RabinKarp.java

```
1
    package DivideAndConquerTesting;
2
3
    public class RabinKarp {
4
5
            public static final int d = 256;
6
7
            public int search(String pat, String txt, int q) {
8
                     int index = -1; //note: -1 here represent not found, it is not an index
9
                     int M = pat.length();
10
                     int N = txt.length();
                     int i, j;
11
12
                     int p = 0; // hash value for pattern
13
                     int t = 0; // hash value for txt
                     int h = 1;
14
15
                     for (i = 0; i < M - 1; i++) h = (h * d) % q;
166
17
                     for (i = 0; i < M; i++) {
183
                             p = (d * p + pat.charAt(i)) % q;
19 <u>3</u>
20 3
                             t = (d * t + txt.charAt(i)) % q;
21
                     }
22
23 4
                     for (i = 0; i <= N - M; i++) {
                             if (p == t) {
24 1
25 <u>3</u>
                                      for (j = 0; j < M; j++) {
                                              if (txt.charAt(i + j) != pat.charAt(j)) break;
26 <u>2</u>
                                      }
27
28
29 1
                                      if (j == M) {
                                               System.out.println("Pattern found at index " + i);
30 <u>1</u>
31
                                               index = i;
32 <u>1</u>
                                              return index;
33
                                      }
34
                             }
35
36 3
                             if (i < N - M) {
37 <u>6</u>
                                      t = (d * (t - txt.charAt(i) * h) + txt.charAt(i + M)) % q;
                                      if (t < 0) t = (t + q);
38 3
39
                              }
40
                     return index;
41 1
42
            }
43 }
    Mutations
    1. changed conditional boundary → KILLED
    2. Changed increment from 1 to -1 \rightarrow TIMED\_OUT
    3. Replaced integer multiplication with division → KILLED
    4. Replaced integer modulus with multiplication → KILLED
    5. Replaced integer subtraction with addition → KILLED
    6. negated conditional → KILLED
    1. changed conditional boundary → KILLED
    2. Changed increment from 1 to -1 → KILLED
    negated conditional → KILLED
19 1. Replaced integer multiplication with division → KILLED
```

```
2. Replaced integer addition with subtraction → KILLED
    3. Replaced integer modulus with multiplication → KILLED
    1. Replaced integer multiplication with division → KILLED
    2. Replaced integer addition with subtraction \rightarrow KILLED 3. Replaced integer modulus with multiplication \rightarrow KILLED
    1. changed conditional boundary → KILLED
    2. Changed increment from 1 to -1 → KILLED
    3. Replaced integer subtraction with addition → SURVIVED
    4. negated conditional → KILLED
24 1. negated conditional → KILLED

    changed conditional boundary → KILLED

    2. Changed increment from 1 to -1 → KILLED
    negated conditional → KILLED
    1. Replaced integer addition with subtraction → KILLED
    2. negated conditional → KILLED
29 1. negated conditional → KILLED
30 1. removed call to java/io/PrintStream::println → SURVIVED

    replaced int return with 0 for DivideAndConquerTesting/RabinKarp::search → KILLED

    1. changed conditional boundary → KILLED
36 2. Replaced integer subtraction with addition → KILLED
    3. negated conditional → KILLED
    1. Replaced integer multiplication with division → KILLED

    Replaced integer subtraction with addition → KILLED
    Replaced integer multiplication with division → KILLED

    4. Replaced integer addition with subtraction → KILLED
    5. Replaced integer addition with subtraction → KILLED
    6. Replaced integer modulus with multiplication → KILLED

    changed conditional boundary → SURVIVED

    2. Replaced integer addition with subtraction → KILLED
    negated conditional → KILLED
41 1. replaced int return with 0 for DivideAndConquerTesting/RabinKarp::search → KILLED
```

Active mutators

- BOOLEAN FALSE RETURN
- BOOLEAN TRUE RETURN
- CONDITIONALS_BOUNDARY_MUTATOR
- EMPTY RETURN VALUES
- INCREMENTS MŪTATORINVERT_NEGS_MUTATOR
- MATH MUTATOR
- NEGATE CONDITIONALS MUTATOR
- NULL RĒTURN_VALUESPRIMITIVE_RETURN_VALS_MUTATOR
- VOID_METHOD_CALL_MUTATOR

Tests examined

- DivideAndConquerTesting.AllDivideConquerTesting.[engine:junit-jupiter]/ [class:DivideAndConquerTesting.AllDivideConquerTesting]/[method:testRabinKarp()] (16 ms)
- DivideAndConquerTesting.AllDivideConquerTesting.[engine:junit-jupiter]/ [class:DivideAndConquerTesting.AllDivideConquerTesting]/[method:BinarySearch2dArrayTestMiddle()] (28 ms)

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