Problem H. Trouble Sort

Time limit 1000 ms
Mem limit 262144 kB

Ashish has n elements arranged in a line.

These elements are represented by two integers a_i — the value of the element and b_i — the type of the element (there are only two possible types: 0 and 1). He wants to sort the elements in non-decreasing values of a_i.

He can perform the following operation any number of times:

- Select any two elements i and j such that $b_i \neq b_j$ and swap them. That is, he can only swap two elements of different types in one move.

Tell him if he can sort the elements in non-decreasing values of a_i after performing any number of operations.

Input

The first line contains one integer t $(1 \leq t \leq 100)$ — the number of test cases. The description of the test cases follows.

The first line of each test case contains one integer n $(1 \leq n \leq 500)$ — the size of the arrays.

The second line contains n integers a_i $(1 \leq a_i \leq 10^5)$ — the value of the i-th element.

The third line containts n integers b_i $(b_i \in \{0, 1\})$ — the type of the i-th element.

Output

For each test case, print "`Yes`" or "`No`" (without quotes) depending on whether it is possible to sort elements in non-decreasing order of their value.

You may print each letter in any case (upper or lower).

Examples

Input	Output
5 4 10 20 20 30 0 1 0 1 3 3 1 2 0 1 1 4 2 2 4 8 1 1 1 1 3 5 15 4 0 0 0 4 20 10 100 50 1 0 0 1	Yes Yes Yes No Yes

Note

For the first case: The elements are already in sorted order.

For the second case: Ashish may first swap elements at positions 1 and 2, then swap elements at positions 2 and 3.

For the third case: The elements are already in sorted order.

For the fourth case: No swap operations may be performed as there is no pair of elements i and j such that $b_i \neq b_j$. The elements cannot be sorted.

For the fifth case: Ashish may swap elements at positions 3 and 4, then elements at positions 1 and 2.