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# Question 1

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## Question Type: MultipleChoice

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A developer has been asked to create an AWS Lambda function that is invoked any time updates are made to items in an Amazon DynamoDB table. The function has been created and appropriate permissions have been added to the Lambda execution role Amazon DynamoDB streams have been enabled for the table, but the function is still not being invoked.

Which option would enable DynamoDB table updates to invoke the Lambda function?

### Options:

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- A- Change the StreamViewType parameter value to NEW\_AND\_OLD\_IMAGES for the DynamoDB table.
- B- Configure event source mapping for the Lambda function.
- C- Map an Amazon Simple Notification Service (Amazon SNS) topic to the DynamoDB streams.
- D- Increase the maximum runtime (timeout) setting of the Lambda function.

### Answer:

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B

### Explanation:

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This solution allows the Lambda function to be invoked by the DynamoDB stream whenever updates are made to items in the DynamoDB table. Event source mapping is a feature of Lambda that enables a function to be triggered by an event source, such as a DynamoDB stream, an Amazon Kinesis stream, or an Amazon Simple Queue Service (SQS) queue. The developer can configure event source mapping for the Lambda function using the AWS Management Console, the AWS CLI, or the AWS SDKs. Changing the `StreamViewType` parameter value to `NEW_AND_OLD_IMAGES` for the DynamoDB table will not affect the invocation of the Lambda function, but only change the information that is written to the stream record. Mapping an Amazon Simple Notification Service (Amazon SNS) topic to the DynamoDB stream will not invoke the Lambda function directly, but require an additional subscription from the Lambda function to the SNS topic. Increasing the maximum runtime (timeout) setting of the Lambda function will not affect the invocation of the Lambda function, but only change how long the function can run before it is terminated.

## Question 2

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### Question Type: MultipleChoice

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A company is using AWS CloudFormation to deploy a two-tier application. The application will use Amazon RDS as its backend database. The company wants a solution that will randomly generate the database password during deployment. The solution also must automatically rotate the database password without requiring changes to the application.

What is the MOST operationally efficient solution that meets these requirements'?

## Options:

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- A- Use an AWS Lambda function as a CloudFormation custom resource to generate and rotate the password.
- B- Use an AWS Systems Manager Parameter Store resource with the SecureString data type to generate and rotate the password.
- C- Use a cron daemon on the application's host to generate and rotate the password.
- D- Use an AWS Secrets Manager resource to generate and rotate the password.

## Answer:

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D

## Explanation:

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This solution will meet the requirements by using AWS Secrets Manager, which is a service that helps protect secrets such as database credentials by encrypting them with AWS Key Management Service (AWS KMS) and enabling automatic rotation of secrets. The developer can use an AWS Secrets Manager resource in AWS CloudFormation template, which enables creating and managing secrets as part of a CloudFormation stack. The developer can use an `AWS::SecretsManager::Secret` resource type to generate and rotate the password for accessing RDS database during deployment. The developer can also specify a `RotationSchedule` property for the secret resource, which defines how often to rotate the secret and which Lambda function to use for rotation logic. Option A is not optimal because it will use an AWS Lambda function as a CloudFormation custom resource, which may introduce additional complexity and overhead for creating and managing a custom resource and implementing rotation logic. Option B is not optimal because it will use an AWS Systems Manager Parameter Store resource with the SecureString data type, which does not support automatic rotation of secrets. Option C is not optimal because it will use a cron daemon on the application's host to generate and rotate the password, which may incur more costs and require more maintenance for running and securing a host.

## Question 3

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**Question Type:** MultipleChoice

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A company is building a micro services application that consists of many AWS Lambda functions. The development team wants to use AWS Serverless Application Model (AWS SAM) templates to automatically test the Lambda functions. The development team plans to test a small percentage of traffic that is directed to new updates before the team commits to a full deployment of the application.

Which combination of steps will meet these requirements in the MOST operationally efficient way? (Select TWO.)

### Options:

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- A- Use AWS SAM CLI commands in AWS CodeDeploy to invoke the Lambda functions to test the deployment
- B- Declare the EventInvokeConfig on the Lambda functions in the AWS SAM templates with OnSuccess and OnFailure configurations.
- C- Enable gradual deployments through AWS SAM templates.
- D- Set the deployment preference type to Canary10Percent130Minutes Use hooks to test the deployment.
- E- Set the deployment preference type to Linear10PercentEvery10Minutes Use hooks to test the deployment.

## Answer:

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C, D

## Explanation:

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This solution will meet the requirements by using AWS Serverless Application Model (AWS SAM) templates and gradual deployments to automatically test the Lambda functions. AWS SAM templates are configuration files that define serverless applications and resources such as Lambda functions. Gradual deployments are a feature of AWS SAM that enable deploying new versions of Lambda functions incrementally, shifting traffic gradually, and performing validation tests during deployment. The developer can enable gradual deployments through AWS SAM templates by adding a `DeploymentPreference` property to each Lambda function resource in the template. The developer can set the deployment preference type to `Canary10Percent30Minutes`, which means that 10 percent of traffic will be shifted to the new version of the Lambda function for 30 minutes before shifting 100 percent of traffic. The developer can also use hooks to test the deployment, which are custom Lambda functions that run before or after traffic shifting and perform validation tests or rollback actions.

## Question 4

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**Question Type:** MultipleChoice

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A company developed an API application on AWS by using Amazon CloudFront, Amazon API Gateway, and AWS Lambda

a. The API has a minimum of four requests every second. A developer notices that many API users run the same query by using the POST method. The developer wants to cache the POST request to optimize the API resources.

Which solution will meet these requirements'?

### Options:

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- A-** Configure the CloudFront cache. Update the application to return cached content based upon the default request headers.
- B-** Override the cache method in the selected stage of API Gateway. Select the POST method.
- C-** Save the latest request response in Lambda /tmp directory. Update the Lambda function to check the /tmp directory.
- D-** Save the latest request in AWS Systems Manager Parameter Store. Modify the Lambda function to take the latest request response from Parameter Store.

### Answer:

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A

### Explanation:

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This solution will meet the requirements by using Amazon CloudFront, which is a content delivery network (CDN) service that speeds up the delivery of web content and APIs to end users. The developer can configure the CloudFront cache, which is a set of edge locations that store copies of popular or recently accessed content close to the viewers. The developer can also update the application to return cached content based upon the default request headers, which are a set of HTTP headers that CloudFront automatically forwards to the

origin server and uses to determine whether an object in an edge location is still valid. By caching the POST requests, the developer can optimize the API resources and reduce the latency for repeated queries. Option B is not optimal because it will override the cache method in the selected stage of API Gateway, which is not possible or effective as API Gateway does not support caching for POST methods by default. Option C is not optimal because it will save the latest request response in Lambda /tmp directory, which is a local storage space that is available for each Lambda function invocation, not a cache that can be shared across multiple invocations or requests. Option D is not optimal because it will save the latest request in AWS Systems Manager Parameter Store, which is a service that provides secure and scalable storage for configuration data and secrets, not a cache for API responses.

## Question 5

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**Question Type:** MultipleChoice

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A developer is troubleshooting an Amazon API Gateway API Clients are receiving HTTP 400 response errors when the clients try to access an endpoint of the API.

How can the developer determine the cause of these errors?

### Options:

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**A-** Create an Amazon Kinesis Data Firehose delivery stream to receive API call logs from API Gateway. Configure Amazon CloudWatch Logs as the delivery stream's destination.



- B-** Turn on AWS CloudTrail Insights and create a trail Specify the Amazon Resource Name (ARN) of the trail for the stage of the API.
- C-** Turn on AWS X-Ray for the API stage Create an Amazon CloudWatch Logs log group Specify the Amazon Resource Name (ARN) of the log group for the API stage.
- D-** Turn on execution logging and access logging in Amazon CloudWatch Logs for the API stage. Create a CloudWatch Logs log group. Specify the Amazon Resource Name (ARN) of the log group for the API stage.

### Answer:

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D

### Explanation:

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This solution will meet the requirements by using Amazon CloudWatch Logs to capture and analyze the logs from API Gateway. Amazon CloudWatch Logs is a service that monitors, stores, and accesses log files from AWS resources. The developer can turn on execution logging and access logging in Amazon CloudWatch Logs for the API stage, which enables logging information about API execution and client access to the API. The developer can create a CloudWatch Logs log group, which is a collection of log streams that share the same retention, monitoring, and access control settings. The developer can specify the Amazon Resource Name (ARN) of the log group for the API stage, which instructs API Gateway to send the logs to the specified log group. The developer can then examine the logs to determine the cause of the HTTP 400 response errors. Option A is not optimal because it will create an Amazon Kinesis Data Firehose delivery stream to receive API call logs from API Gateway, which may introduce additional costs and complexity for delivering and processing streaming data. Option B is not optimal because it will turn on AWS CloudTrail Insights and create a trail, which is a feature that helps identify and troubleshoot unusual API activity or operational issues, not HTTP response errors. Option C is not optimal because it will turn on AWS X-Ray for the API stage, which is a service that helps analyze and debug distributed applications, not HTTP response errors.

## Question 6

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**Question Type:** MultipleChoice

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A company has an application that runs as a series of AWS Lambda functions. Each Lambda function receives data from an Amazon Simple Notification Service (Amazon SNS) topic and writes the data to an Amazon Aurora DB instance.

To comply with an information security policy, the company must ensure that the Lambda functions all use a single securely encrypted database connection string to access Aurora.

Which solution will meet these requirements'?

### Options:

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- A-** Use IAM database authentication for Aurora to enable secure database connections for all the Lambda functions.
- B-** Store the credentials and read the credentials from an encrypted Amazon RDS DB instance.
- C-** Store the credentials in AWS Systems Manager Parameter Store as a secure string parameter.
- D-** Use Lambda environment variables with a shared AWS Key Management Service (AWS KMS) key for encryption.

## Answer:

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A

## Explanation:

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This solution will meet the requirements by using IAM database authentication for Aurora, which enables using IAM roles or users to authenticate with Aurora databases instead of using passwords or other secrets. The developer can use IAM database authentication for Aurora to enable secure database connections for all the Lambda functions that access Aurora DB instance. The developer can create an IAM role with permission to connect to Aurora DB instance and attach it to each Lambda function. The developer can also configure Aurora DB instance to use IAM database authentication and enable encryption in transit using SSL certificates. This way, the Lambda functions can use a single securely encrypted database connection string to access Aurora without needing any secrets or passwords. Option B is not optimal because it will store the credentials and read them from an encrypted Amazon RDS DB instance, which may introduce additional costs and complexity for managing and accessing another RDS DB instance. Option C is not optimal because it will store the credentials in AWS Systems Manager Parameter Store as a secure string parameter, which may require additional steps or permissions to retrieve and decrypt the credentials from Parameter Store. Option D is not optimal because it will use Lambda environment variables with a shared AWS Key Management Service (AWS KMS) key for encryption, which may not be secure or scalable as environment variables are stored as plain text unless encrypted with AWS KMS.

## Question 7

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**Question Type:** MultipleChoice

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A developer is working on a Python application that runs on Amazon EC2 instances. The developer wants to enable tracing of application requests to debug performance issues in the code.

Which combination of actions should the developer take to achieve this goal? (Select TWO)

### Options:

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- A- Install the Amazon CloudWatch agent on the EC2 instances.
- B- Install the AWS X-Ray daemon on the EC2 instances.
- C- Configure the application to write JSON-formatted logs to `/var/log/cloudwatch`.
- D- Configure the application to write trace data to `/var/log/xray`.
- E- Install and configure the AWS X-Ray SDK for Python in the application.

### Answer:

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B, E

### Explanation:

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This solution will meet the requirements by using AWS X-Ray to enable tracing of application requests to debug performance issues in the code. AWS X-Ray is a service that collects data about requests that the applications serve, and provides tools to view, filter, and gain insights into that data. The developer can install the AWS X-Ray daemon on the EC2 instances, which is a software that listens for

traffic on UDP port 2000, gathers raw segment data, and relays it to the X-Ray API. The developer can also install and configure the AWS X-Ray SDK for Python in the application, which is a library that enables instrumenting Python code to generate and send trace data to the X-Ray daemon. Option A is not optimal because it will install the Amazon CloudWatch agent on the EC2 instances, which is a software that collects metrics and logs from EC2 instances and on-premises servers, not application performance data. Option C is not optimal because it will configure the application to write JSON-formatted logs to `/var/log/cloudwatch`, which is not a valid path or destination for CloudWatch logs. Option D is not optimal because it will configure the application to write trace data to `/var/log/xray`, which is also not a valid path or destination for X-Ray trace data.

## Question 8

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**Question Type:** MultipleChoice

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A company is building an application for stock trading. The application needs sub-millisecond latency for processing trade requests. The company uses Amazon DynamoDB to store all the trading data that is used to process each trading request. A development team performs load testing on the application and finds that the data retrieval time is higher than expected. The development team needs a solution that reduces the data retrieval time with the least possible effort.

Which solution meets these requirements'?

**Options:**

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- A- Add local secondary indexes (LSIs) for the trading data.
- B- Store the trading data in Amazon S3 and use S3 Transfer Acceleration.
- C- Add retries with exponential back off for DynamoDB queries.
- D- Use DynamoDB Accelerator (DAX) to cache the trading data.

### Answer:

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D

### Explanation:

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This solution will meet the requirements by using DynamoDB Accelerator (DAX), which is a fully managed, highly available, in-memory cache for DynamoDB that delivers up to a 10 times performance improvement - from milliseconds to microseconds - even at millions of requests per second. The developer can use DAX to cache the trading data that is used to process each trading request, which will reduce the data retrieval time with the least possible effort. Option A is not optimal because it will add local secondary indexes (LSIs) for the trading data, which may not improve the performance or reduce the latency of data retrieval, as LSIs are stored on the same partition as the base table and share the same provisioned throughput. Option B is not optimal because it will store the trading data in Amazon S3 and use S3 Transfer Acceleration, which is a feature that enables fast, easy, and secure transfers of files over long distances between S3 buckets and clients, not between DynamoDB and clients. Option C is not optimal because it will add retries with exponential backoff for DynamoDB queries, which is a strategy to handle transient errors by retrying failed requests with increasing delays, not by reducing data retrieval time.

## Question 9

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### Question Type: MultipleChoice

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A company is expanding the compatibility of its photo-snaring mobile app to hundreds of additional devices with unique screen dimensions and resolutions. Photos are stored in Amazon S3 in their original format and resolution. The company uses an Amazon CloudFront distribution to serve the photos. The app includes the dimension and resolution of the display as GET parameters with every request.

A developer needs to implement a solution that optimizes the photos that are served to each device to reduce load time and increase photo quality.

Which solution will meet these requirements MOST cost-effective?

### Options:

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- A-** Use S3 Batch Operations to invoke an AWS Lambda function to create new variants of the photos with the required dimensions and resolutions. Create a dynamic CloudFront origin that automatically maps the request of each device to the corresponding photo variant.
- B-** Use S3 Batch Operations to invoke an AWS Lambda function to create new variants of the photos with the required dimensions and resolutions. Create a Lambda@Edge function to route requests to the corresponding photo variant by using request headers.
- C-** Create a Lambda@Edge function that optimizes the photos upon request and returns the photos as a response. Change the CloudFront TTL cache policy to the maximum value possible.
- D-** Create a Lambda@Edge function that optimizes the photos upon request and returns the photos as a response. In the same function

store a copy of the processed photos on Amazon S3 for subsequent requests.

**Answer:**

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D

**Explanation:**

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This solution meets the requirements most cost-effectively because it optimizes the photos on demand and caches them for future requests. Lambda@Edge allows the developer to run Lambda functions at AWS locations closer to viewers, which can reduce latency and improve photo quality. The developer can create a Lambda@Edge function that uses the GET parameters from each request to optimize the photos with the required dimensions and resolutions and returns them as a response. The function can also store a copy of the processed photos on Amazon S3 for subsequent requests, which can reduce processing time and costs. Using S3 Batch Operations to create new variants of the photos will incur additional storage costs and may not cover all possible dimensions and resolutions. Creating a dynamic CloudFront origin or a Lambda@Edge function to route requests to corresponding photo variants will require maintaining a mapping of device types and photo variants, which can be complex and error-prone.



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