

AI-050: Develop Generative AI Solutions with Azure OpenAI Service




Module 3

Apply prompt engineering
with Azure OpenAI Service




Agenda



- Understand what prompt engineering is
- Review considerations for different endpoints
- Explore different techniques of prompt engineering

Learning Objectives

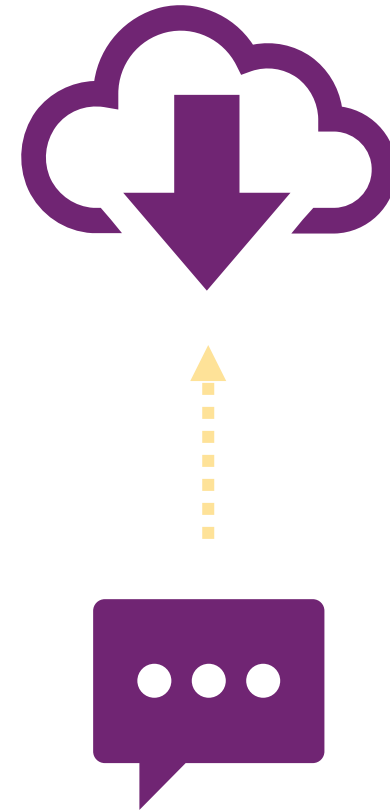
After completing this module, you will be able to:

- 1** Understand the concept of prompt engineering and its role in optimizing Azure OpenAI models' performance.
 - 2** Know how to design and optimize prompts to better utilize AI models.
 - 3** Include clear instructions, request output composition, and use contextual content to improve the quality of the model's responses.
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What is Prompt Engineering?

Constructing prompts to:

- Maximize relevancy and accuracy of completions
- Specify formatting and style of completions
- Provide conversational context
- Mitigate bias and improve fairness



Providing clear instructions

Write a product description for a new water bottle



Introducing the latest addition to our product line - the innovative and eco-friendly water bottle. Made from high-quality, BPA-free materials, this bottle is designed to keep your beverages at the perfect temperature for hours. Its sleek and stylish design makes it the perfect accessory for any outdoor activity or workout session. With its convenient carrying handle and leak-proof lid, you can take it with you wherever you go, without worrying about spills or leaks. Plus, its easy-to-clean design ensures that you can use it again and again, making it the perfect choice for anyone looking for a reliable and sustainable water bottle.

Write a product description for a new water bottle that is 100% recycled. Be sure to include that it comes in natural colors with no dyes, and each purchase removes 10 pounds of plastic from our oceans



Introducing our newest water bottle, the eco-friendly choice for the conscious consumer. Made from 100% recycled materials and available in natural colors with no dyes, this bottle is not only stylish but also sustainable. Each purchase of this bottle removes 10 pounds of plastic from our oceans, making it a responsible choice for those who care about the environment. Its durable and leak-proof design makes it perfect for outdoor activities, while its easy-to-carry handle makes it convenient to take on the go. Join us in our mission to reduce plastic waste and choose this eco-friendly water bottle for your daily hydration needs.

Primary, supporting, and grounding content

Section markers
(--- or ###)

Thanks for your interest in our summer school program.

We're looking for your ideas for webinars on topics such as AI, web development, ... *<more...>*

Primary content to be
summarized, translated, etc.

Topics I'm very interested in: AI, webinar dates, submission deadlines

Supporting content to provide
clarity / specificity

Extract the key points from the above email, and put them in a bulleted list

Grounding content to define
scope for questions

Artificial Intelligence (AI) has evolved over many years ... *<more...>*

Where and when did the field of AI start?

Cues

- Cues provide a starting point on which the completion builds
- Use cues to set the scope and format for the output
- Cues are particularly useful when generating code. For example:
 - Provide the first keyword in a SQL SELECT statement
 - Define a name and parameters for a Python function

Review: The writing was good but the movie was too long.

Review: The special effects were terrible.

<more>...

Summarize the reviews above.

Most common complaints:

-



- **The movie was too long.**
- **The special effects were terrible.**

Requesting output composition

Write a table in markdown with 6 animals in it, with their genus and species



Animal	Genus	Species
Red Panda	Ailurus	fulgens
African Elephant	Loxodonta	africana
Snow Leopard	Panthera	uncia
Arctic Fox	Vulpes	lagopus
Chimpanzee	Pan	trogloodytes
Siberian Tiger	Panthera	tigris altaica

Using a system message

When using the ChatCompletions API, a system message sets context that can affect completions

```
{"role": "system", "content": "You are a casual, helpful assistant.  
You will talk like an American old western film character."},  
{"role": "user", "content": "Can you direct me to the library?"}
```



```
{"role": "assistant", "content": "Well howdy there, stranger! The library, huh?  
Y'all just head down the main road till you hit the town  
square. Once you're there, take a left and follow the street  
for a spell. You'll see the library on your right, can't  
miss it. Happy trails!"}
```

Conversation history and *few shot* learning

- Including previous messages helps retain the context and style of a conversation
- Starting a conversation with user-defined messages and responses (*few shot* learning) sets examples for the expected responses

```
{"role": "system", "content": "You are an assistant that evaluates the sentiment of customer feedback."},  
{"role": "user", "content": "That was an awesome experience"},  
{"role": "assistant", "content": "positive"},  
{"role": "user", "content": "I won't do that again"},  
{"role": "assistant", "content": "negative"},  
{"role": "user", "content": "That was not worth my time"},  
{"role": "assistant", "content": "negative"},  
{"role": "user", "content": "You can't miss this"}
```



```
{"role": "assistant", "content": "positive"},
```

Chain of thought

Ask a model to break down its response and explain its reasoning

What sport is easiest to learn but hardest to master? Give a step by step approach of your thoughts, ending in your answer

Step 1: Identify the criteria for "easy to learn" and "hard to master" sports.

For a sport to be considered easy to learn, it should have simple rules and require minimal equipment. For a sport to be considered hard to master, it should require years of practice to perfect and have a large variety of techniques and strategies...

Step 2: Consider different sports that fit these criteria.

Some sports that could be considered easy to learn but hard to master include:

- Tennis: Simple rules, easy to pick up, but requires years of practice to master all the different shots and strategies.
- Golf: Basic swing mechanics are easy to learn but perfecting them takes a lifetime of practice.
- ...

Step 3: Evaluate each sport based on the criteria.

Tennis and golf both require expensive equipment, which could make them less accessible to beginners. In terms of skill ceiling and time required to master, tennis and golf both have a high skill ceiling and require years of practice to perfect....

Step 4: Make a decision based on the evaluation.

Based on the above criteria and evaluation, I would say that tennis is the sport that is easiest to learn but hardest to master. While it may require expensive equipment, it is still accessible to many people. The basic rules and techniques are easy to learn, but mastering all the different shots and strategies takes years of practice...

Exercise: Utilize prompt engineering in your app



Use the hosted lab environment if provided, or view the lab instructions at the link below:

<https://aka.ms/openai-prompt-engineering-lab>

Knowledge check



1

How can developers optimize the performance of Azure OpenAI models?

- ☐ By using complex instructions that are difficult to understand
 - ☒ By providing clear and descriptive instructions
 - ☐ By using vague prompts
-

2

What is the purpose of the system message in a prompt?

- ☒ To give the model instructions, perspective, or other information helpful to guide its response
 - ☐ To give the model a specific answer to generate
 - ☐ To provide filler information to the model
-

3

What is the purpose of providing conversation history to an AI model?

- ☐ Providing conversation history to an AI model is irrelevant and has no effect on the AI's performance.
- ☐ To limit the number of input tokens used by the model
- ☒ To enable the model to continue responding in a similar way and allow the user to reference previous content in subsequent queries

Learning Recap

In this module, we:

Described the concept of prompt engineering and its role in optimizing Azure OpenAI models' performance.

Explored how to design and optimize prompts to better utilize AI models.

Reviewed how to include clear instructions, request output composition, and use contextual content to improve the quality of the model's responses.

Resources

Apply prompt engineering with Azure OpenAI Service

<https://aka.ms/mslearn-prompt-engineering-openai>



Thank you.