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Summary –

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.

1. The GitHub URL containing the code that was analyzed

I am using existing Triangle github repo to keep all triangle work in same reop.

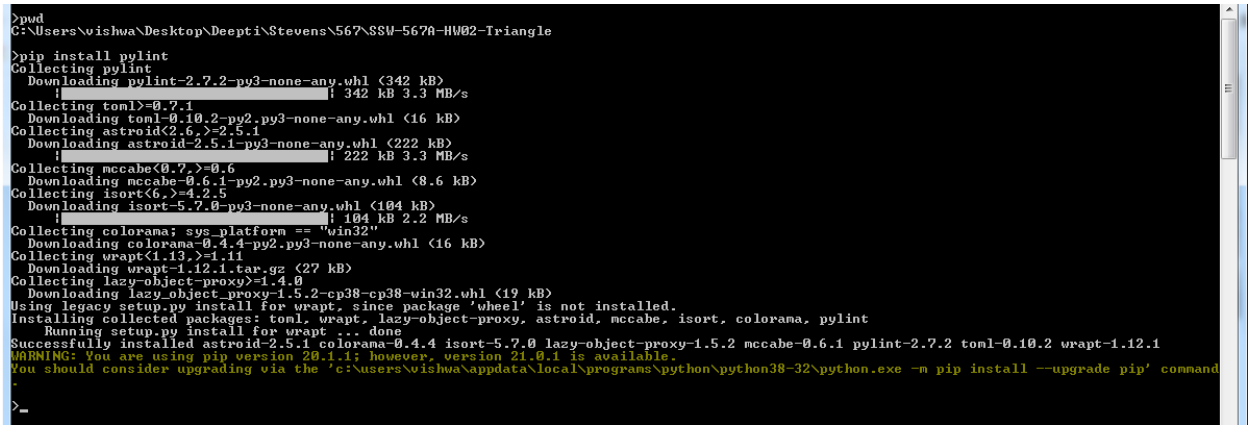
https://github.com/Agrawal-Deepti/SSW-567A-HW02-Triangle

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

I am using Pylint as its most popular and very configurable, customizable and pluggable.

Pylint installation –

```
pip install pylint
```



Before output –

```
>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:33:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:36:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:37:43: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:40:0: W0301: Unnecessary semicolon (unnecessary-semicolon)
Triangle.py:41:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:42:59: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:48:0: C0303: Trailing whitespace (trailing-whitespace)
Triangle.py:49:47: C0303: Trailing whitespace (trailing-whitespace)
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:12:0: C0103: Argument name "a" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:0: C0103: Argument name "b" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:0: C0103: Argument name "c" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:50:4: R1705: Unnecessary "elif" after "return" (no-else-return)
Triangle.py:12:0: R0911: Too many return statements (8/6) (too-many-return-statements)

-----------------------------------
Your code has been rated at -2.50/10
```

```
>pylint TestTriangle.py
************* Module TestTriangle
TestTriangle.py:19:33: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:22:33: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:25:33: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:27:0: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:28:39: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:31:42: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:35:0: C0301: Line too long (143/100) (line-too-long)
TestTriangle.py:41:95: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:44:102: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:44:0: C0301: Line too long (102/100) (line-too-long)
TestTriangle.py:47:97: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:50:97: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:53:97: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:56:104: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:56:0: C0301: Line too long (104/100) (line-too-long)
TestTriangle.py:59:100: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:63:0: C0305: Trailing newlines (trailing-newlines)
TestTriangle.py:1:0: C0103: Module name "TestTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:16:0: C0115: Missing class docstring (missing-class-docstring)
TestTriangle.py:19:4: C0103: Method name "testRightTriangleA" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:19:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:22:4: C0103: Method name "testRightTriangleB" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:22:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:25:4: C0103: Method name "testRightTriangleC" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:25:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:28:4: C0103: Method name "testEquilateralTriangles" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:28:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:31:4: C0103: Method name "testNotEquilateralTriangles" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:31:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:34:4: C0103: Method name "testInvalidInput" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:34:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:37:4: C0103: Method name "testInvalidInput1" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:37:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:40:4: C0103: Method name "testScaleneTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:40:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:43:4: C0103: Method name "testNotAScaleneTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:43:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:46:4: C0103: Method name "testIsocelesTriangleA" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:46:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:49:4: C0103: Method name "testIsocelesTriangleB" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:49:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:52:4: C0103: Method name "testIsocelesTriangleC" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:52:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:55:4: C0103: Method name "testNotAIsocelesTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:55:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:58:4: C0103: Method name "testNotATriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:58:4: C0116: Missing function or method docstring (missing-function-docstring)

-----------------------------------
Your code has been rated at -3.82/10
```

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

I am using Coverage.py which is a 3rd party tool for Python that is used for measuring your code coverage

Coverage.py installation

pip install coverage

```
>pip install coverage
Collecting coverage
  Downloading coverage-5.5-cp38-cp38-win32.whl (210 kB)
     |████████████████████████████████| 210 kB 3.3 MB/s
Installing collected packages: coverage
Successfully installed coverage-5.5
WARNING: You are using pip version 20.1.1; however, version 21.0.1 is available.
You should consider upgrading via the 'c:\users\vishwa\appdata\local\programs\python\python38-32\python.exe -m pip install --upgrade pip' command
.

>
```

Before output

```
>coverage run TestTriangle.py
Running unit tests
..............
----------------------------------------------------------------------
Ran 14 tests in 0.003s

OK

>coverage report -m
Name                Stmts   Miss  Cover   Missing
-------------------------------------------------
TestTriangle.py        35      0   100%
Triangle.py            17      1    94%   32
-------------------------------------------------
TOTAL                  52      1    98%

>coverage html

>_
```

HTML –

Coverage report: 98%

Module ↑	statements	missing	excluded	coverage
TestTriangle.py	35	0	0	100%
Triangle.py	17	1	0	94%
Total	**52**	**1**	**0**	**98%**

coverage.py v5.5, created at 2021-03-16 19:22 -0400

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

   Test coverage is already 98% only one test case was missing added the same to validate invalid input.


triangle.py


test_triangle.py

5.

Static code analysis report on original program

```
>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)
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Triangle.py:40:0: W0301: Unnecessary semicolon (unnecessary-semicolon)
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Triangle.py:12:0: C0103: Argument name "b" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:12:0: C0103: Argument name "c" doesn't conform to snake_case naming style (invalid-name)
Triangle.py:50:4: R1705: Unnecessary "elif" after "return" (no-else-return)
Triangle.py:12:0: R0911: Too many return statements (8/6) (too-many-return-statements)

-------------------------------------
Your code has been rated at -2.50/10
```

```
>pylint TestTriangle.py
************* Module TestTriangle
TestTriangle.py:19:33: C0303: Trailing whitespace (trailing-whitespace)
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TestTriangle.py:44:102: C0303: Trailing whitespace (trailing-whitespace)
TestTriangle.py:44:0: C0301: Line too long (102/100) (line-too-long)
TestTriangle.py:47:97: C0303: Trailing whitespace (trailing-whitespace)
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TestTriangle.py:22:4: C0116: Missing function or method docstring (missing-function-docstring)
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TestTriangle.py:31:4: C0103: Method name "testNotEquilateralTriangles" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:31:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:34:4: C0103: Method name "testInvalidInput" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:34:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:37:4: C0103: Method name "testInvalidInput1" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:37:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:40:4: C0103: Method name "testScaleneTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:40:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:43:4: C0103: Method name "testNotAScaleneTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:43:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:46:4: C0103: Method name "testIsocelesTriangleA" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:46:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:49:4: C0103: Method name "testIsocelesTriangleB" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:49:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:52:4: C0103: Method name "testIsocelesTriangleC" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:52:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:55:4: C0103: Method name "testNotAIsocelesTriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:55:4: C0116: Missing function or method docstring (missing-function-docstring)
TestTriangle.py:58:4: C0103: Method name "testNotATriangle" doesn't conform to snake_case naming style (invalid-name)
TestTriangle.py:58:4: C0116: Missing function or method docstring (missing-function-docstring)

-------------------------------------
Your code has been rated at -3.82/10
```

Code coverage report before any changes to the program

```
>coverage run TestTriangle.py
Running unit tests
..............
----------------------------------------------------------------------
Ran 14 tests in 0.003s

OK

>coverage report -m
Name              Stmts   Miss  Cover   Missing
-----------------------------------------------
TestTriangle.py      35      0   100%
Triangle.py          17      1    94%   32
-----------------------------------------------
TOTAL                52      1    98%

>coverage html

>_
```

Coverage report: 98%

Module ↑	statements	missing	excluded	coverage
TestTriangle.py	35	0	0	100%
Triangle.py	17	1	0	94%
Total	**52**	**1**	**0**	**98%**

coverage.py v5.5, created at 2021-03-16 19:22 -0400

Static code analysis report after you have made changes to eliminate issues

```
>pylint triangle.py

--------------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 10.00/10, +0.00)
```

```
>pylint test_triangle.py

---------------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 9.71/10, +0.29)
```

Code coverage after any changes to the programs (coverage should be > 80%)

```
>coverage run test_triangle.py
Running unit tests
...............
----------------------------------------------------------------------
Ran 15 tests in 0.003s

OK

>coverage report -m
Name                Stmts   Miss  Cover   Missing
-------------------------------------------------
test_triangle.py       37      0   100%
triangle.py            18      0   100%
-------------------------------------------------
TOTAL                  55      0   100%

>coverage html
```

Coverage report: 100%

Module ↑	*statements*	*missing*	*excluded*	*coverage*
test_triangle.py	37	0	0	100%
triangle.py	18	0	0	100%
Total	**55**	**0**	**0**	**100%**

coverage.py v5.5, created at 2021-03-16 20:46 -0400