Vendor: Microsoft

Exam Code: AI-102

Exam Name: Designing and Implementing a Microsoft Azure AI Solution

Version: DEMO

QUESTION 1
QUESTION 1
Case Study 1 - Wide World Importers

Overview
Existing Environment
A company named Wide World Importers is developing an e-commerce platform.

You are working with a solutions architect to design and implement the features of the e-commerce platform. The platform will use microservices and a serverless environment built on Azure.

Wide World Importers has a customer base that includes English, Spanish, and Portuguese speakers.

Applications
Wide World Importers has an App Service plan that contains the web apps shown in the following table.

Name	Description
Product Management	An app used by employees to create and manage products. The app and the expected inputs from the employees are in English.
Inventory Tracking	An app used by employees to manage inventory when dispatching orders, receiving refunds, and receiving consignments from suppliers.

Azure Resources
You have the following resources:

▪ An Azure Active Directory (Azure AD) tenant
  - The tenant supports internal authentication.
  - All employees belong to a group named AllUsers.
  - Senior managers belong to a group named LeadershipTeam.
▪ An Azure Functions resource
  - A function app posts to Azure Event Grid when stock levels of a product change between OK, Low Stock, and Out of Stock. The function app uses the Azure Cosmos DB change feed.
▪ An Azure Cosmos DB account
  - The account uses the Core (SQL) API.
  - The account stores data for the Product Management app and the Inventory Tracking app.
▪ An Azure Storage account
  - The account contains blob containers for assets related to products.
  - The assets include images, videos, and PDFs.
▪ An Azure Cognitive Services resource named wwics
▪ A Video Indexer resource named wwivi

Question
You are developing the smart e-commerce project.

You need to implement autocompletion as part of the Cognitive Search solution.

Which three actions should you perform? Each correct answer presents part of the solution. (Choose three.)

NOTE: Each correct selection is worth one point.

A. Make API queries to the autocomplete endpoint and include suggesterName in the body.
B. Add a suggester that has the three product name fields as source fields.
C. Make API queries to the search endpoint and include the product name fields in the searchFields query parameter.
D. Add a suggester for each of the three product name fields.
E. Set the searchAnalyzer property for the three product name variants.
F. Set the analyzer property for the three product name variants.

Answer: ABF
Explanation:
Scenario: Support autocompletion and autosuggestion based on all product name variants.
A: Call a suggester-enabled query, in the form of a Suggestion request or Autocomplete request, using an API. API usage is illustrated in the following call to the Autocomplete REST API.
POST /indexes/myxboxgames/docs/autocomplete?search&api-version=2020-06-30
{
"search": "minecraf",
"suggesterName": "sg"
}
B: In Azure Cognitive Search, typeahead or "search-as-you-type" is enabled through a suggester. A suggester provides a list of fields that undergo additional tokenization, generating prefix sequences to support matches on partial terms. For example, a suggester that includes a City field with a value for "Seattle" will have prefix combinations of "sea", "seat", "seatt", and "seattl" to support typeahead.
G. Use the default standard Lucene analyzer ("analyzer": null) or a language analyzer (for example, "analyzer": "en.Microsoft") on the field.

Reference:
https://docs.microsoft.com/en-us/azure/search/index-add-suggesters

QUESTION 2
Case Study 2 - Contoso, Ltd.

General Overview
Contoso, Ltd. is an international accounting company that has offices in France. Portugal, and the United Kingdom. Contoso has a professional services department that contains the roles shown in the following table.

Name	Position	Office
Accountant	Manager	United Kingdom, France, Portugal
Accountant	Consultant	United Kingdom, France, Portugal
Customer Service	Manager	United Kingdom
Customer Service	Agent	United Kingdom
Bookkeeper	Manager	United Kingdom, France, Portugal
Bookkeeper	Consultant	United Kingdom, France, Portugal

Infrastructure
Contoso has the following subscriptions:
- Azure

- Microsoft 365
- Microsoft Dynamics 365

Azure Active (Azure AD) Directory
Contoso has Azure Active Directory groups for securing role-based access. The company uses the following group naming conventions:
- ICountryJ-[Levell-[Role]
- [Level]-[Role]

Question
You are developing the chatbot.
You create the following components:

```
- A QnA Maker resource
- A chatbot by using the Azure Bot Framework SDK
```

You need to add an additional component to meet the technical requirements and the chatbot requirements.
What should you add?

A. Dispatch
B. chatdown
C. Language Understanding
D. Microsoft Translator

Answer: A
Explanation:
Scenario: All planned projects must support English, French, and Portuguese.
If a bot uses multiple LUIS models and QnA Maker knowledge bases (knowledge bases), you can use the Dispatch tool to determine which LUIS model or QnA Maker knowledge base best matches the user input. The dispatch tool does this by creating a single LUIS app to route user input to the correct model.

QUESTION 3
You have a Video Indexer service that is used to provide a search interface over company videos on your company's website.

You need to be able to search for videos based on who is present in the video.

What should you do?

A. Create a person model and associate the model to the videos.
B. Create person objects and provide face images for each object.
C. Invite the entire staff of the company to Video Indexer.
D. Edit the faces in the videos.
E. Upload names to a language model.

Answer: A
Explanation:
Video Indexer supports multiple Person models per account. Once a model is created, you can use it by
providing the model ID of a specific Person model when uploading/indexing or reindexing a video.
Training a new face for a video updates the specific custom model that the video was associated

with.
Note: Video Indexer supports face detection and celebrity recognition for video content. The celebrity recognition feature covers about one million faces based on commonly requested data source such as IMDB, Wikipedia, and top LinkedIn influencers. Faces that aren't recognized by the celebrity recognition feature are detected but left unnamed. Once you label a face with a name, the face and name get added to your account's Person model. Video Indexer will then recognize this face in your future videos and past videos.
Reference:
https://docs.microsoft.com/en-us/azure/media-services/video-indexer/customize-person-model-with-api

QUESTION 4
You are building a bot on a local computer by using the Microsoft Bot Framework. The bot will use an existing Language Understanding model.

You need to translate the Language Understanding model locally by using the Bot Framework CLI.

What should you do first?

A. From the Language Understanding portal, clone the model.
B. Export the model as an .lu file.
C. Create a new Speech service.
D. Create a new Language Understanding service.

Answer: B
Explanation:
You might want to manage the translation and localization for the language understanding content for your bot independently.
Translate command in the @microsoft/bf-lu library takes advantage of the Microsoft text translation API to automatically machine translate .lu files to one or more than 60+ languages supported by the Microsoft text translation cognitive service.
What is translated?
An .lu file and optionally translate
Comments in the lu file
LU reference link texts
List of .lu files under a specific path.

Reference:
https://github.com/microsoft/botframework-cli/blob/main/packages/luis/docs/translate-command.md

QUESTION 5
Your company wants to reduce how long it takes for employees to log receipts in expense reports. All the receipts are in English.

You need to extract top-level information from the receipts, such as the vendor and the transaction total.
The solution must minimize development effort.

Which Azure Cognitive Services service should you use?

A. Custom Vision

B. Personalizer
C. Form Recognizer
D. Computer Vision

Answer: C
Explanation:
Azure Form Recognizer is a cognitive service that lets you build automated data processing software using machine learning technology. Identify and extract text, key/value pairs, selection marks, tables, and structure from your documents--the service outputs structured data that includes the relationships in the original file, bounding boxes, confidence and more.
Form Recognizer is composed of custom document processing models, prebuilt models for invoices, receipts, IDs and business cards, and the layout model.
Reference:
https://docs.microsoft.com/en-us/azure/cognitive-services/form-recognizer

QUESTION 6
You have the following C# method for creating Azure Cognitive Services resources programmatically.

```
static void create_resource(CognitiveServicesManagementClient client, string
resource_name, string kind, string account_tier, string location)
{
  CognitiveServicesAccount parameters =
      new CognitiveServicesAccount(null, null, kind, location, resource_name,
new CognitiveServicesAccountProperties(), new Sku(account_tier));
  var result = client.Accounts.Create(resource_group_name, account_tier,
parameters);
}
```

You need to call the function to create a free Azure resource in the West US Azure region. The resource will be used to generate captions of images automatically.

Which code should you use?

A. create_resource(client, "res1", "ComputerVision", "F0", "westus")
B. create_resource(client, "res1", "CustomVision.Prediction", "F0", "westus")
C. create_resource(client, "res1", "ComputerVision", "S0", "westus")
D. create_resource(client, "res1", "CustomVision.Prediction", "S0", "westus")

Answer: A
Explanation:
There is free tier available for Computer Vision service.
- Free - Web/Container
- 20 per minute
- 5,000 free transactions per month

Only ComputerVision allows you to generate descriptions. Custom vision is used to build custom models for image classification and other basic stuff, not complex tasks like description generation.

Reference:
https://azure.microsoft.com/en-us/pricing/details/cognitive-services/computer-vision/

QUESTION 7
You are building a Language Understanding model for an e-commerce platform.

You need to construct an entity to capture billing addresses.

Which entity type should you use for the billing address?

A. machine learned
B. Regex
C. geographyV2
D. Pattern.any
E. list

Answer: A
Explanation:
An ML entity can be composed of smaller sub-entities, each of which can have its own properties.
For example, Address could have the following structure:

Address: 4567 Main Street, NY, 98052, USA
Building Number: 4567
Street Name: Main Street
State: NY
Zip Code: 98052
Country: USA

https://docs.microsoft.com/en-us/azure/cognitive-services/luis/luis-concept-entity-types

QUESTION 8
You have a chatbot that was built by using the Microsoft Bot Framework.

You need to debug the chatbot endpoint remotely.

Which two tools should you install on a local computer? Each correct answer presents part of the solution.
(Choose two.)

NOTE: Each correct selection is worth one point.

A. Fiddler
B. Bot Framework Composer
C. Bot Framework Emulator
D. Bot Framework CLI
E. ngrok
F. nginx

Answer: CE
Explanation:
Bot Framework Emulator is a desktop application that allows bot developers to test and debug bots, either locally or remotely.
ngrok is a cross-platform application that "allows you to expose a web server running on your local machine to the internet." Essentially, what we'll be doing is using ngrok to forward messages from external channels on the web directly to our local machine to allow debugging, as opposed to the standard messaging endpoint configured in the Azure portal.

Reference:
https://docs.microsoft.com/en-us/azure/bot-service/bot-service-debug-emulator

QUESTION 9
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 in the review screen.

You develop an application to identify species of flowers by training a Custom Vision model.

You receive images of new flower species.

You need to add the new images to the classifier.

Solution: You add the new images, and then use the Smart Labeler tool.

Does this meet the goal?

A. Yes
B. No

Answer: B
Explanation:
The model need to be extended and retrained.
Note: Smart Labeler to generate suggested tags for images. This lets you label a large number of images more quickly when training a Custom Vision model.

QUESTION 10
Drag and Drop Question

You have 100 chatbots that each has its own Language Understanding model.

Frequently, you must add the same phrases to each model.

You need to programmatically update the Language Understanding models to include the new phrases.

How should you complete the code? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

```
Values                                Answer Area
AddPhraseListAsync                    var phraselistId = await client.Features. [          ]
Phraselist                            (appId, versionId, new [                    ]
PhraselistCreateObject
Phrases                               {
SavePhraselistAsync                       EnabledForAllModels = false,
UploadPhraseListAsync                     IsExchangeable = true,
                                          Name = "PL1",
                                          Phrases = "item1,item2,item3,item4,item5"

                                      });
```

Answer:

```
Values                                Answer Area
                                      var phraselistId = await client.Features. [AddPhraseListAsync]
Phraselist                            (appId, versionId, new [PhraselistCreateObject]
                                      {
Phrases                                   EnabledForAllModels = false,
SavePhraselistAsync                       IsExchangeable = true,
UploadPhraseListAsync                     Name = "PL1",
                                          Phrases = "item1,item2,item3,item4,item5"

                                      });
```

Explanation:
Box 1: AddPhraseListAsync
Example: Add phraselist feature

var phraselistId = await client.Features.AddPhraseListAsync(appId, versionId, new
PhraselistCreateObject {
EnabledForAllModels = false,
IsExchangeable = true,
Name = "QuantityPhraselist",
Phrases = "few,more,extra"
});

Box 2: PhraselistCreateObject

Reference:
https://docs.microsoft.com/en-us/azure/cognitive-services/luis/client-libraries-rest-api

QUESTION 11
Hotspot Question

You are developing an application that will use the Computer Vision client library. The application
has the following code.

```
public async TaskAnalyzeImage(ComputerVisionClient client, string localImage)
{
        List<VisualFeatureTypes> features = new List<VisualFeatureTypes>()
                {
                        VisualFeatureTypes.Description,
                        VisualFeatureTypes.Tags,
                };
        using (Stream imageStream = File.OpenRead(localImage))
        {
                try
                {
                  ImageAnalysis results = await client.AnalyzeImageInStreamAsync(imageStream, features);

                  foreach (var caption in results.Description.Captions)
                  {
                        Console.WriteLine($"{caption.Text} with confidence {caption.Confidence}");
                  }

                  foreach (var tag in results.Tags)
                  {
                        Console.WriteLine($"{tag.Name} {tag.Confidence}");
                  }
                }
                catch (Exception ex)
                {
                        Console.WriteLine(ex.Message);
                }
        }
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Answer Area

Statements	Yes	No
The code will perform face recognition.	○	○
The code will list tags and their associated confidence.	○	○
The code will read a file from the local file system.	○	○

Answer:

Answer Area

Statements	Yes	No
The code will perform face recognition.	○	●
The code will list tags and their associated confidence.	●	○
The code will read a file from the local file system.	●	○

Explanation:
Box 1: No
The code generates description and tags. See line 3,4.

Box 2: Yes
The ComputerVision.analyzeImageInStreamAsync operation extracts a rich set of visual features based on the image content.

Box 3: Yes
File.OpenRead reads a local file.

Reference:
https://docs.microsoft.com/en-us/dotnet/api/system.io.file.openread?view=net-6.0
https://docs.microsoft.com/en-us/java/api/com.microsoft.azure.cognitiveservices.vision.computervision.computervision.analyzeimageinstreamasync?view=azure-java-legacy

QUESTION 12
You plan to provision a QnA Maker service in a new resource group named RG1.

In RG1, you create an App Service plan named AP1.

Which two Azure resources are automatically created in RG1 when you provision the QnA Maker service? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. Language Understanding
B. Azure SQL Database
C. Azure Storage
D. Azure Cognitive Search
E. Azure App Service

Answer: DE
Explanation:
At the creation, we have to precise Azure Search an Azure Web App details.
When you create a QnAMaker resource, you host the data in your own Azure subscription. Azure Search is used to index your data.
When you create a QnAMaker resource, you host the runtime in your own Azure subscription. App Service is the compute engine that runs the QnA Maker queries for you.
https://docs.microsoft.com/en-us/azure/cognitive-services/qnamaker/how-to/set-up-qnamaker-service-azure?tabs=v1#delete-azure-resources

QUESTION 13
You are building an Azure Weblob that will create knowledge bases from an array of URLs.

You instantiate a QnAMakerClient object that has the relevant API keys and assign the object to a variable named client.

You need to develop a method to create the knowledge bases.

Which two actions should you include in the method? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. Create a list of FileDTO objects that represents data from the WebJob.

B. Call the client.Knowledgebase.CreateAsync method.
C. Create a list of QnADTO objects that represents data from the WebJob.
D. Create a CreateKbDTO object.

Answer: BD
Explanation:
var createOp = await client.Knowledgebase.CreateAsync(createKbDto);
https://docs.microsoft.com/en-us/azure/cognitive-services/qnamaker/quickstarts/quickstart-sdk?tabs=v1%2Cversion-1&pivots=programming-language-csharp#create-a-knowledge-base

QUESTION 14
You are developing a solution to generate a word cloud based on the reviews of a company's products.

Which Text Analytics REST API endpoint should you use?

A. keyPhrases
B. sentiment
C. languages
D. entities/recognition/general

Answer: A
Explanation:
The key phrases provide us with the important words from our customer comments, not just the most common words. Also, word sizing in the resulting cloud isn't skewed by the frequent use of a word in a relatively small number of comments.
https://docs.microsoft.com/en-us/azure/cognitive-services/language-service/key-phrase-extraction/tutorials/integrate-power-bi#create-the-word-cloud

QUESTION 15
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 in the review screen.

You have an Azure Cognitive Search service.

During the past 12 months, query volume steadily increased.

You discover that some search query requests to the Cognitive Search service are being throttled.

You need to reduce the likelihood that search query requests are throttled.

Solution: You add indexes.

Does this meet the goal?

A. Yes

B. No

Answer: B
Explanation:
Instead, you could migrate to a Cognitive Search service that uses a higher tier.
Note: A simple fix to most throttling issues is to throw more resources at the search service
(typically replicas for query-based throttling, or partitions for indexing-based throttling). However,
increasing replicas or partitions adds cost, which is why it is important to know the reason why
throttling is occurring at all.
Reference:
https://docs.microsoft.com/en-us/azure/search/search-performance-analysis

QUESTION 16
You are training a Language Understanding model for a user support system.

You create the first intent named GetContactDetails and add 200 examples.

You need to decrease the likelihood of a false positive.

What should you do?

A. Enable active learning.
B. Add a machine learned entity.
C. Add additional examples to the GetContactDetails intent.
D. Add examples to the None intent.

Answer: D
Explanation:
You should also consider adding false positive examples to the None intent.
Reference:
https://docs.microsoft.com/en-us/azure/cognitive-services/language-service/conversational-
language-understanding/concepts/none-intent#adding-examples-to-the-none-intent

QUESTION 17
You need to enable speech capabilities for a chatbot.

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

NOTE: Each correct selection is worth one point.

A. Enable WebSockets for the chatbot app.
B. Create a Speech service.
C. Register a Direct Line Speech channel.
D. Register a Cortana channel.
E. Enable CORS for the chatbot app.
F. Create a Language Understanding service.

Answer: ABC
Explanation:
You can use the Speech service to voice-enable a chat bot.
The Direct Line Speech channel uses the text-to-speech service, which has neural and standard
voices.

You'll need to make a small configuration change so that your bot can communicate with the Direct Line Speech channel using web sockets.
Reference:
https://docs.microsoft.com/en-us/azure/cognitive-services/speech-service/tutorial-voice-enable-your-bot-speech-sdk

QUESTION 18
You have the following C# method.

```
static void create_resource(string resource_name, string kind, string account_tier, string location)
{
    CognitiveServicesAccount parameters =
        new CognitiveServicesAccount(null, null, kind, location, resource_name, new CognitiveServicesAccountProperties(), new Sku(account_tier));
    var result = cog_svc_client.Accounts.Create(resource_group_name, account_tier, parameters);
}
```

You need to deploy an Azure resource to the East US Azure region. The resource will be used to perform sentiment analysis.

How should you call the method?

A. create_resource("res1", "ContentModerator", "S0", "eastus")
B. create_resource("res1", "TextAnalytics", "S0", "eastus")
C. create_resource("res1", "ContentModerator", "Standard", "East US")
D. create_resource("res1", "TextAnalytics", "Standard", "East US")

Answer: B
Explanation:
To perform sentiment analysis, we specify TextAnalytics, not ContentModerator.

Possible SKU names include: 'F0','F1','S0','S1','S2','S3','S4','S5','S6','S7','S8'
Possible location names include: westus, eastus

Reference:
https://docs.microsoft.com/en-us/powershell/module/az.cognitiveservices/new-azcognitiveservicesaccount

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