# Problem K. Peace with Magic

| | |
|---|---|
| Time limit: | 2 seconds |
| Memory limit: | 1024 megabytes |

The NPCA country consists of $N$ squares arranged in a straight line, numbered from 1 to $N$ from left to right. Let the height of square $i$ be $H_i$. Initially, $H_1 = H_2 = \cdots = H_N = 0$.

For each $1 \leq i \leq N - 1$, if the absolute difference between $H_i$ and $H_{i+1}$ is less than $D_i$, a conflict arises between square $i$ and square $i+1$. Napuka-kun, the peace-loving king of NPCA country, aims to eliminate all conflicts between every pair of adjacent squares. To achieve this, Napuka-kun can perform the following magic any number of times (including zero):

- Choose integers $i$ and $j$ such that $1 \leq i \leq j \leq N$ and $H_i = H_{i+1} = \cdots = H_j$, then add 1 to each of $H_i, H_{i+1}, \ldots, H_j$.

Determine the minimum number of magic Napuka-kun needs to perform to achieve his goal.

## Constraints

- $2 \leq N \leq 100$
- $0 \leq D_i \leq 1000$

## Input

The input is given in the following format from standard input:

$N$

$D_1 \; D_2 \; \ldots \; D_{N-1}$

## Output

Output the answer.

## Examples

| standard input | standard output |
|---|---|
| 4<br>2 3 1 | 4 |
| 3<br>0 0 | 0 |
| 10<br>1 9 5 6 2 7 1 4 8 | 22 |

## Note

For the first sample case:

Initially, $(H_1, H_2, H_3, H_4) = (0, 0, 0, 0)$. For example, the magic can be cast as follows:

- Choose $(i, j) = (1, 3)$. Then $(H_1, H_2, H_3, H_4) = (1, 1, 1, 0)$.
- Choose $(i, j) = (1, 2)$. Then $(H_1, H_2, H_3, H_4) = (2, 2, 1, 0)$.
- Choose $(i, j) = (2, 2)$. Then $(H_1, H_2, H_3, H_4) = (2, 3, 1, 0)$.
- Choose $(i, j) = (2, 2)$. Then $(H_1, H_2, H_3, H_4) = (2, 4, 1, 0)$.

Napuka-kun casts the magic 4 times to achieve the goal, and this is the minimum number of casts. Note that you may choose $i = j$.