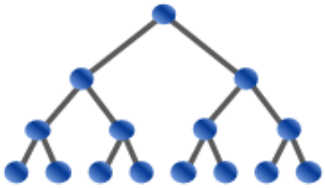

USACO 2020 US Open Contest, Gold
Problem 1. Haircut

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Contest has ended.

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English (en)

Tired of his stubborn cowlick, Farmer John decides to get a haircut. He has N ($1 \leq N \leq 10^5$) strands of hair arranged in a line, and strand i is initially A_i micrometers long ($0 \leq A_i \leq N$). Ideally, he wants his hair to be monotonically increasing in length, so he defines the "badness" of his hair as the number of inversions: pairs (i, j) such that $i < j$ and $A_i > A_j$.

For each of $j = 0, 1, \ldots, N-1$, FJ would like to know the badness of his hair if all strands with length greater than j are decreased to length exactly j.

(Fun fact: the average human head does indeed have about 10^5 hairs!)

INPUT FORMAT (file haircut.in):

The first line contains N.

The second line contains $A_1, A_2, \ldots, A_N$.

OUTPUT FORMAT (file haircut.out):

For each of $j = 0, 1, \ldots, N-1$, output the badness of FJ's hair on a new line.

Note that the large size of integers involved in this problem may require the use of 64-bit integer data types (e.g., a "long long" in C/C++).

SAMPLE INPUT:

```
5
5 2 3 3 0
```

SAMPLE OUTPUT:

```
0
4
4
5
7
```

The fourth line of output describes the number of inversions when FJ's hairs are decreased to length 3. Then $A = [3, 2, 3, 3, 0]$ has five inversions: $A_1 > A_2$, $A_1 > A_5$, $A_2 > A_5$, $A_3 > A_5$, and $A_4 > A_5$.

SCORING:

- Test case 2 satisfies $N \leq 100$.
- Test cases 3-5 satisfy $N \leq 5000$.
- Test cases 6-13 satisfy no additional constraints.

Problem credits: Dhruv Rohatgi

Contest has ended. No further submissions allowed.