

Mock CCC '20 Contest 1 S3 - Tree Programming

Time Limit: 7.0s **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 ($2 \leq N \leq 5 \times 10^4, N - 1 \leq M \leq 10^5, 1 \leq Q \leq 10^5$) .

The next M lines will each contain three integers, u_i, v_i, k_i ($1 \leq u_i, v_i \leq N, u_i \neq v_i, 0 \leq k_i \leq 100$) , 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 ($1 \leq a_j, b_j \leq N, a_j \neq b_j$) .

Output Specification

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

Subtasks

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

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

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
```