Company

SEASON 7 – SECOND ROUND

After yet another boring day at work, Lora decided that it is time to start her own company. In Lora's company there are **N** employees, numbered from 1 to N, with Lora having number 1 (we will treat her as an employee).

For a company to be truly successful, a strict internal hierarchy must be established. The only condition for a hierarchy to be valid is that every employee, except Lora, must have exactly one boss, while Lora must have no boss. After conducting the necessary psychological evaluations, Lora has compiled a list of **M** pairs "A_i B_i", each meaning that employee number A_i is fit to be boss of employee number B_i. **For every such pair we have $A_i < B_i$ (i.e. the number of a potential boss is always smaller than the number of his subordinate)**

Lora wants to choose the hierarchy in order to minimize the amount of employees who are not bosses of anyone. Help her by writing a program that finds the minimum amount of employees that are not bosses of anyone, in the optimal hierarchy. If there is no valid hierarchy – just print -1.

Input

The first line of the file `company.in` contains two integers N and M – the amount of employees and the amount of pairs in Lora's list, respectively. The following M lines describe the pairs. The i-th of those lines has two space-separated integers A_i and B_i, indicating that employee number A_i is fit to be the boss of employee number B_i

Output

In the output file `company.out` print a single integer – the minimum amount of employees that are not bosses of anyone in an optimal hierarchy. If there is no valid hierarchy then print -1 on a single line.

Constraints

$1 \leq N \leq 30\ 000$

$0 \leq M \leq 30\ 000$

$1 \leq A_i < B_i \leq N$

Time limit: 1.0 sec
Memory limit: 256 MB

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Example tests

Input (company.in)	Output (company.out)
3 3 1 2 1 3 2 3	1
6 8 1 2 1 3 1 5 2 5 3 5 2 4 1 4 5 6	2
1 0	1
2 0	-1

Clarifications

In the first sample case it is optimal 1 to be the boss of 2 and 2 to be the boss of 3. In such hierarchy only 3 is not a boss of someone and thus we get an answer of 1. We could have instead chosen 1 to be the boss of both 2 and 3, but then the answer for the hierarchy would have been 2, as neither 2 nor 3 would be bosses of anyone.