# Forgotten Pencil Case (pens)

Forgetting things is one of the most played "sport" worldwide, and university students make no exception. To be more accurate, students keep forgetting their pencil cases, often because they leave it on the desk at their home.

When the first lecture starts in the morning, they suddenly realize that they are unable to take class notes, as they have no pen at their disposal. What usually happens next is that these students start asking pens to other students, seated increasingly away, until someone happened to brought many pens with them and is thus able to lend one.

Luca, who is notoriously a calm person, finds that this process is rather messy and produces too much noise. Wouldn't it be simpler if, considered a row of seatings, a student could only ask a pen to the student seated at their immediate left or right?



Figure 1: A modern university classroom.

Luca wants to experiment with the rule above, worried that maybe too many students will be left without a pen. Help him: given a row of $N$ students, each with $P_i$ pens in their pencil case, what is the minimum number of students who will not be able to get a pen from their immediate neighbors (using the best strategy while lending pens)?

> ☞ Among the attachments of this task you may find a template file `pens.*` with a sample incomplete implementation.

## Input

The first line contains the number $N$ of students in the row. The second line contains $N$ integers $P_i$, the number of pens that the $i$-th student has in their pencil case (possibly zero, if the pencil case was forgotten).

## Output

You need to write a single line with an integer: the minimum number of students that will be left without a pen, respecting the rule described above.

## Constraints

- $1 \leq N \leq 1\,000\,000$.

- $0 \leq P_i \leq 100$ for each $i = 0 \ldots N-1$.

- The $i$-th student can ask for a pen only to the $(i-1)$-th and to the $(i+1)$-th student, unless the $i$ position is an extreme of the row: the student seated in position 0 can only ask to the student in position 1, and the student in position $N-1$ can only ask to the student in position $N-2$.

- When a student has more than one pen, they will always lend one when asked. Conversely, if a student has just one pen, they will never lend their only pen.

- Students who have not forgot their pencil case (i.e., $P_i \geq 1$) will never ask others for more pens.

## Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points)      Examples.

– **Subtask 2** (5 points)      $N = 1$.

– **Subtask 3** (10 points)      $0 \leq P_i \leq 1$ for each $i = 0 \ldots N-1$.

– **Subtask 4** (35 points)      $N \leq 15$.

– **Subtask 5** (50 points)      No additional limitations.

## Examples

| input | output |
|---|---|
| 2<br>0 3 | 0 |
| 6<br>0 2 0 1 1 0 | 2 |

## Explanation

In the **first sample case** there are just two students in the row: the first one has forgotten his pencil case and has no pens, while the second one has three pens. The first student can ask a pen to the student sat on his right, and they will have one and two pens, respectively. Thus, no student will be left without a pen.

In the **second sample case** there are six students in the row and the first, the third and the sixth one have forgotten their pencil case. The last student is unable to get a pen: she has only one neighbor, who has just a pen for himself. The first student can ask a pen to the student sat on his right, but doing so prevents the third student from getting a pen. Simmetrically, if the pen is asked by the third student to the second one, the first one will not be able to get a pen.

Summing it up, there is no way of lending pens that leaves less than two students without a pen.