Author: Gavin Snyder

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

Repository: https://github.com/Arceus1ooo/HW2-567

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 made 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 InvalidInput. 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 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:

Text

Description automatically generated