Microservices Interview Questions and Answers

1. What are Microservices?

Microservices are an architectural style that structures an application as a collection of small, autonomous services modeled around a business domain.

2. What are the advantages of Microservices?

They offer scalability, flexibility, faster deployment, fault isolation, and independent development.

3. What are the challenges with Microservices?

Complexity in distributed systems, data consistency, network latency, deployment, and monitoring.

4. What is a monolithic architecture?

An architecture where all components are combined into a single program.

5. How do Microservices communicate?

Through lightweight protocols like HTTP, REST, gRPC, or messaging queues.

6. What is service discovery in Microservices?

It's a mechanism that allows services to find each other on the network.

7. What is Spring Boot?

A Java-based framework used to create stand-alone, production-grade Spring-based applications.

8. What is Spring Cloud?

A set of tools for building some of the common patterns in distributed systems such as configuration management, service discovery, circuit breakers, and routing.

9. What is Eureka in Microservices?

A service registry used for service discovery.

10. What is Hystrix?

A library from Netflix used to handle latency and fault tolerance.

11. What is API Gateway?

An API Gateway acts as a single entry point for all clients to access backend services.

12. What is a circuit breaker pattern?

It is used to detect failures and encapsulate the logic of preventing a failure from constantly recurring.

13. What is the difference between orchestration and choreography in Microservices?

Orchestration is centralized control, while choreography is decentralized.

14. How is data managed in Microservices?

Each microservice has its own database to ensure loose coupling.

15. What is eventual consistency?

Data consistency is not immediate but is guaranteed eventually.

16. What is a container and how is it useful in Microservices?

A container packages a microservice and its dependencies; Docker is commonly used.

17. What is Docker?

An open-source platform for building, deploying, and managing containerized applications.

18. What is Kubernetes?

An open-source platform for automating deployment, scaling, and operations of application containers.

19. What is DevOps in the context of Microservices?

A set of practices that automates and integrates the processes between software development and IT teams.

20. What is configuration management?

Managing application configurations in a centralized location, often with Spring Cloud Config Server.

21. How do you handle security in Microservices?

Use OAuth2, JWT tokens, and API Gateways to manage authentication and authorization.

22. What is a sidecar pattern?

A sidecar service is attached to a main service and enhances its capabilities without changing it.

23. What is service mesh?

A dedicated infrastructure layer to handle service-to-service communication.

24. What is Zipkin?

A distributed tracing system that helps gather timing data for requests.

25. What is Sleuth?

Spring Cloud Sleuth adds unique IDs to logs for traceability.

26. What is a saga pattern?

A design pattern to manage data consistency across microservices using a sequence of local transactions.

27. What is CQRS?

Command Query Responsibility Segregation separates read and write operations.

28. What is the role of a message broker in Microservices?

Enables asynchronous communication between services; examples include RabbitMQ and Kafka.

29. How do you monitor Microservices?

Using tools like Prometheus, Grafana, ELK stack, and Zipkin.

30. How do you test Microservices?

Use unit tests, integration tests, contract tests, and end-to-end testing.