Interview Preparation

Microservices

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Questions & Answers

1. What does "Microservices" mean? Explain the term Microservices?

Answer: Microservices is a Systems Development Life Cycle (SDLC) approach in which huge applications are built as a collection of small functional modules. These modules are deployed independently. They are scalable and can communicate with each other over standard protocols.

2. What are the advantages of using Microservices?

Answer: If you have been doing software development then you know that Microservices is the future, the biggest advantage of Microservices is that it fits nicely in cloud infrastructure. By using containers like Docker it's easy to deploy and scale and it also makes the development easier.

Here are some key advantages of using Microservice architecture:

They can be deployed independently.

They are fault isolated.

They are technologically diverse.

Deployment time is less.

3. Name the main components of Microservices?.

Answer: Containers, cloud infrastructure, API gateway, Service delivery, IaC, and Service bus.

4. How is Microservice architecture different from Monolithic architecture?

Answer: Monolithic architecture is tightly coupled (mostly) while microservice architecture is loosely coupled. Microservices focuses on products while monolithic architecture focuses on the whole project. Moreover, service startups are faster in the microservice architecture.

5. What is the meaning of RESTful?

Answer: RESTful means Representational State Transfer web services. It's based on HTTP protocol and has been the backbone of modern web development which is highly based upon APIs.

6. What is the meaning of OAuth? And why is it used?

Answer: OAuth means open authorization protocol. OAuth is used to access the client applications on HTTP for third-party providers Facebook, GitHub, etc. On Java world, Spring Security supports OAuth 2.0 which you can use to secure your application. If you want to learn more about OAuth and Spring Security I suggest you join OAuth 2.0 in the Spring Boot Applications course on Udemy. It's a great course to learn OAuth 2 in depth.

7. What are some challenges faced while using Microservices?

Answer: Here are some challenges faced on building application on Microservices architecture:

a) Being a distributed system, microservice architecture is a heavily involved model.

b) Microservices always need to communicate with each other because they always rely on each other.

c) There are always operation overheads.

8. What is the use of containers in Microservices?

Answer: Containers are used to manage microservice-based applications. They are easy and effective. Containers also help effectively in deploying and developing individually.

The biggest advantages of containers are that they are easy to scale.

You can easily scale your Microservices using tools like Kubernetes which can manage containers at scale. Containers also make deployment uniform, for example, you can deploy a Microservice written in Java or any other programming languages in the same way.

9. Explain end to end Microservices testing?

Answer: End-to-end microservices testing is a technique in which the entire flow of the application is tested using a business transaction. Such kind of testing covers the gaps left during other testing techniques such as unit and integration testing.

10. In what kind of application we should use microservices?

Answer: Microservices should be used in applications like web, desktop, mobile devices, Smart TVs, etc.

11. What is Docker used for?

Answer: Docker provides a container environment that is used to host applications. It provides a static background for the app to run. Thus, preventing deployment issues.

12. What is a "Client certificate"?

Answer: It is a digital certificate. It is used by client systems to make authenticated requests to any remote server. It is highly useful in mutual authentication designs as it provides strong assurances of a requester's identity.

13. How do independent Microservices communicate with each other?

Answer: Microservices can communicate with others through WebSockets for streaming, HTTP for request-response, or brokers.

14. What are some common Microservices design principles?

Microservices architecture is a better way of implementing Service-oriented architecture and following design principles are key for implementing Microservices applications

High Cohesion

Autonomous

Business Domain Centric

Resilence

Observable

Automation

15. What are the disadvantages of using microservices?

Answer: While Microservices goes hand-in-hand with modern Cloud infrastructure and they are easy to scale, it all comes with a cost of complexity.

Here are some of the notable disadvantages of Microservice architecture

As a whole, microservices architecture is complicated.

There is less control over third-party apps.

Overall end-to-end testing is tough.

Challenges while deployment.

Accurate pre-planning is required.

Though the advantages offered by Microservices in a Cloud Computing environment outweigh these disadvantages, and it's now becoming a standard way to develop a cloud-native software application.

16. Give the major difference between Cohesion and Coupling?

Answer: Coupling is the relationship between two modules while cohesion is the relationship between two or more parts within a module.

17. What is a Container?

Answer: Containers are isolated workload environments in a virtualized operating system. It consists of an application and all the features and files required to run it. Each box is an independent environment and is not tied to the software on a physical environment, thus providing a solution for application portability.

18. What is PACT in Microservices Architecture?

Answer: A contract between a consumer application and a provider application is called a PACT. Each pact is a collection of interactions. It is an open-source tool that can be used to implement the Consumer-Driven Contract in Microservices.

19. What is Contract Testing?

Answer: Contract Testing ensures that the explicit and implicit contracts of a microservice architecture work as expected. There are two perspectives to contract to test – Consumer and Provider. The consumer is the [application] entity using the microservice, and the provider is the [application] entity providing the service. Such services work under predefined specifications, and contract testing ensures so.

20. What is OAuth?

Answer: OAuth stands for Open-standard Authorization Protocol or framework that describes how unrelated servers and services can safely allow

authenticated access to their assets without sharing the initial related, single login credential. This is also known as secure, third-party, user-agent, delegated authorization.

21. What is the role of RESTful APIs in Microservices?

Answer: A microservice is based on the concept where all it's component services require to interact with one another to complete the business functionality. This requires each microservice to have an interface. RESTful APIs provide a logical model for building these interfaces. It is based on the open networking principles of the Web. Thus, it serves as the most critical enabler of microservices.

22. What is Eureka in Microservices?

Answer: Eureka is alternatively known as the Netflix Service Discovery Server. It uses Spring Cloud and is not heavy on the application development process.