AMBIENT-IT

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Sign up

Spring WebFlux Training

2 days (14 hours)

Overview

Spring WebFlux is a reactive web framework based on Reactive Streams and Project Reactor. Designed for asynchronous, non-blocking services, it optimizes throughput and latency in cloud-native architectures.

Our Spring WebFlux training course enables you to master the design of reactive APIs with Flux/Mono, the use of WebClient, the integration of reactive data sources (R2DBC, MongoDB), security and observability for production.

You will learn how to expose SSE / WebSocket flows, reinforce resilience (timeouts, retry, circuit-breaker) and deploy in containers within a CI/CD pipeline.

At the end of the course, you will be able to build, secure, test and operate high-performance Spring WebFlux services in a cloud environment, based on the latest stable version of the Spring Framework.

Objectives

- Assimilate reactive fundamentals and the Flux/Mono model
- Design WebFlux APIs (annotations & functional routing)
- Master WebClient, SSE/WebSocket and error handling
- Integrate R2DBC/MongoDB and test with WebTestClient
- Implement security, observability and resilience
- Deploy in Docker/Kubernetes and automate CI/CD

Target audience

- Java back-end developers
- Cloud-native and platform teams

Prerequisites

- Mastery of Java 17+ and Spring Boot basics
- Knowledge of HTTP/REST, Git and Docker

Our Spring WebFlux training program

[Day 1 - Morning]

Reactive fundamentals and WebFlux

- Reactive principles: non-blocking, asynchronous, back-pressure
- WebFlux vs. Spring MVC, Netty/Undertow servers
- Project Reactor ecosystem: Flux/Mono
- Spring Boot with webflux starter
- Debugging: BlockHound, logs, StepVerifier
- Hands-on workshop: reactive "product" API with Flux/Mono

[Day 1 - Afternoon]

Routing, controllers and WebClient

- Annotation style vs. functional routing
- JSON serialization, error handling, @ControllerAdvice
- WebClient: timeout, retry/backoff, circuit-breaker
- Streaming SSE / WebSocket
- Tests: WebTestClient, StepVerifier
- Practical workshop: third-party API consumption, SSE streams + tests

Reactive data and persistence

- Reactive data: R2DBC, MongoDB Reactive
- Modeling: hot/cold streams, reactive pagination
- Transactions and idempotency
- Configuration: reactive pool, time-outs, retries
- Observability: Micrometer, tracing
- Practical workshop: reactive repository + paginated endpoint

[Day 2 - Morning]

Resilience, perf & security

- Resilience patterns: timeout, retry, bulkhead, circuit-breaker
- Spring Cloud integration and cloud-native best practices
- Reactive Spring Security: JWT, CORS
- Performance: event-loop, Schedulers, back-pressure
- Packaging: Native Image, containers
- Practical workshop: securing JWT + retry/backoff

[Day 2 - Afternoon]

Integration, load testing and CI/CD

- Gateway, WebSocket, reactive transfers
- E2E testing, contract testing, testcontainers
- CI/CD: quality, Docker, Kubernetes deployment
- Advanced observability: logs, traces, dashboards
- Ops reliability: SLA/SLO, error budgets
- Practical workshop: CI pipeline + deployment (simulation)

Architecture & stack selection

- Choosing WebFlux vs MVC
- Migration strategies and coexistence
- API versioning, governance
- FinOps: costs and performance
- Go-live checklist
- Practical workshop: architecture review & adoption plan

Companies concerned

This course is aimed at both individuals and companies, large or small,

wishing to train their teams in a new advanced IT technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the forthcoming course, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical training: 60% hands-on, 40% theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Certification

A certificate will be awarded to each trainee who has completed the entire course.