Lessons | Challenges

AVAILABLE LESSONS:

Lesson 1
Time Complexity

Lesson 2
Counting Elements

Lesson 3
Prefix Sums

Lesson 4
Sorting

Lesson 5
Stacks and Queues

Lesson 6
Leader

Lesson 7
Maximum slice problem

Lesson 8
Prime and composite numbers

Lesson 9
Sieve of Eratosthenes

Lesson 10

PAINLESS

TapeEquilibrium

START

Minimize the value |(A[0] + ... + A[P-1]) - (A[P] + ... + A[N-1])|.

Programming language: JavaScript ▼

A non-empty zero-indexed array A consisting of N integers is given. Array A represents numbers on a tape.

Any integer P, such that 0 < P < N, splits this tape into two non-empty parts: A[0], A[1], ..., A[P − 1] and A[P], A[P + 1], ..., A[N − 1].

The *difference* between the two parts is the value of: |(A[0] + A[1] + ... + A[P − 1]) − (A[P] + A[P + 1] + ... + A[N − 1])|

In other words, it is the absolute difference between the sum of the first part and the sum of the second part.

For example, consider array A such that:

```
  A[0] = 3
  A[1] = 1
  A[2] = 2
  A[3] = 4
  A[4] = 3
```

We can split this tape in four places:

- P = 1, difference = |3 − 10| = 7
- P = 2, difference = |4 − 9| = 5
- P = 3, difference = |6 − 7| = 1
- P = 4, difference = |10 − 3| = 7

Write a function:

```
    function solution(A);
```

that, given a non-empty zero-indexed array A of N integers, returns the minimal difference that can be achieved.

Euclidean algorithm

Lesson 11

Fibonacci numbers

Lesson 12

Binary search algorithm

Lesson 13

Caterpillar method

Lesson 14

Greedy algorithms

Lesson 15

Dynamic programming

Lesson 99

Future training

For example, given:

```
  A[0] = 3
  A[1] = 1
  A[2] = 2
  A[3] = 4
  A[4] = 3
```

the function should return 1, as explained above.

Assume that:

- N is an integer within the range [2..100,000];
- each element of array A is an integer within the range [−1,000..1,000].

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.

For programmers

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