Microservices

Zetlan Technologies

e-Learning Course

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COURSE MODULES

Introduction to Microservices

- What are Microservices?
- Monolithic vs. Microservices Architecture
- Benefits and Challenges of Microservices
- Key Characteristics of Microservices
- When to Use Microservices?

Microservices Architecture & Design

- Principles of Microservices Architecture
- Domain-Driven Design (DDD)
- Service Decomposition Strategies
- API-First Development
- Event-Driven Microservices
- Microservices Design Patterns
  - Saga Pattern
  - Strangler Pattern
  - Circuit Breaker Pattern
  - API Gateway Pattern

Communication in Microservices

- Synchronous vs. Asynchronous Communication
- RESTful APIs with HTTP
- gRPC and Protocol Buffers
- Message Brokers (Kafka, RabbitMQ)
- Event Sourcing & CQRS

Implementing Microservices

- Choosing the Right Tech Stack
- Building a Microservice with Spring Boot / Node.js / .NET
- Database Per Microservice
- API Gateway (Kong, NGINX, Zuul)
- Authentication & Authorization (JWT, OAuth2, OpenID)

Microservices Deployment & DevOps

- CI/CD Pipelines for Microservices
- Dockerizing Microservices
- Container Orchestration with Kubernetes
- Service Mesh (Istio, Linkerd)
- Config Management (Consul, Vault, Config Server)

Monitoring, Logging & Security

- Centralized Logging (ELK Stack, Prometheus, Grafana)
- Distributed Tracing with Jaeger / Zipkin
- Observability & Performance Monitoring
- Security Best Practices
- Handling Failures & Resilience