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## cødility

Training center

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### Demo ticket

### Session

ID: demoGTU9N3-873 Time limit: 120 min.

### Status: closed

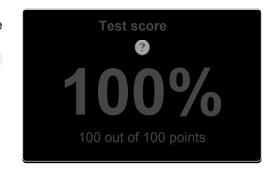
Created on: 2014-03-23 07:47 UTC Started on: 2014-03-23 07:47 UTC Finished on: 2014-03-23 07:48 UTC

#### Tasks in test

1 | {} ArrayInversionCount

### Task score

100%



## EDIUM

### 1. ArrayInversionCount

Compute number of inversion in an array.

score: 100 of 100



### Task description

A zero-indexed array A consisting of N integers is given. An *inversion* is a pair of indexes (P, Q) such that P < Q and A[Q] < A[P]. Write a function:

def solution(A)

that computes the number of inversions in A, or returns -1 if it exceeds 1,000,000,000.

Assume that:

- N is an integer within the range [0..100,000];
- each element of array A is an integer within the range [-2,147,483,648..2,147,483,647].

For example, in the following array:

$$A[0] = -1 A[1] = 6 A[2] = 3$$
  
 $A[3] = 4 A[4] = 7 A[5] = 4$ 

there are four inversions:

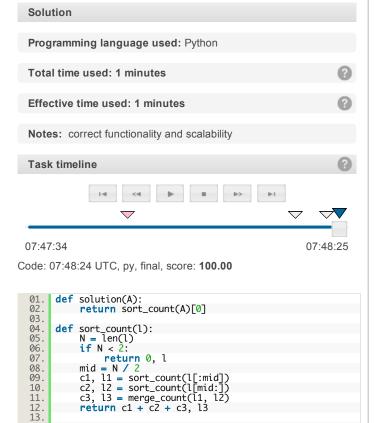
$$(1,2)$$
  $(1,3)$   $(1,5)$   $(4,5)$ 

so the function should return 4. Complexity:

- expected worst-case time complexity is O(N\*log(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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def merge\_count(l1, l2):
 count = i = j = k = 0
 N = len(l1)
 M = len(l2)
 l3 = [0] \* (N + M)
 while i < N and j < M:
 if l1[i] <= l2[j]:
 l3[k] = l1[i]
 i += 1</pre>

14.

16. 17. 18. 19. 20. 21.

**Analysis** 



# Detected time complexity: O(N\*log(N))

test	time	result
example1 example test	0.050 s.	ок
simple1	0.050 s.	ОК
simple2	0.050 s.	ОК
simple3	0.050 s.	ОК
extreme_0_inv [0], [], [1,2,3], [1,1,1]	0.050 s.	ок
medium1 n=100	0.050 s.	ок
medium2 n=200	0.050 s.	ок
medium3 n=1000	0.050 s.	ок
big1 n=10000	0.140 s.	ок
big2 n=20000	0.250 s.	ок
big3 n=30000	0.360 s.	ок

### Training center

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