

What is the OpenAI API?

WORKING WITH THE OPENAI API



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Coming up...

Course goals

- Use the *OpenAI API* to access AI models
- Use those models to solve various tasks
- Use **Python** code to do this!

Expected knowledge

- Subsetting Python lists and **dictionaries**
- Control flow → `if` , `elif` , `else`
- Loops → `for` , `while`

Not expected to know

- AI or machine learning

OpenAI, ChatGPT, and the OpenAI API

- OpenAI = AI R&D company
- ChatGPT = AI application
- OpenAI API = Interface for accessing OpenAI models



OpenAI

¹ Image Credit: OpenAI

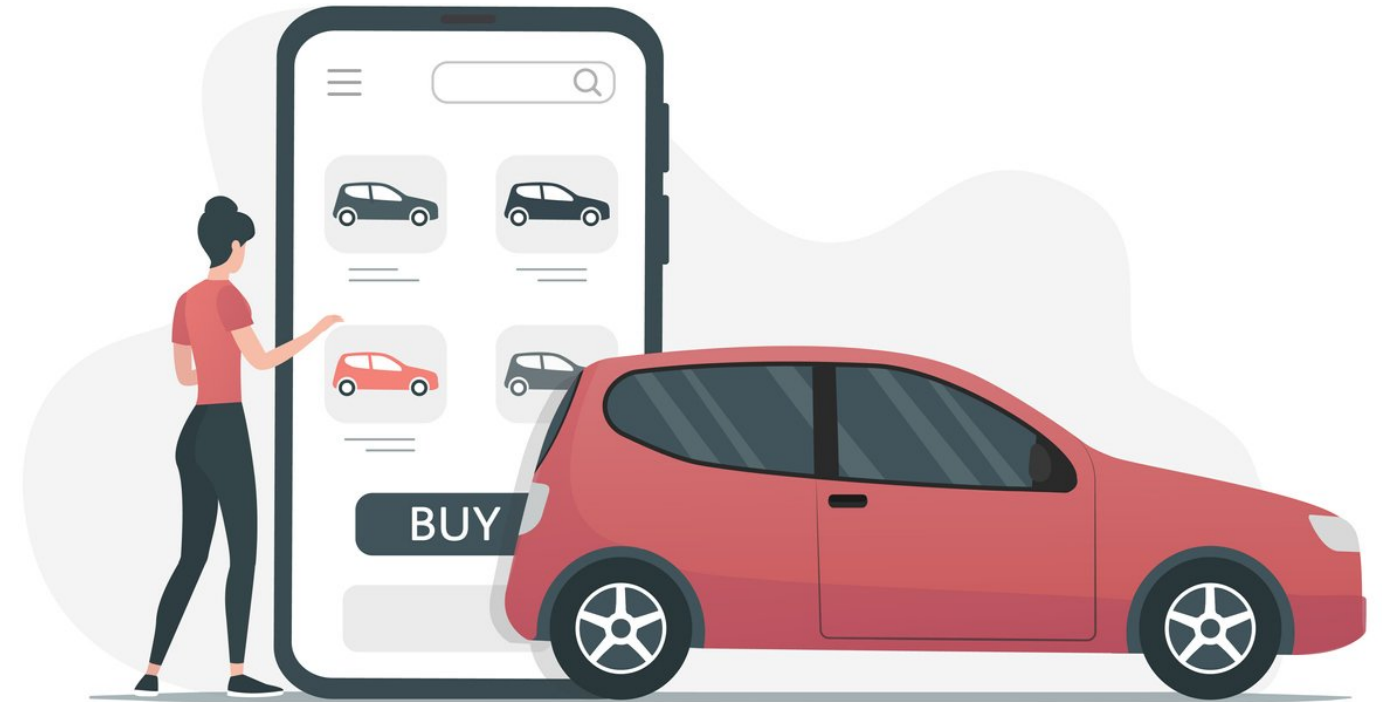
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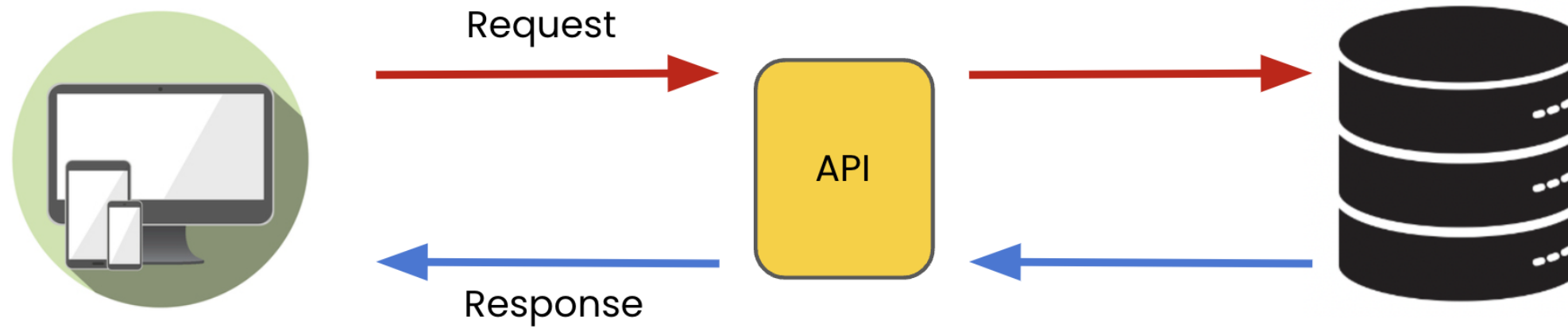
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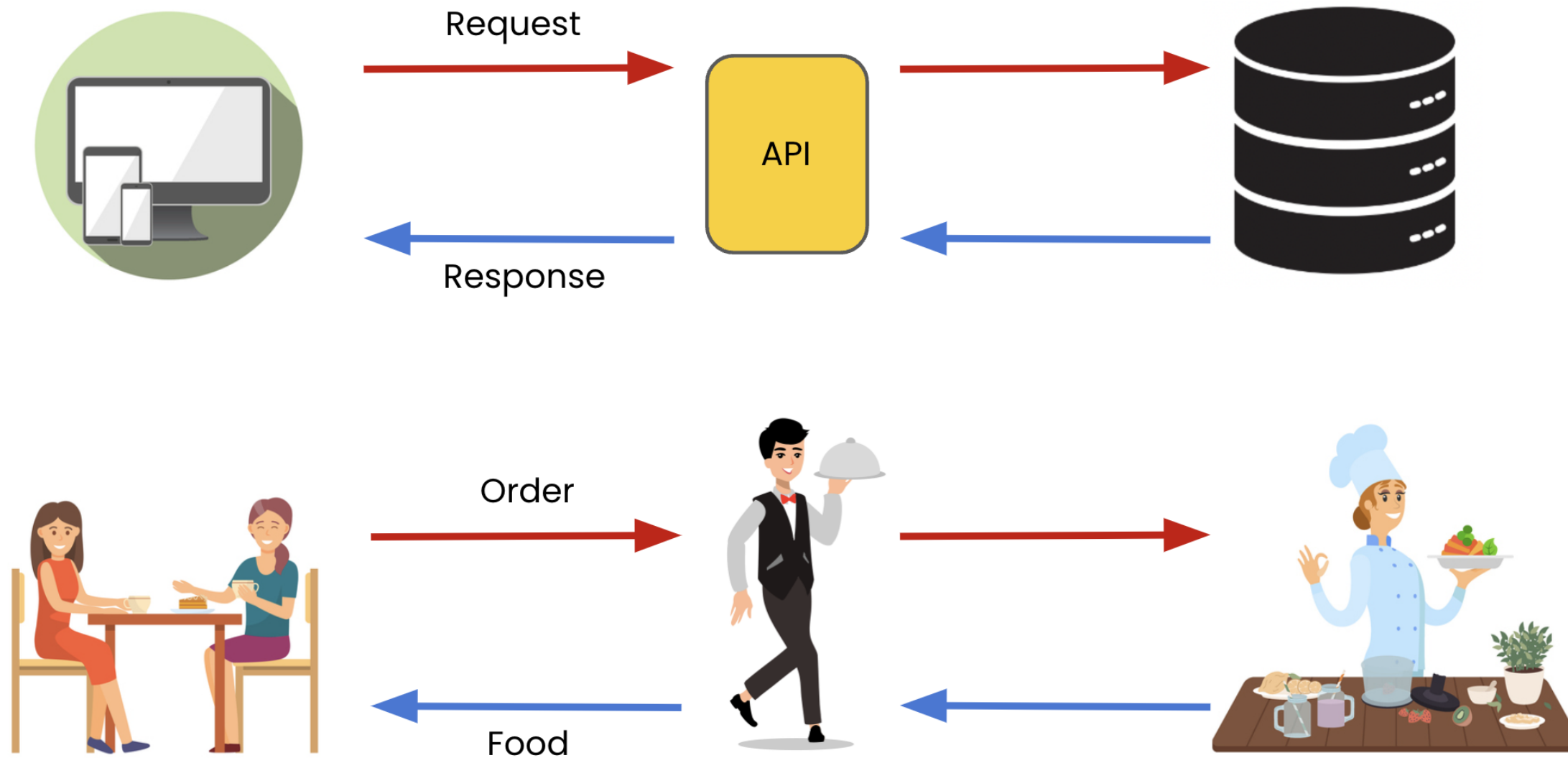
What is an API?

- Application Programming Interface

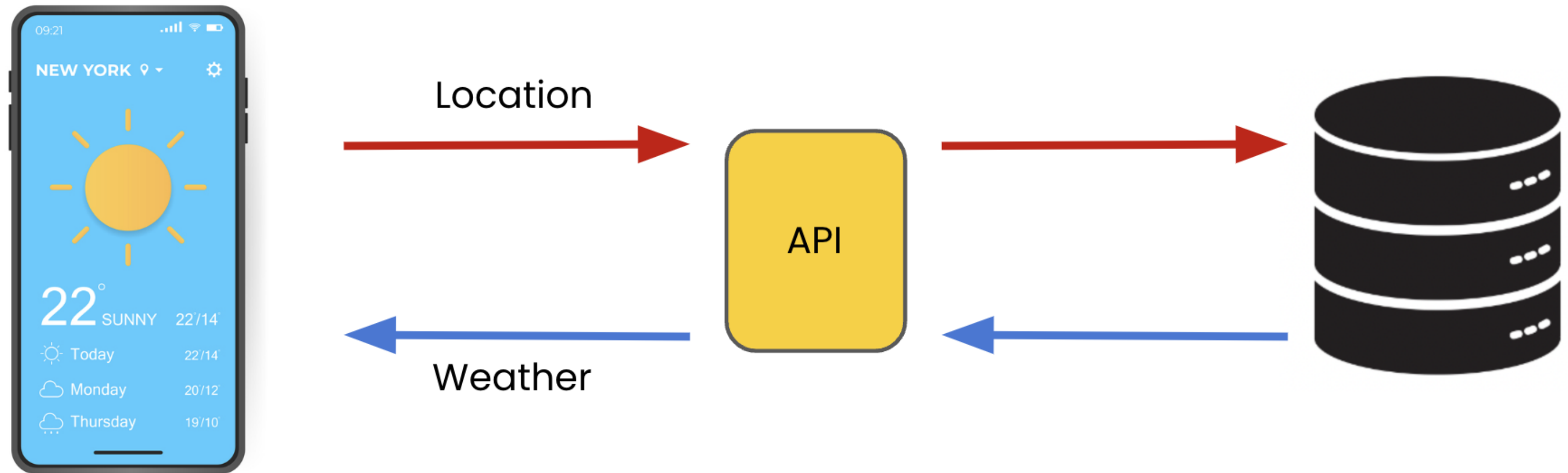


What is an API?

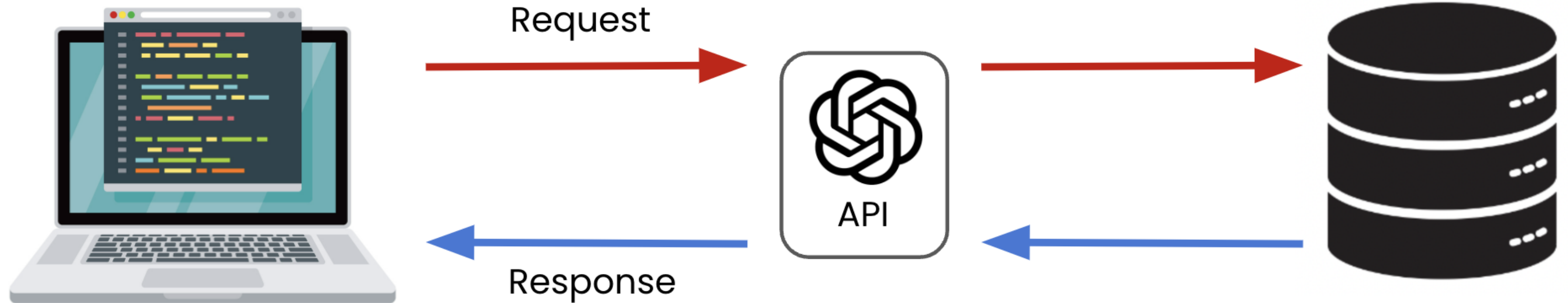
- Application Programming Interface



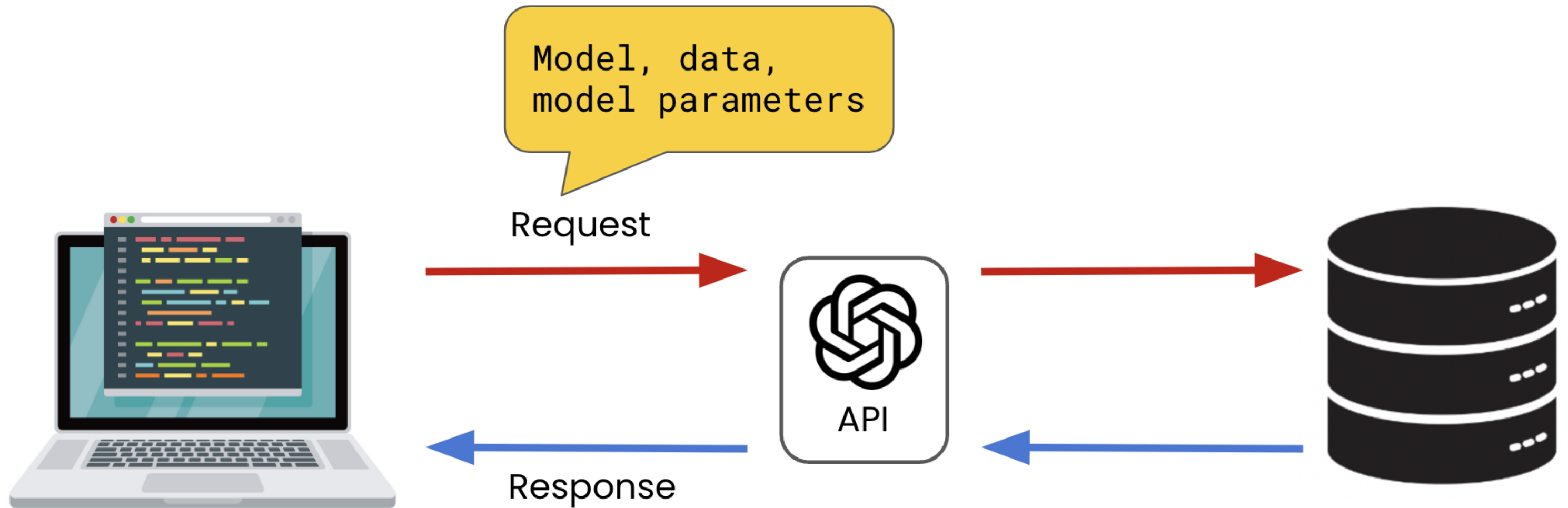
What is an API?



The OpenAI API

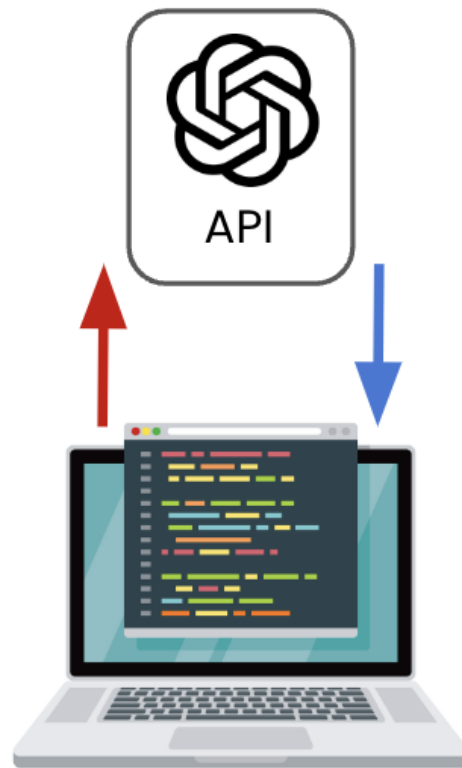


The OpenAI API



API vs. web interface

- Provides *flexibility* for integrating AI into products, experiences, and processes
- Interact via programming language



- Very little setup
- Sufficient for *streamlining* individual's workflows

The screenshot shows a chat window. At the top, a user icon is followed by the text "Write Python code for drawing a scatter plot." Below this, an AI icon is followed by the response: "You can use the 'matplotlib' library in Python to draw a scatter plot. Here's an example code:". Underneath the text is a code editor with a dark background and syntax-highlighted Python code. A "Copy code" button is visible in the top right corner of the code editor.

```
python
import matplotlib.pyplot as plt

# Example data
x = [1, 2, 3, 4, 5]
y = [2, 4, 1, 3, 5]

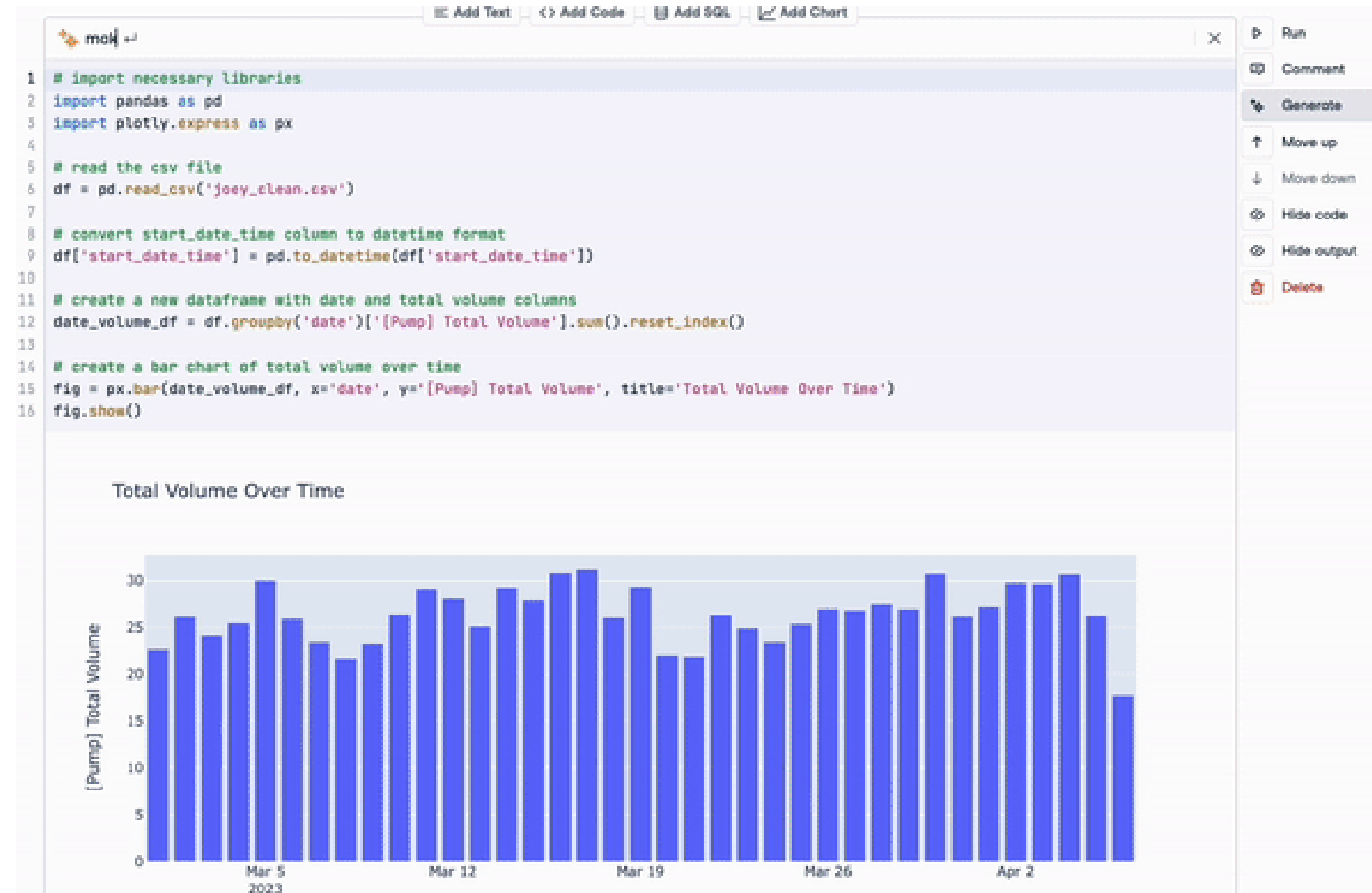
# Draw scatter plot
plt.scatter(x, y)

# Add labels and title
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Scatter Plot Example')

# Show plot
plt.show()
```

Building AI applications

DataLab = Cloud-based, AI-powered IDE



¹ <https://www.datacamp.com/datalab>

Let's practice!
WORKING WITH THE OPENAI API

Making requests to the OpenAI API

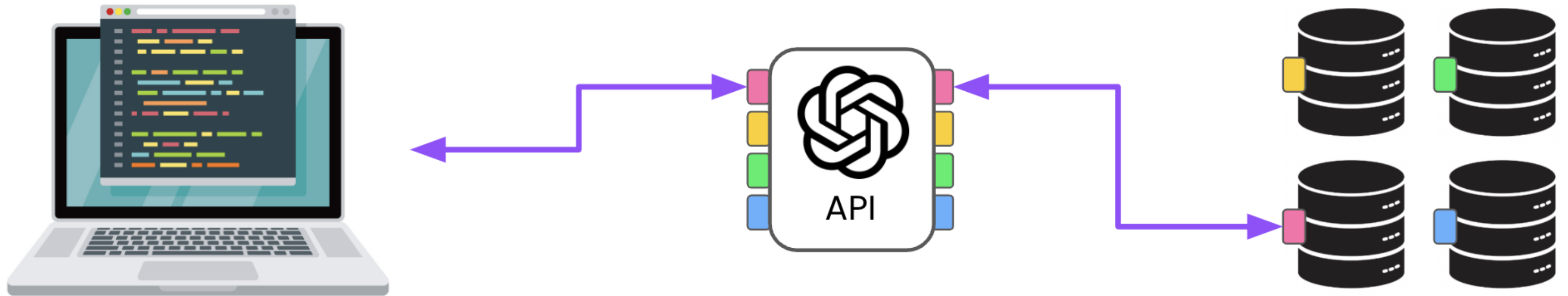
WORKING WITH THE OPENAI API



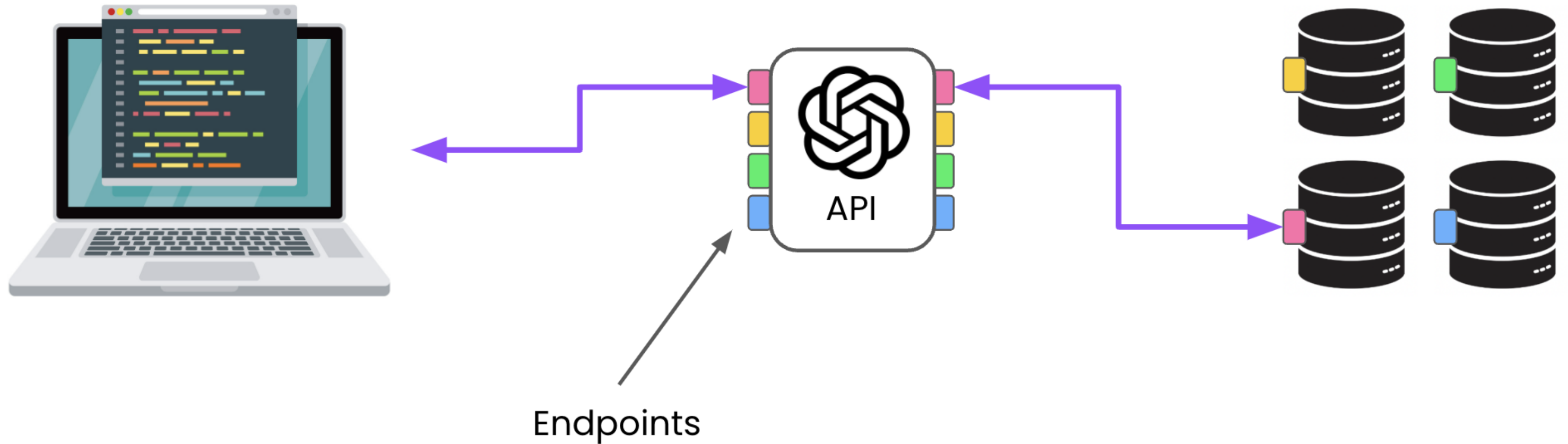
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API endpoints

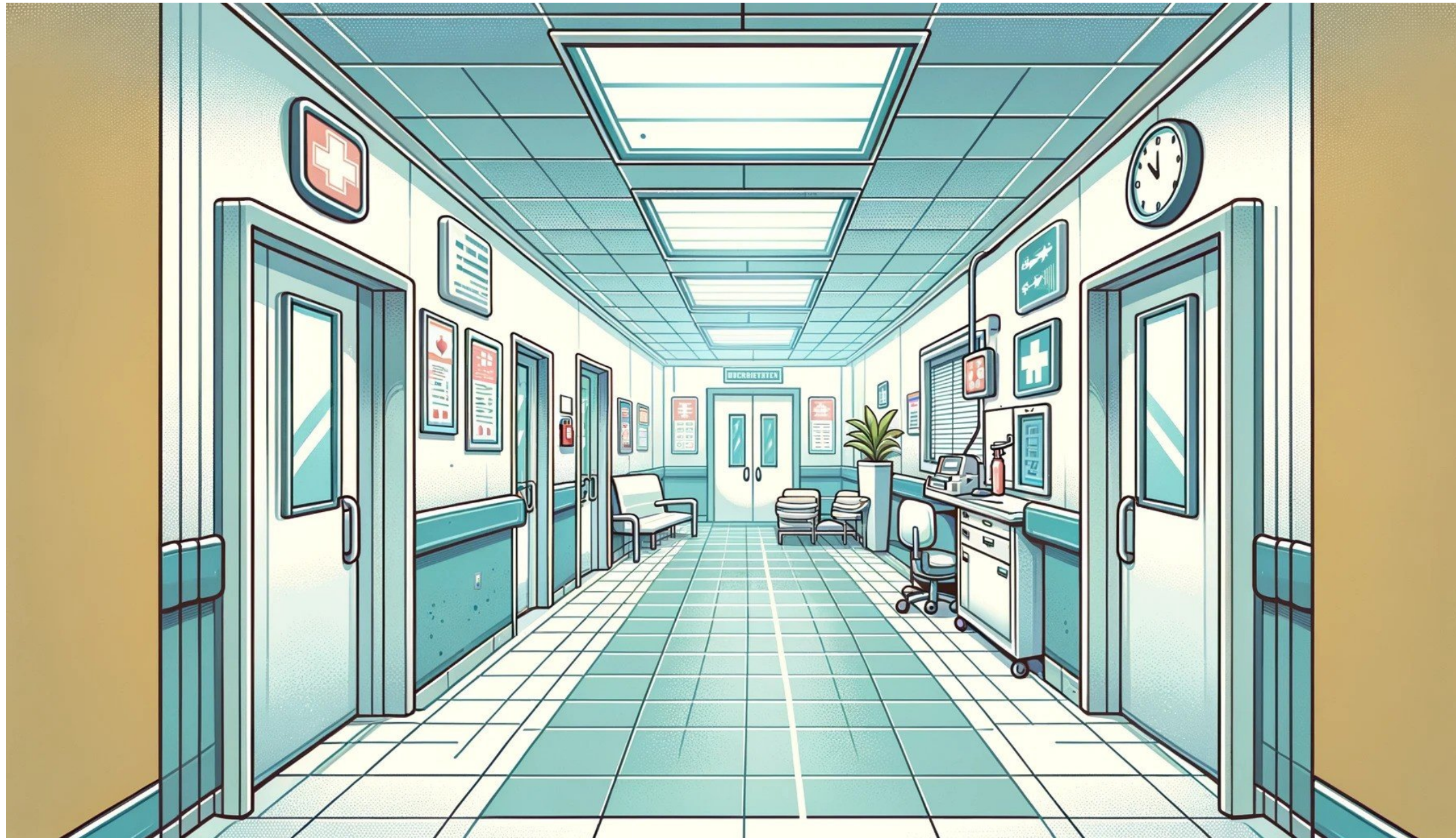


API endpoints



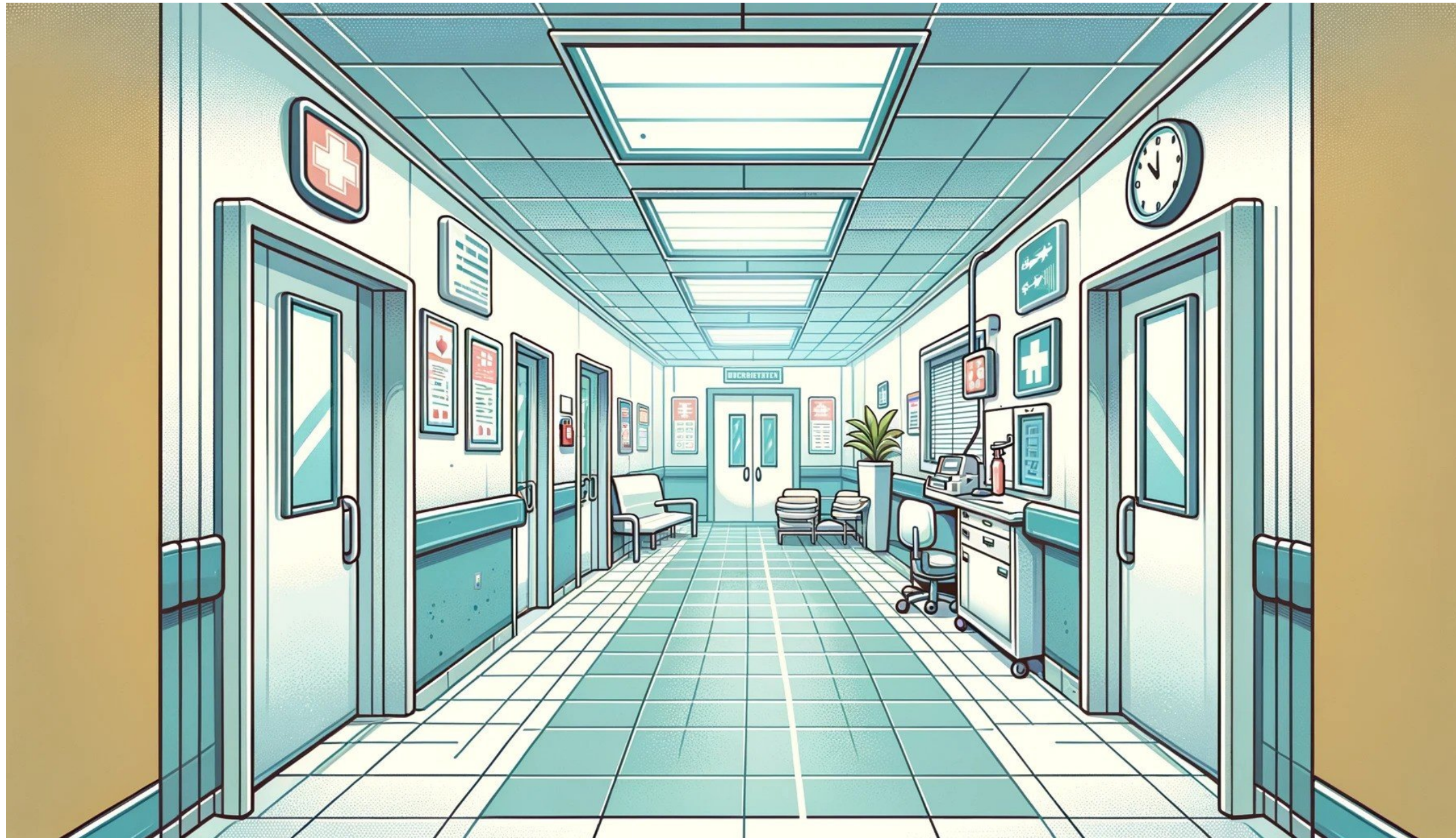
API endpoints

- Endpoints → API access point designed for specific interactions



API authentication

- Authentication → Controls on access to API endpoint services (often unique key)



API usage costs

- For OpenAI API:
 - Model
 - Larger inputs + outputs = Greater cost
- No additional costs for this course ☐



¹ <https://openai.com/pricing>

Creating an API key

- Isn't required in this course
1. Create your account → <https://platform.openai.com/signup>
 2. Go to the API keys page → <https://platform.openai.com/account/api-keys>
 3. Create a new secret key and **copy** it

NAME	KEY	CREATED	LAST USED ⓘ	
Secret key	sk- . . . Vpp5	5 Feb 2023	25 Apr 2023	 
<div>+ Create new secret key</div>				

Making a request

```
from openai import OpenAI

client = OpenAI(api_key="ENTER YOUR KEY HERE")

response = client.chat.completions.create(
    model="gpt-4o-mini",
    messages=[{"role": "user", "content": "What is the OpenAI API?"}]
)

print(response)
```

The response

```
ChatCompletion(id='chatcmpl-AEcQbQekIzxcxVAKYVAjgUAXokgrl', choices=[Choice(finish_reason='length', index=0, logprobs=None, message=ChatCompletionMessage(content='The OpenAI API is a cloud-based service provided by OpenAI that allows developers to integrate advanced AI models into their applications.', refusal=None, role='assistant', function_call=None, tool_calls=None))], created=1728047673, model='gpt-4o-mini-2024-07-18', object='chat.completion', service_tier=None, system_fingerprint='fp_f85bea6784', usage=CompletionUsage(completion_tokens=30, prompt_tokens=14, total_tokens=44, prompt_tokens_details={'cached_tokens': 0}, completion_tokens_details={'reasoning_tokens': 0}))
```

The response

```
ChatCompletion(id='chatcmpl-AEcQbQekIzxcxVAKYVAjgUAXokgrl',
               choices=[Choice(finish_reason='length', index=0, logprobs=None,
                               message=ChatCompletionMessage(content='The OpenAI API is a cloud-based service
                               provided by OpenAI that allows developers to integrate advanced AI models
                               into their applications.',
                               refusal=None, role='assistant', function_call=None, tool_calls=None))],
               created=1728047673,
               model='gpt-4o-mini-2024-07-18',
               object='chat.completion', service_tier=None, system_fingerprint='fp_f85bea6784',
               usage=CompletionUsage(completion_tokens=25, prompt_tokens=14, total_tokens=39,
                                     prompt_tokens_details={'cached_tokens': 0},
                                     completion_tokens_details={'reasoning_tokens': 0}))
```

Interpreting the response

```
print(response.choices)
```

```
[Choice(finish_reason='length', index=0, logprobs=None,  
message=ChatCompletionMessage(content='The OpenAI API is a cloud-based service provided by  
OpenAI that allows developers to integrate advanced AI models into their applications.',  
refusal=None, role='assistant', function_call=None, tool_calls=None))]
```


Interpreting the response

```
print(response.choices[0])
```

```
Choice(finish_reason='length', index=0, logprobs=None,  
      message=ChatCompletionMessage(content='The OpenAI API is a cloud-based service provided by  
OpenAI that allows developers to integrate advanced AI models into their applications.',  
      refusal=None, role='assistant', function_call=None, tool_calls=None))
```

Interpreting the response

```
print(response.choices[0].message)
```

```
ChatCompletionMessage(content='The OpenAI API is a cloud-based service provided by  
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refusal=None, role='assistant', function_call=None, tool_calls=None)
```

```
print(response.choices[0].message.content)
```

```
The OpenAI API is a cloud-based service provided by OpenAI that allows developers to  
integrate advanced AI models into their applications.
```

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