

C. Bipartite Segments

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph with n vertices. There are no edge-simple cycles with the even length in it. In other words, there are no cycles of even length that pass each edge at most once. Let's enumerate vertices from 1 to n .

You have to answer q queries. Each query is described by a segment of vertices $[l; r]$, and you have to count the number of its subsegments $[x; y]$ ($l \leq x \leq y \leq r$), such that if we delete all vertices except the segment of vertices $[x; y]$ (including x and y) and edges between them, the resulting graph is bipartite.

Input

The first line contains two integers n and m ($1 \leq n \leq 3 \cdot 10^5$, $1 \leq m \leq 3 \cdot 10^5$) — the number of vertices and the number of edges in the graph.

The next m lines describe edges in the graph. The i -th of these lines contains two integers a_i and b_i ($1 \leq a_i, b_i \leq n$; $a_i \neq b_i$), denoting an edge between vertices a_i and b_i . It is guaranteed that this graph does not contain edge-simple cycles of even length.

The next line contains a single integer q ($1 \leq q \leq 3 \cdot 10^5$) — the number of queries.

The next q lines contain queries. The i -th of these lines contains two integers l_i and r_i ($1 \leq l_i \leq r_i \leq n$) — the query parameters.

Output

Print q numbers, each in new line: the i -th of them should be the number of subsegments $[x; y]$ ($l_i \leq x \leq y \leq r_i$), such that the graph that only includes vertices from segment $[x; y]$ and edges between them is bipartite.

Examples

| input |
|---|
| 6 6 1 2 2 3 3 1 4 5 5 6 6 4 3 1 3 4 6 1 6 |
| output |
| 5 5 14 |

| input |
|--|
| 8 9 1 2 2 3 3 1 4 5 5 6 6 7 7 8 |

8 4
7 2
3
1 8
1 4
3 8

output

27
8
19

Note

The first example is shown on the picture below:

For the first query, all subsegments of $[1; 3]$, except this segment itself, are suitable.

For the first query, all subsegments of $[4; 6]$, except this segment itself, are suitable.

For the third query, all subsegments of $[1; 6]$ are suitable, except $[1; 3]$, $[1; 4]$, $[1; 5]$, $[1; 6]$, $[2; 6]$, $[3; 6]$, $[4; 6]$.

The second example is shown on the picture below: