Mock CCC '20 Contest 2 S3 - Tree Programming

Time limit: 2.0s **Memory limit:** 512M

A tree is a strange type of graph. We will not be dealing with trees today, as they are too hard.

You are instead given a graph of N nodes and M edges. Edge i connects nodes u_i and v_i with a value of k_i. A path from a_j to b_j consists of a sequence of the M edges, such that consecutive edges in the path share a common node. The *value* of this path is the bitwise OR of all the edge values in the path.

Given Q queries, a_j, b_j, can you determine the minimum path *value* of a path from a_j to b_j?

Input Specification

The first line will contain three integers N, M, Q $(2 \le N \le 5 \times 10^4, N-1 \le M \le 10^5, 1 \le Q \le 10^5)$.

The next M lines will each contain three integers, u_i, v_i, k_i $(1 \le u_i, v_i \le N, u_i \neq v_i, 0 \le k_i \le 100)$, indicating there is an edge between nodes u_i and v_i of value k_i. Note that there may be duplicate edges between nodes. It is guaranteed that the entire graph is connected.

The next Q lines will each contain two integers, a_j, b_j $(1 \le a_j, b_j \le N, a_j \neq b_j)$.

Output Specification

For each query, output one integer, the minimum path *value*.

Subtasks

For 2/15 of the points, $k_i \le 1, N \le 10, M \le 20$.

For an additional 3/15 of the points, $k_i \le 1$.

Sample Input 1

```
3 4 2
1 2 1
2 3 1
1 3 0
2 3 0
1 3
1 2
```

Sample Output 1

```
0
0
```

Note: You do not need to pass sample 2 for subtask 1 or 2.

Sample Input 2

```
4 5 5
1 3 3
1 2 2
2 3 1
3 4 4
2 4 1
1 3
1 4
3 4
2 3
1 2
```

Sample Output 2

```
3
3
1
1
2
```