Course : Developing microservices

Practical course - 3d - 21h00 - Ref. LLH
Price : 1940 CHF E.T.

NEW

On completion of the course, participants will be able to design, develop and deploy microservices using best practices and appropriate technologies. This training program is intended for employees of professional branches covered by the OPCO Atlas.

Teaching objectives

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

- Understand microservices architecture and identify its advantages
- Analyze different frameworks and identify the most suitable for microservice deployment
- Distinguishing between different containers (Docker, Azure) and their advantages for microservices
- Securing communication between microservices
- Developing a microservice

Intended audience

For OPCO Atlas members: developers, architects.

Prerequisites

Knowledge of Java.

Practical details

Teaching methods

To optimize the learning experience, e-learning modules can be provided before and after the classroom session or virtual class, at the participant's request.

Course schedule

PARTICIPANTS

For OPCO Atlas members: developers, architects.

PREREQUISITES

Knowledge of Java.

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.

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.

1 Programming in Java - Pre-training digital learning content

- Introduction to Java and the development environment.
- Types, variables and operators.
- Control structures.
- Methods and best practices.
- Putting it into practice.

Digital activities

This online training course introduces the basics of the Java language and teaches you how to write your first programs. Participants will learn about instructions, types, variables and operators, as well as control structures such as if, switch and loops. They will also see how to use the Eclipse IDE to develop in Java and implement good programming practices. The course concludes with demonstrations and a practical exercise to put the concepts covered into practice.

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 to review your request and its feasibility.

2 Introduction to microservices

- Definition and perspective.
- Comparison with other architectures.
- Agility, DevOps: practices that promote microservices.
- Benefits but new challenges.

Hands-on work

Definition puzzle.

3 Frameworks and microservices architectures

- Independence and reduced scope.
- Synchronous and asynchronous communications.
- Formalization of interface contracts.
- Design issues.
- The main frameworks available.

Hands-on work

Implementation of a first microservice on a Java framework.

4 HTTP/Restful and GraphQL communication

- REST principles.
- Let's use Jakarta RESTful.
- GraphQL contributions.
- Endpoint documentation (Open API).
- Customer side.
- Security and authentication.
- Implement "Long Running Action".

Hands-on work

Defining and demonstrating web services (REST and GraphQL).

5 Message-oriented communication

- Benefits and main difficulties.
- How to manage transactions
- The Saga pattern.
- Asynchronous communication (ActiveMQ, Kafka...).

Hands-on work

Implementation of asynchronous communication with Kafka.

6 Fault tolerance

- The principle of resilience.
- Why is this important?
- Defensive programming.
- Circuit breaker, Bulkhead.
- Other patterns.

Hands-on work

Pattern implementation "fault tolerance".

7 Deploying and securing microservices

- Introducing Docker.
- Images and containers.
- Service supervision (healthcheck, metrics and logs).
- Safety considerations.
- Cloud offerings, with a focus on Azure.

Hands-on work

Build your own red wire microservice container image.

8 Understanding Docker, getting to grips with containers - Post-training digital learning content

- How Docker works.
- Compiling a Docker image.
- Docker image production features.
- Docker features on Windows.
- Docker in the cloud.

Digital activities

This online training course introduces the fundamentals of Docker and the philosophy of containers in a DevOps context. Participants will learn how to create and manage Docker images, use advanced Dockerfile files and manipulate an image registry. The course also covers network and volume management for data persistence, the particularities of Docker on Windows, and its integration in the cloud.

9 **Docker in production, cluster implementation on microservices - Post-training digital learning content**

- Presentation of the example application.
- Scaling with Docker Swarm.
- Industrial-level orchestration with Kubernetes.
- Productivity features in Kubernetes.

Digital activities

This online course teaches how to use Docker in a production environment to deploy and maintain complex applications. Participants will learn how to implement a microservices architecture with Docker Compose and Traefik, manage clusters with Swarm, and use advanced orchestration with Kubernetes. The course concludes with best production practices, including rolling updates and monitoring.

Dates and locations

REMOTE CLASS
2026 : 17 Mar., 9 June, 15 Sep., 17 Nov.