FastAPI framework, high performance, easy to learn, fast to code, ready for production

Documentation: https://fastapi.tiangolo.com

Source Code: https://github.com/fastapi/fastapi

FastAPI is a modern, fast (high-performance), web framework for building APIs with Python based on standard Python type hints.

The key features are:

- **Fast**: Very high performance, on par with **NodeJS** and **Go** (thanks to Starlette and Pydantic). One of the fastest Python frameworks available.
- **Fast to code**: Increase the speed to develop features by about 200% to 300%. *
- **Fewer bugs**: Reduce about 40% of human (developer) induced errors. *
- **Intuitive**: Great editor support. Completion everywhere. Less time debugging.
- **Easy**: Designed to be easy to use and learn. Less time reading docs.
- **Short**: Minimize code duplication. Multiple features from each parameter declaration. Fewer bugs.
- **Robust**: Get production-ready code. With automatic interactive documentation.
- **Standards-based**: Based on (and fully compatible with) the open standards for APIs: OpenAPI [🔗] (previously known as Swagger) and JSON Schema [🔗].

* estimation based on tests conducted by an internal development team, building production applications.

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Opinions

"*[...] I'm using **FastAPI** a ton these days. [...] I'm actually planning to use it for all of my team's **ML services at Microsoft**. Some of them are getting integrated into the core **Windows** product and some **Office** products.*"

Kabir Khan - **Microsoft** (ref)

"*We adopted the **FastAPI** library to spawn a **REST** server that can be queried to obtain **predictions**. [for Ludwig]*"

Piero Molino, Yaroslav Dudin, and Sai Sumanth Miryala - **Uber** (ref)

"***Netflix** is pleased to announce the open-source release of our **crisis management** orchestration framework: **Dispatch**! [built with **FastAPI**]*"

Kevin Glisson, Marc Vilanova, Forest Monsen - **Netflix** (ref)

"*I'm over the moon excited about **FastAPI**. It's so fun!*"

Brian Okken - **Python Bytes** **podcast host** (ref)

"*Honestly, what you've built looks super solid and polished. In many ways, it's what I wanted **Hug** to be - it's really inspiring to see someone build that.*"

Timothy Crosley - **Hug** **creator** (ref)

"*If you're looking to learn one **modern framework** for building REST APIs, check out **FastAPI** [...] It's fast, easy to use and easy to learn [...]*"

"*We've switched over to **FastAPI** for our **APIs** [...] I think you'll like it [...]*"

Ines Montani - Matthew Honnibal - **Explosion AI** **founders** - **spaCy** **creators** (ref) - (ref)

"*If anyone is looking to build a production Python API, I would highly recommend **FastAPI**. It is **beautifully designed**, **simple to use** and **highly scalable**, it has become a **key component** in our API first development strategy and is driving many automations and services such as our Virtual TAC Engineer.*"

Deon Pillsbury - **Cisco** (ref)

FastAPI mini documentary

There's a FastAPI mini documentary [🔄] released at the end of 2025, you can watch it online:

Typer, the FastAPI of CLIs

If you are building a CLI app to be used in the terminal instead of a web API, check out **Typer** [🔄].

Typer is FastAPI's little sibling. And it's intended to be the **FastAPI of CLIs**. ⌨️ 🚀

Requirements

FastAPI stands on the shoulders of giants:

- Starlette [🔄] for the web parts.
- Pydantic [🔄] for the data parts.

Installation

Create and activate a virtual environment [🔄] and then install FastAPI:

```bash
$ pip install "fastapi[standar
```


Note: Make sure you put `"fastapi[standard]"` in quotes to ensure it works in all terminals.

Example

Create it

Create a file `main.py` with:

```python
from typing import Union

from fastapi import FastAPI

app = FastAPI()


@app.get("/")
def read_root():
    return {"Hello": "World"}


@app.get("/items/{item_id}")
def read_item(item_id: int, q: Union[str, None] = None):
    return {"item_id": item_id, "q": q}
```

Or use `async def` ...

If your code uses `async` / `await`, use `async def`:

```
from typing import Union

from fastapi import FastAPI

app = FastAPI()


@app.get("/")
async def read_root():
    return {"Hello": "World"}


@app.get("/items/{item_id}")
async def read_item(item_id: int, q: Union[str, None] = None):
    return {"item_id": item_id, "q": q}
```

Note:

If you don't know, check the *"In a hurry?"* section about `async` and `await` in the docs.

Run it

Run the server with:

bash

```
                                                    fast →

$ fastapi dev main.py

  ╭────────── FastAPI CLI - Development mode ──────────╮
  │                                                    │
  │  Serving at: http://127.0.0.1:8000                 │
  │                                                    │
  │  API docs: http://127.0.0.1:8000/docs              │
  │                                                    │
  │  Running in development mode, for production use:  │
  │                                                    │
  │  fastapi run                                       │
  │                                                    │
  ╰────────────────────────────────────────────────────╯

INFO:     Will watch for changes in these directories: ['/home/user/
code/awesomeapp']
INFO:     Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to
quit)
INFO:     Started reloader process [2248755] using WatchFiles
INFO:     Started server process [2248757]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
```

About the command `fastapi dev main.py`...

The command `fastapi dev` reads your `main.py` file, detects the **FastAPI** app in it, and starts a server using Uvicorn [🔄].

By default, `fastapi dev` will start with auto-reload enabled for local development.

You can read more about it in the FastAPI CLI docs.

Check it

Open your browser at http://127.0.0.1:8000/items/5?q=somequery [🔄].

You will see the JSON response as:

```
{"item_id": 5, "q": "somequery"}
```

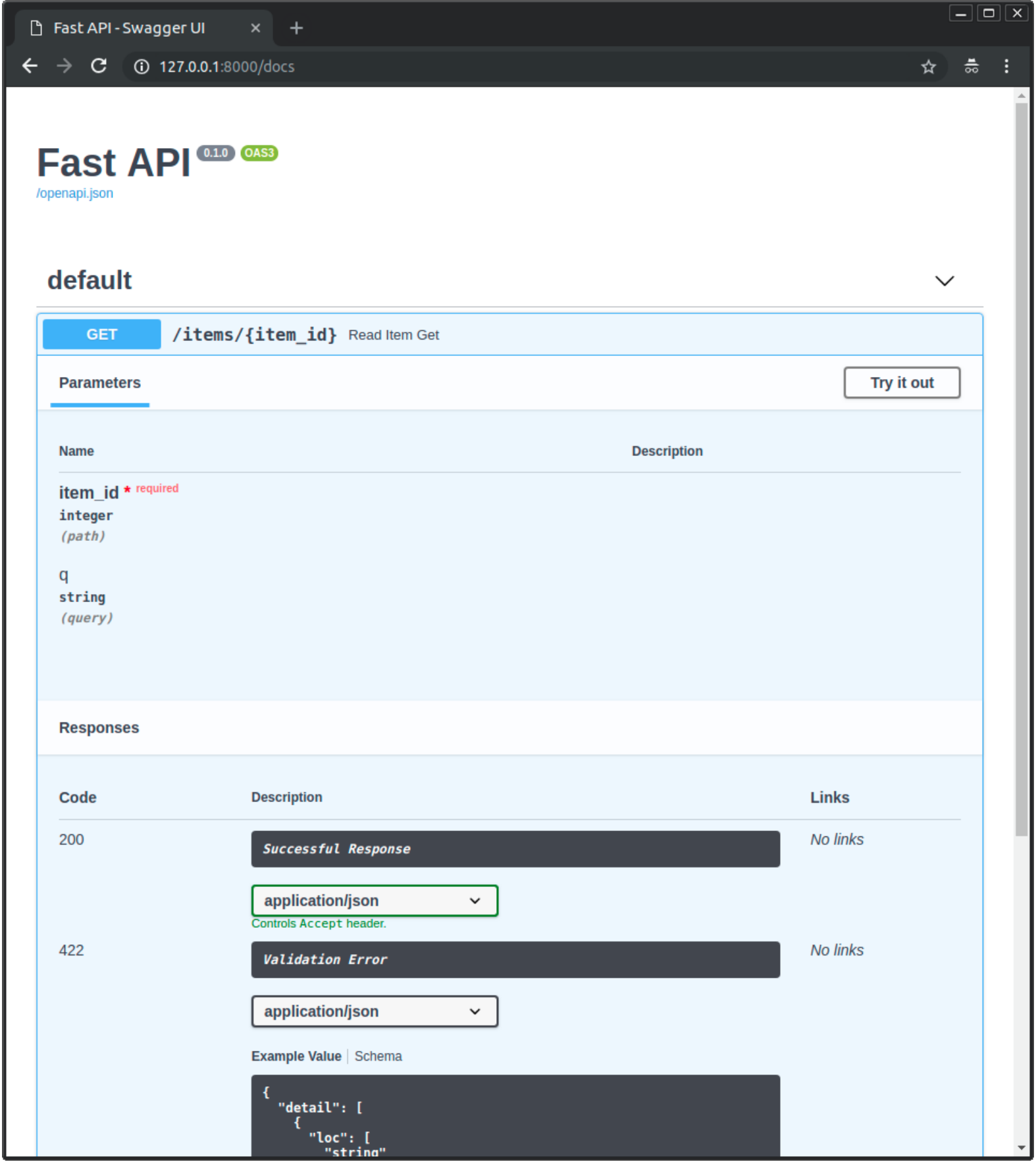
You already created an API that:

- Receives HTTP requests in the *paths* `/` and `/items/{item_id}`.
- Both *paths* take `GET` *operations* (also known as HTTP *methods*).
- The *path* `/items/{item_id}` has a *path parameter* `item_id` that should be an `int`.
- The *path* `/items/{item_id}` has an optional `str` *query parameter* `q`.

Interactive API docs

Now go to http://127.0.0.1:8000/docs [🔄].

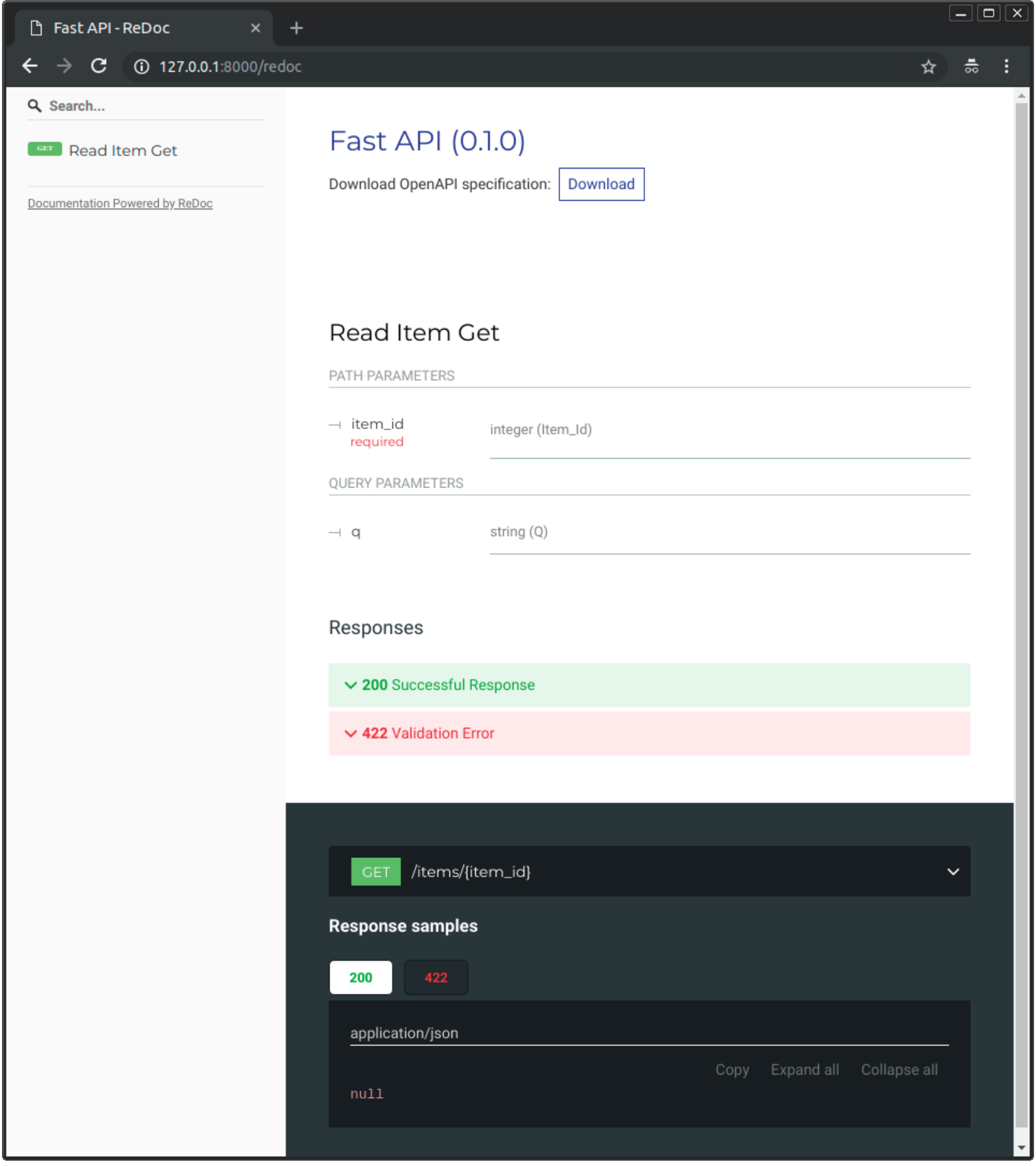
You will see the automatic interactive API documentation (provided by Swagger UI [🔄]):



Alternative API docs

And now, go to http://127.0.0.1:8000/redoc [🔄].

You will see the alternative automatic documentation (provided by ReDoc [🔄]):



Example upgrade

Now modify the file `main.py` to receive a body from a `PUT` request.

Declare the body using standard Python types, thanks to Pydantic.

```python
from typing import Union

from fastapi import FastAPI
from pydantic import BaseModel

app = FastAPI()


class Item(BaseModel):
    name: str
    price: float
    is_offer: Union[bool, None] = None


@app.get("/")
def read_root():
    return {"Hello": "World"}


@app.get("/items/{item_id}")
def read_item(item_id: int, q: Union[str, None] = None):
    return {"item_id": item_id, "q": q}


@app.put("/items/{item_id}")
def update_item(item_id: int, item: Item):
    return {"item_name": item.name, "item_id": item_id}
```

The `fastapi dev` server should reload automatically.

Interactive API docs upgrade

Now go to http://127.0.0.1:8000/docs [🔄].

- The interactive API documentation will be automatically updated, including the new body: