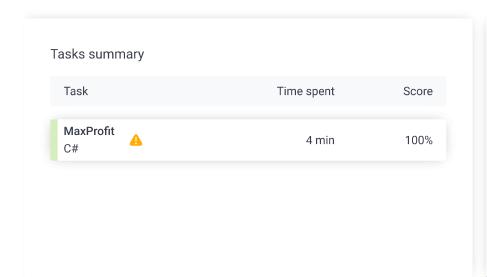
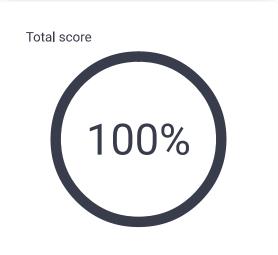
Codility_

CodeCheck Report: trainingBUDB54-N36

Test Name:

Summary Timeline





Check out Codility training tasks

Tasks Details

1. MaxProfit

Given a log of stock prices compute the maximum possible earning.

Task Score 100% Correctness

Performance

100%

100%

Task description

An array A consisting of N integers is given. It contains daily prices of a stock share for a period of N consecutive days. If a single share was bought on day P and sold on day Q, where $0 \le P$ \leq Q < N, then the *profit* of such transaction is equal to A[Q] - A[P], provided that $A[Q] \ge A[P]$. Otherwise, the transaction brings loss of A[P] - A[Q].

For example, consider the following array A consisting of six elements such that:

A[0] = 23171

A[1] = 21011

A[2] = 21123

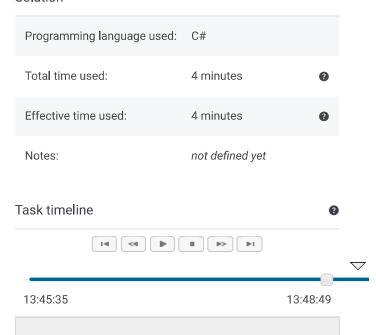
A[3] = 21366

A[4] = 21013

A[5] = 21367

If a share was bought on day 0 and sold on day 2, a loss of 2048 would occur because A[2] - A[0] = 21123 - 23171 = -2048. If a share was bought on day 4 and sold on day 5, a profit of 354

Solution



would occur because A[5] – A[4] = 21367 - 21013 = 354. Maximum possible profit was 356. It would occur if a share was bought on day 1 and sold on day 5.

Write a function,

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

that, given an array A consisting of N integers containing daily prices of a stock share for a period of N consecutive days, returns the maximum possible profit from one transaction during this period. The function should return 0 if it was impossible to gain any profit.

For example, given array A consisting of six elements such that:

A[0] = 23171 A[1] = 21011 A[2] = 21123 A[3] = 21366 A[4] = 21013 A[5] = 21367

the function should return 356, as explained above.

Write an efficient algorithm for the following assumptions:

- N is an integer within the range [0..400,000];
- each element of array A is an integer within the range [0..200,000].

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Code: 13:48:48 UTC, cs, final, show code in pop-up score: 100

```
1
      using System;
2
      using System.Linq;
3
      using System.Collections.Generic;
4
5
      * 9.1 - Max Profit
6
7
      * Paulo Santos
8
      * 14.Dec.2022
      */
9
10
     class Solution {
11
         public int solution(int[] A) {
12
13
14
              * Check the input
15
16
             if (A == null)
17
                  throw new ArgumentNullException();
             if (A.Length == 0)
18
19
                 return 0;
20
             var min = A[0];
21
22
             var difs = new List<int>();
23
             var dif = 0;
24
25
             for (var i = 1; i < A.Length; i++) {
26
                 dif = Math.Max((A[i] - min), dif);
27
                 if (min > A[i]) {
                     difs.Add(dif);
28
29
                     dif = 0;
30
                     min = A[i];
31
                 }
32
             difs.Add(dif);
33
34
35
             return difs.Max();
36
         }
     }
37
```

Analysis summary

The solution obtained perfect score.

Analysis

Detected time complexity: O(N)

ехра	ınd all	Example tests
•	example example, length=6	√ OK
ехра	ind all	Correctness tests
•	simple_1 V-pattern sequence	✓ OK ength=7
•	simple_desc descending and asc length=5	✓ OK ending sequence,
•	simple_empty empty and [0,20000	✓ OK] sequence

	 two_hills two increasing subsection max_profit_after_ ore_min max profit is after glob before global minimur 	quences max_and_bef v pal maximum and	/ OK / OK
e	kpand all F	erformance tes	ts
	medium_1 large value (99) follow pattern (values from [1	ed by short V-	⁄ OK
	large_1 large value (99) follow pattern (values from [1	red by short	/ OK
	large_2 chaotic sequence of 2 [100K120K], then 200 [0100K]	00K values from	/ OK
	large_3 chaotic sequence of 2 [1200K]	·	/ OK