

# Software Quality And Testing

Assignment 7 - Automation Mutation Analysis

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## Spit method

### ➤ Substituted 0 with 1 at line 66

This mutant substitutes the initialization of variable `next` from 0 to 1. This is not killed because it doesn't affect the behavior of the program because this variable is used only after the initialization again at the entrance of the while loop. So initializing it as 0 or 1 at first doesn't matter and this mutant can't be killed.

### ➤ Changed conditional boundary at line 91

This mutant changes `resultSize > 0` to `resultSize >= 0`. And this doesn't affect the behavior of the program because the variable `resultSize` will be always greater than 0 as it is the number of occurrences found inside the input string. This mutant cannot be killed

## Max method

### ➤ Substituted 1 with 0 at line 25,26

The mutant in line 25 has been obtained by changing the variable `J` from 1 to 0 survive because it changes only by adding 1 more iteration at the beginning of the loop which is redundant verifying getting the first element of the array and setting as value of variable `max` if this is greater than `max + 1` and this doesn't change the behavior of program.

The mutant in line 26 survives because it just set the `max` value again as it is therefore not killed

### ➤ Changed conditional boundary at line 26, Replaced Integer addition with subtraction

Not survived because it doesn't affect the behavior of the program

## BinarySearch method

### ➤ Substituted 0 with 1 at line 67,74

The mutants at line 67 and 74 are survived is by changing 1 to 0 doesn't change the behavior of final result of the program therefore it cannot be killed