Codility_

## Candidate Report: trainingRHPQM2-X8U

Check out Codility training tasks

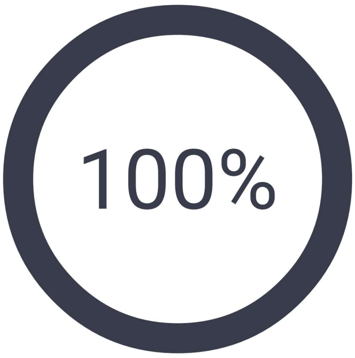
Test Name:

Summary Review (0) Timeline

### Tasks summary

| Task | Time spent | Score |
|---|---|---|
| MaxCounters<br>Java 8 | 1 min | 100% |

### Total score



## Tasks Details

### 1. MaxCounters

Medium

Calculate the values of counters after applying all alternating operations: increase counter by 1; set value of all counters to current maximum.

| Task Score | Correctness | Performance |
|---|---|---|
| 100% | 100% | 100% |

### Task description

You are given N counters, initially set to 0, and you have two possible operations on them:

- *increase(X)* − counter X is increased by 1,
- *max counter* − all counters are set to the maximum value of any counter.

A non-empty array A of M integers is given. This array represents consecutive operations:

- if A[K] = X, such that 1 ≤ X ≤ N, then operation K is increase(X),
- if A[K] = N + 1 then operation K is max counter.

For example, given integer N = 5 and array A such that:

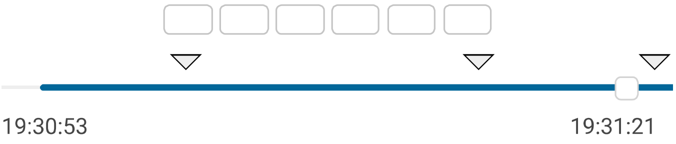
```
    A[0] = 3
    A[1] = 4
    A[2] = 4
    A[3] = 6
    A[4] = 1
    A[5] = 4
    A[6] = 4
```

the values of the counters after each consecutive operation will be:

### Solution

| | |
|---|---|
| Programming language used: | Java 8 |
| Total time used: | 1 minutes |
| Effective time used: | 1 minutes |
| Notes: | *not defined yet* |

### Task timeline



Code: 19:31:20 UTC, java, final, score: **100**

show code in pop-up

```
// you can also use imports, for example:
// import java.util.*;

// you can write to stdout for debugging purposes, e.g.
```

```
    (0, 0, 1, 0, 0)
    (0, 0, 1, 1, 0)
    (0, 0, 1, 2, 0)
    (2, 2, 2, 2, 2)
    (3, 2, 2, 2, 2)
    (3, 2, 2, 3, 2)
    (3, 2, 2, 4, 2)
```

The goal is to calculate the value of every counter after all operations.

Write a function:

```
class Solution { public int[] solution(int N, int[] A);
}
```

that, given an integer N and a non-empty array A consisting of M integers, returns a sequence of integers representing the values of the counters.

Result array should be returned as an array of integers.

For example, given:

```
    A[0] = 3
    A[1] = 4
    A[2] = 4
    A[3] = 6
    A[4] = 1
    A[5] = 4
    A[6] = 4
```

the function should return [3, 2, 2, 4, 2], as explained above.

Write an **efficient** algorithm for the following assumptions:

- N and M are integers within the range [1..100,000];
- each element of array A is an integer within the range [1..N + 1].

```
// System.out.println("this is a debug message");

class Solution {
   public int[] solution(int N, int[] A) {

    final int condition = N + 1;
    int currentMax = 0;
    int lastUpdate = 0;
    int countersArray[] = new int[N];

    for (int iii = 0; iii < A.length; iii++) {
      int currentValue = A[iii];
      if (currentValue == condition) {
        lastUpdate = currentMax;
      } else {
        int position = currentValue - 1;
        if (countersArray[position] < lastUpdate)
          countersArray[position] = lastUpdate
        else
          countersArray[position]++;

        if (countersArray[position] > currentMax)
          currentMax = countersArray[position];
        }
      }

    }

    for (int iii = 0; iii < N; iii++) {
       if (countersArray[iii] < lastUpdate)
         countersArray[iii] = lastUpdate;
    }

    return countersArray;
  }
}
```

## Analysis summary

The solution obtained perfect score.

## Analysis ?

Detected time complexity: **O(N + M)**

| expand all | Example tests | |
|---|---|---|
| ▶ | example<br>example test | ✓ OK |
| expand all | Correctness tests | |
| ▶ | extreme_small<br>all max_counter operations | ✓ OK |
| ▶ | single<br>only one counter | ✓ OK |
| ▶ | small_random1<br>small random test, 6 max_counter operations | ✓ OK |
| ▶ | small_random2<br>small random test, 10 max_counter operations | ✓ OK |
| expand all | Performance tests | |
| ▶ | medium_random1<br>medium random test, 50 max_counter operations | ✓ OK |
| ▶ | medium_random2<br>medium random test, 500 max_counter | ✓ OK |

| | | |
|---|---|---|
| | operations | |
| ▶ | large_random1<br>large random test, 2120 max_counter operations | ✓ OK |
| ▶ | large_random2<br>large random test, 10000 max_counter operations | ✓ OK |
| ▶ | extreme_large<br>all max_counter operations | ✓ OK |

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