

LetterCombinationsOfPhoneNumber.java

```

1  package StringAlgorithms;
2
3  import java.util.*;
4
5  public class LetterCombinationsOfPhoneNumber {
6
7      static Character[][] numberToCharMap;
8
9      public static List<String> printWords(int[] numbers, int len, int numIndex, String s) {
10 1         if (len == numIndex) {
11 1             return new ArrayList<>(Collections.singleton(s));
12         }
13
14         List<String> stringList = new ArrayList<>();
15
16 2         for (int i = 0; i < numberToCharMap[numbers[numIndex]].length; i++) {
17             String sCopy = String.valueOf(s.toCharArray());
18             sCopy = sCopy.concat(numberToCharMap[numbers[numIndex]][i].toString());
19 1             stringList.addAll(printWords(numbers, len, numIndex + 1, sCopy));
20         }
21 1         return stringList;
22     }
23
24     public static void generateNumberToCharMap() {
25         numberToCharMap = new Character[10][5];
26         numberToCharMap[0] = new Character[] { '\0' };
27         numberToCharMap[1] = new Character[] { '\0' };
28         numberToCharMap[2] = new Character[] { 'a', 'b', 'c' };
29         numberToCharMap[3] = new Character[] { 'd', 'e', 'f' };
30         numberToCharMap[4] = new Character[] { 'g', 'h', 'i' };
31         numberToCharMap[5] = new Character[] { 'j', 'k', 'l' };
32         numberToCharMap[6] = new Character[] { 'm', 'n', 'o' };
33         numberToCharMap[7] = new Character[] { 'p', 'q', 'r', 's' };
34         numberToCharMap[8] = new Character[] { 't', 'u', 'v' };
35         numberToCharMap[9] = new Character[] { 'w', 'x', 'y', 'z' };
36     }
37 }

```

Mutations

- 10 1. negated conditional → KILLED
- 11 1. replaced return value with Collections.emptyList for
StringAlgorithms/LetterCombinationsOfPhoneNumber::printWords → KILLED
- 16 1. changed conditional boundary → KILLED
2. negated conditional → KILLED
- 19 1. Replaced integer addition with subtraction → KILLED
- 21 1. replaced return value with Collections.emptyList for
StringAlgorithms/LetterCombinationsOfPhoneNumber::printWords → 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

- StringAlgorithms.AllStringTesting.[engine:junit-jupiter]/[class:StringAlgorithms.AllStringTesting]/[method:letterCombinationsOfPhoneNumber()] (31 ms)

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