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Microsoft Operationalizing Machine Learning and Generative AI Solutions Sample Questions (Q57-Q62):

NEW QUESTION # 57

Case Study 1 - Fabrikam Inc.

Background

Fabrikam Inc. is a mid-sized healthcare analytics company that provides population health dashboards and predictive insights to regional hospital systems across the United States.

Fabrikam Inc. customers rely on near real time analytics to monitor patient flow, staffing needs, and readmission risks. They use multiple traditional forecasting machine learning models for predictions.

Fabrikam Inc. has an established Microsoft Azure footprint. The company uses Jupyter Notebooks that run on a local server as the primary development environment. The data science team is experiencing scalability, asset management and code management issues with the current development platform. Fabrikam Inc. plans to migrate to a cloud-based development environment to mitigate the issues.

Additionally, the company plans to implement a Retrieval-Augmented Generation (RAG)-based chat application for client support. Leadership requires the application to be developed and deployed with a low operational risk.

Current Environment

Fabrikam Inc. operates a single Azure subscription that has the following components:

- * Azure Data Lake Storage Gen2 that contains de-identified clinical and operational datasets
- * Azure AI Search indexing curated analytical documents and reference materials
- * A small set of Python-based training scripts maintained by data scientists
- * Azure OpenAI Service with deployed foundational models
- * A Microsoft Foundry resource for building a RAG-based solution

Evaluation data has manually defined expected responses.

The current challenges faced by the data science team include the following:

- * Model training jobs are run manually from notebooks.
- * Experiment tracking is inconsistent
- * Model versions are registered without standardized metadata.
- * Deployment is performed manually by data scientists, with limited rollback capability.
- * The team has no standardized evaluation process for generative AI outputs.

The environment currently allows public network access. Authentication relies on user accounts rather than managed identities. Compute targets are manually created and shared across experiments. This has led to resource contention during peak usage.

Business Requirements

Fabrikam Inc. has the following business requirements for the modernization initiative:

- * Provide a conversational interface that answers analytics questions by using internal documents and datasets.
- * Ensure that sensitive healthcare-related data is not exposed outside the Fabrikam Inc. Azure tenant.
- * Enable repeatable and auditable model training and deployment processes.
- * Support experimentation to compare prompt strategies and fine-tuned models.
- * Align the model with the ranked preferences and optimize behavior for the long term.
- * Minimize disruption to existing analytics workloads during rollout.

Technical Requirements

To support the business goals, Fabrikam Inc. identifies these technical requirements:

- * Use Azure Machine Learning workspaces to centrally manage data assets, models, and environments.
 - * Implement experiment tracking and model versioning for all training jobs.
 - * Orchestrate training and evaluation by using pipelines rather than manually running notebooks.
 - * Deploy traditional machine learning models with support for staged rollout and rollback.
 - * Improve RAG-based solution output quality.
 - * Use the existing evaluation datasets that are based on real data with input-output pairs.
 - * Apply advanced fine-tuning techniques only when prompt engineering is insufficient
- Issues and Constraints Fabrikam Inc. must comply with internal security policies that require the company to restrict network access and avoid long-lived secrets. The data science team has limited Azure DevOps experience, so solutions must favor managed services and automation over custom infrastructure.

Cost predictability is important. Leadership prefers serverless or managed compute options where possible but is willing to approve dedicated compute for stable production workloads.

Problem Statement

Fabrikam Inc. must design and implement an Azure-based AI operations solution that enables reliable training, evaluation, deployment, and iteration of generative AI models. The solution must support experimentation and gradual rollout while ensuring governance, security, and operational stability. The data science and platform teams must collaborate to deliver this solution by using Azure Machine Learning and Microsoft Foundry capabilities.

You need to isolate training workloads while remaining cost-aware to address Fabrikam Inc.'s issues, constraints, and technical requirements. What should you implement?

- A. Fixed-size compute cluster
- B. Dedicated compute clusters per experiment
- C. Training jobs that run on a single shared compute cluster
- **D. Managed compute targets with autoscaling**

Answer: D

Explanation:

Scenario: Issues and Constraints: Cost predictability is important. Leadership prefers serverless or managed compute options where possible but is willing to approve dedicated compute for stable production workloads.

Managed compute targets with autoscaling are the best choice for Azure Machine Learning training workloads when serverless or managed options are preferred and cost predictability is critical.

Best Implementation: Managed Compute with Autoscaling

This option, specifically using Azure Machine Learning compute clusters (AmlCompute), aligns with all your requirements:

Managed Infrastructure: Azure handles the creation, patching, and lifecycle of the virtual machines, reducing management overhead.

Cost Predictability & Efficiency: Autoscaling allows you to set a minimum of zero nodes. This ensures you only pay for compute while a job is running, preventing costs from idle resources.

Scalability: It can automatically scale up to a multi-node cluster to handle large datasets or distributed training jobs.
Enterprise Governance: Administrators can enforce cost control by setting quotas at the subscription or workspace level.
Reference:
<https://learn.microsoft.com/en-us/azure/machine-learning/how-to-use-serverless-compute>

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governance, security, and operational stability. The data science and platform teams must collaborate to deliver this solution by using Azure Machine Learning and Microsoft Foundry capabilities.

You need to standardize how Fabrikam Inc. manages machine learning assets. Which action should you perform first?

- A. Deploy a managed online endpoint.
- B. Create a new Microsoft Foundry project.
- C. Register assets in the Azure Machine Learning registry.
- **D. Create a shared Azure Machine Learning workspace.**

Answer: D

Explanation:

Scenario: To support the business goals, Fabrikam Inc. identifies these technical requirements:

Use Azure Machine Learning workspaces to centrally manage data assets, models, and environments.

To centrally manage data assets, models, and environments across multiple Azure Machine Learning workspaces, you should Create a shared Azure Machine Learning workspace first.

The workspace serves as the top-level resource for your machine learning activities, providing a centralized place to view and manage the artifacts you create. While Registries are used to share assets (like models and environments) across existing workspaces, you must have a workspace as a prerequisite to create or use those assets in a project context.

Key Management Options

Azure provides several ways to organize and centralize your machine learning operations:

Shared Workspace: The primary container for managing data, compute, and experiments within a project team.

Registries: Used specifically for MLOps to decouple assets from specific workspaces, allowing them to be promoted through development, test, and production environments.

Hub Workspaces: A newer feature that groups multiple project workspaces under a single "hub" to share security settings, connections, and compute resources.

Reference:

<https://docs.azure.cn/en-us/machine-learning/concept-workspace>

NEW QUESTION # 59

You have a deployment of an Azure OpenAI Service base model.

You plan to fine-tune the model.

You need to prepare a file that contains training data for multi-turn chat.

Which file encoding method should you use?

- A. ISO-8859-1
- **B. UTF-8**
- C. ASCII
- D. UTF-16

Answer: B

Explanation:

For preparing a multi-turn training data file for the Azure OpenAI Service, you should use UTF-8 with a Byte Order Mark (BOM) encoding.

File Format Requirements

Format: The file must be in JSON Lines (JSONL) format, where each individual line is a valid JSON object representing one training example.

Encoding: Specifically, Azure OpenAI requires the JSONL file to be encoded in UTF-8 with BOM.

Structure: For multi-turn conversations, each line must contain a messages array with multiple role ("system", "user", "assistant") and content pairs to represent the dialogue history.

Reference:

<https://dev.to/icebeam7/fine-tuning-a-model-with-azure-open-ai-studio-39p7>

NEW QUESTION # 60

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear on the

review screen.

You work in Microsoft Foundry with a prompt flow.

You must manually evaluate prompts and compare results across prompt variants.

You need to capture the inputs, outputs, token usage, and latencies for each flow run for the evaluation.

Solution: In Microsoft Foundry, turn on Tracing for the prompt flow of the project and execute test runs to produce trace data.

Does the solution meet the goal?

- A. No
- B. Yes

Answer: B

Explanation:

Correct:

* In Microsoft Foundry, turn on Tracing for the prompt flow of the project and execute test runs to produce trace data.

Incorrect:

* Create prompt variants and compare their outputs in the Evaluation experience.

* Use the prompt flow SDK to enable tracing for the flow before executing runs. Then run the flow to generate traceable results.

Note:

In Azure AI Foundry, you can capture and compare these metrics by enabling Tracing and using the Bulk Test feature. This allows you to systematically evaluate different prompt variants against a common dataset.

Steps to Evaluate and Compare Prompt Variants

*-> 1. Enable Tracing

Navigate to your Prompt Flow project.

Locate the Tracing toggle at the top of the flow authoring page.

Switch it to On.

This ensures every execution captures latency, token counts, and node-level inputs/outputs.

2. Create Prompt Variants

Within your flow, identify the LLM node you want to test.

Click Variants to create multiple versions of your prompt (e.g., Variant_0, Variant_1).

This allows you to test different instructions or few-shot examples side-by-side.

3. Run a Bulk Test (Evaluation)

4. Analyze the Results

Reference:

<https://www.linkedin.com/pulse/streamlining-generative-ai-development-azure-foundry-tracing- taneja-mbwze>

NEW QUESTION # 61

A data science team completes multiple training runs within an experiment by using MLflow.

The team wants to store a selected model in Azure Machine Learning so that it can be versioned and deployed later.

The model must be versioned centrally for reuse across environments.

You need to version the trained model.

Which two actions should you perform? Each correct answer presents part of the solution.

Choose two.

NOTE: Each correct selection is worth one point.

- A. Locate and capture the model artifacts from the outputs of the training run.
- B. Register the model in the Azure Machine Learning workspace.
- C. Export the model files to local storage.
- D. Tag the training experiment with a name.

Answer: A,B

Explanation:

To set up versioning for a trained model in an Azure Machine Learning (Azure ML) workspace using MLflow, you must capture the model artifacts during the training run and then register the model into the centralized registry.

[A]

1. Capture Model Artifacts

During each training run, use the MLflow SDK to log the model. This ensures that all necessary files (the model binary, environment dependencies, and the MLmodel metadata) are stored as run outputs in the workspace.

Manual Logging: Use a flavor-specific method like `mlflow.sklearn.log_model(model,`

"model_path") within an active run.

Automatic Logging: Call `mlflow.autolog()` before starting your training. This automatically captures metrics, parameters, and the model artifacts for supported frameworks.

Artifact Location: Once logged, artifacts are typically found in the `outputs/` folder of the specific run, accessible via the Azure Machine Learning Studio.

[B]

2. Register the Model

After identifying the best-performing run, you register it to the Model Registry. This creates a named, versioned entity that can be accessed across different environments for deployment.

To set up versioning for an MLflow model in Azure Machine Learning (Azure ML) that is accessible across different environments, you should use a centralized Azure ML Registry. While a standard Azure ML Workspace acts as an MLflow server for individual experiments, an Azure ML Registry is the specifically designed feature for sharing models, environments, and components across multiple workspaces and environments within an Azure tenant.

3. Centralized Reuse

By registering the model in the workspace's registry, you establish a single source of truth. You can then load this specific version in any environment (e.g., staging or production) using its registry URI: `models:/<model_name>/<version_or_alias>`.

Incorrect:

[Not D]

Must use an Azure ML Registry (Central).

Reference:

<https://mlflow.org/docs/latest/ml/model-registry/>

NEW QUESTION # 62

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