**Lab #1**

**Topic: Equivalence Class Partitioning and Boundary Value Analysis                         Weightage: 6%**

**Submission: individual Lab**

**Question #1:**

 Consider a Black Board Ultra grading component, which generates grading, with the following specification:

A student’s course grade is calculating with the final exam mark (out of 75) and a continuous assessment mark (out of 25), from which it generates a grade for the course in the range of 'A' to 'D'. The grade is calculated from the overall mark which is calculated as the sum of the exam and continuous assessment marks, as follows:

•            greater than or equal to 70 - 'A'

•            greater than or equal to 50, but less than 70 - 'B'

•            greater than or equal to 30, but less than 50 - 'C'

•            less than 30 - 'D'

All inputs are passed as integer values. A mark outside its expected range results in a fault message ('FM').

Tasks:

1.           Identify Equivalence Class Partitions and generate Test Cases to apply to the identified Equivalence Class Partitions.

The partitions are:

0-29=’D’,

30-49=’C’,

50-69=’B’,

70-100=’A’,

Grade less than 0 = invalid,

Grade over 100 = invalid,

Test with:

25: D

-4: invalid

105: invalid

89: A

2.           Perform Boundary Value analysis and generate Test cases to apply the identified boundaries.

**Question # 2:**

Design, develop, code, and run the program in any suitable language to solve the triangle problem.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case ID** | **a** | **b** | **c** | **Expected Output** |
| **T1** | **12** | **30** | 110 | Invalid |
| **T2** | 30 | 60 | 90 | scalene |
| **T3** | 40 | 40 | 100 | Isosceles |
| **T4** | 60 | 60 | 60 | Equilateral |

 Whether the triangle is (Scalene, Isosceles, Equilateral, Not a Triangle). Analyze it from the perspective of boundary value testing, derive different test cases, execute these test cases, and discuss the test results.

Tested for if all angles did not add up to 180, outcome was “Invalid”

Tested for if all angles were equal, outcome was “equilateral”

Tested for if 2 angles were equal, outcome was “isosceles”

Tested if no angles were not equal, outcome was “scalene”

Tested if all angles exceeded 180 degrees, outcome was “invalid”