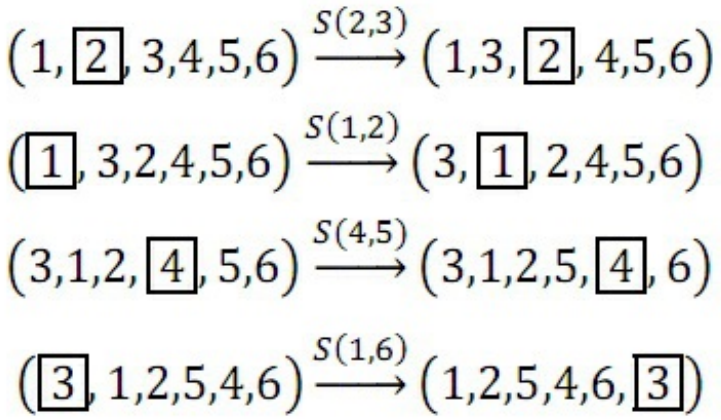
Cards shuffing

English Tiếng Việt

"Phú ông" has a card deck consits of n cards. He writes on each card a number from 1 to n from the top to the bottom of the deck.
Then he does shuffle the card deck several times, each time is described by **S(i, j)** meaning: pull out the i^{th} card then put it on the j^{th} of the remaining cards ($1 \le i, j \le n$). If j = n, the i^{th} card will be the bottom card of the new one.
For example (**n=6**):



Afer x times of shuffing, "Phú ông" gives "Bờm" the card deck and chanllenges him to make it into the original order. Please help "Bờm"!

Input

- The first line contains two integer n, x.
- Next x line(s), the p^{th} line contains two integer i_p, j_p describing the p^{th} time of shuffing (**S(i_p, j_p)**).

Output

- A single integer means the minimal number of times of shuffing the card deck to help "Bờm".

Example

Input:
6 4
2 3
1 2
4 5
1 6

Output:
2

Limitations

- $1 \le n, x \le 10^5$.