Batyr I and Tima the Great

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

There is a country that is a large ring road in the shape of a circle. On the ring road there are L cities evenly spaced at a distance 1 from each other. Neighboring cities on the ring road are connected by roads in the form of arcs. Unfortunately, the greedy King Batyr I has made these roads toll and charges 1 gold coin for travel. But Tima the Great made m illegal roads that connect two cities in a straight line (chord), i-th road connects two cities with numbers a_i and b_i.

Residents can now travel by using both toll roads and free roads. In doing so, residents can change direction at the intersections of the two roads Tima built as many times as they want, and it's still free!

You are given q queries, for the i-th query determine what is the minimum number of gold coins a resident needs to spend to travel from city x_i to city y_i.

Input

The first line of input data contains three integers L, m, q ($1 \le L \le 10^9$, $0 \le m \le 10^5$, $1 \le q \le 10^5$) — the number of cities in the country, the number of illegal roads that Tima the Great built, and the number of queries.

The next m lines contain two integers each a_i, b_i ($1 \le a_i < b_i \le L$) — the two cities that are connected by the i-th road.

The next q lines contain two integers each x_i, y_i ($1 \le x_i, y_i \le L$) — two cities between which the resident has to travel.

Output

Print q lines, in the i-th line print the minimum number of gold coins that must be paid to travel from city x_i to city y_i.

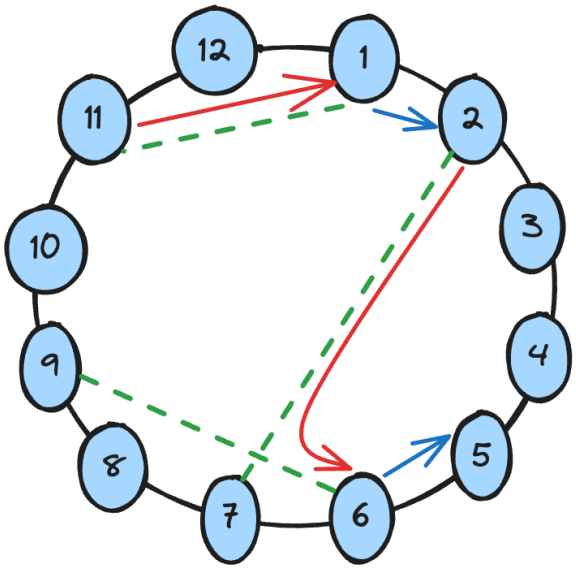
Scoring

Subtask	Additional constraints	Points
0	Examples	0
1	$m = 0$	5
2	$L, m, q \le 10^2$	8
3	$L, m, q \le 10^3$	11
4	$m, q \le 10^3$	10
5	$b_i < a_{i+1}$	12
6	$a_i < a_{i+1}, b_{i+1} < b_i$	14
7	$\lvert x_i - y_i \rvert = 1$ $(1 \le i \le q)$	18
8	No additional constraints	22

Example

standard input	standard output
12 3 5 1 11 6 9 2 7 11 5 10 3 9 11 4 5 2 9	2 2 1 1 0

Note



The path from city 11 to city 5 is shown by arrows.