Study guide for Exam AI-102: Designing and Implementing a Microsoft Azure AI Solution

QUICK NAVIGATION

Document purpose

As an attendee of the Exam Prep session for **Exam AI-102: Designing and Implementing an Azure AI Solution**, you can use this guide as a summary of the topics covered and to explore important links and additional resources. The information and materials found here can help you focus your studies as you prepare for the exam.

About Exam AI-102: Designing and Implementing an Azure AI Solution

Exam AI-102 is required to earn the **Azure AI Engineer Associate certification**.

This exam measures your ability to build, manage, and deploy AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework.

As a candidates for this exam, you should be proficient in C#, Python, or JavaScript and you should be able to use REST-based APIs and SDKs to build computer vision, natural

language processing, knowledge mining, and conversational AI solutions on Azure. You should also understand the components that make up the Azure AI portfolio and the available data storage options. Plus, you need to understand and be able to apply responsible AI principles.

Skills measured

For the full list of the skills that the exam measures, along with the level of experience and expertise that you'll need as an exam candidate, check out the Exam AI-102 skills outline.

Certification journey

For an overview of the journey to Microsoft Certification, including prerequisites (if any) and follow-up resources, explore The journey to Microsoft Certified: Azure AI Engineer Associate.

Exam overview

For information on the exam, including the types of questions you may encounter, read About Microsoft Certification exams.

Objective domains

This section itemizes the topics covered in the Exam Prep session and links to Microsoft documentation so you can review the topics in detail.

- Plan and manage an Azure Cognitive Services solution (15–20%)
- Implement Computer Vision solutions (20–25%)
- Implement natural language processing solutions (20–25%)
- Implement knowledge mining solutions (15–20%)
- Implement conversational AI solutions (15–20%)

Plan and manage an Azure Cognitive Services solution (15–20%)

Select the appropriate Cognitive Services resource

- Overview of Cognitive Services

Plan and configure security for a Cognitive Services solution

- Manage Cognitive Services account keys
- Authenticate requests to Cognitive Services
- Configure Cognitive Services virtual networks
- Responsible AI principles

Create a Cognitive Services resource

- Create a Cognitive Services resource
- Monitor Cognitive Services
- Configuring diagnostic logging
- Azure pricing calculator
- Manage Cognitive Services costs
- Implement a privacy policy in Cognitive Services

Plan and implement Cognitive Services containers

- Identify when to deploy to a container
- Containerize Cognitive Services

Implement Computer Vision solutions (20–25%)

Analyze images using the Computer Vision API

- Computer Vision capabilities

Extract text from images

- Use the OCR and Read API
- Extract information from forms and receipts

Extract facial information from images

- Detect faces in an image
- Recognize faces in an image
- Match similar faces using the Face API

Use the Custom Vision service

- Use the web portal to build an image classifier
- Use the Custom Vision SDK to build an image classifier
- Use the web portal to build an object detector
- Use the Custom Vision SDK to build an object detector
- Deploy custom models to containers
- Training a custom model by using the SDK

Analyze video using Video Indexer

- Processing a video with Video Analyzer for Media
- Extract insights from videos
- Moderate content in a video
- Customize the Brands model
- Customize the Language model
- Customize the Person model
- Extract insights from a live stream of video data

Implement natural language processing solutions (20–25%)

Analyze text using the Text Analytics service

- Retrieve and process key phrases
- Retrieve and process entity information
- Retrieve and process sentiment
- Detect the language used in text

Manage speech using the Speech service

- Implement text-to-speech
- Customize text-to-speech
- Implement speech-to-text
- Improve speech-to-text accuracy

Translate language

- Translate text with the Speech service
- Translate speech-to-speech using the Speech service
- Translate speech with the Translator API

Build an initial language model using LUIS

- Create intents and entities based on a schema, and then add utterances
- Create complex hierarchical entities
- Train a model
- Test a model
- Batch test a model
- Publish a model

Iterate on and optimize a language model using LUIS

- Implement phrase lists
- Implement a model as a feature
- Manage punctuation and diacritics
- Implement active learning
- Monitor and correct data imbalances
- Implement patterns

Manage a LUIS model

- Manage collaborators
- Manage versioning
- Publish a model through the portal or in a container
- Deploy a LUIS package to a container
- Integrate Bot Framework (LuDown) to run outside of the LUIS portal

Implement knowledge mining solutions (15–20%)

Implement a Cognitive Search solution

- Define Azure Cognitive Search
- Create data sources
- Define an index
- Create and run an indexer
- Query an index
- Configure an index to support autocomplete and autosuggest
- Boost results based on relevance
- Implement synonyms

Implement an enrichment pipeline

- Overview of knowledge mining
- Attach a Cognitive Services account to a skillset
- Select and include built-in skills for documents
- Implement custom skills and include them in a skillset

Implement a knowledge store

- Define projections
- Query projections

Manage a Cognitive Search solution

- Configure security for Cognitive Search
- Configure scalability for Cognitive Search

Manage indexing

- Manage re-indexing
- Rebuild indexes
- Monitor indexing
- Implement incremental indexing
- Manage concurrency
- Push data to an index
- Troubleshoot indexing for a pipeline

Implement conversational AI solutions (15–20%)

Create a knowledge base using QnA Maker

- Overview of QnA Maker
- Create a QnA Maker service
- Create a knowledge base
- Import a knowledge base
- Train and test a knowledge base
- Publish a knowledge base
- Create a multi-turn conversation
- Add alternative phrasing
- Add chit-chat to a knowledge base
- Export a knowledge base
- Add active learning

Create a bot using the Bot Framework SDK

- Create a bot with the SDK
- Implement dialogs with the SDK
- Design and implement adaptive cards
- Maintain state
- Implement a prompt for user input
- Implement a bot-to-human handoff
- Troubleshoot a conversational bot
- Add custom middleware for processing user messages
- Implement logging for a bot conversation with Azure Cosmos DB
- Implement logging for a bot conversation with Application Insights
- Manage identity and authentication
- Implement channel-specific logic
- Testing a bot using Bot Framework Emulator
- Publish a bot

Create a bot using Bot Framework Composer

- Creating a bot with Composer
- Implement dialogs in Composer
- Add language generation for a response

Integrate Cognitive Services into a bot

- Integrate a QnA Maker service with the SDK
- Integrate a QnA Maker service with Composer
- Integrate a LUIS service
- Integrate a Speech service
- Integrate Dispatch for multiple language models
- Manage keys in the app settings file

Additional study resources

In addition to the documentation listed in the previous sections, we offer several resources to help you prepare for the exam and to stay up to speed and engaged with the Azure community. These resources range from formal training to blogs and even interviews with Microsoft team members.

Course AI-102T00: Designing and Implementing a Microsoft Azure AI Solution	This four-day instructor-led course combines lectures and hands-on exercises. It's intended for software developers who want to build AI-infused applications using Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework.
AI-102 online learning paths	Don't miss these free, self-paced online resources to help you gain the skills needed to earn your certification.
Azure documentation	Stay informed on the latest products, tools, and features, and get information on pricing, partners, support, solutions, and more.
Azure Community Support	Ask questions, get answers, and connect with Microsoft engineers and Azure community experts.
Microsoft Learn Community Blog	Get the latest information about certification tests and exam study groups.
Channel 9	Explore this community site for customers. It includes video channels, discussions, podcasts, screencasts, and interviews.
Azure Tuesdays with Corey	Corey Sanders answers your questions about Microsoft Azure.
Azure Fridays	Scott Hanselman, Partner Program Manager, speaks with Azure engineers as they demo capabilities and share insights.
Microsoft Azure Blog	Keep current on what's happening in Azure, including what's in preview and what's generally available, along with Azure news, updates, and much more.