HOW SOFTWARE WORKS · BUILDER · 14 MIN READ

APIs and JSON, hands on

How apps ask other services for data: endpoints, methods, status codes and JSON, with a real API you can try in your browser.

Pass the check (4 of 5) online to earn the “API Explorer” badge:
https://digitalbuilders757.com/university/study/apis-and-json-hands-on

What an API is

An API is a menu of requests another program accepts. Each item on the menu is an endpoint, a URL like https://api.github.com/users/octocat. Your app sends a request; the service sends back a response, usually as JSON, a simple text format for data. Payments, maps, AI models and weather all work this way.

The parts of a request

- Method: GET reads data, POST creates something, PATCH or PUT updates it, DELETE removes it.
- URL and query parameters: /repos?per_page=5 asks for five results.
- Headers: extra details, like Authorization: Bearer <key> to prove who's asking.
- Body: the data you send with POST or PATCH, usually JSON.

Reading the response

The status code says how it went: 200 OK, 201 created, 400 something's wrong with the request, 401 not signed in, 403 not allowed, 404 not found, 429 too many requests, 500 the server failed. JSON uses { } for objects with named fields and [ ] for lists, so { "user": { "name": "Sam" } } gives you the name at user.name. Always check the status before using the data.

Try one, then use them safely

Open https://api.github.com/users/octocat in your browser: that's real JSON from GitHub's public API. In the browser Console you can run fetch('https://api.github.com/users/octocat').then((r) => r.json()).then(console.log). For APIs that need a key, call them from your server with the key in an environment variable, read the docs for limits and costs, handle errors and rate limits, and send only the data the service needs.

Key terms

API
An agreed way for one piece of software to ask another for something.

Endpoint
One URL an API answers, like /users/octocat, each doing one job.

HTTP method
The verb of a web request: GET reads, POST creates, PATCH or PUT updates, DELETE removes.

JSON
A simple text format for data that apps send to each other: names and values in curly braces.

HTTP status code
A number a server sends back: 200 OK, 401 not signed in, 403 not allowed, 404 not found, 500 server error.

API key
A secret code that identifies your app to a service and is often tied to billing.

Rate limit
The most requests or tokens a key may use in a period, such as per minute.

Environment variable
A setting or secret the app reads at run time, kept outside the code.

Try it: Your first API calls

1. Open https://api.github.com/users/octocat in your browser and find the name and public_repos fields.
2. Run the fetch line from the guide in your browser's Console and expand the result.
3. Change the URL to a user that doesn't exist and note the status code.
4. Ask an AI to write a tiny page that shows a GitHub user's name and avatar, checking response.ok first.

KNOWLEDGE CHECK

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5 questions. Circle one answer for each; 4 or more correct passes. Answers are at the back.

1. Which HTTP method is used to read data?

A. POST
B. DELETE
C. GET
D. PATCH

2. The response is { "user": { "name": "Sam" } }. How do you reach the name?

A. name.user
B. user[name]
C. json.name.user
D. user.name

3. An API call returns 401. What does it mean?

A. The request isn't signed in: the key or token is missing or wrong
B. Everything worked
C. The server crashed
D. You sent too many requests

4. What does ?per_page=5 at the end of a URL do?

A. It tells the browser to print the results as five separate pages
B. It's a query parameter asking for five results per page
C. It sets the page colour
D. It signs you in

5. An API needs a secret key. Where should the call happen?

A. In the browser, with the key hidden in a minified JavaScript file
B. In a public GitHub file
C. On your server, with the key in an environment variable
D. In the page's HTML

Official sites

MDN: Using the Fetch API: https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/Using_Fetch
GitHub REST API docs: https://docs.github.com/en/rest

Last reviewed 2026-11-25. AI tools change fast; check each tool's own site for current features, plans and prices.

ANSWER KEY

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1. C: GET
GET reads; POST creates; PATCH/PUT update; DELETE removes.

2. D: user.name
Follow the path from the outside in: user, then name.

3. A: The request isn't signed in: the key or token is missing or wrong
401 is about who you are. 403 means you're known but not allowed; 429 means slow down.

4. B: It's a query parameter asking for five results per page
Query parameters pass options to the endpoint.

5. C: On your server, with the key in an environment variable
Browser code is visible to everyone; secrets stay on the server.