HW 05 - Static Code Analysis

Jiayin Huang 10477088

The objective of this assignment is to apply the techniques from the lecture to static testing of your Triangles program.    Specifically:

* You will run a static code analyzer on your code, e.g. Pylint, identify and fix any problems reported by the static code analyzer;
* You will run a code coverage tool on your code, e.g. Coverage.py, and extend your test cases to demonstrate at least 80% code coverage;

In this assignment, you will need to download and install the tools that you will need for static code analysis and code coverage.  You will then run those tools locally on your laptop to get the results.

Any changes that you make to your programs should be pushed up to GitHub.

Deliverables:

Submit a report with the following information :

1. The GitHub URL containing the code that was analyzed
2. The name and output of the static code analyzer tool you used;
3. The name and output of the code coverage tool you used;
4. Identify both your original test cases and new test cases that you created to achieve at least 80% code coverage.
5. Attach screen shots of the output of the static code analyzer as well as code coverage.  You should show a screen shot of the analysis results both before and after any changes that you make to your programs:
   1. Static code analysis report on original program
   2. Code coverage report before any changes to the program
   3. Static code analysis report after you have made changes to eliminate issues
   4. Code coverage after any changes to the programs (coverage should be > 80%)

As always, start with a summary at the top, and follow with more detailed results.

You'll find a nice tutorial on Pylint at [https://www.blog.pythonlibrary.org/2012/06/12/pylint-analyzing-python-code/Links to an external site.](https://www.blog.pythonlibrary.org/2012/06/12/pylint-analyzing-python-code/) or many IDEs run Pylint automatically, e.g. VS Code and PyCharm both run Pylint on your code and display errors in the code window.

You'll find a nice tutorial on Coverage.py at [https://www.blog.pythonlibrary.org/2016/07/20/an-intro-to-coverage-py/Links to an external site.](https://www.blog.pythonlibrary.org/2016/07/20/an-intro-to-coverage-py/)   The idea is that coverage is a standalone program that analyzes your code and generates a nice HTML report that you can submit as part of your homework submission.

Results:

There’s some C(convention) and W(warning) in my original Triangle program, but no R(refactor) or E(error). After I modified my code style based on the Pylint report, my program looks nicer. The coverage for my original program total is 96%, 88% of Triangle.py and 100% of TestTriangle.py. After adding two more test cases based on the report of coverage, both of my Triangle.py and TestTriangle.py coverage increased to 100%.

Add two more test cases to cover every condition:

1. if not(isinstance(a,int) and isinstance(b,int) and isinstance(c,int)):

return 'InvalidInput'*;*

test case: def test\_Greater\_200(self):

self.assertEqual(classifyTriangle(230,7,18),'InvalidInput','230,7,18 is greater than 200')

1. if a > 200 or b > 200 or c > 200:

return 'InvalidInput'

test case: def test\_Not\_Int(self):

self.assertEqual(classifyTriangle('a','b','c'),'InvalidInput','a,b,c is not legal triangle')

I used Pylint to run a static code analyzer on my Triangle program.

Output: Before changes:

Text

Description automatically generated

After changes:

Graphical user interface, text

Description automatically generated

I used Coverage to run a code coverage tool on my program:

Output:

Before changes:

Text

Description automatically generated

Text

Description automatically generated

After changes:

Text

Description automatically generated

Text

Description automatically generated