ScanAPI

Automated Integration Testing and Live Documentation for your API

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EuroPython 2020
Motivation

Everything started in a week which I as Firefighter 🔥
I work at...
Who am I?

- Brazilian Backend Developer
- Bachelor of Computer Information System
- Coding since 2010
- Python and Ruby
- Events: Pyjamas and EuroPython
Motivation

Everything started in a week which I as Firefighter 🔥
Motivation

Integration Errors 🌟

- **Client** sending fields different than what’s expected

- **Frontend** receiving fields different than what’s expected
Motivation

Outdated documentation

- Missing endpoints
- Missing fields
- Misinformation
Motivation

Hard to recreate scenarios 😞

/reserve/:seat_id

flight_id?

airplane_id?

passenger_id?

Is the airplane available?

????
Motivation

Hard to recreate scenarios 😞
Proposal

- Open Source Framework
- Written in Python

1. Provide a **Live Documentation**

2. Tool to implement **integration tests**
How does it work?

Example: PokéAPI

PokéAPI: https://pokeapi.co

$ http https://pokeapi.co/api/v2/pokemon/
{
    "count": 964,
    "next": "https://pokeapi.co/api/v2/pokemon/?offset=20&limit=20",
    "previous": null,
    "results": [
        {
            "name": "bulbasaur",
            "url": "https://pokeapi.co/api/v2/pokemon/1/"
        },
        {
            "name": "ivysaur",
            "url": "https://pokeapi.co/api/v2/pokemon/2/"
        },
        {
            "name": "venusaur",
            "url": "https://pokeapi.co/api/v2/pokemon/3/"
        },
        {
            "name": "charmander",
            "url": "https://pokeapi.co/api/v2/pokemon/4/"
        },
        {
            "name": "charmeleon",
            "url": "https://pokeapi.co/api/v2/pokemon/5/"
        }
    ]
}
How does it work?

Example: PokéAPI

Installing: $ pip install scanapi
How does it work?

Example: PokéAPI

```yaml
# api.yaml
api:
  endpoints:
    - name: pokeapi
      path: https://pokeapi.co/api/v2/
      endpoints:
        - name: pokemon
          path: pokemon
          requests:
            - name: list_all
              method: get
              path: /
```
How does it work?

Example: PokéAPI

Running

```
$ (scanner)
scanapi-org/scanapi-examples/pokeapi master
  ∙ scanapi api.yaml
Loading file .scanapi.yaml
Loading file api.yaml
Writing documentation
Making request GET https://pokeapi.co/api/v2/pokemon

The documentation was generated successfully.
It is available at scanapi-report.html
```


```
$ (scanner)
scanapi-org/scanapi-examples/pokeapi master
  ∙
```

```
How does it work?

Documentation

Report generated for **PokéAPI**
Generated at: 2020-06-24 16:48:48

```
GET /api/v2/pokemon
```

Tests Summary

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PASSED</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>FAILURES</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>ERRORS</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total Time</td>
<td>0:00:00.807107</td>
<td></td>
</tr>
</tbody>
</table>
GET /api/v2/pokemon

REQUEST

Full URL: https://pokeapi.co/api/v2/pokemon

<table>
<thead>
<tr>
<th>Header</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>User-Agent</td>
<td>python-requests/2.22.0</td>
</tr>
<tr>
<td>Accept-Encoding</td>
<td>gzip, deflate</td>
</tr>
<tr>
<td>Accept</td>
<td><em>/</em></td>
</tr>
<tr>
<td>Connection</td>
<td>keep-alive</td>
</tr>
<tr>
<td>Content-Length</td>
<td>2</td>
</tr>
<tr>
<td>Content-Type</td>
<td>application/json</td>
</tr>
</tbody>
</table>

```
' https://pokeapi.co/api/v2/pokemon
```
# RESPONSE

<table>
<thead>
<tr>
<th>Status Code</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Time</td>
<td>0.197517 s</td>
</tr>
<tr>
<td>Redirect</td>
<td>False</td>
</tr>
</tbody>
</table>

## Headers

<table>
<thead>
<tr>
<th>Header</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Wed, 24 Jun 2020 14:55:51 GMT</td>
</tr>
<tr>
<td>Content-Type</td>
<td>application/json; charset=utf-8</td>
</tr>
<tr>
<td>Content-Length</td>
<td>307</td>
</tr>
<tr>
<td>Connection</td>
<td>keep-alive</td>
</tr>
<tr>
<td>Set-Cookie</td>
<td>_cfuid=d1a0df98414a32d78a8390d8295e1583010661; expires=Fri, 24-Jul-20 14:55:51 GMT; path=/; domain=polipilo.co; HttpOnly; SameSite=Lax, Secure</td>
</tr>
<tr>
<td>Access-Control-Allow-Origin</td>
<td>*</td>
</tr>
<tr>
<td>Cache-Control</td>
<td>public, max-age=86400, s-maxage=86400</td>
</tr>
<tr>
<td>Content-Encoding</td>
<td>gzip</td>
</tr>
<tr>
<td>Etag</td>
<td>W/&quot;587-wNEYLOw72/bLM=MQTg8/tbna/E&quot;</td>
</tr>
<tr>
<td>Function-Execution-Id</td>
<td>98b1mn354nhh3</td>
</tr>
<tr>
<td>X-Cloud-Trace-Context</td>
<td>7b467741a334d7997bc9b06e61979490</td>
</tr>
<tr>
<td>X-Powered-By</td>
<td>Express</td>
</tr>
<tr>
<td>X-Build-Server</td>
<td>c2be-ae1U3N-CPU</td>
</tr>
</tbody>
</table>
RESPONSE

status code 200
response time 0.197517 s
redirect False

Headers

Content

{ "count": 994, "next": "https://pokeapi.co/api/v2/pokemon?offset=20&limit=20", "previous": null, "results": [ { "name": "bulbasaur", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "ivysaur", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "venusaur", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "charmander", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "charmleon", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "charizard", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "squirtle", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "wartortle", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "blastoise", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "caterpie", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "metapod", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "butterfree", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "weedle", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "kakuna", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "beedrill", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "pidigit", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "pidgey", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "pidgeotto", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "pidgeot", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "rattata", "url": "https://pokeapi.co/api/v2/pokemon/"
} , { "name": "raticate", "url": "https://pokeapi.co/api/v2/pokemon/" } ]

TESTS

Tests Summary

PASSED: 0  FAILURES: 0  ERRORS: 0  Total Time: 0:00:00
How does it work?

Integration tests ✅

requests:
  - name: list_all
    method: get
    path: /

tests:
  - name: status_code_is_200
    assert: ${{ response.status_code == 200 }}
  - name: response_time_is_under_half_second
    assert: ${{ response.elapsed.total_seconds() < 0.5 }}
  - name: count_is_964
    assert: ${{ response.json()["count"] == 964 }}

https://requests.readthedocs.io
response time | 0.230083 s
redirect | False

- Headers
- Content

**TESTS**

[PASS] pokeapi::pokemon::list_all::status_code_is_200
[PASS] pokeapi::pokemon::list_all::response_time_is_under_half_second
[PASS] pokeapi::pokemon::list_all::count_is_equals_to_964

**Tests Summary**

PASSED: 3     FAILURES: 0     ERRORS: 0     Total Time: 0:00:00.611139
How does it work?

Chaining Requests

- Get details of a Pokémon
- In this case, the data is “static”, but it might not be.
- https://pokeapi.co/api/v2/pokemon/bulbasaur
How does it work?

Chaining requests

requests:
- name: pokemon
  path: pokemon

requests:
- name: list_all
  method: get
  path: /
  vars:
    pokemon_name: ${response.json()"results"[0]"name"}

tests: ...
- name: details
  method: get
  path: ${pokemon_name}  →  pokemon/${pokemon_name}
Report generated for PokéAPI
Generated at: 2020-06-24 15:46:48

GET /api/v2/pokemon
200

GET /api/v2/pokemon/rebelade
200

Tests Summary
PASSED: 3  FAILURES: 0  ERRORS: 0  Total Time: 0:00:00.601009
Adding ScanAPI to a project

```
~/my_project/scanapi
$ ls -la
total 16
drwxr-xr-x 4 camilamaia staff 128 Jul 20 21:49 .
drwxr-xr-x 3 camilamaia staff 96 Jul 20 21:49 ..
-rw-r--r-- 1 camilamaia staff  1 Jul 20 21:48 .scanapi.yaml
-rw-r--r-- 1 camilamaia staff  1 Jul 20 21:47 api.yaml
```
Adding ScanAPI to a project

```
lodger
master
\ gl
scanapi (995)
```

```
\ success
```

<table>
<thead>
<tr>
<th>Duration / Finished</th>
<th>Queued</th>
<th>Executor</th>
<th>Commit</th>
<th>Branch</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>15s / 20d ago</td>
<td>0s</td>
<td>Docker Medium</td>
<td></td>
<td>master</td>
<td>Camila Maia</td>
</tr>
</tbody>
</table>

**Steps**

- Parallel Run 0
  - scanapi/report.html
scanapi:
  docker:
    - image: camilamaia/scanapi:1.0.5
  steps:
    - checkout
    - run:
      name: Run ScanAPI
      command: |
        scanapi scanapi/api.yaml
        -c scanapi/.scanapi.yaml
        -o scanapi/report.html
      - store_artifacts:
        path: scanapi/report.html
  workflows:
    version: 2
    main:
      jobs:
        - scanapi:
          filters:
            branches:
              only:
                - master
        - build-push:
          name: build-push-staging
          env: staging
          requires:
            - scanapi
          filters:
            branches:
              only:
                - master
How does it work?

And there is more 🎉

- Language-independent
- It also accepts API spec in JSON
- Environment variables
- Hide sensitive info in the report
- Multiple files API specification
- Custom templates
Can I start using it?

For sure! 👍

We are super happy to announce that today we released the version 1.0.0! 🎉🎉
https://github.com/scanapi/scanapi...
Now you can start using safely ScanAPI!
With ScanAPI, you can define endpoints to be hit, the expected behaviours, and as result, receive a full real-time diagnostic of your API!
Basic Structure

You can write ScanAPI specifications in YAML or JSON. In this guide, we use only YAML examples but JSON works equally well.

A sample ScanAPI specification written in YAML looks like:

```yaml
api:
  endpoints:
    - name: sample-api
      path: http://api.example.com/v1
      requests:
        - name: users
          path: /users
          method: get
          tests:
            - name: status_code_is_200
              assert: $
```

This specification follows a tree structure.

One value defined in a node will propagate to it’s children, concatenating the values.

In the example above, for instance, the final path of the request will be:
Next Steps

What about the future? 🔄

- Missing HTTP methods (current: GET, POST, PUT, PATCH, DELETE)
- JSON visualization
- Docs + Tutorials
- Website improvements
- GitHub Action

And what if....

- OpenAPI
Why to contribute?

Join us! 🚀

- Backend, frontend, automation, design
- “Pure Python”
- Understand how a lib works
- Test coverage > 90%
- Issues with labels – i.e: good first issue
Why to contribute?

Join us! 🚀

How Open Source Changed My Life with Max Stoiber
Sprint Session

What is a “Sprint”? 

Most open source software development happens on the web and developers usually communicate online only when working on projects. This usually works out fine, but the lack of live meetings can sometimes be a limiting factor in making good progress.

For this reason, a form of impromptu coding meetups called "sprints" or "hackathons" (outside the Python community, the term "hackathon" is more common) were initiated, where developers interested in a project can get together for a short period of time to make quick progress. Since conferences provide the perfect occasion to meet, sprints are made part of the conference program.

- Sprint session on this weekend – July 25th and 26th (free!)

#sprint-scanapi

More information
ScanAPI
Automated Integration Testing and Live Documentation for your API

- Repositories: 7
- Packages: 5
- People: 5
- Projects: 2

Pinned repositories:

- **scanapi**
  Automated Integration Testing and Live Documentation for your API
  - Python: 103
  - 13

- **examples**
  ScanAPI examples
  - HTML: 4

- **design**
  Icons and logos
  - 4

- **website**
  Website for ScanAPI testing framework.
  - CSS: 4

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Automated Integration Testing and Live Documentation for your API

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