**Problem Statement Test Cases**

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| 1. **Branch Testing** | **T = True, F = False** |

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| --- | --- |
| **Conditions** | **Branches** |
| while (i<=1) | 4T,4F |
| if (a >= c) | 5T,5F |
| if (b >= c) | 9T,9F |
| if (a + b <= c) | 13T,13F |
| if (type >= 0) | 15T,15F |
| if ((a == c) || (b == c)) | 16T,16F |
| if ((type==0)&&(a == b)) | 18T,18F |
| if (type>=0) | 20T,20F |
| if ((a\*a+b\*b==c\*c) || (a\*a+c\*c==b\*b)) | 21T, 21F |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case #** | **a** | **b** | **c** | **Covered Branches** |
| 1 | 20 | 10 | 5 | 4T 5T 9F 13T 15F 4T 5F 9F 13T 15F 4F |
| 2 | 2 | 2 | 2 | 4T 5T 9T 13F 15T 16T 18F 20T 21F 4T 5T 9T 13F 15T 16T 18F 20T 21F 4F |
| 3 | 3 | 4 | 5 | 4T 5F 9F 13F 15T 16F 18F 20T 21T 4T 5F 9F 13F 15T 16F 18F 20T 21T 4F |
| 4 | 5 | 5 | 6 | 4T 5F 9F 13F 15T 16F 18T 20T 21F 4T 5F 9F 13F 15T 16F 18F 20T 21F 4F |

Green indicates covered branches

20F is a non-executable branch

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| --- |
| 4T |
| 4F |
| 5T |
| 5F |
| 9T |
| 9F |
| 13T |
| 13F |
| 15T |
| 15F |
| 16T |
| 16F |
| 18T |
| 18F |
| 20T |
| 20F |
| 21T |
| 21F |

1. **Multiple Condition Testing**

|  |  |
| --- | --- |
| **line #** | **Complex predicates** |
| 16 | if ((a == c) || (b == c)) |
| 18 | if ((type==0)&&(a == b)) |
| 21 | if ((a\*a+b\*b==c\*c) || (a\*a+c\*c==b\*b)) |

Truth Tables for complex predicate:  
if ((a == c) || (b == c))

|  |  |
| --- | --- |
| **a==c** | **b==c** |
| T | T |
| T | F |
| F | T |
| F | F |

Truth Tables for complex predicate:  
if ((type==0)&&(a == b))

|  |  |
| --- | --- |
| type == 0 | a == b |
| T | T |
| T | F |
| F | T |
| F | F |

Truth Tables for complex predicate:  
if ((a\*a+b\*b==c\*c) || (a\*a+c\*c==b\*b))

|  |  |
| --- | --- |
| a\*a+b\*b==c\*c | a\*a+c\*c==b\*b |
| T | T |
| T | F |
| F | T |
| F | F |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case #** | **a** | **b** | **c** | **Covered complex predicates** |
| 1 | 1 | 2 | 2 | loop1: 16FT, 18FF, 21FF  loop2: 16FT, 18FF, 21FF |
| 2 | 5 | 5 | 5 | loop1: 16TT, 18FT, 21FF  loop2: 16TT, 18FT, 21FF |
| 3 | 6 | 8 | 10 | loop1: 16FF, 18TF, 21TF  loop2: 16FF, 18FF, 21TF |
| 4 | 5 | 5 | 6 | loop1: 16FF, 18TT, 21FF loop2: 16FF, 18FT, 21FF |
| 5 | 8 | 2 | 8 | loop1: 16TF, 18FF, 21FF loop2: 16TF, 18FF, 21FF |

21TT and 21FT are non-executable conditions.