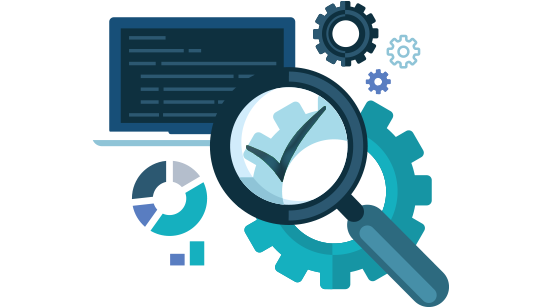
**COMPUTER ENGINEERING DEPARTMENT**

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SOFT3406 SOFTWARE VERIFICATION AND VALIDATION PROJECT REPORT



**MODIFIED CONDITION DECISION TESTING**

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**Modified Condition/Decision Testing:**

In this project, we had developed tests for the project class with using MC/DC design method. There are some test cases with scenario and expected results shown in the Table.1.1 Triangle Example.

public static boolean isTriangle(double a, double b, double c) {  
 if ((a + b > c) &&  
 (a + c > b) &&

(b + c > a)) {  
 return true;  
 }  
 return false;  
}

* X 🡪 a+b>c
* Y 🡪 a+c>b
* Z 🡪 b+c>a
* T 🡪 a= =b
* U 🡪 b= =c
* P 🡪 a= =c

1. X = false / Y = true / Z = true / T=Any/ U=Any/ P=Any🡪decision is evaluated to "false"
2. X = true / Y = false / Z = true / T=Any/ U=Any/ P=Any🡪decision is evaluated to "false"
3. X = true / Y = true / Z = false /T=Any/ U=Any/ P=Any🡪decision is evaluated to "false"
4. X = true / Y = true / Z = true /T=false/ U=false/ P=false🡪decision is evaluated to "true", return value is scalene
5. X = true / Y = true / Z = true / T=false/ U=false/ P=true🡪decision is evaluated to "true", return value is isosceles
6. X = true / Y = true / Z = true /T=false/ U=true/ P=Any🡪decision is evaluated to "true", return value is isosceles
7. X = true / Y = true / Z = true /T=true/ U=false/ P=Any🡪decision is evaluated to "true", return value is isosceles
8. X = true / Y = true / Z = true /T=true/ U=true/ P=Any🡪decision is evaluated to "true", return value is equilateral

It has been shown that each condition in a decision independently affects the outcome of that decision. There are 8 test cases in total. There are 3 conditions in total for the edges, not providing any condition means that the triangle cannot be formed. In forming a triangle, the condition of being equal to each other does not matter, so the conditions T, U and P do not matter, so we wrote “Any”. Based on this, we wrote our first 3 test cases. In other conditions, we assumed that all 3 conditions were met and a triangle was formed. Therefore, the X, Y and Z conditions became "T". As a result, we gave different values ​​to a , b and c to indicate the varieties of the triangle. In the 4th test case, we gave 3 different values ​​to the sides a, b and c to indicate that the triangle is a scalene. Therefore, the T, U and P conditions became “F”. We stated that the triangle is isosceles in the 5th, 6th and 7th test cases. In the 5th test case, we assumed that sides a and c are equal, so we made the P condition "T", the T and U conditions "F". In the 6th test case, we assumed that sides b and c are equal, so we made the U condition "T", the T and U conditions became "F". In this test case, sides a and c cannot be equal (P condition) because we do not count sides b and c equal to each other, and sides a and b equal to each other, so we returned "Any". In the 7th test case, we assumed that sides a and b are equal, so we made the T condition "T", the T and U conditions "F". In this test case, a and b sides cannot be equal (P condition) since we do not count the sides a and b equal to each other and the sides b and c equal, so we returned "Any". In the 8th test case, we gave equal values ​​to the sides a, b and c to indicate that the triangle is equilateral, so all the conditions were "T".

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC** | **X** | **Y** | **Z** | **T** | **U** | **P** | **a** | **b** | **c** |
| **1** | F | T | T | Any | Any | Any | 1 | 2 | 4 |
| **2** | T | F | T | Any | Any | Any | 0 | 2 | 1 |
| **3** | T | T | F | Any | Any | Any | 4 | 1 | 2 |
| **4** | T | T | T | F | F | F | 2 | 3 | 4 |
| **5** | T | T | T | F | F | T | 2 | 1 | 2 |
| **6** | T | T | T | F | T | Any | 1 | 2 | 2 |
| **7** | T | T | T | T | F | Any | 2 | 2 | 1 |
| **8** | T | T | T | T | T | Any | 5 | 5 | 5 |

Table 1.1 Triangle Example

**REFERENCES**

* Photo: MRN Infotech, “Software Testing Service”

https://www.mrninfotech.com/testing