Tanimawo AI Academy

ADVANCED

Connecting to AI with APIs

Call an AI model from your own code: keys, requests, tokens and costs

Free guide

About 18 minutes to read

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Free AI training every Sunday
with Dr. Daniel Tanimawo

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What an API call is

An **API** lets your program send a request to an AI provider and get a response back. Instead of typing into a chat window, your code sends the conversation as data and receives the model's reply.

Every request has the same ingredients:

- **Model:** which AI to use (bigger models are smarter but cost more)
- **Messages:** the conversation so far (system instructions, user messages, earlier replies)
- **Settings:** for example the maximum length of the answer
- **API key:** a secret that proves the request is yours and is billed to you

Get an API key safely

1. Create an account on the provider's developer platform (OpenAI, Anthropic, Google and others all offer APIs).
2. Add billing or use free credits if offered, and **set a monthly spending limit**.
3. Create an API key and store it in an **environment variable**, never in your code.

```
# Linux / macOS
export OPENAI_API_KEY="sk-...your key..."
# Windows PowerShell
$env:OPENAI_API_KEY="sk-...your key..."
```

> **Never** put an API key in a web page, a mobile app, a screenshot or a public GitHub repository. Anyone who finds it can spend your money.

Your first call: Python

```
pip install openai
```

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```
import os
from openai import OpenAI

client = OpenAI(api_key=os.environ["OPENAI_API_KEY"])

response = client.chat.completions.create(
    model="gpt-4.1-mini",
    max_tokens=200,
    messages=[
        {"role": "system", "content": "You are a friendly tutor. Answer simply."},
        {"role": "user", "content": "Explain what an API is in two sentences."},
    ],
)
print(response.choices[0].message.content)
```

The same call: JavaScript (Node.js)

```
npm install openai
```

```
import OpenAI from "openai";

const client = new OpenAI(); // reads OPENAI_API_KEY from the environment

const response = await client.chat.completions.create({
  model: "gpt-4.1-mini",
  max_tokens: 200,
  messages: [
    { role: "system", content: "You are a friendly tutor. Answer simply." },
    { role: "user", content: "Explain what an API is in two sentences." },
  ],
});
console.log(response.choices[0].message.content);
```

Message roles

Role	Purpose
system	Standing instructions: persona, rules, format
user	What the person asks
assistant	Earlier model replies (send them back to keep a conversation going)

The API does **not** remember previous calls. To continue a conversation, send the earlier messages again in the next request.

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Tokens and cost

Models read and write **tokens** (pieces of words; roughly 4 characters of English each). You pay per token for both input and output, at prices listed on the provider's pricing page.

Cost per request = (input tokens × input price) + (output tokens × output price)

- Set **max_tokens** on every request so answers cannot run long.
- Use a **smaller model** for simple jobs (classifying, extracting, formatting).
- Keep system prompts short, and reuse the same opening text so providers that offer **prompt caching** can discount it.

Handle errors

Error	Meaning	What to do
401	Bad or missing key	Check the environment variable
429	Too many requests or out of credit	Wait and retry with a delay; check billing
500 / 503	Provider problem	Retry later; show a friendly message

Checklist

- [ ] Key stored in an environment variable, not in code
- [ ] Spending limit set on the provider dashboard
- [ ] max_tokens set on every request
- [ ] Errors caught and shown as friendly messages

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