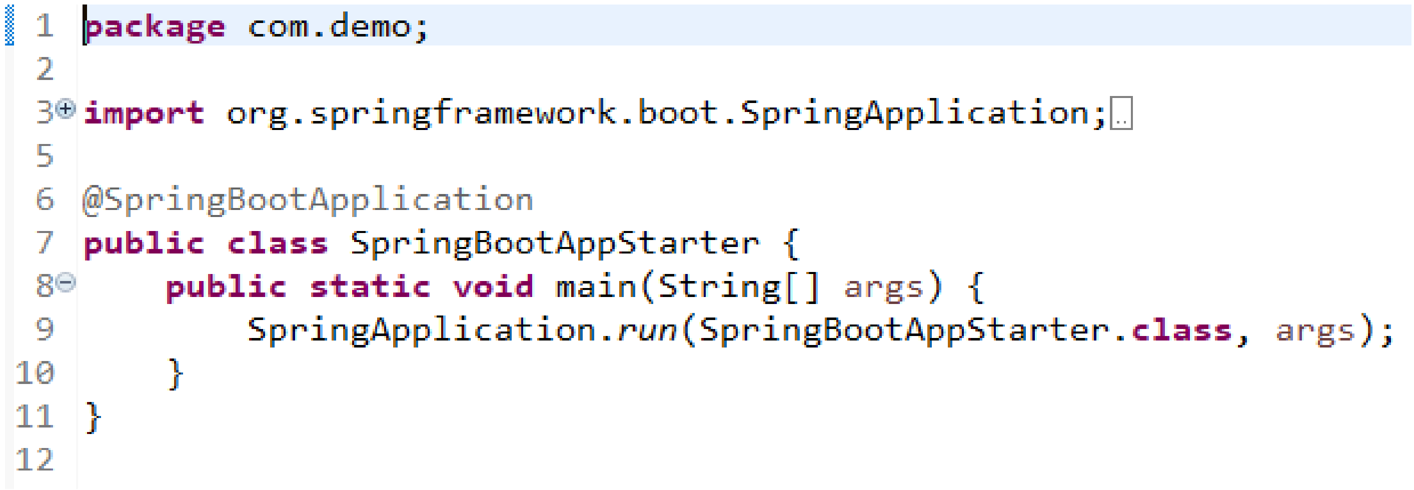


```java
package com.demo.servlets;

import java.io.IOException;
import java.io.PrintWriter;

import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;


@WebServlet(urlPatterns = "/region/*", loadOnStartup = 1)
public class HelloRegionServlet extends HttpServlet   {
    private static final long serialVersionUID = 1L;
    public void doPost(HttpServletRequest request, HttpServletResponse response)
                                                        throws IOException{
        doGet(request,response);
    }
    public void doGet(HttpServletRequest request, HttpServletResponse response)
                                                        throws IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<h3>Hello Piemonte!</h3>");
    }
}
```

Spring Boot Servlet Registration Bean



```
springBoot07_ServletBean [boot] [devtools]
    src/main/java
        com.demo
            SpringBootAppStarter.java
            WebConfig.java
        com.demo.controller
            HelloWorldController.java
        com.demo.servlets
            HelloCountryServlet.java
            HelloRegionServlet.java
    src/main/resources
    JRE System Library [JavaSE-17]
    Maven Dependencies
    src
    target
    pom.xml
```



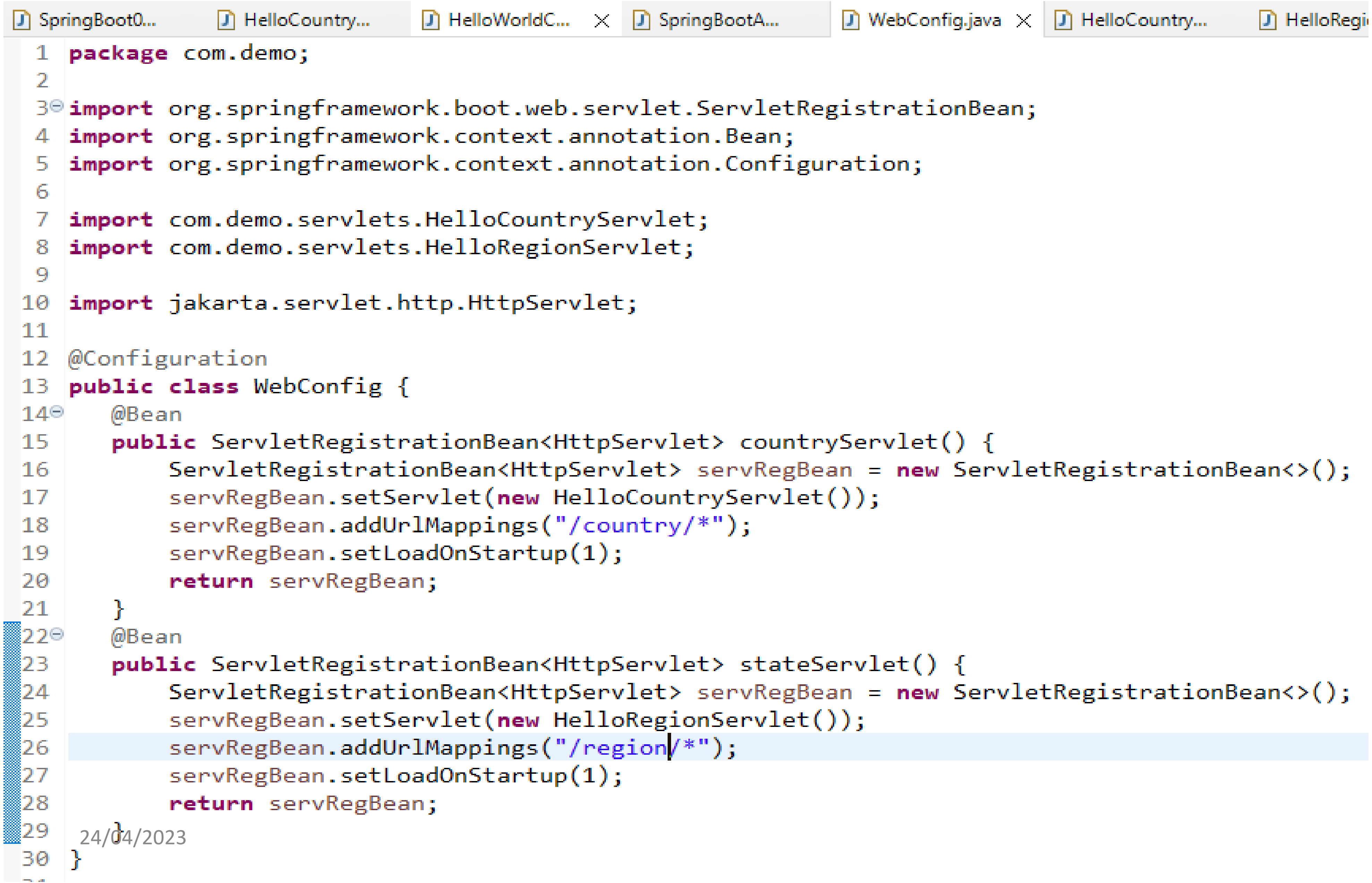
```java
package com.demo;

import org.springframework.boot.SpringApplication;

@SpringBootApplication
public class SpringBootAppStarter {
    public static void main(String[] args) {
        SpringApplication.run(SpringBootAppStarter.class, args);
    }
}

```

Spring Boot Servlet Registration Bean

- ❑ Le Servlet vengono registrate da ***ServletRegistrationBean*** ed è necessario creare un bean di questo tipo in configurazione
- ❑ Alcuni metodi usati per configurare le Servlet sono:
  - ➢ **setServlet()**: imposta la Servlet da registrare
  - ➢ **addUrlMappings():** Aggiunge il mapping dell'URL per la Servlet
  - ➢ **setLoadOnStartup:** Imposta la priorità di caricamento allo startup

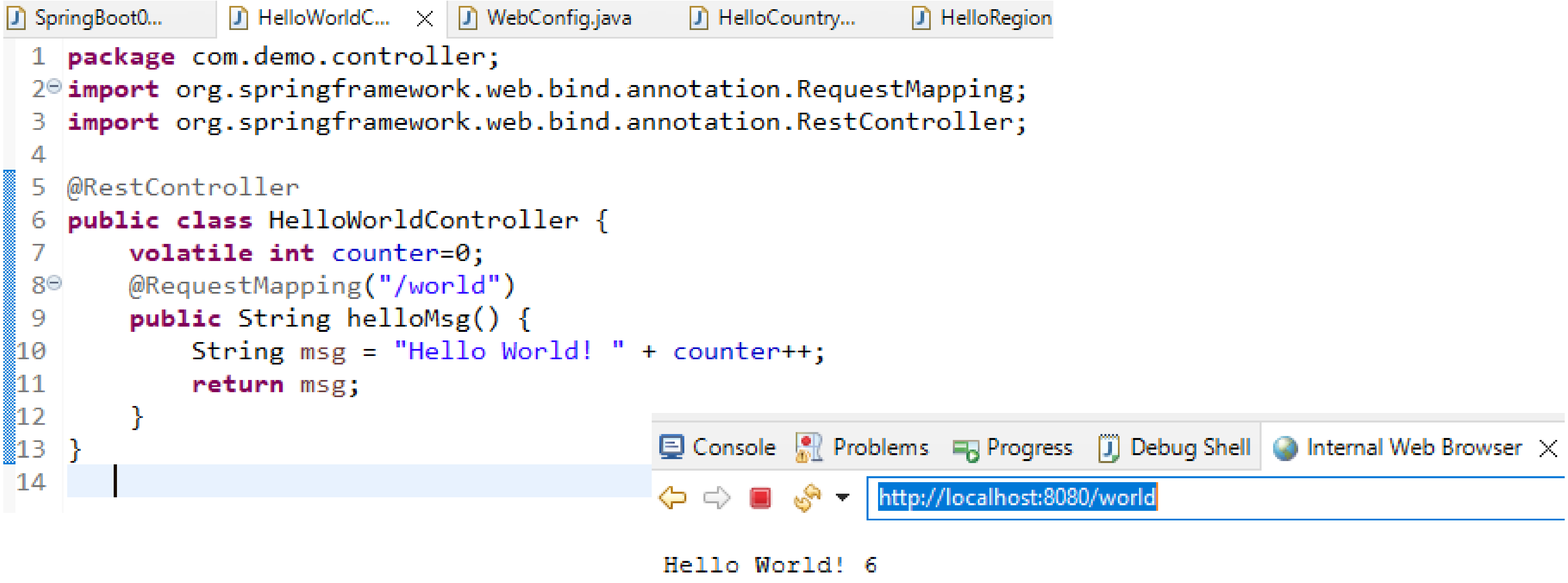
- ❑ Questa modalità, in luogo dell'utilizzo delle annotation ***@WebServlet*** *e* ***@ServletComponentScan*** non sfrutta le capacità di autoconfigurazione ma permette un controllo più completo sul mapping delle servlet

Spring Boot Servlet Registration Bean



```java
package com.demo;

import org.springframework.boot.web.servlet.ServletRegistrationBean;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;

import com.demo.servlets.HelloCountryServlet;
import com.demo.servlets.HelloRegionServlet;

import jakarta.servlet.http.HttpServlet;

@Configuration
public class WebConfig {
    @Bean
    public ServletRegistrationBean<HttpServlet> countryServlet() {
        ServletRegistrationBean<HttpServlet> servRegBean = new ServletRegistrationBean<>();
        servRegBean.setServlet(new HelloCountryServlet());
        servRegBean.addUrlMappings("/country/*");
        servRegBean.setLoadOnStartup(1);
        return servRegBean;
    }
    @Bean
    public ServletRegistrationBean<HttpServlet> stateServlet() {
        ServletRegistrationBean<HttpServlet> servRegBean = new ServletRegistrationBean<>();
        servRegBean.setServlet(new HelloRegionServlet());
        servRegBean.addUrlMappings("/region/*");
        servRegBean.setLoadOnStartup(1);
        return servRegBean;
    }
}
```

Spring Boot Servlet Registration Bean

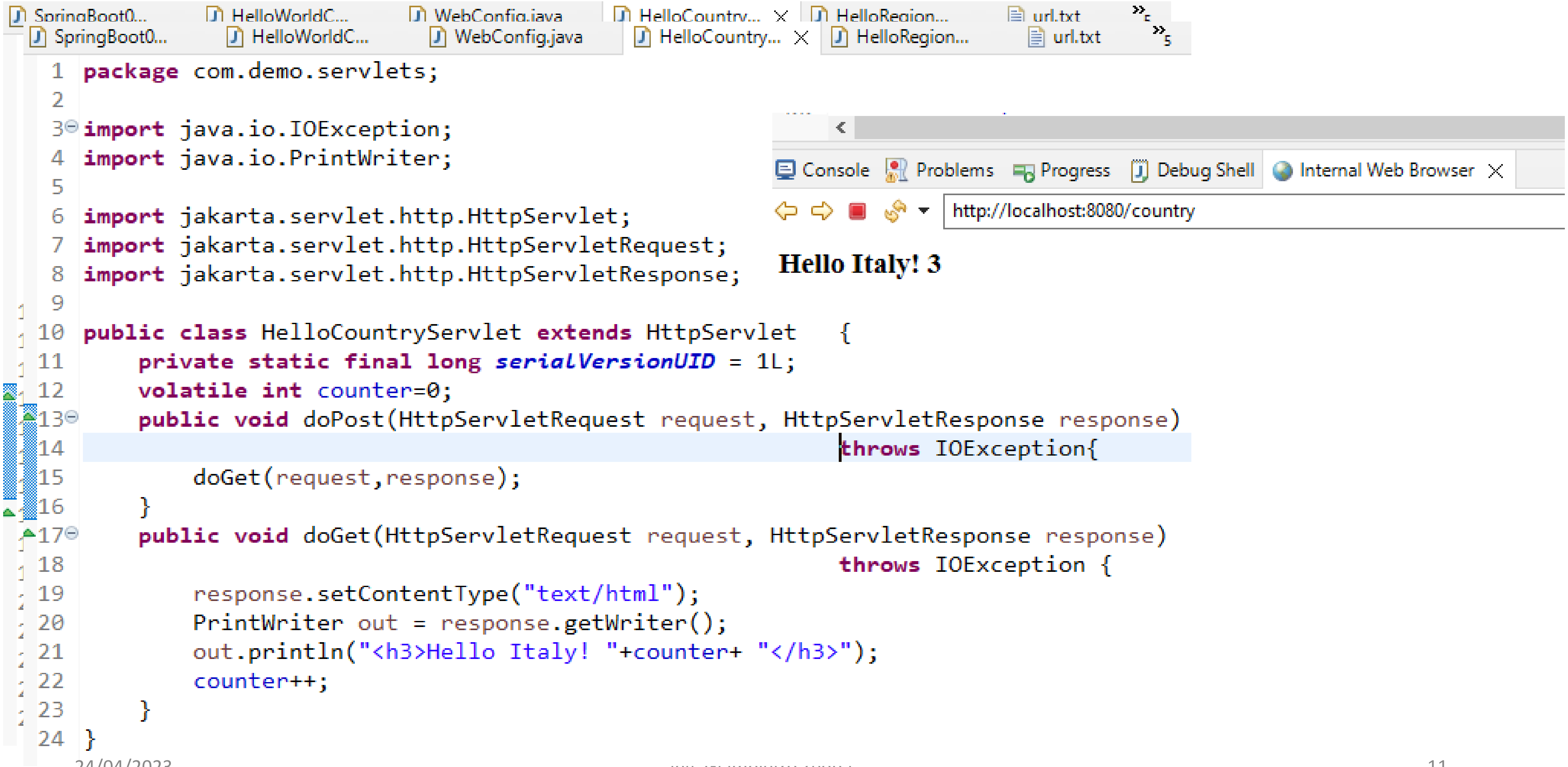


```java
package com.demo.controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

@RestController
public class HelloWorldController {
    volatile int counter=0;
    @RequestMapping("/world")
    public String helloMsg() {
        String msg = "Hello World! " + counter++;
        return msg;
    }
}

```

http://localhost:8080/world

```
Hello World! 6
```

Spring Boot Servlet Registration Bean

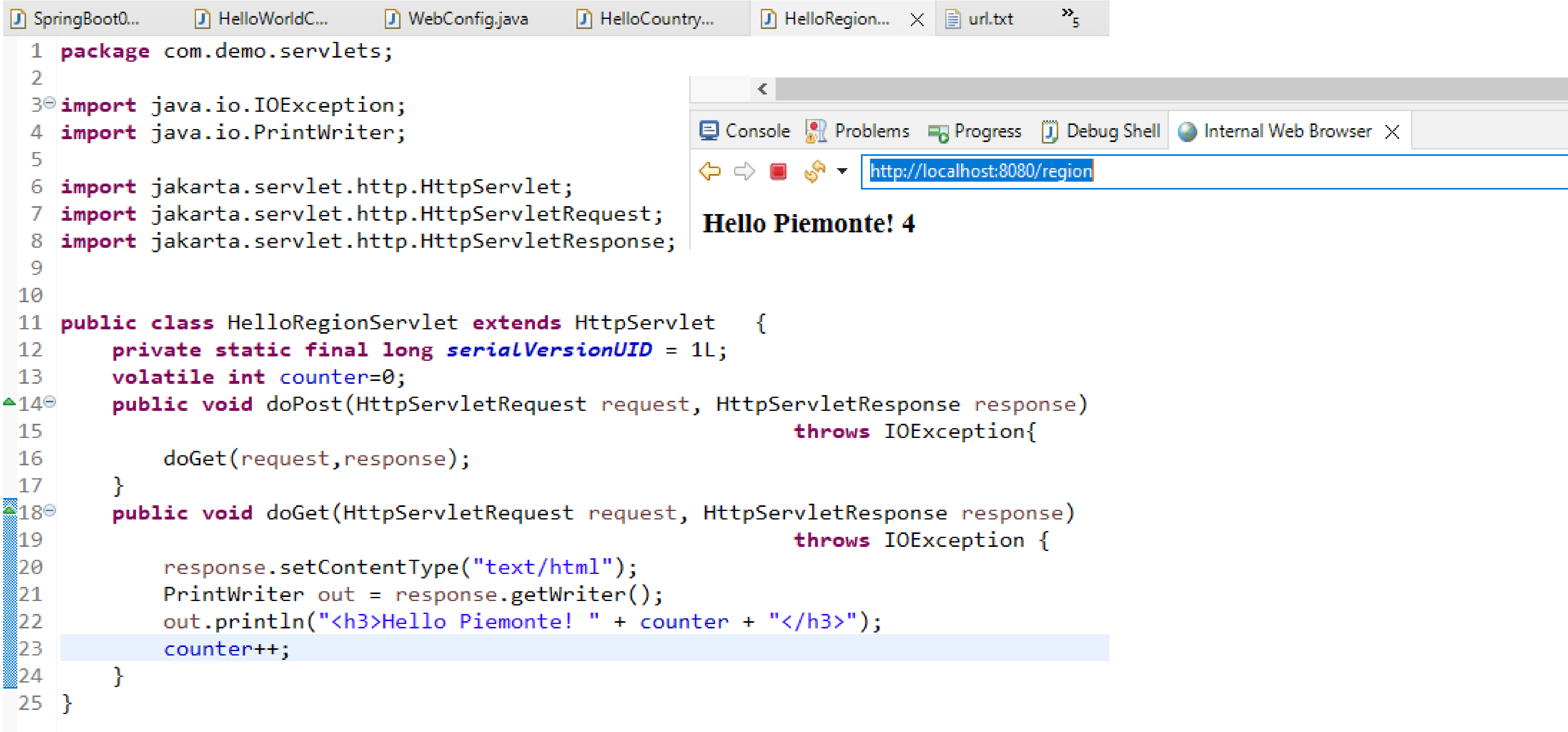


```java
package com.demo.servlets;

import java.io.IOException;
import java.io.PrintWriter;

import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;

public class HelloCountryServlet extends HttpServlet   {
    private static final long serialVersionUID = 1L;
    volatile int counter=0;
    public void doPost(HttpServletRequest request, HttpServletResponse response)
                                                      throws IOException{
        doGet(request,response);
    }
    public void doGet(HttpServletRequest request, HttpServletResponse response)
                                                      throws IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<h3>Hello Italy! "+counter+ "</h3>");
        counter++;
    }
}
```

http://localhost:8080/country

```
Hello Italy! 3
```

Spring Boot Servlet Registration Bean



```java
package com.demo.servlets;

import java.io.IOException;
import java.io.PrintWriter;

import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;


public class HelloRegionServlet extends HttpServlet   {
    private static final long serialVersionUID = 1L;
    volatile int counter=0;
    public void doPost(HttpServletRequest request, HttpServletResponse response)
                                                         throws IOException{
        doGet(request,response);
    }
    public void doGet(HttpServletRequest request, HttpServletResponse response)
                                                         throws IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();
        out.println("<h3>Hello Piemonte! " + counter + "</h3>");
        counter++;
    }
}
```

http://localhost:8080/region

```
Hello Piemonte! 4
```