You have n equal-length paragraphs numbered 1 to n. Now you want to arrange them in the order of $1, 2, \ldots, n$. With the help of a clipboard, you can easily do this: Ctrl-X (cut) and Ctrl-V (paste) several times. You cannot cut twice before pasting, but you can cut several contiguous paragraphs at the same time - they'll be pasted in order.

For example, in order to make $\{2, 4, 1, 5, 3, 6\}$, you can cut 1 and paste before 2, then cut 3 and paste before 4. As another example, one copy and paste is enough for $\{3, 4, 5, 1, 2\}$. There are two ways to do so: cut $\{3, 4, 5\}$ and paste after $\{1, 2\}$, or cut $\{1, 2\}$ and paste before $\{3, 4, 5\}$.

Input

The input consists of at most 20 test cases. Each case begins with a line containing a single integer n ($1 < n < 10$), thenumber of paragraphs. The next line contains a permutation of $1, 2, 3, \ldots, n$. The last case is followed by a single zero, which should not be processed.

Output

For each test case, print the case number and the minimal number of cut/paste operations.

Sample Input

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

Sample Output

```
Case 1: 2
Case 2: 1
```