Palindrome.java

```
1    package StringAlgorithms;
2
3    public class Palindrome {
4          public static boolean isPalindrome(String s) {
5  2             return (
6  3                            (s == null || s.length() <= 1) ||
7  1                            s.equals(new StringBuilder(s).reverse().toString())
8                             );
9          }
10
11         public static boolean isPalindromeRecursion(String s) {
12 3             if (s == null || s.length() <= 1) {
13 1                    return true;
14             }
15 2             if (s.charAt(0) != s.charAt(s.length() - 1)) {
16 1                    return false;
17             }
18 3             return isPalindromeRecursion(s.substring(1, s.length() - 1));
19         }
20
21         public static boolean isPalindromeTwoPointer(String s) {
22 3             if (s == null || s.length() <= 1) {
23 1                    return true;
24             }
25 5             for (int i = 0, j = s.length() - 1; i < j; ++i, --j) {
26 1                    if (s.charAt(i) != s.charAt(j)) {
27 1                            return false;
28                     }
29             }
30 1             return true;
31         }
32 }
```

Mutations

5   1. replaced boolean return with false for StringAlgorithms/Palindrome::isPalindrome
     → KILLED
     2. replaced boolean return with true for StringAlgorithms/Palindrome::isPalindrome
     → KILLED

6   1. changed conditional boundary → SURVIVED
     2. negated conditional → KILLED
     3. negated conditional → KILLED

7   1. negated conditional → KILLED

12   1. changed conditional boundary → KILLED
     2. negated conditional → KILLED
     3. negated conditional → KILLED

13   1. replaced boolean return with false for
     StringAlgorithms/Palindrome::isPalindromeRecursion → KILLED

15   1. Replaced integer subtraction with addition → KILLED
     2. negated conditional → KILLED

16   1. replaced boolean return with true for
     StringAlgorithms/Palindrome::isPalindromeRecursion → KILLED

```
18   1. replaced boolean return with false for
     StringAlgorithms/Palindrome::isPalindromeRecursion → KILLED
     2. replaced boolean return with true for
     StringAlgorithms/Palindrome::isPalindromeRecursion → KILLED
     3. Replaced integer subtraction with addition → KILLED

     1. changed conditional boundary → SURVIVED
22   2. negated conditional → KILLED
     3. negated conditional → KILLED

23   1. replaced boolean return with false for
     StringAlgorithms/Palindrome::isPalindromeTwoPointer → KILLED

     1. changed conditional boundary → SURVIVED
     2. Changed increment from 1 to -1 → KILLED
25   3. Changed increment from -1 to 1 → KILLED
     4. Replaced integer subtraction with addition → KILLED
     5. negated conditional → KILLED

26   1. negated conditional → KILLED

27   1. replaced boolean return with true for
     StringAlgorithms/Palindrome::isPalindromeTwoPointer → KILLED

30   1. replaced boolean return with false for
     StringAlgorithms/Palindrome::isPalindromeTwoPointer → 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:testPalindrome()] (10 ms)
- StringAlgorithms.AllStringTesting.[engine:junit-jupiter]/[class:StringAlgorithms.AllStringTesting]/[method:testPalindromeTwoPointer()] (17 ms)
- StringAlgorithms.AllStringTesting.[engine:junit-jupiter]/[class:StringAlgorithms.AllStringTesting]/[method:testPalindromeRecursive()] (14 ms)
- StringAlgorithms.AllStringTesting.[engine:junit-jupiter]/[class:StringAlgorithms.AllStringTesting]/[method:letterCombinationsOfPhoneNumber()] (31 ms)

Report generated by PIT 1.6.8