

The 2018 Ethiopian Collegiate Programming Contest



Problem G

Passport Control

Time Limit: 0.2 Seconds

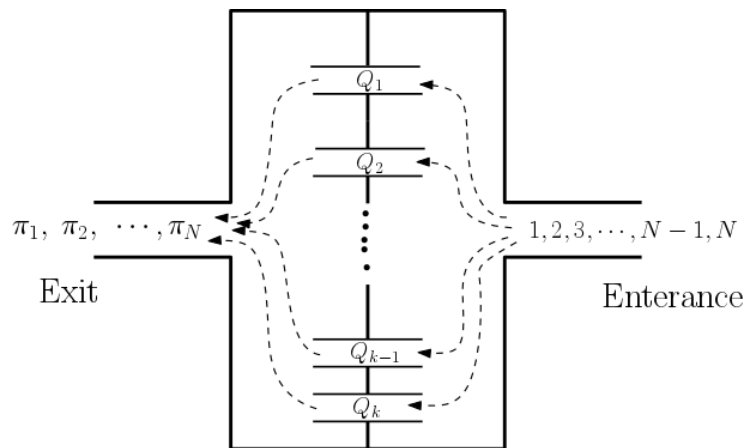


Figure G.1: N passengers should be controlled at one of the passport control offices $\{Q_k\}$.

All N passengers wait in one immigration queue for the passport control in the order of $[1, 2, 3, \dots, N-1, N]$ as shown in Figure G.1. Each passenger is required to be checked at one of k passport control queues. After completing the passport control, the passenger exits from the airport through the exit gate (Exit as shown in Figure G.1). The initial order of the entrance queue, $[1, 2, 3, \dots, N-1, N]$ can be changed to a shuffled order, $[\pi_1, \pi_2, \dots, \pi_{N-1}, \pi_N]$ at the exit gate. You must determine if the exiting order $[\pi_1, \pi_2, \dots, \pi_{N-1}, \pi_N]$ is possible using k parallel passport control queues. Let us explain with an example. In the case of $N = 3$ and $k = 2$, the exit orders $[1, 2, 3]$, $[1, 3, 2]$, $[2, 1, 3]$, $[2, 3, 1]$, $[3, 1, 2]$ are all possible, but $[3, 2, 1]$ is not.

Given an exit order $[\pi_1, \dots, \pi_N]$ as an input, write a program to print YES if the exit order is possible, or NO if not. Note that passengers are not allowed to change their order in passport control queues and each control queue is long enough to keep all N passengers.

Input

Your program is to read from standard input. The standard input consists of two lines. The first line gives two integers, N and k , where N is the number of passengers and k is the number of passport control queues. Note that $2 \leq k \leq N \leq 100$. The second line gives $[\pi_1, \dots, \pi_N]$, an exit order of the passengers from the airport.

Output

Your program is to write to standard output. Print the string YES if the exit order is possible or NO otherwise.

The following shows sample input and output for two test cases.

Sample Input 1	Output for the Sample Input 1
3 2 3 2 1	NO

Sample Input 2	Output for the Sample Input 2
10 3 4 1 3 2 5 6 8 9 7 10	YES