Codility_

CodeCheck Report: trainingWVBWYD-J2D

Test Name:

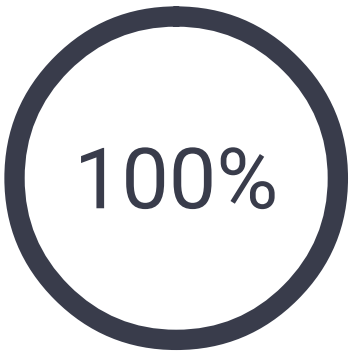
Check out Codility training tasks

Summary Timeline

Tasks summary

Task	Time spent	Score
MaxProfit Java 8 ⚠	19 min	100%

Total score



Tasks Details

1. **MaxProfit**

Easy

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

Task Score	Correctness	Performance
100%	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 ≤ P ≤ Q < N, then the *profit* of such transaction is equal to A[Q] − A[P], provided that A[Q] ≥ 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 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); }
```

Solution

Programming language used:	Java 8
Total time used:	19 minutes
Effective time used:	19 minutes
Notes:	*not defined yet*

Task timeline

16:52:24 17:10:57

Code: 17:10:57 UTC, java, final, score: **100** show code in pop-up

```
1  // you can also use imports, for example:
2  // import java.util.*;
3
```

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].


```
4  // you can write to stdout for debugging purposes,
5  // System.out.println("this is a debug message");
6  class Solution {
7      public int solution(int[] A) {
8          if(A.length <= 1){
9              return 0;
10         }
11         int minPrice = A[0];
12         int maxProfit =0;
13         for(int i=1; i<A.length; i++){
14             if(A[i] < minPrice){
15                 minPrice = A[i];
16             }
17             else{
18                 int curProfit = A[i] - minPrice;
19                 if(curProfit > maxProfit)
20                     maxProfit = curProfit;
21             }
22         }
23         return maxProfit;
24     }
25 }
```

Analysis summary

The solution obtained perfect score.

Analysis

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

expand all	Example tests	
▶	example example, length=6	✓ OK
expand all	Correctness tests	
▶	simple_1 V-pattern sequence, length=7	✓ OK
▶	simple_desc descending and ascending sequence, length=5	✓ OK
▶	simple_empty empty and [0,200000] sequence	✓ OK
▶	two_hills two increasing subsequences	✓ OK
▶	max_profit_after_max_and_before_min max profit is after global maximum and before global minimum	✓ OK
expand all	Performance tests	
▶	medium_1 large value (99) followed by short V-pattern (values from [1..5]) repeated 100 times	✓ OK
▶	large_1 large value (99) followed by short pattern (values from [1..6]) repeated 10K times	✓ OK
▶	large_2 chaotic sequence of 200K values from [100K..120K], then 200K values from [0..100K]	✓ OK

▶	large_3 chaotic sequence of 200K values from [1..200K]	✓ OK