

# **DevOps Engineer Interview Q&A – Crack Any Interview with Confidence!**

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## **DevOps Fundamentals – Must-Know Basics**

### **1. What is DevOps?**

- DevOps is a software development methodology that combines development (Dev) and operations (Ops) to improve collaboration, automate processes, and accelerate software delivery through CI/CD, monitoring, and infrastructure automation.

### **2. How does DevOps differ from Agile?**

- Agile focuses on iterative software development, while DevOps extends Agile principles to IT operations, ensuring continuous integration, continuous deployment, and automated monitoring for faster and more reliable software delivery.

### **3. What are the key benefits of DevOps?**

- Faster software delivery through automation, improved team collaboration, increased deployment frequency, reduced failures, better monitoring, and enhanced system reliability.

### **4. What are the main phases of the DevOps lifecycle?**

- Plan → Develop → Build → Test → Release → Deploy → Operate → Monitor, ensuring a continuous feedback loop for improvement.

## **5. What is Continuous Integration (CI)?**

- Continuous Integration (CI) is a practice where developers frequently merge code changes into a shared repository, triggering automated builds and tests to detect issues early.

## **6. What is Continuous Deployment (CD)?**

- Continuous Deployment (CD) is an automated software release process where every successful code change passing CI tests is automatically deployed to production without manual intervention.

## **7. What is Infrastructure as Code (IaC)?**

- Infrastructure as Code (IaC) is the practice of managing and provisioning IT infrastructure using code instead of manual configurations, ensuring consistency, automation, and version control.

## **8. What are some popular DevOps tools?**

- Jenkins (CI/CD), Docker (Containerization), Kubernetes (Orchestration), Terraform (IaC), Ansible (Configuration Management), Prometheus (Monitoring), Grafana (Visualization).

## **9. What is Docker and how does it help in DevOps?**

- Docker is a containerization platform that enables applications to run in isolated environments, ensuring consistency across development, testing, and production.

## **10. What is Kubernetes?**

- Kubernetes is an open-source container orchestration platform that automates deployment, scaling, and management of containerized applications.

# **CI/CD – Automation and Deployment Strategies**

## **11. What is a CI/CD pipeline?**

- A CI/CD pipeline automates software integration, testing, and deployment, ensuring fast and reliable delivery of applications with minimal human intervention.

## **12. What is a Blue-Green Deployment?**

- A deployment strategy where two identical environments (Blue and Green) exist, allowing seamless rollback and zero-downtime updates by switching traffic between them.

### **13. What is a Rolling Update in Kubernetes?**

- A deployment strategy that gradually updates application instances without downtime, ensuring high availability.

### **14. What is a Canary Deployment?**

- A progressive release strategy where new changes are deployed to a small subset of users before full rollout to mitigate risks.

### **15. What is a Helm Chart?**

- Helm is a package manager for Kubernetes that simplifies the deployment and management of applications using predefined templates.

### **16. What is a feature toggle in DevOps?**

- A software development technique that allows teams to enable or disable features dynamically without deploying new code.

### **17. What is GitOps?**

- GitOps is an operational framework that uses Git as the single source of truth for declarative infrastructure and application deployments.

### **18. What is the purpose of Artifactory in DevOps?**

- Artifactory is a repository manager that stores, manages, and distributes binary artifacts, ensuring version control and dependency management.

### **19. What are the best practices for CI/CD?**

- Automate everything, ensure small and frequent releases, implement robust testing, enable monitoring, and use rollback strategies to handle failures.

### **20. What is a deployment strategy in DevOps?**

- A plan for rolling out changes in a controlled manner, including strategies like Blue-Green, Rolling Updates, Canary Deployments, and A/B testing.

# Containerization and Orchestration – Docker & Kubernetes

## 21. What are the advantages of using containers?

- Portability, scalability, faster deployment, resource efficiency, and isolation of applications from underlying infrastructure.

## 22. What are Pods in Kubernetes?

- The smallest deployable unit in Kubernetes, consisting of one or more containers that share the same network and storage resources.

## 23. What is the difference between a ReplicaSet and a Deployment in Kubernetes?

- A ReplicaSet ensures a specified number of pod replicas, while a Deployment provides versioning, rollback, and rolling updates.

## 24. What is a Kubernetes Namespace?

- A logical partition within a Kubernetes cluster that isolates resources and enables multi-tenancy.

## 25. How does Kubernetes manage networking?

- Kubernetes uses CNI (Container Network Interface) plugins to handle networking between pods, services, and external resources.

## 26. What is a Persistent Volume (PV) in Kubernetes?

- A storage resource that provides durable and independent storage for pods, managed separately from their lifecycle.

## 27. What is the role of etcd in Kubernetes?

- etcd is a distributed key-value store used by Kubernetes for storing cluster configuration, state data, and leader election.

## 28. What is Kubernetes Ingress?

- A Kubernetes API object that manages external access to services, providing HTTP/S routing, load balancing, and SSL termination.

### **29. How does Kubernetes handle high availability?**

- Kubernetes achieves high availability using multiple master nodes, health checks, self-healing mechanisms, and automatic scaling of workloads.

### **30. What is the difference between a StatefulSet and a Deployment?**

- StatefulSets are used for stateful applications requiring stable network identities and persistent storage, while Deployments handle stateless applications.

### **31. What is the purpose of Infrastructure as Code (IaC)?**

- IaC automates infrastructure provisioning and management using code, ensuring consistency, version control, and repeatability.

### **32. What are some popular IaC tools?**

- Terraform (Declarative), Ansible (Configuration Management), CloudFormation (AWS), Pulumi (Multi-cloud), and Chef/Puppet (Automation).

### **33. What is the difference between Terraform and Ansible?**

- Terraform is used for infrastructure provisioning (IaC), while Ansible is primarily for configuration management and automation.

### **34. What is state management in Terraform?**

- Terraform uses state files (`terraform.tfstate`) to track resources deployed, enabling updates and rollbacks efficiently.

### **35. What is a Terraform module?**

- A reusable set of Terraform configurations that simplifies infrastructure management by encapsulating common patterns.

### **36. How does Ansible differ from Puppet and Chef?**

- Ansible is agentless and uses YAML playbooks, while Puppet and Chef require agents and use Ruby-based configurations.

### **37. What is a playbook in Ansible?**

- A YAML file defining automation tasks, executed sequentially to configure and manage systems.

### **38. What is the role of inventory files in Ansible?**

- Inventory files define managed hosts and their groups, enabling targeted execution of automation tasks.

### **39. What are Terraform providers?**

- Plugins that interact with cloud platforms (AWS, Azure, GCP), enabling Terraform to manage resources across different environments.

### **40. What is Terraform's 'Plan' and 'Apply' command?**

- `terraform plan` previews changes before applying them, while `terraform apply` executes the changes to provision infrastructure.

## **Monitoring, Logging, and Observability**

### **41. What is observability in DevOps?**

- Observability refers to the ability to measure the internal state of a system using logs, metrics, and traces for proactive monitoring.

### **42. What are the key components of observability?**

- Logging (structured event data), Monitoring (performance metrics), and Tracing (end-to-end request tracking).

### **43. What is Prometheus?**

- A time-series monitoring tool that collects, stores, and queries real-time metrics for alerting and analysis.

### **44. How does Prometheus collect metrics?**

- Prometheus scrapes metrics from targets using HTTP endpoints, storing them in a time-series database.

### **45. What is Grafana used for?**

- Grafana visualizes metrics from Prometheus, InfluxDB, and other sources using customizable dashboards.

### **46. What is the ELK Stack?**

- A centralized logging solution consisting of Elasticsearch (search engine), Logstash (data processing), and Kibana (visualization).

#### **47. What is a Service Level Objective (SLO)?**

- A measurable performance target (e.g., 99.9% uptime) that defines acceptable service reliability.

#### **48. What is a Service Level Agreement (SLA)?**

- A contractual agreement defining the minimum service performance guaranteed to users.

#### **49. What is a Service Level Indicator (SLI)?**

- A specific metric (e.g., response time, error rate) used to measure system performance against SLOs.

#### **50. What is Distributed Tracing?**

- A technique for tracking requests across multiple services, helping diagnose performance bottlenecks in microservices architectures.

### **Security in DevOps (DevSecOps)**

#### **51. What is DevSecOps?**

- A security-focused approach integrating security practices within the DevOps lifecycle to identify vulnerabilities early.

#### **52. What is the principle of least privilege?**

- A security model ensuring users and systems have the minimum necessary access required to perform tasks.

#### **53. What are some common DevSecOps tools?**

- SonarQube (Code Analysis), Trivy (Container Security), OWASP ZAP (Web Security Testing), Vault (Secrets Management).

#### **54. What is Infrastructure as Code (IaC) security?**

- Ensuring that Terraform, Ansible, and CloudFormation scripts follow best practices to prevent misconfigurations and vulnerabilities.

## **55. What is Shift Left Security?**

- A practice of integrating security earlier in the software development lifecycle rather than at the end.

## **56. How do you secure a Kubernetes cluster?**

- Implement RBAC, use network policies, enable encryption, scan container images, and regularly update dependencies.

## **57. What is a Security Information and Event Management (SIEM) tool?**

- SIEM tools collect and analyze security logs from various sources to detect threats and respond to incidents.

## **58. What are secrets management tools?**

- Tools like HashiCorp Vault, AWS Secrets Manager, and Kubernetes Secrets securely store API keys, passwords, and certificates.

## **59. What is an SBOM (Software Bill of Materials)?**

- A detailed inventory of components used in software development, helping to track vulnerabilities and dependencies.

## **60. What is Zero Trust Security?**

- A security model where no entity (inside or outside the network) is automatically trusted, enforcing strict identity verification.

# **Advanced Kubernetes Concepts**

## **61. What is the difference between Kubernetes Deployment and StatefulSet?**

- Deployment manages stateless applications, while StatefulSet manages stateful applications that require persistent storage.

## **62. What is a DaemonSet in Kubernetes?**

- A DaemonSet ensures that a copy of a specific pod runs on all or some nodes, commonly used for monitoring agents like Prometheus Node Exporter.



### **63. What is a Kubernetes Ingress?**

- An API object that manages external access to services, typically HTTP(S), using ingress controllers like Nginx or Traefik.

### **64. What is a Kubernetes ConfigMap?**

- A Kubernetes resource that stores non-sensitive configuration data as key-value pairs for application consumption.

### **65. How does Kubernetes handle secrets?**

- Secrets store sensitive data like API keys and passwords securely, reducing exposure in application configurations.

### **66. What is a Kubernetes Persistent Volume (PV)?**

- A PV is a storage resource provisioned by an administrator, independent of pod lifecycle, to retain data persistently.

### **67. What is a Persistent Volume Claim (PVC)?**

- A PVC is a request for storage by a user, dynamically binding pods to available persistent volumes.

### **68. What is the difference between ClusterIP, NodePort, and LoadBalancer services?**

- ClusterIP (internal-only communication), NodePort (exposes service on node IP and a specific port), LoadBalancer (allocates an external IP).

### **69. What is a Kubernetes Sidecar pattern?**

- A Sidecar is a secondary container running alongside the main container in a pod, commonly used for logging, monitoring, or proxies.

### **70. How does Kubernetes handle rolling updates?**

- Kubernetes gradually replaces old pod instances with new ones while ensuring zero downtime using Deployment strategies.

## **CI/CD (Continuous Integration & Continuous Deployment/Delivery)**

## **71. What is CI/CD in DevOps?**

- CI/CD automates code integration, testing, and deployment to ensure fast, reliable software releases.

## **72. What are the key benefits of CI/CD?**

- Faster development cycles, reduced manual errors, improved software quality, and continuous feedback loops.

## **73. What are some popular CI/CD tools?**

- Jenkins, GitHub Actions, GitLab CI/CD, CircleCI, Travis CI, ArgoCD, and Spinnaker.

## **74. What is a Jenkins pipeline?**

- A Jenkins pipeline defines an automated workflow for building, testing, and deploying applications using code.

## **75. What is the difference between declarative and scripted Jenkins pipelines?**

- Declarative pipelines use a structured YAML-like syntax, while scripted pipelines provide full programmatic flexibility using Groovy.

## **76. What are GitHub Actions?**

- A CI/CD automation service by GitHub that executes workflows based on GitHub events (push, PR, issue creation).

## **77. What is GitLab CI/CD?**

- A built-in CI/CD tool within GitLab that automates builds, tests, and deployments using `.gitlab-ci.yml` files.

## **78. How does Blue-Green Deployment work?**

- A deployment strategy where two identical environments (Blue and Green) are maintained, switching traffic between them for zero downtime updates.

## **79. What is Canary Deployment?**

- A strategy where a new version is gradually released to a subset of users before full rollout, reducing risk.

## **80. What is Feature Flagging?**

- A technique that allows enabling/disabling features at runtime without redeploying code, useful for controlled rollouts.

## **Cloud & Multi-Cloud Strategies**

### **81. What is the difference between Public, Private, and Hybrid Cloud?**

- Public cloud (AWS, Azure, GCP) is shared infrastructure, Private cloud is dedicated, and Hybrid cloud combines both.

### **82. What are the key advantages of cloud computing?**

- Scalability, cost-efficiency, reliability, security, and global reach with on-demand resource provisioning.

### **83. What is Infrastructure as a Service (IaaS)?**

- A cloud model providing virtual machines, networking, and storage (e.g., AWS EC2, Azure VM, GCP Compute Engine).

### **84. What is Platform as a Service (PaaS)?**

- A cloud model providing application hosting and management (e.g., AWS Elastic Beanstalk, Google App Engine).

### **85. What is Software as a Service (SaaS)?**

- A cloud model offering fully managed software applications (e.g., Google Workspace, Office 365, Salesforce).

### **86. What is Multi-Cloud?**

- Using multiple cloud providers (AWS, Azure, GCP) to avoid vendor lock-in, enhance redundancy, and optimize costs.

### **87. What is a Cloud-Native application?**

- An application designed for cloud environments using microservices, containers, and Kubernetes for scalability.

### **88. What are Spot Instances in AWS?**

- Discounted EC2 instances that AWS can terminate when demand rises, used for cost-saving in non-critical workloads.

## **89. What is an AWS Lambda function?**

- A serverless compute service that runs event-driven functions without managing servers, billed per execution.

## **90. What is an S3 bucket?**

- An object storage service in AWS for storing and retrieving large-scale data with high durability.

# **Containerization & Docker**

## **91. What is a container?**

- A lightweight, isolated environment for running applications with all dependencies bundled together.

## **92. How is a container different from a virtual machine?**

- Containers share the host OS kernel, while VMs run a separate OS instance, making containers more efficient.

## **93. What is a Dockerfile?**

- A script defining instructions to build a Docker image, including base image, dependencies, and commands.

## **94. What is Docker Compose?**

- A tool for defining multi-container applications using a `docker-compose.yml` file to manage dependencies.

## **95. What is a Docker Volume?**

- A persistent storage mechanism for containers to retain data beyond container lifecycle.

## **96. What is the difference between ENTRYPOINT and CMD in a Dockerfile?**

- `ENTRYPOINT` defines the executable command, while `CMD` provides default arguments.

## 97. What is a Docker Registry?

- A centralized storage for Docker images, such as Docker Hub or private registries like AWS ECR or GitLab Container Registry.

## 98. How do you optimize Docker images?

- Use smaller base images, multi-stage builds, layer caching, and minimal dependencies.

## 99. What is the purpose of `docker-compose up` and `docker-compose down`?

- `docker-compose up` starts containers as defined in `docker-compose.yml`, while `docker-compose down` stops and removes them.

## 100. What is a Kubernetes Helm Chart?

- A package manager for Kubernetes that simplifies deployment and versioning of applications.

# Security & Compliance in DevOps

## 101. What is DevSecOps?

- DevSecOps integrates security practices into the DevOps pipeline to ensure continuous security, compliance, and vulnerability management.

## 102. How can you secure Docker containers?

- Use minimal base images, run as non-root user, enable seccomp profiles, sign images, scan for vulnerabilities, and apply network policies.

## 103. What are the OWASP Top 10 vulnerabilities?

- A list of the most critical web application security risks, including injection attacks, broken authentication, and misconfigurations.

## 104. What is Infrastructure as Code (IaC) security?

- Ensuring security best practices are embedded in IaC scripts like Terraform and CloudFormation to prevent misconfigurations.

## 105. How do you manage secrets in DevOps?

- Use tools like HashiCorp Vault, AWS Secrets Manager, Kubernetes Secrets, or environment variables with encryption.

### **106. What is Zero Trust Security?**

- A security model that assumes no user or system is trusted by default, enforcing strict identity verification and least privilege access.

### **107. How do you secure a CI/CD pipeline?**

- Implement access controls, scan dependencies, use code signing, enforce least privilege, and monitor build logs for anomalies.

### **108. What is role-based access control (RBAC) in Kubernetes?**

- A security mechanism that restricts access to cluster resources based on user roles and permissions.

### **109. What is a Web Application Firewall (WAF)?**

- A firewall that filters and monitors HTTP traffic to protect web applications from common threats like SQL injection and XSS.

### **110. What are security best practices for cloud environments?**

- Use IAM policies, enable MFA, encrypt data at rest and in transit, monitor logs, and follow the principle of least privilege.

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## **Monitoring & Logging**

### **111. What is observability in DevOps?**

- The ability to monitor, analyze, and troubleshoot applications using logs, metrics, and traces for real-time insights.

### **112. What are some popular monitoring tools?**

- Prometheus, Grafana, Datadog, New Relic, ELK Stack, and Splunk.

### **113. What is the ELK Stack?**

- A combination of Elasticsearch (search), Logstash (log processing), and Kibana (visualization) used for centralized logging.

#### **114. What is Prometheus?**

- A monitoring tool that collects and stores time-series data using an efficient pull-based model.

#### **115. What is Grafana used for?**

- A visualization tool for monitoring metrics collected from Prometheus, InfluxDB, or other data sources.

#### **116. What are logs, metrics, and traces in monitoring?**

- Logs (event records), metrics (quantifiable data points), and traces (request flows) provide full observability.

#### **117. How does distributed tracing work?**

- It tracks requests across multiple microservices to analyze performance bottlenecks and dependencies.

#### **118. What is log aggregation?**

- The process of collecting, centralizing, and analyzing logs from different sources to identify system issues.

#### **119. How do you set up alerting in a monitoring system?**

- Define thresholds for critical metrics, configure alerting rules, and use tools like Prometheus Alertmanager or PagerDuty.

#### **120. What is synthetic monitoring?**

- Simulating user interactions to proactively test application performance and availability before issues occur.

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## **Networking & Load Balancing**

#### **121. What is a reverse proxy?**

- A server that forwards client requests to backend services, often used for load balancing and caching.

### **122. What is a load balancer?**

- A system that distributes incoming traffic across multiple servers to improve availability and performance.

### **123. What is the difference between Layer 4 and Layer 7 load balancing?**

- Layer 4 (transport) balances based on TCP/UDP, while Layer 7 (application) makes routing decisions based on HTTP headers and URLs.

### **124. What is an API Gateway?**

- A service that manages API requests, authentication, and rate limiting for microservices architectures.

### **125. How does DNS work?**

- Converts human-readable domain names into IP addresses using hierarchical name resolution.

### **126. What is a CDN (Content Delivery Network)?**

- A distributed network of servers that caches and delivers content to users based on geographic location for faster performance.

### **127. What is a VPN?**

- A Virtual Private Network that encrypts internet traffic for secure remote access.

### **128. What is NAT (Network Address Translation)?**

- A technique that allows multiple devices to share a single public IP address while maintaining unique private IPs.

### **129. What is an SSL/TLS certificate?**

- A digital certificate that enables encrypted HTTPS communication for secure web applications.

### **130. What is HTTP/2?**



- A major revision of HTTP that improves performance with multiplexing, header compression, and faster request handling.
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## **DevOps Best Practices & Culture**

### **131. What is the CALMS framework in DevOps?**

- Culture, Automation, Lean, Measurement, and Sharing—key principles for DevOps transformation.

### **132. What is Shift Left Testing?**

- Moving testing earlier in the development lifecycle to detect and fix bugs sooner.

### **133. What is Site Reliability Engineering (SRE)?**

- A discipline combining software engineering and operations to improve system reliability and scalability.

### **134. What is GitOps?**

- A workflow that manages infrastructure and deployments using Git as a single source of truth.

### **135. What is Chaos Engineering?**

- A practice of intentionally injecting failures into systems to improve resilience and fault tolerance.

### **136. What is a Blameless Postmortem?**

- A retrospective analysis of an incident that focuses on learning instead of blaming individuals.

### **137. What is a Service Level Agreement (SLA)?**

- A contract defining service expectations, uptime guarantees, and penalties for non-compliance.

### **138. What is a Service Level Objective (SLO)?**

- A measurable target for reliability (e.g., 99.9% uptime) derived from SLAs.

### **139. What is a Service Level Indicator (SLI)?**

- A key metric (e.g., request latency, error rate) used to measure service performance.

#### **140. What is a Runbook in DevOps?**

- A documented procedure for responding to incidents, automating tasks, and troubleshooting issues.
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## **Infrastructure as Code (IaC) & Automation**

#### **141. What is Terraform?**

- An open-source IaC tool that provisions infrastructure using declarative configuration files.

#### **142. What is Ansible?**

- A configuration management tool that automates software provisioning, configuration, and deployment using YAML playbooks.

#### **143. What is the difference between Terraform and Ansible?**

- Terraform is declarative and focuses on provisioning, while Ansible is procedural and mainly used for configuration management.

#### **144. What is Packer?**

- A tool for creating identical machine images across multiple platforms like AWS AMI, Docker, and VMware.

#### **145. What is immutable infrastructure?**

- An approach where servers are never modified after deployment—updates require creating new instances.

#### **146. What is a Bastion Host?**

- A secure server used to access internal networks from external connections with strict security policies.

#### **147. What is an Idempotent operation in automation?**

- A process that can be repeated multiple times without changing the final state of the system.

### **148. What is Blue-Green Testing?**

- A deployment technique where two identical environments run in parallel for seamless rollbacks and updates.

### **149. What is a Pipeline as Code?**

- Defining CI/CD pipelines using code in a repository (e.g., Jenkinsfile, GitHub Actions YAML).

### **150. What is Auto Scaling?**

- Automatically adjusting cloud resources based on traffic load and performance metrics.

## **Cloud Computing & Kubernetes**

### **151. What is the shared responsibility model in cloud computing?**

- A security framework where cloud providers manage the infrastructure, while customers handle data, applications, and configurations.

### **152. What is the difference between IaaS, PaaS, and SaaS?**

- IaaS provides virtualized infrastructure, PaaS offers a platform for application development, and SaaS delivers fully managed software over the internet.

### **153. What is Kubernetes?**

- An open-source container orchestration platform for managing, scaling, and automating application deployment.

### **154. What is a Kubernetes Pod?**

- The smallest deployable unit in Kubernetes, consisting of one or more containers that share resources like storage and networking.

### **155. What is a Kubernetes Deployment?**

- A controller that manages the desired state of pods, ensuring they run and are updated efficiently.

### **156. What is a Kubernetes Service?**

- An abstraction that defines a stable network endpoint for accessing pods, even when pod instances change.

### **157. What are the different types of Kubernetes Services?**

- ClusterIP (internal access), NodePort (exposed on a node), LoadBalancer (external traffic), and ExternalName (DNS aliasing).

### **158. What is a Kubernetes Ingress?**

- A resource that manages external access to services via HTTP/HTTPS using rules and load balancing.

### **159. What is a Kubernetes Namespace?**

- A way to create isolated environments within a Kubernetes cluster to organize and separate workloads.

### **160. How does Kubernetes handle scaling?**

- Using Horizontal Pod Autoscaler (HPA) for pod scaling based on CPU/memory and Cluster Autoscaler for adjusting node count.

### **161. What is Helm in Kubernetes?**

- A package manager for Kubernetes that simplifies application deployment using reusable charts.

### **162. What is an Operator in Kubernetes?**

- A custom controller that extends Kubernetes functionality by automating application-specific tasks.

### **163. What is etcd in Kubernetes?**

- A distributed key-value store that serves as Kubernetes' primary database for storing cluster state.

### **164. What is the difference between StatefulSet and Deployment in Kubernetes?**

- StatefulSet maintains unique pod identities and persistent storage, while Deployment manages stateless applications.

### **165. How does Kubernetes handle networking?**

- Through CNI plugins (like Calico, Flannel, or Cilium) that provide pod-to-pod communication across nodes.
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## **Git, CI/CD & Automation**

### **166. What is Git?**

- A distributed version control system used for tracking changes in code and enabling collaboration.

### **167. What is a Git branch?**

- A parallel version of code that allows developers to work on features independently before merging changes.

### **168. What is Git rebase?**

- A process of moving or combining a branch's changes onto another branch's latest commit to maintain a linear history.

### **169. What is Git merge vs. Git rebase?**

- Merge preserves commit history with a new commit, while rebase moves commits to maintain a cleaner history.

### **170. What is the difference between Git pull and Git fetch?**

- Git fetch downloads updates without merging, whereas Git pull fetches and merges changes into the working branch.

### **171. What is CI/CD?**

- Continuous Integration (CI) automates testing and integration of code changes, while Continuous Deployment (CD) automatically deploys tested code.

### **172. What are some popular CI/CD tools?**

- Jenkins, GitHub Actions, GitLab CI/CD, CircleCI, Travis CI, and ArgoCD.

### **173. What is a Jenkins Pipeline?**

- A script-based CI/CD workflow that automates build, test, and deployment stages using declarative or scripted syntax.

#### **174. What is the difference between declarative and scripted pipelines in Jenkins?**

- Declarative pipelines use structured YAML-like syntax, while scripted pipelines use Groovy for more flexibility.

#### **175. What is an artifact repository?**

- A storage system (like Nexus or JFrog Artifactory) that manages binary files, dependencies, and build artifacts.

#### **176. What is Canary Deployment?**

- A strategy where new versions of an application are gradually rolled out to a subset of users before full release.

#### **177. What is Blue-Green Deployment?**

- A method where two environments (Blue and Green) run in parallel, allowing instant rollback by switching traffic.

#### **178. What is a Feature Flag?**

- A technique to enable or disable features in production without deploying new code.

#### **179. How do you roll back a failed deployment in Kubernetes?**

- Use `kubectl rollout undo deployment <deployment-name>` to revert to a previous stable version.

#### **180. What is GitOps?**

- A DevOps approach where infrastructure and application deployments are managed through Git repositories as a single source of truth.

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## **Containerization & Microservices**

#### **181. What is the difference between Docker and Kubernetes?**

- Docker is a containerization platform, while Kubernetes orchestrates and manages containerized workloads.

### **182. What is a Dockerfile?**

- A script that defines instructions to build a Docker image, including dependencies and configurations.

### **183. What is the difference between a Docker Image and a Docker Container?**

- An image is a lightweight, standalone package, while a container is a running instance of an image.

### **184. What is Docker Compose?**

- A tool for defining and managing multi-container Docker applications using a YAML file.

### **185. What is the difference between monolithic and microservices architectures?**

- Monolithic applications are tightly coupled, while microservices break them into independent, loosely coupled services.

### **186. What is a Sidecar Pattern in microservices?**

- A design where auxiliary services (e.g., logging, monitoring) run alongside the main application container.

### **187. What is API Gateway in microservices?**

- A central entry point that handles authentication, request routing, and load balancing for microservices.

### **188. What is Circuit Breaker Pattern?**

- A fault tolerance mechanism that prevents cascading failures by stopping requests to a failing service.

### **189. What is Service Mesh?**

- A dedicated infrastructure layer (e.g., Istio, Linkerd) that manages service-to-service communication.

## **190. How do you secure microservices?**

- Implement authentication (OAuth, JWT), encryption, rate limiting, and API gateways.
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## **Advanced DevOps Topics**

### **191. What is Chaos Engineering?**

- A practice of intentionally injecting failures into a system to improve resilience and fault tolerance.

### **192. What is Site Reliability Engineering (SRE)?**

- A discipline that applies software engineering to IT operations to enhance reliability and scalability.

### **193. What is FinOps in Cloud Computing?**

- A framework that helps organizations optimize cloud spending while maintaining performance.

### **194. What is an API Rate Limiter?**

- A mechanism to control the number of API requests to prevent overloading a system.

### **195. What is an Immutable Deployment?**

- A deployment strategy where infrastructure is never modified after deployment; new changes create new instances.

### **196. What is the concept of Shift Left in Security?**

- Integrating security early in the development process instead of after deployment.

### **197. What are Spot Instances in AWS?**

- Low-cost instances offered by AWS that can be terminated anytime based on demand.

### **198. What is a Disaster Recovery Plan in DevOps?**

- A documented approach for restoring systems and data in case of a failure or cyber attack.

### **199. What is Edge Computing?**



- A computing model that processes data closer to the source (e.g., IoT devices) instead of centralized cloud servers.

## **200. What is the future of DevOps?**

- DevOps is evolving with AI-driven automation, NoOps (fully automated operations), and GitOps for infrastructure management.

## **Tips & Tricks to Crack Your DevOps Interview**

The key to success in any DevOps interview is hands-on practice. Set up your own CI/CD pipelines, automate deployments, and experiment with cloud services. Focus on real-world problem-solving rather than just theoretical knowledge. Be prepared for scenario-based questions and troubleshooting challenges. Stay updated with the latest DevOps tools and trends to showcase adaptability.

## **Confidence – Your Secret Weapon**

Confidence comes from preparation and practice. Before the interview, revise key concepts, review your past projects, and practice explaining them clearly. Don't rush your answers—take a moment to structure your response. If you don't know something, admit it and show a willingness to learn. Interviewers value a growth mindset more than memorized answers.

## **Final Advice for Success**

Be honest about your experience and skills while highlighting your ability to learn quickly. DevOps is about collaboration, so demonstrate strong communication and teamwork. Research the company's DevOps culture and ask insightful questions. Stay calm under pressure, approach each question methodically, and always end the interview on a positive note.

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