CRONUS
CONSULTANTS
HARVESTING EXCELLENCE

Maven, Spring Boot & Microservices

Course Structure

Duration – 40 Hours (2 Months)



Module 1: Java Build Automation with Maven (2 Hours)

- **Maven Introduction:** Project Object Model (POM) structure, project lifecycle, and phases (clean, compile, test, package, install).
- **Dependency Management:** Adding dependencies, scope (compile, test, runtime), and transitive dependencies.
- **Build & Plugins:** Using Maven plugins for packaging (JAR/WAR) and running Spring Boot applications.

Module 2: Spring Boot Fundamentals (8 Hours)

- **Getting Started:** Project setup via Spring Initializr, project structure, and application.properties/YAML configuration.
- **Core Concepts:** Dependency Injection (DI), Inversion of Control (IoC), and Auto-configuration.
- **RESTful APIs:** Developing REST controllers using @RestController, @RequestMapping, and handling HTTP methods (GET, POST, PUT, DELETE).
- **Data Access:** Spring Data JPA, Hibernate integration, entity mapping, and repository patterns with H2 or MySQL.

Module 3: Microservices Architecture (10–12 Hours)

- **Core Patterns:** Moving from Monolithic to Microservices, service boundaries, and decentralized data management.
- **Service Discovery:** Implementing Spring Cloud Netflix Eureka for service registration and discovery.
- **Inter-service Communication:** Using RestTemplate, WebClient, or declarative REST clients like Spring Cloud OpenFeign.
- **API Gateway:** Routing and load balancing with Spring Cloud Gateway.
- **Externalized Configuration:** Centralizing settings using Spring Cloud Config Server.

Module 4: Advanced Features & Resilience (5–7 Hours)

- **Fault Tolerance:** Implementing Circuit Breaker and Retry patterns with Resilience4j.
- **Security:** Securing services using Spring Security, JWT, or OAuth2.
- **Observability:** Monitoring application health and metrics with Spring Boot Actuator and distributed tracing.
- **Containerization:** Introduction to Dockerizing microservices for cloud deployment.

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