K. Sadism

Difficulty: Demon **Time**: 2 s **Memory**: 1024 MB

by canin3

Oh dear! Thomas accidentally overcomplicated the solution to a Div 2 E. Luckily, he solved a more general case and can now force you to endure his suffering!

You're given an array $a_1, ..., a_n$ of length n. The MEX of the subarray $a_i, ..., a_j$ is defined as the smallest nonnegative integer $x \geq 0$ which does not appear in the subarray (i.e. no $i \leq l \leq j$ satisfies $a_l = x$). For each possible MEX $0 \leq x \leq n$, calculate the number of nonempty subarrays $a_i, ..., a_j$ $(1 \leq i \leq j \leq n)$ with that MEX.

Input

The first line contains an integer n $(1 \leq n \leq 10^6)$, the length of the array.

The second line contains n integers $a_1, ..., a_n$ $(0 \leq a_i < n)$.

Output

Output $n + 1$ integers separated by a space on one line, where the i-th integer is the number of nonempty subarrays with MEX $i - 1$ (i.e. starting at MEX 0).

Sample 1

Input

```
4
1 0 0 2
```

Output

```
2 5 2 1 0
```

Explanation

For example, the subarray $a_1, ..., a_4$ is the only subarray with MEX 3, since it contains $0, 1, 2$, but not 3. Therefore the 4th element of the output sequence is 1.

Sample 2

Input

```
7
1 5 4 2 6 0 3
```

Output

```
16 10 0 1 0 0 0 1
```