

Java with Spring & Kafka

Duration: 40 hrs

Basics OOPs Concepts Java

Introduction to course, expected outcome, Procedural programming: looping array examples, Dry run, 2 dimension array, Fundamental OOPs concepts: Abstraction, encapsulation, modularity, hierarchy, Classes and method, static variable, static methods

Inheritance, Interface,String, Immutability

Packages and visibility modifier: public, protected, private and default, Inheritance instance of operator, Abstract classes, interface example and applications, Field modifier

IO, Java 5 feature, Exception Handling

IO, Serialization, Java 5 enhancements, AutoBoxing and Unboxing, Enhanced For loop, Varargs, Static Import, Enums, examples Inner classes, nested classes, examples

Exception Handling

Exception Handling basics, Try, catch, throws, throw, finally, Exception handling good programming practice

Java Collection

Important methods of Object class, Collections Framework, List, Map, Set usages introduction, Comparable, Comparator, examples, Usages ArrayList, LinkedList, HashMap, TreeMap, HashSet

Advance Java collection, Generics

HashMap internal, Comparable, Comparator interface implementation, User define key in HashMap , Collection gotcha, Generics Introduction, Wildcards, PCES, extends, Super, bounded type

Java Multi-Threading

Multi-Threading, Creating threads: using Thread class and Runnable interface, Thread life cycle, Synchronization, Deadlock introduction, Thread dump

Java 8 stream processing

Introduction to functional programming in Java 8, Why Java 8, functional interface, Interface evaluation, Lambda expressions, Difference between anonymous inner class vs lambda expression, performance, Passing code with behavior parameterization, Introduction to stream processing

Streams Case study and examples, Optional, Java 8 date and time API**JDBC**

Java Database programming using JDBC, Using statement, Prepared Statement, CRUD application, DAO, DTO pattern, 3 tier application design

GIT

GIT architecture, Common git bash commands, init, Clone, add, status, commit, push, pull, checkout. reset, log, rm, branch, merge, rebase, stash, Branches in GIT, Creating Branches in GIT, Working with Branches in GitHub, GIT branches workflow, Pull Request in GitHub, Resolve conflicts in code

Maven & Logging

Maven Introduction, POM, Maven Build Life Cycle, Maven Build Profiles, Repositories, Plug-ins, Maven Creating Project, Build & Test Project, Dependencies management, Logging Overview, Log4j, SLF4j, Log4J components, Logger, Appenders and Layouts

Junit

Using JUnit with Eclipse, Basic fundamental of Test driven development, Test methods: testMethod or @Test method, Assertions in TestCase, Testing for exceptions

Java Web development: Introducing JEE, Tomcat 9

Introducing JEE, Introduction to web components: Servlet/JSP, where they fit, Web Server vs Web Container vs EJB Container, Servlet Introduction, Servlet Life cycle, Handling Form Requests in Servlets

Java Web development: JSP

Introduction to JSP, EL & JSTL, Expression Language, Introduction to JSTL Tags, Book store Manage Application

Spring framework fundamentals

Spring vs Spring boot, Introduction to DI, Implementing DI application using xml, annotation and Java code, Setter/Constructor injection, Scopes, c and p namespace, xml configuration

Spring framework , Dependency Injection in detail

Spring bean life cycle, Spring EL basics, Spring annotation in details, Using Environment to retrieve properties, What are Profiles? , Activating profiles

Aspect Oriented Programming (AOP)

What is AOP and cross cutting concern, Applying AOP to existing bank application, @Aspect, @Before, @After, @AfterReturning, @AfterThrowing, @Around, @PointCut

Introduction to Spring JDBC

How Spring reduce boilerplate code using Jdbc Template, Applying AOP to existing bank application

Hibernate framework basics

Introduction to Object Relational Mapping (ORM) framework, Hibernate vs JPA, CRUD application with Hibernate

Hibernate framework Joins

Hibernate Mapping between relationship, One to One, one to many and many to many, Inheritance Mapping

Hibernate Performance, Queries

Hibernate N+1 problem and solution, HQL Performance issues and solutions

REST with Spring Boot

How Spring boot works, Spring boot internals, Getting started with REST web service, CRUD REST operation with Spring boot

Exception handling, HttpStatus, JSR validation

Handling Exceptions with Spring REST using @ControllerAdvice, Using ResponseEntity & http status code, JSR 303 validation

HATEOAS, Swagger, Actuator, Caching

Spring rest HATEOAS, Swagger Documentation, Monitoring APIs with Spring Boot Actuator, Enable caching

Spring Security

Configuration Spring security with Spring boot, Spring security Internals, how it work, Spring security JPA configuration

Microservice with Spring boot

Spring boot microservice architecture, 12 factor application, Developing microservice with netflix oss, Service Discovery with Eureka

Load balancing, Fault tolerance , config server

Load-Balancing with Netflix Ribbon, Fault Tolerance with Netflix Hystrix, Config server and Config Client

Zuul proxy,API Gateway N, Distributed tracing

Create Zuul Proxy, Configure Zuul, zuul filters Create a filter, Distributed Tracing in Action, Install Zipkin, Zipkin configuration

Config server and client,accessing resources in microservice

Create Config Server, Create Local Configuration, Access Default Configuration, Configure Dev Configuration, Configure Config Client

Introduction to docker

Architecture and Workflow, DOcker basics commands, Docker Run,Docker Commit, Docker Layers and Overlay Storage, Launch MySql Container, Volumes and Bind Mounts,Use Volumes, Use Bind Mounts

Dockerfile, Docker Compose

Creating Dockerfile,Dockerize Micro Services, Push to Docker Hub, Docker Prune Command, Docker Compose, YAML Syntax, Compose in action,Compose Syntax

Cloud foundry microservice deployment

Setting up cloud foundry account, PCF Architecture, PCF Orgs and Spaces, Deploying Spring Boot + MySQL Application to PCF

RabbitMQ

AMQP vs JMS, Asynchronous, message-driven systems with RabbitMQ, Develop message listeners for specific queues and routings, Implement Topics, Queues, Exchanges and Bindings in RabbitMQ

Apache Kafka

What is Apache Kafka, Rabbitmq vs kafka, where fit what, Streaming process, Kafka basics components, Kafka Cluster,Workflow, Basic Operations, Simple Producer Example, Consumer Group Example