Expeditors Backend Academy Labs

Introduction

This document contains the labs for the Expeditors Backend Academy.

The instructions are split up into **Classwork** and **Homework**. The Classwork we will do in class together. You should do the Homework in the **Homework** module. Create a new package for each week's homework if it makes sense. I will go through an example before we start.

Week 12 (and maybe 13)

Classwork

1. Introduction to JPA
2. Introduction to Spring data JPA
3. Spring Repositories
4. JPQL
   a. Watch that generated SQL!!!
5. Convert StudentService to use JPA using a Spring Repository
6. Modify the StudentService to handle JPA relationships
   a. Many to One relationship between ScheduledClass and Course
   b. One to Many relationship between Student and PhoneNumber
      1. Several different ways to model this.
   c. Many to many relationships between Student and ScheduledClass
7. Referential integrity in Java is important, and **your** responsibility.

Homework

Objectives

1. Learn how to create JPA Entity and Spring Repositories to interact with databases
2. Learn how to use JPQL to customize database queries
3. Learn how to write JUnit tests for Repositories
4. Learn how to create JPA relationships

Tasks

1. Convert AdoptionService to use JPA

    a. Convert the Adopter class to a JPA Entity
       1. @Entity
       2. @Id, @GeneratedValue
       3. @Enumerated
    b. Create a Spring Repository for your Entity
    c. Implement any extra methods you may need in the repository with JPQL
    d. Have your Service use this new Repository. The easiest way may be to make a copy of your existing Service and modify the copy.
    e. Have your Controller use the new Service. Again, the easiest way may be to make a copy of your existing Controller
    f. Write Junit tests for the Repository
    a. Make sure all your Service and Controller tests still pass when using the Repository.

2. Modify the AdoptionService to handle JPA relationships
    a. Modify the application class so an Adopter can have one or more Pets.
    b. This will have an impact on your database. Change your database appropriately.
    c. If you have not already done so, you will have to create a Pet class and make it a JPA Entity. Then you need to establish a OneToMany relationship between Adopters and Pets.

Week 13

Classwork and Homework

1. Continue with unfinished business from last week.
2. Use Spring profiles to switch between databases.
3. Adding Spring Security to our application.