Problem V. Find the Good Sequence

Time limit 1000 ms
Mem limit 524288 kB

Let's say two numbers are called "good" if their difference is at least 2.

Similarly, a sequence is also called good if the sequence is increasing and each adjacent two elements in this sequence are good as well. A sequence must consist of at least 2 elements.

Given an array of length n, For each index **i** ($1 \le i \le n$), print the maximum length of a consecutive good sequence starting from position i.

Input

The first line contains single positive integer **n** ($1 \le n \le 106$) — the number of integers.

Then each of the next ith line contains ith element of the array ($0 \le$ array element ≤ 107).

Output

For each index i, print the maximum length of a consecutive good sequence starting from position i.

Sample

Input	Output
7 1 3 5 6 8 10 11	3 2 0 3 2 0 0