3. Ninja Master

Problem ID: 15694 | Required Problem | 100pt(s)

The Latest: **Accepted 100 pt(s)**
The Best: **Accepted 100 pt(s)**

Time Limit: 1000ms **Memory Limit: 262144kB**

Description

After entering the forest for an adventure, Xiaolan got lost. Now there is a river blocking his way. Fortunately, there are n logs floating on the river. Each log has its own number $(1, 2, ...n)$ and magic value a_i (which can be positive or negative). Xiaolan is a ninja master. When he stands on the i-th log, if the magic value $a_i > 0$, he can use the Shadow Clone Technique to choose to teleport to any log in $[i, i + k]$ (where $1 \leqslant k \leqslant a_i$). If the magic value $a_i \leqslant 0$, he can teleport to any log in $[1, i + a_i]$.

Now Xiaolan is on the 1st log, and he needs to teleport to the log with number n to cross the river. Each use of the Shadow Clone Technique consumes 1 point of stamina. Xiaolan wants to save as much stamina as possible. He wants to know the minimum amount of stamina he needs to cross the river. If it is impossible to cross the river no matter what, output -1.

Input

The first line contains a positive integer $n(2 < n < 2000)$.

The second line contains n integers $a_1, a_2, ..., a_n(1 < |a_i| < 2000)$, which represent the magic values of the logs.

Output

If it is possible to cross the river, output an integer, which represents the minimum stamina consumed.

Otherwise, output -1.

Examples

Input 1

```
4
2 2 -1 2
```

Output 1

```
2
```

Input 2

```
2
-1 -2
```

Output 2

```
-1
```

Examples Explanation

For example 1, Xiaolan can choose to teleport from the 1st log to the 2nd log, and then from the 2nd log to the 4th log to cross the river.

A total of 2 teleports were made, consuming 2 stamina.

For example 2, Xiaolan can only stay on the 1st log.