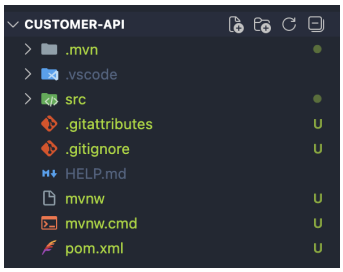
ITITWE23039 - Phan Kim Vĩnh Phúc

Lab 8

Github site & link

https://github.com/alexis0704/web-dev-practice-lab/tree/main/Lab8/customer-api

Task 1.1: Create Spring Boot Project



Configuration:
Spring Boot: 4.0.0
Group: com.example
Artifact: customer-api
Java: 17

Task 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.2: Database Setup, Create Customer Entity, Create Request DTO, Create Response DTO, Create Error Response DTO, Create Repository, Create Service Interface, Implement Service, Create Basic REST Controller, Add Exception Handling

I simply pasted in the given code in the guide.
However, there's a bug as follows

```
private CustomerResponseDTO convertToResponseDTO(Customer customer) {
    CustomerResponseDTO dto = new CustomerResponseDTO();
    dto.setId(customer.getId());
    dto.setCustomerCode(customer.getCustomerCode());
    dto.setFullName(customer.getFullName());
    dto.setEmail(customer.getEmail());
    dto.setPhone(customer.getPhone());
    dto.setAddress(customer.getAddress());
    dto.setStatus(customer.getStatus().toString());    Enum.toString() is defined in an inaccessible class or interface
    dto.setCreatedAt(customer.getCreatedAt());
    return dto;
}
```

```
// Enum for status
enum CustomerStatus {
    ACTIVE,
    INACTIVE
}
```

The service couldn't use the method of the CustomerStatus enum, defined in the Customer.java entity file. Here, I think we can either modify the Customer's getStatus() method to implement toString(), or we can create a new CustomerStatus enum class.
I go with the second approach, because it improves maintainability and readability. Also, it avoids modifying the entity's basic method unnecessarily.

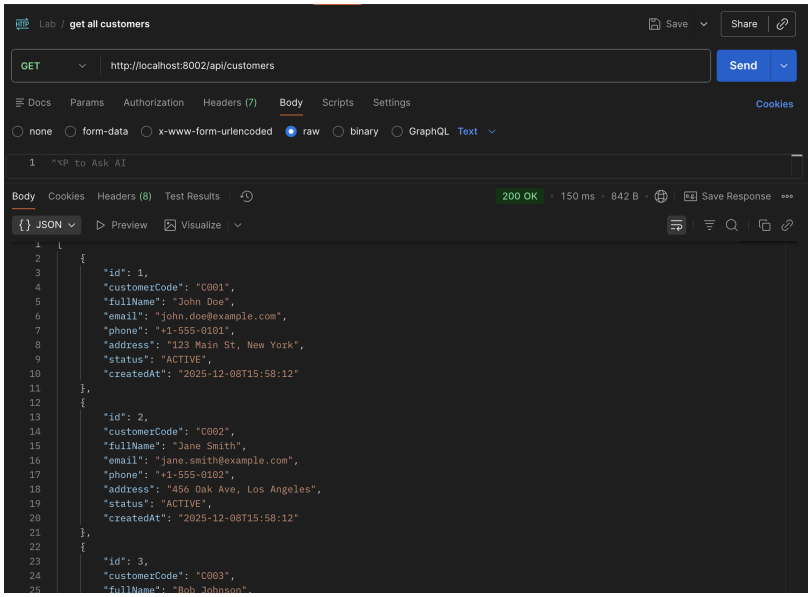

```java
package com.example.customerapi.entity;

public enum CustomerStatus {
    ACTIVE,
    INACTIVE
}
```

After moving CustomerStatus to its own public enum class, the method shows no bug anymore:

```java
private CustomerResponseDTO convertToResponseDTO(Customer customer) {
    CustomerResponseDTO dto = new CustomerResponseDTO();
    dto.setId(customer.getId());
    dto.setCustomerCode(customer.getCustomerCode());
    dto.setFullName(customer.getFullName());
    dto.setEmail(customer.getEmail());
    dto.setPhone(customer.getPhone());
    dto.setAddress(customer.getAddress());
    dto.setStatus(customer.getStatus().toString());
    dto.setCreatedAt(customer.getCreatedAt());
    return dto;
}
```

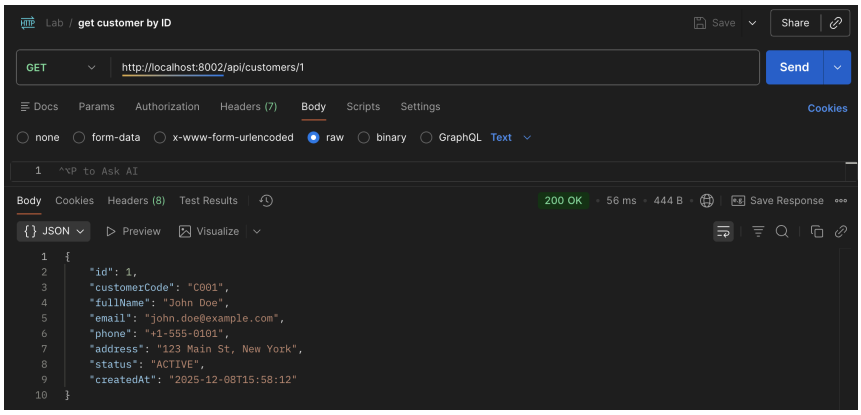
Testing all endpoints with Postman:

Get all customers

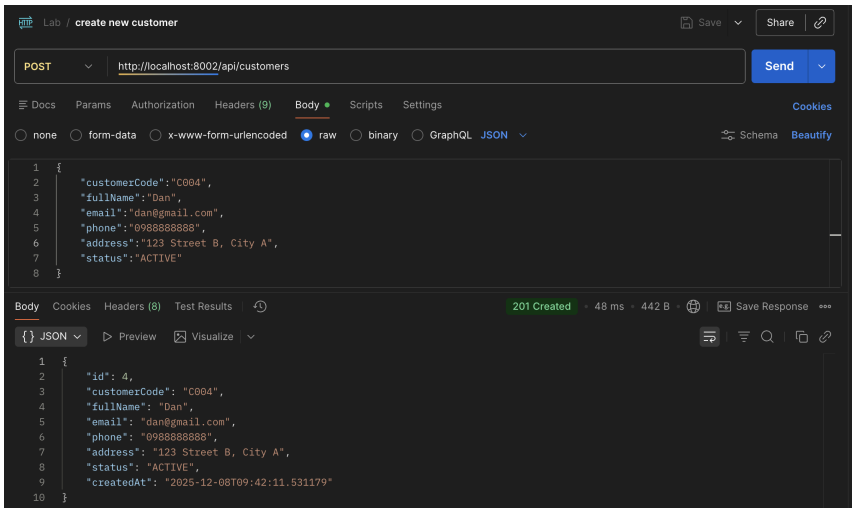


```
    {
        "id": 3,
        "customerCode": "C003",
        "fullName": "Bob Johnson",
        "email": "bob.johnson@example.com",
        "phone": "+1-555-0103",
        "address": "789 Pine Rd, Chicago",
        "status": "ACTIVE",
        "createdAt": "2025-12-08T15:58:12"
    }
]
```

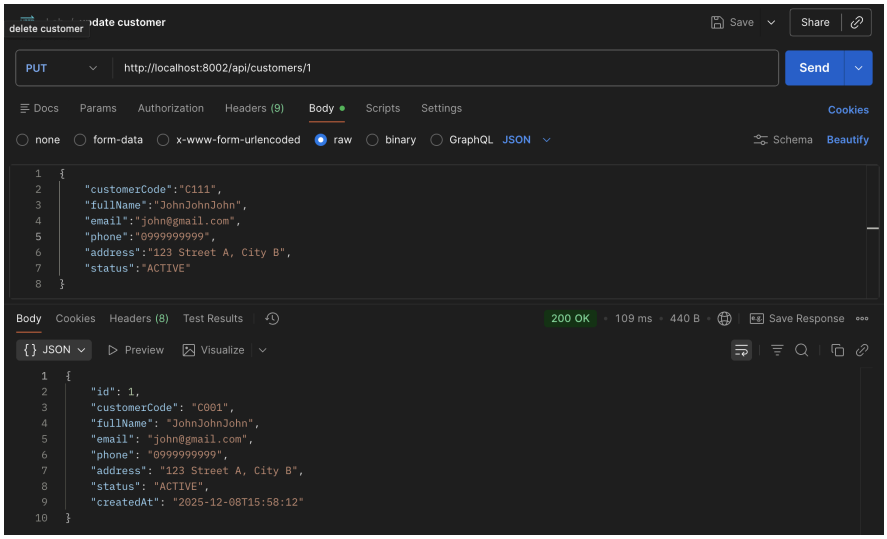

Get customer by ID



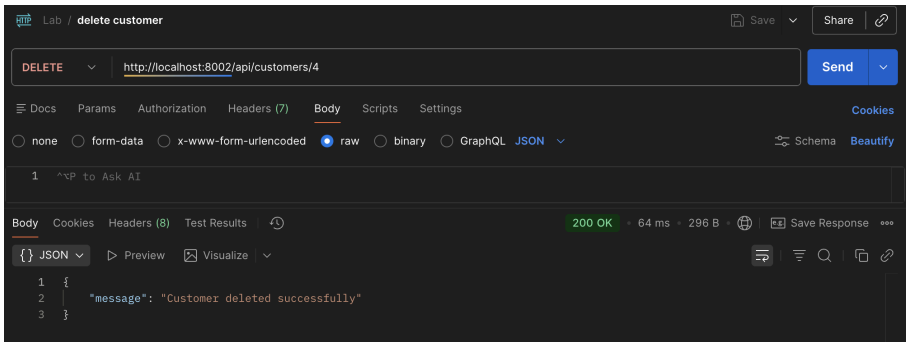
Create new customer



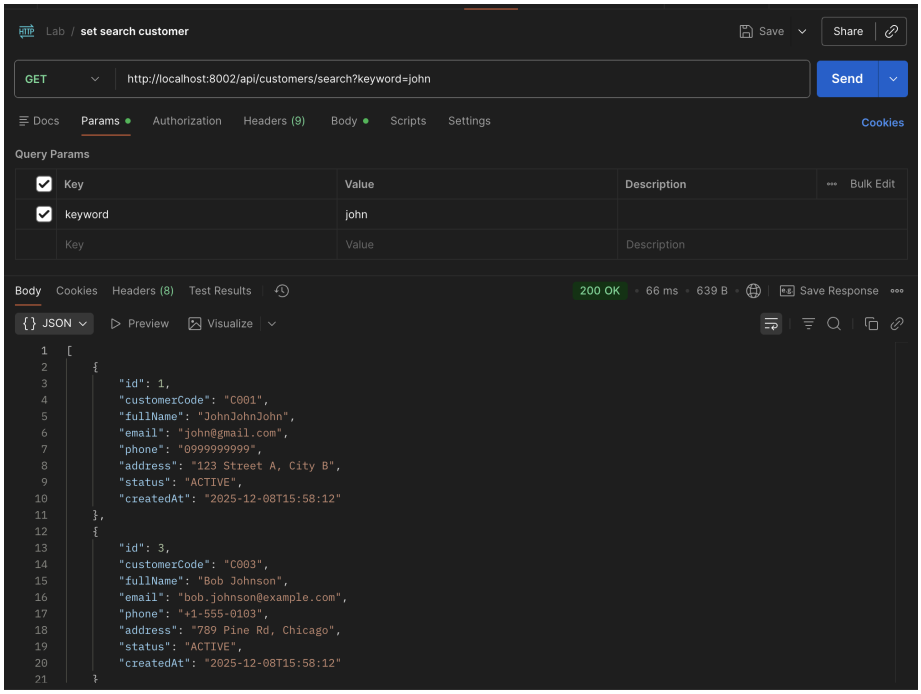
Update Customer



Delete customer

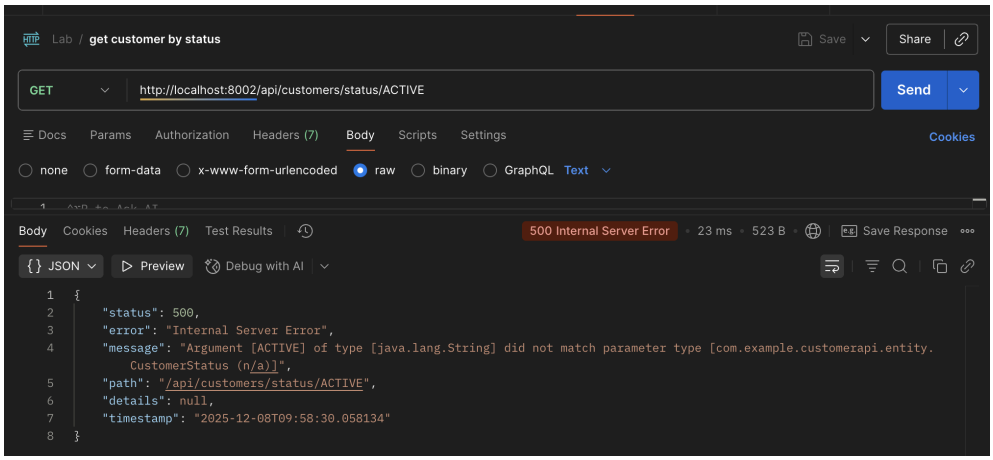


Search customer



Get customer by status

There's a type mismatch bug here for enum.



This is because the entity's attribute is CustomerStatus, but the whole flow from the Controller, to Service and to Repository throw in String status.
To fix the bug, I make the Service class convert the string to the enum type and make the Repository class save the enum:

- Old repository method

```
List<Customer> findByStatus(String status);
```

- New repository method

```
List<Customer> findByStatus(CustomerStatus status);
```

- Old service method

```java
@Override
public List<CustomerResponseDTO> getCustomersByStatus(String status) {
    return customerRepository.findByStatus(status).stream().map(this::convertToResponseDTO)
            .collect(Collectors.toList());
}
```

- New service method

```java
@Override
public List<CustomerResponseDTO> getCustomersByStatus(String status) {
    CustomerStatus enumStatus = CustomerStatus.valueOf(status.toUpperCase());
    return customerRepository.findByStatus(enumStatus)
            .stream()
            .map(this::convertToResponseDTO)
            .collect(Collectors.toList());
}
```

Result of the bug resolve: