Codility_

Candidate Report: Anonymous

Check out Codility training tasks

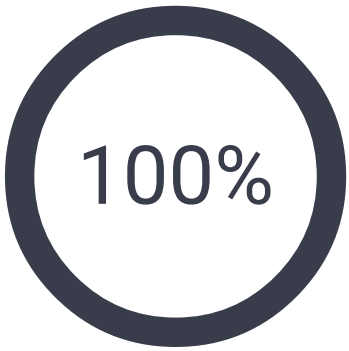
Test Name:

Summary Timeline Feedback

Tasks summary

Task	Time spent	Score
MaxProfit Swift 4	4 min	100%

Total score



Tasks Details

Easy

1. MaxProfit

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,

```
public func solution(_ A : inout [Int]) -> Int
```

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.

Solution

Programming language used:	Swift 4
Total time used:	4 minutes
Effective time used:	4 minutes
Notes:	*not defined yet*

Task timeline

10:21:15 10:25:06

Code: 10:25:06 UTC, swift4, final, score: **100** show code in pop-up

```
1  import Foundation
2  import Glibc
3
4  public func solution(_ A : inout [Int]) -> Int {
5
6      var minItem = Int.max
7      var maxProfit = 0
8
```

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].


```
 9      for item in A{
10          minItem = min(minItem, item)
11          maxProfit = max(maxProfit, item - minItem)
12      }
13
14      return maxProfit
15  }
```

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