1. **Assignment Description:**

The goal of this assignment is to find and report bugs in the Triangle.py file by using test file TestTriangle.py and fix it in incremental phases.

1. **Author:** Mahir Dhall
2. **Summary:** I started with writing test case for type checks and validation of the input of the three sides followed by writing test cases for each classification, checking them for each side of the triangle and then for all sides of the triangle. Found 14 bugs out of which 3 were exceptions raised in the code during the first test run. Unit test helped in pointing out exactly where the code is having bugs and where the execution is breaking. After fixing the bugs I was able to successfully pass all the 23 tests. I learnt to set up Git, Git hub and unit test.
3. **Failed Result Testing:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test ID | Input | | Expected Result | | Actual result | | Pass or Fail |
| testNegativeA | -1,2,3 | | InvalidInput | | InvalidInput | | Pass |
| testNegativeB | 1,-2,3 | | InvalidInput | | InvalidInput | | Pass |
| testNegativeC | 1,2,-3 | | InvalidInput | | InvalidInput | | Pass |
| testNegative | -1,-2,-3 | | InvalidInput | | InvalidInput | | Pass |
| testGreaterThanA | 201,190,199 | | InvalidInput | | InvalidInput | | Pass |
| testGreaterThanB | 180, 209, 109 | | InvalidInput | | InvalidInput | | Pass |
| testGreaterThanC | 191, 180, 209 | | InvalidInput | | InvalidInput | | Pass |
| testGreaterThan | 291, 280, 209 | | InvalidInput | | InvalidInput | | Pass |
| testInvalidTriangleA | 40, 5, 7 | | NotATriangle | | InvalidInput | | Fail |
| testInvalidTriangleB | 40, 55, 7 | | NotATriangle | | InvalidInput | | Fail |
| testInvalidTriangleC | 40, 5, 76 | | NotATriangle | | InvalidInput | | Fail |
| testTypeA | 'a', 1, 2 | | InvalidInput | | TypeError | | Fail |
| testTypeB | 1, 1.0, 2 | | InvalidInput | | InvalidInput | | Pass |
| testTypeC | 2, 1, "s" | | InvalidInput | | TypeError | | Fail |
| testType | 'a', '1', '2' | | InvalidInput | | TypeError | | Fail |
| testRightTriangleA | 3,4,5 | | Right | | InvalidInput | | Fail |
| testRightTriangleB | 5,3,4 | | Right | | InvalidInput | | Fail |
| testRightTriangleC | 3,5,4 | | Right | | InvalidInput | | Fail |
| testEquilateralTriangles | 1,1,1 | | Equilateral | | InvalidInput | | Fail |
| testIsocelesA | 1,1,2 | | Isoceles | | InvalidInput | | Fail |
| testIsocelesB | 2,1,1 | Isoceles | | InvalidInput | | Fail | | |
| testIsocelesC | 1,2,1 | Isoceles | | InvalidInput | | Fail | | |
| testScalene | 7,12,15 | Scalene | | Invalid Input | | Fail | | |

**Result After Fixing the code:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test ID | Input | Expected Result | Actual result | Pass or Fail |
| testNegativeA | -1,2,3 | InvalidInput | InvalidInput | Pass |
| testNegativeB | 1,-2,3 | InvalidInput | InvalidInput | Pass |
| testNegativeC | 1,2,-3 | InvalidInput | InvalidInput | Pass |
| testNegative | -1,-2,-3 | InvalidInput | InvalidInput | Pass |
| testGreaterThanA | 201,190,199 | InvalidInput | InvalidInput | Pass |
| testGreaterThanB | 180, 209, 109 | InvalidInput | InvalidInput | Pass |
| testGreaterThanC | 191, 180, 209 | InvalidInput | InvalidInput | Pass |
| testGreaterThan | 291, 280, 209 | InvalidInput | InvalidInput | Pass |
| testInvalidTriangleA | 40, 5, 7 | NotATriangle | NotATriangle | Pass |
| testInvalidTriangleB | 40, 55, 7 | NotATriangle | NotATriangle | Pass |
| testInvalidTriangleC | 40, 5, 76 | NotATriangle | NotATriangle | Pass |
| testTypeA | 'a', 1, 2 | InvalidInput | InvalidInput | Pass |
| testTypeB | 1, 1.0, 2 | InvalidInput | InvalidInput | Pass |
| testTypeC | 2, 1, "s" | InvalidInput | InvalidInput | Pass |
| testType | 'a', '1', '2' | InvalidInput | InvalidInput | Pass |
| testRightTriangleA | 3,4,5 | Right | Right | Pass |
| testRightTriangleB | 5,3,4 | Right | Right | Pass |
| testRightTriangleC | 3,5,4 | Right | Right | Pass |
| testEquilateralTriangles | 1,1,1 | Equilateral | Equilateral | Pass |
| testIsocelesA | 1,1,2 | Isoceles | Isoceles | Pass |
| testIsocelesB | 2,1,1 | Isoceles | Isoceles | Pass |
| testIsocelesC | 1,2,1 | Isoceles | Isoceles | Pass |
| testScalene | 7,12,15 | Scalene | Scalene | Pass |

**Summary Report:**

|  |  |  |
| --- | --- | --- |
|  | Test Run 1 | Test Run 2 |
| Tests Planned | 23 | 23 |
| Tests Executed | 23 | 23 |
| Tests Passed | 9 | 23 |
| Defects Found | 14 | 0 |
| Defects Fixed | 0 | 14 |

1. **Honor pledge:** I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source.
2. **Detailed Result:** I made sure I try all inputs for the three sides of the triangle. With different data types, equal unequal values along with invalid length sides.

**A screenshot of a cell phone

Description automatically generated**