Task: CAR
Car Park

english

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Johnny works at a car park of Bytesoft headquarters. The designer of the car park, Professor John, usually does research on graph algorithms.

The car park consists of n parking spaces, numbered from 1 to n. Between some pairs of parking spaces there are bidirectional connections. Each pair of parking spaces is connected by at most one such connection. At each parking space at most one car can be parked. In Professor John's idea there is a small design defect: if a parking space is occupied, then *no car can drive through it*. Luckily, if no cars were parked at the car park, there would exist a way to drive between any two parking spaces.

Next to some parking spaces there are exits from the car park. A car can drive out of the car park through a given exit only if there is a sequence of parking spaces $p_1, \ldots, p_r$ such that p_1 is the parking space where the car is parked, p_r is the parking space where the chosen exit is located, each pair p_i, p_{i+1} (for $i = 1, \ldots, r-1$) of parking spaces has a connection, and no car is parked at any of the parking spaces $p_2, \ldots, p_r$. In particular, this means that the parking space where the exit is located also needs to be free if $r > 1$.

Many employees come to Johnny each afternoon and ask if they are able to drive out of the car park by their chosen exits. If Johnny says yes, then the employee immediately leaves the car park (and the parking space becomes free for considering further questions of other employees). Otherwise, the car stays in place and the employee starts thinking about a different solution; for example: wait until a passage gets free, change the desired exit, go home on foot, or sleep in the office.

Your task is to compute Johnny's answers to the employees' questions.

Input

The first line of the standard input contains two integers n and m ($n \geq 2$, $m \geq 1$) separated by a space, the number of parking spaces and the number of connections between them.

The second line contains a sequence $b_1, b_2, \ldots, b_n$ consisting of zeroes or ones, separated by spaces. If $b_i = 1$, then initially there is a car at the i-th parking space. Otherwise (if $b_i = 0$), the parking space is free. You can assume that at least one of b_i is equal to 1.

Each of next m lines contains two integers u_j and v_j ($1 \leq u_j, v_j \leq n, u_j \neq v_j$) separated by a space that represent a connection between parking spaces u_j and v_j.

The next line contains one integer q, the number of employees' queries. Each of the following q lines contains two integers c_k and e_k ($1 \leq c_k, e_k \leq n$, $c_k \neq e_k$) separated by a space that denote a query from employee with car on parking space c_k, who asks for the possibility of leaving the car park by an exit at the parking space e_k. You can assume there indeed is a car parked at the parking space c_k when the question is asked.

Output

Your program should write q lines to the standard output. Each of the lines should contain the answer to the respective querion: `YES` or `NO`.

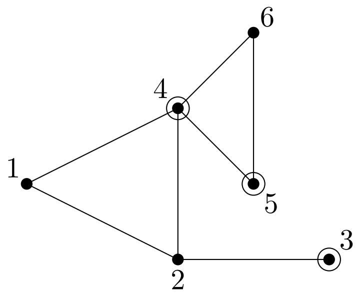
Grading

The test set is divided into the following subtasks with additional constraints. Tests in each of the subtasks consist of one or more separate test groups. Each test group may contain one or more test cases.

Subtask	Constraints	Points
1	$n, m, q \leq 1\,000$	30
2	$n, q \leq 500\,000$, $m = n - 1$	20
3	$n, m, q \leq 500\,000$	50

For the input data:

```
6 7
0 0 1 1 1 0
1 2
2 3
2 4
1 4
4 5
5 6
6 4
5
3 6
5 1
3 1
4 5
4 6
```



a correct result is:

```
NO
NO
YES
NO
YES
```