Problem C
Even Path

Pathfinding is a task of finding a route between two points. It often appears in many problems. For example, in a GPS navigation software where a driver can query for a suggested route, or in a robot motion planning where it should find a valid sequence of movements to do some tasks, or in a simple maze solver where it should find a valid path from one point to another point. This problem is related to solving a maze.

The maze considered in this problem is in the form of a matrix of integers A of $N \times N$. The value of each cell is generated from a given array R and C of N integers each. Specifically, the value on the i^{th} row and j^{th} column, cell (i, j), is equal to $R_i + C_j$. Note that all indexes in this problem are from 1 to N.

A path in this maze is defined as a sequence of cells $(r_1, c_1), (r_2, c_2), \ldots, (r_k, c_k)$ such that $|r_i - r_{i+1}| + |c_i - c_{i+1}| = 1$ for all $1 \leq i < k$. In other words, each adjacent cell differs only by 1 row or only by 1 column. An **even path** in this maze is defined as a path in which all the cells in the path contain only even numbers.

Given a tuple $\langle r_a, c_a, r_b, c_b \rangle$ as a query, your task is to determine whether there exists an even path from cell (r_a, c_a) to cell (r_b, c_b). To simplify the problem, it is guaranteed that both cell (r_a, c_a) and cell (r_b, c_b) contain even numbers.

For example, let $N = 5$, $R = \{6, 2, 7, 8, 3\}$, and $C = \{3, 4, 8, 5, 1\}$. The following figure depicts the matrix A of 5×5 which is generated from the given array R and C.

+	3	4	8	5	1
6	9	10	14	11	7
2	5	6	10	7	3
7	10	11	15	12	8
8	11	12	16	13	9
3	6	7	11	8	4

Let us consider several queries:

- $\langle 2, 2, 1, 3 \rangle$: There is an even path from cell $(2, 2)$ to cell $(1, 3)$, e.g., $(2, 2), (2, 3), (1, 3)$. Of course, $(2, 2), (1, 2), (1, 3)$ is also a valid even path.
- $\langle 4, 2, 4, 3 \rangle$: There is an even path from cell $(4, 2)$ to cell $(4, 3)$, namely $(4, 2), (4, 3)$.
- $\langle 5, 1, 3, 4 \rangle$: There is no even path from cell $(5, 1)$ to cell $(3, 4)$. Observe that the only two neighboring cells of $(5, 1)$ are cell $(5, 2)$ and cell $(4, 1)$, and both of them contain odd numbers (7 and 11, respectively), thus, there cannot be any even path originating from cell $(5, 1)$.

Input

Input begins with a line containing two integers: N Q ($2 \leq N \leq 100\,000$; $1 \leq Q \leq 100\,000$) representing the size of the maze and the number of queries, respectively. The next line contains N integers: R_i ($0 \leq R_i \leq 10^6$) representing the array R. The next line contains N integers: C_i ($0 \leq C_i \leq 10^6$) representing the array C. The next Q lines each contains four integers: r_a c_a r_b c_b ($1 \leq r_a, c_a, r_b, c_b \leq N$) representing a query of $\langle r_a, c_a, r_b, c_b \rangle$. It is guaranteed that (r_a, c_a) and (r_b, c_b) are two different cells in the maze and both of them contain even numbers.

Output

For each query in the same order as input, output in a line a string "`YES`" (without quotes) or "`NO`" (without quotes) whether there exists an even path from cell (r_a, c_a) to cell (r_b, c_b).

Sample Input #1

```
5 3
6 2 7 8 3
3 4 8 5 1
2 2 1 3
4 2 4 3
5 1 3 4
```

Sample Output #1

```
YES
YES
NO
```

Explanation for the sample input/output #1

This is the example from the problem description.

Sample Input #2

```
3 2
30 40 49
15 20 25
2 2 3 3
1 2 2 2
```

Sample Output #2

```
NO
YES
```