Who's Who?

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C++ — 2 sec — 512 MB

Higher ups at the Guild of Sorcerers are worried about the growing size of a rival guild: the Guild of Monks. Bound by faith but split by fashion, the monks belong to one of two different sects: the Breeches Brothers and the Sandal Sons.

The Guild of Sorcerers have employed magic familiars (cats, rats, frogs, and dogs) as spies to watch the movements of the Guild of Monks. They have recorded a series of meetings between a group of **n** monks. Each meeting was between two monks from opposite sects.

To gauge the danger posed by the Guild of Monks, the chief sorcerers want to know the maximum possible size of one of the sects.

INPUT You will be given two integers, **n** and **m**, denoting the number of monks and the number of recorded meetings, respectively. This will be followed by **m** lines, each containing two integers between 1 and **n**, indicating two monks who held a meeting together. The input will be consistent.

$1 \leq \mathbf{n}, \mathbf{m} \leq 2^{20}$

OUTPUT For each meeting, output a single integer, **s**, giving the maximum possible size of one of the sects.

SAMPLE For example, suppose there are 6 monks. Initially, the maximum size of a sect is 6. If monks 1 and 2 meet, the maximum size becomes 5. Then, if monks 3 and 4 meet, the maximum size becomes 4. If monks 4 and 5 meet next, the maximum size is till 4. Finally, if monks 5 and 6 meet, the maximum size becomes 3.

INPUT	OUTPUT
6 4 1 2 3 4 4 5 5 6	5 4 4 3
12 12 1 2 2 3 3 4 2 6 7 8 7 11 2 7 5 9 9 10 10 12 10 11 1 4	11 11 10 10 9 9 8 7 7 6 6 6