

Lab 04 Ecomm Cart Service 🡪 REST MicroserviceFood Protection Program

**Spring Cloud Cart REST Service**

Udemy Spring Cloud Course

Presented By

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**Rolling Stone Technology**

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Chapter 1

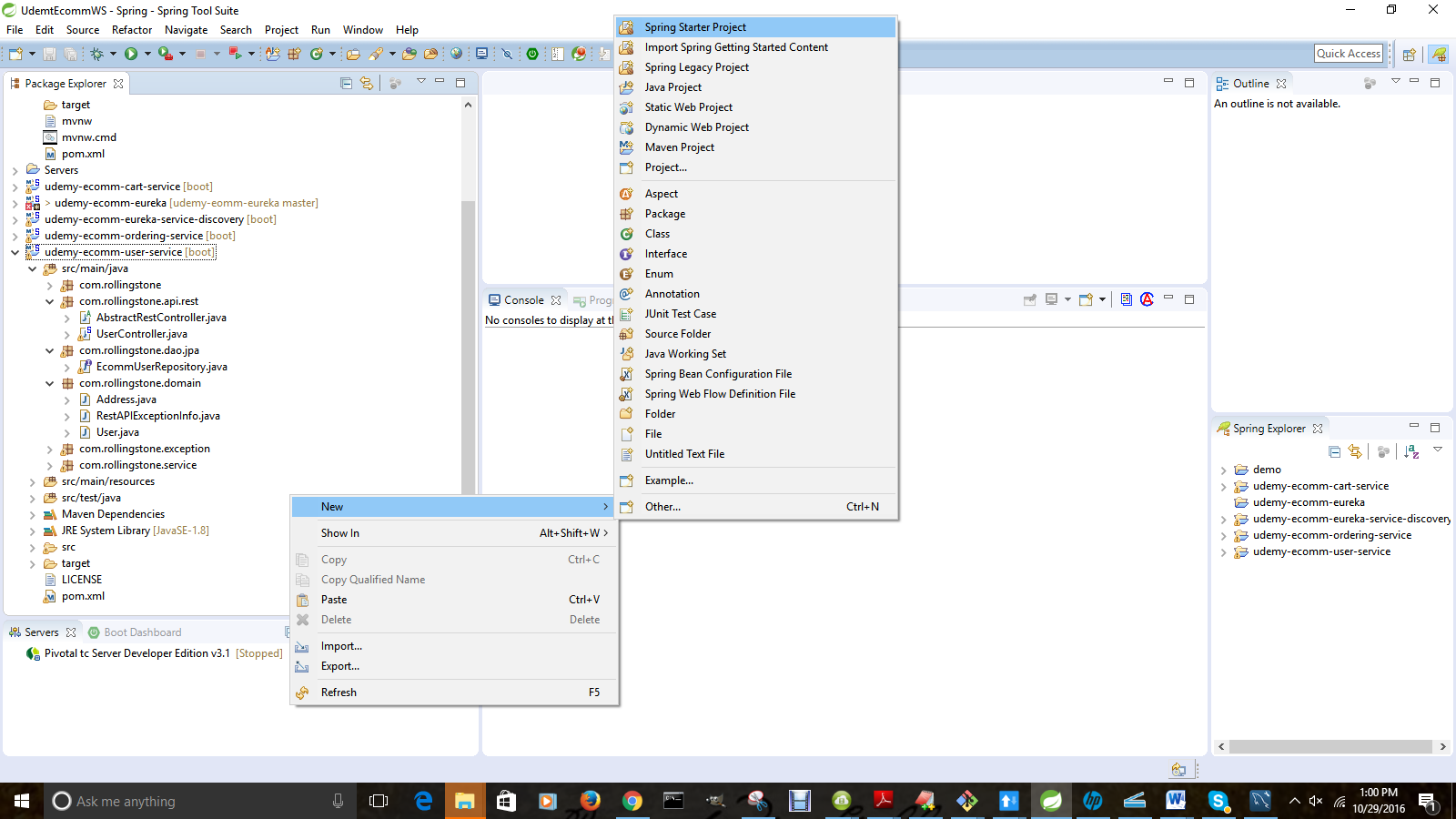
*Spring Cloud Shopping Cart Service Project Creation*

1.0 - Introduction

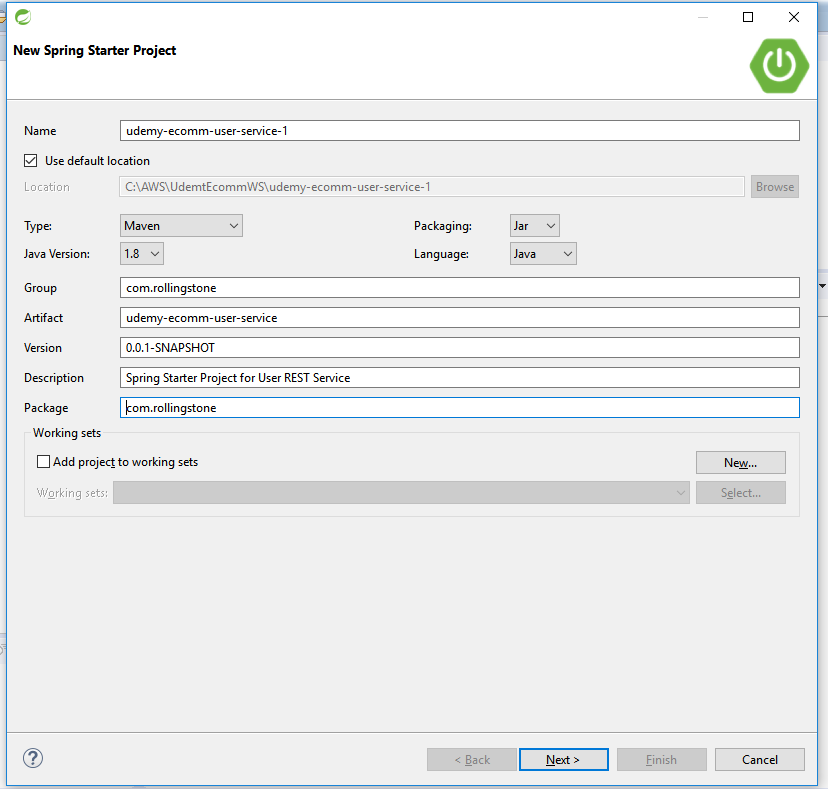
The purpose of the *MPPU Safe Food-Handling Plan* is to insure that the products – whole raw poultry and giblets – offered for sale by Massachusetts’ smallest-scale poultry producers using a Massachusetts-approved MPPU – are wholesome and processed under clean and sanitary conditions, and that the operation meets Massachusetts Department of Environmental Protection (DEP) guidelines for waste disposal, and, therefore, does not contribute to environmental harm.



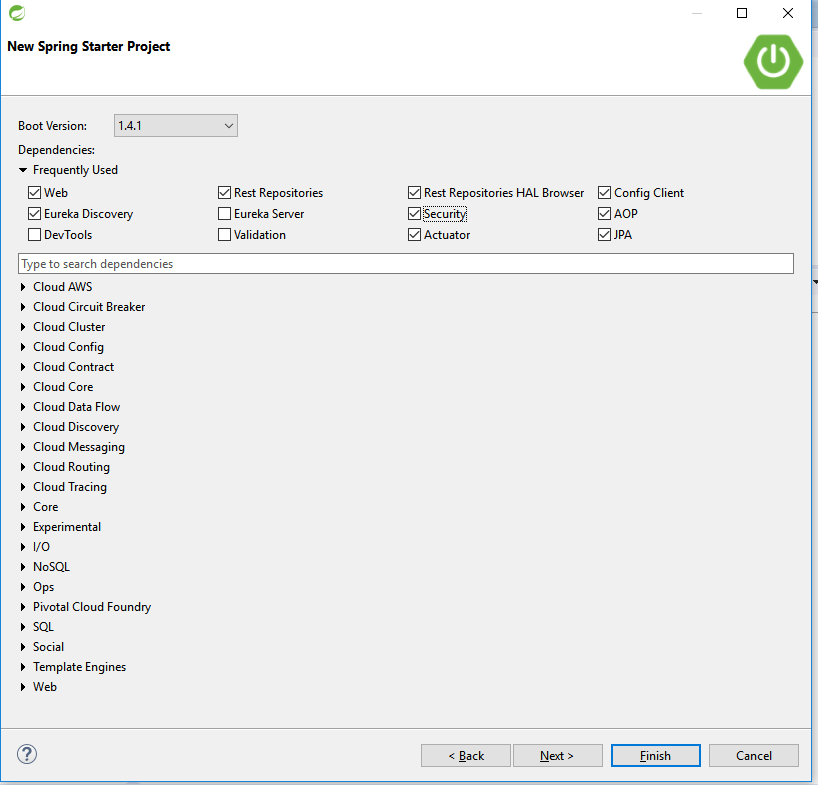
1.1 – Create a new Spring Starter Project



1.2 – Fill initial values

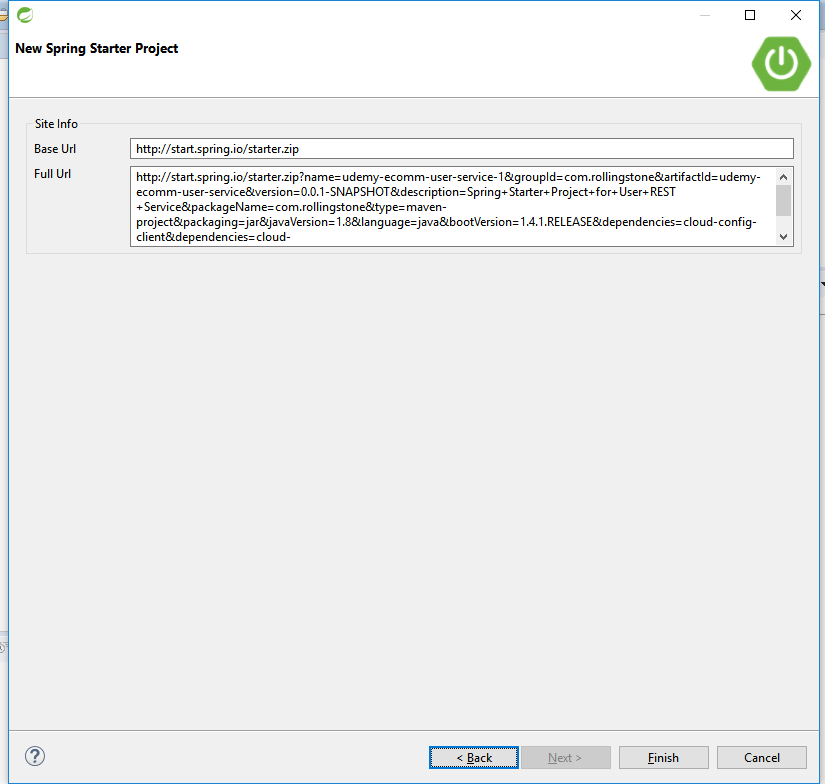


1.3 – Choose Eureka and Web as starter projects

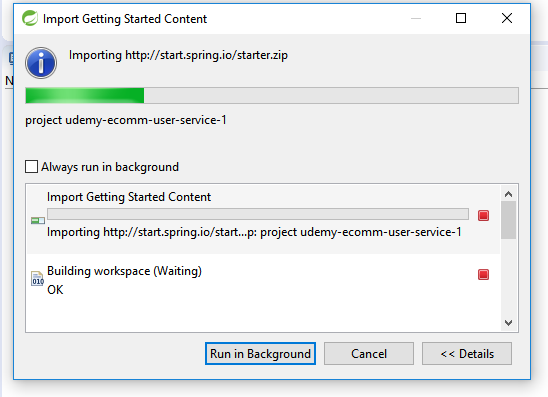


.

1.4 – Click Finish Now



1.5 – Let Spring Tool Suite Prepare the Project



1.6 – View the generated pom.xml

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

<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.rollingstone</groupId>

<artifactId>udemy-ecomm-cart-service</artifactId>

<version>1.0</version>

<packaging>jar</packaging>

<description>Example project demonstrating Spring Cloud based Microservice as a REST API</description>

<parent>

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

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

<version>1.3.6.RELEASE</version>

</parent>

<properties>

<start-class>com.rollingstone.ShoppingCartRestAPIApplication</start-class>

</properties>

<dependencyManagement>

<dependencies>

<dependency>

<groupId>org.springframework.cloud</groupId>

<artifactId>spring-cloud-dependencies</artifactId>

<version>Angel.SR6</version>

<type>pom</type>

<scope>import</scope>

</dependency>

</dependencies>

</dependencyManagement>

<dependencies>

<dependency>

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

<artifactId>spring-boot-actuator</artifactId>

</dependency>

<!-- web development, including Tomcat and spring-webmvc -->

<dependency>

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

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

</dependency>

<!-- Spring security -->

<dependency>

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

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

</dependency>

<dependency>

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

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

<scope>provided</scope>

</dependency>

<!-- spring-data-jpa, spring-orm and Hibernate -->

<dependency>

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

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<version>1.4.181</version>

</dependency>

<!-- spring-test, hamcrest, ... -->

<dependency>

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

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

<scope>test</scope>

</dependency>

<dependency>

<groupId>com.fasterxml.jackson.core</groupId>

<artifactId>jackson-databind</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.data</groupId>

<artifactId>spring-data-rest-hal-browser</artifactId>

</dependency>

<!-- attribute level json comparisons -->

<dependency>

<groupId>com.jayway.jsonpath</groupId>

<artifactId>json-path</artifactId>

<version>0.9.1</version>

<scope>test</scope>

</dependency>

<dependency>

<groupId>com.jayway.jsonpath</groupId>

<artifactId>json-path-assert</artifactId>

<version>0.9.1</version>

<scope>test</scope>

</dependency>

<!-- https://mvnrepository.com/artifact/com.mangofactory/swagger-springmvc

<dependency> <groupId>com.mangofactory</groupId> <artifactId>swagger-springmvc</artifactId>

<version>1.0.1</version> </dependency> -->

<dependency>

<groupId>io.springfox</groupId>

<artifactId>springfox-swagger2</artifactId>

<version>2.3.1</version>

</dependency>

<dependency>

<groupId>io.springfox</groupId>

<artifactId>springfox-swagger-ui</artifactId>

<version>2.3.1</version>

</dependency>

<dependency>

<groupId>org.hsqldb</groupId>

<artifactId>hsqldb</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>mysql</groupId>

<artifactId>mysql-connector-java</artifactId>

<version>5.1.40</version>

</dependency>

<dependency>

<groupId>org.springframework.cloud</groupId>

<artifactId>spring-cloud-starter-eureka</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.cloud</groupId>

<artifactId>spring-cloud-starter-feign</artifactId>

</dependency>

</dependencies>

<build>

<resources>

<resource>

<directory>src/main/resources</directory>

<filtering>true</filtering>

</resource>

</resources>

<plugins>

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-compiler-plugin</artifactId>

<version>3.1</version>

<configuration>

<source>1.8</source>

<target>1.8</target>

</configuration>

</plugin>

<!-- Spring boot support -->

<plugin>

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

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

<configuration>

<addResources>false</addResources>

</configuration>

</plugin>

</plugins>

</build>

</project>

1.7 – Maven POM Elements Explanation

1. Starter parent
2. Dependency Management
3. Packaging
4. POM Hierarchy
5. Spring Boot Actuator
6. Starter Web
7. Starter Security
8. Starter Tomcat
9. Starter JPA
10. Starter Test
11. Jackson Databind
12. HAL Browser
13. Swagger
14. Eureka
15. Feign
16. Resources Plugin
17. Compiler Plugin
18. Spring Boot Plugin

1.8 – Add this property to the pom.xml

<start-class>com.rollingstone.ShoppingCartRestAPIApplication</start-class>

1.9 – Add these maven dependencies to the pom.xml

<dependency>

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

<artifactId>spring-boot-actuator</artifactId>

</dependency>

<!-- web development, including Tomcat and spring-webmvc -->

<dependency>

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

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

</dependency>

<!-- Spring security -->

<dependency>

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

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

</dependency>

<dependency>

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

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

<scope>provided</scope>

</dependency>

<!-- spring-data-jpa, spring-orm and Hibernate -->

<dependency>

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

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<version>1.4.181</version>

</dependency>

<!-- spring-test, hamcrest, ... -->

<dependency>

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

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

<scope>test</scope>

</dependency>

<dependency>

<groupId>com.fasterxml.jackson.core</groupId>

<artifactId>jackson-databind</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.data</groupId>

<artifactId>spring-data-rest-hal-browser</artifactId>

</dependency>

<!-- attribute level json comparisons -->

<dependency>

<groupId>com.jayway.jsonpath</groupId>

<artifactId>json-path</artifactId>

<version>0.9.1</version>

<scope>test</scope>

</dependency>

<dependency>

<groupId>com.jayway.jsonpath</groupId>

<artifactId>json-path-assert</artifactId>

<version>0.9.1</version>

<scope>test</scope>

</dependency>

<dependency>

<groupId>io.springfox</groupId>

<artifactId>springfox-swagger2</artifactId>

<version>2.3.1</version>

</dependency>

<dependency>

<groupId>io.springfox</groupId>

<artifactId>springfox-swagger-ui</artifactId>

<version>2.3.1</version>

</dependency>

<dependency>

<groupId>org.hsqldb</groupId>

<artifactId>hsqldb</artifactId>

<scope>runtime</scope>

</dependency>

<dependency>

<groupId>mysql</groupId>

<artifactId>mysql-connector-java</artifactId>

<version>5.1.40</version>

</dependency>

<dependency>

<groupId>org.springframework.cloud</groupId>

<artifactId>spring-cloud-starter-eureka</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.cloud</groupId>

<artifactId>spring-cloud-starter-feign</artifactId>

</dependency>

1.10 – Replace the Maven build section with this

<build>

<resources>

<resource>

<directory>src/main/resources</directory>

<filtering>true</filtering>

</resource>

</resources>

<plugins>

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-compiler-plugin</artifactId>

<version>3.1</version>

<configuration>

<source>1.8</source>

<target>1.8</target>

</configuration>

</plugin>

<!-- Spring boot support -->

<plugin>

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

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

<configuration>

<addResources>false</addResources>

</configuration>

</plugin>

</plugins>

</build>

1.11 – Add Eureka Client Discovery Annotation

package com.rollingstone;

/\*

\* This is the primary Spring Boot application class. It configures Spring Boot, JPA, Swagger and

\* other dependent Spring modules.

\*/

@SuppressWarnings("deprecation")

@SpringBootApplication

@EnableAutoConfiguration // Sprint Boot Automatic Configuration

@ComponentScan(basePackages = "com.rollingstone")

@EnableJpaRepositories("com.rollingstone.dao.jpa") // To segregate MongoDB and JPA repositories. Otherwise not needed.

@EnableSwagger2

@EnableDiscoveryClient

@EnableFeignClients

public class ShoppingCartRestAPIApplication extends SpringBootServletInitializer {

private static final Class<ShoppingCartRestAPIApplication> applicationClass = ShoppingCartRestAPIApplication.class;

private static final Logger log = LoggerFactory.getLogger(applicationClass);

public static void main(String[] args) {

SpringApplication.run(applicationClass, args);

}

@Override

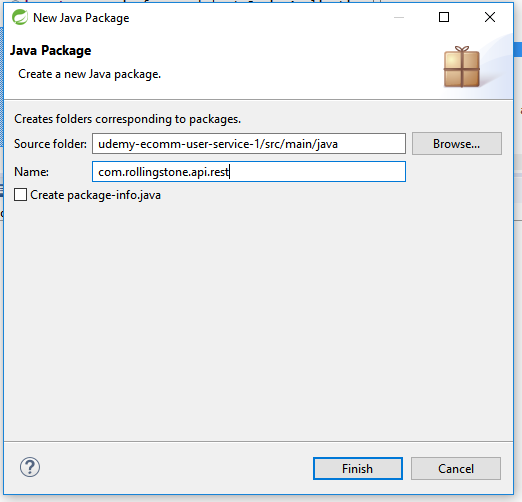
protected SpringApplicationBuilder configure(SpringApplicationBuilder application) {

return application.sources(applicationClass);

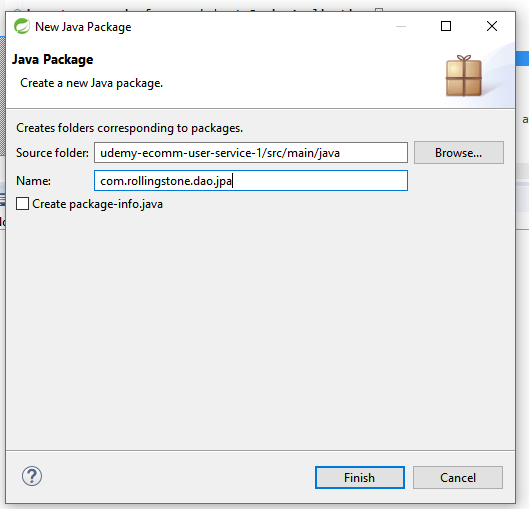
}

}

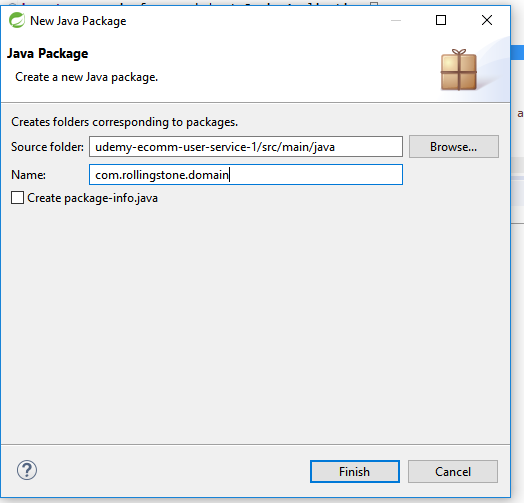
1.12 – Add api.rest package



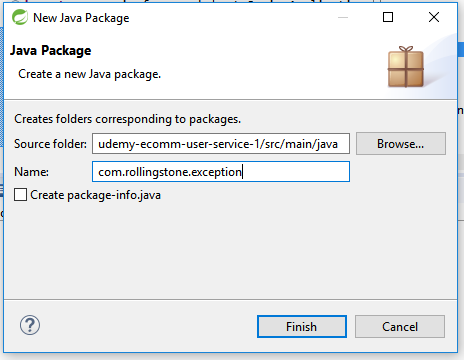
1.13– Add dao.jpa package



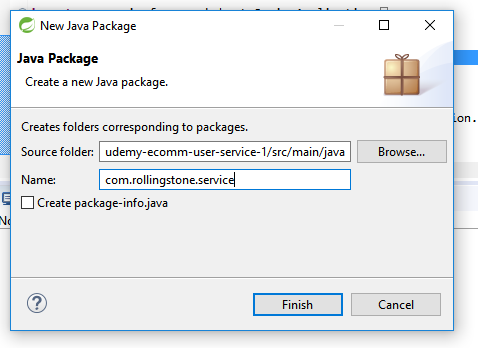
1.14– Add domain package



1.15– Add exception package



1.16– Add service package



1.17– Create REST AOP Class in the com.rollingstone package

package com.rollingstone;

import org.aspectj.lang.JoinPoint;

import org.aspectj.lang.ProceedingJoinPoint;

import org.aspectj.lang.annotation.Around;

import org.aspectj.lang.annotation.Aspect;

import org.aspectj.lang.annotation.Before;

import org.aspectj.lang.annotation.Pointcut;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

import org.springframework.stereotype.Component;

@Aspect

@Component

public class RestControllerAspect {

private static final Logger log = LoggerFactory.getLogger(RestControllerAspect.class);

@Before("execution(public \* com.rollingstone.api.rest.\*Controller.\*(..))")

public void logBeforeRestCall(JoinPoint pjp) throws Throwable {

log.info(":::::AOP Before REST call:::::" + pjp);

}

}

1.18– Create User Domain class in the domain package

package com.rollingstone.domain;

@Entity

@Table(name = "ecomm\_product")

@XmlRootElement

@XmlAccessorType(XmlAccessType.FIELD)

public class Product {

@Id

@GeneratedValue(strategy = GenerationType.AUTO)

private long id;

@Column(nullable = false)

private String productName;

@Column(nullable = false)

private String productShortDescription;

@Column(nullable = false)

private String productLongDescription;

@Column(nullable = false)

private String imageUrl;

@Column(nullable = false)

private String productType;

@Column(nullable = false)

private double productPrice;

public Product() {

}

public Product(String productName, String productShortDescription, String productLongDescription, String imageUrl,

String productType, double productPrice) {

super();

this.productName = productName;

this.productShortDescription = productShortDescription;

this.productLongDescription = productLongDescription;

this.imageUrl = imageUrl;

this.productType = productType;

this.productPrice = productPrice;

}

public double getProductPrice() {

return productPrice;

}

public void setProductPrice(double productPrice) {

this.productPrice = productPrice;

}

public long getId() {

return id;

}

public void setId(long id) {

this.id = id;

}

public String getProductName() {

return productName;

}

public void setProductName(String productName) {

this.productName = productName;

}

public String getProductShortDescription() {

return productShortDescription;

}

public void setProductShortDescription(String productShortDescription) {

this.productShortDescription = productShortDescription;

}

public String getProductLongDescription() {

return productLongDescription;

}

public void setProductLongDescription(String productLongDescription) {

this.productLongDescription = productLongDescription;

}

public String getImageUrl() {

return imageUrl;

}

public void setImageUrl(String imageUrl) {

this.imageUrl = imageUrl;

}

public String getProductType() {

return productType;

}

public void setProductType(String productType) {

this.productType = productType;

}

@Override

public String toString() {

return "Product [id=" + id + ", productName=" + productName + ", productShortDescription="

+ productShortDescription + ", productLongDescription=" + productLongDescription + ", imageUrl="

+ imageUrl + ", productType=" + productType + ", productPrice=" + productPrice + ", getProductPrice()="

+ getProductPrice() + ", getId()=" + getId() + ", getProductName()=" + getProductName()

+ ", getProductShortDescription()=" + getProductShortDescription() + ", getProductLongDescription()="

+ getProductLongDescription() + ", getImageUrl()=" + getImageUrl() + ", getProductType()="

+ getProductType() + ", getClass()=" + getClass() + ", hashCode()=" + hashCode() + ", toString()="

+ super.toString() + "]";

}

}

}

1.18– Do the following to the User Class

* Create Product Class
* Paste Code
* Press CTRL+Shift+O [Command + Shift + O in Mac] to import
* Choose java.persistence package
* Generate Getter Setter
* Generate Constructor using Fields
* Generate toString

1.19– Create Address Class in the domain package

package com.rollingstone.domain;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.Table;

import javax.xml.bind.annotation.XmlAccessType;

import javax.xml.bind.annotation.XmlAccessorType;

import javax.xml.bind.annotation.XmlRootElement;

import com.fasterxml.jackson.annotation.JsonBackReference;

@Entity

@Table(name = "ecomm\_address")

@XmlRootElement

@XmlAccessorType(XmlAccessType.FIELD)

public class Address {

@Id

@GeneratedValue(strategy = GenerationType.AUTO)

private long id;

@Column(nullable = false)

private String streetAddress;

@Column(nullable = false)

private String state;

@Column(nullable = false)

private String city;

@Column(nullable = false)

private String zipCode;

@Column(nullable = false)

private String country;

/\*@ManyToOne(fetch = FetchType.LAZY)

@JoinColumn(name = "USER\_ID", nullable = false)\*/

@ManyToOne

@JoinColumn(name = "USER\_ID")

@JsonBackReference

User user;

public Address() {

}

public Address(String streetAddress, String state, String city, String zipCode, String country, User user) {

super();

this.streetAddress = streetAddress;

this.state = state;

this.city = city;

this.zipCode = zipCode;

this.country = country;

this.user = user;

}

public User getUser() {

return user;

}

public void setUser(User user) {

this.user = user;

}

public long getId() {

return id;

}

public void setId(long id) {

this.id = id;

}

public String getStreetAddress() {

return streetAddress;

}

public void setStreetAddress(String streetAddress) {

this.streetAddress = streetAddress;

}

public String getState() {

return state;

}

public void setState(String state) {

this.state = state;

}

public String getCity() {

return city;

}

public void setCity(String city) {

this.city = city;

}

public String getZipCode() {

return zipCode;

}

public void setZipCode(String zipCode) {

this.zipCode = zipCode;

}

public String getCountry() {

return country;

}

public void setCountry(String country) {

this.country = country;

}

}

1.20– Do the following to the Address Class

* Create Address Class
* Paste Code
* Press CTRL+Shift+O [Command + Shift + O in Mac] to import
* Choose java.persistence package
* Generate Getter Setter
* Generate Constructor using Fields
* Generate toString

1.21– Create Product Class in the domain package

package com.rollingstone.domain;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.Table;

import javax.xml.bind.annotation.XmlAccessType;

import javax.xml.bind.annotation.XmlAccessorType;

import javax.xml.bind.annotation.XmlRootElement;

import com.fasterxml.jackson.annotation.JsonBackReference;

@Entity

@Table(name = "ecomm\_product")

@XmlRootElement

@XmlAccessorType(XmlAccessType.FIELD)

public class Product {

@Id

@GeneratedValue(strategy = GenerationType.AUTO)

private long id;

@Column(nullable = false)

private String productName;

@Column(nullable = false)

private String productShortDescription;

@Column(nullable = false)

private String productLongDescription;

@Column(nullable = false)

private String imageUrl;

@Column(nullable = false)

private String productType;

@Column(nullable = false)

private double productPrice;

public Product() {

}

public Product(String productName, String productShortDescription, String productLongDescription, String imageUrl,

String productType, double productPrice) {

super();

this.productName = productName;

this.productShortDescription = productShortDescription;

this.productLongDescription = productLongDescription;

this.imageUrl = imageUrl;

this.productType = productType;

this.productPrice = productPrice;

}

public double getProductPrice() {

return productPrice;

}

public void setProductPrice(double productPrice) {

this.productPrice = productPrice;

}

public long getId() {

return id;

}

public void setId(long id) {

this.id = id;

}

public String getProductName() {

return productName;

}

public void setProductName(String productName) {

this.productName = productName;

}

public String getProductShortDescription() {

return productShortDescription;

}

public void setProductShortDescription(String productShortDescription) {

this.productShortDescription = productShortDescription;

}

public String getProductLongDescription() {

return productLongDescription;

}

public void setProductLongDescription(String productLongDescription) {

this.productLongDescription = productLongDescription;

}

public String getImageUrl() {

return imageUrl;

}

public void setImageUrl(String imageUrl) {

this.imageUrl = imageUrl;

}

public String getProductType() {

return productType;

}

public void setProductType(String productType) {

this.productType = productType;

}

@Override

public String toString() {

return "Product [id=" + id + ", productName=" + productName + ", productShortDescription="

+ productShortDescription + ", productLongDescription=" + productLongDescription + ", imageUrl="

+ imageUrl + ", productType=" + productType + ", productPrice=" + productPrice + ", getProductPrice()="

+ getProductPrice() + ", getId()=" + getId() + ", getProductName()=" + getProductName()

+ ", getProductShortDescription()=" + getProductShortDescription() + ", getProductLongDescription()="

+ getProductLongDescription() + ", getImageUrl()=" + getImageUrl() + ", getProductType()="

+ getProductType() + ", getClass()=" + getClass() + ", hashCode()=" + hashCode() + ", toString()="

+ super.toString() + "]";

}

}

1.22– Do the following to the Product Class

* Create Address Class
* Paste Code
* Press CTRL+Shift+O [Command + Shift + O in Mac] to import
* Choose java.persistence package
* Generate Getter Setter
* Generate Constructor using Fields
* Generate toString

1.23– Create ShoppingCart Class in the domain package

package com.rollingstone.domain;

import java.util.Date;

import java.util.HashSet;

import java.util.Set;

import javax.persistence.CascadeType;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.OneToMany;

import javax.persistence.Table;

import javax.persistence.Temporal;

import javax.persistence.TemporalType;

import javax.xml.bind.annotation.XmlAccessType;

import javax.xml.bind.annotation.XmlAccessorType;

import javax.xml.bind.annotation.XmlRootElement;

import com.fasterxml.jackson.annotation.JsonBackReference;

import com.fasterxml.jackson.annotation.JsonManagedReference;

/\*

\* A User POJO serving as an Entity as well as a Data Transfer Object i.e DTO

\*/

@Entity

@Table(name = "ecomm\_cart")

@XmlRootElement

@XmlAccessorType(XmlAccessType.FIELD)

public class ShoppingCart {

@Id

@GeneratedValue(strategy = GenerationType.AUTO)

private long id;

@ManyToOne(fetch = FetchType.EAGER)

@JoinColumn(name="user\_id",referencedColumnName="id")

//@JsonBackReference

User user;

@Column(nullable = false)

private double cartTotalValue;

@Temporal(TemporalType.DATE)

@Column(name = "CART\_DATE", unique = true, nullable = false, length = 10)

private Date cartDate;

@OneToMany(mappedBy = "cart", cascade = CascadeType.ALL)

@JsonManagedReference

private Set<CartItem> cartItems = new HashSet<CartItem>();;

@Column()

private int rating;

public ShoppingCart() {

}

public ShoppingCart(User user, double cartTotalValue, Date cartDate, Set<CartItem> cartItems, int rating) {

super();

this.user = user;

this.cartTotalValue = cartTotalValue;

this.cartDate = cartDate;

this.cartItems = cartItems;

this.rating = rating;

}

public long getId() {

return id;

}

public void setId(long id) {

this.id = id;

}

public User getUser() {

return user;

}

public void setUser(User user) {

this.user = user;

}

public double getCartTotalValue() {

return cartTotalValue;

}

public void setCartTotalValue(double cartTotalValue) {

this.cartTotalValue = cartTotalValue;

}

public Date getCartDate() {

return cartDate;

}

public void setCartDate(Date cartDate) {

this.cartDate = cartDate;

}

public Set<CartItem> getCartItems() {

return cartItems;

}

public void setCartItems(Set<CartItem> cartItems) {

this.cartItems = cartItems;

}

public int getRating() {

return rating;

}

public void setRating(int rating) {

this.rating = rating;

}

}

1.24– Do the following to the ShoppingCart Class

* Create ShoppingCart Class
* Paste Code
* Press CTRL+Shift+O [Command + Shift + O in Mac] to import
* Choose java.persistence package
* Generate Getter Setter
* Generate Constructor using Fields
* Generate toString

1.25– Create CartItem Class in the domain package

package com.rollingstone.domain;

import javax.persistence.Column;

import javax.persistence.Entity;

import javax.persistence.FetchType;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

import javax.persistence.JoinColumn;

import javax.persistence.ManyToOne;

import javax.persistence.OneToOne;

import javax.persistence.Table;

import javax.xml.bind.annotation.XmlAccessType;

import javax.xml.bind.annotation.XmlAccessorType;

import javax.xml.bind.annotation.XmlRootElement;

import com.fasterxml.jackson.annotation.JsonBackReference;

@Entity

@Table(name = "ecomm\_cart\_item")

@XmlRootElement

@XmlAccessorType(XmlAccessType.FIELD)

public

class CartItem {

@Id

@GeneratedValue(strategy = GenerationType.AUTO)

private Long id;

//@ManyToOne(fetch = FetchType.EAGER)

//@JoinColumn(name="product\_id",referencedColumnName="id")

//@JoinColumn(name="product\_id")

@OneToOne

@JoinColumn(name="product\_id")

private Product product;

@Column(nullable = false)

private int quantity;

@ManyToOne(optional=true, fetch=FetchType.EAGER)

@JoinColumn(name = "cart\_id")

@JsonBackReference

ShoppingCart cart;

public CartItem(){

}

public Long getId() {

return id;

}

public void setId(Long id) {

this.id = id;

}

public Product getProduct() {

return product;

}

public void setProduct(Product product) {

this.product = product;

}

public int getQuantity() {

return quantity;

}

public void setQuantity(int quantity) {

this.quantity = quantity;

}

public ShoppingCart getCart() {

return cart;

}

public void setCart(ShoppingCart cart) {

this.cart = cart;

}

@Override

public String toString() {

return "CartItem [id=" + id + ", product=" + product + ", quantity=" + quantity + "]";

}

public CartItem(Long id, Product product, int quantity) {

super();

this.id = id;

this.product = product;

this.quantity = quantity;

}

}

1.26– Do the following to the CartItem Class

* Create CartItem Class
* Paste Code
* Press CTRL+Shift+O [Command + Shift + O in Mac] to import
* Choose java.persistence package
* Generate Getter Setter
* Generate Constructor using Fields
* Generate toString

1.27– Generate RestAPIExceptionInfo in the domain package

package com.rollingstone.domain;

import javax.xml.bind.annotation.XmlRootElement;

/\*

\* A sample class for adding error information in the response

\*/

@XmlRootElement

public class RestAPIExceptionInfo {

public final String detail;

public final String message;

public RestAPIExceptionInfo(Exception ex, String detail) {

this.message = ex.getLocalizedMessage();

this.detail = detail;

}

}

1.28– Generate HTTP400Exception in the exception package

package com.rollingstone.exception;

/\*\*

\* for HTTP 400 Bad Request errors

\*/

public final class HTTP400Exception extends RuntimeException {

public HTTP400Exception() {

super();

}

public HTTP400Exception(String message, Throwable cause) {

super(message, cause);

}

public HTTP400Exception(String message) {

super(message);

}

public HTTP400Exception(Throwable cause) {

super(cause);

}

}

1.29– Generate HTTP404Exception in the exception package

package com.rollingstone.exception;

/\*\*

\* For HTTP 404 Not Found errros

\*/

public class HTTP404Exception extends RuntimeException {

/\*\*

\*

\*/

private static final long serialVersionUID = 1L;

public HTTP404Exception() {

super();

}

public HTTP404Exception(String message, Throwable cause) {

super(message, cause);

}

public HTTP404Exception(String message) {

super(message);

}

public HTTP404Exception(Throwable cause) {

super(cause);

}

}

1.30– Generate DAOInterface in the dao.jpa package

package com.rollingstone.dao.jpa;

import org.springframework.data.domain.Page;

import org.springframework.data.domain.Pageable;

import org.springframework.data.repository.PagingAndSortingRepository;

import com.rollingstone.domain.ShoppingCart;

public interface EcommShoppingCartRepository extends PagingAndSortingRepository<ShoppingCart, Long> {

ShoppingCart findUserByRating(int rating);

Page findAll(Pageable pageable);

}

1.31– Generate Service class in the service package

package com.rollingstone.service;

import org.slf4j.Logger;

import org.slf4j.LoggerFactory;

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

import org.springframework.boot.actuate.metrics.CounterService;

import org.springframework.boot.actuate.metrics.GaugeService;

import org.springframework.data.domain.Page;

import org.springframework.data.domain.PageRequest;

import org.springframework.stereotype.Service;

import org.springframework.transaction.annotation.Transactional;

import com.rollingstone.dao.jpa.EcommShoppingCartRepository;

import com.rollingstone.domain.\*;

/\*

\* Service class to do CRUD for User and Address through JPS Repository

\*/

@Service

public class EcommShoppingCartService {

private static final Logger log = LoggerFactory.getLogger(EcommShoppingCartService.class);

@Autowired

private EcommShoppingCartRepository cartRepository;

@Autowired

CounterService counterService;

@Autowired

GaugeService gaugeService;

@Autowired

private UserClient userClient;

@Autowired

private ProductClient productClient;

public EcommShoppingCartService() {

}

@Transactional

public ShoppingCart createCart(ShoppingCart cart) throws Exception {

ShoppingCart shoppingCart = null;

boolean areCartItemsValid = true;

log.info("In service create");

if (cart != null && cart.getUser() != null){

log.info("In service create"+ cart.getUser().getId());

if (userClient == null){

log.info("In userServiceClient null got user");

}

else {

log.info("In userServiceClient not null got user");

}

User user = userClient.getUser((new Long(cart.getUser().getId())));

if (user != null){

log.info("In service got user"+user.getId());

log.info("In Service size of cart :"+cart.getCartItems().size());

for (CartItem cartItem : cart.getCartItems()){

log.info("Inside cart loop");

if (cartItem.getProduct() != null){

log.info("In service Product is not null");

Product product = productClient.getProduct(new Long(cartItem.getProduct().getId()));

if (product == null){

log.info("In service did not get product");

areCartItemsValid = false;

}else {

log.info("In Service Valid product");

}

}else {

log.info("In service Product is null");

}

}

if (areCartItemsValid){

shoppingCart = cartRepository.save(cart);

}

}else {

throw new Exception("Invalid USer");

}

}

return shoppingCart;

}

public ShoppingCart getCart(long id) {

return cartRepository.findOne(id);

}

public void updateCart(ShoppingCart user) {

cartRepository.save(user);

}

public void deleteCart(Long id) {

cartRepository.delete(id);

}

public Page<ShoppingCart> getAllCarts(Integer page, Integer size) {

Page pageOfCarts = cartRepository.findAll(new PageRequest(page, size));

// example of adding to the /metrics

if (size > 50) {

counterService.increment("com.rollingstone.getAll.largePayload");

}

return pageOfCarts;

}

}

1.32– Create ProductClient Feign Interface in service package

package com.rollingstone.service;

import java.util.List;

import org.springframework.cloud.netflix.feign.FeignClient;

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

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

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

import com.rollingstone.domain.Product;

@FeignClient("product-service")

interface ProductClient {

@RequestMapping(method = RequestMethod.GET, value="/productsservice/v1/products")

List<Product> getProducts();

@RequestMapping(method = RequestMethod.GET, value="/productsservice/v1/products/simple/{id}")

Product getProduct(@PathVariable("id") Long id);

}

1.33– Create UserClient Feign Interface in service package

package com.rollingstone.service;

import java.util.List;

import org.springframework.cloud.netflix.feign.FeignClient;

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

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

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

import com.rollingstone.domain.User;

@FeignClient("user-service")

interface UserClient {

@RequestMapping(method = RequestMethod.GET, value="/userservice/v1/users/all")

List<User> getUsers();

@RequestMapping(method = RequestMethod.GET, value="/userservice/v1/users/simple/{id}")

User getUser(@PathVariable("id") Long id);

}

1.34– Create ServiceProperties class in service package

package com.rollingstone.service;

import org.springframework.boot.context.properties.ConfigurationProperties;

import org.springframework.stereotype.Component;

import javax.validation.constraints.NotNull;

/\*

\* demonstrates how service-specific properties can be injected

\*/

@ConfigurationProperties(prefix = "user.service", ignoreUnknownFields = false)

@Component

public class ServiceProperties {

@NotNull // you can also create configurationPropertiesValidator

private String name = "Empty";

public String getName() {

return this.name;

}

public void setName(String name) {

this.name = name;

}

}

1.35– Generate ServiceHealth class in the service package

package com.rollingstone.service;

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

import org.springframework.boot.actuate.health.Health;

import org.springframework.boot.actuate.health.HealthIndicator;

import org.springframework.stereotype.Component;

/\*\*

\* This is an optional class used to inject application specific health check

\* into the Spring Boot health management endpoint.

\*/

@Component

public class ShoppingCartServiceHealth implements HealthIndicator {

@Autowired

private ServiceProperties configuration;

// extend this to create an application-specific health check according to http://goo.gl/vt8I7O

@Override

public Health health() {

return Health.up().withDetail("details", "{ 'internals' : 'getting close to limit', 'profile' : '" + this.configuration.getName() + "' }").status("itsok!").build();

}

}

1.36– Generate ServiceEvent class in the service package

package com.rollingstone.service;

import org.springframework.context.ApplicationEvent;

/\*\*

\* This is an optional class used in publishing application events.

\* This can be used to inject events into the Spring Boot audit management endpoint.

\*/

public class ShoppingCartServiceEvent extends ApplicationEvent {

public ShoppingCartServiceEvent(Object source) {

super(source);

}

public String toString() {

return "My UserService Event";

}

}

1.37– Generate AbstractRestController class in the rest.api package

package com.rollingstone.api.rest;

/\*\*

\* This class is meant to be the backbone of all other REst controllers. It contains common functionality such as exception handling etc.

\*/

//@ControllerAdvice?

public abstract class AbstractRestController implements ApplicationEventPublisherAware {

protected final Logger log = LoggerFactory.getLogger(this.getClass());

protected ApplicationEventPublisher eventPublisher;

protected static final String DEFAULT\_PAGE\_SIZE = "30";

protected static final String DEFAULT\_PAGE\_NUM = "0";

@ResponseStatus(HttpStatus.BAD\_REQUEST)

@ExceptionHandler(HTTP400Exception.class)

public

@ResponseBody

RestAPIExceptionInfo handleDataStoreException(HTTP400Exception ex, WebRequest request, HttpServletResponse response) {

log.info("Converting Data Store exception to RestResponse : " + ex.getMessage());

return new RestAPIExceptionInfo(ex, "The Request did not have correct parameters / body etc. Please check");

}

@ResponseStatus(HttpStatus.NOT\_FOUND)

@ExceptionHandler(HTTP404Exception.class)

public

@ResponseBody

RestAPIExceptionInfo handleResourceNotFoundException(HTTP404Exception ex, WebRequest request, HttpServletResponse response) {

log.info("ResourceNotFoundException handler:" + ex.getMessage());

return new RestAPIExceptionInfo(ex, "The Endpoint was not found.");

}

@Override

public void setApplicationEventPublisher(ApplicationEventPublisher applicationEventPublisher) {

this.eventPublisher = applicationEventPublisher;

}

//todo: replace with exception mapping

public static <T> T checkResourceFound(final T resource) {

if (resource == null) {

throw new HTTP404Exception("resource not found");

}

return resource;

}

}

1.39– Generate ProductRestController class in the rest.api package

package com.rollingstone.api.rest;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

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

import org.springframework.cloud.client.discovery.EnableDiscoveryClient;

import org.springframework.cloud.netflix.feign.EnableFeignClients;

import org.springframework.cloud.netflix.feign.FeignClient;

import org.springframework.data.domain.Page;

import org.springframework.http.HttpStatus;

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

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

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

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

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

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

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

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

import com.rollingstone.domain.ShoppingCart;

import com.rollingstone.domain.User;

import com.rollingstone.exception.HTTP400Exception;

import com.rollingstone.service.EcommShoppingCartService;

/\*

\* Demonstrates how to set up RESTful API endpoints using Spring MVC

\*/

@EnableDiscoveryClient

@RestController

@EnableFeignClients

@RequestMapping(value = "/shoppingcartservice/v1/cart")

public class ShoppingCartController extends AbstractRestController {

@Autowired

private EcommShoppingCartService cartService;

@Autowired

UserServiceClient userServiceClient;

@RequestMapping(value = "",

method = RequestMethod.POST,

consumes = {"application/json", "application/xml"},

produces = {"application/json", "application/xml"})

@ResponseStatus(HttpStatus.CREATED)

public void createUser(@RequestBody ShoppingCart cart,

HttpServletRequest request, HttpServletResponse response) {

ShoppingCart createdCart;

try {

createdCart = this.cartService.createCart(cart);

response.setHeader("Location", request.getRequestURL().append("/").append(createdCart.getId()).toString());

} catch (Exception e) {

response.setStatus(HttpStatus.BAD\_REQUEST.value());

}

}

@RequestMapping(value = "",

method = RequestMethod.GET,

produces = {"application/json", "application/xml"})

@ResponseStatus(HttpStatus.OK)

public

@ResponseBody

Page<ShoppingCart> getAllCarts(@RequestParam(value = "page", required = true, defaultValue = DEFAULT\_PAGE\_NUM) Integer page,

@RequestParam(value = "size", required = true, defaultValue = DEFAULT\_PAGE\_SIZE) Integer size,

HttpServletRequest request, HttpServletResponse response) {

return this.cartService.getAllCarts(page, size);

}

@RequestMapping(value = "/{id}",

method = RequestMethod.GET,

produces = {"application/json", "application/xml"})

@ResponseStatus(HttpStatus.OK)

public

@ResponseBody

ShoppingCart getCart(@PathVariable("id") Long id,

HttpServletRequest request, HttpServletResponse response) throws Exception {

ShoppingCart user = this.cartService.getCart(id);

checkResourceFound(user);

//todo: http://goo.gl/6iNAkz

return user;

}

@RequestMapping(value = "/{id}",

method = RequestMethod.PUT,

consumes = {"application/json", "application/xml"},

produces = {"application/json", "application/xml"})

@ResponseStatus(HttpStatus.NO\_CONTENT)

public void updateUser(@PathVariable("id") Long id, @RequestBody ShoppingCart user,

HttpServletRequest request, HttpServletResponse response) {

checkResourceFound(this.cartService.getCart(id));

if (id != user.getId()) throw new HTTP400Exception("ID doesn't match!");

this.cartService.updateCart(user);

}

//todo: @ApiImplicitParams, @ApiResponses

@RequestMapping(value = "/{id}",

method = RequestMethod.DELETE,

produces = {"application/json", "application/xml"})

@ResponseStatus(HttpStatus.NO\_CONTENT)

public void deleteUser(@PathVariable("id") Long id, HttpServletRequest request,

HttpServletResponse response) {

checkResourceFound(this.cartService.getCart(id));

this.cartService.deleteCart(id);

}

@FeignClient("user-service")

interface UserServiceClient {

@RequestMapping(method = RequestMethod.GET, value="/userservice/v1/users")

User getUser(@PathVariable("userId") String userId);

}

}

1.40– Create application.yml file under resources

### This is the main way to configure the application (other than annotations).

### This fils is in Yaml format but you can also do this using the traditional

### Java properties file.

server:

port: 8282

eureka:

client:

serviceUrl:

defaultZone: http://localhost:8761/eureka/

spring.jmx:

enabled: false

spring.datasource:

driverClassName: org.h2.Driver

url: jdbc:h2:mem:bootexample;MODE=MySQL

#todo: make sure to always enable security in production

security:

basic:

enabled: false

#management endpoints on a separate port

management:

port: 8091

security:

enabled: false # management port is internal only. no need to secure it.

#default project info followed by actual injected pom-specified values.

project:

name: spring-boot-rest-example

version: 0.1

description: boot-example default description

info:

build:

artifact: ${project.artifactId}

name: ${project.name}

description: ${project.description}

version: ${project.version}

user.service:

name: 'default profile:'

---

spring:

profiles: test

spring.jpa:

hibernate.ddl-auto: create-drop

user.service:

name: 'test profile:'

---

spring:

profiles: mysql

datasource:

driverClassName: com.mysql.jdbc.Driver

url: jdbc:mysql://localhost/ecommerce

username: root

password: root

jpa:

hibernate:

dialect: org.hibernate.dialect.MySQLInnoDBDialect

ddl-auto: update # todo: in non-dev environments, comment this out:

user.service:

name: 'test profile:'

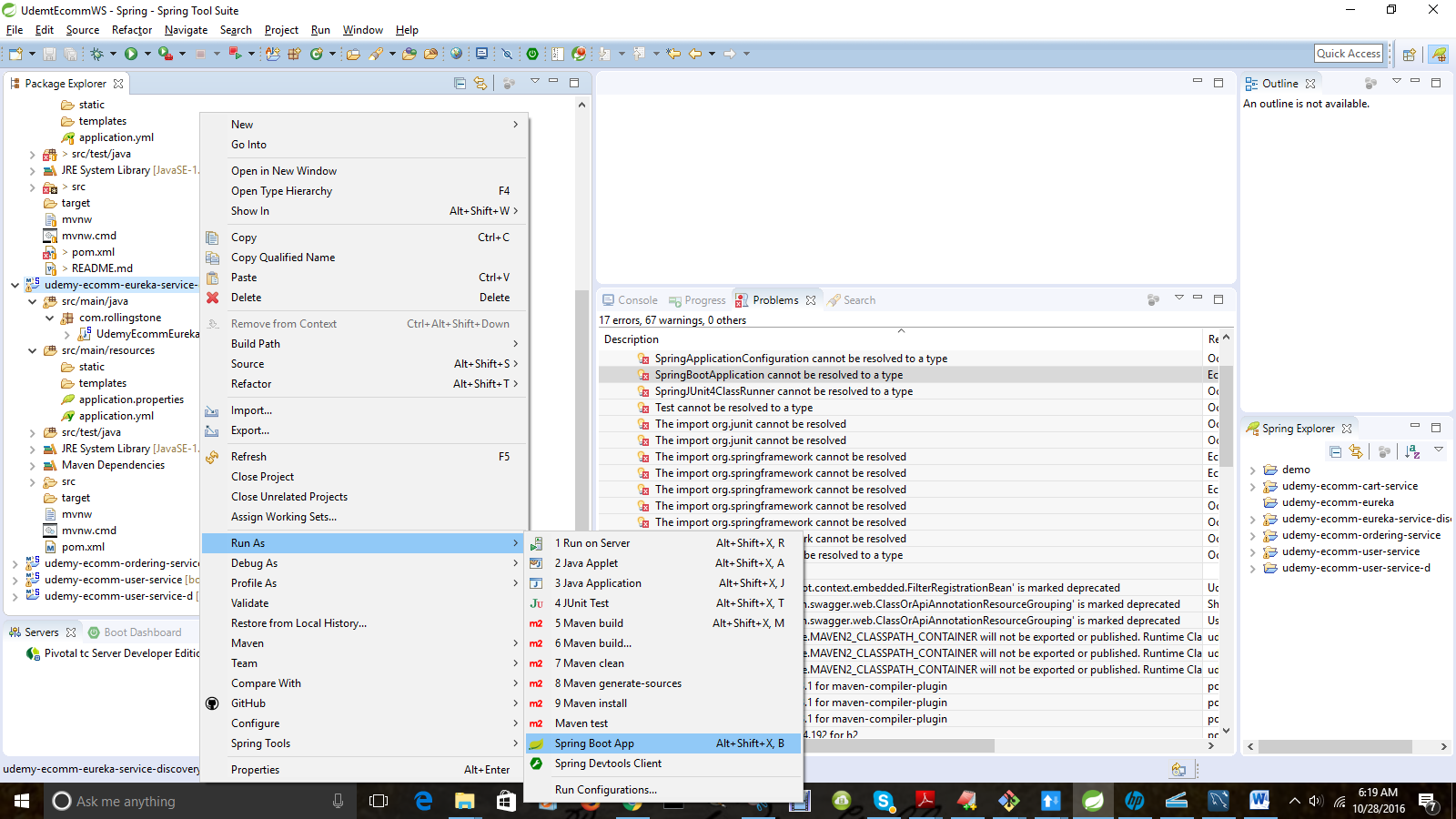
1.41– Add bootstrap.yml file in the resources folder

spring:

application:

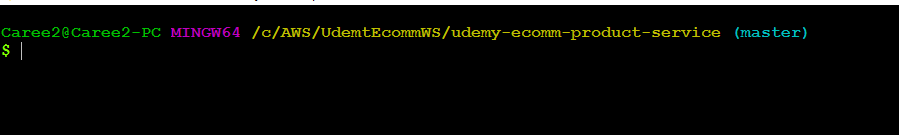
name: cart-service

1.34– Run the Eureka Discovery Server



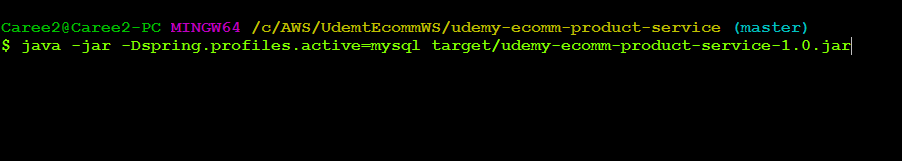


1.35– Open Git bash in the project directory

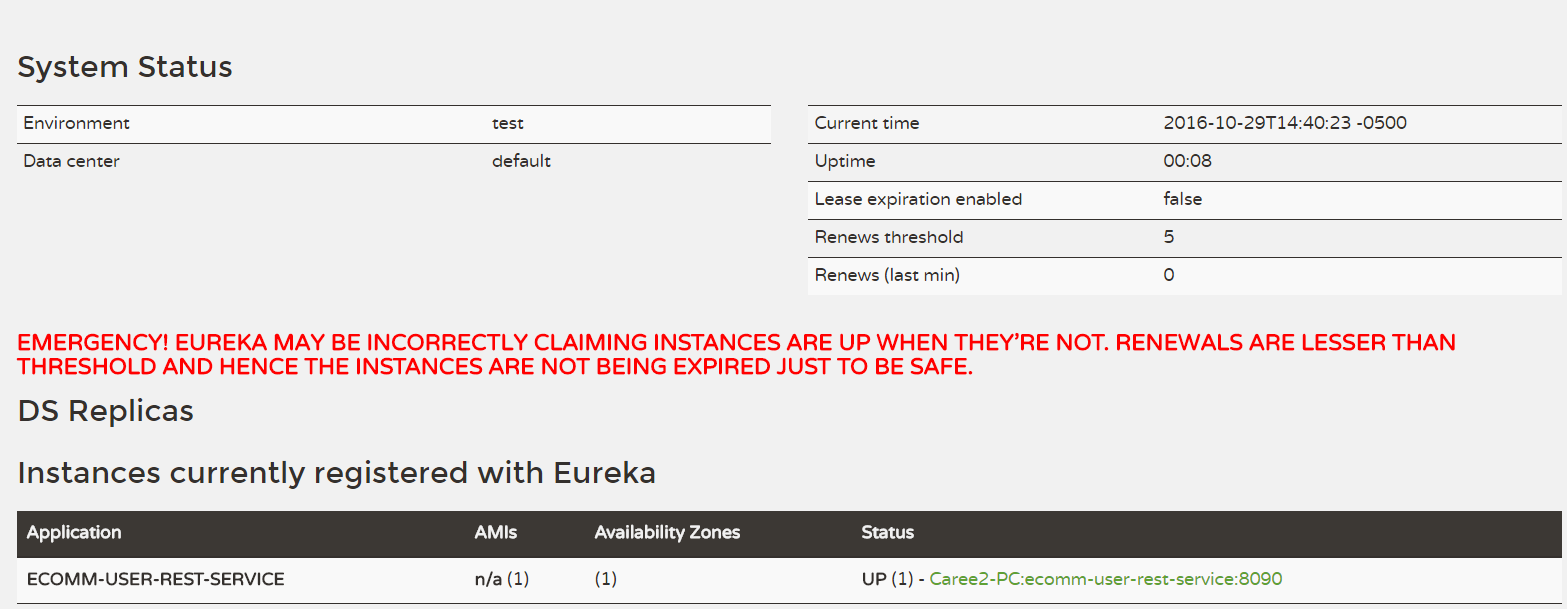


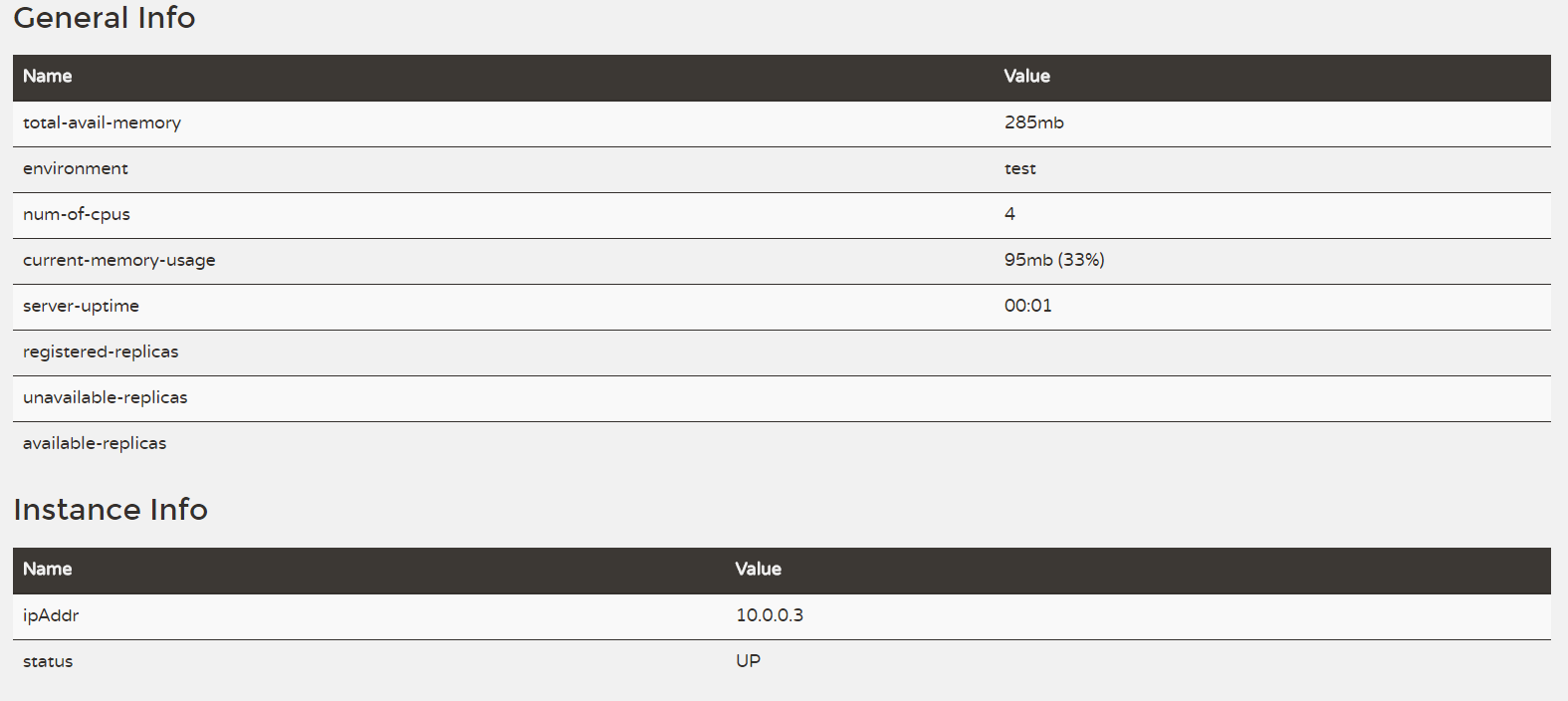
1.36– Run the project

NOTE : First run mvn clean package

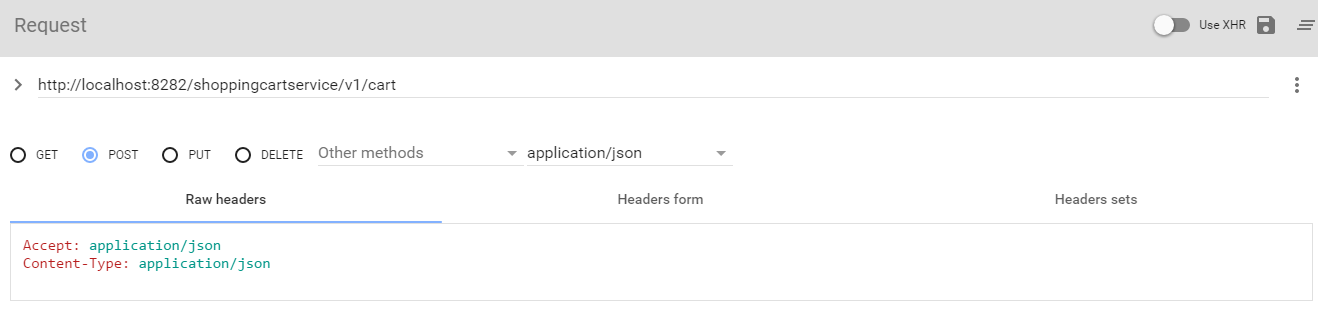


1.37 – Navigate to <http://localhost:8761>

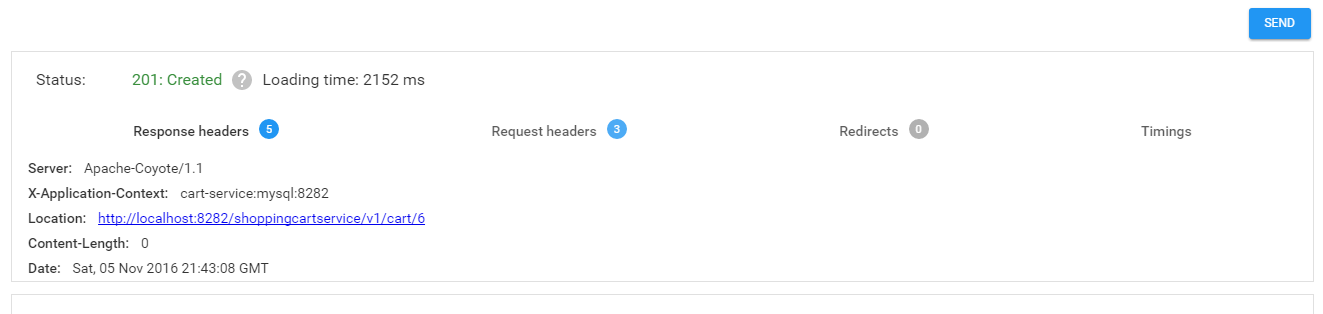




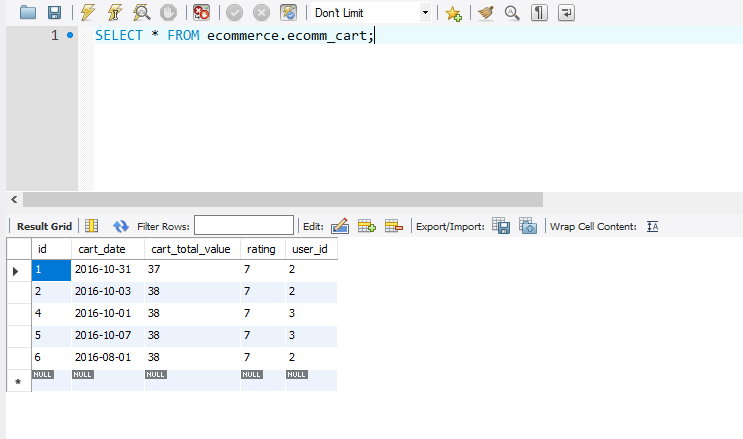
1.38– Create a ShoppingCart







1.39– Verify in MySQL Workbench

















































































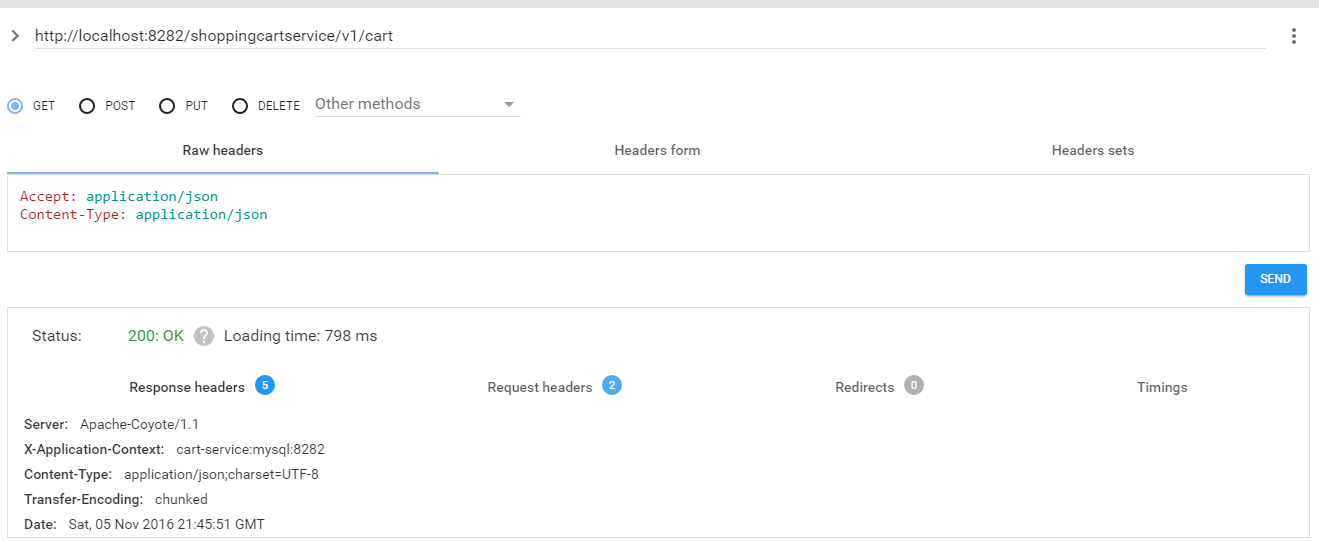






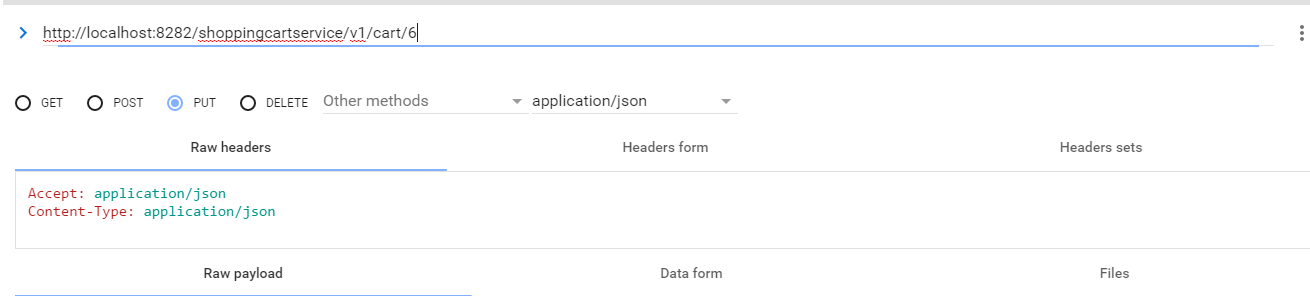


1.41—Try GET Request

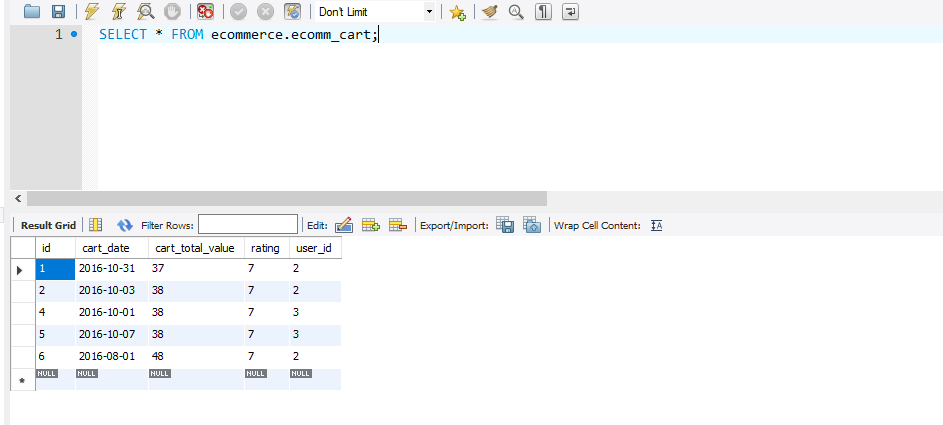




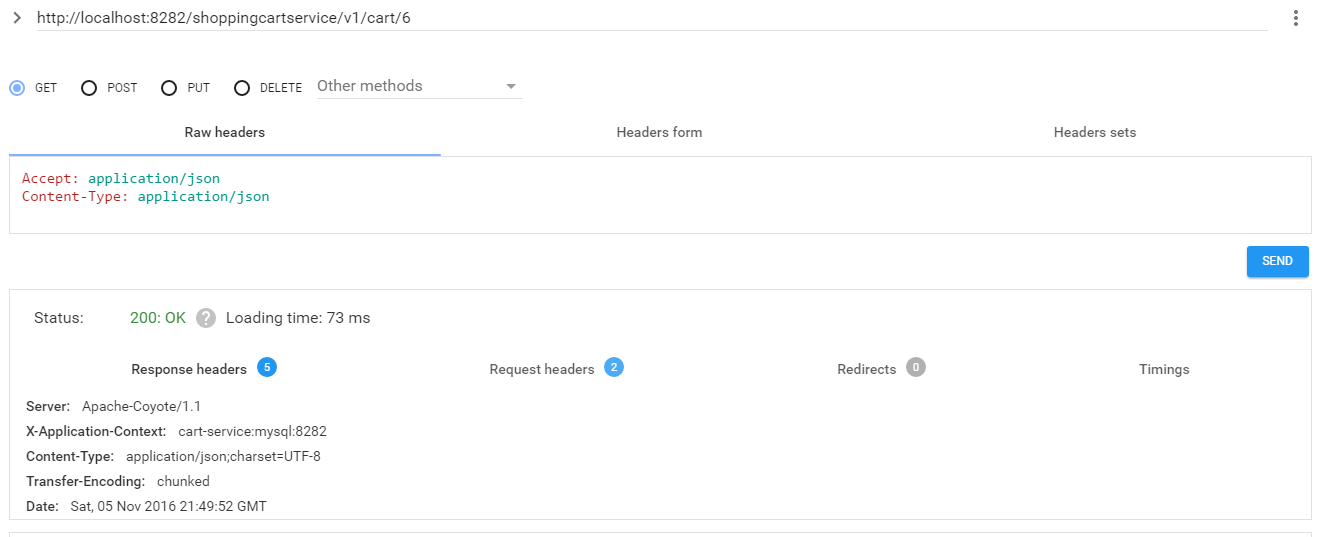
1.42—Try to Update a Record

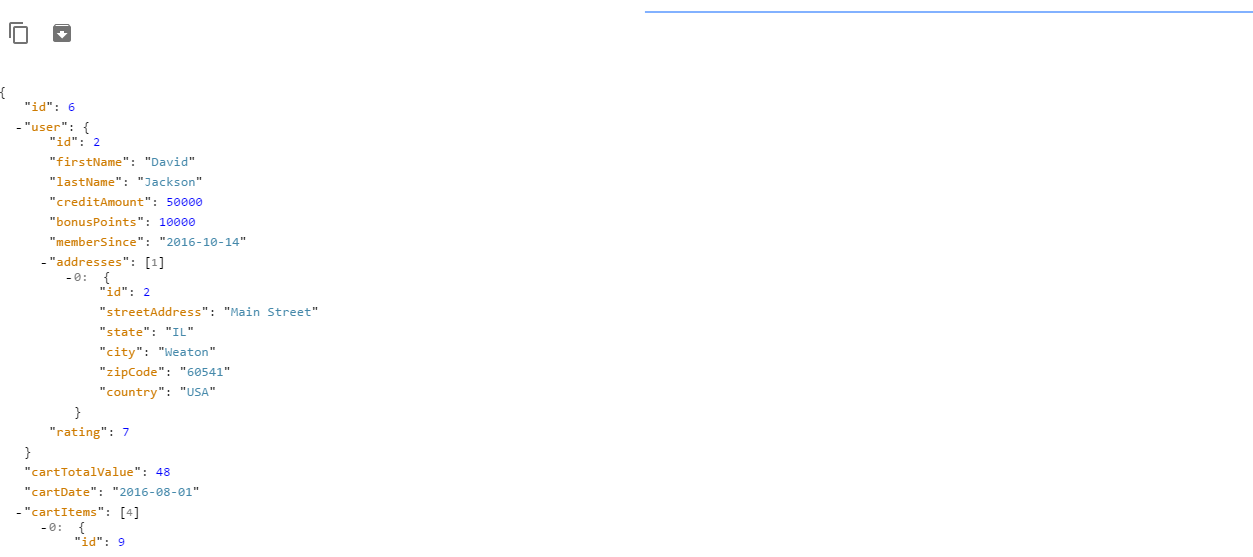




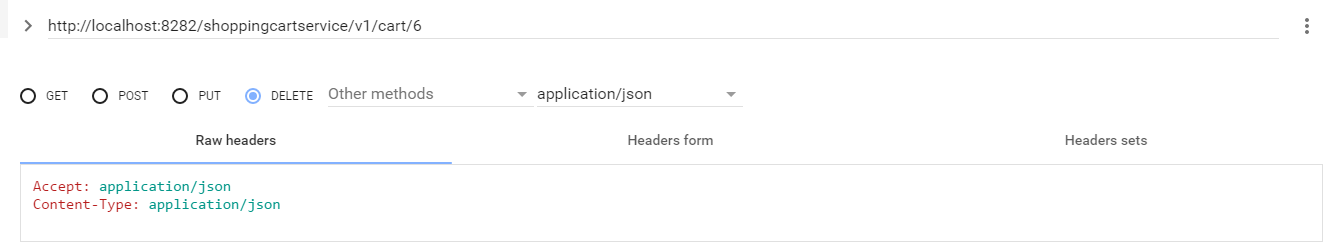


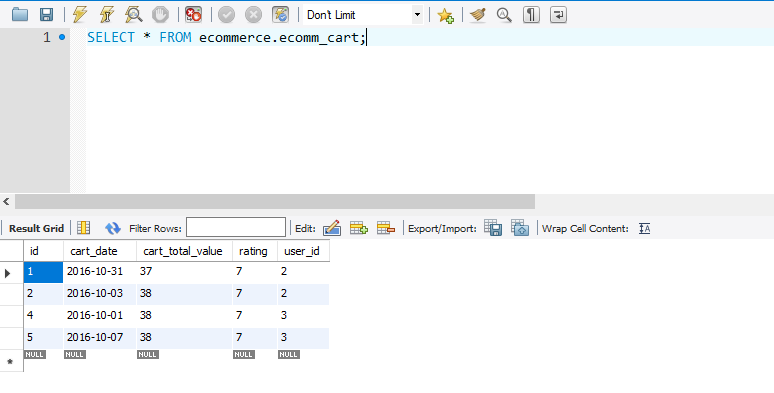
1.43 – Try to get a single ShoppingCart





1.44 – Try to delete a single ShoppingCart





1.45 –HAL Browser



1.47 – Swagger UI



1.48 – Conclusion

This document listed the steps as well as provided the explanation of creating a Spring Boot application based on Spring Cloud Service Discovery as well as JPA.