"This Thing" Is Making Rögér Stunned

Team ID:59
Team Member: B05902061 B05902065 B05902089

Topic:

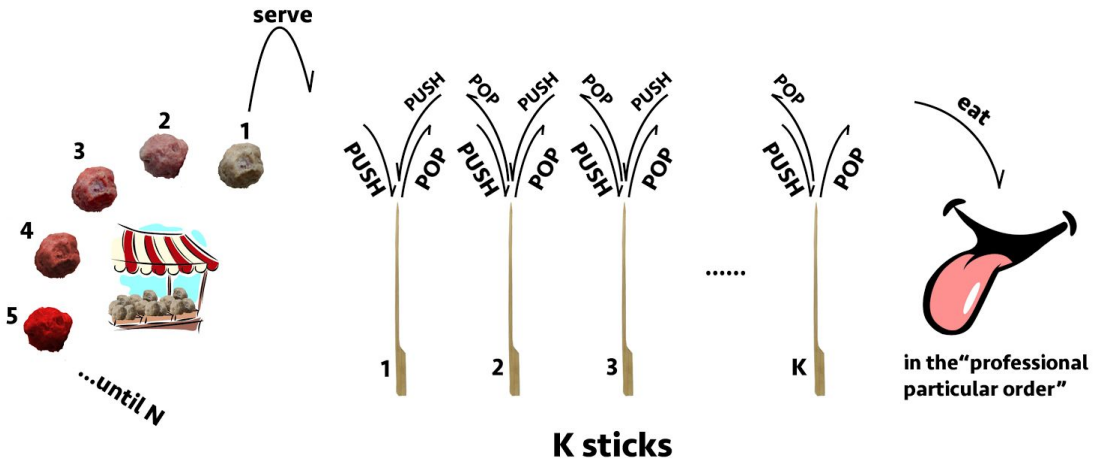
Basic data structure (stack)

Description:

The Taiwan Legend Meatball Stand is now open! There are N spicy levels of meatballs that are now available, from level 1 to level N, where the levels are all integers. The stand also provides bamboo sticks so that the customers can pick up meatballs with them. Meatballs can only be PUSHed into a stick from its TOP, and similarly they can only be POPed out from the TOP. The capacity of these sticks is unlimited because the sizes of the sticks and meatballs are specially designed.

Few days after the opening of the stand, Rögér, the world-famous food critic, is ready to eat through all of the spicy levels of meatballs, exactly once in each level, in order to write a comment on his facebook fan page about local foods in Taiwan. In addition, according to Rögér's professional knowledge, one can only eat a single meatball at a time to ensure the original flavor of it. Also, the different spicy levels of meatballs should be eaten in a "*professional particular order*", which is a specific order that can bring the most joy and satisfaction to people who eat them.

However, because of the spicy levels of meatballs are proportional to the complexity of procedures of them, they can only be served in ascending order of their spicy levels, which means the level of 1 will be served first, then the level of 2, and goes like this until the level of N is served eventually. To make the levels rearranged in the "*professional particular order*", Rögér figures out that he may use K empty bamboo stick(s) for help, where K is an integer greater than zero.



First, He lines up all the sticks into a row, and then he labels them in sequence, from 1 to K. After doing so, the following are some actions he can do next as many times as he wants and in any order he likes:

- Get one meatball from the meatball stand if there is a meatball remaining, and then PUSH it to the stick labeled 1.
- POP a meatball from a non-empty stick labeled i, where 1 <= i <= K-1, and then immediately PUSH it to the stick on its right, which is labeled i+1.
- POP a meatball from a non-empty stick labeled i, where 2 <= i <= K, and then immediately PUSH it to the stick on its left, which is labeled i-1.
- POP a meatball from the stick labeled K if it is non-empty, and then eat it.

Here come the questions. Given the "*professional particular order*", can Rögér achieve it after doing a series of actions? If so, since we are the citizens of the earth, we are obliged to reduce the amount of trash we make, including used bamboo sticks. Please also find the minimal number of K satisfying Rögér's requirement if such K exists.

Input Format:

The first line contains an integer T, the number of testcases. (1<=T<=20)
Every testcase contains two lines. The first line contains an integer N (1<=N<=100000) indicating the number of the spicy levels of meatballs. The second line contains a permutation of 1~N indicating the "*professional particular order*" Rögér wants to taste in.

Output Format:

For each testcase output one line containing a letter (N or Y) indicating the feasibility of achieving the request.
If it is feasible, you should also output an integer indicating the minimal number of K stick(s) to achieve the request. The letter and the integer are separated by a space.

Sample Input:

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2
5
1 3 5 4 2
7
1 2 3 6 7 4 5
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Sample Output:

Y 1
Y 2

Hint:

In the first testcase, we can push meatball 1 to a stick and then output it to Rögér's mouth. Next, we push meatball 2 and meatball 3 into the stick and output meatball 3. Finally, we push meatball 4 and meatball 5 into the stick and output all of the meatballs in the stick.

In the second testcase, firstly we can push meatball 1 to stick 1, then move it to stick 2, and then output it right away, so do meatball 2 and meatball 3. Next, we push meatball 4 and meatball 5 into stick 1. After that, we apply the first step to meatball 6 and meatball 7 to output them. In the end, we pop meatball 5 and meatball 4 from stick 1 to stick 2, and then output them in sequence.

Time & Memory Limit:

Time limit: 2s
Memory limit: 256MB