1. **Create a Spring Web Project using Maven**

Code:-

package com.cognizant.springlearn;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

public class SpringLearnApplication {

public static void main(String[] args) {

System.out.println("START");

SpringApplication.run(SpringLearnApplication.class, args);

System.out.println("END");

}

}

@SpringBootApplication

public class SpringLearnApplication {

public static void main(String[] args) {

SpringApplication.run(SpringLearnApplication.class, args);

}

}

<project>

<modelVersion>4.0.0</modelVersion>

<groupId>com.cognizant</groupId>

<artifactId>spring-learn</artifactId>

<version>0.0.1-SNAPSHOT</version>

<name>spring-learn</name>

<description>Demo project for Spring Boot</description>

<parent>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-parent</artifactId>

<version>3.0.0</version>

</parent>

<dependencies>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-web</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-devtools</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-test</artifactId>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<plugin>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-maven-plugin</artifactId>

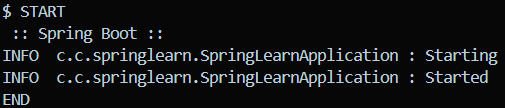
</plugin>

</plugins>

</build>

</project>

Output:-



1. **Spring Core – Load Country from Spring Configuration XML**

Code:-

<?xml version="1.0" encoding="UTF-8"?>

<beans xmlns="http://www.springframework.org/schema/beans"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="

http://www.springframework.org/schema/beans

http://www.springframework.org/schema/beans/spring-beans.xsd">

<bean id="country" class="com.cognizant.springlearn.Country">

<property name="code" value="IN" />

<property name="name" value="India" />

</bean>

</beans>

package com.cognizant.springlearn;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

public class Country {

private static final Logger LOGGER = LoggerFactory.getLogger(Country.class);

private String code;

private String name;

public Country() {

LOGGER.debug("Inside Country Constructor.");

}

public String getCode() {

LOGGER.debug("Inside getCode");

return code;

}

public void setCode(String code) {

LOGGER.debug("Inside setCode");

this.code = code;

}

public String getName() {

LOGGER.debug("Inside getName");

return name;

}

public void setName(String name) {

LOGGER.debug("Inside setName");

this.name = name;

}

@Override

public String toString() {

return "Country [code=" + code + ", name=" + name + "]";

}

}

package com.cognizant.springlearn;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import org.springframework.boot.autoconfigure.SpringBootApplication;

import org.springframework.boot.SpringApplication;

@SpringBootApplication

public class SpringLearnApplication {

private static final Logger LOGGER = LoggerFactory.getLogger(SpringLearnApplication.class);

public static void main(String[] args) {

SpringApplication.run(SpringLearnApplication.class, args);

displayCountry();

}

public static void displayCountry() {

LOGGER.debug("START displayCountry()");

ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");

Country country = (Country) context.getBean("country", Country.class);

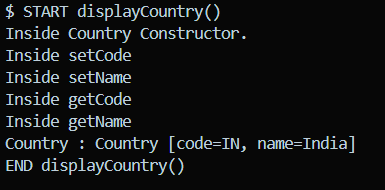
LOGGER.debug("Country : {}", country.toString());

LOGGER.debug("END displayCountry()");

}

}

Output:-



1. **Hello World RESTful Web Service**

Code:-

package com.cognizant.springlearn.controller;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.web.bind.annotation.GetMapping;

import org.springframework.web.bind.annotation.RestController;

@RestController

public class HelloController {

private static final Logger LOGGER = LoggerFactory.getLogger(HelloController.class);

@GetMapping("/hello")

public String sayHello() {

LOGGER.debug("START sayHello()");

LOGGER.debug("END sayHello()");

return "Hello World!!";

}

}

Output:-



1. **REST - Country Web Service**

Code:-

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.Country;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RestController;

@RestController

public class CountryController {

private static final Logger LOGGER = LoggerFactory.getLogger(CountryController.class);

@RequestMapping("/country")

public Country getCountryIndia() {

LOGGER.debug("START getCountryIndia()");

ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");

Country country = context.getBean("country", Country.class);

LOGGER.debug("Country: {}", country.toString());

LOGGER.debug("END getCountryIndia()");

return country;

}

}

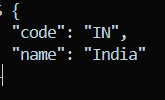
<bean id="country" class="com.cognizant.springlearn.Country">

<property name="code" value="IN" />

<property name="name" value="India" />

</bean>

Output:-



1. **REST - Get country based on country code**

Code:-

<?xml version="1.0" encoding="UTF-8"?>

<beans xmlns="http://www.springframework.org/schema/beans"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="

http://www.springframework.org/schema/beans

http://www.springframework.org/schema/beans/spring-beans.xsd">

<bean id="countryList" class="java.util.ArrayList">

<constructor-arg>

<list>

<bean class="com.cognizant.springlearn.Country">

<property name="code" value="IN"/>

<property name="name" value="India"/>

</bean>

<bean class="com.cognizant.springlearn.Country">

<property name="code" value="US"/>

<property name="name" value="United States"/>

</bean>

<bean class="com.cognizant.springlearn.Country">

<property name="code" value="DE"/>

<property name="name" value="Germany"/>

</bean>

<bean class="com.cognizant.springlearn.Country">

<property name="code" value="JP"/>

<property name="name" value="Japan"/>

</bean>

</list>

</constructor-arg>

</bean>

</beans>

package com.cognizant.springlearn.service;

import com.cognizant.springlearn.Country;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import org.springframework.stereotype.Service;

import java.util.List;

@Service

public class CountryService {

private static final Logger LOGGER = LoggerFactory.getLogger(CountryService.class);

public Country getCountry(String code) {

LOGGER.debug("START getCountry()");

ApplicationContext context = new ClassPathXmlApplicationContext("country.xml");

List<Country> countryList = context.getBean("countryList", List.class);

// Using lambda expression

Country country = countryList.stream()

.filter(c -> c.getCode().equalsIgnoreCase(code))

.findAny()

.orElse(null);

LOGGER.debug("END getCountry()");

return country;

}

}

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.Country;

import com.cognizant.springlearn.service.CountryService;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.web.bind.annotation.GetMapping;

import org.springframework.web.bind.annotation.PathVariable;

import org.springframework.web.bind.annotation.RestController;

@RestController

public class CountryController {

private static final Logger LOGGER = LoggerFactory.getLogger(CountryController.class);

@Autowired

private CountryService countryService;

@GetMapping("/countries/{code}")

public Country getCountry(@PathVariable String code) {

LOGGER.debug("START getCountry() with code: {}", code);

Country country = countryService.getCountry(code);

LOGGER.debug("Country: {}", country);

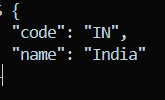
LOGGER.debug("END getCountry()");

return country;

}

}

Output:-



1. **Create authentication service that returns JWT**

Code:-

<dependency>

<groupId>io.jsonwebtoken</groupId>

<artifactId>jjwt</artifactId>

<version>0.9.1</version>

</dependency>

package com.cognizant.springlearn.controller;

import io.jsonwebtoken.Jwts;

import io.jsonwebtoken.SignatureAlgorithm;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RestController;

import javax.servlet.http.HttpServletRequest;

import java.util.Base64;

import java.util.Date;

@RestController

public class AuthenticationController {

private static final Logger LOGGER = LoggerFactory.getLogger(AuthenticationController.class);

private static final String SECRET\_KEY = "mySecretKey";

@RequestMapping("/authenticate")

public String authenticate(HttpServletRequest request) {

LOGGER.debug("START authenticate()");

String authHeader = request.getHeader("Authorization");

if (authHeader == null || !authHeader.startsWith("Basic ")) {

throw new RuntimeException("Missing or invalid Authorization header");

}

String base64Credentials = authHeader.substring("Basic ".length());

String credentials = new String(Base64.getDecoder().decode(base64Credentials));

String[] values = credentials.split(":", 2);

String username = values[0];

String password = values[1];

LOGGER.debug("Username: {}", username);

LOGGER.debug("Password: {}", password);

if (!"user".equals(username) || !"pwd".equals(password)) {

throw new RuntimeException("Invalid credentials");

}

String token = Jwts.builder()

.setSubject(username)

.setIssuedAt(new Date(System.currentTimeMillis()))

.setExpiration(new Date(System.currentTimeMillis() + 10 \* 60 \* 1000)) // 10 minutes validity

.signWith(SignatureAlgorithm.HS256, SECRET\_KEY.getBytes())

.compact();

LOGGER.debug("Generated Token: {}", token);

LOGGER.debug("END authenticate()");

return "{\"token\":\"" + token + "\"}";

}

}

package com.cognizant.springlearn.config;

import org.springframework.context.annotation.Configuration;

import org.springframework.security.config.annotation.web.builders.HttpSecurity;

import org.springframework.security.config.annotation.web.configuration.WebSecurityConfigurerAdapter;

@SuppressWarnings("deprecation")

@Configuration

public class SecurityConfig extends WebSecurityConfigurerAdapter {

@Override

protected void configure(HttpSecurity http) throws Exception {

http.csrf().disable() // disable CSRF for /authenticate

.authorizeRequests()

.antMatchers("/authenticate").permitAll()

.anyRequest().authenticated();

}

}

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-security</artifactId>

</dependency>

Output:-

