Introduction to Data Persistence with JPA

Description

The course Introduction to Data Persistence with JPA offers a clear and progressive understanding of the Java Persistence API framework. This training guides you step by step to learn how to manage object persistence in a modern Java application. With this approach, you will understand how to effectively connect your POJO classes to a relational database.

Why learn JPA now

JPA technology is based on the concept of object-relational mapping. It simplifies data management and avoids writing complex SQL code. You will discover fundamental concepts such as entities, primary keys, relationships, and the lifecycle of persistent objects. These skills are essential for developing robust and scalable applications.

Course Content
Module 1: Introduction to the Java Persistence API (JPA)

- Persistence layers, object-relational mapping (ORM), JDBC
- Overview of JPA
- Entities and @Entity, ids and @Id
- Generated ID values
- Basic mapping types
- Persistence to the database, the EntityManager API
- Persistence units, configuration, persistence context
- Finding persistent entities with find()
- Default mappings, @Basic, @Column
- Field vs Property Access
- Temporal mappings (date / time)
- Logging options (provider-based)

Module 2: Updates and Queries

- New persistent entities, update and delete
- Entity-based queries, SELECT, WHERE
- Query interface, execution and generic queries
- JPQL operators, expressions and parameters
- Named queries
- Projection, ordering, aggregation, update and delete
- @Embeddable, @Embedded and embedded objects
- Composite primary keys with @EmbeddedID and @IDClass

Module 3: The Persistence Lifecycle

- Overview of the Transaction API
- EntityTransaction, JTA and Resource-local EntityManager
- JPA entity states and state diagram
- Persistence context and synchronization

- Version, @Version and optimistic locking
- @PrePersist, @PostPersist and Entity Listeners

Module 4: Entity Relationships

- Object relationships, roles, directionality and cardinality
- @ManyToOne, @OneToMany, @ManyToMany, @OneToOne
- Unidirectional and bidirectional relationships
- Collection types and cascading
- Inner joins, outer joins and fetch joins
- Entity inheritance mapping
- Single table, joined and concrete class mapping
- Value object collections with @ElementCollection

Module 5: The Criteria API (JPA 2)

- Overview of the Criteria API
- CriteriaBuilder, CriteriaQuery, Subquery and Predicate
- Executing queries and retrieving results

Module 6: Additional JPA Capabilities

- XML Mapping files
- Bean Validation
- Primary keys, named queries and lazy loading
- Transactional semantics and encapsulation
- Report queries and best practices

Module 7: Integration

- DAO integration and EntityManager management in Java SE
- Using JPA with EJB session beans
- JTA transactions and extended persistence contexts
- EntityManager in web applications
- Lazy loading and Open EntityManager
- Integration with Spring and EntityManager injection

Documentation

- Digital courseware included

Participant profiles

- Beginner Java developers
- Programmers aiming to master data persistence
- Computer science students focused on software development
- Early-career software engineers

Prerequisites

- Have an intermediate knowledge of Java
- Master the basics of SQL and relational databases
- Understand the principles of JDBC and building simple web applications

Objectives

- Understand how to persist your class POJO's with relational database using JPA Object-Relational mapping technology
- Be confident for implementing and maintaining Object-Relational persistence in your JPA application, including all necessary client-side and server-side programming

Description
Training Introduction to Data Persistence with JPA
Niveau
Intermédiaire
Classroom Registration Price (CHF)
2300
Virtual Classroom Registration Price (CHF)
2150
Duration (in Days)
3
Reference
JPA