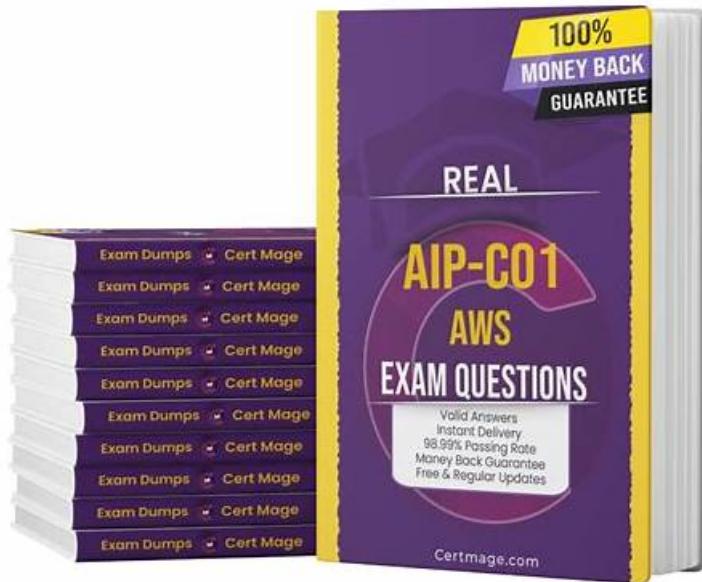


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Amazon AIP-C01 Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none">Implementation and Integration: This domain focuses on building agentic AI systems, deploying foundation models, integrating GenAI with enterprise systems, implementing FM APIs, and developing applications using AWS tools.
Topic 2	<ul style="list-style-type: none">Foundation Model Integration, Data Management, and Compliance: This domain covers designing GenAI architectures, selecting and configuring foundation models, building data pipelines and vector stores, implementing retrieval mechanisms, and establishing prompt engineering governance.
Topic 3	<ul style="list-style-type: none">AI Safety, Security, and Governance: This domain addresses input output safety controls, data security and privacy protections, compliance mechanisms, and responsible AI principles including transparency and fairness.
Topic 4	<ul style="list-style-type: none">Testing, Validation, and Troubleshooting: This domain covers evaluating foundation model outputs, implementing quality assurance processes, and troubleshooting GenAI-specific issues including prompts, integrations, and retrieval systems.
Topic 5	<ul style="list-style-type: none">Operational Efficiency and Optimization for GenAI Applications: This domain encompasses cost optimization strategies, performance tuning for latency and throughput, and implementing comprehensive monitoring systems for GenAI applications.

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Amazon AWS Certified Generative AI Developer - Professional Sample Questions (Q58-Q63):

NEW QUESTION # 58

A pharmaceutical company is developing a Retrieval Augmented Generation (RAG) application that uses an Amazon Bedrock knowledge base. The knowledge base uses Amazon OpenSearch Service as a data source for more than 25 million scientific papers. Users report that the application produces inconsistent answers that cite irrelevant sections of papers when queries span methodology, results, and discussion sections of the papers.

The company needs to improve the knowledge base to preserve semantic context across related paragraphs on the scale of the entire corpus of data.

Which solution will meet these requirements?

- A. Configure the knowledge base to use semantic chunking. Use a buffer size of 1 and a breakpoint percentile threshold of 85% to determine chunk boundaries based on content meaning.
- B. **Configure the knowledge base to use hierarchical chunking. Use parent chunks that contain 1,000 tokens and child chunks that contain 200 tokens. Set a 50-token overlap between chunks.**
- C. Configure the knowledge base not to use chunking. Manually split each document into separate files before ingestion. Apply post-processing reranking during retrieval.
- D. Configure the knowledge base to use fixed-size chunking. Set a 300-token maximum chunk size and a 10% overlap between chunks. Use an appropriate Amazon Bedrock embedding model.

Answer: B

Explanation:

Option B is the best solution because hierarchical chunking is specifically designed to preserve broader semantic context while still enabling precise retrieval at paragraph or sub-paragraph granularity. The problem described-answers citing irrelevant sections when a query spans multiple paper sections-often occurs when chunks are either too small (losing cross-paragraph context) or too "flat" (retrieving isolated snippets without their surrounding rationale).

In a scientific paper, related information is frequently distributed across methodology, results, and discussion.

Flat, fixed-size chunking (Option A) can split these logically connected ideas into separate chunks, causing retrieval to surface fragments that match a term but not the full intent. Semantic chunking (Option C) improves boundary placement, but it does not inherently provide a multi-resolution structure that helps preserve section-level continuity at massive scale.

Hierarchical chunking solves this by creating parent chunks (larger context windows) that capture broader section context and child chunks (smaller units) that retain retrieval precision. When the retriever identifies relevant child chunks, it can also bring in the associated parent context so the foundation model sees the surrounding methodological or discussion framing. The defined overlaps further reduce the risk that key transitions or references are split across chunks.

This approach is well suited for a corpus of 25 million papers because it improves relevance without requiring a custom reranking model or a manual preprocessing pipeline. It remains operationally efficient because it is configured at the knowledge base level rather than implemented through custom code per document.

Option D introduces high operational complexity and inconsistent document handling at scale. Therefore, Option B best meets the requirement to preserve semantic context across related paragraphs and improve citation relevance across scientific paper sections.

NEW QUESTION # 59

A company uses an AI assistant application to summarize the company's website content and provide information to customers. The company plans to use Amazon Bedrock to give the application access to a foundation model (FM).

The company needs to deploy the AI assistant application to a development environment and a production environment. The

solution must integrate the environments with the FM. The company wants to test the effectiveness of various FMs in each environment. The solution must provide product owners with the ability to easily switch between FMs for testing purposes in each environment.

Which solution will meet these requirements?

- A. Create one AWS CDK application. Configure the application to invoke the Amazon Bedrock FMs by using the `aws_bedrock.FoundationModel.fromFoundationModelId()` method. Create a pipeline in AWS CodePipeline that has a deployment stage for each environment that uses AWS CodeBuild deploy actions.
- B. Create a separate AWS CDK application for each environment. Configure the applications to invoke the Amazon Bedrock FMs by using the `aws_bedrock.FoundationModel.fromFoundationModelId()` method. Create a separate pipeline in AWS CodePipeline for each environment.
- C. Create one AWS CDK application for the production environment. Configure the application to invoke the Amazon Bedrock FMs by using the `aws_bedrock.ProvisionedModel.fromProvisionedModelArn()` method. Create a pipeline in AWS CodePipeline. Configure the pipeline to deploy to the production environment by using an AWS CodeBuild deploy action. For the development environment, manually recreate the resources by referring to the production application code.
- D. Create one AWS CDK application. Create multiple pipelines in AWS CodePipeline. Configure each pipeline to have its own settings for each FM. Configure the application to invoke the Amazon Bedrock FMs by using the `aws_bedrock.ProvisionedModel.fromProvisionedModelArn()` method.

Answer: A

Explanation:

Option C best satisfies the requirement for flexible FM testing across environments while minimizing operational complexity and aligning with AWS-recommended deployment practices. Amazon Bedrock supports invoking on-demand foundation models through the `FoundationModel` abstraction, which allows applications to dynamically reference different models without requiring dedicated provisioned capacity. This is ideal for experimentation and A/B testing in both development and production environments. Using a single AWS CDK application ensures infrastructure consistency and reduces duplication.

Environment-specific configuration, such as selecting different foundation model IDs, can be externalized through parameters, context variables, or environment-specific configuration files. This allows product owners to easily switch between FMs in each environment without modifying application logic.

A single AWS CodePipeline with distinct deployment stages for development and production is an AWS best practice for multi-environment deployments. It enforces consistent build and deployment steps while still allowing environment-level customization. AWS CodeBuild deploy actions enable automated, repeatable deployments, reducing manual errors and improving governance. Option A increases complexity by introducing multiple pipelines and relies on provisioned models, which are not necessary for FM evaluation and experimentation. Provisioned throughput is better suited for predictable, high-volume production workloads rather than frequent model switching.

Option B creates unnecessary operational overhead by duplicating CDK applications and pipelines, making long-term maintenance more difficult.

Option D directly conflicts with infrastructure-as-code best practices by manually recreating development resources, which increases configuration drift and reduces reliability.

Therefore, Option C provides the most flexible, scalable, and AWS-aligned solution for testing and switching foundation models across development and production environments.

NEW QUESTION # 60

A financial services company is creating a Retrieval Augmented Generation (RAG) application that uses Amazon Bedrock to generate summaries of market activities. The application relies on a vector database that stores a small proprietary dataset with a low index count. The application must perform similarity searches.

The Amazon Bedrock model's responses must maximize accuracy and maintain high performance.

The company needs to configure the vector database and integrate it with the application.

Which solution will meet these requirements?

- A. Launch an Amazon MemoryDB cluster and configure the index by using the Flat algorithm. Configure a horizontal scaling policy based on performance metrics.
- B. Launch an Amazon Aurora PostgreSQL cluster and configure the index by using the Inverted File with Flat Compression (IVFFlat) algorithm. Configure the instance class to scale to a larger size when the load increases.
- C. Launch an Amazon MemoryDB cluster and configure the index by using the Hierarchical Navigable Small World (HNSW) algorithm. Configure a vertical scaling policy based on performance metrics.
- D. Launch an Amazon DocumentDB cluster that has an IVFFlat index and a high probe value. Configure connections to the cluster as a replica set. Distribute reads to replica instances.

Answer: C

Explanation:

Option B is the optimal solution because it maximizes similarity search accuracy and performance for a small, proprietary dataset while maintaining low operational complexity. Amazon MemoryDB is a fully managed, in- memory database that provides microsecond-level latency, making it ideal for real-time RAG workloads that require fast vector similarity searches.

For small datasets with low index counts, the Hierarchical Navigable Small World (HNSW) algorithm is recommended by AWS for its high recall and accuracy. Unlike approximate methods optimized for massive datasets, HNSW excels at returning the most semantically relevant vectors with minimal loss of precision, which directly improves the quality of responses generated by the Amazon Bedrock foundation model.

Vertical scaling in MemoryDB is sufficient for this use case because the dataset size is limited. Scaling up instance size provides increased memory and compute capacity without the complexity of managing distributed indexes or sharding strategies. This simplifies operations while maintaining predictable performance.

Option A's Flat algorithm is computationally expensive and inefficient at scale, even for moderate query volumes. Option C introduces higher latency and operational overhead by using a relational database not optimized for in-memory vector search. Option D is unsuitable because Amazon DocumentDB is not designed for high-performance vector similarity workloads and introduces unnecessary replica management complexity.

Therefore, Option B best meets the requirements for accuracy, performance, and efficient integration with an Amazon Bedrock-based RAG application.

NEW QUESTION # 61

A company developed a multimodal content analysis application by using Amazon Bedrock. The application routes different content types (text, images, and code) to specialized foundation models (FMs).

The application needs to handle multiple types of routing decisions. Simple routing based on file extension must have minimal latency. Complex routing based on content semantics requires analysis before FM selection. The application must provide detailed history and support fallback options when primary FMs fail.

Which solution will meet these requirements?

- A. Create a hybrid solution. Handle simple routing based on file extensions in application code. Handle complex content-based routing by using an AWS Step Functions state machine with JSONata for content analysis and the InvokeModel API for specialized FMs.
- B. Deploy separate AWS Step Functions workflows for each content type with routing logic in AWS Lambda functions. Use Amazon EventBridge to coordinate between workflows when fallback to alternate FMs is required.
- C. Use Amazon SQS with different SQS queues for each content type. Configure AWS Lambda consumers that analyze content and invoke appropriate FMs based on message attributes by using Amazon Bedrock with an AWS SDK.
- D. Configure AWS Lambda functions that call Amazon Bedrock FMs for all routing logic. Use conditional statements to determine the appropriate FM based on content type and semantics.

Answer: A

Explanation:

Option B is the most appropriate solution because it directly aligns with AWS-recommended architectural patterns for building scalable, observable, and resilient generative AI applications on Amazon Bedrock. The requirements clearly distinguish between simple and complex routing decisions, and this option addresses both in an optimal way.

Simple routing based on file extension is latency sensitive. Handling this logic directly in the application code avoids unnecessary orchestration, state transitions, and service calls. This approach ensures that straightforward requests, such as routing images to vision-capable foundation models or text files to language models, are processed with minimal overhead and maximum performance. For complex routing based on content semantics, AWS Step Functions is specifically designed for multi-step workflows that require analysis, branching logic, and error handling. Semantic routing often requires inspecting meaning, intent, or structure before selecting the appropriate foundation model. Step Functions enables this by orchestrating analysis steps and applying conditional logic to determine the correct model to invoke using the Amazon Bedrock InvokeModel API.

A key requirement is detailed execution history. Step Functions provides built-in execution tracing, including state inputs, outputs, and error details, which is essential for auditing, debugging, and compliance.

Additionally, Step Functions supports native retry and catch mechanisms, allowing the workflow to automatically fall back to alternate foundation models if a primary model invocation fails. This directly satisfies the fallback requirement without introducing excessive custom code.

The other options lack one or more critical capabilities. Lambda-only logic lacks deep observability and structured fallback handling, SQS introduces additional latency and limited workflow visibility, and multiple coordinated workflows increase architectural complexity without added benefit.

NEW QUESTION # 62

A financial services company uses an AI application to process financial documents by using Amazon Bedrock. During business hours, the application handles approximately 10,000 requests each hour, which requires consistent throughput.

The company uses the CreateProvisionedModelThroughput API to purchase provisioned throughput. Amazon CloudWatch metrics show that the provisioned capacity is unused while on-demand requests are being throttled. The company finds the following code in the application:

python

```
response = bedrock_runtime.invoke_model(modelId="anthropic.claude-v2", body=json.dumps(payload))
```

The company needs the application to use the provisioned throughput and to resolve the throttling issues.

Which solution will meet these requirements?

- A. Add exponential backoff retry logic to handle throttling exceptions during peak hours.
- B. Modify the application to use the InvokeModelWithResponseStream API instead of the InvokeModel API.
- C. Replace the model ID parameter with the ARN of the provisioned model that the CreateProvisionedModelThroughput API returns.
- D. Increase the number of model units (MUs) in the provisioned throughput configuration.

Answer: C

Explanation:

Option B is correct because the application is currently invoking the base foundation model identifier, which routes traffic to the on-demand capacity pool rather than the company's purchased provisioned throughput. In Amazon Bedrock, provisioned throughput is attached to a specific provisioned resource created through the provisioned throughput APIs. To consume that reserved capacity, inference requests must target the provisioned resource identifier that represents the purchased throughput, not the generic model identifier used for on-demand inference.

The code snippet uses modelId="anthropic.claude-v2". This value selects the on-demand endpoint for that model. As a result, requests are subject to on-demand quotas and throttling behavior, while the provisioned throughput remains idle. This directly explains the CloudWatch observation: provisioned capacity metrics show unused capacity because no traffic is being directed to the provisioned resource, and the on-demand path is throttling because it is exceeding the applicable on-demand limits during peak volume.

Replacing the modelId value with the provisioned throughput ARN returned by the CreateProvisionedModelThroughput workflow ensures the runtime invocation is routed to the reserved capacity. Once traffic is directed correctly, the purchased model units provide the consistent throughput required for predictable performance during business hours, which is exactly why provisioned throughput is used.

Option A could increase capacity, but it does not fix the core issue that the application is not using the provisioned resource at all. Option C can reduce the impact of throttling temporarily, but it adds latency and does not guarantee consistent throughput; it also still wastes the provisioned capacity. Option D changes the response delivery mechanism, but throttling is a capacity routing and quota issue, not a streaming API issue.

NEW QUESTION # 63

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