Imaginary Grasshopper (grasshopper)

Luca is attending a course about graph algorithms but he is a bit bored: the lectures are covering pretty basic topics on graphs, which have been already explained many times.

To kill time, Luca starts playing with his imagination and dreams a grasshopper jumping on graph nodes. Everyone knows that dreams are often an exaggeration of the reality: the grasshopper, in this dream, does not jump directly from a vertex on the graph to an adjacent vertex. Instead, it always jumps *two* vertices at a time: when it passes on the vertex in the middle, it's still "flying"!

The lesson is ending and Luca just woke up from the dream. He is still thinking about it, puzzled with an important question: how many vertices could the imaginary grasshopper reach, starting from vertex 0 and jumping however many times it wants?

☞ Among the attachments of this task you may find a template file grasshopper.* with a sample incomplete implementation.

Input

The first line contains two integers N and M, respectively the number of vertices and the number of edges of the graph. The following M lines contain two integers A_i and B_i each, representing a directed edge from the vertex A_i to the vertex B_i.

Output

You need to write a single line with an integer: the number of reachable vertices by the grasshopper.

Constraints

- $2 \leq N \leq 100\,000$.
- $1 \leq M \leq 1\,000\,000$.
- $0 \leq A_i, B_i \leq N-1$ for each $i = 0 \ldots M-1$.
- The graph is directed, thus (u, v) and (v, u) are different edges.
- There can be *loops*, which are edges of the (u, u) kind.
- There are no duplicate edges.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) The graph is a “line” which starts with the vertex 0 (as in the first sample case).

– **Subtask 3** (30 points) The graph is a tree (thus it does not contain cycles).

– **Subtask 4** (25 points) $N \leq 1000$ and $M \leq 10\,000$.

– **Subtask 5** (35 points) No additional limitations.

Examples

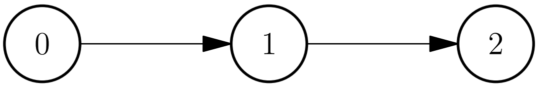
input	output

3 2
0 1
1 2
	2

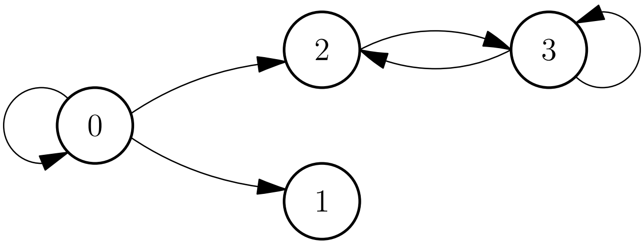
4 6
0 2
3 2
2 3
0 0
0 1
3 3
	4

Explanation

In the **first sample case**, described in the following picture, the grasshopper can reach the vertex 0 (as it stars from there) and the vertex 2 (jumping from 0 to 2, through 1). In total, two vertices are reachable.



The **second sample case** is represented in the following picture.



Every vertex is reachable. For example, a possible way to reach all vertices is:

- Vertex 0 is the starting point;
- Vertex 3 is reachable from 0 through $(0, 2)$ and $(2, 3)$;
- Vertex 2 is reachable from 3 (which is reachable) through $(3, 3)$ and $(3, 2)$;
- Vertex 1 is reachable from 0 through $(0, 0)$ and $(0, 1)$.