Solution:

|  |  |
| --- | --- |
| Test Number | Test |
| T1 | (ab, ab, 0) |
| T2 | (ab, a, 0) |
| T3 | (ab, ac, -1) |
| T4 | (ab, c, -1) |
| T5 | (a, bc, -1) |
| T6 | (abc, bc, 1) |
| T7 | (ab, b, 1) |
| T8 | (abc, ba, -1) |
| T4 | (ab, c, -1) |
| T2 | (ab, a, 0) |

1. Give a minimal test set that satisﬁes all defs coverage. Use the test cases given.

Since all du-paths can be visited directly, we don’t look side trips. Direct visiting is shown by ‘+’ symbol. The table will elaborate our answer.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | Du paths |
| + |  |  |  |  |  |  |  | [2, 3, 4, 5, 6, 7, 9] |
|  | + |  |  |  |  |  |  | [2, 3, 4, 5, 6, 10] |
|  |  | + |  |  |  |  |  | [2, 3, 4, 5, 6, 7, 8, 10] |
|  |  |  | + |  | + | + | + | [2, 3, 4, 10] |
|  |  |  |  | + |  |  |  | [2, 3, 11] |
|  |  |  |  |  | + |  |  | [10, 3, 4, 5, 6, 7, 9] |
|  |  |  |  |  |  | + |  | [10, 3, 4, 5, 6, 10] |
|  |  |  |  |  |  |  | + | [10, 3, 4, 5, 6, 7, 8, 10] |
|  |  |  | + |  |  |  |  | [10, 3, 4, 10] |
| + | + | + | + |  | + | + | + | [10, 3, 11] |

For all defs coveage , we have to visit one of the du-paths starting with 2 and one with 10. There are almost 7 minimal sets except T5.

1. Give a minimal test set that satisﬁes all uses coverage.

From the calculations of table. To tour the def-use relation from 2 to 9 we have to use t1 . t5 is required for association of 2 to 11. And t6  is required for 10 to 9. Similarly these test happened to tour 10 to 11 and 2 to 10 associations. Therefore, we have only three minimal all-uses sets that are given below.

* {t1, t5, t6, t8}
* {t1, t4, t5, t6}
* {t1, t5, t6, t7}

1. Give a minimal test set that satisﬁes all du-paths coverage.

All the tests uniquely toured the path so we can conclude the set.

* {t1, t2, t3, t4 t5, t6, t7, t8}