# cødility

### Training center

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### Demo ticket

#### Session

ID: demoCR49Z6-R5W Time limit: 120 min.

### Status: closed

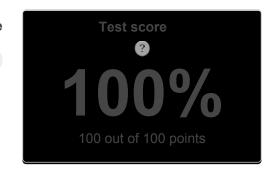
Created on: 2014-03-20 01:33 UTC Started on: 2014-03-20 01:33 UTC Finished on: 2014-03-20 01:41 UTC

### Tasks in test

1 | {} StoneWall

### Task score

100%



## 1. **St**o

#### 1. StoneWall

Cover "Manhattan skyline" using the minimum number of rectangles.

score: 100 of 100



### Task description

Solution to this task can be found at our blog.

You are going to build a stone wall. The wall should be straight and N meters long, and its thickness should be constant; however, it should have different heights in different places. The height of the wall is specified by a zero-indexed array H of N positive integers. H[I] is the height of the wall from I to I+1 meters to the right of its left end. In particular, H[0] is the height of the wall's left end and H[N-1] is the height of the wall's right end.

The wall should be built of cuboid stone blocks (that is, all sides of such blocks are rectangular). Your task is to compute the minimum number of blocks needed to build the wall.

Write a function:

def solution(H)

that, given a zero-indexed array H of N positive integers specifying the

height of the wall, returns the minimum number of blocks needed to build it

For example, given array H containing N = 9 integers:

H[0] = 8 H[1] = 8 H[2] = 5 H[3] = 7 H[4] = 9 H[5] = 8H[6] = 7 H[7] = 4 H[8] = 8

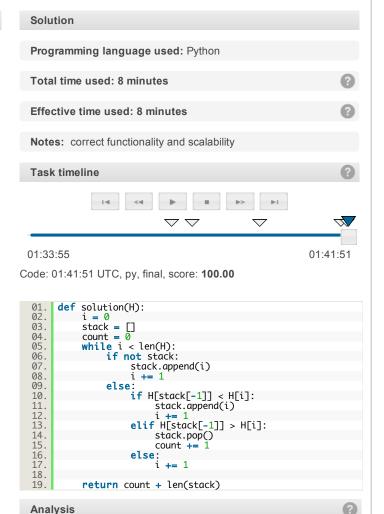
the function should return 7. The figure shows one possible arrangement of seven blocks.

Assume that:

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

### Complexity:

- expected worst-case time complexity is O(N);
- expected worst-case space complexity is O(N), beyond input storage (not counting the storage required for input arguments).



Elements of input arrays can be modified.

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## Detected time complexity: O(N)

test	time	result
example	0.050 s.	ОК
simple1	0.050 s.	ОК
simple2	0.050 s.	OK
simple3	0.050 s.	ок
simple4	0.050 s.	ок
boundary_cases	0.050 s.	ок
medium1	0.050 s.	ок
medium2	0.050 s.	ок
medium3	0.050 s.	ок
medium4	0.050 s.	ок
large_piramid	0.290 s.	ок
large_increasing_decreasing	0.330 s.	ок
large_up_to_20	0.310 s.	ок
large_up_to_100	0.320 s.	ок
large_max	0.350 s.	ОК

### Training center

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