HTTP. Як тестувати HTTP

Бутенко Сергій

План лекції

Як тестувати HTTP

Практика

◎ **Задача**

Написати тести для перевірки HTTP

Тестування HTTP

Тестування HTTP

Що перевіряти	Як перевіряти
HTTP response статус код	● Чи прийшов вам саме той статус код на який ви очікували
HTTP response тіло	● Чи вірні дані в тілі запиту
HTTP response заголовки	● Чи вірні дані в заголовках

Перевірка статус кода

Перевірка статус кода

Перевірка статус кода

◎ Перевірка статус кода

```
rootdir: /home/sbutenko/repos/LnD/Become QA Auto, configfile: pytest.ini
plugins: Faker-4.1.1, rerunfailures-9.1.1, forked-1.3.0, anyio-3.4.0, xdist-1.32.0, allure-pytest-2.8.16, html-2.1.1, metadata-1.
10.0, ordering-0.6, instafail-0.4.2
collected 7 items / 5 deselected / 2 selected

tests/api/test_http.py Response is Mind your words, they are important.
.Response Body is {'login': 'defunkt', 'id': 2, 'node_id': 'MDQ6VXNlcjI=', 'avatar_url': 'https://avatars.githubusercontent.com/u
/2?v=4', 'gravatar_id': '', 'url': 'https://api.github.com/users/defunkt', 'html_url': 'https://github.com/defunkt', 'followers_u
rl': 'https://api.github.com/users/defunkt/followers', 'following_url': 'https://api.github.com/users/defunkt/following{/other_us
er}', 'gists_url': 'https://api.github.com/users/defunkt/gists{/gist_id}', 'starred_url': 'https://api.github.com/users/defunkt/s
tarred{/owner}{/repo}', 'subscriptions_url': 'https://api.github.com/users/defunkt/subscriptions', 'organizations_url': 'https://
api.github.com/users/defunkt/orgs', 'repos_url': 'https://api.github.com/users/defunkt/repos', 'events_url': 'https://api.github.
com/users/defunkt/events{/privacy}', 'received_events_url': 'https://api.github.com/users/defunkt/received_events', 'type': 'User
', 'site_admin': False, 'name': 'Chris Wanstrath', 'company': None, 'blog': 'http://chriswanstrath.com/', 'location': None, 'emai
l': None, 'hireable': None, 'bio': '🍔', 'twitter_username': None, 'public_repos': 107, 'public_gists': 273, 'followers': 21451,
'following': 210, 'created_at': '2007-10-20T05:24:19Z', 'updated_at': '2022-06-01T23:46:26Z'}
Response Headers are {'Server': 'GitHub.com', 'Date': 'Mon, 20 Jun 2022 19:02:29 GMT', 'Content-Type': 'application/json; charset
=utf-8', 'Cache-Control': 'public, max-age=60, s-maxage=60', 'Vary': 'Accept, Accept-Encoding, Accept, X-Requested-With', 'ETag':
 'W/"a139706aa40019d7e06c9bd50ba4626e24c8d51cd1d1c01854f4c6a72ad3f612"', 'Last-Modified': 'Wed, 01 Jun 2022 23:46:26 GMT', 'X-Git
Hub-Media-Type': 'github.v3; format=json', 'Access-Control-Expose-Headers': 'ETag, Link, Location, Retry-After, X-GitHub-OTP, X-R
ateLimit-Limit, X-RateLimit-Remaining, X-RateLimit-Used, X-RateLimit-Resource, X-RateLimit-Reset, X-OAuth-Scopes, X-Accepted-OAut
h-Scopes, X-Poll-Interval, X-GitHub-Media-Type, X-GitHub-SSO, X-GitHub-Request-Id, Deprecation, Sunset', 'Access-Control-Allow-Or
igin': '*', 'Strict-Transport-Security': 'max-age=31536000; includeSubdomains; preload', 'X-Frame-Options': 'deny', 'X-Content-Ty
pe-Options': 'nosniff', 'X-XSS-Protection': '0', 'Referrer-Policy': 'origin-when-cross-origin, strict-origin-when-cross-origin',
'Content-Security-Policy': "default-src 'none'", 'Content-Encoding': 'gzip', 'X-RateLimit-Limit': '60', 'X-RateLimit-Remaining':
'40', 'X-RateLimit-Reset': '1655752270', 'X-RateLimit-Resource': 'core', 'X-RateLimit-Used': '20', 'Accept-Ranges': 'bytes', 'Con
tent-Length': '484', 'X-GitHub-Request-Id': '4EB8:4F1B:1ECBC2E:1FE54DD:62B0C445'}
.
=========================================== 2 passed, 5 deselected in 0.68s ===========================================
```

Перевірка тіла ріспонсу

rootdir: /home/sbutenko/repos/LnD/Become QA Auto, configfile: pytest.ini
plugins: Faker-4.1.1, rerunfailures-9.1.1, forked-1.3.0, anyio-3.4.0, xdist-1.32.0, allure-pytest-2.8.16, html-2.1.1, metadata-1.
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/2?v=4', 'gravatar_id': '', 'url': 'https://api.github.com/users/defunkt', 'html_url': 'https://github.com/defunkt', 'followers_u
rl': 'https://api.github.com/users/defunkt/followers', 'following_url': 'https://api.github.com/users/defunkt/following{/other_us
er}', 'gists_url': 'https://api.github.com/users/defunkt/gists{/gist_id}', 'starred_url': 'https://api.github.com/users/defunkt/s
tarred{/owner}{/repo}', 'subscriptions_url': 'https://api.github.com/users/defunkt/subscriptions', 'organizations_url': 'https://
api.github.com/users/defunkt/orgs', 'repos_url': 'https://api.github.com/users/defunkt/repos', 'events_url': 'https://api.github.
com/users/defunkt/events{/privacy}', 'received_events_url': 'https://api.github.com/users/defunkt/received_events', 'type': 'User
', 'site_admin': False, 'name': 'Chris Wanstrath', 'company': None, 'blog': 'http://chriswanstrath.com/', 'location': None, 'emai
l': None, 'hireable': None, 'bio': '🍔', 'twitter_username': None, 'public_repos': 107, 'public_gists': 273, 'followers': 21451,
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ateLimit-Limit, X-RateLimit-Remaining, X-RateLimit-Used, X-RateLimit-Resource, X-RateLimit-Reset, X-OAuth-Scopes, X-Accepted-OAut
h-Scopes, X-Poll-Interval, X-GitHub-Media-Type, X-GitHub-SSO, X-GitHub-Request-Id, Deprecation, Sunset', 'Access-Control-Allow-Or
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'Content-Security-Policy': "default-src 'none'", 'Content-Encoding': 'gzip', 'X-RateLimit-Limit': '60', 'X-RateLimit-Remaining':
'40', 'X-RateLimit-Reset': '1655752270', 'X-RateLimit-Resource': 'core', 'X-RateLimit-Used': '20', 'Accept-Ranges': 'bytes', 'Con
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Перевірка тіла ріспонсу


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rl': 'https://api.github.com/users/defunkt/followers', 'following_url': 'https://api.github.com/users/defunkt/following{/other_us
er}', 'gists_url': 'https://api.github.com/users/defunkt/gists{/gist_id}', 'starred_url': 'https://api.github.com/users/defunkt/s
tarred{/owner}{/repo}', 'subscriptions_url': 'https://api.github.com/users/defunkt/subscriptions', 'organizations_url': 'https://
api.github.com/users/defunkt/orgs', 'repos_url': 'https://api.github.com/users/defunkt/repos', 'events_url': 'https://api.github.
com/users/defunkt/events{/privacy}', 'received_events_url': 'https://api.github.com/users/defunkt/received_events', 'type': 'User
', 'site_admin': False, 'name': 'Chris Wanstrath', 'company': None, 'blog': 'http://chriswanstrath.com/', 'location': None, 'emai
l': None, 'hireable': None, 'bio': 🍔, 'twitter_username': None, 'public_repos': 107, 'public_gists': 273, 'followers': 21451,
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Response Headers are {'Server': 'GitHub.com', 'Date': 'Mon, 20 Jun 2022 19:02:29 GMT', 'Content-Type': 'application/json; charset
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 'W/"a139706aa40019d7e06c9bd50ba4626e24c8d51cd1d1c01854f4c6a72ad3f612"', 'Last-Modified': 'Wed, 01 Jun 2022 23:46:26 GMT', 'X-Git
Hub-Media-Type': 'github.v3; format=json', 'Access-Control-Expose-Headers': 'ETag, Link, Location, Retry-After, X-GitHub-OTP, X-R
ateLimit-Limit, X-RateLimit-Remaining, X-RateLimit-Used, X-RateLimit-Resource, X-RateLimit-Reset, X-OAuth-Scopes, X-Accepted-OAut
h-Scopes, X-Poll-Interval, X-GitHub-Media-Type, X-GitHub-SSO, X-GitHub-Request-Id, Deprecation, Sunset', 'Access-Control-Allow-Or
igin': '*', 'Strict-Transport-Security': 'max-age=31536000; includeSubdomains; preload', 'X-Frame-Options': 'deny', 'X-Content-Ty
pe-Options': 'nosniff', 'X-XSS-Protection': '0', 'Referrer-Policy': 'origin-when-cross-origin, strict-origin-when-cross-origin',
'Content-Security-Policy': "default-src 'none'", 'Content-Encoding': 'gzip', 'X-RateLimit-Limit': '60', 'X-RateLimit-Remaining':
'40', 'X-RateLimit-Reset': '1655752270', 'X-RateLimit-Resource': 'core', 'X-RateLimit-Used': '20', 'Accept-Ranges': 'bytes', 'Con
tent-Length': '484', 'X-GitHub-Request-Id': '4EB8:4F1B:1ECBC2E:1FE54DD:62B0C445'}
.

================= 2 passed, 5 deselected in 0.68s =================
```
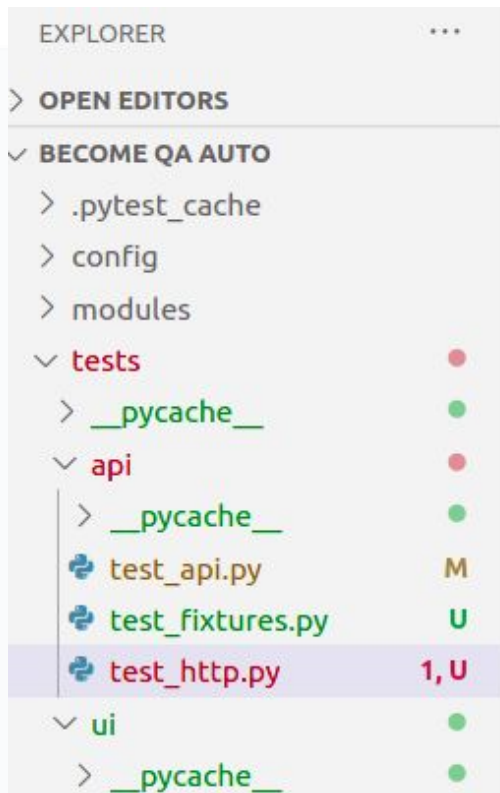
◎ **Перевірка тіла ріспонсу**

```
EXPLORER                          ···
> OPEN EDITORS
∨ BECOME QA AUTO
  > .pytest_cache
  > config
  > modules
  ∨ tests                            ●
    > __pycache__                    ●
    ∨ api                            ●
      > __pycache__                  ●
      🐍 test_api.py               M
      🐍 test_fixtures.py          U
      🐍 test_http.py             1, U
  ∨ ui                               ●
    > __pycache__                    ●
```

🐍 test_http.py ✕   ≡ pytest.ini

tests > api > 🐍 test_http.py > ◈ test_second_request

```python
 1  import pytest
 2  import requests
 3
 4
 5  @pytest.mark.http
 6  def test_first_request():
 7      r = requests.get('https://api.github.com/zen')
 8      print(f"Response is {r.text}")
 9
10  @pytest.mark.http
11  def test_second_request():
12      r = requests.get('https://api.github.com/users/defunkt')
13      print(f"Response Body is {r.json()}")
14      assert r.status_code == 200
15      print(f"Response Headers are {r.headers}")
```

Перевірка тіла ріспонсу

EXPLORER   ···

> OPEN EDITORS
∨ BECOME QA AUTO
   > .pytest_cache
   > config
   > modules
   ∨ tests   ●
     > __pycache__   ●
     ∨ api   ●
       > __pycache__   ●
       🐍 test_api.py   M
       🐍 test_fixtures.py   U
       🐍 test_http.py   1, U
   ∨ ui   ●
     > __pycache__   ●
     🐍 test_ui.py
   🐍 conftest.py   U

🐍 test_http.py ✕   ≡ pytest.ini

tests > api > 🐍 test_http.py > ...

```python
1    import pytest
2    import requests
3
4
5    @pytest.mark.http
6    def test_first_request():
7        r = requests.get('https://api.github.com/zen')
8        print(f"Response is {r.text}")
9
10   @pytest.mark.http
11   def test_second_request():
12       r = requests.get('https://api.github.com/users/defunkt')
13       body = r.json()
14
15       assert body['name'] == 'Chris Wanstrath'
16       assert r.status_code == 200
17       print(f"Response Headers are {r.headers}")
```

◎ **Перевірка тіла ріспонсу**

```
→ Become QA Auto git:(master) ✗ pytest -m http -s
========================================= test session starts =========================================
platform linux -- Python 3.8.10, pytest-7.1.2, pluggy-0.13.1
rootdir: /home/sbutenko/repos/LnD/Become QA Auto, configfile: pytest.ini
plugins: Faker-4.1.1, rerunfailures-9.1.1, forked-1.3.0, anyio-3.4.0, xdist-1.32.0, allure-pytest-2.8.16, html-2.1.1, metadata-1.
10.0, ordering-0.6, instafail-0.4.2
collected 7 items / 5 deselected / 2 selected

tests/api/test_http.py Response is Responsive is better than fast.
.Response Headers are {'Server': 'GitHub.com', 'Date': 'Mon, 20 Jun 2022 19:19:14 GMT', 'Content-Type': 'application/json; charse
t=utf-8', 'Cache-Control': 'public, max-age=60, s-maxage=60', 'Vary': 'Accept, Accept-Encoding, Accept, X-Requested-With', 'ETag'
: 'W/"a139706aa40019d7e06c9bd50ba4626e24c8d51cd1d1c01854f4c6a72ad3f612"', 'Last-Modified': 'Wed, 01 Jun 2022 23:46:26 GMT', 'X-Gi
tHub-Media-Type': 'github.v3; format=json', 'Access-Control-Expose-Headers': 'ETag, Link, Location, Retry-After, X-GitHub-OTP, X-
RateLimit-Limit, X-RateLimit-Remaining, X-RateLimit-Used, X-RateLimit-Resource, X-RateLimit-Reset, X-OAuth-Scopes, X-Accepted-OAu
th-Scopes, X-Poll-Interval, X-GitHub-Media-Type, X-GitHub-SSO, X-GitHub-Request-Id, Deprecation, Sunset', 'Access-Control-Allow-O
rigin': '*', 'Strict-Transport-Security': 'max-age=31536000; includeSubdomains; preload', 'X-Frame-Options': 'deny', 'X-Content-T
ype-Options': 'nosniff', 'X-XSS-Protection': '0', 'Referrer-Policy': 'origin-when-cross-origin, strict-origin-when-cross-origin',
'Content-Security-Policy': "default-src 'none'", 'Content-Encoding': 'gzip', 'X-RateLimit-Limit': '60', 'X-RateLimit-Remaining':
'55', 'X-RateLimit-Reset': '1655756230', 'X-RateLimit-Resource': 'core', 'X-RateLimit-Used': '5', 'Accept-Ranges': 'bytes', 'Con
tent-Length': '484', 'X-GitHub-Request-Id': '7097:0C89:1EF6AEB:1FB5898:62B0C832'}
.
========================================= 2 passed, 5 deselected in 0.74s =========================================
```

Перевірка заголовків ріспонсу

EXPLORER   ...

> OPEN EDITORS

∨ BECOME QA AUTO

> .pytest_cache
> config
> modules
∨ tests   ●
  > __pycache__   ●
  ∨ api   ●
    > __pycache__   ●
    🐍 test_api.py   M
    🐍 test_fixtures.py   U
    🐍 test_http.py   1, U
  ∨ ui   ●
    > __pycache__   ●
    🐍 test_ui.py
🐍 conftest.py   U

🐍 test_http.py ✕   ≡ pytest.ini

tests > api > 🐍 test_http.py > ...

```python
1   import pytest
2   import requests
3
4
5   @pytest.mark.http
6   def test_first_request():
7       r = requests.get('https://api.github.com/zen')
8       print(f"Response is {r.text}")
9
10  @pytest.mark.http
11  def test_second_request():
12      r = requests.get('https://api.github.com/users/defunkt')
13      body = r.json()
14
15      assert body['name'] == 'Chris Wanstrath'
16      assert r.status_code == 200
17      print(f"Response Headers are {r.headers}")
```

Перевірка заголовків ріспонсу

test_http.py ✕   pytest.ini

tests > api > 🐍 test_http.py > ...

```python
import pytest
import requests


@pytest.mark.http
def test_first_request():
    r = requests.get('https://api.github.com/zen')
    print(f"Response is {r.text}")


@pytest.mark.http
def test_second_request():
    r = requests.get('https://api.github.com/users/defunkt')
    body = r.json()
    headers = r.headers

    assert body['name'] == 'Chris Wanstrath'
    assert r.status_code == 200
    assert headers['Server'] == 'GitHub.com'
```

◎ Перевірка тіла ріспонсу

Перевірка тіла ріспонсу

◎ **Негативний тест**

test_http.py ✕   ≡ pytest.ini

tests > api > 🐍 test_http.py > 🔷 test_status_code_request

```
 8          print(f"Response is {r.text}")
 9
10    @pytest.mark.http
11    def test_second_request():
12        r = requests.get('https://api.github.com/users/defunkt')
13        body = r.json()
14        headers = r.headers
15
16        assert body['name'] == 'Chris Wanstrath'
17        assert r.status_code == 200
18        assert headers['Server'] == 'GitHub.com'
19
20
21    @pytest.mark.http
22    def test_status_code_request():
23        r = requests.get('https://api.github.com/users/sergii_butenko')
24
25        assert r.status_code == 200
```

EXPLORER

- OPEN EDITORS
- BECOME QA AUTO
  - .pytest_cache
  - config
  - modules
  - tests ●
    - __pycache__ ●
    - api ●
      - __pycache__ ●
      - test_api.py   M
      - test_fixtures.py   U
      - test_http.py   1, U
    - ui ●
      - __pycache__ ●
      - test_ui.py
  - conftest.py   U
  - pytest.ini   U

◎ Негативний тест


```
→ Become QA Auto git:(master) ✗ pytest -m http -s
================================ test session starts ================================
platform linux -- Python 3.8.10, pytest-7.1.2, pluggy-0.13.1
rootdir: /home/sbutenko/repos/LnD/Become QA Auto, configfile: pytest.ini
plugins: Faker-4.1.1, rerunfailures-9.1.1, forked-1.3.0, anyio-3.4.0, xdist-1.32.0, a
llure-pytest-2.8.16, html-2.1.1, metadata-1.10.0, ordering-0.6, instafail-0.4.2
collected 8 items / 5 deselected / 3 selected

tests/api/test_http.py Response is It's not fully shipped until it's fast.
..F


================================== FAILURES ==================================
_____ test_status_code_request _____

    @pytest.mark.http
    def test_status_code_request():
        r = requests.get('https://api.github.com/users/sergii_butenko')

>       assert r.status_code == 200
E       assert 404 == 200
E        +  where 404 = <Response [404]>.status_code

tests/api/test_http.py:25: AssertionError
=========================== short test summary info ===========================
FAILED tests/api/test_http.py::test_status_code_request - assert 404 == 200
======================= 1 failed, 2 passed, 5 deselected in 1.12s =======================
```

20

Негативний тест


```
EXPLORER                          test_http.py  ×        ≡ pytest.ini

> OPEN EDITORS                    tests > api > 🐍 test_http.py > ...

∨ BECOME QA AUTO                    8        print(f"Response is {r.text}")
  > .pytest_cache                   9
  > config                         10   @pytest.mark.http
  > modules                        11   def test_second_request():
  ∨ tests                     ●    12       r = requests.get('https://api.github.com/users/defunkt')
    > __pycache__              ●    13       body = r.json()
    ∨ api                      ●    14       headers = r.headers
      > __pycache__            ●    15
      🐍 test_api.py           M    16       assert body['name'] == 'Chris Wanstrath'
      🐍 test_fixtures.py      U    17       assert r.status_code == 200
      🐍 test_http.py        1, U   18       assert headers['Server'] == 'GitHub.com'
    ∨ ui                      ●    19
      > __pycache__            ●    20
      🐍 test_ui.py                 21   @pytest.mark.http
    🐍 conftest.py            U    22   def test_status_code_request():
    ≡ pytest.ini              U    23       r = requests.get('https://api.github.com/users/sergii_butenko')
                                   24
                                   25       assert r.status code == 404
```

◎ Негативний тест

```
→ Become QA Auto git:(master) ✗ pytest -m http -s
============================= test session starts ==============================
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llure-pytest-2.8.16, html-2.1.1, metadata-1.10.0, ordering-0.6, instafail-0.4.2
collected 8 items / 5 deselected / 3 selected

tests/api/test_http.py Response is It's not fully shipped until it's fast.
...

========================= 3 passed, 5 deselected in 1.49s =========================
```

Підсумки

Навчилися:

- ✓ **Тестувати** статус код

- ✓ **Тестувати** тіло ріспонса

- ✓ **Тестувати** заголовки