## Request Body

When you need to send data from a client (let's say, a browser) to your API, you send it as a **request body**.

A **request** body is data sent by the client to your API. A **response** body is the data your API sends to the client.

Your API almost always has to send a **response** body. But clients don't necessarily need to send **request bodies** all the time, sometimes they only request a path, maybe with some query parameters, but don't send a body.

To declare a **request** body, you use Pydantic models with all their power and benefits.

**Info**

To send data, you should use one of: `POST` (the more common), `PUT`, `DELETE` or `PATCH`.

Sending a body with a `GET` request has an undefined behavior in the specifications, nevertheless, it is supported by FastAPI, only for very complex/extreme use cases.

As it is discouraged, the interactive docs with Swagger UI won't show the documentation for the body when using `GET`, and proxies in the middle might not support it.

### Import Pydantic's `BaseModel`

First, you need to import `BaseModel` from `pydantic`:

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None


app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    return item
```

▸ 🤓 Other versions and variants

**Python 3.8+**

```
from typing import Union

from fastapi import FastAPI
from pydantic import BaseModel


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


app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    return item
```

### Create your data model

Then you declare your data model as a class that inherits from `BaseModel`.

Use standard Python types for all the attributes:

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None
```

```
app = FastAPI()


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    name: str
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app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    return item
```

The same as when declaring query parameters, when a model attribute has a default value, it is not required. Otherwise, it is required. Use `None` to make it just optional.

For example, this model above declares a JSON "`object`" (or Python `dict`) like:

```
{
    "name": "Foo",
    "description": "An optional description",
    "price": 45.2,
    "tax": 3.5
}
```

...as `description` and `tax` are optional (with a default value of `None`), this JSON "`object`" would also be valid:

```
{
    "name": "Foo",
    "price": 45.2
}
```

### Declare it as a parameter

To add it to your *path operation*, declare it the same way you declared path and query parameters:

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None


app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    return item
```

▸ Other versions and variants

**Python 3.8+**

```
from typing import Union

from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: Union[str, None] = None
```

```
    price: float
    tax: Union[float, None] = None


app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    return item
```

...and declare its type as the model you created, `Item`.

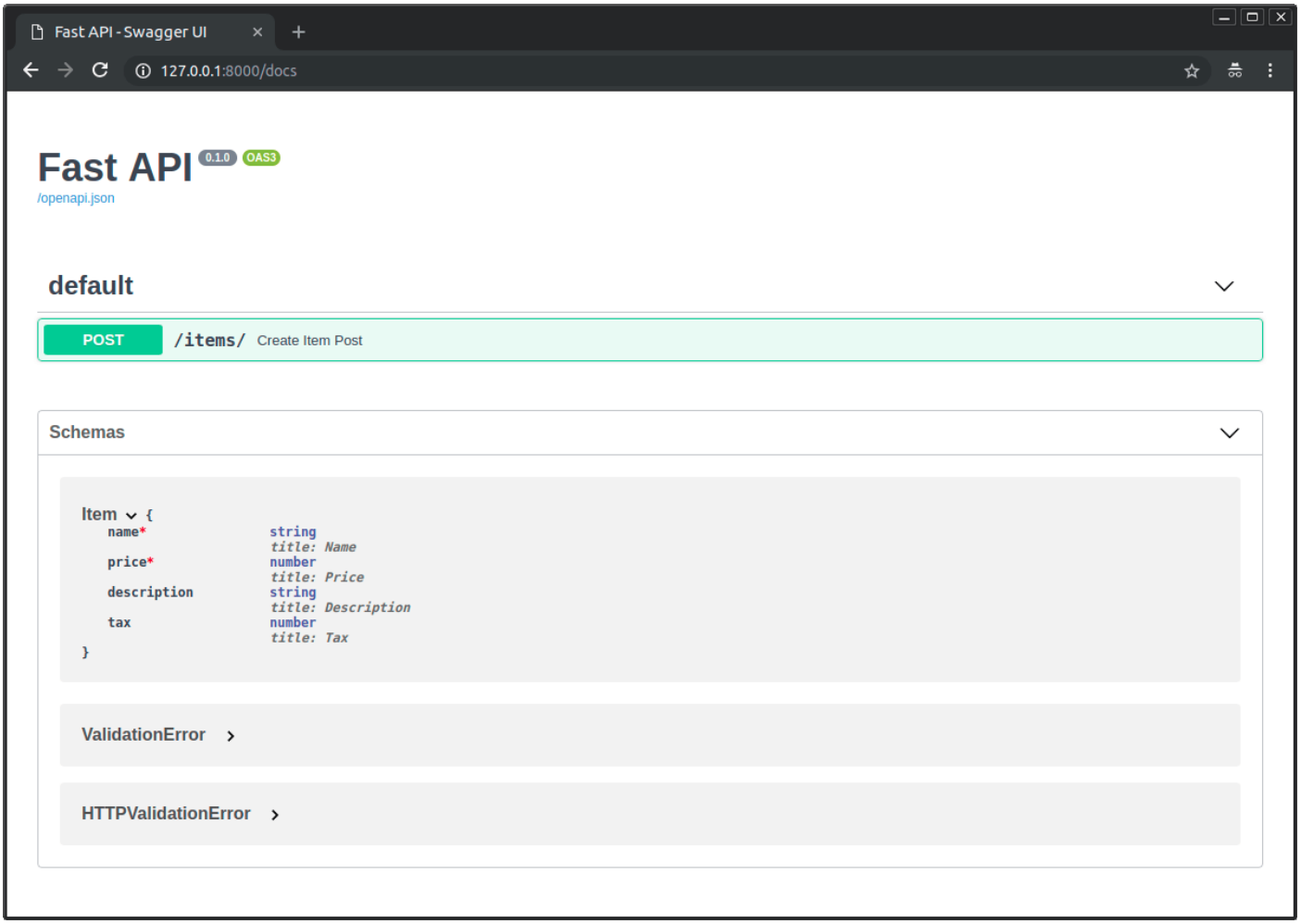
### Results

With just that Python type declaration, **FastAPI** will:

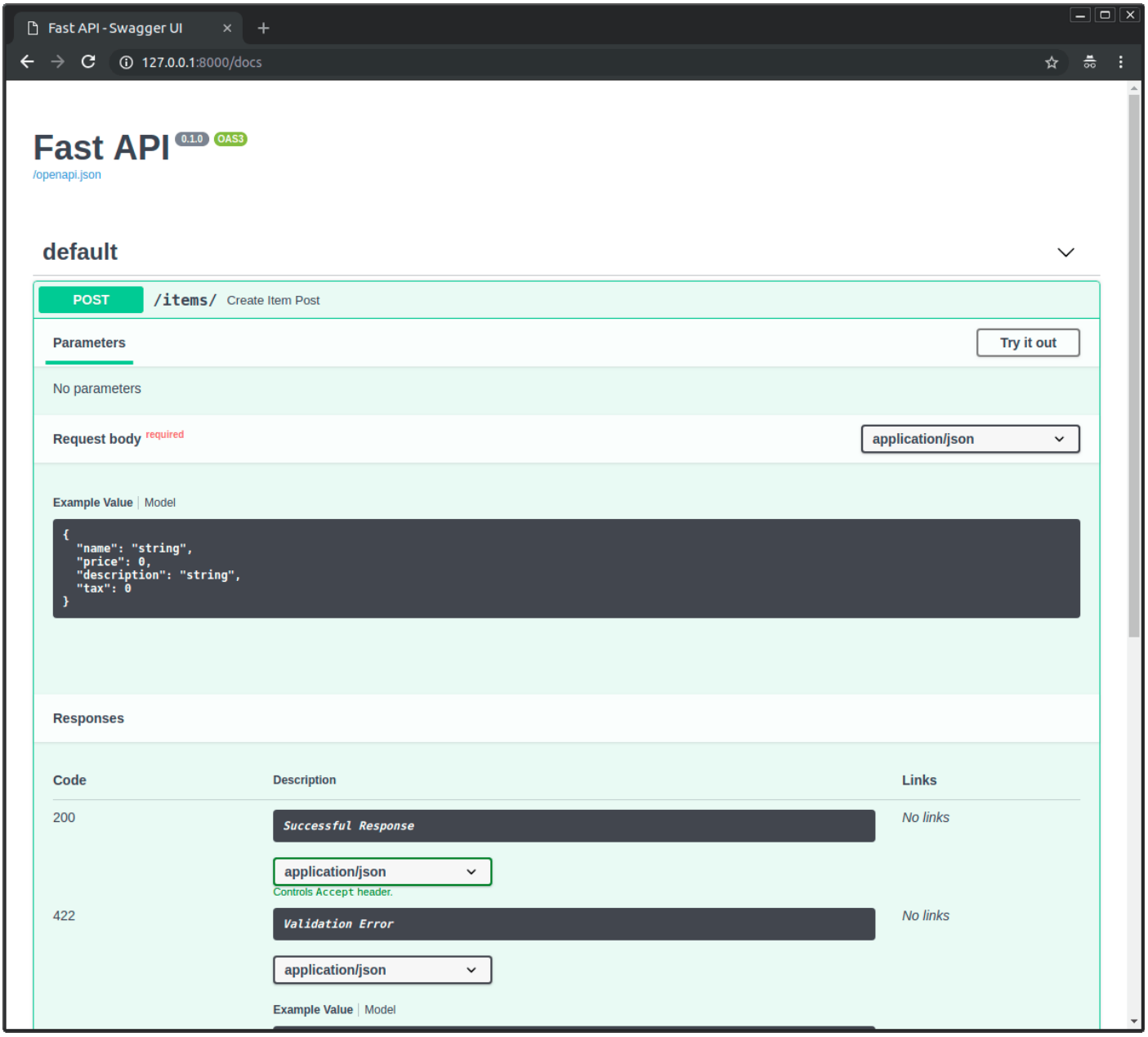
- Read the body of the request as JSON.
- Convert the corresponding types (if needed).
- Validate the data.
  - If the data is invalid, it will return a nice and clear error, indicating exactly where and what was the incorrect data.
- Give you the received data in the parameter `item`.
  - As you declared it in the function to be of type `Item`, you will also have all the editor support (completion, etc) for all of the attributes and their types.
- Generate JSON Schema definitions for your model, you can also use them anywhere else you like if it makes sense for your project.
- Those schemas will be part of the generated OpenAPI schema, and used by the automatic documentation UIs.

### Automatic docs

The JSON Schemas of your models will be part of your OpenAPI generated schema, and will be shown in the interactive API docs:

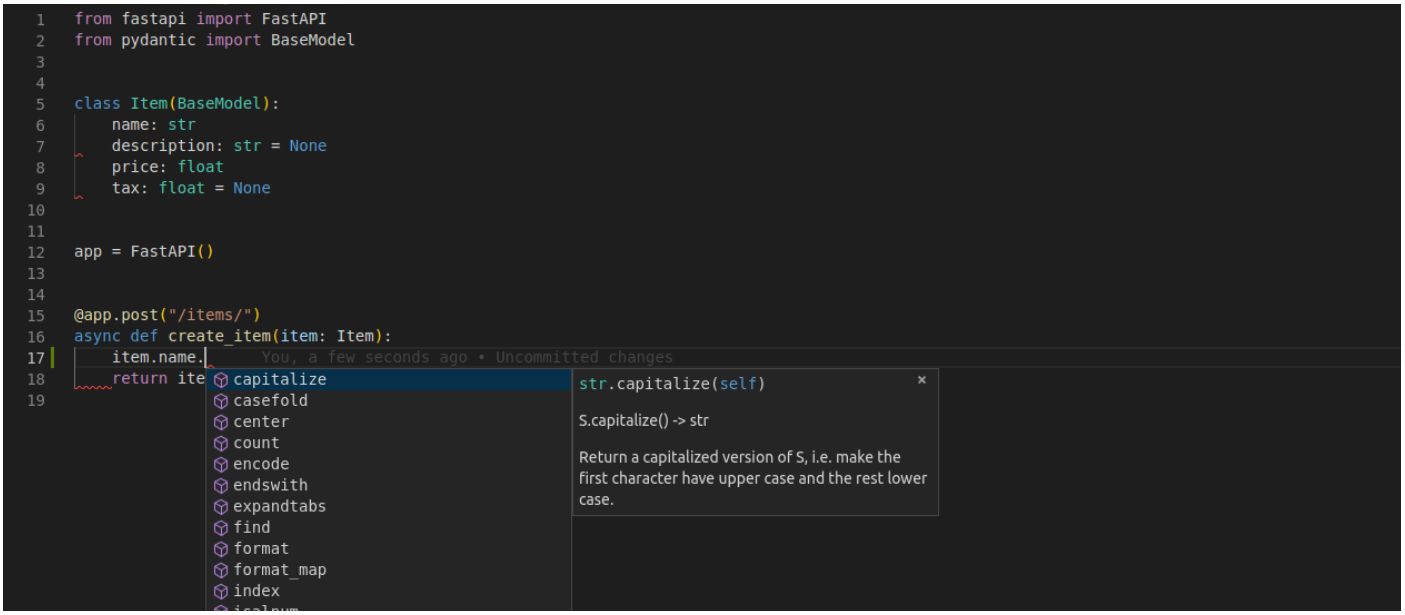



And will also be used in the API docs inside each *path operation* that needs them:

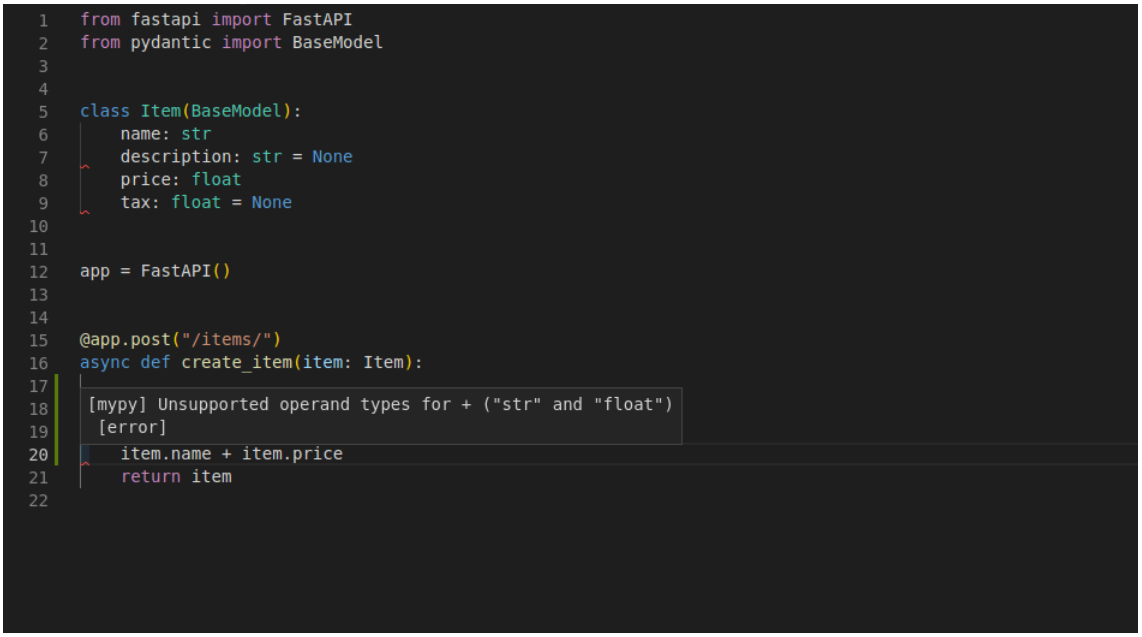



**Editor support**

In your editor, inside your function you will get type hints and completion everywhere (this wouldn't happen if you received a `dict` instead of a Pydantic model):



You also get error checks for incorrect type operations:



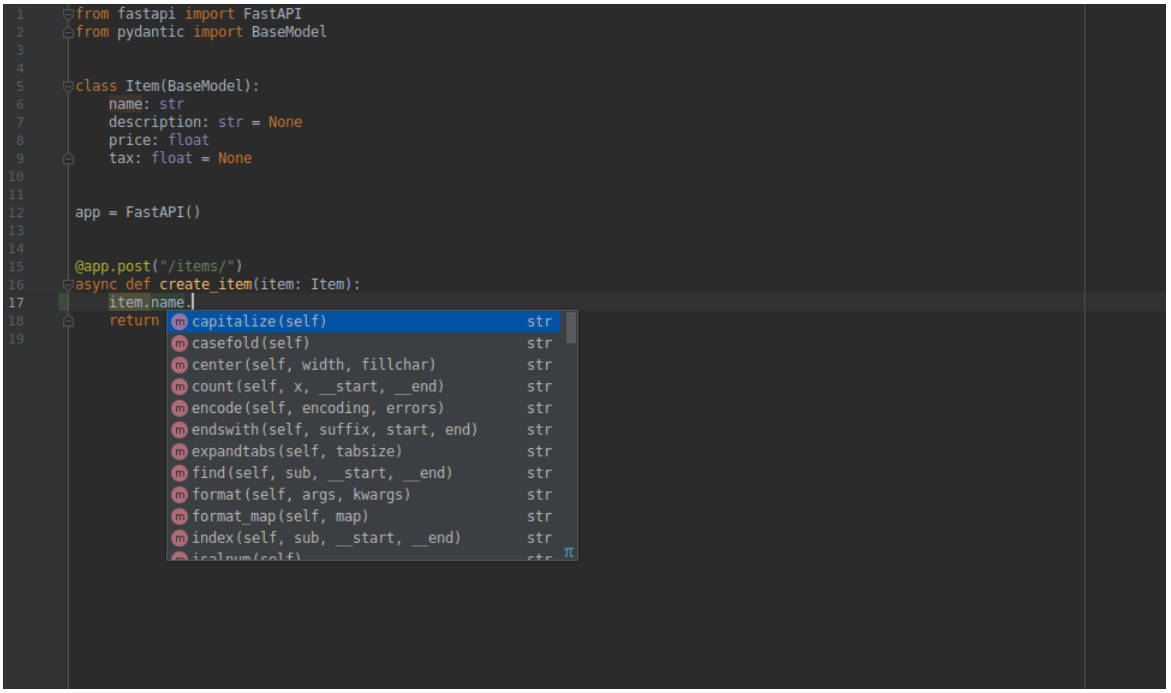

This is not by chance, the whole framework was built around that design.

And it was thoroughly tested at the design phase, before any implementation, to ensure it would work with all the editors.

There were even some changes to Pydantic itself to support this.

The previous screenshots were taken with Visual Studio Code.

But you would get the same editor support with PyCharm and most of the other Python editors:




**Tip**

If you use PyCharm as your editor, you can use the Pydantic PyCharm Plugin.

It improves editor support for Pydantic models, with:

- auto-completion
- type checks
- refactoring
- searching
- inspections

**Use the model**

Inside of the function, you can access all the attributes of the model object directly:

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None


app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    item_dict = item.dict()
    if item.tax:
        price_with_tax = item.price + item.tax
        item_dict.update({"price_with_tax": price_with_tax})
    return item_dict
```

▸ Other versions and variants

**Python 3.8+**

```
from typing import Union

from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: Union[str, None] = None
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app = FastAPI()


@app.post("/items/")
async def create_item(item: Item):
    item_dict = item.dict()
    if item.tax:
        price_with_tax = item.price + item.tax
        item_dict.update({"price_with_tax": price_with_tax})
    return item_dict
```

### Request body + path parameters

You can declare path parameters and request body at the same time.

**FastAPI** will recognize that the function parameters that match path parameters should be **taken from the path**, and that function parameters that are declared to be Pydantic models should be **taken from the request body**.

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None


app = FastAPI()


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

▸ Other versions and variants

**Python 3.8+**

```
from typing import Union

from fastapi import FastAPI
```

```
from pydantic import BaseModel


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


app = FastAPI()


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

### Request body + path + query parameters

You can also declare **body**, **path** and **query** parameters, all at the same time.

**FastAPI** will recognize each of them and take the data from the correct place.

**Python 3.10+**

```
from fastapi import FastAPI
from pydantic import BaseModel


class Item(BaseModel):
    name: str
    description: str | None = None
    price: float
    tax: float | None = None


app = FastAPI()


@app.put("/items/{item_id}")
async def update_item(item_id: int, item: Item, q: str | None = None):
    result = {"item_id": item_id, **item.dict()}
    if q:
        result.update({"q": q})
    return result
```

▸ 🤓 Other versions and variants

**Python 3.8+**

```
from typing import Union

from fastapi import FastAPI
from pydantic import BaseModel


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


app = FastAPI()


@app.put("/items/{item_id}")
async def update_item(item_id: int, item: Item, q: Union[str, None] = None):
    result = {"item_id": item_id, **item.dict()}
    if q:
        result.update({"q": q})
    return result
```

The function parameters will be recognized as follows:

- If the parameter is also declared in the **path**, it will be used as a path parameter.
- If the parameter is of a **singular type** (like `int`, `float`, `str`, `bool`, etc) it will be interpreted as a **query** parameter.
- If the parameter is declared to be of the type of a **Pydantic model**, it will be interpreted as a request **body**.

**Note**

FastAPI will know that the value of `q` is not required because of the default value `= None`.

The `str | None` (Python 3.10+) or `Union` in `Union[str, None]` (Python 3.8+) is not used by FastAPI to determine that the value is not required, it will know it's not required because it has a default value of `= None`.

But adding the type annotations will allow your editor to give you better support and detect errors.

**Without Pydantic**

If you don't want to use Pydantic models, you can also use **Body** parameters. See the docs for Body - Multiple Parameters: Singular values in body.