Problem B. ADEI Football Tournament

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds

The exam period is coming at ENSIAS, and the first year students are very stressed about it. ADEI has decided to organise a football tournament, to help students release their stress, and prepare better for the exams.

The tournament will have d matches, played by a total of t teams. Each match will take place on a separate day, so the tournament will be d days long.

Team a beats team b if and only if team a has higher skill level than team b. And if team a beats team b, and team b beats team c, then team a beats team c. No two teams have the same skill level.

Halim, ADEI's ex-president, wants to order ENSIAS football teams by skill level.

Given the results of the matches, determine the minimum number of days needed for Halim to order all teams by skill level.

Input

The first line contains two integers t and d ($1 \leq t \leq 10^5$, $1 \leq d \leq min(10^5, t(t-1)/2)$). Each of the next d lines contains two integers a_i and b_i ($a_i \neq b_i$, $1 \leq i \leq d$), indicating that team a_i beats team b_i on the i-th day. No two matches involve the same pair of teams.

Output

Print the answer.

Example

Standard input	Standard output
3 2 1 2 3 2	-1
4 5 2 1 1 3 2 3 4 2 4 3	4