IOITC 2022 Practice Contest 1

Quick Queries

You are given an undirected simple graph G with n vertices indexed $0, 1, 2, \ldots n-1$. Instead of the edges of G, you are given m edges that are missing from G. So, G has $\frac{n(n-1)}{2} - m$ edges. You are given q queries, each of which contains two vertices a and b. For each query, print the length of the shortest path between a and b, or -1 if no such path exists

Input

- The first line contains n and m the number of vertices, and the number of missing edges.
- Each of the next m lines contains two integers x and y, denoting a missing edge.
- The next line contains q, the number of queries.
- Each of the next q lines contains two integers a and b

Output

For each query, print the length of the shortest path between a and b, or -1 if no such path exists

Test Data

In all inputs,

- $1 \leq n \leq 10^4$
- $1 \leq m \leq n^{1.5}$
- $1 \leq q \leq 10^6$
- $0 \leq x, y < n$, $x \neq y$
- $0 \leq a, b < n$

Subtask 1 (6 Points): $n, q \leq 700$

Subtask 2 (5 Points): $n \leq 700, q \leq 3 \times 10^4$

Subtask 3 (33 Points): $n \leq 2.5 \times 10^3, q \leq 2 \times 10^5$

Subtask 4 (56 Points): No additional constraints

Sample Input

```
6 10
0 2
5 0
4 1
1 3
1 5
```

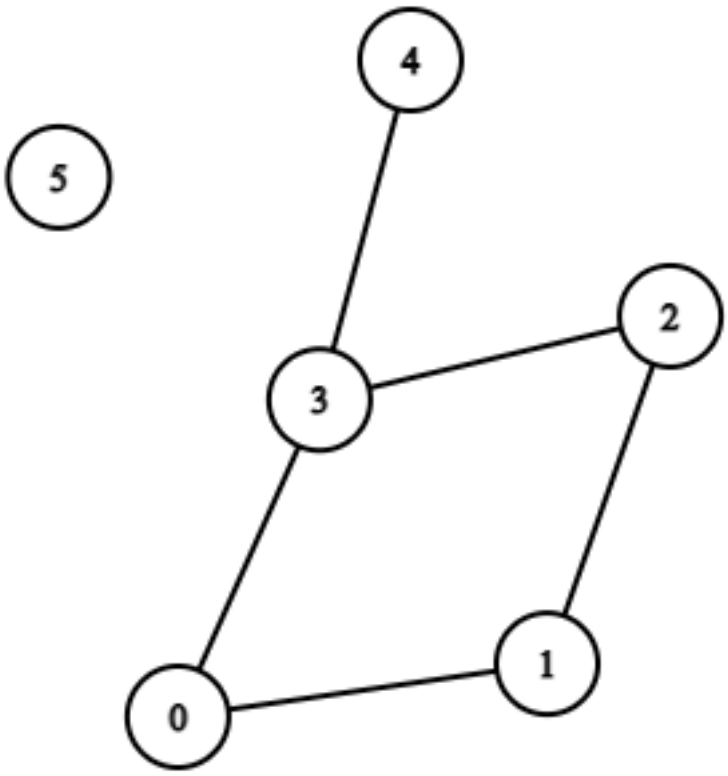
```
2 5
2 4
4 0
5 3
4 5
4
1 4
3 2
4 4
0 5
```

Sample Output

```
3
1
0
-1
```

Explanation

The graph G is the following:



Limits

Time: 3 seconds

Memory: 256 MB