

# Course : Java optimization (communication aspects, interaction with BD)

**Practical course - 4d - 28h00 - Ref. JOD**

**Price : 2470 CHF E.T.**

This course presents the main techniques for optimizing the performance of Java applications, focusing on "input/output" (collection, IO), "interactions with a DB" (JDBC) and JVM mechanisms that have a major impact on the performance of such applications.

## Teaching objectives

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

- ✓ Optimize the Java code of an application (strongly interacting with a DB) to improve performance
- ✓ Mastering optimization tools
- ✓ Optimizing memory management
- ✓ Optimize use of standard libraries (especially JDBC)

## Intended audience

Developers, engineers, project managers close to development.

## Prerequisites

Good knowledge of Java. Experience in Java programming required.

## Practical details

### Hands-on work

Theoretical sequences alternate with practical work.

## Course schedule

### PARTICIPANTS

Developers, engineers, project managers close to development.

### PREREQUISITES

Good knowledge of Java. Experience in Java programming required.

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects.

They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.

Participants also complete a placement test before and after the course to measure the skills they've developed.

## 1 Optimization methodology and tools

- The elements involved in optimizing Java applications.
- Elements of the methodology.
- Profiling, testing and support tools.

### Hands-on work

Use of a profiling tool (VisualVM or JFR) and a unit testing tool (JUnit).

## 2 Optimization and language

- Different execution and compilation modes.
- Types, instructions and methods.
- String manipulation.

### Hands-on work

Improved benchmark application performance.

## 3 Memory optimization and management

- Object management by the JVM (creation, copying).
- The use of caches.
- Choice of GCs (algorithms, parameterization, activity visualization).
- Memory saturation (causes, diagnosis, solutions).

### Hands-on work

Improved witness application performance through better object management. Use of tools for visualizing memory (VisualVM, MAT) and GC activity (Visual GC).

## 4 Optimization and I/O

- Choosing the right stream classes.
- Optimizing serialization.

### Hands-on work

Improved witness application performance through better IO management.

## 5 Optimization and comics

- Reminder of DBs (main concepts, main optimizations).
- Review of the standard JDBC library (underlying model, API).
- Optimization and JDBC (grouping requests, reducing preparation phases).
- Optimization and JDBC (pagination optimization, transaction management, connection pools).

### Hands-on work

Improved witness application performance through JDBC optimization.

## 6 The JMeter tool

- JMeter's underlying model (test plans, thread groups, samplers, timers, controllers, processors, etc.).
- Building http (web) and JDBC (database) test plans.

### Hands-on work

Profiling a simple application using JMeter.

## TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

## ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@orsys.fr](mailto:psh-accueil@orsys.fr) to review your request and its feasibility.

