Spring Data JPA Hands-On Projects

# Overview

This document is updated to match the full scope of the Spring Data JPA hands-on exercises described in the provided instruction file. It includes code structure, configuration, and usage for performing CRUD operations on the 'Country' entity using Spring Boot, Spring Data JPA, and MySQL.

# Project Structure

The Maven-based Spring Boot project follows the structure below:

orm-learn/  
├── src/  
│ ├── main/  
│ │ ├── java/  
│ │ │ └── com/  
│ │ │ └── cognizant/  
│ │ │ └── ormlearn/  
│ │ │ ├── controller/  
│ │ │ ├── model/  
│ │ │ ├── repository/  
│ │ │ ├── service/  
│ │ │ │ └── exception/  
│ │ │ └── OrmLearnApplication.java  
│ └── resources/  
│ └── application.properties  
├── pom.xml

# application.properties

# Logging config  
logging.level.org.springframework=info  
logging.level.com.cognizant=debug  
logging.level.org.hibernate.SQL=trace  
logging.level.org.hibernate.type.descriptor.sql=trace  
logging.pattern.console=%d{dd-MM-yy} %d{HH:mm:ss.SSS} %-20.20thread %5p %-25.25logger{25} %25M %4L %m%n  
  
# DB config  
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver  
spring.datasource.url=jdbc:mysql://localhost:3306/ormlearn  
spring.datasource.username=root  
spring.datasource.password=root  
  
# Hibernate config  
spring.jpa.hibernate.ddl-auto=validate  
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL5Dialect

# Country.java

package com.cognizant.ormlearn.model;  
  
import javax.persistence.Column;  
import javax.persistence.Entity;  
import javax.persistence.Id;  
import javax.persistence.Table;  
  
@Entity  
@Table(name="country")  
public class Country {  
 @Id  
 @Column(name="code")  
 private String code;  
  
 @Column(name="name")  
 private String name;  
  
 // Getters and Setters  
 // toString()  
}

# CountryRepository.java

package com.cognizant.ormlearn.repository;  
  
import org.springframework.data.jpa.repository.JpaRepository;  
import org.springframework.stereotype.Repository;  
import com.cognizant.ormlearn.model.Country;  
  
@Repository  
public interface CountryRepository extends JpaRepository<Country, String> {  
}

# CountryService.java

package com.cognizant.ormlearn.service;  
  
import com.cognizant.ormlearn.model.Country;  
import com.cognizant.ormlearn.repository.CountryRepository;  
import com.cognizant.ormlearn.service.exception.CountryNotFoundException;  
import org.springframework.stereotype.Service;  
import org.springframework.transaction.annotation.Transactional;  
  
import java.util.List;  
import java.util.Optional;  
  
@Service  
public class CountryService {  
  
 private final CountryRepository countryRepository;  
  
 public CountryService(CountryRepository countryRepository) {  
 this.countryRepository = countryRepository;  
 }  
  
 @Transactional  
 public List<Country> getAllCountries() {  
 return countryRepository.findAll();  
 }  
  
 @Transactional  
 public Country findCountryByCode(String code) throws CountryNotFoundException {  
 Optional<Country> result = countryRepository.findById(code);  
 if (!result.isPresent()) {  
 throw new CountryNotFoundException("Country not found");  
 }  
 return result.get();  
 }  
  
 @Transactional  
 public void addCountry(Country country) {  
 countryRepository.save(country);  
 }  
  
 @Transactional  
 public void updateCountry(String code, String name) throws CountryNotFoundException {  
 Country country = findCountryByCode(code);  
 country.setName(name);  
 countryRepository.save(country);  
 }  
  
 @Transactional  
 public void deleteCountry(String code) {  
 countryRepository.deleteById(code);  
 }  
}

# CountryNotFoundException.java

package com.cognizant.ormlearn.service.exception;  
  
public class CountryNotFoundException extends Exception {  
 public CountryNotFoundException(String message) {  
 super(message);  
 }  
}

# OrmLearnApplication.java (Test Logic)

@SpringBootApplication  
public class OrmLearnApplication {  
 private static final Logger LOGGER = LoggerFactory.getLogger(OrmLearnApplication.class);  
 private static CountryService countryService;  
  
 public static void main(String[] args) throws CountryNotFoundException {  
 ApplicationContext context = SpringApplication.run(OrmLearnApplication.class, args);  
 countryService = context.getBean(CountryService.class);  
  
 testGetAllCountries();  
 testFindCountryByCode();  
 testAddCountry();  
 testUpdateCountry();  
 testDeleteCountry();  
 }  
  
 private static void testGetAllCountries() {  
 LOGGER.info("Start");  
 List<Country> countries = countryService.getAllCountries();  
 LOGGER.debug("countries={}", countries);  
 LOGGER.info("End");  
 }  
  
 private static void testFindCountryByCode() throws CountryNotFoundException {  
 Country country = countryService.findCountryByCode("IN");  
 LOGGER.debug("Country: {}", country);  
 }  
  
 private static void testAddCountry() throws CountryNotFoundException {  
 Country country = new Country();  
 country.setCode("ZZ");  
 country.setName("Testland");  
 countryService.addCountry(country);  
 LOGGER.debug("Added Country: {}", countryService.findCountryByCode("ZZ"));  
 }  
  
 private static void testUpdateCountry() throws CountryNotFoundException {  
 countryService.updateCountry("ZZ", "Updatedland");  
 LOGGER.debug("Updated Country: {}", countryService.findCountryByCode("ZZ"));  
 }  
  
 private static void testDeleteCountry() {  
 countryService.deleteCountry("ZZ");  
 LOGGER.debug("Deleted Country ZZ");  
 }  
}