spring boot framework for micro services

Spring Boot Framework for Micro Services: A Deep Dive into Modern Application Development

spring boot framework for micro services has revolutionized the way developers build and deploy scalable, efficient, and resilient applications. As businesses increasingly adopt microservices architecture to enhance agility and maintainability, Spring Boot emerges as a natural choice, simplifying the complexities associated with distributed systems. If you’re venturing into microservices or looking to optimize your existing architecture, understanding how Spring Boot fits into this landscape is essential.

Understanding the Basics: What is Spring Boot and Why Microservices?

Before diving into the specifics, it’s helpful to clarify what Spring Boot and microservices architecture entail and why their combination is so powerful.

Spring Boot is a Java-based framework designed to simplify the development of stand-alone, production-grade applications. It provides a robust platform with auto-configuration, embedded servers, and opinionated defaults that drastically reduce boilerplate setup. This means developers can focus more on business logic rather than configuration headaches.

Microservices, on the other hand, represent an architectural style where applications are broken down into smaller, loosely coupled services, each responsible for a specific business capability. This approach contrasts with monolithic architectures by promoting scalability, resilience, and faster development cycles.

When you integrate the Spring Boot framework for micro services, you get a streamlined path to creating independent, easily deployable services that communicate efficiently within a distributed ecosystem.

Why Choose Spring Boot for Microservices Architecture?

Spring Boot offers several advantages that align perfectly with the needs of microservices environments:

1. Simplified Configuration and Quick Start

One of the biggest challenges in microservices development is managing the complexity of multiple services. Spring Boot’s auto-configuration and starter dependencies mean you can spin up a new microservice with minimal setup. This quick start capability accelerates development timelines and reduces errors in configuration.

2. Embedded Servers for Independence

Each microservice can run independently without relying on external application servers. Spring Boot embeds servers like Tomcat or Jetty, enabling services to be packaged as executable JARs. This autonomy supports the microservices principle of independent deployment and scalability.

3. Seamless Integration with Spring Cloud

Spring Cloud complements Spring Boot by providing tools necessary for building distributed systems—such as configuration management, service discovery, circuit breakers, and intelligent routing. Together, they form a robust ecosystem for managing microservices complexities.

4. Rich Ecosystem and Community Support

Spring Boot has a vast ecosystem with extensive documentation and community-driven support. This wealth of resources means troubleshooting, enhancements, and integrations are easier, making it an attractive choice for enterprises and startups alike.

Core Components of Spring Boot Framework for Micro Services

Delving deeper, it’s beneficial to understand some of the key components and modules that make Spring Boot ideal for microservices:

Spring Boot Starters

Starters are dependency descriptors that simplify adding libraries to your project. For microservices, starters like spring-boot-starter-web provide RESTful capabilities out of the box, while spring-boot-starter-data-jpa helps with database interactions.

Spring Boot Actuator

Monitoring and managing multiple microservices can be daunting. Actuator exposes production-ready endpoints for health checks, metrics, and auditing, which are crucial for maintaining service reliability.

Spring Cloud Config

Centralized configuration is vital in microservices. Spring Cloud Config manages external configurations across environments, ensuring consistency and reducing configuration drift.

Service Discovery with Eureka

In distributed systems, services need to locate each other dynamically. Netflix Eureka, integrated with Spring Boot, provides a registry where services can register and discover peers, fostering scalability and resilience.

Load Balancing and Resilience

Spring Cloud’s Ribbon offers client-side load balancing, while Hystrix provides circuit breaker patterns to prevent cascading failures, both essential for robust microservices.

Building a Simple Microservice with Spring Boot

To illustrate the practical side, here’s a high-level overview of creating a basic microservice using Spring Boot framework for micro services:

1. **Initialize the Project:** Use Spring Initializr or your IDE to create a new Spring Boot project with dependencies like Web, Actuator, and JPA.

2. **Develop REST APIs:** Create controller classes to define endpoints that serve business functions.

3. **Configure Database:** Set up a datasource and repositories to handle data persistence.

4. **Enable Service Discovery:** Annotate your application with @EnableEurekaClient to register it with Eureka Server.

5. **Implement Health Checks:** Customize Actuator endpoints to monitor service health.

6. **Package and Deploy:** Build executable JARs and deploy services independently.

This process, while simplified, highlights how Spring Boot dramatically reduces the complexity of building microservices.

Best Practices for Using Spring Boot Framework for Micro Services

To maximize the benefits, consider these tips when working with Spring Boot in a microservices context:

- **Keep Services Lightweight:** Design microservices to focus on single responsibilities, avoiding unnecessary dependencies.

- **Externalize Configuration:** Use Spring Cloud Config to manage environment-specific settings outside of your codebase.

- **Implement Robust Logging and Monitoring:** Leverage Actuator and integration with tools like Prometheus and Grafana for observability.

- **Secure Your Services:** Utilize Spring Security to enforce authentication and authorization across microservices.

- **Automate Testing and Deployment:** Incorporate CI/CD pipelines for continuous integration and delivery to maintain quality and agility.

Challenges and Considerations

While Spring Boot simplifies many aspects of microservices, it’s important to be aware of potential pitfalls:

- **Service Coordination:** Managing inter-service communication requires careful design, often leveraging REST, messaging queues, or gRPC.
- **Data Consistency:** Distributed transactions can be tricky; eventual consistency models and event-driven patterns often help.

- **Resource Overhead:** Running multiple Spring Boot services can increase memory and CPU usage; containerization and orchestration tools like Docker and Kubernetes help mitigate this.
- **Version Management:** Ensuring compatible versions of Spring Boot and Spring Cloud components is critical to prevent runtime conflicts.

Spring Boot in the Cloud-Native Environment

In today’s cloud-first world, the Spring Boot framework for micro services is a natural fit for cloud-native development. It integrates smoothly with container orchestration platforms like Kubernetes, enabling features such as auto-scaling, service mesh integration, and rolling updates.

Moreover, Spring Boot’s lightweight nature ensures fast startup times, which is beneficial in serverless and ephemeral container environments. Paired with Spring Cloud Kubernetes, developers can leverage native cloud functionalities while continuing to enjoy the productivity benefits of Spring Boot.

The Future of Spring Boot Framework for Micro Services

As microservices continue to evolve, so does Spring Boot. The framework consistently adapts to emerging trends like reactive programming, event-driven architectures, and enhanced security protocols. Upcoming versions focus on better support for native compilation through GraalVM, further reducing startup times and resource consumption.

Spring Boot’s commitment to developer experience, combined with its powerful integration capabilities, ensures it will remain a cornerstone in microservices development for years to come.

Exploring the Spring Boot framework for micro services offers a pathway to building scalable, maintainable, and agile applications. Its blend of simplicity, rich features, and vibrant ecosystem makes it an excellent choice for developers aiming to harness the full potential of microservices architecture. Whether you’re starting fresh or modernizing legacy systems, Spring Boot provides the tools and patterns necessary to thrive in the distributed computing era.

Frequently Asked Questions

What is Spring Boot and why is it popular for microservices?

Spring Boot is a Java-based framework that simplifies the development of production-ready applications. It is popular for microservices because it provides embedded servers, auto-configuration, and easy integration with various Spring ecosystem projects, enabling rapid development and deployment of microservices.

How does Spring Boot support building microservices architecture?

Spring Boot supports microservices architecture by providing features like embedded servers, RESTful web service support, easy configuration management, and integration with Spring Cloud for distributed system patterns such as service discovery, circuit breakers, and centralized configuration.

What is Spring Cloud and how does it complement Spring Boot in microservices?

Spring Cloud is a suite of tools built on top of Spring Boot that provides solutions for common challenges in distributed systems, such as configuration management, service discovery, load balancing, circuit breakers, and distributed tracing, making it easier to build and manage microservices architectures.

How do you implement service discovery in Spring Boot microservices?

Service discovery in Spring Boot microservices is typically implemented using Spring Cloud Netflix Eureka, where microservices register themselves with a Eureka server, allowing other services to discover and communicate with them dynamically without hard-coded URLs.

What role does Spring Boot Actuator play in microservices?

Spring Boot Actuator provides production-ready features such as health checks, metrics, audit events, and environment information, which are essential for monitoring, managing, and maintaining microservices in a distributed environment.

How can Spring Boot handle configuration management in microservices?

Spring Boot integrates with Spring Cloud Config, which centralizes configuration management for microservices. This allows microservices to fetch their configuration from a centralized server, enabling dynamic configuration updates and consistency across services.

What is the typical packaging format for Spring Boot microservices?

Spring Boot microservices are typically packaged as executable JAR files with embedded servlet containers like Tomcat or Jetty, enabling easy deployment and running as standalone applications without requiring an external application server.

How do you implement inter-service communication in Spring Boot microservices?

Inter-service communication in Spring Boot microservices can be implemented using RESTful APIs with Spring MVC or by using messaging systems like RabbitMQ or Kafka. Spring Cloud OpenFeign is also commonly used as a declarative REST client for easier HTTP communication between services.

How does Spring Boot facilitate resilience in microservices?

Spring Boot, combined with Spring Cloud Circuit Breaker or Resilience4j, facilitates resilience by implementing patterns like circuit breakers, retries, and bulkheads, which help microservices handle failures gracefully and maintain system stability.

Can Spring Boot microservices be containerized and deployed to Kubernetes?

Yes, Spring Boot microservices are commonly containerized using Docker and deployed to container orchestration platforms like Kubernetes. Spring Boot’s executable JAR packaging and configuration flexibility make it well-suited for cloud-native deployments on Kubernetes.

Additional Resources

Spring Boot Framework for Micro Services: An In-Depth Exploration

spring boot framework for micro services has rapidly gained traction as a preferred choice for developers seeking to build scalable, efficient, and maintainable microservices architectures. As enterprises shift from monolithic applications to distributed systems, the Spring Boot framework offers a streamlined, developer-friendly environment to create, deploy, and manage microservices with minimal overhead. This article delves into the capabilities of Spring Boot in the context of microservices, examining its core features, integration possibilities, and the practical advantages it brings to modern software development.

Understanding the Role of Spring Boot in Microservices Architecture

Microservices architecture divides complex applications into smaller, loosely coupled services that can be developed, deployed, and scaled independently. Implementing microservices involves challenges such as service discovery, inter-service communication, fault tolerance, and configuration management. Spring Boot addresses many of these challenges by offering a comprehensive framework that simplifies the development process and encourages best practices.

Unlike traditional Spring Framework setups, which often require extensive configuration, Spring Boot introduces sensible defaults and auto-configuration, drastically reducing the boilerplate code. This makes it particularly well-suited for microservices, where agility and rapid iteration are paramount.

Core Features of Spring Boot Supporting Microservices

Spring Boot’s design philosophy aligns with the microservices paradigm, incorporating features that enhance modularity, scalability, and rapid deployment:

- **Auto-Configuration:** Automatically configures Spring and third-party libraries based on project dependencies, speeding up initial setup.
- **Embedded Servers:** Comes with embedded Tomcat, Jetty, or Undertow, eliminating the need for external application servers and simplifying deployment.
- **Spring Cloud Integration:** Seamlessly integrates with Spring Cloud components for service discovery (Eureka), distributed configuration (Config Server), circuit breakers (Hystrix), and more.
- **Actuator:** Provides production-ready features like health checks, metrics, and monitoring endpoints, which are crucial for microservices observability.
- **Starter Dependencies:** Predefined dependency sets that simplify the inclusion of common microservices functionalities such as REST APIs, database access, and messaging.

Comparative Advantages of Spring Boot in Microservices Development

When compared to other microservices frameworks or platforms, the Spring Boot framework for micro services stands out due to its mature ecosystem and strong community support. Frameworks like Node.js with Express or Go with Gin offer lightweight alternatives, but Spring Boot’s integration with the extensive Spring ecosystem provides robust solutions for complex enterprise requirements.

Moreover, Spring Boot supports Java, one of the most widely adopted programming languages in enterprise environments, enabling organizations to leverage existing talent pools and codebases. This compatibility facilitates smoother transitions to microservices without a steep learning curve or wholesale technology shifts.

Scalability and Maintainability Considerations

Microservices demand the ability to scale individual components independently. Spring Boot’s lightweight container and modular architecture allow services to be packaged as standalone executables, often using Docker containers in modern deployment pipelines. This containerization fits naturally with orchestration platforms like Kubernetes, which manage scaling, load balancing, and fault tolerance.

From a maintenance perspective, Spring Boot’s convention-over-configuration approach ensures consistency across multiple microservices. The use of common patterns and shared libraries reduces technical debt and eases troubleshooting, which is vital when managing dozens or even hundreds of microservices.

Integration with Cloud-Native Technologies

Spring Boot’s compatibility with cloud-native tools and platforms enhances its suitability for microservices in distributed and dynamic environments. Cloud providers such as AWS, Azure, and Google Cloud offer managed Kubernetes services, and Spring Boot microservices can be deployed seamlessly in these environments.

Additionally, Spring Cloud complements Spring Boot by providing components that address microservices-specific challenges:

- **Service Discovery:** Using Netflix Eureka or Consul to enable dynamic lookup of services.
- **Distributed Configuration:** Centralized configuration management through Spring Cloud Config Server.
- **Load Balancing:** Client-side load balancing via Netflix Ribbon.
- **Fault Tolerance:** Circuit breakers implemented through Hystrix or Resilience4j.

These integrations provide a production-grade infrastructure that reduces time-to-market and increases system resilience.

Security and Monitoring in Spring Boot Microservices

Security remains a critical aspect of microservices architecture, especially as services expose APIs over the network. Spring Boot leverages the Spring Security module to provide authentication and authorization mechanisms tailored for RESTful services. Features such as OAuth2 support, JWT token validation, and method-level security annotations are readily available.

Monitoring and observability are enabled through the Spring Boot Actuator, which exposes a wealth of metrics and health indicators. These endpoints can be integrated with monitoring tools like Prometheus and Grafana, facilitating real-time analysis and proactive issue detection.

Challenges and Considerations When Using Spring Boot for Microservices

While the Spring Boot framework for micro services offers numerous benefits, there are inherent challenges to consider:

- **Complexity Growth:** As the number of microservices increases, managing dependencies and versions across services can become cumbersome.
- **Resource Consumption:** Java-based microservices may consume more memory compared to lightweight alternatives, impacting resource utilization in constrained environments.
- **Learning Curve:** Although Spring Boot reduces configuration overhead, mastering the broader Spring ecosystem and microservices best practices requires time and experience.

Organizations must weigh these factors against their project requirements, team expertise, and infrastructure capabilities.

Best Practices for Implementing Spring Boot Microservices

To leverage the full potential of Spring Boot in a microservices context, following established best practices is essential:

1. **Keep Services Small and Focused:** Each microservice should encapsulate a distinct business capability.
2. **Use API Gateways:** Implement API gateways such as Spring Cloud Gateway to centralize routing, authentication, and rate limiting.
3. **Automate Testing and Deployment:** Employ CI/CD pipelines for rapid and reliable service updates.
4. **Implement Centralized Logging:** Use tools like ELK Stack (Elasticsearch, Logstash, Kibana) to aggregate logs across services.
5. **Manage Configuration Externally:** Use Spring Cloud Config Server to avoid hardcoded settings.

Adhering to these strategies enhances system robustness and developer productivity.

Spring Boot's role in the microservices landscape continues to evolve, supported by ongoing updates and improvements from the Spring community. Its balance of simplicity, power, and integration capabilities ensures it remains a solid foundation for building modern distributed applications. Whether in startups or large enterprises, developers recognize Spring Boot as a pivotal tool for crafting resilient, scalable microservices architectures that meet today’s dynamic business demands.

Spring Boot Framework For Micro Services

spring boot framework for micro services: *Spring: Microservices with Spring Boot* Ranga Rao Karanam, 2018-03-14 Unlock the power of Spring Boot to build and deploy production-ready microservices Key Features Get to know the advanced features of Spring Boot in order to develop and monitor applications Use Spring cloud to deploy and manage microservices on the cloud Look at embedded servers and deploy a test application to a PaaS Cloud platform Embedded with assessments that will help you revise the concepts you have learned in this book Book Description Microservices helps in decomposing applications into small services and move away from a single monolithic artifact. It helps in building systems that are scalable, flexible, and high resilient. Spring Boot helps in building REST-oriented, production-grade microservices. This book is a quick learning guide on how to build, monitor, and deploy microservices with Spring Boot. You'll be first familiarized with Spring Boot before delving into building microservices. You will learn how to document your microservice with the help of Spring REST docs and Swagger documentation. You will then learn how to secure your microservice with Spring Security and OAuth2. You will deploy your app using a self-contained HTTP server and also learn to monitor a microservice with the help of Spring Boot actuator. This book is ideal for Java developers who knows the basics of Spring programming and want to build microservices with Spring Boot. This book is embedded with useful assessments that will help you revise the concepts you have learned in this book. What you will learn Use Spring Initializr to create a basic spring project Build a basic microservice with Spring Boot Implement caching and exception handling Secure your microservice with Spring security and OAuth2 Deploy microservices using self-contained HTTP server Monitor your microservices with Spring Boot actuator Learn to develop more effectively with developer tools Who this book is for This book is aimed at Java developers who knows the basics of Spring programming and want to build microservices with Spring Boot.

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spring boot framework for micro services: Microservices with Spring Boot and Spring Cloud Magnus Larsson, 2021-07-29 A step-by-step guide to creating and deploying production-quality microservices-based applications Key FeaturesBuild cloud-native production-ready microservices with this comprehensively updated guideUnderstand the challenges of building large-scale microservice architecturesLearn how to get the best out of Spring Cloud, Kubernetes, and Istio in combinationBook Description With this book, you'll learn how to efficiently build and deploy microservices. This new edition has been updated for the most recent versions of Spring, Java, Kubernetes, and Istio, demonstrating faster and simpler handling of Spring Boot, local Kubernetes clusters, and Istio installation. The expanded scope includes native compilation of

Spring-based microservices, support for Mac and Windows with WSL2, and an introduction to Helm 3 for packaging and deployment. A revamped security chapter now follows the OAuth 2.1 specification and makes use of the newly launched Spring Authorization Server from the Spring team. Starting with a set of simple cooperating microservices, you'll add persistence and resilience, make your microservices reactive, and document their APIs using OpenAPI. You’ll understand how fundamental design patterns are applied to add important functionality, such as service discovery with Netflix Eureka and edge servers with Spring Cloud Gateway. You’ll learn how to deploy your microservices using Kubernetes and adopt Istio. You'll explore centralized log management using the Elasticsearch, Fluentd, and Kibana (EFK) stack and monitor microservices using Prometheus and Grafana. By the end of this book, you'll be confident in building microservices that are scalable and robust using Spring Boot and Spring Cloud. What you will learnBuild reactive microservices using Spring BootDevelop resilient and scalable microservices using Spring CloudUse OAuth 2.1/OIDC and Spring Security to protect public APIsImplement Docker to bridge the gap between development, testing, and productionDeploy and manage microservices with KubernetesApply Istio for improved security, observability, and traffic managementWrite and run automated microservice tests with JUnit, testcontainers, Gradle, and bashWho this book is for If you are a Java or Spring Boot developer who wants to learn how to build microservice landscapes from scratch, this book is for you. No familiarity with microservices architecture is required.

spring boot framework for micro services: Microservices with Spring Boot and Spring Cloud Tejaswini Jog, Mandar Jog, 2023-09-23 Leverage microservices and Spring Boot 3 to build production-grade apps on the cloud. KEY FEATURES ● Step-by-step guide to transform your apps from monolithic to microservices architecture. ● Master microservice architecture, migration, and design patterns. ● Grasp the intricate workings of powerful tools like Feign Client, Resilience4J and the Cloud Config Service. ● Harness token-based protection mechanisms, ensuring your system's confidentiality and integrity. ● Monitor and analyze microservices with Micrometer and Zipkin. DESCRIPTION Microservices has emerged as a powerful solution to build flexible, scalable, and resilient applications. This Book is the go-to-guide to understanding, designing, and implementing microservice architectures using Spring Boot. It takes you on a journey through the intricacies of microservices to create robust and efficient microservice-based applications. This book helps you to understand the motivations and the entire process behind migrating from monolithic to microservice architectures. It covers essentials like REST basics, advanced topics such as centralized configuration, inter-service communication, Eureka Server, resilience mechanisms, security, and Docker deployment. Readers will be equipped to effortlessly find and access instances within a microservice architecture without disrupting clients. You will delve into distributed tracing and its importance in monitoring the interactions among microservices. Finally, we will discuss strategies for ensuring the reliability of your microservices architecture. Whether you're new to microservices or seeking to enhance your existing expertise, this book is your comprehensive guide to navigating the intricacies of modern application development. Embark on your microservices journey today and unlock the potential of Spring Boot in crafting efficient, scalable, and resilient software solutions. WHAT WILL YOU LEARN ● Grasp microservice architecture's advantages, migration, and design patterns. ● Develop RESTful services, handle diverse data, and manage exceptions. ● Achieve service transparency with Eureka Server and location discovery. ● Implement effective communication using RestTemplate and Feign Client. ● Implement inter-service communication, secure microservices, and leverage container-based deployment with Docker. WHO IS THIS BOOK FOR? This book is designed for software developers, architects, technical leads, emerging tech professionals and students who wish to acquire the skills to design, build, and deploy robust microservices architectures. This book is also helpful for traditional developers who intend to migrate, integrate, or upgrade from monolithic development to a microservice-based architecture. With practical insights and real-world examples, this book is a valuable resource for those seeking to navigate the world of microservices using Spring technologies. TABLE OF CONTENTS 1. The Foundation 2. Decipher the unintelligible 3. Scale it down 4. Reflective Composition 5. Liaison among services 6. Location Transparency 7. Gateway API Services 8. Observability 9. Reliability 10. Keep It safe 11. Deployment Appendix 1 Appendix 2 Index

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spring boot framework for micro services: Building Microservices with Spring Dinesh Rajput, Rajesh R V, 2018-12-21 Learn and use the design patterns and best practices in Spring to solve common design problems and build user-friendly microservices Key FeaturesStudy the benefits of using the right design pattern in your toolkitManage your code easily with Spring's dependency injection patternExplore the features of Docker and Mesos to build successful microservicesBook Description Getting Started with Spring Microservices begins with an overview of the Spring Framework 5.0, its design patterns, and its guidelines that enable you to implement responsive microservices at scale. You will learn how to use GoF patterns in application design. You will understand the dependency injection pattern, which is the main principle behind the decoupling process of the Spring Framework and makes it easier to manage your code. Then, you will learn how to use proxy patterns in aspect-oriented programming and remoting. Moving on, you will understand the JDBC template patterns and their use in abstracting database access. After understanding the basics, you will move on to more advanced topics, such as reactive streams and concurrency. Written to the latest specifications of Spring that focuses on Reactive Programming, the Learning Path teaches you how to build modern, internet-scale Java applications in no time. Next, you will understand how Spring Boot is used to deploying serverless autonomous services by removing the need to have a heavyweight application server. You’ll also explore ways to deploy your microservices to Docker and managing them with Mesos. By the end of this Learning Path, you will have the clarity and confidence for implementing microservices using Spring Framework. This Learning Path includes content from the following Packt products: Spring 5 Microservices by Rajesh R V Spring 5 Design Patterns by Dinesh RajputWhat you will learnDevelop applications using dependency injection patternsBuild web applications using traditional Spring MVC patternsUtilize the reactive programming pattern to build reactive web appsLearn concurrency and handle multiple connections inside a web serverUse Spring Boot and Spring Cloud to develop microservicesLeverage reactive programming to build cloud-native applicationsWho this book is for Getting Started with Spring Microservices is ideal for Spring developers who want to use design patterns to solve common design problems and build cloud-ready, Internet-scale applications, and simple RESTful services.

spring boot framework for micro services: Hands-on Application Development using Spring Boot Shagun Bakliwal, 2021-10-30 A pragmatic guide for Java developers to help build Microservices and Cloud Apps using Spring Boot. KEY FEATURES ● Develops microservices from start to finish using the Spring Boot Framework. ● Creates cloud-native applications using Spring Boot's production-ready features. ● Covers the API gateway, unit testing, cloud deployments, and managing high-traffic applications. DESCRIPTION Spring is an excellent framework for developing both web and cloud-native applications. This book on application development using Spring Boot simplifies the process of writing boilerplate code for complex software. It allows developers to concentrate on the application's concept rather than on the internal Java configuration. This book will guide you on how to make the best use of the strength that Spring Boot provides. You'll gain an understanding of how Spring Boot configuration works in conjunction with application development, including auto-configuration and overriding default configurations. You will learn to develop scalable, dependable microservices to accelerate the development lifecycle of a cloud-based application. Each chapter will walk you through the features of Spring Boot as a Software Development Framework, such as performing Create, Read, Update, and Delete (CRUD) operations on a database and securing web services with appropriate logging. By the end of this book, you will develop, test, and deploy applications ready for production and how to establish them as cloud-based applications. The readers will also gain the expertise of writing unit and integration test cases. WHAT YOU WILL LEARN ● Get to know Spring Boot and all its capabilities. ● Build start-to-end production-ready applications. ● Explore the API Gateway and practice how to run request routing. ● Learn API doc tools like Swagger and host your apps on Cloud. ● Practice how to balance the application's load when the system is under high traffic. ● Learn to write unit tests and integration tests for bug-free coding. WHO THIS BOOK IS FOR This book is for Java developers who want to quickly develop, test, and deploy production-ready applications. This book will also appeal to cloud-native application developers and cloud engineers. No prior Spring Boot knowledge is required as the basics are covered in the book. TABLE OF CONTENTS 1. Getting Started with Spring Boot 2. Developing Your First Spring Boot Application 3. Spring Boot Starter Dependencies and Auto-Configuration 4. Spring Boot Annotations 5. Working with Spring Data JPA and Caching 6. Building RESTFul Microservices 7. Securing a Web Application 8. Building Resilient System 9. Logging 10. Working with the Swagger API Management Tool 11. Testing a Spring Boot Application 12. Deploying a Spring Boot Application

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spring boot framework for micro services: *Hands-On Microservices with Spring Boot and Spring Cloud* Magnus Larsson, 2019-09-20 Apply microservices patterns to build resilient and scalable distributed systems Key Features Understand the challenges of building large-scale microservice landscapes Build cloud-native production-ready microservices with this comprehensive guide Discover how to get the best out of Spring Cloud, Kubernetes, and Istio when used together Book DescriptionMicroservices architecture allows developers to build and maintain applications with ease, and enterprises are rapidly adopting it to build software using Spring Boot as their default framework. With this book, you'll learn how to efficiently build and deploy microservices using Spring Boot. This microservices book will take you through tried and tested approaches to building distributed systems and implementing microservices architecture in your organization. Starting with a set of simple cooperating microservices developed using Spring Boot, you'll learn how you can add functionalities such as persistence, make your microservices reactive, and describe their APIs using Swagger/OpenAPI. As you advance, you'll understand how to add different services from Spring Cloud to your microservice system. The book also demonstrates how to deploy your microservices using Kubernetes and manage them with Istio for improved security and traffic management. Finally, you'll explore centralized log management using the EFK stack and monitor microservices using Prometheus and Grafana. By the end of this book, you'll be able to build microservices that are scalable and robust using Spring Boot and Spring Cloud.What you will learn Build reactive microservices using Spring Boot Develop resilient and scalable microservices using Spring Cloud Use OAuth 2.0/OIDC and Spring Security to protect public APIs Implement Docker to bridge the gap between development, testing, and production Deploy and manage microservices using Kubernetes Apply Istio for improved security, observability, and traffic management Who this book is for This book is for Java and Spring developers and architects who want to learn how to break up their existing monoliths into microservices and deploy them either on-premises or in the cloud using Kubernetes as a container orchestrator and Istio as a service Mesh. No familiarity with microservices architecture is required to get started with this book.

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