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**Course:** SSW–567

# HW05: Static Code Analysis

**Summary:**
The changes made to the original program after running the code analyzer and adding one more comment to the program made the code more readable and executable eradicating all the unnecessary indentation, spaces, variable renaming. Once this was done static value reached to a full. Hence ensuring in covering 81% coverage.

1. The GitHub URL of this code which is analyzed is:
   ➔ https://github.com/SeeAnish/SSW567/tree/main/HW5

2. The name and output of the static code analyzer tool I used are:
   ➔ The tool used for static code analyzer is **Pylint** and **Coverage**

## Initial Output (Before making the changes to code)

```
anish@LAPTOP-VQR94QOO MINGW64 ~/OneDrive/Documents/Masters/Semester 3/SSW 567/HW#5a
$ pylint triangle.py
************* Module triangle
triangle.py:9:0: C0301: Line too long (113/100) (line-too-long)
triangle.py:10:0: C0325: Unnecessary parens after 'return' keyword (superfluous-parens)
triangle.py:11:0: C0325: Unnecessary parens after 'return' keyword (superfluous-parens)
triangle.py:14:25: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:22:0: C0301: Line too long (106/100) (line-too-long)
triangle.py:25:0: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:27:25: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:35:82: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:36:0: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:48:0: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:1:0: C0114: Missing module docstring (missing-module-docstring)
triangle.py:2:0: C0116: Missing function or method docstring (missing-function-docstring)
triangle.py:2:22: C0103: Argument name "a" doesn't conform to snake_case naming style (invalid-name)
triangle.py:2:24: C0103: Argument name "b" doesn't conform to snake_case naming style (invalid-name)
triangle.py:2:26: C0103: Argument name "c" doesn't conform to snake_case naming style (invalid-name)
triangle.py:7:8: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
triangle.py:7:33: C0321: More than one statement on a single line (multiple-statements)
triangle.py:8:45: C0321: More than one statement on a single line (multiple-statements)
triangle.py:9:77: C0321: More than one statement on a single line (multiple-statements)
triangle.py:1:0: W0611: Unused import unittest (unused-import)

-------------------------------------------------------------------
Your code has been rated at 0.00/10 (previous run: 2.50/10, -2.50)
```

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**Output after making changes to the code:**

```
anish@LAPTOP-VQR94QOO MINGW64 ~/OneDrive/Documents/Masters/Semester 3/SSW 567/HW#5a
$ pylint triangle.py
************* Module triangle
triangle.py:3:29: C0303: Trailing whitespace (trailing-whitespace)
triangle.py:7:0: W0301: Unnecessary semicolon (unnecessary-semicolon)
triangle.py:1:0: C0114: Missing module docstring (missing-module-docstring)
triangle.py:1:0: C0116: Missing function or method docstring (missing-function-docstring)
triangle.py:1:0: C0103: Function name "classifyTriangle" doesn't conform to snake_case naming style (invalid-name)
triangle.py:1:21: C0103: Argument name "a" doesn't conform to snake_case naming style (invalid-name)
triangle.py:1:23: C0103: Argument name "b" doesn't conform to snake_case naming style (invalid-name)
triangle.py:1:25: C0103: Argument name "c" doesn't conform to snake_case naming style (invalid-name)
triangle.py:4:17: R0124: Redundant comparison - b <= b (comparison-with-itself)
triangle.py:10:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
triangle.py:14:9: R1714: Consider merging these comparisons with 'in' by using 'b not in (a, c)'. Use a set instead if elements are hashable. (consider-using-in
)
triangle.py:1:0: R0911: Too many return statements (8/6) (too-many-return-statements)

------------------------------------------------------------------
Your code has been rated at 2.50/10 (previous run: 1.67/10, +0.83)
```

As you can see our code rating changed from 0 to 2.5 which might not seem much but is a huge increase in coding programs.

**Pylint Report:**

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```
Report
======
12 statements analysed.

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

+---------+------+----------+----------+-----------+---------+
|type     |number|old number|difference|%documented|%badname |
+=========+======+==========+==========+===========+=========+
|module   |1     |1         |=         |0.00       |0.00     |
+---------+------+----------+----------+-----------+---------+
|class    |0     |NC        |NC        |0          |0        |
+---------+------+----------+----------+-----------+---------+
|method   |0     |NC        |NC        |0          |0        |
+---------+------+----------+----------+-----------+---------+
|function |1     |1         |=         |0.00       |100.00   |
+---------+------+----------+----------+-----------+---------+



20 lines have been analyzed

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

+----------+------+------+--------+----------+
|type      |number|%     |previous|difference|
+==========+======+======+========+==========+
|code      |15    |75.00 |NC      |NC        |
+----------+------+------+--------+----------+
|docstring |0     |0.00  |NC      |NC        |
+----------+------+------+--------+----------+
|comment   |0     |0.00  |NC      |NC        |
+----------+------+------+--------+----------+
|empty     |5     |25.00 |NC      |NC        |
+----------+------+------+--------+----------+
```

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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 | 9 | 9 | 9 |
| refactor | 1 | 1 | 1 |
| warning | 0 | 0 | 0 |
| error | 0 | 0 | 0 |

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

+---------------------------+------------+
|message id                 |occurrences |
+===========================+============+
|invalid-name               |4           |
+---------------------------+------------+
|trailing-whitespace        |1           |
+---------------------------+------------+
|no-else-return             |1           |
+---------------------------+------------+
|missing-module-docstring   |1           |
+---------------------------+------------+
|missing-function-docstring |1           |
+---------------------------+------------+
|missing-final-newline      |1           |
+---------------------------+------------+
|line-too-long              |1           |
+---------------------------+------------+




-------------------------------------------------------------------
Your code has been rated at 1.67/10 (previous run: 1.67/10, +0.00)
```

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3. The name and output of the code coverage tool you used:
   ➔ The tool used is coverage.py Initial: The initial coverage was 76%

```
anish@LAPTOP-VQR94QOO MINGW64 ~/OneDrive/Documents/Masters/Semester 3/SSW 567/HW#5a
$ coverage report -m
Name              Stmts   Miss  Cover   Missing
-----------------------------------------------
testtriangle.py      13      0   100%
triangle.py          16      6    62%   11-17
-----------------------------------------------
TOTAL                29      6    79%
```

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**Final:** The final coverage is 81%, covering all the test cases.

```
anish@LAPTOP-VQR94QOO MINGW64 ~/OneDrive/Documents/Masters/Semester 3/SSW 567/HW#5a
$ coverage report -m
Name             Stmts   Miss  Cover   Missing
----------------------------------------------
testtriangle.py     13      0   100%
triangle.py         12      2    83%   3, 6
----------------------------------------------
TOTAL               25      2    92%
```

**Coverage HTML:**

Coverage report: 92%

*coverage.py v6.5.0, created at 2022-10-14 18:57 -0400*

| *Module* | *statements* | *missing* | *excluded* | *coverage* |
|---|---|---|---|---|
| testtriangle.py | 13 | 0 | 0 | 100% |
| triangle.py | 12 | 2 | 0 | 83% |
| **Total** | **25** | **2** | **0** | **92%** |

*coverage.py v6.5.0, created at 2022-10-14 18:57 -0400*

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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 90% 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 92%. 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.

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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 above. I have also uploaded this assignment to the new folder in the same repository mentioned above with git URL.**