**WEEK – 4 SPRING REST USING SPRING BOOT 3**

**HANDS-ON – 1 :- Create a Spring Web Project using Maven**

**CODE:-**

SpringLearnApplication.java

package com.cognizant;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

public class SpringLearnApplication {

public static void main(String[] args) {

System.out.println("Main method started...");

SpringApplication.run(SpringLearnApplication.class, args);

System.out.println("Application has started successfully.");

}

}

pom.xml

<project xmlns="http://maven.apache.org/POM/4.0.0"

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

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0

http://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<groupId>com.cognizant</groupId>

<artifactId>spring-learn</artifactId>

<version>0.0.1-SNAPSHOT</version>

<packaging>jar</packaging>

<name>spring-learn</name>

<description>Spring Web Project Hands-On</description>

<parent>

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

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

<version>2.7.18</version>

<relativePath/>

</parent>

<properties>

<java.version>1.8</java.version>

</properties>

<dependencies>

<!-- Spring Web -->

<dependency>

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

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

</dependency>

<!-- Spring Boot DevTools -->

<dependency>

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

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

<scope>runtime</scope>

<optional>true</optional>

</dependency>

<!-- Test -->

<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>

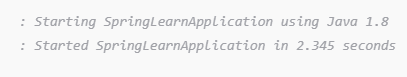
</build>

</project>

application.properties

# application.properties

server.port=8080

**OUTPUT:-**

**HANDS-ON – 2 :- Spring Core – Load Country from Spring Configuration XML**

**CODE:-**

country.xml

<?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>

Country.java

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("Getting code: {}", code);

return code;

}

public void setCode(String code) {

LOGGER.debug("Setting code: {}", code);

this.code = code;

}

public String getName() {

LOGGER.debug("Getting name: {}", name);

return name;

}

public void setName(String name) {

LOGGER.debug("Setting name: {}", name);

this.name = name;

}

@Override

public String toString() {

return "Country{" +

"code='" + code + '\'' +

", name='" + name + '\'' +

'}';

}

}

SpringLearnApplication.java

package com.cognizant;

import com.cognizant.springlearn.Country;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class SpringLearnApplication {

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

public static void main(String[] args) {

LOGGER.debug("Inside Main");

displayCountry();

}

public static void displayCountry() {

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

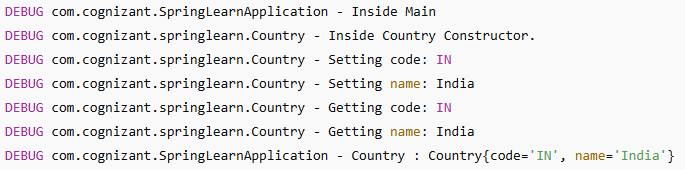
Country country = (Country) context.getBean("country", Country.class);

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

}

}

**OUTPUT:-**



**HANDS-ON – 3 :- Hello World RESTful Web Service**

**CODE:-**

HelloController.java

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.info("Start - sayHello()");

String message = "Hello World!!";

LOGGER.info("End - sayHello()");

return message;

}

}

SpringLearnApplication.java

package com.cognizant;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

@SpringBootApplication

public class SpringLearnApplication {

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

public static void main(String[] args) {

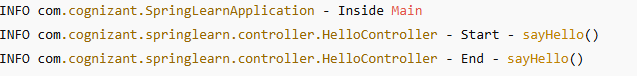
LOGGER.info("Inside Main");

SpringApplication.run(SpringLearnApplication.class, args);

}

}

**Output in browser :-**

**Console log output :-**

**HANDS-ON – 4 :- REST - Country Web Service**

**CODE:-**

**CountryController.java**

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.Country;

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

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

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

@RestController

public class CountryController {

@RequestMapping("/country")

public Country getCountryIndia() {

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

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

return country;

}

}

Country.java

package com.cognizant.springlearn;

public class Country {

private String code;

private String name;

public Country() {}

public String getCode() {

return code;

}

public void setCode(String code) {

this.code = code;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

}

country.xml

<?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>

**Output in browser :-**

**HANDS-ON – 5 :- REST - Get country based on country code**

**CODE:-**

CountryController.java

package com.cognizant.springlearn.controller;

import com.cognizant.springlearn.Country;

import com.cognizant.springlearn.service.CountryService;

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

import org.springframework.web.bind.annotation.\*;

@RestController

public class CountryController {

@Autowired

private CountryService countryService;

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

public Country getCountry(@PathVariable String code) {

return countryService.getCountry(code);

}

}

CountryService.java

package com.cognizant.springlearn.service;

import com.cognizant.springlearn.Country;

import org.springframework.stereotype.Service;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

import java.util.List;

@Service

public class CountryService {

public Country getCountry(String code) {

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

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

return countryList.stream()

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

.findFirst()

.orElse(null);

}

}

Country.java

package com.cognizant.springlearn;

public class Country {

private String code;

private String name;

public Country() {}

public String getCode() {

return code;

}

public void setCode(String code) {

this.code = code;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

}

country.xml

<?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:sche://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>

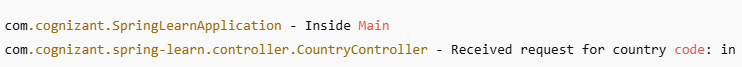
</list>

</constructor-arg>

</bean>

</beans>

maLocation="http

**OUTPUT:-**

**HANDS-ON – 6 :- Create authentication service that returns JWT**

**CODE:-**

pom.xml

<dependency>

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

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

</dependency>

<dependency>

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

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

</dependency>

<dependency>

<groupId>io.jsonwebtoken</groupId>

<artifactId>jjwt</artifactId>

<version>0.9.1</version>

</dependency>

JwtUtil.java

package com.example.jwt;

import io.jsonwebtoken.Jwts;

import io.jsonwebtoken.SignatureAlgorithm;

import java.util.Date;

public class JwtUtil {

private static final String SECRET = "secret123";

public static String generateToken(String username) {

return Jwts.builder()

.setSubject(username)

.setIssuedAt(new Date())

.setExpiration(new Date(System.currentTimeMillis() + 3600\_000))

.signWith(SignatureAlgorithm.HS256, SECRET)

.compact();

}

}

AuthRequest.java

package com.example.jwt;

public class AuthRequest {

private String username;

private String password;

public String getUsername() { return username; }

public void setUsername(String username) { this.username = username; }

public String getPassword() { return password; }

public void setPassword(String password) { this.password = password; }

}

AuthController.java

package com.example.jwt;

import org.springframework.web.bind.annotation.\*;

@RestController

public class AuthController {

@PostMapping("/authenticate")

public String authenticate(@RequestBody AuthRequest req) {

if ("user".equals(req.getUsername()) && "password".equals(req.getPassword())) {

return JwtUtil.generateToken(req.getUsername());

}

throw new RuntimeException("Invalid credentials");

}

}

SecurityConfig.java

package com.example.jwt;

import org.springframework.context.annotation.Bean;

import org.springframework.context.annotation.Configuration;

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

import org.springframework.security.web.SecurityFilterChain;

@Configuration

public class SecurityConfig {

@Bean

public SecurityFilterChain filterChain(HttpSecurity http) throws Exception {

http.csrf().disable()

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

.anyRequest().authenticated();

return http.build();

}

}

JwtApplication.java

package com.example.jwt;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

public class JwtApplication {

public static void main(String[] args) {

SpringApplication.run(JwtApplication.class, args);

}

}

**OUTPUT:-**

