Problem E. Cyclically Isomorphic

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

If there exists an integer k such that string S becomes equal to string T after being **cyclically right-shifted** by k positions, then the strings S and T are said to be **cyclically right-shifted**.

Now, given n strings of length m consisting of **lowercase letters** , there are a total of Q queries. Each query provides two positive integers x and y. If the strings s_x and s_y are **cyclically right-shifted**, output 'Yes'; otherwise, output 'No'.

Input

The input consists of multiple test cases. The first line contains a single integer $T(1 \leq T \leq 5)$ — the number of test cases. Description of the test cases follows.

The first line of each test case contains two integers n and m $(1 \leq n \times m \leq 10^5)$— the number of the strings and the length of strings.

Each of the next n lines contains a string of lowercase letters s_i.

The next line contains a positive integer Q $(1 \leq Q \leq 10^5)$.

Each of the next Q lines contains two integers x, y $(1 \leq x, y \leq n)$ asks whether the string s_x and the string s_y are cyclic isomorphic.

Output

For each test case, output Q lines. Each line should contain a string indicating whether the current query strings s_x and s_y are cyclically isomorphic. If they are cyclically isomorphic, output 'Yes'; otherwise, output 'No'.

Example

standard input	standard output
2 2 2 ab ba 1 1 2 4 3 aab baa bba bab 6 1 2 1 3 1 4 2 3 2 4 3 4	Yes Yes No No No No Yes