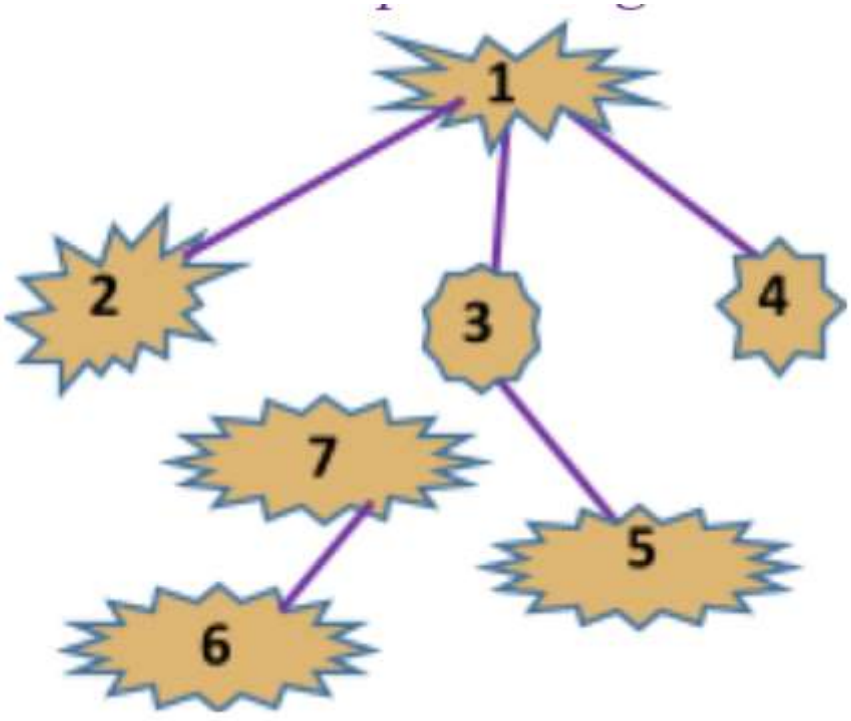
GUIDE DIRECTION

DIRECTION (1s, 512M)

To save tourists from getting lost during the cave exploring trips, organizers of the infamous tour "Hades World" had decided to seal off some exit in the mysterious underworld caves system. This is to ensure that there would be one path between any pairs of caves. Aditionally, each cave will have one direction machine installed. In cave `s`, tourists can input one integer `d` - the ID of the cave they want to visist, the machine will then display the integer `t` - the ID of the cave directly connected to s that tourists have to go through in order to reach cave `d`.

If it's flooded somewhere along the path from `s` to `d`, `t` will be the integer -1. In the illustration below, tourists standing in cave 5 and want to go to cave 2 will be directed to cave 3. Tourists standing in cave 1 and want to go to cave 6 will see the number -1 on the direction machine.



Given that the system had `n` caves, and `k` non-flooded pathways, pathway `i` directly connects cave a_i and b_i $(1 \le a_i, b_i \le n, a_i \ne b_i, i = 1 \div k)$. There will be `m` tourists query, each

and d is the destination for that query. Find out the direction machine response to each query.

Cho *n* – là số hang động, *k* cặp số *ai*, *bi* cho biết hiện đang có đường đi không bị ngập nối trực tiếp 2 hang *ai* và *bi* ($1 \le ai, bi \le n, ai \ne bi$, i = 1 ÷ *n*) và *m* truy vấn, mỗi truy vấn là một cặp số *s* và *d*, trong đó *s* – hang nơi khách đang đứng, *d* nơi khách muốn đến. Hãy xác định số hiển thị trên màn hình ứng với mỗi truy vấn.

INPUT

- The first line is *n, k* ($2 \le k < n \le 2 \times 10^5$),
- The *ith* line in the next k linesis a_i and b_i ,
- The (*k*+2)th line will be *m* ($1 \le m \le 10^5$),
- The *jth* line in the next *m* line will be s_j and d_j ($1 \le s_j, d_j \le n, s_j \ne d_j$).

OUTPUT

The results for each query, one result per line

EXAMPLE

INPUT	OUTPUT
7 5 1 2 1 3 1 4 3 5 6 7 4 5 2 1	3 4 1 -1

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