Problem F. Floyd-Warshall

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

In ICPCCamp, there are n cities and m (bidirectional) roads between cities. The i-th road is between the a_i-th city and the b_i-th city. There may be roads connecting a citie to itself and multiple roads between the same pair of cities.

Bobo has q travel plans. The i-th plan is to travel from the u_i-th city to the v_i-th city. He would like to know the smallest number of roads needed to travel for each plan. It is guaranteed that cities are connected.

Input

The first line contains 3 integers n, m, q ($1 \le n \le 10^5, 0 < m - n < 100, 1 \le q \le 10^5$).

The i-th of the following m lines contains 2 integers a_i, b_i ($1 \le a_i, b_i \le n$).

The i-th of the last q lines contains 2 integers u_i, v_i ($1 \le u_i, v_i \le n$).

Output

n lines with integers $l_1, l_2, \ldots, l_n$. l_i denotes the smallest number of roads travelling from city u_i to city v_i.

Examples

standard input	standard output
4 5 3 1 2 1 3 1 4 2 3 3 4 2 2 2 3 2 4	0 1 2
1 2 1 1 1 1 1 1 1	0