

UPCOMING
CHALLENGES:CURRENT
CHALLENGES:

Scandium 2016

PAST CHALLENGES


Indeed Prime
Challenge
Indeed Prime 2
Indeed Prime

Calcium 2015

Kalium 2015

Argon 2015

Chlorum 2014

Sulphur 2014

Phosphorus
2014

Silicium 2014

Aluminium 2014

AMBITIOUS

MinAbsSum

START

Given array of integers, find the lowest absolute sum of elements.

Programming language: C++ ▼

For a given array A of N integers and a sequence S of N integers from the set $\{-1, 1\}$, we define $\text{val}(A, S)$ as follows:

$$\text{val}(A, S) = |\text{sum}\{A[i] * S[i] \text{ for } i = 0..N-1\}|$$

(Assume that the sum of zero elements equals zero.)

For a given array A , we are looking for such a sequence S that minimizes $\text{val}(A, S)$.

Write a function:

```
int solution(vector<int> &A);
```

that, given an array A of N integers, computes the minimum value of $\text{val}(A, S)$ from all possible values of $\text{val}(A, S)$ for all possible sequences S of N integers from the set $\{-1, 1\}$.

For example, given array:

```
A[0] = 1
A[1] = 5
A[2] = 2
A[3] = -2
```

your function should return 0, since for $S = [-1, 1, -1, 1]$, $\text{val}(A, S) = 0$, which is the minimum possible value.

Assume that:

- N is an integer within the range $[0..20,000]$;
- each element of array A is an integer within the range $[-100..100]$.

Complexity:

- expected worst-case time complexity is $O(N * \max(\text{abs}(A))^2)$;

Magnesium 2014
Natrium 2014
Neon 2014
Fluorum 2014
Oxygenium 2014
Nitrogenium 2013
Carbo 2013
Boron 2013
Beryllium 2013
Lithium 2013
Helium 2013
Hydrogenium 2013
Omega 2013
Psi 2012
Chi 2012
Phi 2012
Upsilon 2012
Tau 2012

- expected worst-case space complexity is $O(N + \sum(\text{abs}(A)))$, beyond input storage (not counting the storage required for input arguments).

Elements of input arrays can be modified.

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Sigma 2012
Rho 2012
Pi 2012
Omicron 2012
Xi 2012
Nu 2011
Mu 2011
Lambda 2011
Kappa 2011
Iota 2011
Theta 2011
Eta 2011
Zeta 2011
Epsilon 2011
Delta 2011
Gamma 2011
Beta 2010
Alpha 2010

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