



# JPA with Hibernate

Duration 3 day(s) (HIBERNATE-03)

Data persistence of a Java / JEE application

## Description

Hibernate is the most known object / relational mapping tool in the Java world. We will see how to write a persistence layer with the JPA API. This training addresses the new concepts of JPA 2.1 and Hibernate 5. It gives the best practices for accessing a relational database in a powerful and maintainable way.

## Goals

- Assimilate the concepts and issues of object / relational mapping
- Master the main features of JPA
- Develop and integrate a persistence layer in a Java application

### *Public*

- Architect
- Developer

### *Prerequisites*

- Knowledge of Java. Notions on Maven and Spring.

### *Structure*

50% Theory, 50% Practice

## Program

### Introduction

- Concepts and issues of data persistence
- From JDBC to MNOs
- Standardization of ORM: birth of Java Persistence API specification
- Hibernate: its origins, its ecosystem

### Set up

- Product installation and configuration files configuration
- Pool of connections
- SQL traces

### Premier mapping

- Map a simple Java object on a table
- Configuration by convention, annotation and XML
- ID Generator

### Handling

- EntityManager: role, initializations
- Transient, attached, detached: the life cycle of an entity
- The transactions
- Create, Read, Update, Delete with JPA: the basic operations of the EntityManager
- The flush

### Relationships

- One to Many / Many to One relationship
- Many to Many relationship
- One to One relationship
- Bidirectional relationship
- Cascading

### The inheritance

- Strategy one table
- Strategy one table per concrete class
- Strategy one table per class
- Advantages and disadvantages of each strategy
- Technical inheritance with MappedSuperClass

### The components

- Concept of entity and value
- Map a class with Embedded
- Component Collection

### Querying

- A query mode of the object world based on SQL
- Exploring JPQL operators

- Injecting parameters into queries
- Dynamic querying with the Criteria API
- Generation of the meta model

## The lazy-loading

- Lazy-loading a relationship to Many
- Lazy-loading a relationship to one
- Using proxies: the pitfalls to avoid
- The problem of 1 + N Select and its solutions

## Optimization

- The second level cache
- Statistics

## Advanced Mapping

- Optimistic and pessimistic locking
- Multiple keys

## Spring and application architecture

- Layer cut and CAD design pattern
- The scope of the EntityManager and the transaction
- Integrate Hibernate / JPA into a Spring application
- Generation of CAD with Spring Data JPA

## Tests

- How to test a DAO JPA?
- Using Spring Test
- Introduction to DBUnit