Codility_

CodeCheck Report: trainingTWRT6S-EYG

Test Name:

Check out Codility training tasks

Summary Timeline

Tasks summary

Task	Time spent	Score
TapeEquilibrium C#	1 min	100%

Total score

Tasks Details

Easy

1. TapeEquilibrium

Minimize the value |(A[0] + ... + A[P-1]) - (A[P] + ... + A[N-1])|.

Task Score	Correctness	Performance
100%	100%	100%

Task description

A non-empty array A consisting of N integers is given. Array A represents numbers on a tape.

Any integer P, such that 0 < P < N, splits this tape into two non-empty parts: A[0], A[1], ..., A[P − 1] and A[P], A[P + 1], ..., A[N − 1].

The *difference* between the two parts is the value of: |(A[0] + A[1] + ... + A[P − 1]) − (A[P] + A[P + 1] + ... + A[N − 1])|

In other words, it is the absolute difference between the sum of the first part and the sum of the second part.

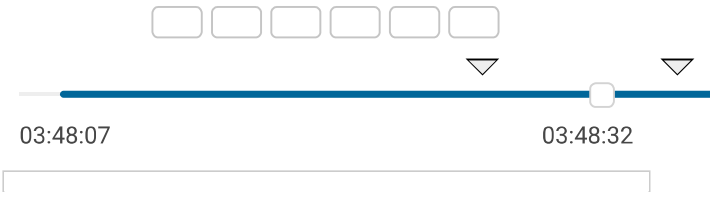
For example, consider array A such that:

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

Solution

Programming language used:	C#
Total time used:	1 minutes
Effective time used:	1 minutes
Notes:	*not defined yet*

Task timeline



We can split this tape in four places:

- P = 1, difference = |3 − 10| = 7
- P = 2, difference = |4 − 9| = 5
- P = 3, difference = |6 − 7| = 1
- P = 4, difference = |10 − 3| = 7

Write a function:

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

that, given a non-empty array A of N integers, returns the minimal difference that can be achieved.

For example, given:

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

the function should return 1, as explained above.

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

- N is an integer within the range [2..100,000];
- each element of array A is an integer within the range [−1,000..1,000].

Code: 03:48:31 UTC, cs, final, score: **100** show code in pop-up

```
1  using System;
2  using System.Linq;
3
4  /* Lesson 3.3 - Tape Equilibrium
5   * Paulo Santos
6   * 24.Nov.2022
7   */
8  class Solution {
9      public int solution(int[] A) {
10
11         /*
12          * Check the input
13          */
14         if (A == null)
15             throw new ArgumentNullException();
16
17         var sum1 = A.Sum();
18         var sum2 = 0;
19         var ans = int.MaxValue;
20         for(var i = 0; i < A.Length - 1; i++) {
21             sum2 += A[i];
22             sum1 -= A[i];
23             var dif = Math.Abs(sum1 - sum2);
24             ans = (dif < ans) ? dif : ans;
25         }
26
27         return ans;
28
29     }
30 }
```

Analysis summary

The solution obtained perfect score.

Analysis

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

expand all	Example tests	
▶	example example test	✓ OK
expand all	Correctness tests	
▶	double two elements	✓ OK
▶	simple_positive simple test with positive numbers, length = 5	✓ OK
▶	simple_negative simple test with negative numbers, length = 5	✓ OK
▶	simple_boundary only one element on one of the sides	✓ OK
▶		

small_random random small, length = 100	✓ OK	
▶ small_range range sequence, length = ~1,000	✓ OK	
▶ small small elements	✓ OK	

expand all

Performance tests

▶ medium_random1 random medium, numbers from 0 to 100, length = ~10,000	✓ OK	
▶ medium_random2 random medium, numbers from -1,000 to 50, length = ~10,000	✓ OK	
▶ large_ones large sequence, numbers from -1 to 1, length = ~100,000	✓ OK	
▶ large_random random large, length = ~100,000	✓ OK	
▶ large_sequence large sequence, length = ~100,000	✓ OK	
▶ large_extreme large test with maximal and minimal values, length = ~100,000	✓ OK	