A comprehensive study guide that will provide you with great preparation tools for the AI-102: Designing and Implementing a Microsoft Azure AI Solution exam

AI-102 Official Course Study Guide

Jordi Koenderink 5/30/2021

Introduction

Welcome to the AI-102 Study Guide. This guide will go over each topic of the skills outline, provided by Microsoft for the AI-102: Designing and Implementing a Microsoft Azure AI Solution.

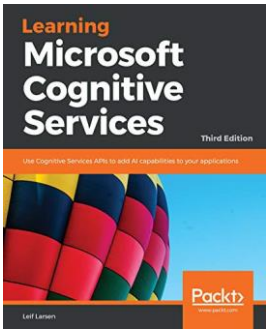
For this exam, Microsoft suggests having subject matter expertise building, managing, and deploying AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework.

Candidates for this exam should be proficient in C#, Python, or JavaScript and 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. They should also understand the components that make up the Azure AI portfolio and the available data storage options. Plus, candidates need to understand and be able to apply responsible AI principles.

About the exam:

- Taking the exam will cost you $165 US dollars.
- Microsoft certification exams are scored out of 1000 points. You need 700 points or higher to pass the AI-102 exam and gain your Azure AI Engineer Associate badge.
- The AI-102 exam will need to be renewed every year. Microsoft will from time to time retire certifications, however, and you may also find exam numbers evolve (this is what happened with the previous exam AI-100) when Microsoft changes the curriculum substantially for the certification.
- The exam will have around 55 questions for which you have 3h to answer.
- As of this moment of writing, there're no labs.

Book/e-book:

	**Exam Ref AI-102 Microsoft Azure Administrator** Explore the Cognitive Services APIs for building machine learning applications • Amazon.com: Amazon.com: Learning Microsoft Cognitive Services: Use Cognitive Services APIs to add AI capabilities to your applications, 3rd Edition eBook: Larsen, Leif: Kindle Store

Video training:

Udemy	This course goes through all of the skills needed to take and pass the AI-102 exam: Designing and Implementing a Microsoft Azure AI Solution. This course teaches all of the requirements for the exam, one by one. Each of the things that Microsoft tests will be covered in this course. AI-102 Microsoft Azure AI Solution Complete Exam Prep | Udemy
PLURALSIGHT	This path is structured to mimic the organization of the exam so you can more easily follow along during your study preparation. Microsoft Azure AI Engineer (AI-100) Learning Path | Pluralsight
in	Linkedin's Microsoft Azure Exam AI-102 Online Course helps Professionals to prepare themselves for the actual certification exam. Learning Microsoft Cognitive Services for Developers (linkedin.com)

Microsoft Learn:

Those tutorial/paths have been combined by Microsoft and published for free. They contain a collection of text, videos, and exercises for the exam.

	AI-102: Evaluate text with Azure Cognitive Language Services Learn how to use Cognitive Language Services to analyze text, determine intent, detect adult themes, and process natural language input. Evaluate text with Azure Cognitive Language Services - Learn | Microsoft Docs
	AI-102: Process and Translate Speech with Azure Cognitive Speech Services Learn how to develop speech-enabled applications by using the Speech service. Process and Translate Speech with Azure Cognitive Speech Services - Learn | Microsoft Docs
	AI-102: Process and classify images with the Azure cognitive vision services Learn how to implement computer vision by exploring how to process faces in images and video, detect

	objects, categorize images, extract insights with video indexer service, and implement custom vision solutions. Process and classify images with the Azure cognitive vision services - Learn | Microsoft Docs
	**AI-102: Process natural language with Azure Cognitive Language Services** Learn to implement language services using APIs for sentiment analysis, extracting key phrases and entities from text, detect the languages, and implement deeper understanding of input through the use of natural language understanding with LUIS. Process natural language with Azure Cognitive Language Services - Learn | Microsoft Docs
	**AI-102: Process and classify images with the Azure cognitive vision services** Learn how to implement computer vision by exploring how to process faces in images and video, detect objects, categorize images, extract insights with video indexer service, and implement custom vision solutions. Process and classify images with the Azure cognitive vision services - Learn | Microsoft Docs
	**AI-102: Process natural language with Azure Cognitive Language Services** Learn to implement language services using APIs for sentiment analysis, extracting key phrases and entities from text, detect the languages, and implement deeper understanding of input through the use of natural language understanding with LUIS. Process natural language with Azure Cognitive Language Services - Learn | Microsoft Docs
	**AI-102: Implement knowledge mining with Azure Cognitive Search** Do you have information locked up in structured and unstructured data sources? Using Azure Cognitive Search, you can extract key insights from this data, and enable applications to search and analyze them. Implement knowledge mining with Azure Cognitive Search - Learn | Microsoft Docs

	AI-102: Create conversational AI solutions Conversational AI solutions are based on interactions between human users and AI agents called bots. In this learning path, you'll learn how to build bots that can be delivered on Microsoft Azure. Create conversational AI solutions - Learn | Microsoft Docs

Practice exams

Those are practice exams and not dumps. I do not encourage dumps as they ruin the certification value for everyone.

	**Whizlabs – Microsoft Azure Exam AI-102 Practice Tests** The AI-102 Azure AI Engineer Associate certification is to measures your ability to accomplish the following technical tasks: plan and manage an Azure Cognitive Services solutions; implement Computer Vision solutions; implement natural language processing solutions; implement knowledge mining solutions; and implement conversational AI solutions. What's inside: • 2 Practice tests (54 questions) • Explanation with every question • Reports to assess strengths and weaknesses AI-102 Designing, Implementing a Microsoft Azure AI Solution | Udemy

This guide is divided up into the following sections and is also part of the exam:

- 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%)

Feel free to join our Facebook Azure Study Group, or check out the Azure courses on Udemy. Errors and suggestions can also be reported in the Azure Group on Facebook.

Thank you,

Software Architect Team
Jordi Koenderink

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Plan and Manage an Azure Cognitive Services Solution (15-20%)

Select the appropriate Cognitive Services resource

Select the appropriate cognitive service for a vision solution

- Choosing a cognitive services technology - Azure Architecture Center | Microsoft Docs
- What are Azure Cognitive Services? - Azure Cognitive Services | Microsoft Docs
    - What is Computer Vision? - Azure Cognitive Services | Microsoft Docs
    - What is Custom Vision? - Azure Cognitive Services | Microsoft Docs
    - What is the Azure Face service? - Azure Cognitive Services | Microsoft Docs
    - What is Form Recognizer? - Azure Cognitive Services | Microsoft Docs
    - What is Azure Media Services Video Indexer? - Azure Media Services | Microsoft Docs

Select the appropriate cognitive service for a language analysis solution

- What are Azure Cognitive Services? - Azure Cognitive Services | Microsoft Docs
    - Language Understanding (LUIS) Overview - Azure Cognitive Services | Microsoft Docs
    - What is QnA Maker service? - Azure Cognitive Services | Microsoft Docs
    - Text mining and analysis with the Text Analytics API - Azure Cognitive Services | Microsoft Docs
    - Microsoft Translator service - Azure Cognitive Services | Microsoft Docs
    - What is the Immersive Reader? - Azure Cognitive Services | Microsoft Docs

Select the appropriate cognitive Service for a decision support solution

- What are Azure Cognitive Services? - Azure Cognitive Services | Microsoft Docs
    - What is the Anomaly Detector API? - Azure Cognitive Services | Microsoft Docs
    - What is Azure Content Moderator? - Azure Cognitive Services | Microsoft Docs
    - What is the Metrics Advisor service? - Azure Cognitive Services | Microsoft Docs
    - What is Personalizer? - Azure Cognitive Services | Microsoft Docs

Select the appropriate cognitive service for a speech solution

- What are Azure Cognitive Services? - Azure Cognitive Services | Microsoft Docs
    - What is the Speech service? - Azure Cognitive Services | Microsoft Docs
        - Speech-to-text overview - Speech service - Azure Cognitive Services | Microsoft Docs
        - Text-to-speech overview - Speech service - Azure Cognitive Services | Microsoft Docs
        - Speech translation overview - Speech service - Azure Cognitive Services | Microsoft Docs
        - Intent recognition quickstart - Speech service - Azure Cognitive Services | Microsoft Docs
        - Speaker Recognition overview - Speech service - Azure Cognitive Services | Microsoft Docs

Plan and configure security for a Cognitive Services solution

Manage Cognitive Services account keys

- Create a Cognitive Services resource in the Azure portal - Azure Cognitive Services | Microsoft Docs
- az cognitiveservices account keys | Microsoft Docs

- What's New? A Single Key for Cognitive Services | AI Show | Channel 9 (msdn.com)

Manage authentication for a resource

- Authentication - Azure Cognitive Services | Microsoft Docs

Secure Cognitive Services by using Azure Virtual Network

- Virtual Networks - Azure Cognitive Services | Microsoft Docs

Plan for a solution that meets responsible AI principles

- Responsible AI principles from Microsoft
- Build powerful and responsible AI solutions with Azure | Azure Blog and Updates | Microsoft Azure

Create a Cognitive Services resource

Create a Cognitive Services resource

- Create a Cognitive Services resource in the Azure portal - Azure Cognitive Services | Microsoft Docs
- Create a Cognitive Services resource using the Azure CLI - Azure Cognitive Services | Microsoft Docs

Configure diagnostic logging for a Cognitive Services resource

- Diagnostic logging - Azure Cognitive Services | Microsoft Docs

Manage Cognitive Services costs

- Plan to manage costs for Azure Cognitive Services - Azure Cognitive Services | Microsoft Docs

Monitor a cognitive service

- Monitor operations and activity - Azure Cognitive Search | Microsoft Docs

Implement a privacy policy in Cognitive Services

- Data, privacy, and security for Spatial Analysis - Azure Cognitive Services | Microsoft Docs

Plan and implement Cognitive Services containers

Identify when to deploy to a container

- Use Azure Cognitive Services Containers on-premises - Azure Cognitive Services | Microsoft Docs
- Cognitive Services containers frequently asked questions (FAQ) - Azure Cognitive Services | Microsoft Docs

Containerize Cognitive Services (including Computer Vision API, Face API, Text Analytics, Speech, Form Recognizer)

- Install Read OCR Docker containers from Computer Vision - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for the Face API - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for the Text Analytics API - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for the Speech service APIs - Azure Cognitive Services | Microsoft Docs

- How to install and run container for Form Recognizer - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for LUIS - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for the Anomaly Detector API - Azure Cognitive Services | Microsoft Docs

Implement Computer Vision Solutions (20-25%)

Analyze images by using the Computer Vision API

Retrieve image descriptions and tags by using the Computer Vision API

- Image descriptions - Computer Vision - Azure Cognitive Services | Microsoft Docs
- Content tags - Computer Vision - Azure Cognitive Services | Microsoft Docs

Identify landmarks and celebrities by using the Computer Vision API

- Domain-specific content - Computer Vision - Azure Cognitive Services | Microsoft Docs

Detect brands in images by using the Computer Vision API

- Brand detection - Computer Vision - Azure Cognitive Services | Microsoft Docs

Moderate content in images by using the Computer Vision API

- Adult, racy, gory content - Computer Vision - Azure Cognitive Services | Microsoft Docs

Generate thumbnails by using the Computer Vision API

- Smart-cropped thumbnails - Computer Vision - Azure Cognitive Services | Microsoft Docs

Extract text from images

Extract text from images by using the OCR API

- Cognitive Services APIs Reference (microsoft.com)
- What is Optical character recognition? - Azure Cognitive Services | Microsoft Docs

Extract text from images or PDFs by using the Read API

- What is Optical character recognition? - Azure Cognitive Services | Microsoft Docs

Convert handwritten text by using Ink Recognizer

- Quickstart: Recognize digital ink with the Ink Recognizer REST API and C# - Azure Cognitive Services | Microsoft Docs

Extract information from forms or receipts by using the pre-built receipt model in Form Recognizer

- Receipts - Form Recognizer - Azure Cognitive Services | Microsoft Docs

Build and optimize a custom model for Form Recognizer

- How to build a training data set for a custom model - Form Recognizer - Azure Cognitive Services | Microsoft Docs
- Quickstart: Form Recognizer client library or REST API - Azure Cognitive Services | Microsoft Docs
- Quickstart: Form Recognizer client library or REST API - Azure Cognitive Services | Microsoft Docs

Extract facial information from images

Detect faces in an image by using the Face API

- Detect faces in an image - Face - Azure Cognitive Services | Microsoft Docs

Recognize faces in an image by using the Face API

- Quickstart: Use the Face client library - Azure Cognitive Services | Microsoft Docs

Configure persons and person groups

- Example: Add faces to a PersonGroup - Face - Azure Cognitive Services | Microsoft Docs

Analyze facial attributes by using the Face API

- Face detection and attributes concepts - Azure Cognitive Services | Microsoft Docs
- Get started with Face analysis on Azure - Learn | Microsoft Docs
- Exercise - Detect and analyze faces with the Face service - Learn | Microsoft Docs

Match similar faces by using the Face API

- What is the Azure Face service? - Azure Cognitive Services | Microsoft Docs

Implement image classification by using the Custom Vision service

Label images by using the Computer Vision Portal

- Label images faster with Smart Labeler - Azure Cognitive Services | Microsoft Docs

Train a custom image classification model in the Custom Vision Portal

- Quickstart: Build a classifier with the Custom Vision website - Azure Cognitive Services | Microsoft Docs

Train a custom image classification model by using the SDK

- Quickstart: Image classification with Custom Vision client library or REST API - Azure Cognitive Services | Microsoft Docs

Manage model iterations

- Quickstart: Build a classifier with the Custom Vision website - Azure Cognitive Services | Microsoft Docs
- Use prediction endpoint to programmatically test images with classifier - Custom Vision - Azure Cognitive Services | Microsoft Docs

Evaluate classification model metrics

- Quickstart: Build a classifier with the Custom Vision website - Azure Cognitive Services | Microsoft Docs

Publish a trained iteration of a model

- Use prediction endpoint to programmatically test images with classifier - Custom Vision - Azure Cognitive Services | Microsoft Docs

Export a model in an appropriate format for a specific target

- Export your model to mobile - Custom Vision Service - Azure Cognitive Services | Microsoft Docs

Consume a classification model from a client application

- Create client for model deployed as web service - Azure Machine Learning | Microsoft Docs

Deploy image classification custom models to containers

- Tutorial - Deploy Custom Vision classifier to a device using Azure IoT Edge | Microsoft Docs

Implement an object detection solution by using the Custom Vision service

Label images with bounding boxes by using the Computer Vision Portal

- Labeling images and text documents | Microsoft Docs

Train a custom object detection model by using the Custom Vision Portal

- Quickstart: Build an object detector with the Custom Vision website - Azure Cognitive Services | Microsoft Docs

Train a custom object detection model by using the SDK

- Quickstart: Object detection with Custom Vision client library - Azure Cognitive Services | Microsoft Docs

Manage model iterations

- Quickstart: Build an object detector with the Custom Vision website - Azure Cognitive Services | Microsoft Docs

Evaluate object detection model metrics

- Quickstart: Build an object detector with the Custom Vision website - Azure Cognitive Services | Microsoft Docs

Publish a trained iteration of a model

- Quickstart: Object detection with Custom Vision client library - Azure Cognitive Services | Microsoft Docs

Consume an object detection model from a client application

- Use the object detection model in Power Automate - AI Builder | Microsoft Docs

Deploy custom object detection models to containers

- Use Azure Cognitive Services Containers on-premises - Azure Cognitive Services | Microsoft Docs

Analyze video by using Video Indexer

Process a video

- Video Indexer - Unlock Insights from your video | AI Show | Channel 9 (msdn.com)

Extract insights from a video

- Video Indexer - Unlock Insights from your video | AI Show | Channel 9 (msdn.com)

Moderate content in a video

- Video Moderation with Content Moderator | AI Show | Channel 9 (msdn.com)

Customize the Brands model used by Video Indexer

- Customize a Brands model with the Video Indexer website - Azure Media Services | Microsoft Docs

Customize the Language model used by Video Indexer by using the Custom Speech Service

- Customize Language model with Video Indexer website - Azure Media Services | Microsoft Docs

Customize the Person model used by Video Indexer

- Customize a Person model with Video Indexer website - Azure Media Services | Microsoft Docs

Extract insights from a live stream of video data

- Live stream analysis using Video Indexer - Azure Media Services | Microsoft Docs
- media-services-dotnet-functions-integration/LiveStreamAnalysis.md at main · Azure-Samples/media-services-dotnet-functions-integration (github.com)

Implement Natural Language Processing Solutions (20-25%)

Analyze text by using the Text Analytics service

Retrieve and process key phrases

- Key phrase extraction using the Text Analytics REST API - Azure Cognitive Services | Microsoft Docs

Retrieve and process entity information (people, places, urls, etc.)

- Supported Categories for Named Entity Recognition - Azure Cognitive Services | Microsoft Docs
- Use entity recognition with the Text Analytics API - Azure Cognitive Services | Microsoft Docs

Retrieve and process sentiment

- Use Azure Databricks for sentiment analysis | Microsoft Docs
- Tutorial: Build a Flask app to translate, synthesize, and analyze text - Translator - Azure Cognitive Services | Microsoft Docs

Detect the language used in text

- Detect language with the Text Analytics REST API - Azure Cognitive Services | Microsoft Docs

Manage speech by using the Speech service

Implement text-to-speech

- Text-to-speech overview - Speech service - Azure Cognitive Services | Microsoft Docs
- Text-to-speech quickstart - Speech service - Azure Cognitive Services | Microsoft Docs

Customize text-to-speech

- Get started with Custom Neural Voice - Speech service - Azure Cognitive Services | Microsoft Docs
- Create a Custom Voice - Speech service - Azure Cognitive Services | Microsoft Docs

Implement speech-to-text

- Speech-to-text overview - Speech service - Azure Cognitive Services | Microsoft Docs
- Speech-to-text quickstart - Speech service - Azure Cognitive Services | Microsoft Docs

Improve speech-to-text accuracy

- Create a tenant model (preview) - Speech Service - Azure Cognitive Services | Microsoft Docs

Translate language

Translate text by using the Translator service

- Tutorial: Create a translation app with WPF, C# - Translator - Azure Cognitive Services | Microsoft Docs

Translate speech-to-speech by using the Speech service

- Speech translation quickstart - Speech service - Azure Cognitive Services | Microsoft Docs

Translate speech-to-text by using the Speech service

- Speech-to-text quickstart - Speech service - Azure Cognitive Services | Microsoft Docs

Build an initial language model by using Language Understanding Service (LUIS)

Create intents and entities based on a schema, and then add utterances

- Add intents - LUIS - Azure Cognitive Services | Microsoft Docs
- Intents and entities - LUIS - Azure Cognitive Services | Microsoft Docs
- Entity types - LUIS - Azure Cognitive Services | Microsoft Docs
- Add entities - LUIS - Azure Cognitive Services | Microsoft Docs
- Good example utterances - LUIS - Azure Cognitive Services | Microsoft Docs

Create complex hierarchical entities

- Using Hierarchical Entities in Microsoft's LUIS for Natural Language Processing - YouTube
- Microsoft Bot Framework Tutorial #19: Hierarchical Entities in LUIS - YouTube

Use this instead of roles

- Collaborate with others - LUIS - Azure Cognitive Services | Microsoft Docs

Train and deploy a model

- Train app - LUIS - Azure Cognitive Services | Microsoft Docs
- Quickstart: Build your app in LUIS portal - Azure Cognitive Services | Microsoft Docs

Iterate on and optimize a language model by using LUIS

Implement phrase lists

- Machine-learning features with LUIS - Azure Cognitive Services | Microsoft Docs
- Use features to improve LUIS word list - Azure Cognitive Services | Microsoft Docs
- Using Phrase Lists in Microsoft's LUIS for Natural Language Processing - YouTube

Implement a model as a feature (i.e. prebuilt entities)

- Use features to improve LUIS word list - Azure Cognitive Services | Microsoft Docs
- Machine-learning features with LUIS - Azure Cognitive Services | Microsoft Docs
- Entity types - LUIS - Azure Cognitive Services | Microsoft Docs
- Prebuilt models for Language Understanding - Azure Cognitive Services | Microsoft Docs
- Prebuilt models - LUIS - Azure Cognitive Services | Microsoft Docs

Manage punctuation and diacritics

- Application settings - LUIS - Azure Cognitive Services | Microsoft Docs
- Good example utterances - LUIS - Azure Cognitive Services | Microsoft Docs
- Application settings - LUIS - Azure Cognitive Services | Microsoft Docs

Implement active learning

- Review user utterance - LUIS - Azure Cognitive Services | Microsoft Docs
- Review user utterances - LUIS - Azure Cognitive Services | Microsoft Docs

Monitor and correct data imbalances

- Dashboard - Language Understanding - LUIS - Azure Cognitive Services | Microsoft Docs
- Evaluating the performance of your LUIS app - Microsoft Tech Community

Implement patterns

- Patterns help prediction - LUIS - Azure Cognitive Services | Microsoft Docs
- Tutorial: Patterns - LUIS - Azure Cognitive Services | Microsoft Docs

Manage a LUIS model

Manage collaborators

- Collaborate with others - LUIS - Azure Cognitive Services | Microsoft Docs
- How do I give collaborators access to LUIS? - Microsoft Q&A

Manage versioning

- Manage versions - LUIS - Azure Cognitive Services | Microsoft Docs
- Application settings - Azure Cognitive Services | Microsoft Docs

Publish a model through the portal or in a container

- Publish app - LUIS - Azure Cognitive Services | Microsoft Docs
- Install and run Docker containers for LUIS - Azure Cognitive Services | Microsoft Docs

Export a LUIS package

- Install and run Docker containers for LUIS - Azure Cognitive Services | Microsoft Docs
- Export & delete data - LUIS - Azure Cognitive Services | Microsoft Docs
- Manage versions - LUIS - Azure Cognitive Services | Microsoft Docs

Deploy a LUIS package to a container

- Azure Container Instance recipe - Azure Cognitive Services | Microsoft Docs
- Deploying Microsoft Azure Cognitive LUIS service on On-Premise as a Docker Image | LinkedIn

Integrate Bot Framework (LUDown) to run outside of the LUIS portal

- botbuilder-tools/packages/Ludown at master · microsoft/botbuilder-tools (github.com)
- Microsoft Bot Framework v4 Node #7: Creating a LUIS Service with LUDown and the CLI - YouTube

Implement Knowledge Mining Solutions (15-20%)

Implement a Cognitive Search solution

Create data sources

- Create Data Source (Azure Cognitive Search REST API) | Microsoft Docs

Define an index

- Create an index - Azure Cognitive Search | Microsoft Docs

Create and run an indexer

- Create an indexer - Azure Cognitive Search | Microsoft Docs
- Create an indexer - Azure Cognitive Search | Microsoft Docs

Query an index

- Query types - Azure Cognitive Search | Microsoft Docs

Configure an index to support autocomplete and autosuggest

- Add autocomplete to a search box - Azure Cognitive Search | Microsoft Docs
- Create a suggester - Azure Cognitive Search | Microsoft Docs

Boost results based on relevance

- Boost search rank using scoring profiles - Azure Cognitive Search | Microsoft Docs

Implement synonyms

- Synonyms for query expansion over a search index - Azure Cognitive Search | Microsoft Docs

Implement an enrichment pipeline

Attach a Cognitive Services account to a skillset

- Attach Cognitive Services to a skillset - Azure Cognitive Search | Microsoft Docs

Select and include built-in skills for documents

- Built-in text and image processing during indexing - Azure Cognitive Search | Microsoft Docs
- Document Extraction cognitive skill - Azure Cognitive Search | Microsoft Docs

Implement custom skills and include them in a skillset

- Interface definition for custom skills - Azure Cognitive Search | Microsoft Docs

Implement a knowledge store

Define file projections

- Define projections in a knowledge store - Azure Cognitive Search | Microsoft Docs

Define object projections

- Define projections in a knowledge store - Azure Cognitive Search | Microsoft Docs

Define table projections

- Define projections in a knowledge store - Azure Cognitive Search | Microsoft Docs

Query projections

- Projection concepts - Azure Cognitive Search | Microsoft Docs

Manage a Cognitive Search solution

Provision Cognitive Search

- Create a search service in the portal - Azure Cognitive Search | Microsoft Docs

Configure security for Cognitive Search

- Security overview - Azure Cognitive Search | Microsoft Docs
- Encryption-at-rest using customer-managed keys - Azure Cognitive Search | Microsoft Docs
- Configure an IP firewall for your Azure Cognitive Search service - Azure Cognitive Search | Microsoft Docs

Configure scalability for Cognitive Search

- Availability and continuity - Azure Cognitive Search | Microsoft Docs

Manage indexing

Manage re-indexing

- Update Index (Azure Cognitive Search REST API) | Microsoft Docs

Rebuild indexes

- Rebuild a search index - Azure Cognitive Search | Microsoft Docs

Schedule indexing

- Schedule indexer execution - Azure Cognitive Search | Microsoft Docs

Monitor indexing

- Monitor indexer status and results - Azure Cognitive Search | Microsoft Docs

Implement incremental indexing

- Incremental enrichment concepts (preview) - Azure Cognitive Search | Microsoft Docs

Manage concurrency

- How to manage concurrent writes to resources - Azure Cognitive Search | Microsoft Docs

Push data to an index

- Import and data ingestion in search indexes - Azure Cognitive Search | Microsoft Docs

Troubleshoot indexing for a pipeline

- Troubleshoot common search indexer issues - Azure Cognitive Search | Microsoft Docs

Implement Conversational AI Solutions (15-20%)

Create a knowledge base by using QnA Maker

Create a QnA Maker service

- Set up a QnA Maker service - QnA Maker - Azure Cognitive Services | Microsoft Docs

Create a knowledge base

- Quickstart: Create, train, and publish knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs

Import a knowledge base

- Migrate knowledge bases - QnA Maker - Azure Cognitive Services | Microsoft Docs

Train and test a knowledge base

- Quickstart: Create, train, and publish knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs
- How to test a knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs

Publish a knowledge base

- Quickstart: Create, train, and publish knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs

Create a multi-turn conversation

- Multi-turn conversations - QnA Maker - Azure Cognitive Services | Microsoft Docs

Add alternate phrasing

- Edit a knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs
- Add questions and answer in QnA Maker portal - Azure Cognitive Services | Microsoft Docs
- Active Learning suggested questions - QnA Maker - Azure Cognitive Services | Microsoft Docs

Add chit-chat to a knowledge base

- Adding chit-chat to a QnA Maker knowledge base - Azure Cognitive Services | Microsoft Docs

Export a knowledge base

- Migrate knowledge bases - QnA Maker - Azure Cognitive Services | Microsoft Docs

Add active learning to a knowledge base

- Use active learning with knowledge base - QnA Maker - Azure Cognitive Services | Microsoft Docs

Manage collaborators

- Collaborate with others - QnA Maker - Azure Cognitive Services | Microsoft Docs

Design and implement conversation flow

Design conversation logic for a bot

- Design and control conversation flow - Bot Service | Microsoft Docs
- Your Go-To Chatbot Guide 101 - All You Need to Know About Chatbots (marutitech.com)

Create and evaluate *.chat file conversations by using the Bot Framework Emulator

- Debug your bot using transcript files - Bot Service | Microsoft Docs

Add language generation for a response

- Language generation in Bot Framework Composer - Bot Composer | Microsoft Docs
- Use language generation templates in your bot - Bot Service | Microsoft Docs

Design and implement adaptive cards

- Adaptive Cards Designer SDK - Adaptive Cards | Microsoft Docs
- Designing Adaptive Cards for your app - Teams | Microsoft Docs

Create a bot by using the Bot Framework SDK

Implement dialogs

- Dialogs within the Bot Framework SDK - Bot Service | Microsoft Docs
- Use dialogs within a skill - Bot Service | Microsoft Docs

Maintain state

- Managing State - Bot Service | Microsoft Docs

Implement logging for a bot conversation

- Add trace activities to your bot - Bot Service | Microsoft Docs

Implement a prompt for user input

- Create your own prompts to gather user input - Bot Service | Microsoft Docs

Add and review bot telemetry

- Add telemetry to your bot - Bot Service | Microsoft Docs
- Analyze the telemetry data from your bot - Bot Service | Microsoft Docs

Implement a bot-to-human handoff

- Transition conversations from bot to human - Bot Service | Microsoft Docs
- Bot to Human Handoff in Node.js | CSE Developer Blog (microsoft.com)

Toubleshoot a conversational bot

- Troubleshooting bots - Bot Service | Microsoft Docs

Add a custom middleware for processing user messages

- Middleware - Bot Service | Microsoft Docs

Manage identity and authentication

- Bot Framework authentication basics - Bot Service | Microsoft Docs
- Add authentication to a bot via Azure Bot Service - Bot Service | Microsoft Docs
- Identity providers Azure Bot Service - Bot Service | Microsoft Docs

Implement channel-specific logic

- Implement channel-specific functionality - Bot Service | Microsoft Docs
- Implement channel-specific functionality using REST API - Bot Service | Microsoft Docs

Publish a bot

- Tutorial to deploy a basic bot - Bot Service | Microsoft Docs

Create a bot by using the Bot Framework Composer

Implement dialogs

- Dialogs in Bot Framework Composer - Bot Composer | Microsoft Docs

Maintain state

- Memory and conversation flow in Bot Framework Composer - Bot Composer | Microsoft Docs

Implement logging for a bot conversation

- Question: Conversation logging · Issue #3286 · microsoft/BotFramework-Composer (github.com)

Implement prompts for user input

- Ask for user input - Bot Composer | Microsoft Docs

Troubleshoot a conversational bot

- Unable to publish my bot built with Bot Framework Composer - Microsoft Q&A

Test a bot by using the Bot Framework Emulator

- Test and debug bots using the Bot Framework Emulator - Bot Service | Microsoft Docs

Publish a bot

- Publish a bot to Azure - Bot Composer | Microsoft Docs

Integrate Cognitive Services into a bot

Integrate a QnA Maker service

- Use QnA Maker to answer questions - Bot Service | Microsoft Docs
- Add a QnA Maker knowledge base to your bot - Bot Composer | Microsoft Docs

Integrate a LUIS service

- Add natural language understanding to your bot - Bot Service | Microsoft Docs

Integrate a Speech service

- Add speech to messages - Bot Service | Microsoft Docs
- Tutorial: Voices enable your bot using Speech SDK - Speech service - Azure Cognitive Services | Microsoft Docs

Integrate Dispatch for multiple language models

- Use Dispatch for multiple LUIS and QnA models - Bot Service | Microsoft Docs

Manage keys in app settings file

- Add natural language understanding to your bot - Bot Service | Microsoft Docs