E - Bowls and Beans

Editorial (/contests/abc404/tasks/abc404_e/editorial)

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 475 points

Problem Statement

There are N large bowls arranged in a row, numbered $0, 1, \ldots, N-1$ from the left.

For each bowl i ($1 \leq i \leq N-1$), an integer C_i is written on it, and initially it contains A_i beans.

Bowl 0 has no integer written on it and initially contains no beans.

Consider repeating the following operation any number of times:

- Choose one bowl i ($1 \leq i \leq N-1$) and take out one or more beans from it.
- Distribute the taken beans freely among bowls $i-C_i, i-C_i+1, \ldots, i-1$.
  - Formally, when you take out k beans, you must put a total of k beans into bowls $i-C_i, i-C_i+1, \ldots, i-1$, and you may choose how many beans go into each bowl.

Find the minimum number of operations required to put all the beans into bowl 0.

Constraints

- All input values are integers.
- $2 \leq N \leq 2000$
- $1 \leq C_i \leq i$
- $0 \leq A_i \leq 1$

- $\sum_{i=1}^{N-1} A_i > 0$

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{llll}
N & & & \\
C_1 & C_2 & \ldots & C_{N-1} \\
A_1 & A_2 & \ldots & A_{N-1}
\end{array}
$$

Output

Output the answer as an integer.

Sample Input 1 Copy

Copy

```
5
1 1 2 1
1 0 0 1
```

Sample Output 1 Copy

Copy

```
3
```

For example, the following three operations put all the beans into bowl 0, and this is the minimum:

- Choose bowl 4. It has 1 bean.
  - Put 1 bean into bowl 3.
- Choose bowl 3. It has 1 bean.
  - Put 1 bean into bowl 1.
- Choose bowl 1. It has 2 beans.
  - Put 2 beans into bowl 0.

Sample Input 2 Copy

Copy

```
6
1 2 1 3 1
1 1 0 1 1
```

Sample Output 2 Copy

```
4
```

Copy

For example, the following four operations put all the beans into bowl 0, and this is the minimum:

- Choose bowl 5. It has 1 bean.
  - Put 1 bean into bowl 4.
- Choose bowl 4. It has 2 beans.
  - Put 1 bean into bowl 1.
  - Put 1 bean into bowl 2.
- Choose bowl 1. It has 2 beans.
  - Put 2 beans into bowl 0.
- Choose bowl 2. It has 2 beans.
  - Put 2 beans into bowl 0.

Sample Input 3 Copy

```
16
1 1 1 2 5 1 1 3 4 1 4 3 1 1 2
1 0 0 0 1 0 0 1 1 0 0 0 0 0 1
```

Copy

Sample Output 3 Copy

```
7
```

Copy

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