KUBERNETES INTERVIEW QUESTIONS

1. What is Kubernetes and why it is important?
2. What problem does Kubernetes solve?
3. How are Kubernetes and Docker related?
4. What is the difference between deploying applications on hosts and containers?
5. What is difference between docker swarm and kubernetes?
6. What are pods in Kubernetes?
7. How can you secure communication between Pods in Kubernetes?
8. Explain the architecture of Kubernetes.
9. Explain the working of the master node in Kubernetes?
10. What is the role of Kube-apiserver?
11. What is a node in Kubernetes?
12. What is the job of the kube-scheduler?
13. How does Kubernetes handle network communication between containers?
14. How does Kubernetes handle scaling of applications? OR How can you scale applications in Kubernetes?
15. What is the purpose of the Horizontal Pod Autoscaler (HPA) in Kubernetes?
16. How does Kubernetes handle container scheduling and resource allocation?
17. What is a Kubernetes Deployment?
18. Explain the difference between a ReplicaSet and a Deployment.
19. What is the difference between a Deployment and a StatefulSet?
20. How does Kubernetes handle service discovery and load balancing?
21. How does Kubernetes handle rolling updates and rollbacks?
22. How does Kubernetes handle network security and access control?
23. Can you give an example of how Kubernetes can be used to deploy a highly available application?
24. What is namespace is Kubernetes? Which namespace any pod takes if we don't specify any namespace?
25. Why should you use namespace?
26. Explain the concept of liveness and readiness probes in Kubernetes.
27. How ingress helps in Kubernetes?
28. Explain different types of services in Kubernetes?
29. What is a headless service?
30. What is Kube-proxy?
31. How can you get a static IP for a Kubernetes load balancer? (A static IP for the Kubernetes load balancer can be achieved by changing DNS records since the Kubernetes Master can assign a new static IP address.)
32. Can you explain the concept of self-healing in Kubernetes and give examples of how it works?
33. How does Kubernetes handle persistent storage for stateful applications?
34. Explain the difference between a DaemonSet and a Deployment.
35. How does Kubernetes handle storage management for containers?
36. How does the NodePort service work?
37. What is a multinode cluster and single-node cluster in Kubernetes?
38. Difference between create and apply in Kubernetes?

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39. What are the different types of Kubernetes volumes?
40. How can you update a running application in Kubernetes without downtime?
41. What are Kubernetes labels and selectors used for?
42. Explain the concept of secrets in Kubernetes and how they are managed.
43. Is Kubelet present on master? (Yes, but in disabled state.)
44. What are the differences between a ConfigMap and a Secret in Kubernetes, and when would you use each?
45. Explain the concept of a service mesh in Kubernetes and its advantages.
46. How can you monitor and collect metrics from Kubernetes clusters?
47. What is the purpose of an Init Container in Kubernetes, and how does it work?
48. How does Kubernetes handle node failure and rescheduling of Pods?
49. What is the difference between a Job and a Cronjob in Kubernetes?
50. How can you secure access to Kubernetes clusters using RBAC (Role-Based Access Control)?
51. Explain the concept of affinity and anti-affinity in Kubernetes and their use cases.
52. How can you integrate external storage systems with Kubernetes using CSI (Container Storage Interface)?
53. What are the best practices for deploying applications in Kubernetes?
54. You have a Kubernetes cluster running multiple Pods. One of the Pods is experiencing high CPU utilization, causing performance issues. How would you troubleshoot and resolve this issue?
55. You have deployed a stateful application in Kubernetes that requires persistent storage. How would you ensure data durability and availability?
56. You need to deploy a microservices-based application in Kubernetes, where each microservice has specific resource requirements. How would you manage resource allocation efficiently?
57. You have a Kubernetes cluster with multiple namespaces. You need to allow a specific user to access and manage resources only within a particular namespace. How would you set up RBAC (Role-Based Access Control) to achieve this?
58. You want to deploy a new version of an application in Kubernetes without causing downtime. How would you achieve zero-downtime deployments using strategies like rolling updates or blue-green deployments?
59. You have a stateful application deployed in Kubernetes that requires a specific DNS name for internal service discovery. How would you configure a stable DNS name for the application using Kubernetes services?
60. You need to deploy a Kubernetes cluster across multiple cloud providers or on-premises data centres for high availability and fault tolerance. How would you set up a multi-cluster architecture and implement cross-cluster communication?
61. You want to secure your Kubernetes cluster by encrypting sensitive data in etcd, the cluster's key-value store. How would you configure encryption at rest for etcd and ensure the security of the data stored within the cluster?
62. You need to schedule a batch job in Kubernetes that runs periodically at a specified interval. How would you configure a cron job to automate the execution of the batch job on a recurring basis?

63. You want to optimize the resource allocation and utilization in your Kubernetes cluster. How would you implement cluster autoscaling to dynamically adjust the number of worker nodes based on resource demand?
64. You have a Kubernetes cluster running multiple applications with different versions of a shared library. How would you manage library versioning and ensure that each application uses the appropriate version without conflicts?
65. You have a stateful application that requires a specific IP address for external communication. How would you assign a static IP address to a Kubernetes service to provide a stable endpoint for accessing the application?
66. You need to perform rolling updates of a StatefulSet in Kubernetes while maintaining ordered and graceful scaling of the application instances. How would you ensure that each replica is updated in a controlled manner without disrupting the application's functionality?
67. Mention some errors you faced while working with K8s cluster.
68. Explain the concept of a sidecar container and its use cases in Kubernetes.
69. You have a multi-container application running in a pod, consisting of a web server container and a sidecar container. The web server container generates log files that you want to persist and analyse. How would you approach this situation?
70. You have a Kubernetes cluster with multiple namespaces, each containing several pods. You need to enforce network policies to restrict network traffic between certain pods based on specific criteria, such as source IP address or pod labels. How would you implement network policies in this scenario?

    Do have a look at this document: Debug the Kubernetes issues.