

# Web API Design with SpringBoot Week 2 Coding Assignment

**Points possible:** 70

Category	Criteria	% of Grade
<b>Functionality</b>	Does the code work?	25
<b>Organization</b>	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
<b>Creativity</b>	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
<b>Completeness</b>	All requirements of the assignment are complete.	25

**Instructions:** In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your Java project code, to the repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

## Coding Steps:

Follow the tutorial in the homework section to build an API. Paste screenshots of your code and your postman requests and responses to show the API works. Push your project to GitHub and paste the link below.

## Screenshots of Code:

```
1 package com.promineotech.inventoryManagement.util;
2
3 public enum MembershipLevel {
4
5     SILVER(.05),
6     GOLD(.10),
7     DIAMOND(.15),
8     PLATINUM(.20);
9
10    private double discount;
11
12    MembershipLevel(double discount) {
13        this.discount = discount;
14    }
15    public double getDiscount() {
16        return discount;
17    }
18
19
20 }
```

```
1 package com.promineotech.inventoryManagement;
2
3 import org.springframework.boot.SpringApplication;
4 import org.springframework.boot.autoconfigure.SpringBootApplication;
5 import org.springframework.context.annotation.ComponentScan;
6
7 @ComponentScan("com.promineotech.inventoryManagement")
8 @SpringBootApplication
9 public class App {
10
11    public static void main( String[] args ) {
12        SpringApplication.run(App.class, args);
13    }
14
15
16
17
18 }
```

```
1 package com.promineotech.inventoryManagement.util;
2
3 public enum OrderStatus {
4
5     ORDERED,
6     DELIVERED,
7     CANCELLED;
8
9 }
```

OrderService.java

```

1 package com.prominotech.inventoryManagement.service;
2
3 import java.time.LocalDate;
4 import java.util.HashSet;
5 import java.util.Set;
6
7 import org.apache.logging.log4j.LogManager;
8 import org.apache.logging.log4j.Logger;
9 import org.springframework.beans.factory.annotation.Autowired;
10 import org.springframework.stereotype.Service;
11
12 import com.prominotech.inventoryManagement.entity.Customer;
13 import com.prominotech.inventoryManagement.entity.Orders;
14 import com.prominotech.inventoryManagement.entity.Product;
15 import com.prominotech.inventoryManagement.repository.CustomerRepository;
16 import com.prominotech.inventoryManagement.repository.OrderRepository;
17 import com.prominotech.inventoryManagement.repository.ProductRepository;
18 import com.prominotech.inventoryManagement.util.MembershipLevel;
19 import com.prominotech.inventoryManagement.util.OrderStatus;
20
21 @Service
22 public class OrderService {
23
24     private static final Logger logger = LogManager.getLogger(OrderService.class);
25     private final int DELIVERY_DAYS = 7;
26
27     @Autowired
28     private OrderRepository repo;
29
30     @Autowired
31     private CustomerRepository customerRepo;
32
33     @Autowired
34     private ProductRepository productRepo;
35
36     public Orders submitNewOrder(Set<Long> productIds, Long customerId) throws Exception {
37         try {
38             Customer customer = customerRepo.findById(customerId);
39             Orders order = initializeNewOrder(productIds, customer);
40             repo.save(order);
41         } catch (Exception e) {
42             logger.error("Exception occurred while trying to create new order for customer: " + customerId, e);
43             throw e;
44         }
45     }
46
47     public Orders cancelOrder(Long orderId) throws Exception {
48         try {
49             Orders order = repo.findOne(orderId);
50             order.setStatus(OrderStatus.CANCELLED);
51             return repo.save(order);
52         } catch (Exception e) {
53             logger.error("Exception occurred while trying to cancel order: " + orderId, e);
54             throw new Exception("Unable to update order.");
55         }
56     }
57
58     public Orders completeOrder(Long orderId) throws Exception {
59         try {
60             Orders order = repo.findOne(orderId);
61             order.setStatus(OrderStatus.DELIVERED);
62             repo.save(order);
63         } catch (Exception e) {
64             logger.error("Exception occurred while trying to complete order: " + orderId, e);
65             throw new Exception("Unable to update order.");
66         }
67     }
68
69     private Orders initializeNewOrder(Set<Long> productIds, Customer customer) {
70         Orders order = new Orders();
71         order.setProducts(convertToProductSet(productRepo.findAll(productIds)));
72         order.setOrdered(LocalDate.now());
73         order.setEstimatedDelivery(LocalDate.now().plusDays(DELIVERY_DAYS));
74         order.setCustomer(customer);
75         order.setInvoiceAmount(calculateOrderTotal(order.getProducts(), customer.getLevel()));
76         order.setStatus(OrderStatus.ORDERED);
77         addOrderToProducts(order);
78         return order;
79     }
80
81     private void addOrderToProducts(Orders order) {
82         Set<Product> products = order.getProducts();
83         for (Product product : products) {
84             product.getOrders().add(order);
85         }
86     }
87
88     private Set<Product> convertToProductSet(Iterable<Product> iterable) {
89         Set<Product> set = new HashSet<Product>();
90         for (Product product : iterable) {
91             set.add(product);
92         }
93         return set;
94     }
95
96     private double calculateOrderTotal(Set<Product> products, MembershipLevel level) {
97         double total = 0;
98         for (Product product : products) {
99             total += product.getPrice();
100        }
101        if (level == null) {
102            return total;
103        } else {
104            return total - total * level.getDiscount();
105        }
106    }
107 }
108
109 
```

Orders.java

```

1 package com.prominotech.inventoryManagement.entity;
2
3 import java.time.LocalDate;
4 import java.util.Set;
5
6 import javax.persistence.Entity;
7 import javax.persistence.GeneratedValue;
8 import javax.persistence.GenerationType;
9 import javax.persistence.Id;
10 import javax.persistence.JoinColumn;
11 import javax.persistence.ManyToOne;
12 import javax.persistence.ManyToOne;
13
14 import com.fasterxml.jackson.annotation.JsonIgnore;
15 import com.prominotech.inventoryManagement.util.OrderStatus;
16
17 @Entity
18 public class Orders {
19
20     private Long id;
21     private LocalDate ordered;
22     private LocalDate estimatedDelivery;
23     private LocalDate delivered;
24     private double invoiceAmount;
25     private OrderStatus status;
26     private Set<Product> products;
27
28     @JsonIgnore
29     private Customer customer;
30
31     @Id
32     @GeneratedValue(strategy = GenerationType.AUTO)
33     public Long getId() {
34         return id;
35     }
36
37     public void setId(Long id) {
38         this.id = id;
39     }
40
41     public LocalDate getOrdered() {
42         return ordered;
43     }
44
45     public void setOrdered(LocalDate ordered) {
46         this.ordered = ordered;
47     }
48
49     public LocalDate getEstimatedDelivery() {
50         return estimatedDelivery;
51     }
52
53     public void setEstimatedDelivery(LocalDate estimatedDelivery) {
54         this.estimatedDelivery = estimatedDelivery;
55     }
56
57     public LocalDate getDelivered() {
58         return delivered;
59     }
60
61     public void setDelivered(LocalDate delivered) {
62         this.delivered = delivered;
63     }
64
65     public double getInvoiceAmount() {
66         return invoiceAmount;
67     }
68
69     public void setInvoiceAmount(double invoiceAmount) {
70         this.invoiceAmount = invoiceAmount;
71     }
72
73     @ManyToOne(mappedBy = "orders")
74     public Set<Product> getProducts() {
75         return products;
76     }
77
78     public void setProducts(Set<Product> products) {
79         this.products = products;
80     }
81
82     @ManyToOne
83     @JoinColumn(name = "customerId")
84     public Customer getCustomer() {
85         return customer;
86     }
87
88     public void setCustomer(Customer customer) {
89         this.customer = customer;
90     }
91
92     public OrderStatus getStatus() {
93         return status;
94     }
95
96     public void setStatus(OrderStatus status) {
97         this.status = status;
98     }
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```

**Customer.java**

```

1 package com.promineotech.inventoryManagement.service;
2
3 import org.apache.logging.log4j.LogManager;
4 import org.apache.logging.log4j.Logger;
5 import org.springframework.beans.factory.annotation.Autowired;
6 import org.springframework.stereotype.Service;
7
8 import com.promineotech.inventoryManagement.entity.Product;
9 import com.promineotech.inventoryManagement.repository.ProductRepository;
10
11 @Service
12 public class ProductService {
13
14     private static final Logger logger = LogManager.getLogger(ProductService.class);
15
16     @Autowired
17     private ProductRepository repo;
18
19     public Iterable<Product> getProducts() {
20         return repo.findAll();
21     }
22
23     public Product createProduct(Product product) {
24         return repo.save(product);
25     }
26
27     public Product updateProduct(Product product, Long id) throws Exception {
28         try {
29             Product oldProduct = repo.findById(id);
30             oldProduct.setDescription(product.getDescription());
31             oldProduct.setPrice(product.getPrice());
32             return repo.save(oldProduct);
33         } catch (Exception e) {
34             logger.error("Exception occurred while trying to update product: " + id, e);
35         }
36     }
37
38     public void removeProduct(Long id) throws Exception {
39         try {
40             repo.deleteById(id);
41         } catch (Exception e) {
42             logger.error("Exception occurred while trying to delete product: " + id, e);
43         }
44     }
45
46 }
47
48 }
```

**Product.java**

```

1 package com.promineotech.inventoryManagement.entity;
2
3 import java.util.Set;
4
5 @Entity
6 public class Product {
7
8     private Long id;
9     private String name;
10    private String description;
11    private double price;
12
13    @JsonIgnore
14    private Set<Orders> orders;
15
16    @Id
17    @GeneratedValue(strategy = GenerationType.AUTO)
18    public Long getId() {
19        return id;
20    }
21
22    public void setId(Long id) {
23        this.id = id;
24    }
25
26    public String getName() {
27        return name;
28    }
29
30    public void setName(String name) {
31        this.name = name;
32    }
33
34    public String getDescription() {
35        return description;
36    }
37
38    public void setDescription(String description) {
39        this.description = description;
40    }
41
42    public double getPrice() {
43        return price;
44    }
45
46    public void setPrice(double price) {
47        this.price = price;
48    }
49
50    @ManyToMany(cascade = CascadeType.ALL)
51    @JoinTable(name = "product_order",
52    joinColumns = @JoinColumn(name = "productId", referencedColumnName = "id"),
53    inverseJoinColumns = @JoinColumn(name = "orderId", referencedColumnName = "id"))
54    public Set<Orders> getOrders() {
55        return orders;
56    }
57
58    public void setOrders(Set<Orders> orders) {
59        this.orders = orders;
60    }
61
62 }
```

**ProductService.java**

```

1 package com.promineotech.inventoryManagement.service;
2
3 import org.apache.logging.log4j.LogManager;
4 import org.apache.logging.log4j.Logger;
5 import org.springframework.beans.factory.annotation.Autowired;
6 import org.springframework.stereotype.Service;
7
8 import com.promineotech.inventoryManagement.entity.Product;
9 import com.promineotech.inventoryManagement.repository.ProductRepository;
10
11 @Service
12 public class ProductService {
13
14     private static final Logger logger = LogManager.getLogger(ProductService.class);
15
16     @Autowired
17     private ProductRepository repo;
18
19     public Iterable<Product> getProducts() {
20         return repo.findAll();
21     }
22
23     public Product createProduct(Product product) {
24         return repo.save(product);
25     }
26
27     public Product updateProduct(Product product, Long id) throws Exception {
28         try {
29             Product oldProduct = repo.findById(id);
30             oldProduct.setDescription(product.getDescription());
31             oldProduct.setPrice(product.getPrice());
32             return repo.save(oldProduct);
33         } catch (Exception e) {
34             logger.error("Exception occurred while trying to update product: " + id, e);
35         }
36     }
37
38     public void removeProduct(Long id) throws Exception {
39         try {
40             repo.deleteById(id);
41         } catch (Exception e) {
42             logger.error("Exception occurred while trying to delete product: " + id, e);
43         }
44     }
45
46 }
47
48 }
```

**ProductController.java**

```

1 package com.promineotech.inventoryManagement.controller;
2
3 import org.springframework.beans.factory.annotation.Autowired;
4
5 @RestController
6 @RequestMapping("/products")
7 public class ProductController {
8
9     @Autowired
10    private ProductService service;
11
12    @RequestMapping(method=RequestMethod.GET)
13    public ResponseEntity<Object> getProducts() {
14        return new ResponseEntity<Object>(service.getProducts(), HttpStatus.OK);
15    }
16
17    @RequestMapping(method=RequestMethod.POST)
18    public ResponseEntity<Object> createProduct(@RequestBody Product product) {
19        return new ResponseEntity<Object>(service.createProduct(product), HttpStatus.CREATED);
20    }
21
22    @RequestMapping(value="/{id}", method=RequestMethod.PUT)
23    public ResponseEntity<Object> updateProduct(@RequestBody Product product, @PathVariable Long id){
24        try {
25            return new ResponseEntity<Object>(service.updateProduct(product,id), HttpStatus.OK);
26        } catch (Exception e) {
27            return new ResponseEntity<Object>("Unable to update product.", HttpStatus.BAD_REQUEST);
28        }
29    }
30
31    @RequestMapping(value="/{id}", method=RequestMethod.DELETE)
32    public ResponseEntity<Object> deleteProduct (@PathVariable Long id) {
33        try {
34            service.removeProduct(id);
35            return new ResponseEntity<Object>("Successfully deleted product with id: " + id, HttpStatus.OK);
36        } catch (Exception e) {
37            return new ResponseEntity<Object>("Unable to delete product.", HttpStatus.BAD_REQUEST);
38        }
39    }
40
41
42 }
```

**Address.java**

```

1 package com.promineotech.inventoryManagement.entity;
2
3 import javax.persistence.Entity;
4 import javax.persistence.GeneratedValue;
5 import javax.persistence.GenerationType;
6 import javax.persistence.Id;
7 import javax.persistence.OneToOne;
8
9 import com.fasterxml.jackson.annotation.JsonIgnore;
10
11 @Entity
12 public class Address {
13
14     private Long id;
15     private String street;
16     private String city;
17     private String state;
18     private String zip;
19
20     @JsonIgnore
21     private Customer customer;
22
23     @Id
24     @GeneratedValue(strategy = GenerationType.AUTO)
25     public Long getId() {
26         return id;
27     }
28
29     public void setId(Long id) {
30         this.id = id;
31     }
32
33     public String getStreet() {
34         return street;
35     }
36
37     public void setStreet(String street) {
38         this.street = street;
39     }
40
41     public String getCity() {
42         return city;
43     }
44
45     public void setCity(String city) {
46         this.city = city;
47     }
48
49     public String getState() {
50         return state;
51     }
52
53     public void setState(String state) {
54         this.state = state;
55     }
56
57     public String getZip() {
58         return zip;
59     }
60
61     public void setZip(String zip) {
62         this.zip = zip;
63     }
64
65     @OneToOne(mappedBy = "address")
66     public Customer getCustomer() {
67         return customer;
68     }
69
70     public void setCustomer(Customer customer) {
71         this.customer = customer;
72     }
73
74
75 }
```

**ProductRepository.java**

```

1 package com.promineotech.inventoryManagement.repository;
2
3 import com.promineotech.inventoryManagement.entity.Product;
4
5 public interface ProductRepository extends JpaRepository<Product, Long> {
6
7 }
```

The screenshot shows the Eclipse IDE interface with two code editors open. The left editor contains the `Customer.java` file, which defines a simple Customer class with a constructor and a getCustomer() method. The right editor contains the `CustomerController.java` file, which is annotated with `@RestController` and `@RequestMapping`. It includes methods for getting, creating, updating, and deleting customers, each returning a `ResponseEntity<Object>`.

```
Customer.java
1 package com.prominotech.inventoryManagement.controller;
2
3 import org.springframework.beans.factory.annotation.Autowired;
4
5 @RestController
6 @RequestMapping("/customers")
7 public class CustomerController {
8
9     @Autowired
10    private CustomerService service;
11
12    @RequestMapping(value="/{id}", method=RequestMethod.GET)
13    public ResponseEntity<Object> getCustomer(@PathVariable Long id) {
14        try {
15            return new ResponseEntity<Object>(service.getCustomerById(id), HttpStatus.OK);
16        } catch (Exception e) {
17            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
18        }
19    }
20
21    @RequestMapping(method=RequestMethod.GET)
22    public ResponseEntity<Object> getCustomers() {
23        return new ResponseEntity<Object>(service.getCustomers(), HttpStatus.OK);
24    }
25
26    @RequestMapping(method=RequestMethod.POST)
27    public ResponseEntity<Object> createCustomer(@RequestBody Customer customer) {
28        return new ResponseEntity<Object>(service.createCustomer(customer), HttpStatus.CREATED);
29    }
30
31    @RequestMapping(value="/{id}", method=RequestMethod.PUT)
32    public ResponseEntity<Object> updateCustomer(@RequestBody Customer customer, @PathVariable Long id) {
33        try {
34            return new ResponseEntity<Object>(service.updateCustomer(customer, id), HttpStatus.OK);
35        } catch (Exception e) {
36            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
37        }
38    }
39
40    @RequestMapping(value="/{id}", method=RequestMethod.DELETE)
41    public ResponseEntity<Object> deleteCustomer(@PathVariable Long id) {
42        try {
43            service.deleteCustomer(id);
44            return new ResponseEntity<Object>("Successfully deleted customer with id: " + id, HttpStatus.OK);
45        } catch (Exception e) {
46            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
47        }
48    }
49
50 }
51
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96
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98
99
100 }
```

```
CustomerController.java
1 package com.prominotech.inventoryManagement.controller;
2
3 import org.springframework.beans.factory.annotation.Autowired;
4
5 @RestController
6 @RequestMapping("/customers")
7 public class CustomerController {
8
9     @Autowired
10    private CustomerService service;
11
12    @RequestMapping(value="/{id}", method=RequestMethod.GET)
13    public ResponseEntity<Object> getCustomer(@PathVariable Long id) {
14        try {
15            return new ResponseEntity<Object>(service.getCustomerById(id), HttpStatus.OK);
16        } catch (Exception e) {
17            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
18        }
19    }
20
21    @RequestMapping(method=RequestMethod.GET)
22    public ResponseEntity<Object> getCustomers() {
23        return new ResponseEntity<Object>(service.getCustomers(), HttpStatus.OK);
24    }
25
26    @RequestMapping(method=RequestMethod.POST)
27    public ResponseEntity<Object> createCustomer(@RequestBody Customer customer) {
28        return new ResponseEntity<Object>(service.createCustomer(customer), HttpStatus.CREATED);
29    }
30
31    @RequestMapping(value="/{id}", method=RequestMethod.PUT)
32    public ResponseEntity<Object> updateCustomer(@RequestBody Customer customer, @PathVariable Long id) {
33        try {
34            return new ResponseEntity<Object>(service.updateCustomer(customer, id), HttpStatus.OK);
35        } catch (Exception e) {
36            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
37        }
38    }
39
40    @RequestMapping(value="/{id}", method=RequestMethod.DELETE)
41    public ResponseEntity<Object> deleteCustomer(@PathVariable Long id) {
42        try {
43            service.deleteCustomer(id);
44            return new ResponseEntity<Object>("Successfully deleted customer with id: " + id, HttpStatus.OK);
45        } catch (Exception e) {
46            return new ResponseEntity<Object>(e.getMessage(), HttpStatus.NOT_FOUND);
47        }
48    }
49
50 }
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97
98
99
100 }
```

```
Customer.java
1 package com.promineotech.inventoryManagement.entity;
2
3 import java.util.Set;
4
5 @Entity
6 public class Customer {
7
8
9     private Long id;
10    private String firstName;
11    private String lastName;
12    private Address address;
13    private MembershipLevel level;
14    private Set<Orders> orders;
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29    @Id
30    @GeneratedValue(strategy=GenerationType.AUTO)
31    public Long getId() {
32        return id;
33    }
34    public void setId(Long id) {
35        this.id = id;
36    }
37    public String getFirstName() {
38        return firstName;
39    }
40    public void setFirstName(String firstName) {
41        this.firstName = firstName;
42    }
43    public String getLastName() {
44        return lastName;
45    }
46    public void setLastName(String lastName) {
47        this.lastName = lastName;
48    }
49
50    @OneToOne(cascade = CascadeType.ALL)
51    @JoinColumn(name = "id")
52    public Address getAddress() {
53        return address;
54    }
55    public void setAddress(Address address) {
56        this.address = address;
57    }
58    public MembershipLevel getLevel() {
59        return level;
60    }
61    public void setLevel(MembershipLevel level) {
62        this.level = level;
63    }
64
65    @OneToMany(mappedBy="customer")
66    public Set<Orders> getOrders() {
67        return orders;
68    }
69    public void setOrders(Set<Orders> orders) {
70        this.orders = orders;
71    }
72
73
74 }
```

```
CustomerService.java [x] Customer.java [x] CustomerController.java
1 package com.promineotech.inventoryManagement.service;
2
3 import org.apache.logging.log4j.LogManager;
4 import org.apache.logging.log4j.Logger;
5 import org.springframework.beans.factory.annotation.Autowired;
6 import org.springframework.stereotype.Service;
7
8 import com.promineotech.inventoryManagement.entity.Customer;
9 import com.promineotech.inventoryManagement.repository.CustomerRepository;
10
11 @Service
12 public class CustomerService {
13
14     private static final Logger logger = LogManager.getLogger(CustomerService.class);
15
16     @Autowired
17     private CustomerRepository repo;
18
19     public Customer getCustomerById(Long id) throws Exception {
20         try {
21             return repo.findById(id);
22         } catch (Exception e) {
23             logger.error("Exception occurred while trying to retrieve customer: " + id, e);
24         }
25     }
26
27
28     public Iterable<Customer> getCustomers() {
29         return repo.findAll();
30     }
31
32     public Customer createCustomer(Customer customer) {
33         return repo.save(customer);
34     }
35
36     public Customer updateCustomer(Customer customer, Long id) throws Exception {
37         try {
38             Customer oldCustomer = repo.findById(id);
39             oldCustomer.setAddress(customer.getAddress());
40             oldCustomer.setFirstName(customer.getFirstName());
41             oldCustomer.setLastName(customer.getLastName());
42             oldCustomer.setLevel(customer.getLevel());
43             return repo.save(oldCustomer);
44         } catch (Exception e) {
45             logger.error("Exception occurred while trying to update customer: " + id, e);
46         }
47     }
48
49
50     public void deleteCustomer(Long id) throws Exception {
51         try {
52             repo.deleteById(id);
53         } catch (Exception e) {
54             logger.error("Exception occurred while trying to delete customer: " + id, e);
55         }
56     }
57
58 }

```

```
Project Explorer log4j2.xml
1<?xml version="1.0" encoding="UTF-8"?>
2<Configuration status="WARN" monitorInterval="30">
3    <Properties>
4        <Property name="LOG_PATTERN">
5            %d{YYYY-MM-DD HH:mm:ss.SSS} %5p ${hostName}
6            [%15.15t] %-40.40c(%1) : %n%ex
7        </Property>
8    </Properties>
9    <Appenders>
10        <Console name="ConsoleAppender" target="SYSTEM_OUT"
11            follow="true"
12            patternLayout pattern="${LOG_PATTERN}" />
13        <Console name="FileAppender"
14            fileName="logs/log4j2-example.log"
15            filePattern="logs\log4j2-example-%d{yyyy-MM-dd}-%i.log"
16            >patternLayout pattern="${LOG_PATTERN}" /<Pattern>
17            <PatternLayout>
18                <sizeBasedTriggeringPolicies size="10MB" />
19            </PatternLayout>
20        <Policies>
21            <defaultRolloverStrategy max="10" />
22        </Policies>
23    </FileAppender>
24    <RollingFile name="FileAppender"
25        >fileName="logs/log4j2-example.log"
26        >filePattern="logs\log4j2-example-%d{yyyy-MM-dd}-%i.log"
27        >patternLayout pattern="${LOG_PATTERN}" /<Pattern>
28        <PatternLayout>
29            <sizeBasedTriggeringPolicies size="10MB" />
30        </PatternLayout>
31    </RollingFile>
32    <Appenders>
33        <Logger name="com.example.log4j2example" level="debug"
34            additivity="false" />
35        <AppenderRef ref="ConsoleAppender" />
36    </Loggers>
37</Configuration>
```

```
J Customer.java J App.java *application.properties x
1 spring.datasource.url=jdbc:mysql://localhost/inventory_api
2 spring.datasource.username=root
3 spring.datasource.password=fakePassword1
4 spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
5
6 spring.jpa.hibernate.ddl-auto=update
7 spring.jpa.show-sql=true
8 spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL5Dialect
9 spring.jpa.properties.hibernate.globally_quoted_identifiers=true
10 |
```

## Screenshots of Running Application:

This image displays a grid of 16 screenshots from the Postman application, illustrating various API interactions for a music store system. The screenshots show requests and responses for creating customers, products, and orders, as well as updating product descriptions and order statuses.

The requests shown in the screenshots include:

- Customer Creation:** POST /customers. Request body: { "name": "Bass", "description": "4/4 Size", "price": 20000.0 }
- Product Creation:** POST /products. Request body: { "id": 1, "name": "Cello", "description": "4/4 Size", "price": 10000.0 }
- Product Update:** PUT /products/1. Request body: { "name": "Violin", "description": "4/4 Size", "price": 9000.0 }
- Order Creation:** POST /customers/1/orders. Request body: { "id": 1, "customer": "Abigail", "address": { "street": "987 Main St", "city": "Manchester", "state": "NH", "zip": "03107" }, "level": "DIAMOND", "orders": [] }
- Order Update:** PUT /customers/1/orders/1. Request body: { "status": "PENDING" }
- Order Status Update:** PUT /customers/1/orders/1. Request body: { "status": "DELIVERED" }
- Order Details:** GET /customers/1/orders. Response body: [ { "id": 1, "customer": "Abigail", "address": { "street": "987 Main St", "city": "Manchester", "state": "NH", "zip": "03107" }, "level": "DIAMOND", "orders": [ { "id": 1, "customer": "Abigail", "address": { "street": "987 Main St", "city": "Manchester", "state": "NH", "zip": "03107" }, "level": "DIAMOND", "orderDetails": [ { "product": { "id": 1, "name": "Cello", "description": "4/4 Size", "price": 10000.0 } ] } ] } ]
- Customer Details:** GET /customers/1. Response body: { "id": 1, "name": "Abigail", "lastName": "Aeson", "address": { "street": "987 Main St", "city": "Manchester", "state": "NH", "zip": "03107" }, "level": "DIAMOND", "orders": [ { "id": 1, "customer": "Abigail", "address": { "street": "987 Main St", "city": "Manchester", "state": "NH", "zip": "03107" }, "level": "DIAMOND", "orderDetails": [ { "product": { "id": 1, "name": "Cello", "description": "4/4 Size", "price": 10000.0 } ] } ] }

```
mysql> select * from customer;
+----+-----+-----+-----+
| id | first_name | last_name | level |
+----+-----+-----+-----+
| 1 | Jennifer | Johnson | 0 |
| 2 | Mary | Miller | 1 |
| 3 | Bob | Bagman | 3 |
| 4 | Abigail | Ameson | 2 |
+----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> select * from product;
+----+-----+-----+-----+
| id | description | name | price |
+----+-----+-----+-----+
| 1 | 4/4 Size | Cello | 10000 |
| 2 | 4/4 Size | Violin | 9000 |
| 3 | 4/4 Size | Viola | 8000 |
| 4 | 4/4 Size | Bass | 20000 |
+----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> select * from address;
+----+-----+-----+-----+
| id | city | state | street | zip |
+----+-----+-----+-----+
| 1 | Nashua | NH | 123 Main St | 03060 |
| 2 | Boston | MA | 456 Main St | 98765 |
| 3 | Madison | WI | 678 Main St | 54321 |
| 4 | Manchester | NH | 987 Main St | 03087 |
+----+-----+-----+-----+
4 rows in set (0.01 sec)
```

The screenshot shows several Postman requests for the REST API:

- Product Creation:** A POST request to `http://localhost:8080/products` with body:
 

```
1 { "name": "Harp", "description": "Full-sized Instrument", "price": 100000.0 }
```
- Customer Creation:** A POST request to `http://localhost:8080/customers` with body:
 

```
1 { "id": 4, "firstName": "Mickey", "lastName": "Mouse", "description": "A Mouse", "price": 30000.0 }
```
- Product Update:** A PUT request to `http://localhost:8080/products/1` with body:
 

```
1 { "name": "Cello", "description": "A/C Size", "price": 10000.0 }
```
- Customer Update:** A PUT request to `http://localhost:8080/customers/1` with body:
 

```
1 { "id": 1, "firstName": "Jennifer", "lastName": "Johnson", "address": { "id": 1, "city": "Nashua", "state": "NH", "street": "123 Main St", "zip": "03060" }, "level": "GOLD" }
```
- Product Deletion:** A DELETE request to `http://localhost:8080/products/8` with body:
 

```
1 { "name": "Bass", "description": "A Bass", "price": 20000.0 }
```
- Customer Deletion:** A DELETE request to `http://localhost:8080/customers/1` with body:
 

```
1 Successfully deleted product with id: 6
```

The screenshot shows detailed API interactions:

- Product Details:** A GET request to `http://localhost:8080/products` returns:
 

```
1 [ { "id": 1, "name": "Cello", "description": "A/C Size", "price": 10000.0 }, { "id": 2, "name": "Violin", "description": "A/C Size", "price": 9000.0 }, { "id": 3, "name": "Viola", "description": "A/C Size", "price": 8000.0 }, { "id": 4, "name": "Bass", "description": "A/C Size", "price": 20000.0 } ]
```
- Customer Details:** A GET request to `http://localhost:8080/customers/1` returns:
 

```
1 { "id": 1, "firstName": "Jennifer", "lastName": "Johnson", "address": { "id": 1, "city": "Nashua", "state": "NH", "street": "123 Main St", "zip": "03060" }, "level": "GOLD" }
```
- Customer Update (PUT):** A PUT request to `http://localhost:8080/customers/1` with body:
 

```
1 { "id": 1, "firstName": "Jennifer", "lastName": "Johnson", "address": { "id": 1, "city": "Nashua", "state": "NH", "street": "123 Main St", "zip": "03060" }, "level": "PLATINUM" }
```
- Customer Deletion (DELETE):** A DELETE request to `http://localhost:8080/customers/1` with body:
 

```
1 { "id": 1, "firstName": "Mickey", "lastName": "Mouse", "description": "A Mouse", "price": 30000.0 }
```
- Customer Details (GET):** A GET request to `http://localhost:8080/customers/1` returns:
 

```
1 { "id": 1, "firstName": "Mickey", "lastName": "Mouse", "description": "A Mouse", "price": 30000.0 }
```
- Customer Update (PUT):** A PUT request to `http://localhost:8080/customers/1` with body:
 

```
1 { "id": 1, "firstName": "Mickey", "lastName": "Mouse", "description": "A Mouse", "price": 30000.0 }
```
- Customer Deletion (DELETE):** A DELETE request to `http://localhost:8080/customers/1` with body:
 

```
1 Successfully deleted customer with id: 5
```

POST http://localhost:8080/customers/6/orders

Params Authorization Headers (8) Body Pre-request Script Tests

Body: [1,2,3,4]

Body: [{"id": 1, "first\_name": "Jennifer", "last\_name": "Johnson", "level": 0}, {"id": 2, "first\_name": "Mary", "last\_name": "Miller", "level": 2}, {"id": 3, "first\_name": "Jane", "last\_name": "Jalbert", "level": 3}, {"id": 4, "first\_name": "Mickey", "last\_name": "Madman", "level": 1}, {"id": 5, "first\_name": "Bob", "last\_name": "Barker", "level": 3}]

Headers (4) Test Results

Pretty Raw Preview Visualize JSON

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```

```

mysql> select * from customer;
+----+-----+-----+-----+
| id | first_name | last_name | level |
+----+-----+-----+-----+
| 1 | Jennifer | Johnson | 0 |
| 2 | Mary | Miller | 2 |
| 3 | Jane | Jalbert | 3 |
| 4 | Mickey | Madman | 1 |
| 5 | Bob | Barker | 3 |
+----+-----+-----+-----+
5 rows in set (0.03 sec)

mysql> select * from product;
+----+-----+-----+-----+
| id | description | name | price |
+----+-----+-----+-----+
| 1 | 4/4 Full Size | Cello | 10000 |
| 2 | 4/4 Full Size | Bass | 20000 |
| 3 | 4/4 Full Size | Viola | 9000 |
| 4 | Professional | Viola | 25000 |
| 5 | Professional | Harp | 100000 |
+----+-----+-----+-----+
5 rows in set (0.01 sec)

mysql> select * from product_order;
+----+-----+
| product_id | order_id |
+----+-----+
| 1 | 1 |
| 2 | 1 |
| 3 | 1 |
| 4 | 1 |
| 3 | 2 |
| 5 | 2 |
+----+-----+
6 rows in set (0.00 sec)

mysql> select * from address;
+----+-----+-----+-----+
| id | city | state | street | zip |
+----+-----+-----+-----+
| 1 | Nashua | NH | 123 Main St | 03060 |
| 2 | Boston | MA | 436 Summer St | 98765 |
| 3 | Madison | WI | 987 Winter St | 54321 |
| 4 | St. Louis | MO | 4 Main St | 76543 |
| 5 | Boston | MA | 456 Main St | 98765 |
+----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> desc orders;
+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| id | bigint | NO | PRI | NULL | auto_increment |
| delivered | tinyblob | YES | | NULL |
| estimated_delivery | tinyblob | YES | | NULL |
| invoice_amount | double | NO | | NULL |
| ordered | tinyblob | YES | | NULL |
| status | int | YES | | NULL |
| customer_id | bigint | YES | MUL | NULL |
+-----+-----+-----+-----+-----+
7 rows in set (0.07 sec)

mysql> select id, delivered, estimated_delivery, invoice_amount from orders;
+----+-----+-----+-----+
| id | delivered | estimated_delivery | invoice_amount |
+----+-----+-----+-----+
| 1 | 0x | 0xACE00057372000D6A176612E74696D652E536572955D84BA1B2248B20C00007870770703000007E5020B78 | 44658 |
| 2 | 0x | 0xACE00057372000D6A176612E74696D652E536572955D84BA1B2248B20C00007870770703000007E5020B78 | 87208 |
+----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> select id, ordered, status, customer_id from orders;
+----+-----+-----+-----+
| id | ordered | | status | customer_id |
+----+-----+-----+-----+
| 1 | 0xACE00057372000D6A176612E74696D652E536572955D84BA1B2248B20C00007870770703000007E5020B78 | 0 | 1 |
| 2 | 0xACE00057372000D6A176612E74696D652E536572955D84BA1B2248B20C00007870770703000007E5020B78 | 1 | 3 |
+----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql>
```

URL to GitHub Repository: <https://github.com/sw-dev-lisa-s-nh/SpringBoot-week2.git>