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I pledge my honor that I have abided by the Stevens Honor System

Repository: <https://github.com/indhunaidu/SSW-567>

Assignment Description: The objective of this assignment is to develop a set of tests for an existing triangle classification program, use those tests to find and fix defects in that program, and report on the testing results for the Triangle problem.

Summary: The completion of the assignment objectives occurred when a 100% pass rate was achieved for the test set for the `classifyTriangle()` implementation. This required changing the logic of the function to meet the requirements of the test cases within the test set. After completing the assignment objectives, I learned how extensive testing needs to be to thoroughly test a function. I also learned that during testing, there needs to be a balance between extensiveness and assumptions.

Detailed Results: I designed 3 test cases for each type of triangle: small integers, small floats, and larger integers or floats. This was sufficient because it covers the base cases, alternative cases, and stress test cases, respectively. The initial implementation of the function was extremely flawed, such that the program terminated after the first conditional, always returning Invalid Input. Although there were obvious bugs in the conditionals of the function, I removed the condition limiting the output to numbers below 200. This allowed the function to be more flexible as it is now able to handle higher inputs. I also had to change the position of the beginning conditionals. Initially, the value constraint is checked before the type of constraint. This led to a testing error, as the program could not validate the value constraint with a non-integer value. Making this change removed the possibility of testing errors.

Test Report of Initial classifyTriangle() Implementation				
Test ID	Input	Expected Result	Actual Result	Pass/Fail
01	3, 4, 5	Right	InvalidInput	Fail
02	5, 3, 4	Right	InvalidInput	Fail
03	60, 61, 11	Right	InvalidInput	Fail
04	1, 1, 1	Equilateral	InvalidInput	Fail
05	1.5, 1.5, 1.5	Equilateral	InvalidInput	Fail
06	300, 300, 300	Equilateral	InvalidInput	Fail
07	2, 2, 3	Isosceles	InvalidInput	Fail
08	8.9, 8.9, 12	Isosceles	InvalidInput	Fail
09	400.25, 400.25, 500.1	Isosceles	InvalidInput	Fail
10	4, 5, 6	Scalene	InvalidInput	Fail
11	3.4, 5.6, 7.8	Scalene	InvalidInput	Fail
12	250, 300, 350	Scalene	InvalidInput	Fail
13	a, [1,2,3], (1,2,3)	InvalidInput	Type Error	Error
14	0, 0, 0	InvalidInput	InvalidInput	Pass
15	3, -4, 5	InvalidInput	InvalidInput	Pass
16	-3, -4, -5	InvalidInput	InvalidInput	Pass
17	0, 1, 1	InvalidInput	InvalidInput	Pass
18	1, 2, 3	NotATriangle	InvalidInput	Fail
19	4, 4, 400	NotATriangle	InvalidInput	Fail

Test Report of Improved classifyTriangle() Implementation				
Test ID	Input	Expected Result	Actual Result	Pass/Fail
01	3, 4, 5	Right	Right	Pass
02	5, 3, 4	Right	Right	Pass
03	60, 61, 11	Right	Right	Pass
04	1, 1, 1	Equilateral	Equilateral	Pass
05	1.5, 1.5, 1.5	Equilateral	Equilateral	Pass
06	300, 300, 300	Equilateral	Equilateral	Pass
07	2, 2, 3	Isosceles	Isosceles	Pass
08	8.9, 8.9, 12	Isosceles	Isosceles	Pass
09	400.25, 400.25, 500.1	Isosceles	Isosceles	Pass
10	4, 5, 6	Scalene	Scalene	Pass
11	3.4, 5.6, 7.8	Scalene	Scalene	Pass
12	250, 300, 350	Scalene	Scalene	Pass
13	a, [1,2,3], (1,2,3)	InvalidInput	InvalidInput	Pass
14	0, 0, 0	InvalidInput	InvalidInput	Pass
15	3, -4, 5	InvalidInput	InvalidInput	Pass
16	-3, -4, -5	InvalidInput	InvalidInput	Pass
17	0, 1, 1	InvalidInput	InvalidInput	Pass
18	1, 2, 3	NotATriangle	NotATriangle	Pass
19	4, 4, 400	NotATriangle	NotATriangle	Pass

	Test Run 1 Initial Implementation	Test Run 2 Improved Implementation
Tests Planned	19	19
Tests Executed	18	19
Tests Passed	4	19
Defects Found	8	0
Defects Fixed	0	8

Improved Implementation Output:

```

indhunaidu@Indhus-MacBook-Air ~ % /usr/bin/env /usr/local/bin/python3 /Users/indhunaidu/.vscode/extensions/ms-python.python-2021.10.1365161279/pythonFiles/lib/python/debugpy/launcher 57438 -- /Users/indhunaidu/TestTriangle.py
indhunaidu@Indhus-MacBook-Air ~ % cd /Users/indhunaidu ; /usr/bin/env /usr/local/bin/python3 /Users/indhunaidu/.vscode/extensions/ms-python.python-2021.10.1365161279/pythonFiles/lib/python/debugpy/launcher 57460 -- /Users/indhunaidu/TestTriangle.py
Running unit tests
.....
Ran 19 tests in 0.002s
OK

```