

Kavala Olives

Input file: **standard input**
Output file: **standard output**
Time limit: 4 seconds
Memory limit: 1024 megabytes

At a taverna in Kavala, a cook is arranging olives on small plates for dinner. The cook wants to distribute the olives so that no plate contains more than one.

There are n plates arranged in a circle and numbered from 1 to n in clockwise order. Plate i initially contains a_i olives. The total number of olives does not exceed n .

In one move, you may take one olive from a plate and put it onto the next plate clockwise or counterclockwise. In particular, plates 1 and n are adjacent. There is no limit on the number of olives on a plate during the process.

Find the minimum number of moves needed to make every plate contain at most one olive.

Input

The first line contains an integer n ($1 \leq n \leq 200\,000$), the number of plates.

The second line contains n integers $a_1, a_2, \dots, a_n$ ($0 \leq a_i \leq n$), the initial numbers of olives. It is guaranteed that $a_1 + a_2 + \dots + a_n \leq n$.

Output

Print one integer: the minimum number of moves.

Examples

standard input	standard output
6 3 0 0 0 0 0	2
5 1 0 1 0 1	0
5 0 3 2 0 0	4

Note

In the first example, move one olive from plate 1 to plate 2, and another olive from plate 1 to plate 6. Two moves are necessary because two olives must leave plate 1.

In the second example, every plate already contains at most one olive.

In the third example, move two olives from plate 2 to plate 1, one at a time. Then move one olive from plate 1 to plate 5, and one from plate 3 to plate 4. This takes four moves; a plate may temporarily contain more than one olive.