Software Testing

Homework3 Solution

5.2 Q2 (Page 189)

a) **findVal**: The mutant is always reached, even if x = null.
sum: If x is null or the empty array, i.e. x = null or [], then the mutant is never reached.

b) **findVal**: Infection always occurs, even if x = null, because i always has the wrong value after initialization in the loop.
sum: Any input with all zeroes will reach but not infect. Examples are: x = [0] or [0, 0].

c) **findVal**: As long as the last occurrence of val isn't at numbers[0], the correct output is returned. Examples are: (numbers, val) = ([1, 1], 1) or ([-1, 1], 1) or (null, 0).
sum: Any input with nonzero entries, but with a sum of zero, is fine. Examples are: x = [1, -1] or [1, -3, 2].

d) **findVal**: Any input with val only in numbers[0] works. An example is: (numbers, val) = ([1, 0], 1).
sum: Any input with a nonzero sum works. An example is: x = [1, 2, 3].

5.5 Q5 (Page 209)

a)

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4 2 +
4 2 7 - *
4 2 – 7 *

b) 4 + 2