

MS-AI3019: BUILD AI APPS WITH AZURE DATABASE FOR POSTGRESQL



DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
1 Day	Intermediate	Azure AI	Instructor-led	NA

INTRODUCTION

This learning path explores how the Azure AI and Azure Machine Learning Services integrations provided by the Azure AI extension for Azure Database for PostgreSQL - Flexible Server can enable you to build AI-powered apps.

AUDIENCE PROFILE

This course is tailored for:

- Intermediate Developers: Those who have experience working with PostgreSQL databases and writing SQL queries.
- AI Enthusiasts: Individuals with a general understanding of AI and machine learning concepts who want to integrate these technologies with Azure Database for PostgreSQL.
- Data Scientists: Professionals looking to leverage Azure AI and Azure Machine Learning Services to build AI-powered applications.
- Participants should have a foundational knowledge of PostgreSQL, SQL, and AI/ML concepts

PREREQUISITES

Before starting this course, you should have experience working with PostgreSQL databases, writing SQL queries, and a general understanding of AI and ML concepts.

COURSE OBJECTIVES

After completion of this course, you will be able to:

- Get Started with Generative AI: Learn about generative AI and how to use it with Azure Database for PostgreSQL.
- Enable Semantic Search: Understand and implement semantic search capabilities.
- Summarize Data: Use Azure AI Services to perform data summarization.
- Perform Sentiment Analysis and Opinion Mining: Analyze sentiment and mine opinions using Azure AI tools.
- Extract Insights: Utilize Azure AI Language services to extract key insights from data.
- Translate Text: Implement text translation using Azure AI Translator.
- Use Azure Machine Learning for Inferencing: Apply Azure Machine Learning models for inferencing tasks.

COURSE CONTENT

Module 1: Get started with generative AI in Azure Database for PostgreSQL

This module explores how to effectively use Azure Database for PostgreSQL - Flexible Server and the Azure AI extension to develop powerful Generative AI applications.

Lessons:

- Introduction
- Understand generative AI language models
- Describe the Azure AI extension
- Explore the Azure OpenAI schema
- Review the Azure Cognitive schema
- Examine the Azure Machine Learning schema
- Exercise-Explore the Azure AI extension
- Knowledge check
- Summary.

Learning Objectives:

- Examine the concepts of generative AI and large

language models and explore how they can be used to build rich AI applications.

- Evaluate the capabilities of azure_ai extension for PostgreSQL.
- Install and explore the azure_ai extension in an Azure Database for PostgreSQL - Flexible Server database.

Module 2: Enable semantic search in Azure Database for PostgreSQL

This module explores semantic search, embedding vectors, vector similarity, and using Azure Database for PostgreSQL - Flexible Server with PostgreSQL Vector and Azure AI extensions to generate, store, and query rows with semantic search.

Lessons:

- Introduction.
- Understand semantic search

- Store vectors in Azure Database for PostgreSQL
- Create embeddings with the Azure AI extension
- Exercise - Generate vector embeddings with Azure OpenAI
- Explore semantic search use cases
- Exercise - Create a search function for a recommendation system
- Knowledge check
- Summary.

Learning Objectives:

- Examine the concepts of semantic search & embedding vectors.
- Understand the difference between lexical search & semantic search.
- Evaluate the capabilities provided by the azure_ai extension for PostgreSQL.
- Install and explore the vector and azure_ai extension

sions in an Azure Database for PostgreSQL - Flexible Server database.

Module 3: Summarize data with Azure AI Services and Azure database for PostgreSQL

This module will examine how Azure AI Services and the Azure AI extension for Azure Database for PostgreSQL - Flexible Server enable Generative AI summarization techniques for condensing complex content into concise summaries.

Lessons:

- Introduction.
- Explain extractive summarization
- Explore abstractive summarization
- Exercise - Perform extractive and abstractive summarization
- Knowledge check
- Summary.

Learning objectives:

- Use Azure Monitor Agent to collect VM client performance metrics and event logs.
- Evaluate the summarization techniques available through Azure AI Services and the azure_ai extension.
- Examine the differences between extractive, abstractive, and query-focused summarization.
- Apply Generative AI summarization techniques to data in a PostgreSQL database to gain practical experience using Azure AI Services and the azure_ai extension for summarization.

Module 4: Perform sentiment analysis and opinion mining with Azure Database for PostgreSQL

This module will explore how Azure AI Services and the Azure AI extension for Azure Database for PostgreSQL - Flexible Server enable sentiment analysis and opinion mining to extract valuable insights from textual data.

Lessons

- Introduction.
- Explore sentiment analysis
- Describe opinion mining
- Exercise-Analyse sentiment
- Knowledge check
- Summary.

Learning Objectives:

- Explore the fundamentals of sentiment analysis and how it can be leveraged to gain insights into user sentiments and emotions.
- Describe opinion mining techniques to identify sentiments related to specific attributes.
- Apply sentiment analysis to user reviews in a PostgreSQL database using the azure_ai extension.

Module 5: Extract insights using Azure AI Language and Azure Database for PostgreSQL

This module covers Azure AI Language tools including key phrase extraction, entity recognition, personally identifiable information recognition and redaction, and using Azure Database for PostgreSQL - Flexible Server with Azure AI to access these services.

Lessons:

- Introduction.
- Extract key phrases
- Recognize entities
- Recognize personally identifiable information (PII) entities
- Exercise-Extract insights using the Azure AI Language service
- Knowledge check
- Summary.

Learning objectives:

- Examine the concepts of key phrase extraction, entity recognition, and PII (personally identifiable information recognition) recognition.
- Understand the capabilities provided by the azure_ai extension for PostgreSQL to access Azure AI Language.
- Install the azure_ai extension in an Azure Database for PostgreSQL - Flexible Server database, and use it to extract key phrases, recognize entities in text, and redact PII.

Module 6: Translate Text with Azure AI Translator and Azure Database for PostgreSQL

This module guides you through translating textual data in Azure Database for PostgreSQL - Flexible Server using the Azure AI

Translator service. You'll load data into PostgreSQL and translate it into multiple languages.

Lesson:

- Introduction.
- Explore the Azure AI Translator Service
- Translate data in Azure Database for PostgreSQL
- Exercise-Translate text
- Knowledge check
- Summary.

Learning objectives

- Learn how to translate documents using the Azure AI Translator.
- Learn how the Azure AI extension enables seamless interaction between Azure Database for PostgreSQL - Flexible Server and Azure AI Translator.
- Understand one way to translate documents automatically as part of record insertion.

Module 7: Use Azure Machine Learning for inferencing from Azure Database for PostgreSQL

This module guides you through training and deploying an Azure Machine Learning model using automated machine learning. Then, you'll call the model directly from Azure Database for PostgreSQL - Flexible Server.

Lessons:

- Introduction.
- Explore Azure Machine Learning
- Invoke Azure Machine Learning models
- Exercise-Perform inference using Azure Machine Learning
- Knowledge check
- Summary.

Learning Objectives:

- Learn how to train and deploy an Azure Machine Learning model using automated machine learning.
- Learn how to invoke deployed Azure Machine Learning models from Azure Database for PostgreSQL - Flexible Server.
- Learn how to generate predictions for each row in an Azure Database for PostgreSQL - Flexible Server table.

ASSOCIATED CERTIFICATIONS & EXAM

There is no Associated Certification or Exam for this course; however, there is an assessment to achieve your Applied Skills credential. ([Assessment Link](#))