

# BinarySearch.java

```

1  package DivideAndConquerTesting;
2
3  class BinarySearch {
4      public int binarySearch(int[] arr, int target) {
5          int low = 0;
6  1      int high = arr.length - 1;
7
8  2      while (low <= high) {
9  2          int mid = (low + high) / 2;
10 1          if (arr[mid] == target) {
11 1              return mid;
12 2          } else if (arr[mid] > target) {
13 1              high = mid - 1;
14          } else {
15 1              low = mid + 1;
16          }
17      }
18 1      return -1;
19  }
20 }

```

## Mutations

- 6 1. Replaced integer subtraction with addition → KILLED
- 8 1. changed conditional boundary → KILLED  
2. negated conditional → KILLED
- 9 1. Replaced integer addition with subtraction → KILLED  
2. Replaced integer division with multiplication → KILLED
- 10 1. negated conditional → KILLED
- 11 1. replaced int return with 0 for  
DivideAndConquerTesting/BinarySearch::binarySearch → KILLED
- 12 1. changed conditional boundary → SURVIVED  
2. negated conditional → KILLED
- 13 1. Replaced integer subtraction with addition → TIMED\_OUT
- 15 1. Replaced integer addition with subtraction → TIMED\_OUT
- 18 1. replaced int return with 0 for  
DivideAndConquerTesting/BinarySearch::binarySearch → KILLED

## Active mutators

- BOOLEAN\_FALSE\_RETURN

- BOOLEAN\_TRUE\_RETURN
- CONDITIONALS\_BOUNDARY\_MUTATOR
- EMPTY\_RETURN\_VALUES
- INCREMENTS\_MUTATOR
- INVERT\_NEGS\_MUTATOR
- MATH\_MUTATOR
- NEGATE\_CONDITIONALS\_MUTATOR
- NULL\_RETURN\_VALUES
- PRIMITIVE\_RETURN\_VALS\_MUTATOR
- VOID\_METHOD\_CALL\_MUTATOR

## Tests examined

- DivideAndConquerTesting.AllDivideConquerTesting.[engine:junit-jupiter]/[class:DivideAndConquerTesting.AllDivideConquerTesting]/[method:BinarySearch2dArrayTestMiddle()] (16 ms)
- DivideAndConquerTesting.AllDivideConquerTesting.[engine:junit-jupiter]/[class:DivideAndConquerTesting.AllDivideConquerTesting]/[method:testBinarySearch()] (9 ms)

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