Веб-приложение Flask.

Веб приложение представляет из себя программу, ведущую учёт пользователей. Сервер принимает запросы с любого клиента, если они имеют структуру запроса HTTP. Сервер принимает 3 типа запросов: get, put, delete.

Для демонстрации работы программы в скрипте «test.py», в котором для быстрого формирования запроса использована библиотека request:

```
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployme
nt.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on all addresses.
   WARNING: This is a development server. Do not use it in a production deployme
nt.
 * Running on http://10.0.2.15:8080/ (Press CTRL+C to quit)
127.0.0.1 - - [07/Dec/2021 23:01:20] "PUT /user/boca HTTP/1.1" 201 -
127.0.0.1 - - [07/Dec/2021 23:01:20] "PUT /user/joca HTTP/1.1" 201 -
127.0.0.1 - - [07/Dec/2021 23:01:20] "PUT /user/boca HTTP/1.1" 409 -
127.0.0.1 - - [07/Dec/2021 23:01:20] "GET /user/boca HTTP/1.1" 200 -
127.0.0.1 - - [07/Dec/2021 23:01:20] "DELETE /user/joca HTTP/1.1" 204 -
127.0.0.1 - - [07/Dec/2021 23:01:20] "GET /user/joca HTTP/1.1" 404 -
```

```
 * Environment: production
   WARNING: This is a development server. Do not use it in a production dep
nt.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on all addresses.
   WARNING: This is a development server. Do not use it in a production dep
nt.
 * Running on http://10.0.2.15:8080/ (Press CTRL+C to quit)
127.0.0.1 - - [07/Dec/2021 22:36:09] "PUT /user/boca HTTP/1.1" 409 -
127.0.0.1 - - [07/Dec/2021 22:36:09] "PUT /user/joca HTTP/1.1" 201 -
127.0.0.1 - - [07/Dec/2021 22:36:09] "PUT /user/boca HTTP/1.1" 409 -
127.0.0.1 - - [07/Dec/2021 22:36:09] "GET /user/boca HTTP/1.1" 200 -
127.0.0.1 - - [07/Dec/2021 22:36:09] "DELETE /user/joca HTTP/1.1" 204 -
127.0.0.1 - - [07/Dec/2021 22:36:09] "GET /user/joca HTTP/1.1" 404 -
```

При хосте приложения на сервере Apache2 структура запросов и ответов не меняется.
При попытке запустить тест или сделать запрос без файла-хранилища данных пользователей, находящегося в одном репозитории с приложением, будет выведен ответ в виде «Internal server error»:

```
Traceback (most recent call last):
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1516,
in full_dispatch_request
    rv = self.dispatch_request()
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1502,
in dispatch_request
    return self.ensure_sync(self.view_functions[rule.endpoint])(**req.view_args)
  File "/home/boca/.local/lib/python3.8/site-packages/flask_restful/__init__.py"
, line 467, in wrapper
    resp = resource(*args, **kwargs)
  File "/home/boca/.local/lib/python3.8/site-packages/flask/views.py", line 84,
in view
    return current_app.ensure_sync(self.dispatch_request)(*args, **kwargs)
  File "/home/boca/.local/lib/python3.8/site-packages/flask_restful/__init__.py"
, line 582, in dispatch_request
    resp = meth(*args, **kwargs)
  File "app.py", line 43, in put
    abort_if_username_exists(username)
  File "app.py", line 22, in abort_if_username_exists
    if username in users:
  File "/home/boca/flask_app/users_storage.py", line 26, in __contains__
    return item in self._load()
  File "/home/boca/flask_app/users_storage.py", line 37, in _load
    return json.load(file)
  File "/usr/lib/python3.8/json/__init__.py", line 293, in load
    return loads(fp.read(),
  File "/usr/lib/python3.8/json/__init__.py", line 357, in loads
    return _default_decoder.decode(s)
  File "/usr/lib/python3.8/json/decoder.py", line 337, in decode
    obj, end = self.raw_decode(s, idx=_w(s, 0).end())
  File "/usr/lib/python3.8/json/decoder.py", line 355, in raw_decode
    raise JSONDecodeError("Expecting value", s, err.value) from None
json.decoder.JSONDecodeError: Expecting value: line 1 column 1 (char 0)
127.0.0.1 - - [07/Dec/2021 22:54:01] "PUT /user/boca HTTP/1.1" 500 -
[2021-12-07 22:54:02,026] ERROR in app: Exception on /user/joca [PUT]
Traceback (most recent call last):
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1516,
in full_dispatch_request
    rv = self.dispatch_request()
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1502,
in dispatch_request
    return self.ensure_sync(self.view_functions[rule.endpoint])(**req.view_args)
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  File "/usr/lib/python3.8/json/__init__.py", line 293, in load
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  File "/usr/lib/python3.8/json/decoder.py", line 337, in decode
    obj, end = self.raw_decode(s, idx=_w(s, 0).end())
  File "/usr/lib/python3.8/json/decoder.py", line 355, in raw_decode
    raise JSONDecodeError("Expecting value", s, err.value) from None
json.decoder.JSONDecodeError: Expecting value: line 1 column 1 (char 0)
127.0.0.1 - - [07/Dec/2021 22:54:02] "PUT /user/joca HTTP/1.1" 500 -
[2021-12-07 22:54:02,045] ERROR in app: Exception on /user/boca [PUT]
Traceback (most recent call last):
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1516,
in full_dispatch_request
    rv = self.dispatch_request()
  File "/home/boca/.local/lib/python3.8/site-packages/flask/app.py", line 1502,
in dispatch_request
    return self.ensure_sync(self.view_functions[rule.endpoint])(**req.view_args)
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