Web Services – Fundamentals and Architectures

Description

The web service training provides you with a complete understanding of the foundations and modern architectures. It is designed for professionals who want to build strong skills in this key area. You will discover how web services facilitate data exchange and communication between applications. Through this course, you will learn how to use SOAP, REST, JSON, and many other current standards.

Practical and structured learning

Web services play a central role in the design of modern applications. In this course, you will study SOAP and REST architectures, while also addressing key aspects of security and performance. You will put your knowledge into practice through real-world examples and deployments. This progressive approach will help you understand every step of implementing a web service.

Course Content

Module 1: Overview of Web Services

- Interoperable applications with SOA
- Designing a SOA integration architecture
- Implementing SOA with web services
- Standard Java API for web services
- Creating SOAP services with JAX-WS

Module 2: Defining SOAP Messages with WSDL

- · Essential elements of XML
- XML namespaces
- XML description with schema
- Structure of SOAP messages
- Role of SOAP in web services
- Operations, messages and faults
- · Anatomy of a WSDL document
- · Defining the interfaces of a web service
- Specifying implementation

Module 3: Code-First Web Service Implementation

- Exposing simple Java objects (POJOs) as web services
- Applying JAX-WS annotations to POJOs
- Configuring and deploying a W service implementation
- · Implementing SOAP clients in Java
- Generating client-side artifacts from WSDL
- Modifying client code to allow message monitoring
- Client authentication and authorization
- Enhancing SOAP-based services
- Integrating best practices for web services

• Implementing security, reliability and message optimization policies

Module 4: Contract-First Web Service Development

- · Developing contract-based services
- · Comparing contract-first and code-first services
- Creating portable Java artifacts
- Importing a WSDL document
- Creating interoperable applications in accordance with WS-I (Web Services Interoperability) standards
- Implementing a web service endpoint using JAX-WS

Module 5: Web Service Security (WS-Security)

- Definitions
- Challenges Public Key Infrastructure (PKI)
- Digital signature
- Certificates
- Overview of web service security
- SOAP message security
- · Message integrity
- Message confidentiality
- Example of symmetric encryption
- · Identity token-based authentication
- Authentication
- Audit tracking

Module 6: Introduction to REST (Representational State Transfer)

- Description of the REST architectural style
- · Comparison of SOAP and RESTful web services

Module 7: RESTful Methods

- POST
- GET
- PUT
- DELETE
- Others...

Module 8: RESTful Architecture

- Distributed resources
- Client/server, stateless, layered, and cacheable

Module 9: Development of RESTful Web Services with JAX-RS

- Adding JAX-RS annotations to a POJO
- Configuring result types using HTTP request headers
- Deploying a JAX-WS service

Module 10: Server-side Support for Ajax Clients

Handling JavaScript Object Notation (JSON)

- Applying JSON case studies to RESTful services
- · Interpreting a JSON format message
- Mapping Java to JSON
- Controlling JSON generation with JAXB annotations
- · Defining a JSON return type from a Java method

Module 11: Sending REST Messages with JAX-RS

- Building the client request
- · Handling service response code and exceptions.

Lab / Exercises

 This course includes hands-on exercises designed to reinforce your knowledge and apply your skills in real-world professional scenarios.

Documentation

Digital Courseware included

Participant profiles

- Decision-makers and IT managers
- · Technical project managers
- Application developers
- Software architects

Prerequisites

· Basic knowledge of computer systems and programming

Objectives

- Understand the basics of web services and their role
- Define and manipulate SOAP messages with WSDL
- Implement web services using the code-first approach
- · Develop contract-first services with JAX-WS
- · Apply web service security mechanisms
- Design and compare SOAP and REST architectures
- Develop RESTful services with JAX-RS
- Manage data exchanges with JSON and AJAX

Description

Web Services training - Fundamentals and Architectures

Niveau

Fondamental

Classroom Registration Price (CHF)

1600

Virtual Classroom Registration Price (CHF)

1500

Duration (in Days)

2

Reference

WSFA