DevOps Shack

Ultimate AWS Interview Guide

1. What is AWS DevOps?

AWS DevOps is a set of practices that combines software development (Dev) and IT operations (Ops) to automate and integrate the processes of software development and deployment. AWS provides various tools such as AWS CodePipeline, AWS CodeBuild, AWS CodeDeploy, and AWS CodeCommit to facilitate continuous integration and continuous delivery (CI/CD), infrastructure as code (IaC), and monitoring.

2. What are the core components of AWS DevOps?

The core components include:

- **AWS CodePipeline: Automates the build, test, and deployment process.**
- **AWS CodeBuild: Compiles source code, runs tests, and produces software packages.**
- **AWS CodeDeploy: Automates application deployments across various environments.**
- **AWS CodeCommit: A fully managed source control service.**
- **AWS CloudFormation: Helps in infrastructure as code (IaC).**
- **AWS Elastic Beanstalk: PaaS for easy application deployment.**
- **AWS Lambda: Serverless computing for event-driven applications.**
- **Amazon CloudWatch: Monitoring and logging service.**

3. What is Infrastructure as Code (IaC) and how is it implemented in AWS?

Infrastructure as Code (IaC) is a practice of managing and provisioning infrastructure through machine-readable configuration files rather than manual processes. AWS provides:

- **AWS CloudFormation: Templates define AWS infrastructure resources declaratively.**
- **AWS CDK (Cloud Development Kit): Enables defining infrastructure using programming languages.**
- **Terraform: Third-party IaC tool that supports AWS and other cloud platforms.**

4. How does AWS CodePipeline work?

AWS CodePipeline automates the steps in a software release process:

- **Source stage: Retrieves source code from AWS CodeCommit, GitHub, or S3.**
- **Build stage: Uses AWS CodeBuild to compile code and run tests.**
- **Test stage: Executes automated tests.**
- **Deploy stage: Deploys to AWS services like ECS, Lambda, or EC2.**
- **Approval stage (optional): Manual approval before moving to the next stage.**

5. What is Blue-Green Deployment and how is it implemented in AWS?

Blue-Green Deployment is a release management strategy where two environments (Blue - current live environment and Green - new version) exist:

- **Green (new) environment is tested.**

- Traffic is switched to the Green environment once testing is successful.
- AWS services such as Route 53 (DNS switching), Elastic Load Balancer (ELB), and AWS CodeDeploy facilitate blue-green deployments.

6. What is Canary Deployment?

Canary Deployment is a strategy where a small portion of users receive the new version before rolling it out completely. AWS services like AWS App Mesh, AWS Lambda aliases, and Route 53 weighted routing help implement Canary Deployments.

7. How do you implement CI/CD in AWS?

A typical AWS CI/CD pipeline includes:

- AWS CodeCommit (source code management)
- AWS CodeBuild (compilation and testing)
- AWS CodeDeploy (deployment)
- AWS CodePipeline (orchestrates the pipeline)

8. What is AWS CodeCommit and how does it compare to GitHub?

AWS CodeCommit is a managed source control service similar to GitHub but:

- Fully integrates with AWS services.
- Provides encryption at rest using AWS KMS.
- Offers fine-grained access control through IAM policies.

9. How do you secure AWS CodeCommit repositories?

- Use IAM policies for fine-grained access control.
- Enable AWS CloudTrail logging for repository access.

- Implement branch policies to restrict unauthorized commits.

10. How does AWS CodeDeploy work?

AWS CodeDeploy automates deployments using deployment groups and deployment strategies:

- **In-place deployment:** Updates the same instances with the new code.
- **Blue-green deployment:** Shifts traffic to a new environment.

11. How do you monitor AWS DevOps pipelines?

- Use Amazon CloudWatch Logs for logging.
- AWS X-Ray for tracing requests.
- AWS CloudTrail for API call tracking.

12. What is Amazon Elastic Kubernetes Service (EKS)?

Amazon EKS is a managed Kubernetes service that allows running Kubernetes workloads on AWS.

13. How does AWS Lambda integrate with DevOps?

AWS Lambda can be used for:

- Automating CI/CD workflows.
- Handling event-driven deployments.
- Running infrastructure automation tasks.

14. What is AWS CloudFormation Stack?

A CloudFormation stack is a collection of AWS resources defined in a single CloudFormation template.

15. What is the difference between Terraform and CloudFormation?

- **Terraform: Supports multi-cloud, uses HCL (HashiCorp Configuration Language).**
- **CloudFormation: AWS-specific, uses JSON/YAML.**

16. How do you handle secret management in AWS DevOps?

- **Use AWS Secrets Manager or AWS Systems Manager Parameter Store.**

17. How does AWS Auto Scaling work?

AWS Auto Scaling adjusts the number of EC2 instances based on demand using policies.

18. What is Amazon ECS and how does it differ from Kubernetes (EKS)?

- **ECS (Elastic Container Service): AWS-native container orchestration.**
- **EKS (Elastic Kubernetes Service): Managed Kubernetes service.**

19. What are the different EC2 Auto Scaling policies?

- **Target tracking scaling: Adjusts capacity based on a metric (e.g., CPU utilization).**
- **Step scaling: Changes capacity based on predefined thresholds.**
- **Scheduled scaling: Scales at a fixed schedule.**

20. How do you handle logging in AWS DevOps?

- **Use CloudWatch Logs for application logs.**
- **Use AWS OpenSearch (formerly Elasticsearch Service) for log analytics.**

- **Enable S3 logging for long-term storage.**

21. What are AWS IAM roles and how do they differ from IAM users?

- **IAM roles: Temporary access with permissions.**
- **IAM users: Permanent user accounts.**

22. What is AWS Config and how does it help in compliance?

AWS Config tracks AWS resource configurations and changes to ensure compliance.

23. How do you automate AWS infrastructure provisioning?

- **Use AWS CloudFormation or Terraform.**

24. What is AWS CodeArtifact?

AWS CodeArtifact is a package management service for storing and retrieving dependencies.

25. How does AWS App Mesh help in DevOps?

AWS App Mesh enables microservices communication using a service mesh approach.

26. What is AWS Fargate?

AWS Fargate is a serverless compute engine for containers that eliminates the need to manage EC2 instances.

27. How do you implement cost optimization in AWS DevOps?

- **Use Reserved Instances for predictable workloads.**
- **Implement auto-scaling.**
- **Monitor AWS Cost Explorer.**

28. How do you enforce security best practices in AWS DevOps?

- **Enable AWS GuardDuty for threat detection.**
- **Implement IAM least privilege.**
- **Use AWS WAF for web application protection.**

29. What is AWS GuardDuty and how does it help in DevOps security?

AWS GuardDuty is a managed threat detection service that continuously monitors AWS accounts for malicious activity and unauthorized behavior. It uses machine learning, anomaly detection, and integrated threat intelligence to identify threats such as compromised IAM credentials, unusual API calls, and unauthorized access attempts.

30. How do you implement Blue-Green Deployment with AWS Elastic Beanstalk?

AWS Elastic Beanstalk supports Blue-Green Deployment by allowing users to create a new environment (Green), test it, and then swap environment CNAMEs to shift traffic from Blue to Green.

31. What is Amazon Inspector and how does it help in security compliance?

Amazon Inspector is an automated security assessment service that identifies vulnerabilities in EC2 instances. It performs:

- **Network reachability assessments.**
- **Common vulnerability and exposure (CVE) scans.**
- **Security best practice checks.**

32. How does AWS Systems Manager (SSM) help in managing AWS infrastructure?

AWS SSM provides a unified interface to manage EC2 instances, on-premises servers, and other AWS resources. Key features include:

- Session Manager: Secure shell access without opening SSH ports.
- Run Command: Automate administration tasks.
- Patch Manager: Automate patching for EC2 and on-prem servers.

33. How do you manage cross-account CI/CD pipelines in AWS?

- Use AWS CodePipeline with AWS IAM roles to assume cross-account permissions.
- Store artifacts in S3 with bucket policies for cross-account access.
- Use AWS Organizations and Service Control Policies (SCPs) to enforce governance.

34. How does AWS AppConfig help in feature flag management?

AWS AppConfig allows safe deployment of application configurations and feature flags. It enables gradual rollouts, automatic rollback, and monitoring of configuration changes.

35. What is AWS EventBridge and how does it help in DevOps automation?

AWS EventBridge is an event bus that allows event-driven architecture by integrating AWS services and third-party applications. It enables automation by triggering AWS Lambda functions, Step Functions, or other services based on defined events.

36. How do you perform rolling updates in AWS Auto Scaling Groups?

- **Use EC2 Auto Scaling Lifecycle Hooks to drain instances before termination.**
- **Configure Elastic Load Balancer (ELB) connection draining.**
- **Define Update Policies in AWS CloudFormation or Terraform.**

37. What is the difference between AWS SSM Parameter Store and AWS Secrets Manager?

- **AWS SSM Parameter Store: Stores configuration values and simple secrets.**
- **AWS Secrets Manager: Manages, rotates, and retrieves secrets securely.**

38. How do you use AWS CloudTrail to track DevOps activities?

AWS CloudTrail logs all API calls made in an AWS account, helping in:

- **Security auditing.**
- **Compliance tracking.**
- **Debugging operational issues.**

39. What is the purpose of Amazon CloudFront in a DevOps pipeline?

CloudFront is AWS's CDN service that accelerates the delivery of content by caching it at edge locations. It improves:

- **Application performance.**
- **Security (with AWS WAF and Shield).**
- **Latency reduction.**

40. How does AWS Service Catalog help in DevOps governance?

AWS Service Catalog allows organizations to create and manage approved AWS resources as catalogs, ensuring compliance and governance.

41. How do you use AWS Step Functions for workflow automation?

AWS Step Functions allows building serverless workflows using state machines to coordinate AWS services and automate CI/CD pipelines.

42. How do you handle environment-specific configurations in AWS?

- **Use AWS SSM Parameter Store.**
- **Store configurations in AWS AppConfig.**
- **Use AWS Lambda environment variables.**

43. What is the difference between AWS CodeDeploy and AWS Elastic Beanstalk?

- **AWS CodeDeploy: Automates application deployments to EC2, ECS, and on-prem servers.**
- **AWS Elastic Beanstalk: Manages application infrastructure with automatic scaling.**

44. How do you implement logging for AWS Lambda functions?

- **Use AWS CloudWatch Logs for capturing logs.**
- **Enable AWS X-Ray for distributed tracing.**

45. What is AWS Organizations and how does it help in multi-account management?

AWS Organizations allows managing multiple AWS accounts with:

- **Centralized billing.**
- **Service Control Policies (SCPs) for governance.**
- **Consolidated security and compliance.**

46. How do you configure AWS Auto Scaling for ECS?

- **Configure ECS Service Auto Scaling.**
- **Use AWS Application Auto Scaling to adjust ECS task counts.**

47. How do you automate patch management in AWS?

- **Use AWS Systems Manager Patch Manager.**
- **Define maintenance windows and compliance policies.**

48. How does AWS Shield help in DDoS protection?

AWS Shield provides:

- **Shield Standard: Free, always-on DDoS protection.**
- **Shield Advanced: Enhanced protection with cost coverage.**

49. How do you implement GitOps in AWS?

- **Use FluxCD or ArgoCD with Amazon EKS.**
- **Store IaC configurations in AWS CodeCommit.**

50. How do you secure AWS Lambda functions?

- **Use IAM least privilege policies.**
- **Enable AWS Lambda VPC access.**
- **Use AWS Secrets Manager for storing secrets.**

51. What is AWS Proton and how does it help in DevOps?

AWS Proton is a fully managed service for deploying and managing microservices and container applications.

52. How do you enable observability in AWS DevOps?

- Use AWS X-Ray for tracing.
- Enable AWS CloudWatch Metrics and Logs.
- Utilize AWS OpenSearch for log analytics.

53. How do you integrate AWS DevOps with third-party tools like GitHub and Jenkins?

- Use AWS CodePipeline integrations.
- Implement AWS CodeBuild webhooks for GitHub.
- Use Jenkins with AWS plugins.

54. What is Amazon DevOps Guru?

Amazon DevOps Guru uses machine learning to detect operational issues and recommend remediation actions.

55. How do you perform rollback in AWS CodeDeploy?

- Configure Automatic Rollbacks in CodeDeploy.
- Use CloudWatch Alarms to trigger rollbacks.
- Implement Canary or Blue-Green Deployments.

56. What are AWS CodeBuild buildspec files?

A `buildspec.yml` file defines:

- **Pre-build, build, and post-build commands.**
- **Artifacts for deployment.**
- **Environment variables.**

57. How do you implement disaster recovery in AWS DevOps?

- **Use AWS Backup for data recovery.**
- **Configure AWS Route 53 failover routing.**
- **Replicate data using AWS S3 Cross-Region Replication.**

58. How do you optimize CI/CD performance in AWS?

- **Use parallel builds in AWS CodeBuild.**
- **Enable build caching.**
- **Use AWS Lambda for lightweight automation tasks.**

59. What is Amazon MWAA (Managed Workflows for Apache Airflow)?

AWS MWAA is a managed service for running Apache Airflow workflows in AWS.

60. How do you track infrastructure changes in AWS?

- **Use AWS Config for tracking resource changes.**
- **Enable AWS CloudTrail for API event logging.**

61. What is AWS Elastic Load Balancer (ELB) and how does it work in DevOps?

AWS Elastic Load Balancer (ELB) automatically distributes incoming application traffic across multiple targets such as EC2 instances, containers, and IP addresses. ELB improves application availability and fault tolerance. The three types of ELBs are:

- **Application Load Balancer (ALB) – Works at Layer 7 (HTTP/HTTPS) and supports advanced routing.**
- **Network Load Balancer (NLB) – Works at Layer 4 (TCP/UDP) and is optimized for low latency.**
- **Classic Load Balancer (CLB) – Legacy load balancer, mainly for EC2 instances.**

62. How do you enable sticky sessions in AWS Elastic Load Balancer?

- **For Application Load Balancer (ALB), enable the session affinity (sticky sessions) feature based on the application cookies.**
- **For Classic Load Balancer (CLB), enable stickiness based on an AWS-generated cookie.**

63. What is AWS Elastic Beanstalk and how does it simplify DevOps workflows?

AWS Elastic Beanstalk is a Platform as a Service (PaaS) that simplifies application deployment and management by handling infrastructure provisioning, load balancing, and scaling automatically.

64. How do you monitor AWS Lambda functions in real-time?

- **Use Amazon CloudWatch Logs to capture Lambda execution logs.**
- **Use AWS X-Ray for distributed tracing.**
- **Configure CloudWatch Alarms to monitor failures and latency.**

65. What is AWS Trusted Advisor and how does it help in DevOps?

AWS Trusted Advisor is an online tool that provides recommendations on security, performance, cost optimization, fault tolerance, and service limits.

66. What are AWS Service Control Policies (SCPs) and how are they used in DevOps?

AWS SCPs allow organizations to enforce governance policies across multiple AWS accounts by restricting certain API actions.

67. How do you configure AWS Lambda to access resources in a private VPC?

- **Assign a VPC, subnet, and security group to the Lambda function.**
- **Use AWS PrivateLink or VPC endpoints to connect to AWS services securely.**

68. How do you ensure high availability in AWS DevOps architectures?

- **Use Multi-AZ deployments for databases.**
- **Deploy Auto Scaling Groups to maintain resilience.**
- **Configure AWS Global Accelerator for latency reduction.**

69. How does AWS CodePipeline handle rollbacks?

- **Configure Manual Approval Stages.**
- **Integrate with AWS Lambda for rollback automation.**
- **Use CloudFormation Stack Rollback Triggers.**

70. How does AWS CodeArtifact help in package management?

AWS CodeArtifact is a fully managed service that stores, publishes, and retrieves software dependencies securely.

71. What is AWS Well-Architected Framework and how does it help DevOps teams?

AWS Well-Architected Framework provides best practices across five pillars:

- **Operational Excellence**
- **Security**
- **Reliability**
- **Performance Efficiency**
- **Cost Optimization**

72. How does AWS Systems Manager Patch Manager work?

AWS Patch Manager automates patching of EC2 instances, on-premises servers, and containers to improve security and compliance.

73. How do you secure AWS API Gateway endpoints?

- **Enable AWS WAF to prevent attacks.**
- **Use IAM authentication or API Keys.**
- **Implement Lambda Authorizers for token validation.**

74. How does Amazon Athena help in AWS log analysis?

Amazon Athena is a serverless query service that enables SQL-based querying of AWS S3 logs.

75. What is AWS OpsWorks and how does it compare to AWS Systems Manager?

- **AWS OpsWorks – A configuration management service using Chef/Puppet.**
- **AWS Systems Manager – More flexible for managing EC2, on-prem, and hybrid environments.**

76. How do you manage application performance in AWS?

- **Use AWS CloudWatch for monitoring.**
- **Enable AWS X-Ray for request tracing.**
- **Use AWS Auto Scaling for resource optimization.**

77. What is AWS Transit Gateway and how does it simplify networking?

AWS Transit Gateway simplifies VPC-to-VPC and on-prem connectivity by acting as a hub for networking.

78. How do you implement AWS IAM best practices for DevOps?

- **Follow least privilege access.**
- **Enable MFA for all users.**
- **Use IAM roles instead of access keys.**

79. How does AWS Backup help in disaster recovery?

AWS Backup automates backup processes for EC2, RDS, EFS, DynamoDB, and more.

80. What is the difference between AWS CloudWatch and AWS X-Ray?

- **CloudWatch – Monitors logs, metrics, and alerts.**
- **X-Ray – Provides distributed tracing for applications.**

81. How does AWS DMS (Database Migration Service) help in database migration?

AWS DMS migrates databases between different platforms with minimal downtime.

82. How do you optimize AWS Lambda cold start issues?

- **Enable Provisioned Concurrency.**
- **Use smaller Lambda function packages.**
- **Implement Warm-up Lambda invocations.**

83. What is AWS Global Accelerator and how does it improve application performance?

AWS Global Accelerator routes traffic to the nearest AWS Region using AWS backbone networking.

84. How do you implement secure DevOps practices in AWS?

- **Enable AWS Config for compliance checks.**
- **Use AWS GuardDuty for threat detection.**
- **Encrypt data using AWS KMS.**

85. How do you use AWS Glue for data processing in DevOps?

AWS Glue is a serverless ETL (Extract, Transform, Load) service that processes and catalogs data.

86. How do you use AWS PrivateLink to connect to AWS services securely?

AWS PrivateLink allows private connectivity between AWS VPCs and AWS services without exposing traffic to the public internet.

87. How do you handle configuration drift in AWS DevOps?

- **Use AWS Config Rules.**
- **Enable CloudFormation Drift Detection.**

88. How do you use AWS CodeDeploy for serverless applications?

AWS CodeDeploy supports AWS Lambda deployment with automated rollbacks.

89. What is AWS Kinesis and how does it help in real-time data streaming?

AWS Kinesis enables real-time streaming of log data, IoT events, and analytics.

90. How do you prevent data loss in AWS S3?

- **Enable S3 Versioning.**
- **Implement S3 Lifecycle Policies.**
- **Use Cross-Region Replication (CRR).**

91. What is AWS Control Tower and how does it simplify multi-account management?

AWS Control Tower automates account provisioning and enforces governance policies.

92. What is AWS Lake Formation and how does it help in data management?

AWS Lake Formation simplifies setting up secure data lakes with fine-grained access controls.

93. How do you manage AWS cost optimization in DevOps?

- **Use AWS Compute Optimizer.**
- **Implement Reserved Instances & Spot Instances.**
- **Monitor using AWS Cost Explorer.**

94. How do you set up automated testing in AWS DevOps?

- **Use AWS CodeBuild for unit testing.**
- **Implement AWS Device Farm for mobile testing.**
- **Integrate with Selenium for UI testing.**

95. How does AWS Step Functions integrate with AWS Lambda?

AWS Step Functions orchestrate multiple AWS Lambda functions into a workflow.

96. What is AWS Batch and how does it help in batch computing?

AWS Batch enables running batch computing jobs on managed AWS infrastructure.

97. How do you migrate on-prem applications to AWS DevOps?

- **Use AWS Migration Hub.**
- **Implement AWS Server Migration Service (SMS).**

98. How does AWS Amplify help in DevOps for front-end applications?

AWS Amplify simplifies front-end deployment, CI/CD, and authentication.

99. How do you handle secrets rotation in AWS?

- **Use AWS Secrets Manager with automatic rotation policies.**

100. What is AWS Outposts and how does it extend AWS to on-premises environments?

AWS Outposts bring AWS services on-premises for hybrid cloud deployments.

101. What is AWS Cloud9 and how does it help in DevOps?

AWS Cloud9 is a cloud-based integrated development environment (IDE) that allows developers to write, run, and debug code within a web browser. It supports real-time collaboration and integrates with AWS services like Lambda, CodeCommit, and CodeBuild.

102. How do you implement compliance and governance in AWS DevOps?

- Use AWS Config for tracking resource changes.
- Implement AWS CloudTrail for logging API calls.
- Enforce Service Control Policies (SCPs) using AWS Organizations.

103. What are AWS Compute Savings Plans, and how do they optimize costs?

AWS Compute Savings Plans provide significant discounts on EC2, Lambda, and Fargate usage in exchange for a one- or three-year commitment.

104. How does AWS Direct Connect help in hybrid cloud DevOps?

AWS Direct Connect establishes a dedicated network connection between on-premises infrastructure and AWS, improving speed, security, and reliability.

105. What are the different AWS networking services used in DevOps?

- VPC (Virtual Private Cloud): Isolates network resources.
- AWS Transit Gateway: Connects multiple VPCs and on-prem networks.
- AWS PrivateLink: Provides secure private connectivity.
- AWS Route 53: Manages DNS routing.

106. How do you implement centralized logging in AWS?

- **Use AWS CloudWatch Logs for application logs.**
- **Implement AWS OpenSearch (Elasticsearch) for log analysis.**
- **Use AWS Lambda for log processing automation.**

107. What is AWS Rekognition and how does it integrate with DevOps?

AWS Rekognition is a machine learning-based image and video analysis service. It can be integrated into DevOps workflows for automated content moderation, security surveillance, and facial recognition.

108. How do you manage AWS costs using automation?

- **Set up AWS Budgets and Alarms.**
- **Use AWS Cost Explorer for visualization.**
- **Implement AWS Lambda functions to auto-scale or shut down idle resources.**

109. How do you migrate workloads from Azure to AWS?

- **Use AWS Migration Hub to track migrations.**
- **Implement AWS Server Migration Service (SMS) for VM migration.**
- **Utilize AWS Database Migration Service (DMS) for database migration.**

110. How does AWS Batch differ from AWS Lambda?

- **AWS Batch is used for large-scale batch processing jobs.**
- **AWS Lambda is a serverless function execution service for event-driven tasks.**

111. What is Amazon Timestream and how does it help in monitoring?

Amazon Timestream is a managed time-series database service optimized for storing and analyzing time-series data such as application logs, performance metrics, and IoT sensor data.

112. How do you implement AWS Lambda@Edge?

AWS Lambda@Edge allows running Lambda functions at AWS CloudFront edge locations to process HTTP requests, perform authentication, or modify responses before reaching the origin server.

113. What is AWS Snowball, and how does it help in data migration?

AWS Snowball is a data transfer device that helps migrate large volumes of data from on-premises to AWS securely.

114. How do you manage secrets in ECS container deployments?

- Store secrets in AWS Secrets Manager.
- Pass secrets via AWS Systems Manager Parameter Store.
- Use IAM roles for ECS tasks to restrict access.

115. What is AWS CodeStar, and how does it improve DevOps productivity?

AWS CodeStar provides an integrated development environment that enables teams to set up and manage CI/CD pipelines efficiently.

116. How do you secure an Amazon RDS database?

- Enable VPC Security Groups and IAM authentication.
- Use AWS KMS to encrypt storage.
- Enable automated backups and snapshots.

117. What are AWS Step Functions Parallel States?

AWS Step Functions allow executing multiple tasks in parallel using Parallel States, which help in faster workflow execution.

118. What is AWS Artifact and how does it help with compliance?

AWS Artifact provides compliance reports and agreements for AWS services, helping organizations meet regulatory requirements.

119. How do you integrate AWS DevOps with Jira?

- Use AWS Lambda functions to send deployment status updates to Jira.
- Leverage AWS CodePipeline plugins for Jira integration.

120. What are AWS Deep Learning AMIs?

AWS Deep Learning AMIs are pre-configured machine learning environments optimized for frameworks like TensorFlow, PyTorch, and MXNet.

121. What is AWS FireLens and how does it help in log management?

AWS FireLens enables ECS and Fargate tasks to send logs to external services like AWS OpenSearch, FluentBit, and Splunk.

122. How do you implement chaos engineering in AWS?

- Use AWS Fault Injection Simulator (FIS) to test failure scenarios.
- Simulate network latencies and crashes.

123. What is AWS Kendra and how does it help in DevOps knowledge management?

AWS Kendra is an intelligent search service that enables enterprise-wide document search and DevOps knowledge management.

124. How do you configure AWS CI/CD pipelines for mobile applications?

- Use AWS CodePipeline with AWS Device Farm.
- Automate testing using AWS Amplify.

125. How do you implement serverless DevOps with AWS?

- Use AWS Lambda for event-driven processing.
- Store infrastructure as code using AWS SAM (Serverless Application Model).
- Monitor serverless apps with AWS X-Ray.

126. How do you secure AWS API Gateway endpoints for microservices?

- Use AWS Cognito for authentication.
- Implement API Gateway WAF rules.
- Enable JWT-based authorizers.

127. How do you monitor AWS Fargate workloads?

- Use AWS CloudWatch Metrics.
- Enable AWS Container Insights.

128. How do you set up data pipeline automation in AWS?

- Use AWS Glue for ETL automation.
- Implement AWS Data Pipeline for orchestration.

129. What is AWS IoT Greengrass and how does it help DevOps?

AWS IoT Greengrass extends AWS IoT functionality to local edge devices for offline computing.

130. How do you implement security scanning in AWS CI/CD?

- Use AWS CodeGuru for code reviews.
- Integrate Amazon Inspector for vulnerability scanning.

131. How do you perform AWS CloudFormation template validation?

- Use `cfn-lint` to validate CloudFormation syntax.
- Run `aws cloudformation validate-template`.

132. How do you optimize ECS task scheduling?

- Use Fargate Spot instances for cost reduction.
- Implement task placement strategies.

133. How does AWS Shield protect against DDoS attacks?

AWS Shield monitors and mitigates DDoS attacks on AWS infrastructure.

134. How do you implement autoscaling policies in AWS Lambda?

- Configure Provisioned Concurrency Autoscaling.
- Use Step Functions for event-driven scaling.

135. What is AWS Proton and how does it help in CI/CD automation?

AWS Proton helps automate infrastructure deployment for microservices.

136. How does AWS SageMaker integrate with DevOps?

AWS SageMaker provides MLOps features for automating machine learning model deployment.

137. How do you configure AWS WAF rules for security?

- Define rate-based rules to block excessive requests.
- Use predefined AWS managed rules.

138. What is AWS CloudTrail Insights and how does it help in security monitoring?

AWS CloudTrail Insights automatically detects unusual API activity and identifies security threats, helping organizations take preventive actions.

139. How do you automate compliance enforcement in AWS?

- Use AWS Config Rules to enforce compliance policies.
- Implement AWS Security Hub for centralized security monitoring.
- Use AWS Lambda to trigger compliance remediation.

140. How do you implement feature toggling in AWS DevOps?

- Use AWS AppConfig to manage feature flags dynamically.
- Store feature flag settings in AWS Systems Manager Parameter Store.

141. What is AWS S3 Intelligent-Tiering and how does it optimize storage costs?

AWS S3 Intelligent-Tiering automatically moves data between frequent and infrequent access tiers based on usage patterns, reducing storage costs.

142. How do you secure DevOps pipelines in AWS?

- **Implement IAM least privilege policies.**
- **Use AWS CodePipeline approval stages.**
- **Enable CloudTrail for pipeline activity tracking.**

143. What is AWS Config Conformance Packs?

AWS Config Conformance Packs allow organizations to group compliance rules into a single package and enforce them across accounts and regions.

144. How do you use AWS Security Hub for centralized security monitoring?

AWS Security Hub aggregates security alerts from AWS services like GuardDuty, Inspector, and IAM Access Analyzer, providing a consolidated security dashboard.

145. How do you integrate AWS Step Functions with AWS Lambda for automation?

AWS Step Functions orchestrate multiple AWS Lambda functions to create serverless workflows with retry logic, error handling, and parallel execution.

146. What is AWS Outposts and how does it support hybrid cloud DevOps?

AWS Outposts brings AWS services on-premises, enabling a consistent hybrid cloud environment with AWS-managed infrastructure.

147. How do you manage IAM permissions across multiple AWS accounts?

- **Use AWS IAM Roles for cross-account access.**

- Implement AWS Organizations and SCPs to enforce policies.
- Configure IAM Identity Center (AWS SSO) for centralized user management.

148. How does AWS Transit Gateway simplify VPC networking?

AWS Transit Gateway acts as a central hub that connects multiple VPCs, on-premises networks, and AWS Direct Connect, reducing network complexity.

149. What is AWS Global Accelerator and how does it improve latency?

AWS Global Accelerator optimizes global application performance by routing traffic to the nearest AWS Region using AWS's global network.

150. How do you handle multi-region deployments in AWS?

- Use Route 53 latency-based routing.
- Implement S3 cross-region replication.
- Deploy multi-region DynamoDB Global Tables.

151. How do you automate the scaling of AWS Lambda functions?

- Use AWS Lambda Provisioned Concurrency.
- Implement CloudWatch Alarms to trigger scaling events.

152. What is AWS EKS Fargate and how does it differ from standard EKS?

- EKS Fargate runs Kubernetes pods without managing worker nodes.
- Standard EKS requires users to manage EC2 worker nodes.

153. How do you use AWS Control Tower for centralized account management?

AWS Control Tower automates multi-account setup, enforces governance using guardrails, and standardizes AWS security policies.

154. How do you manage Kubernetes cluster costs in AWS EKS?

- Use AWS Spot Instances for worker nodes.
- Implement Cluster Autoscaler for dynamic scaling.
- Use AWS Fargate for cost-effective serverless workloads.

155. How do you integrate AWS CodeBuild with third-party CI/CD tools?

- Use CodeBuild webhooks to trigger builds from GitHub, GitLab, or Bitbucket.
- Integrate Jenkins with AWS CodeBuild using AWS plugins.

156. How do you secure AWS Lambda execution environments?

- Assign minimal IAM permissions.
- Store secrets in AWS Secrets Manager.
- Use VPC settings for private networking.

157. How do you track cost usage per team or project in AWS?

- Implement AWS Cost Allocation Tags.
- Use AWS Organizations billing reports.
- Enable AWS Budgets and alerts.

158. What is AWS Launch Wizard and how does it help in DevOps?

AWS Launch Wizard simplifies deploying enterprise applications like SAP, Microsoft SQL Server, and Jenkins with automated best practices.

159. How does AWS Glue DataBrew help in data preprocessing?

AWS Glue DataBrew provides a visual interface for data cleaning, transformations, and enrichment without writing code.

160. How do you enforce encryption in AWS S3 buckets?

- **Enable S3 default encryption.**
- **Use AWS KMS (Key Management Service) for encryption keys.**
- **Apply Bucket Policies to enforce encryption rules.**

161. How does AWS IAM Access Analyzer improve security?

IAM Access Analyzer automatically scans AWS accounts to detect unintended public or cross-account access to resources.

162. How do you migrate AWS RDS databases with zero downtime?

- **Use AWS DMS (Database Migration Service).**
- **Enable Read Replica promotion for MySQL/PostgreSQL.**
- **Implement blue-green database deployment strategy.**

163. How does AWS WAF protect web applications?

AWS WAF filters traffic using rules that protect against SQL injection, cross-site scripting (XSS), and DDoS attacks.

164. How do you create immutable infrastructure in AWS?

- **Use AWS Auto Scaling Groups with rolling updates.**
- **Implement Infrastructure as Code (IaC) with Terraform or CloudFormation.**

- **Use AWS AMIs for versioned EC2 deployments.**

165. How do you troubleshoot AWS Lambda cold start issues?

- **Enable Provisioned Concurrency.**
- **Optimize function package size.**
- **Use warm-up invocations.**

166. How does AWS DeepLens help in DevOps automation?

AWS DeepLens enables ML-based automation tasks like anomaly detection in CI/CD pipelines.

167. How do you enable auto-healing in AWS Auto Scaling Groups?

- **Use EC2 health checks.**
- **Integrate with Elastic Load Balancer (ELB) for instance termination.**

168. How do you deploy AWS Lambda functions from a CI/CD pipeline?

- **Use AWS SAM CLI for packaging and deployment.**
- **Integrate AWS CodePipeline with Lambda.**

169. What is AWS CloudShell and how does it help in DevOps?

AWS CloudShell provides an interactive CLI environment pre-configured with AWS SDKs and CLI tools.

170. How do you manage configuration consistency across AWS regions?

- **Use AWS CloudFormation StackSets.**
- **Implement AWS Config Conformance Packs.**

171. How do you enforce strict IAM policies in a multi-account AWS setup?

- **Use AWS Organizations Service Control Policies (SCPs).**
- **Regularly audit IAM Access Analyzer findings.**

172. How do you optimize AWS CI/CD pipeline performance?

- **Enable parallel builds in AWS CodeBuild.**
- **Use cached dependencies to reduce build times.**

173. How do you scale ECS workloads based on demand?

- **Configure ECS Service Auto Scaling.**
- **Use AWS Application Auto Scaling.**

174. How do you automate IAM role audits?

- **Use AWS Access Analyzer.**
- **Schedule AWS Config Rules for IAM compliance.**

175. What is AWS RoboMaker and how does it support DevOps for robotics?

AWS RoboMaker provides cloud-based simulation environments for robotics application testing.

176. What is AWS App Runner and how does it help in DevOps?

AWS App Runner is a fully managed service that enables developers to deploy containerized applications quickly without managing infrastructure.

177. How do you implement continuous compliance in AWS DevOps?

- **Use AWS Config to track resource configurations.**
- **Implement AWS Security Hub to aggregate security findings.**
- **Enforce AWS Config Conformance Packs for predefined compliance checks.**

178. What is Amazon QLDB and how does it help in DevOps auditing?

Amazon QLDB (Quantum Ledger Database) is a managed ledger database that provides a transparent, immutable, and cryptographically verifiable transaction log.

179. How do you monitor AWS Fargate workloads in a CI/CD pipeline?

- **Use AWS CloudWatch Logs for application logs.**
- **Enable AWS CloudWatch Container Insights for real-time monitoring.**
- **Integrate AWS X-Ray for distributed tracing.**

180. What is AWS Elastic Disaster Recovery (AWS DRS)?

AWS DRS is a disaster recovery service that enables replication and failover of on-premises and cloud-based workloads.

181. How do you implement federated authentication in AWS DevOps?

- **Use AWS IAM Identity Center (AWS SSO) for centralized authentication.**
- **Integrate SAML or OpenID Connect providers for third-party identity federation.**
- **Enable IAM role-based access control.**

182. How does AWS Trusted Advisor help in cost optimization?

AWS Trusted Advisor provides recommendations for cost savings, such as

unused resources, Reserved Instance purchases, and right-sizing EC2 instances.

183. How do you implement event-driven DevOps workflows in AWS?

- **Use Amazon EventBridge to trigger automation based on AWS service events.**
- **Integrate AWS Lambda functions for real-time event processing.**
- **Use AWS Step Functions for orchestrating complex workflows.**

184. How do you handle AWS CloudFormation template drift detection?

- **Use the Drift Detection feature in CloudFormation to identify untracked infrastructure changes.**
- **Implement AWS Config to continuously monitor resource state changes.**
- **Schedule AWS Lambda automation to revert drifts automatically.**

185. How do you implement a multi-region S3 data replication strategy?

- **Use S3 Cross-Region Replication (CRR) for automatic data copying.**
- **Enable S3 Versioning to keep track of object changes.**
- **Use AWS DataSync for scheduled bulk transfers.**

186. How do you ensure high availability for AWS databases in DevOps?

- **Enable Multi-AZ deployments for Amazon RDS and Amazon DynamoDB.**
- **Implement Amazon Aurora Global Database for multi-region availability.**
- **Configure read replicas for horizontal scaling.**

187. How do you automate infrastructure rollback in AWS DevOps?

- **Use CloudFormation Stack Rollback Triggers to revert failed deployments.**
- **Configure AWS CodeDeploy automatic rollback based on health checks.**

- **Implement Canary Deployments** to gradually roll out changes and detect issues early.

188. What is AWS Lake Formation and how does it support data governance?

AWS Lake Formation simplifies building and securing data lakes by managing data access controls, cataloging metadata, and automating ingestion.

189. How do you optimize cost for AWS Lambda functions?

- **Use Provisioned Concurrency** only when needed to avoid over-provisioning.
- **Optimize Lambda memory allocation** based on performance benchmarks.
- **Implement AWS Compute Savings Plans** for predictable Lambda workloads.

190. How do you integrate AWS Step Functions with third-party APIs?

- **Use AWS Lambda functions** to process external API calls.
- **Enable Step Functions API Gateway integrations** for direct HTTP requests.
- **Implement SNS or SQS queues** for asynchronous API communication.

191. What is AWS Ground Station and how does it support DevOps automation?

AWS Ground Station provides satellite communication as a service, allowing automation of data processing pipelines for space-based applications.

192. How do you ensure secure data transfers between AWS and on-premises?

- **Use AWS Direct Connect** for private, high-speed networking.
- **Encrypt data with AWS Transfer Family** (SFTP, FTPS, FTP).

- **Implement AWS Snowball for large-scale offline data transfers.**

193. How do you manage zero-downtime updates for Amazon ECS?

- **Use Rolling Updates to gradually replace tasks.**
- **Implement Blue-Green Deployments using ALB and Route 53.**
- **Configure Canary Deployments with AWS CodeDeploy for gradual traffic shifting.**

194. How does AWS Athena help in DevOps analytics?

AWS Athena is a serverless query engine that allows analyzing AWS service logs stored in Amazon S3 using SQL-based queries.

195. How do you optimize storage costs for Amazon EBS volumes?

- **Use Amazon EBS Snapshot Lifecycle Policies to delete unused snapshots.**
- **Enable Amazon EBS Volume Auto-Scaling for dynamic resizing.**
- **Convert gp2 volumes to gp3 for cost reduction.**

196. How do you manage CI/CD pipeline security in AWS?

- **Restrict access using IAM roles and policies.**
- **Encrypt artifacts with AWS KMS.**
- **Enable approval steps in AWS CodePipeline.**

197. How do you implement centralized logging for AWS multi-account environments?

- **Use AWS CloudTrail with AWS Organizations for centralized audit logging.**
- **Aggregate logs using Amazon OpenSearch Service (formerly Elasticsearch**

Service).
- **Implement AWS FireLens to route logs to external destinations.**

198. How do you handle database schema migrations in AWS DevOps?

- **Use AWS Schema Conversion Tool (SCT) for heterogeneous migrations.**
- **Automate migrations using Liquibase or Flyway with AWS CodeBuild.**
- **Implement Amazon RDS Data API for automated schema versioning.**

199. How does AWS Macie improve DevOps security for sensitive data?

AWS Macie is an AI-powered data discovery tool that scans Amazon S3 buckets for sensitive data and helps enforce data protection policies.

200. What is AWS Well-Architected Tool and how does it improve DevOps processes?

AWS Well-Architected Tool helps DevOps teams assess their workloads against AWS best practices, providing recommendations for security, performance, reliability, cost optimization, and operational excellence.