G
Non-negative Partial Sums

You are given a sequence of n numbers $a_0, \ldots, a_{n-1}$. A cyclic shift by k positions ($0 \leq k \leq n-1$) results in the following sequence: $a_k, a_{k+1}, \ldots, a_{n-1}, a_0, a_1, \ldots, a_{k-1}$. How many of the n cyclic shifts satisfy the condition that the sum of the first i numbers is greater than or equal to zero for all i with $1 \leq i \leq n$?

Input

Each test case consists of two lines. The first contains the number n ($1 \leq n \leq 10^6$), the number of integers in the sequence. The second contains n integers $a_0, \ldots, a_{n-1}$ ($-1000 \leq a_i \leq 1000$) representing the sequence of numbers. The input will finish with a line containing 0.

Output

For each test case, print one line with the number of cyclic shifts of the given sequence which satisfy the condition stated above.

Sample Input

```
3
2 2 1
3
-1 1 1
1
-1
0
```

Sample Output

```
3
2
0
```