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SSW 567

HW 05 - Static Code Analysis

Summary:

The changes made to the original program after running the code analyzer PyLint. Added one more comment to the program made the code more readable and executable, eradicating all the unnecessary indentation, spaces, variables, and method renaming. Once this was done the code quality reached 8.12 out of 10.

For Code Coverage, No changes in the test code since coverage with old cases was 98%, as all testcases were initially written with code coverage and branch coverage perspective.

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1. The GitHub URL of this code which is analyzed is:

https://github.com/sabudanakichdi/ssw567_hw_software_eng_test/tree/main/HW05%20Static%20Code%20Analysis

2. The name and output of the static code analyzer tool you used:

- The tool used for static code analyzer is Pylint
- Output in Page 2

3. The name and output of the code coverage tool you used:

- The tool used for code coverage is Coverage
- Output in Page 5

4. Identify both your original test cases and new test cases that you created to achieve at least 80% code coverage.

- As a part of the initial request our aim was to make the code 100%, we fixed our code to more than 80% efficiency and post that when we ran the test cases against the new code and was able to achieve coverage of more than 80%. We achieved an efficiency of 98%. I tested the program with a lot of test cases in the Assignment and there was no need to add more test cases. The thing that worked for me was to make the correction to code and post that everything was working well.

5. Attach screen shots of the output of the static code analyzer as well as code coverage. You should show a screenshot of the analysis results both before and after any changes that you make to your programs:

- I have attached the screenshot of the static code analysis and code coverage in below pages.

Static Code Analyzer Output:

Initial Output (Before making the changes to code):

```
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis> pylint Triangle.py
************* Module Triangle
Triangle.py:14:91: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:15:19: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:16:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:19:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:26:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:30:43: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:34:0: W0301: Unnecessary semicolon (unnecessary-semicolon)
Triangle.py:39:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:42:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:43:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:44:59: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:50:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:51:47: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:54:0: C0301: Line too long (123/100) (line-too-long)
Triangle.py:1:0: C0103: Module name "Triangle" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:0: C0103: Function name "classifyTriangle" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:21: C0103: Argument name "a" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:23: C0103: Argument name "b" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:25: C0103: Argument name "c" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:52:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
Triangle.py:12:0: R0911: Too many return statements (8/6) (too-many-return-statements)

-----------------------------------
Your code has been rated at 0.00/10
```

Pylint Report:

```
Report
======
16 statements analysed.

Statistics by type
------------------

+---------+-------+-----------+-----------+------------+---------+
|type     |number |old number |difference |%documented |%badname |
+=========+=======+===========+===========+============+=========+
|module   |1      |1          |=          |100.00      |100.00   |
+---------+-------+-----------+-----------+------------+---------+
|class    |0      |NC         |NC         |0           |0        |
+---------+-------+-----------+-----------+------------+---------+
|method   |0      |NC         |NC         |0           |0        |
+---------+-------+-----------+-----------+------------+---------+
|function |1      |1          |=          |100.00      |100.00   |
+---------+-------+-----------+-----------+------------+---------+



61 lines have been analyzed

Raw metrics
-----------

+----------+-------+------+---------+-----------+
|type      |number |%     |previous |difference |
+==========+=======+======+=========+===========+
|code      |19     |31.15 |NC       |NC         |
+----------+-------+------+---------+-----------+
|docstring |25     |40.98 |NC       |NC         |
+----------+-------+------+---------+-----------+
|comment   |10     |16.39 |NC       |NC         |
+----------+-------+------+---------+-----------+
|empty     |7      |11.48 |NC       |NC         |
+----------+-------+------+---------+-----------+
```

```
Duplication
-----------

+-------------------------+------+---------+-----------+
|                         |now   |previous |difference |
+=========================+======+=========+===========+
|nb duplicated lines      |0     |0        |0          |
+-------------------------+------+---------+-----------+
|percent duplicated lines |0.000 |0.000    |=          |
+-------------------------+------+---------+-----------+



Messages by category
--------------------

+-----------+-------+---------+-----------+
|type       |number |previous |difference |
+===========+=======+=========+===========+
|convention |18     |18       |18         |
+-----------+-------+---------+-----------+
|refactor   |2      |2        |2          |
+-----------+-------+---------+-----------+
|warning    |1      |1        |1          |
+-----------+-------+---------+-----------+
|error      |0      |0        |0          |
+-----------+-------+---------+-----------+



Messages
--------
```

```
+---------------------------+------------+
|message id                 |occurrences |
+===========================+============+
|trailing-whitespace        |12          |
+---------------------------+------------+
|invalid-name               |5           |
+---------------------------+------------+
|unnecessary-semicolon      |1           |
+---------------------------+------------+
|too-many-return-statements |1           |
+---------------------------+------------+
|no-else-return             |1           |
+---------------------------+------------+
|line-too-long              |1           |
+---------------------------+------------+




--------------------------------------------------------------------
Your code has been rated at 0.00/10 (previous run: 0.00/10, +0.00)
```

Changes Done After PyLint report:

- Removed unnecessary comments
- Removed Multiple Trailing Whitespaces
- Changed Function name "classifyTriangle" to “classify_triangle” to conform to snake_case naming style
- Resolved Lines too long issue
- Replaced all Argument name to match snake_case naming style. Replaced argument “a” with “side_1”, argument “b” with “side_2” and argument “c” with "side_3”
- Added comment (Method Docstring) to function classify_triangle
- Changed “elif” condition to “if” condition due to unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)

```
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis> pylint --reports=y Triangle.py
************* Module Triangle
Triangle.py:1:0: C0103: Module name "Triangle" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:8:0: R0911: Too many return statements (8/6) (too-many-return-statements)


Report
======
16 statements analysed.
```

```
Messages
--------

+---------------------------+------------+
|message id                 |occurrences |
+===========================+============+
|too-many-return-statements |1           |
+---------------------------+------------+
|invalid-name               |1           |
+---------------------------+------------+




--------------------------------------------------------------------
Your code has been rated at 8.75/10 (previous run: 8.12/10, +0.62)
```

After Changes the Code rating increased from 0.00/10 to 8.12/10

Code Coverage Reports

Initial Code Coverage: 98%

No changes in the test code since coverage with old cases was 98%, as all testcases were written with code coverage and branch coverage perspective.

```
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis> pip install coverage
Collecting coverage
  Downloading coverage-6.5.0-cp310-cp310-win_amd64.whl (188 kB)
     ---------------------------------------- 188.5/188.5 kB 3.8 MB/s eta 0:00:00
Installing collected packages: coverage
Successfully installed coverage-6.5.0
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis> coverage run TestTriangle.py
Running unit tests
Case passed: 1,1,1 should be equilateral
.Case passed: 2,1,2 should be isoceles triangle
.Case passed: 3,4,5 is a Right triangle
.Case passed: 5,3,4 is a Right triangle
.Case passed: 3,1,5 should not be scalene triangle
.Case passed: -1,1,1 should not be triangle
.Case passed: All input should be numeric
.Case passed: 201,201,1 should not be triangle
.
----------------------------------------------------------------------
Ran 8 tests in 0.005s

OK
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis> coverage report -m
Name              Stmts   Miss  Cover   Missing
-----------------------------------------------
TestTriangle.py      31      0   100%
Triangle.py          17      1    94%   29
-----------------------------------------------
TOTAL                48      1    98%
PS C:\Users\chauh\Documents\SSW 567\ssw567_hw_software_eng_test\HW05 Static Code Analysis>
```