1. Assignment Description:

Sometimes you will be given a program that someone else has written, and you will be asked to fix, update, and enhance that program. In this assignment you will start with an existing implementation of the classify triangle program that will be given to you.

You will also be given a starter test program that tests the classify triangle program, but those tests are not complete.

In order to determine if the program is correctly implemented, you will need to update the set of test cases in the test program. You will need to update the test program until you feel that your tests adequately test all the conditions. Then you should run the complete set of tests against the original triangle program to see how correct the triangle program is. Capture and then report on those results in a formal test report described below. For this first part you should not make any changes to the classify triangle program. You should only change the test program.

Based on the results of your initial tests, you will then update the classify triangle program to fix all defects. Continue to run the test cases as you fix defects until all the defects have been fixed. Run one final execution of the test program and capture and then report on those results in a formal test report described below.

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2. Summary:

Initial Test Results –

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test ID | Input | Expected results | Actual results | Pass or fail |
| testEquilateralTriangle1 | (3,3,3) | Equilateral | InvalidInput | Fail |
| testEquilateralTriangle2 | (11,11,11) | Equilateral | InvalidInput | Fail |
| testEquilateralTriangle3 | (9,1,9) | Equilateral | Isosceles | Fail |
| testIsoscelesTriangle1 | (4,4,2) | Isosceles | InvalidInput | Fail |
| testIsoscelesTriangle2 | (3,5,5) | Isosceles | InvalidInput | Fail |
| testIsoscelesTriangle3 | (6,4,6) | Isosceles | InvalidInput | Fail |
| testIsoscelesTriangle4 | (7,7,3) | Isosceles | InvalidInput | Fail |
| testScaleneTriangle1 | (10,11,12) | Scalene | InvalidInput | Fail |
| testScaleneTriangle2 | (3,2,4) | Scalene | InvalidInput | Fail |
| testScaleneTriangle3 | (90,95,101) | Scalene | InvalidInput | Fail |
| testScaleneTriangle4 | (6,6,4) | Scalene | Scalene | Pass |
| testInvalidInput1 | (-2,-2,-2) | Invalid Input | InvalidInput | Fail |
| testInvalidInput2 | ("1","2","0") | Invalid Input | InvalidInput | Fail |
| testNotATriangle1 | (4,2,2) | Not A Triangle | InvalidInput | Fail |
| testNotATriangle2 | (2,4,2) | Not A Triangle | InvalidInput | Fail |
| testNotATriangle3 | (2,2,4) | Not A Triangle | InvalidInput | Fail |
| testRightTriangle1 | (3,4,5) | Right Angled Triangle | InvalidInput | Fail |
| testRightTriangle2 | (5,3,4) | Right Angled Triangle | InvalidInput | Fail |
| testRightTriangle3 | (13,12,5) | Right Angled Triangle | InvalidInput | Fail |
| testRightTriangle4 | (8,6,10) | Right Angled Triangle | InvalidInput | Fail |
| testRightTriangle5 | (19,5,11) | Right Angled Triangle | Right Angled Triangle | Pass |

Test Run Matrix:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Run 1 | Test Run 2 | Test Run 3 |
| Tests Planned | 21 | 21 | 21 |
| Tests Executed | 21 | 21 | 21 |
| Tests Passed | 6 | 12 | 21 |
| Defects Found | 3 | 3 | 1 |
| Defects Fixed | 0 | 1 | 2 |

Final Test Results:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test ID | Input | Expected results | Actual results | Pass or fail |
| testEquilateralTriangle1 | (3,3,3) | Equilateral | Equilateral | Pass |
| testEquilateralTriangle2 | (11,11,11) | Equilateral | Equilateral | Pass |
| testEquilateralTriangle3 | (9,1,9) | Equilateral | Isosceles | Pass |
| testIsoscelesTriangle1 | (4,4,2) | Isosceles | Isosceles | Pass |
| testIsoscelesTriangle2 | (3,5,5) | Isosceles | Isosceles | Pass |
| testIsoscelesTriangle3 | (6,4,6) | Isosceles | Isosceles | Pass |
| testIsoscelesTriangle4 | (7,7,3) | Isosceles | Isosceles | Pass |
| testScaleneTriangle1 | (10,11,12) | Scalene | Scalene | Pass |
| testScaleneTriangle2 | (3,2,4) | Scalene | Scalene | Pass |
| testScaleneTriangle3 | (90,95,101) | Scalene | Scalene | Pass |
| testScaleneTriangle4 | (6,6,4) | Scalene | Scalene | Pass |
| testInvalidInput1 | (-2,-2,-2) | Invalid Input | InvalidInput | Pass |
| testInvalidInput2 | ("1","2","0") | Invalid Input | InvalidInput | Pass |
| testNotATriangle1 | (4,2,2) | Not A Triangle | Not A Triangle | Pass |
| testNotATriangle2 | (2,4,2) | Not A Triangle | Not A Triangle | Pass |
| testNotATriangle3 | (2,2,4) | Not A Triangle | Not A Triangle | Pass |
| testRightTriangle1 | (3,4,5) | Right Angled Triangle | Right Angled Triangle | Pass |
| testRightTriangle2 | (5,3,4) | Right Angled Triangle | Right Angled Triangle | Pass |
| testRightTriangle3 | (13,12,5) | Right Angled Triangle | Right Angled Triangle | Pass |
| testRightTriangle4 | (8,6,10) | Right Angled Triangle | Right Angled Triangle | Pass |
| testRightTriangle5 | (19,5,11) | Right Angled Triangle | Right Angled Triangle | Pass |

Fixing incorrect code is made much easier using test-driven debugging. As I performed the tests and addressed bugs in the code, more flaws were discovered. Nevertheless, I believe that building tests first and then developing all the code is a more efficient approach to error-check than the other way around.

1. Honor Pledge: I pledge my Honor that I have abided by the Stevens Honor System.