Codeelse ;
LEARNING CENTRE

MODULE - 3
WEBSERVICES – REST & SOAP
MICROSERVICES – SPRING CLOUD

Course Outline

Chapter 1- Introduction to Web Services

01 - Introduction to Web Services - An Overview

02 - What is a Web Service?

03 - Important How Questions related to Web Services

04 - Web Services - Key Terminology

05 - Introduction to SOAP Web Services

06 - Introduction to RESTful Web Services

07 - SOAP vs RESTful Web Services

Chapter 2- Soap Web Services with Spring and Spring Boot

01 - Initialize a Spring Web Services application with Spring Boot

02 - Overview of creating SOAP Web Service using Contract First Approach

03 - Define Request and Response XML Structure

04 - Define XML Schema Definition (XSD) for Request - GetCourseDetailsReque

05 - Define XML Schema Definition (XSD) for Response - GetCourseDetailsResp

06 - More about XML Schema Definition and Implementing XSD Best Practices

07 - Introduction to Java API for XML Binding (JAXB) and Configuring JAXB 2

08 - Configuring an Endpoint for GetCourseDetailsRequest

09 - Spring Web Services Configuration - Message Dispatcher Servlet

10 - Spring Web Services Configuration - Generating WSDL

11 - Using Wizdler to execute SOAP Requests

12 - Implementing a service - Course Details Service - backend within the memo

13 - Implementing SOAP Web Service for GetAllCourseDetailsRequest

14 - Quick introduction to different parts of a WSDL

15 - Implementing SOAP Web Service for DeleteCourseDetailsRequest

16 - Improving the DeleteCourseDetailsRequest - Using an Enum for Status

17 - Exception Handling and SOAP Fault Responses

18 - Implementing Security for SOAP Web Services with WS Security

Chapter 3- Restful Web Services with Spring and Spring Boot

01 - Initializing a RESTful Services Project with Spring Boot

02 - Understanding the RESTful Services we would create in this course

03 - Creating a Hello World Service

04 - Enhancing the Hello World Service to return a Bean

05 - Quick Review of Spring Boot Auto Configuration and Dispatcher Servlet

06 - Enhancing the Hello World Service with a Path Variable

07 - Creating User Bean and User Service

08 - Implementing GET Methods for User Resource

09 - Implementing the POST Method to create User Resource

10 - Enhancing the POST Method to return correct HTTP Status Code and Location

11 - Implementing Exception Handling - 404 Resource Not Found

12 - Implementing Generic Exception Handling for all Resources

13 - Exercise - User Post Resource and Exception Handling

14 - Implementing DELETE Method to delete a User Resource

15 - Implementing Validations for RESTful Services

16 - Implementing HATEOAS for RESTful Services

17 - Overview of Advanced RESTful Service Features

18 - Internationalization for RESTful Services

18 - Part 2 - Internationalization

19 - Content Negotiation - Implementing Support for XML

20 - Configuring Auto Generation of Swagger Documentation

21 - Introduction to Swagger Documentation Format

22 - Enhancing Swagger Documentation with Custom Annotations

23 - Monitoring APIs with Spring Boot Actuator

24 - Implementing Static Filtering for RESTful Service

25 - Implementing Dynamic Filtering for RESTful Service

26 - Versioning RESTful Services - Basic Approach with URIs

27 - Versioning RESTful Services - Header and Content Negotiation Approach

28 - Implementing Basic Authentication with Spring Security

Chapter 4- Introduction to JPA in 10 Steps

Introduction to JPA - An Overview

1 - Object-Relational Impedance Mismatch

2 - World before JPA - JDBC, Spring JDBC and myBatis

3 - Introduction to JPA

4 - Creating a JPA Project using Spring Initializr

5 - Defining a JPA Entity - User

6 - Defining a Service to manage the Entity - UserService and EntityManager

7 - Using a Command-Line Runner to save the User to the database.

8 - Magic of Spring Boot and In-Memory Database H2

9 - Introduction to Spring Data JPA

10 - More JPA Repository - findById and findAll

Chapter 5- Connecting Restful Web Service to JPA

29 - Overview of Connecting RESTful Service to JPA

30 - Creating a User Entity and some test data

31 - Updating GET methods on User Resource to use JPA

32 - Updating POST and DELETE methods on User Resource to use JPA

33 - Creating Post Entity and Many to One Relationship with User Entity

34 - Implementing a GET service to retrieve all Posts of a User

35 - Implementing a POST service to create a Post for a User

Chapter 6- Restful Web Services - Best Practices

36 - Richardson Maturity Model

37 - RESTful Web Services - Best Practices

Chapter 7- Microservices with Spring Cloud

00 - 01 - Introduction to Microservices

00 - 02 - Challenges with Microservices

00 - 03 - Introduction to Spring Cloud

00 - 04 - Advantages of Microservices Architectures

00 - 05 - Microservice Components - Standardizing Ports and URL

01 - Part 1 - Intro to Limits Microservice and Spring Cloud Config Server

01 - Part 2 - Setting up Limits Microservice

02 - Creating a hard-coded limits service

03 -Enhance limits service to get configuration from application properties

04 - Setting up Spring Cloud Config Server

05 - Installing Git

06 - Creating Local Git Repository

07 - Connect Spring Cloud Config Server to Local Git Repository

08 - Configuration for Multiple Environments in the Git Repository

09 - Connect Limits Service to Spring Cloud Config Server

10 - Configuring Profiles for Limits Service

11 - A review of Spring Cloud Config Server

12 - Introduction to Currency Conversion and Currency Exchange Microservice

13 - Setting up Currency Exchange Microservice

14 - Create a simple hardcoded currency exchange service

15 - Setting up Dynamic Port in the Response

16 - Configure JPA and Initialized Data

17 - Create a JPA Repository

18 - Setting up Currency Conversion Microservice

19 - Creating a service for currency conversion

20 - Invoking Currency Exchange Microservice from Currency Conversion Micro

21 - Using Feign REST Client for Service Invocation

22 - Setting up client-side load balancing with Ribbon

23 - Running client-side load balancing with Ribbon

24 - Understand the need for a Naming Server

25 - Setting up Eureka Naming Server

26 - Connecting Currency Conversion Microservice to Eureka

27 - Connecting Currency Exchange Microservice to Eureka

28 - Distributing calls using Eureka and Ribbon

29 - A review of implementing Eureka, Ribbon and Feign

30 - Introduction to API Gateways

31 - Setting up Zuul API Gateway

32 - Implementing Zuul Logging Filter

33 - Executing a request through Zuul API Gateway

34 - Setting up Zuul API Gateway between microservice invocations

35 - Introduction to Distributed Tracing

36 - Implementing Spring Cloud Sleuth

37 - Introduction to Distributed Tracing with Zipkin

38 - Installing Rabbit MQ

39 - Setting up Distributed Tracing with Zipkin

40 - Connecting microservices to Zipkin

41 - Using Zipkin UI Dashboard to trace requests

42 - Understanding the need for Spring Cloud Bus

43 - Implementing Spring Cloud Bus

44 - Fault Tolerance with Hystrix

Course Requirements

- You have an attitude to learn while having fun -)
- You have programming experience with Java, Spring

Course Outcome

- You want to learn the basics of Web Services
- You want to learn the terminology associated with Web Services
- You want to learn to develop and design RESTful web services
- You want to learn to develop and design SOAP web services
- You want to learn how to design and develop RESTful web services with Spring Boot
- You want to learn how to design and develop Microservices with Spring Cloud