Array Similarity

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Let $a = (a_1, a_2, \ldots, a_n)$ and $b = (b_1, b_2, \ldots, b_n)$ be two sequences of equal length. We say a and b are *similar* if and only if for every $i = 1, 2, \ldots, n$,

$$a_i = \max(a_1, a_2, \ldots, a_i) \quad \text{holds exactly when} \quad b_i = \max(b_1, b_2, \ldots, b_i).$$

You are given a sequence $(A_1, A_2, \ldots, A_N)$. Answer Q queries. In the i-th query you are given integers $L_{i,1}, R_{i,1}, L_{i,2}, R_{i,2}$. Determine whether the two subsequences

$$(A_{L_{i,1}}, A_{L_{i,1}+1}, \ldots, A_{R_{i,1}}) \quad \text{and} \quad (A_{L_{i,2}}, A_{L_{i,2}+1}, \ldots, A_{R_{i,2}})$$

are similar.

Input

The input is given in the following format:

N Q
A_1 A_2 $\ldots$ A_N
$L_{1,1}$ $R_{1,1}$ $L_{1,2}$ $R_{1,2}$
$L_{2,1}$ $R_{2,1}$ $L_{2,2}$ $R_{2,2}$
$\vdots$
$L_{Q,1}$ $R_{Q,1}$ $L_{Q,2}$ $R_{Q,2}$

- All input values are integers.
- $1 \leq N \leq 2 \times 10^5$.
- $1 \leq Q \leq 2 \times 10^5$.
- $1 \leq A_i \leq 10^9$.
- $1 \leq L_{i,1} \leq R_{i,1} \leq N$.
- $1 \leq L_{i,2} \leq R_{i,2} \leq N$.
- $R_{i,1} - L_{i,1} = R_{i,2} - L_{i,2}$.

Output

Print Q lines. On the i-th line, print "`Yes`" if the subsequences

$$(A_{L_{i,1}}, A_{L_{i,1}+1}, \ldots, A_{R_{i,1}}) \quad \text{and} \quad (A_{L_{i,2}}, A_{L_{i,2}+1}, \ldots, A_{R_{i,2}})$$

are similar; otherwise, print "`No`".

Example

standard input	standard output
10 6 3 1 4 1 5 9 2 6 5 3 1 3 3 5 1 5 6 10 1 1 9 9 1 9 1 9 1 3 6 8 5 8 7 10	Yes No Yes Yes No Yes

Note

In the first query, $(3, 1, 4)$ and $(4, 1, 5)$ are similar, so the output is "Yes".

In the second query, $(3, 1, 4, 1, 5)$ and $(9, 2, 6, 5, 3)$ are not similar, so the output is "No".

In the third query, note that it is possible to have $L_{i,1} = R_{i,1}$ and $L_{i,2} = R_{i,2}$.

In the fourth query, note that it is possible to have $L_{i,1} = L_{i,2}$ and $R_{i,1} = R_{i,2}$.