Disjoint Set Splitting

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2.5 seconds
Memory limit:	1024 mebibytes

You are given an undirected graph consisting of n vertices and m edges. The vertices are numbered from zero: $0, 1, \ldots, n-1$. You are required to process q queries. Each query provides a pair (u, v) and asks you to erase the edge (u, v) from the graph. If there is no such edge in the graph (for example, if $u = v$), do nothing. After each query, print whether the graph is connected or not.

Input

The input contains several test cases. The first line contains a single integer t ($1 \le t \le 5 \cdot 10^5$), the number of test cases. The description of the test cases follows.

The first line of each test case contains three integers n, m, and q ($2 \le n \le 10^6$, $1 \le m, q \le 10^6$): the number of vertices, edges, and queries, respectively.

Each of the next m lines contains two integers u_i and v_i ($0 \le u_i, v_i < n$), representing an edge between u_i and v_i. There are no loops and no parallel edges in the graph.

Each of the next q lines describes a query. However, the query parameters u_j and v_j are not provided directly. Instead, the j-th of these lines contains two integers a_j and b_j ($0 \le a_j, b_j < n$). Suppose that the answer to the k-th query is $c_k = 1$ if the graph is connected or $c_k = 0$ otherwise. Then u_j and v_j are generated according to the formulae:

$$u_j = \left(2^{j-2}c_1 + 2^{j-3}c_2 + \ldots + 2^1 c_{j-2} + 2^0 c_{j-1} + a_j\right) \bmod n,$$
$$v_j = \left(3^{j-2}c_1 + 3^{j-3}c_2 + \ldots + 3^1 c_{j-2} + 3^0 c_{j-1} + b_j\right) \bmod n.$$

The sum of all n, the sum of all m, and the sum of all q across all test cases do not exceed 10^6.

Output

For each test case, print q lines with integers $c_1, \ldots, c_q$: the answers to the queries.

Example

standard input	*standard output*
2 3 1 2 0 1 0 0 0 1 4 4 4 0 1 1 2 2 3 0 3 0 1 1 3 0 0 2 3	0 0 1 1 0 0

Note

In the first test case, the queries ask to delete the edges $(0, 0)$ (it does not exist) and $(0, 1)$.

In the second test case, the queries ask to delete the edges $(0, 1)$, $(2, 0)$ (it does not exist), $(3, 0)$, and $(0, 3)$ (it is already deleted by the previous operation).