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Demo ticket

Session

ID: demoZSQ3V6-Z7E Time limit: 120 min.

Status: closed

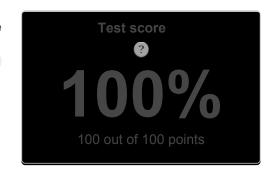
Created on: 2014-03-23 04:22 UTC Started on: 2014-03-23 04:22 UTC Finished on: 2014-03-23 04:29 UTC

Tasks in test

MinAbsSumOfTwo

Task score

100%



1. MinAbsSumOfTwo

Find the minimal absolute value of a sum of two elements.

score: 100 of 100



04:29:13

Task description

Let A be a non-empty zero-indexed array consisting of N integers. The abs sum of two for a pair of indices (P, Q) is the absolute value |A[P] + A[Q]|, for $0 \le P \le Q < N$.

For example, the following array A:

A[0] = 1

A[1] = 4

A[2] = -3

has pairs of indices (0, 0), (0, 1), (0, 2), (1, 1), (1, 2), (2, 2). The abs_sum_of_two for the pair (0, 0) is A[0] + A[0] = |1 + 1| = 2. The abs_sum_of_two for the pair (0, 1) is A[0] + A[1] = |1 + 4| = 5. The abs_sum_of_two for the pair (0, 2) is A[0] + A[2] = |1 + (-3)| = 2. The abs_sum_of_two for the pair (1, 1) is A[1] + A[1] = |4 + 4| = 8. The abs_sum_of_two for the pair (1, 2) is A[1] + A[2] = |4 + (-3)| = 1. The abs_sum_of_two for the pair (2, 2) is A[2] + A[2] = |(-3) + (-3)| =

Write a function:

def solution(A)

that, given a non-empty zero-indexed array A consisting of N integers, returns the minimal abs sum of two for any pair of indices in this

For example, given the following array A:

A[0] = 1

A[1] = 4

A[2] = -3

the function should return 1, as explained above. Given array A:

A[0] = -8

A[1] = 4

A[2] = 5

A[3] = -10A[4] = 3

the function should return |(-8) + 5| = 3.

Solution

Programming language used: Python

Total time used: 7 minutes

Effective time used: 7 minutes

Notes: correct functionality and scalability

Task timeline



04:22:37 Code: 04:29:13 UTC, py, final, score: 100.00

01 02 A.sort() N = len(A) 03. $i = \emptyset$ j = N-105 06 07 min_abs = 1000000000 * 2 08 while i <= j: s = A[j] + A[i] 09 10.

def solution(A):

11 min_abs = min(min_abs, abs(s)) **if** s > 0: 12. -= 1 14. s < 0: i += 1

15 16. 17. break 18. return min_abs

Analysis

Assume that:

- N is an integer within the range [1..100,000];
- each element of array A is an integer within the range [-1,000,000,000.1,000,000,000].

Complexity:

- expected worst-case time complexity is O(N*log(N));
- expected worst-case space complexity is O(1), beyond input storage (not counting the storage required for input arguments).

Elements of input arrays can be modified.

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O(N * log(N))

test	time	result
example1 first example	0.050 s.	ок
example2 second example	0.050 s.	ок
extreme_single sequences of 1 elements	0.050 s.	ок
extreme_double sequences of 2 elements	0.050 s.	ок
positive_small only positive numbers	0.050 s.	ОК
negative_small only negative numbers	0.050 s.	ок
random_small random sequence, length = ~1000	0.050 s.	ок
random_medium random sequence, length = ~10,000	0.070 s.	ок
arithmetic_medium arithemtic sequence, length = ~10,000	0.130 s.	ОК
random_large random sequence, length = ~100,000	0.280 s.	ок
extreme_large sequence of MAX_INT, length = ~100,000	0.280 s.	ок
arithmetic_large arithmetic sequence, length = ~100,000	0.340 s.	ок
constant_distance constant distance between all elements, length = 100,000	0.330 s.	ок

Training center

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