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# Spring Boot @Controller Annotation with Example

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Spring is one of the most popular frameworks for building enterprise-level Java applications. It is an open-source, lightweight framework that simplifies the development of robust, scalable, and maintainable applications. Spring provides various features such as Dependency Injection (DI), Aspect-Oriented Programming (AOP), and support for Plain Old Java Objects (POJOs), making it a preferred choice for Java developers.

In this article, we will focus on the **@Controller annotation in Spring**, which is a key component in building web applications using the [Spring MVC](#) framework.

## @Controller Annotation in Spring Boot

The **@Controller annotation** is a specialization of the **@Component** annotation. It is used to mark a class as a controller in a Spring MVC application. Controllers are responsible for handling incoming web requests, processing them, and returning the appropriate response.

### Key Points about @Controller:

- It is typically used in combination with the **@RequestMapping** annotation to map web requests to specific handler methods.
- It can only be applied to classes.
- It is part of the Spring MVC framework and is used to create web controllers.
- The **@Controller** annotation allows the Spring framework to detect the class as a controller during component scanning.

## Steps to Use the @Controller Annotation

Let's consider a simple example to understand how to use the @Controller annotation in a Spring Boot application.

## Step 1: Create a Simple Spring Boot Project

Refer to this article [Create and Setup Spring Boot Project in Eclipse IDE](#) and create a simple spring boot project.

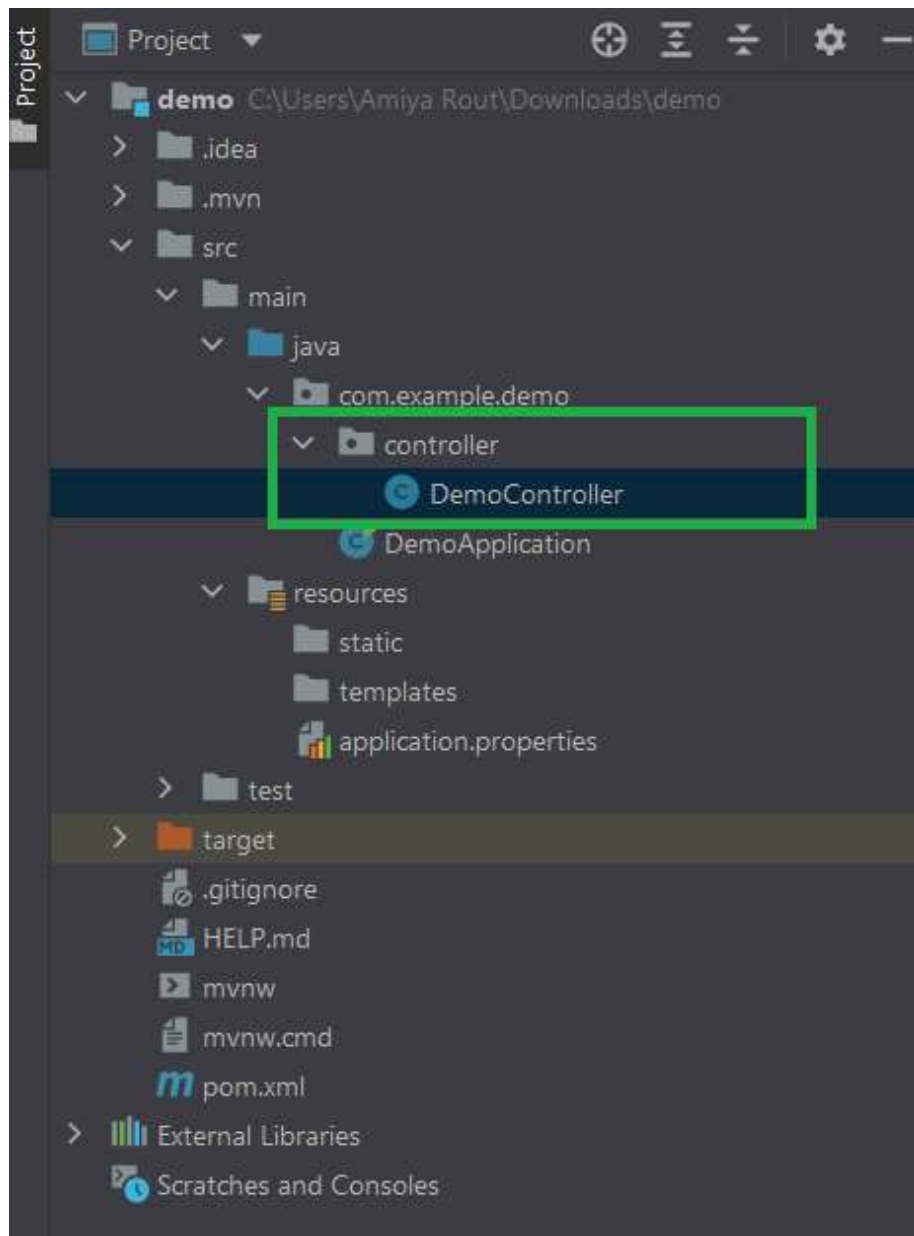
## Step 2: Add the spring-web dependency

In your [pom.xml](#) file, inside your project and add the following **spring-web** dependency.

```
<dependency>  
  <groupId>org.springframework.boot</groupId>  
  <artifactId>spring-boot-starter-web</artifactId>  
</dependency>
```

## Step 3: Create a Controller Package

Create a package named controller. This package will contain your controller classes. This is going to be our final project structure.



## Step 4: Create a Controller Class

Inside the controller package, create a class named DemoController. This class will act as the controller for handling web requests.

```
// Java Program to Illustrate DemoController File

// Importing package in this code module
package com.example.demo.controller;
// Importing required classes
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.ResponseBody;
```

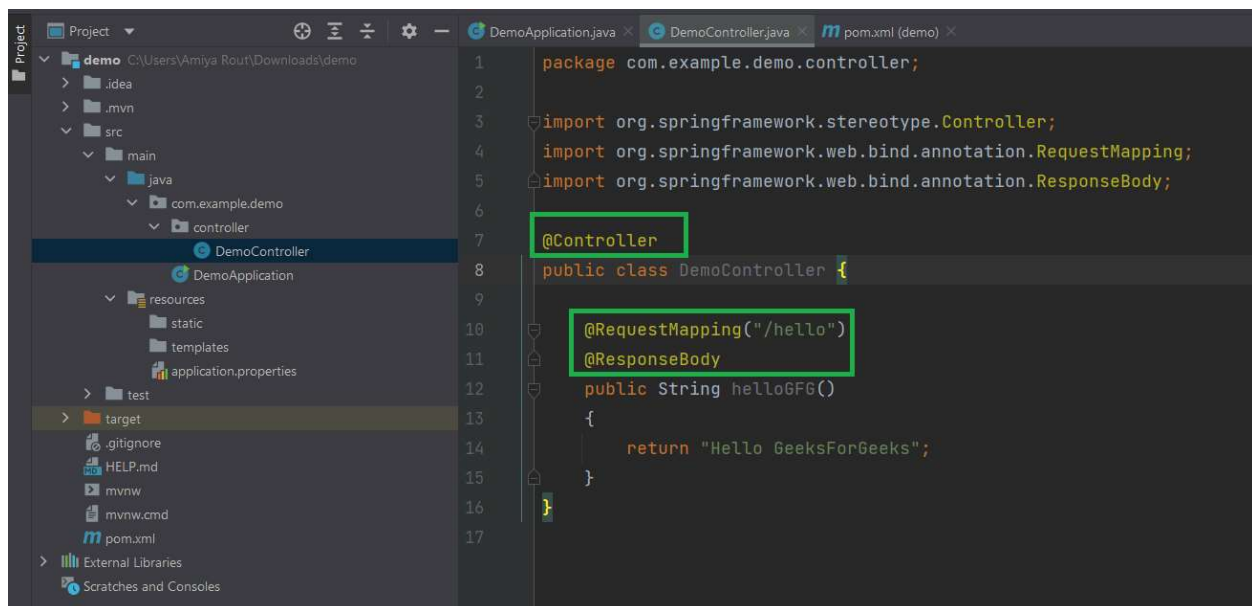
```
// Annotation
@Controller
// Main class
public class DemoController {

    @RequestMapping("/hello")
    @ResponseBody

    // Method
    public String helloGFG()
    {
        return "Hello GeeksForGeeks";
    }
}
```

We have used the below annotations in our controller layer. Here in this example, the URI path is **/hello**.

- **@Controller**: This is used to specify the controller.
- **@RequestMapping**: This is used to map to the Spring MVC controller method.
- **@ResponseBody**: Ensures the returned value is sent as an HTTP response instead of resolving a view name.



## Step 5: Run the Application

To run the application, navigate to the main class (usually named DemoApplication.java) and execute it. The Spring Boot application will

start, and you can access the **/hello** endpoint in your browser or using a tool like Postman.

```
// Java Program to Illustrate DemoApplication File

// Importing package in this code module
package com.example.demo;
// Importing required classes
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

// Annotation
@SpringBootApplication

// Main class
public class DemoApplication {

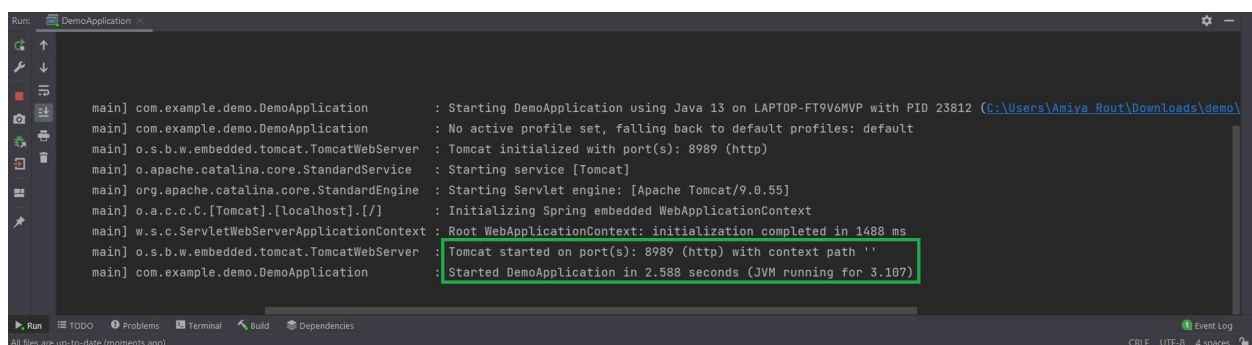
    // Main driver method
    public static void main(String[] args)
    {

        SpringApplication.run(DemoApplication.class, args);

    }
}
```

"@SpringBootApplication" enables component scanning, auto-configuration, and Spring Boot features, ensuring all annotated classes within the package hierarchy are detected.

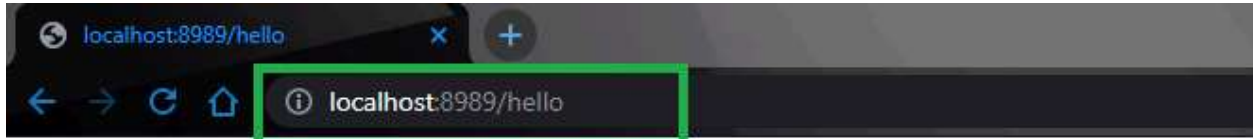
## Step 6: Test the Application



```
main] com.example.demo.DemoApplication : Starting DemoApplication using Java 13 on LAPTOP-F19V6MVP with PID 23812 (C:\Users\Amiya Rout\Downloads\demo\
main] com.example.demo.DemoApplication : No active profile set, falling back to default profiles: default
main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.55]
main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 1488 ms
main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
main] com.example.demo.DemoApplication : Started DemoApplication in 2.588 seconds (JVM running for 3.107)
```

**Note:** Note: By default, Spring Boot runs on port 8080. If not changed, access the endpoint at <http://localhost:8080/hello>. If you have configured a

custom port (e.g., 8989), update "server.port=8989" in "application.properties".

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