

**What is AWS Lambda?**

AWS Lambda is a serverless compute service that runs code without provisioning servers.

**What are common event sources for Lambda?**

API Gateway, S3, DynamoDB Streams, Kinesis, SQS, CloudWatch Events, SNS.

**How does AWS Lambda scale?**

It scales horizontally by creating parallel instances automatically.

**What is the cold start problem?**

Cold start occurs when Lambda initializes a new execution environment, especially with Java.

**How to reduce Java Lambda cold starts?**

Use SnapStart, reduce dependencies, use provisioned concurrency, avoid heavy initialization.

**What is Provisioned Concurrency?**

Keeps Lambdas pre-initialized to eliminate cold starts.

**How long can a Lambda function run?**

Maximum 15 minutes.

**How do you pass environment variables?**

Using console, SAM, Terraform, and access via `System.getenv()` in Java.

**Difference between synchronous and asynchronous invocation?**

Sync waits for response; async queues the event for later processing.

**How does Lambda integrate with API Gateway?**

API Gateway triggers Lambda to build serverless REST APIs.

**What is Lambda execution environment?**

A reusable environment with runtime, /tmp storage, variables, and AWS SDK.

**What is the /tmp directory?**

Temporary storage (512 MB or 10 GB) for caching and files.

**How do Lambdas access VPC resources?**

Enable VPC networking to attach ENIs.

**What are Lambda Layers?**

Reusable components or libraries shared across Lambdas.

**How do you monitor Lambda?**

Using CloudWatch logs, metrics, alarms, and X-Ray tracing.

**What is SnapStart?**

Optimizes Java cold starts by snapshotting and restoring the JVM.

**What happens when concurrency is exceeded?**

Requests are throttled.

**How do retries work in Lambda?**

Async: 2 retries; SQS/Kinesis: continuous retry until DLQ; Sync: caller retries.

**What is a Dead Letter Queue (DLQ)?**

Queue to store failed Lambda events.

**How do you deploy Java Lambdas?**

Using console, CLI, SAM, Terraform, CloudFormation, or CI/CD with ZIP or container images.