Course : Java EE 7 : Web application design and development

Practical course - 5d - 35h00 - Ref. APJ
Price : 3070 CHF E.T.

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Instructional goals

Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Set up a data access layer with JPA.
- ✓ Set up a distributed architecture with EJB and JMS
- ✓ Set up a presentation layer
- ✓ Develop and consume REST webservices
- ✓ Set up a communication channel between an HTML5 browser and a server via Websockets.
- ✓ Participants
- ✓ A "common theme" exercise will be carried out. The various modules will be validated by unit tests (launched with the em
- ✓ TRAINING PROGRAM

Intended audience
Prerequisites

Prerequisites
Instructional methods

Course schedule

① » **Introduction**

- Bricks of the Java EE 7 specification.
- Best practices of design: Separating responsibilities, KISS, DRY, POJO.
- What's new compared to version 6.
- Overview of Java EE, the Spring framework.

(2) » **Work environment**

- The Eclipse environment. Maven dependencies.
- Unit tests with the embedded container.
- Using webtools, getting started with the server.
- Hands-on work ¤Instaling IDE and the server.

(3) » **N-tier breakdown and dependency injection**

- Breakdown into layers, the POJO approach.
- Scopes and state management.
- Dependency injections.
- Interceptors.
- Hands-on work ¤Setting up an n-tier application, using CDI (dependency injection).

(4) » **Access to the data with JPA**

- Relational object mapping (xml, annotations).
- Lazy loading.
- Working with API : EntityManager, etc.
- JPA-QL, API Criteria, MetaModel, EntityGraph.
- Transactions, the annotation @Transactional JTA 1.2.
- Hands-on work ¤Setting up the data access layer.

(5) » **Distributed architecture with EJB and JMS**

- Technical services of the EJB API: Security, remoting, concurrent access, asynchronous access, timers.
- Positioning of EJBs with respect to CDI beans.
- JMS for exchanging messages.
- Hands-on work ¤Setting up services with the Sessions EJB and a message exchange bus with JMS.

(6) » **Web and JSF**

- Concepts (MVP, Presenter, View).
- Facelets, taglibs, jsf-el.
- JSR303 validation.
- Implementing Ajax.
- Hands-on work ¤Implementing JSF 2.2 and Ajax.

(7) » **REST Web Services**

- JAX-RS API for RESTful web services.
- HTTP refreshers: Verbs, contentType, etc.
- CORS: Cross Origin Shared Resource. HATEOAS.
- Producing and consuming objects via the JSON processing Java API.
- Hands-on work ¤Exposing services, consuming those REST services via a Web client (AngularJS).

(8) » **Websockets**

- Real-time web concepts.
- Support by browsers, fallback mechanisms.
- Set-up on server and client sides.
- Hands-on work ¤Adding a websocket connection to the Web client.

Dates and locations

REMOTE CLASS

2026 : 15 June, 15 June, 30 Nov., 30 Nov.