I Index Case

Time limit: 1s

The epidemiologist W. Andy wants to find the index case of an ongoing crisis. To do this, he modelled the city of the outbreak and its n residents with a *cellular automaton*. The city is represented by n cells numbered from 1 to n and each cell has two neighbouring cells, one to its left and one to its right. The left neighbour of cell i is cell $i-1$ and the right neighbour is cell $i+1$. Additionally, the left neighbour of cell 1 is cell n and the right neighbour of cell n is cell 1. Thus, the city and the corresponding automaton form a simple cycle.

Each cell contains an integer between 1 and m which represents how likely it is that this person is infected. Since the virus can only be transmitted by personal contact, the value in the ith cell on day d only depends on the values of its neighbours and itself on the previous day. If we denote this value by $s_d[i]$, then the outbreak can be simulated by a function f using the formula:

$$s_d[i] = f(s_{d-1}[i-1], s_{d-1}[i], s_{d-1}[i+1]).$$

Note that as the city is cyclic both $i+1$ and $i-1$ are calculated modulo n.

Andy wants to find the index case, so he first has to find s_0, the state of the city on day zero. This poses a problem, however, as it is not known on which day the crisis started. Right now, Andy believes that he accomplished the task and found the state s_0, but you are not convinced. Therefore, you want to check if there may be a state previous to the initial state proposed by Andy, i.e. whether there exists any state s_{-1} that gets transformed into s_0 by applying f.

Input

The input consists of:

- One line with two integers n and m ($3 \leq n \leq 200, 2 \leq m \leq 10$), the number of cells and the number of states.
- m^3 lines describing the values $f(x, y, z)$ ($1 \leq f(x, y, z) \leq m$ for each $1 \leq x, y, z \leq m$) of the function f modelling the automaton. The values are given in lexicographic order of the arguments: The first value is $f(1, 1, 1)$, the next is $f(1, 1, 2)$, and so on until $f(1, 1, m)$, followed by $f(1, 2, 1)$ and so forth. The last value is $f(m, m, m)$.
- One line with n integers $s_0[1], \ldots, s_0[n]$ ($1 \leq s_0[i] \leq m$ for each i), the initial state that has been proposed by Andy.

Output

Output `yes` if there exists at least one possible previous state and `no` otherwise.

Sample Input 1

```
4 2
1
2
1
2
2
1
2
1
1 2 1 2
```

Sample Output 1

```
yes
```

Sample Input 2

```
6 2
1
2
1
2
2
1
2
1
1 2 1 2 1 2
```

Sample Output 2

```
no
```

Sample Input 3

```
10 2
1
2
1
1
2
2
2
2
1 2 2 2 1 2 1 2 1 2
```

Sample Output 3

```
yes
```