Island Alliances
Problem ID: islandalliances

In a vast ocean there are n islands numbered from 1 to n, where each island constitutes a sovereign state.

However, the large number of states is making foreign policy a very complicated matter, so the inhabitants of the islands have decided to simplify things by joining into larger (but fewer) states. This endeavour has turned out to be easier said than done, because there are m pairs of islands whose inhabitants distrust each other and refuse to be part of the same state.

The islanders have sent you q proposals that you should process in order. The ith proposal calls for the state containing island a_i to merge with the state containing island b_i. If the two states contain a pair of islands whose inhabitants distrust each other the proposal should be rejected, but otherwise the proposal should be approved and all the islands in the two states will henceforth be part of the same state.

Please help the islanders figure out which proposals should be rejected and which should be approved!

Input

The input consists of:

- One line with three integers n, m, and q, the number of islands, the number of distrusting pairs of islands, and the number of proposals.
- m lines, the ith of which contains two integers u_i and v_i, where $1 \leq u_i, v_i \leq n$, $u_i \neq v_i$, meaning that the inhabitants of islands u_i and v_i distrust each other. Each pair (u_i, v_i) will be listed at most once.
- q lines, the ith of which contains two integers a_i and b_i, where $1 \leq a_i, b_i \leq n$, describing the ith proposal. It is guaranteed that no proposal will ever call for a state to merge with itself, meaning that at the time when you receive the ith proposal, a_i and b_i are guaranteed to belong to different states.

Output

Output q lines, where the ith line should be "`REFUSE`" if the ith proposal should be refused, or "`APPROVE`" if the ith proposal should be approved.

Scoring

Group	Points	Constraints
1	15	$2 \leq N \leq 500, 1 \leq M \leq 10^5, 1 \leq Q \leq 10^5$
2	17	$2 \leq N \leq 10^5, 1 \leq M \leq 250, 1 \leq Q \leq 10^5$
3	20	$2 \leq N \leq 5\,000, 1 \leq M \leq 5\,000, 1 \leq Q \leq 10^5$
4	23	$2 \leq N \leq 10^5, 1 \leq M \leq 10^5, 1 \leq Q \leq 10^5$, maximum of one "`REFUSE`"
5	25	$2 \leq N \leq 10^5, 1 \leq M \leq 10^5, 1 \leq Q \leq 10^5$

Sample Input 1

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3 1 2
1 2
2 1
1 3
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Sample Output 1

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REFUSE
APPROVE
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Sample Input 2	Sample Output 2
8 3 7 1 2 2 3 3 4 1 2 4 5 5 6 7 8 3 4 1 3 2 4	REFUSE APPROVE APPROVE APPROVE REFUSE APPROVE APPROVE