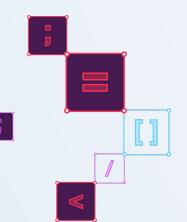


# Leave the past behind: focus on new code.

Managing the quality of your project



**EuroPython 2022** 

13.07.2022





#### **Andrea GUARINO**

- Software Developer @ 59nar
- Static analyzer for Python

## **Agenda**

- Problems and challenges using code quality tools
- How to make sure the new code is clean?
  - What do we mean by "new code"?
  - Techniques to focus on new code

### Static analysis

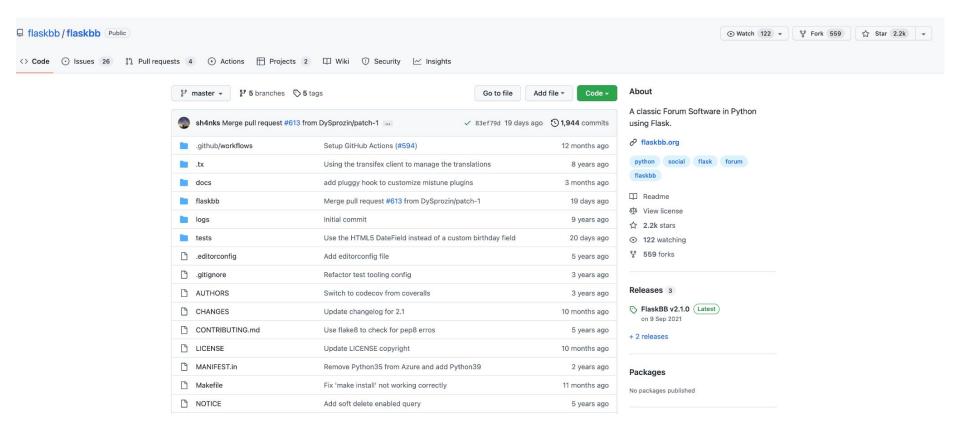
Analysing code without executing it

It helps developers writing clean code

- Maintainable
- Correct
- Secure

```
elif isinstance(current_val, tuple) and isinstance(
200
         new_val, (list, tuple)
201
202
         options[key] = list(current_val).extend(new_val)
203
     elif isinstance(current_val, dict) and isinstance(new_val, dict):
204
         current val.update(new val)
205
```

#### FlaskBB ~ 20K Lines of code



```
run:
           pylint flaskbb
23
```

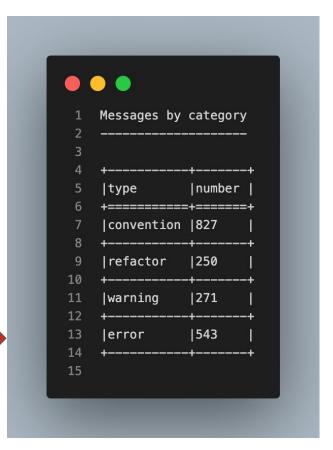
## First analysis with Pylint... 1891 messages (for ~20K Lines of code)

```
flaskbb git:(master) pylint flaskbb
```

#### Challenges of traditional approaches

Risk of functional regression

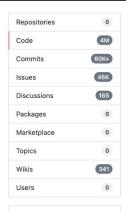
Where to find the budget?



#### Developer pushback

- Not my code
- Too many issues
- Boring!

```
# pylintrc
[MESSAGES CONTROL]
# Disable all to choose the Tests one by one
disable=all
enable=bad-indentation,
                           # Used when an unexpected number of indentation's tabulations or spaces has been found.
       mixed-indentation,
                             # Used when there are some mixed tabs and spaces in a module.
       unnecessary-semicolon, # Used when a statement is ended by a semi-colon (";"), which isn't necessary.
       unused-variable
                             # Used when a variable is defined but not used. (Use _var to ignore var).
[REPORTS]
# Activate the evaluation score.
score=no
```



#### Languages Markdown 10,686 HTML 37.487 Makefile 7,215 YAML 7,775 24,751 Jupyter Notebook TOML 6,168 4,010,510 Python Text 10,433 **JSON** 8.136 Shell 5,395

Advanced search Cheat sheet

#### 4,010,510 code results

#### mteyazking/Dark-cobra userbot/plugins/night.py

```
7 from userbot.utils import admin_cmd
8 from userbot import ALIVE_NAME
9
10 global USER_night # pylint:disable=E0602
11 global night_time # pylint:disable=E0602
12 global last_night_message # pylint:disable=E0602
13 USER_night = {}
14 night_time = None

Python Showing the top five matches Last indexed on 11 Jun 2021
```

Sort: Best match ▼

#### ImTheekshana126/X-tra-Telegramuserbot/plugins/afk.py

#### mteyazking/Dark-cobra

#### userbot/plugins/afk.py

```
from userbot.utils import admin_cmd

13

14

15

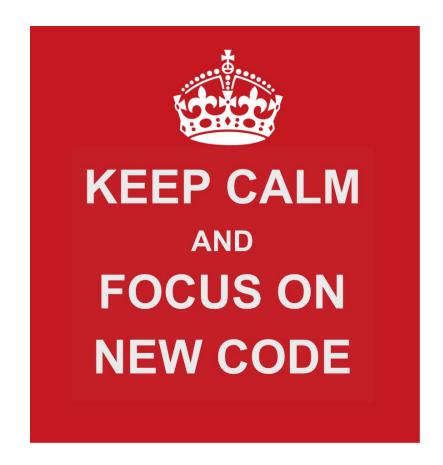
16

17
```

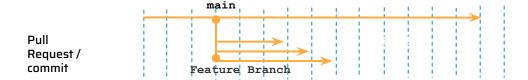
## What about coverage?



#### Where to start?



#### But... what's the new code?







## **Pull Request**

```
†
             @@ -174,3 +174,24 @@ def write_config(config, config_template, config_path):
174
      174
                    cfg_file.write(
175
                        config_template.render(**config).encode("utf-8")
      175
176
      176
      177 +
      178 +
      179
          + def quick_sort(array):
      180 +
                if array is None:
                    ValueError("Input array shouldn't be None")
      181 +
      182 +
                less = []
      183 +
                equal = []
      184 +
                greater = []
      185 +
                if len(array) > 1:
      186 +
      187 +
                    pivot = array[0]
      188 +
                    for x in array:
      189 +
                        if x < pivot:</pre>
      190 +
                           less.append(x)
      191 +
                        elif x == pivot:
      192 +
                           equal.append(x)
      193 +
                        elif x > pivot:
      194 +
                           greater.append(x)
      195 +
                    return quick_sort(less) + equal + quick_sort(greater)
      196 +
                 else:
      197 +
                    return array
```

```
1433 flaskBB/cli/utils.py:179:0: C0116: Missing function or method docstring (missing-function-docstring)
1434 flaskBB/cli/utils.py:186:4: R1705: Unnecessary "else" after "return" (no-else-return)
1435 flaskBB/cli/utils.py:188:12: C0103: Variable name "x" doesn't conform to snake_case naming style (invalid-name)
      ********* Module flaskBB.cli.main
```

#### 1st step: analyze only changed files

```
pylint $(git diff --name-only origin/master origin/$current_branch)
```

19 flaskbb/cli/utils.py:179:0: C0116: Missing function or method docstring (missing-function-docstring) 20 flaskbb/cli/utils.py:186:4: R1705: Unnecessary "else" after "return" (no-else-return)

21 flaskbb/cli/utils.py:188:12: C0103: Variable name "x" doesn't conform to snake\_case naming style (invalid-name)

## "Clean as you code" methodology

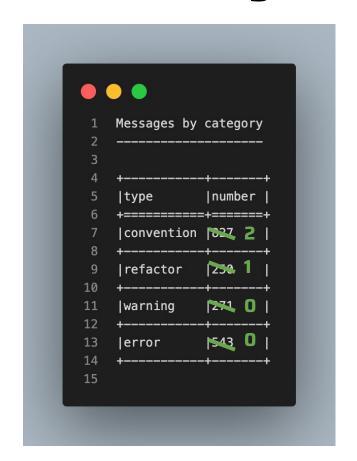
Quality measured only on recent changes.

- . Focus on new code (lines, not files)
- . Focus on metrics relative to new code

## With "Clean as you code"

Risk of functional regression

Where to find budget?





## 2nd step: report only on changed lines

#### Darker

```
    name: Analysing the code with pylint

45
      run:
46
        darker -- revision master -- check -- lint pylint flaskbb
```

### 2nd step: report only on changed lines

#### **Darker**

```
→ flaskbb git:(add-new-feature) × darker --revision master --check --lint pylint flaskbb

flaskbb/cli/utils.py:179:0: C0116: Missing function or method docstring (missing-function-docstring)

flaskbb/cli/utils.py:186:4: R1705: Unnecessary "else" after "return" (no-else-return)

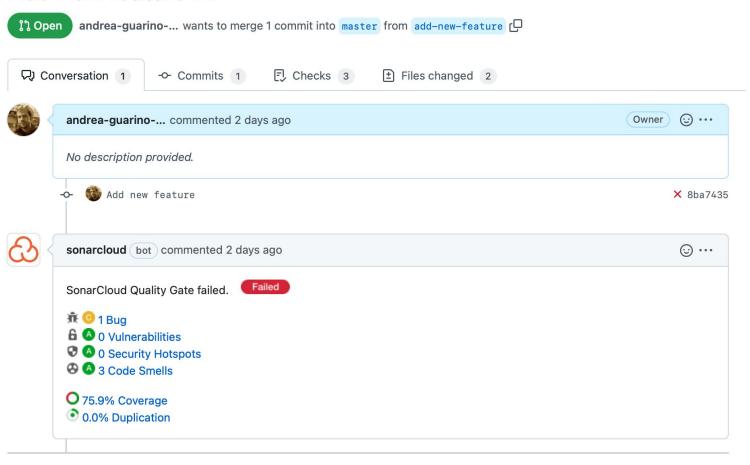
flaskbb/cli/utils.py:188:12: C0103: Variable name "x" doesn't conform to snake_case naming style (invalid-name)
```

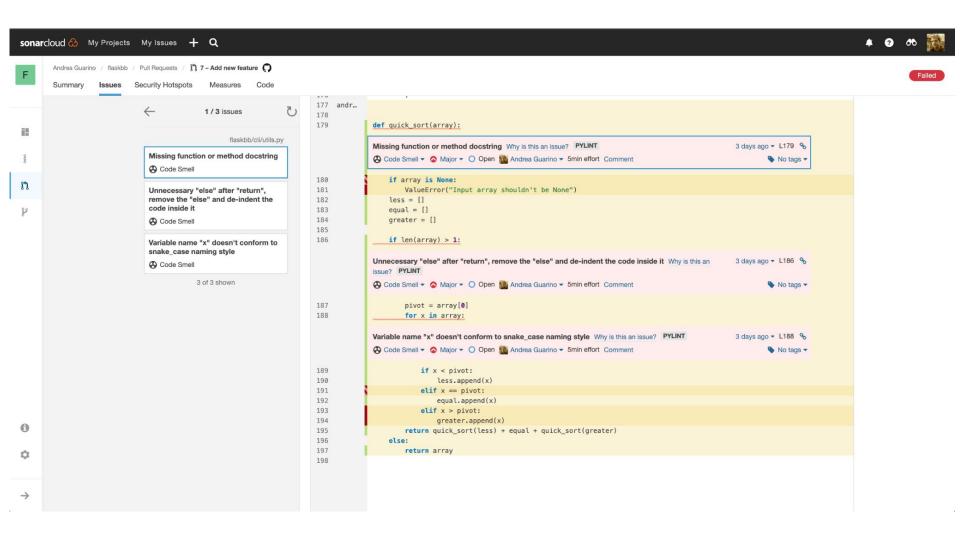
## 2nd step: report only on changed lines

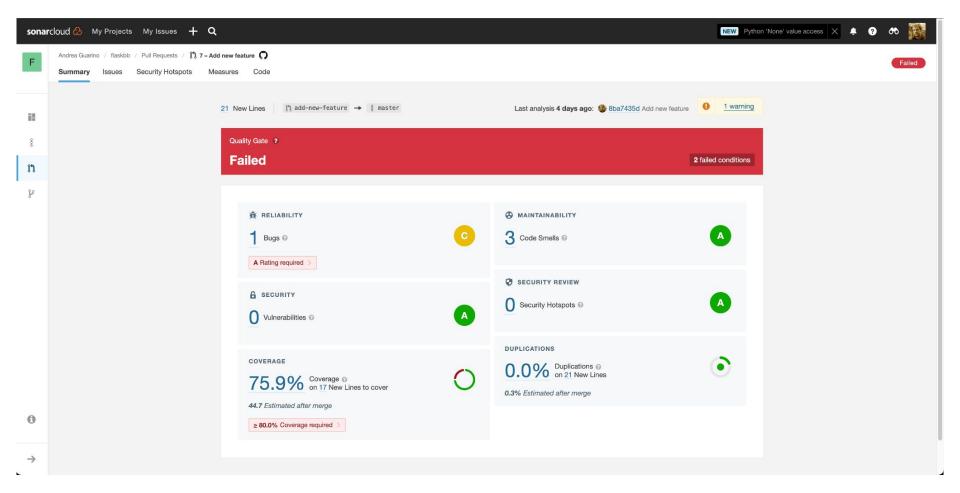
#### Sonar

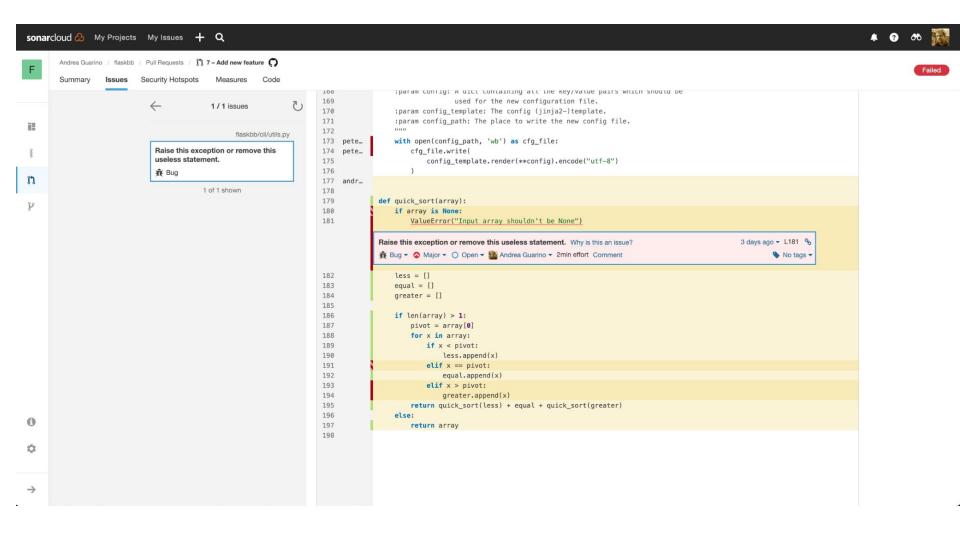
```
pylint flaskbb --exit-zero --output-format=parseable > pylint-report.txt
46
    - name: SonarCloud Scan
48
      uses: SonarSource/sonarcloud-github-action@master
```

#### Add new feature #7

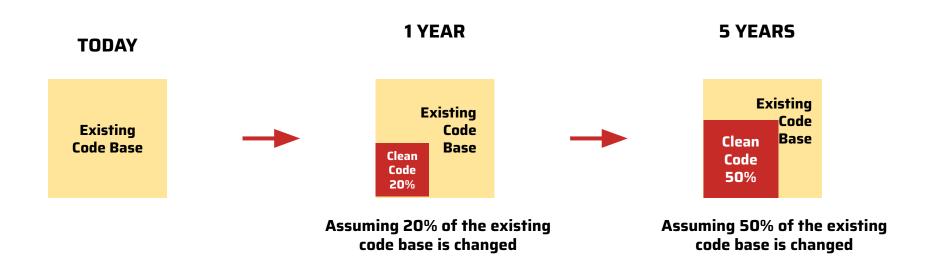








## Cleaning up the old code



#### **Conclusion**

- Code quality on old code
- Clean as you code
  - Using "git diff"
  - Using tools like Darker or Sonar
- Cleaning up incrementally the existing code base

# Questions?

