**QUESTION 8**

A company hosts an application on multiple Amazon EC2 instances.

The application processes messages from an Amazon SQS queue writes to an Amazon RDS table and deletes the message from the queue.

Occasional duplicate records are found in the RDS table.

The SQS queue does not contain any duplicate messages.

What should a solutions architect do to ensure messages are being processed once only?

1. Use the CreateQueue API call to create a new queue.
2. Use the Add Permission API call to add appropriate permissions.
3. Use the ReceiveMessage API call to set an appropriate wail time.
4. Use the ChangeMessageVisibility API call to increase the visibility timeout.

**Answer:** D

**Explanation:**

The visibility timeout begins when Amazon SQS returns a message. During this time, the consumer processes and deletes the message. However, if the consumer fails before deleting the message and your system doesn't call the DeleteMessage action for that message before the visibility timeout expires, the message becomes visible to other consumers and the message is received again. If a message must be received only once, your consumer should delete it within the duration of the visibility timeout.

<https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqsvisibility-timeout.html>

Keyword: SQS queue writes to an Amazon RDS From this, Option D best suite &amp; other Options ruled out [Option A -You can't intruduce one more Queue in the existing one; Option B - only Permission &amp; Option C -Only Retrieves Messages] FIF O queues are designed to never introduce duplicate messages. However, your message producer might introduce duplicates in certain scenarios: for example, if the producer sends a message, does not receive a response, and then resends the same message. Amazon SQS APIs provide deduplication functionality that prevents your message producer from sending duplicates. Any duplicates introduced by the message producer are removed within a 5-minute deduplication interval. For standard queues, you might occasionally receive a duplicate copy of a message (at-least-once delivery). If you use a standard queue, you must design your applications to be idempotent (that is, they must not be affected adversely when processing the same message more than once).

**QUESTION 22**

A solutions architect is designing the cloud architecture for a new application being deployed on AWS.

The process should run in parallel while adding and removing application nodes as needed based on the number of jobs to be processed.

The processor application is stateless.

The solutions architect must ensure that the application is loosely coupled and the job items are durably stored.

Which design should the solutions architect use?

1. Create an Amazon SNS topic to send the jobs that need to be processed.

Create an Amazon Machine Image (AMI) that consists of the processor application.

Create a launch configuration that uses the AMI.

Create an Auto Scaling group using the launch configuration.

Set the scaling policy for the Auto Scaling group to add and remove nodes based on CPU usage.

1. Create an Amazon SQS queue to hold the jobs that need to be processed.

Create an Amazon Machine image (AMI) that consists of the processor application.

Create a launch configuration that uses the AMI.

Create an Auto Scaling group using the launch configuration.

Set the scaling policy for the Auto Scaling group to add and remove nodes based on network usage.

1. Create an Amazon SQS queue to hold the jobs that needs to be processed.

Create an Amazon Machine image (AMI) that consists of the processor application.

Create a launch template that uses the AMI.

Create an Auto Scaling group using the launch template.

Set the scaling policy for the Auto Scaling group to add and remove nodes based on the number of items in the SQS queue.

1. Create an Amazon SNS topic to send the jobs that need to be processed.

Create an Amazon Machine Image (AMI) that consists of the processor application.

Create a launch template that uses the AMI.

Create an Auto Scaling group using the launch template.

Set the scaling policy for the Auto Scaling group to add and remove nodes based on the number of messages published to the SNS topic

**Answer:** C

**Explanation:**

"Create an Amazon SQS queue to hold the jobs that needs to be processed. Create an Amazon EC2 Auto Scaling group for the compute application. Set the scaling policy for the Auto Scaling group to add and remove nodes based on the number of items in the SQS queue"

In this case we need to find a durable and loosely coupled solution for storing jobs. Amazon SQS is ideal for this use case and can be configured to use dynamic scaling based on the number of jobs waiting in the queue.To configure this scaling you can use the backlog per instance metric with the target value being the acceptable backlog per instance to maintain. You can calculate these numbers as follows: Backlog per instance: To calculate your backlog per instance, start with the ApproximateNumberOfMessages queue attribute to determine the length of the SQS queue

**QUESTION 67**

A company has a service that produces event data.

The company wants to use AWS to process the event data as it is received.

The data is written in a specific order that must be maintained throughout processing.

The company wants to implement a solution that minimizes operational overhead.

How should a solutions architect accomplish this?

1. Create an Amazon Simple Queue Service (Amazon SQS) FIFO queue to hold messages. Set up an AWS Lambda function to process messages from the queue.

1. Create an Amazon Simple Notification Service (Amazon SNS) topic to deliver notifications containing payloads to process.

Configure an AWS Lambda function as a subscriber.

1. Create an Amazon Simple Queue Service (Amazon SQS) standard queue to hold messages.

Set up an AWS Lambda function to process messages from the queue independently.

1. Create an Amazon Simple Notification Service (Amazon SNS) topic to deliver notifications containing payloads to process.

Configure an Amazon Simple Queue Service (Amazon SQS) queue as a subscriber.

**Answer:** A

**Explanation:**

The details are revealed in below url:

<https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/FIFOqueues.html>

**QUESTION 67**

A company has a service that produces event data.

The company wants to use AWS to process the event data as it is received.

The data is written in a specific order that must be maintained throughout processing.

The company wants to implement a solution that minimizes operational overhead.

How should a solutions architect accomplish this?

1. Create an Amazon Simple Queue Service (Amazon SQS) FIFO queue to hold messages.

Set up an AWS Lambda function to process messages from the queue.

1. Create an Amazon Simple Notification Service (Amazon SNS) topic to deliver notifications containing payloads to process.

Configure an AWS Lambda function as a subscriber.

1. Create an Amazon Simple Queue Service (Amazon SQS) standard queue to hold messages. Set up an AWS Lambda function to process messages from the queue independently.
2. Create an Amazon Simple Notification Service (Amazon SNS) topic to deliver notifications containing payloads to process.

Configure an Amazon Simple Queue Service (Amazon SQS) queue as a subscriber.

**Answer:** A

**Explanation:**

The details are revealed in below url:

<https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/FIFOqueues.html>

FIFO (First-In-First-Out) queues are designed to enhance messaging between applications when the order of operations and events is critical, or where duplicates can't be tolerated. Examples of situations where you might use FIFO queues include the following: To make sure that userentered commands are run in the right order. To display the correct product price by sending price modifications in the right order. To prevent a student from enrolling in a course before registering for an account.

**QUESTION 94**

An online photo application lets users upload photos and perform image editing operations.

The application offers two classes of service free and paid.

Photos submitted by paid users are processed before those submitted by free users. Photos are uploaded to Amazon S3 and the job information is sent to Amazon SQS.

Which configuration should a solutions architect recommend?

1. Use one SQS FIFO queue.

Assign a higher priority to the paid photos so they are processed first.

1. Use two SQS FIFO queues: one for paid and one for free.

Set the free queue to use short polling and the paid queue to use long polling.

1. Use two SQS standard queues one for paid and one for free.

Configure Amazon EC2 instances to prioritize polling for the paid queue over the free queue.

1. Use one SQS standard queue.

Set the visibility timeout of the paid photos to zero.

Configure Amazon EC2 instances to prioritize visibility settings so paid photos are processed first.

**Answer:** C

**Explanation:**

Priority: Use separate queues to provide prioritization of work.

**QUESTION 107**

A company has an application that ingests incoming messages.

These messages are then quickly consumed by dozens of other applications and microservices.

The number of messages varies drastically and sometimes spikes as high as 100,000 each second.

The company wants to decouple the solution and increase scalability.

Which solution meets these requirements?

1. Persist the messages to Amazon Kinesis Data Analytics.

All the applications will read and process the messages.

1. Deploy the application on Amazon EC2 instances in an Auto Scaling group, which scales the number of EC2 instances based on CPU metrics.

1. Write the messages to Amazon Kinesis Data Streams with a single shard.

All applications will read from the stream and process the messages.

1. Publish the messages to an Amazon Simple Notification Service (Amazon SNS) topic with one or more Amazon Simple Queue Service (Amazon SQS) subscriptions.

All applications then process the messages from the queues.

**Answer:** D

**Explanation:**

"SNS Standard Topic"

Maximum throughput: Standard topics support a nearly unlimited number of messages per second. <https://aws.amazon.com/sns/features/>

"SQS Standard Queue"

Unlimited Throughput: Standard queues support a nearly unlimited number of transactions per second (TPS) per API action.

<https://aws.amazon.com/sqs/features/>

**QUESTION 94**

An online photo application lets users upload photos and perform image editing operations.

The application offers two classes of service free and paid.

Photos submitted by paid users are processed before those submitted by free users.

Photos are uploaded to Amazon S3 and the job information is sent to Amazon SQS.

Which configuration should a solutions architect recommend?

1. Use one SQS FIFO queue.

Assign a higher priority to the paid photos so they are processed first.

1. Use two SQS FIFO queues: one for paid and one for free.

Set the free queue to use short polling and the paid queue to use long polling.

1. Use two SQS standard queues one for paid and one for free.

Configure Amazon EC2 instances to prioritize polling for the paid queue over the free queue.

1. Use one SQS standard queue.

Set the visibility timeout of the paid photos to zero.

Configure Amazon EC2 instances to prioritize visibility settings so paid photos are processed first.

**Answer:** C

**Explanation:**

Priority: Use separate queues to provide prioritization of work.

**QUESTION 110**

A company is building an ecommerce web application on AWS.

The application sends information about new orders to an Amazon API Gateway REST API to process.

The company wants to ensure that orders are processed in the order that they are received.

Which solution will meet these requirements?

1. Use an API Gateway integration to publish a message to an Amazon Simple Notification Service (Amazon SNS) topic when the application receives an order.

Subscribe an AWS Lambda function to the topic to perform processing.

1. Use an API Gateway integration to send a message to an Amazon Simple Queue Service (Amazon SQS) FIFO queue when the application receives an order.

Configure the SQS FIFO queue to invoke an AWS Lambda function for processing.

1. Use an API Gateway authorizer to block any requests while the application processes an order.

1. Use an API Gateway integration to send a message to an Amazon Simple Queue Service (Amazon SQS) standard queue when the application receives an order.

Configure the SQS standard queue to invoke an AWS Lambda function for processing.

**Answer:** B

**QUESTION 137**

A company has an automobile sales website that stores its listings in an database on Amazon RDS.

When an automobile is sold, the listing needs to be removed from the website and the data must be sent to multiple target systems.

Which design should a solutions architect recommend?

1. Create an AWS Lambda function triggered when the database on Amazon RDS is updated to send the information to an Amazon Simple Queue Service (Amazon SQS) queue for the targets to consume.

1. Create an AWS Lambda function triggered when the database on Amazon RDS is updated to send the information to an Amazon Simple Queue Service (Amazon SQS) FIFO queue for the targets to consume.
2. Subscribe to an RDS event notification and send an Amazon Simple Queue Service (Amazon SQS) queue fanned out to multiple Amazon Simple Notification Service (Amazon SNS) topics. Use AWS Lambda functions to update the targets.
3. Subscribe to an RDS event notification and send an Amazon Simple Notification Service (Amazon SNS) topic fanned out to multiple Amazon Simple Queue Service (Amazon SQS) queues.

Use AWS Lambda functions to update the targets.

**Answer:** A

**Explanation:**

You can use AWS Lambda to process event notifications from an Amazon Relational Database Service (Amazon RDS) database. Amazon RDS sends notifications to an Amazon Simple Notification Service (Amazon SNS) topic, which you can configure to invoke a Lambda function. Amazon SNS wraps the message from Amazon RDS in its own event document and sends it to your function.

<https://docs.aws.amazon.com/lambda/latest/dg/with-sns.html>

<https://aws.amazon.com/blogs/compute/messaging-fanout-pattern-for-serverless-architecturesusing-amazon-sns/>

**QUESTION 138**

A company is developing a video conversion application hosted on AWS.

The application will be available in two tiers: a free tier and a paid tier.

Users in the paid tier will have their videos converted first and then the tree tier users will have their videos converted.

Which solution meets these requirements and is MOST cost-effective?

1. One FIFO queue for the paid tier and one standard queue for the free tier.
2. A single FIFO Amazon Simple Queue Service (Amazon SQS) queue for all file types.
3. A single standard Amazon Simple Queue Service (Amazon SQS) queue for all file types.
4. Two standard Amazon Simple Queue Service (Amazon SQS) queues with one for the paid tier and one for the free tier.

**Answer:** D

**Explanation:**

In AWS, the queue service is the Simple Queue Service (SQS). Multiple SQS queues may be prepared to prepare queues for individual priority levels (with a priority queue and a secondary queue). Moreover, you may also use the message Delayed Send function to delay process execution.

**QUESTION 158**

An image-processing company has a web application that users use to upload images.

The application uploads the images into an Amazon S3 bucket.

The company has set up S3 event notifications to publish the object creation events to an Amazon Simple Queue Service (Amazon SQS) standard queue.

The SQS queue serves as the event source for an AWS Lambda function that processes the images and sends the results to users through email.

Users report that they are receiving multiple email messages for every uploaded image.

A solutions architect determines that SQS messages are invoking the Lambda function more than once, resulting in multiple email messages.

What should the solutions architect do to resolve this issue with the LEAST operational overhead?

1. Set up long polling in the SQS queue by increasing the ReceiveMessage wait time to 30 seconds.

1. Change the SQS standard queue to an SQS FIFO queue.

Use the message deduplication ID to discard duplicate messages.

1. Increase the visibility timeout in the SQS queue to a value that is greater than the total of the function timeout and the batch window timeout.

1. Modify the Lambda function to delete each message from the SQS queue immediately after the message is read before processing.

**Answer:** A