

# Problem E: Fire safety

Advanced Algorithms for Programming Contests

## Restrictions

Time: 2 seconds

Memory: 512 MB

## Problem description

In the city of Göttham there are  $N$  houses, some of which are connected by one-way roads. Lately there had been increasingly many fires in the city, so the people of Göttham decided to finally build some fire stations.

But first they need to solve a problem: While a fire truck can of course use streets in the wrong direction when heading to an emergency, it has to obey the rules of Göttham and drive in the right directions on its return.

Obviously fire trucks should be able to return to their respective station from wherever in the city they needed to go. However, building fire stations is very costly, so the people on the main council of Göttham decided to build the minimum number of fire stations necessary to satisfy this demand. Moreover, in order to save money, stations will be built next to already existing houses.

Your task is to write a program that calculates optimal positions for the fire stations and checks how many are needed.

## Input

The input consists of

- one line containing  $N$ , ( $1 \leq N \leq 3000$ ) – the number of houses
- one line containing  $M$  – the number of roads ( $1 \leq M \leq 10^5$ )
- $M$  lines corresponding to the roads – each of them containing two integers  $a_i$  and  $b_i$  ( $1 \leq a_i, b_i \leq n$ ), denoting that there is a road in the city on which vehicles are allowed to drive from house  $a_i$  to house  $b_i$ .

## Output

Output a single integer – the minimum number of fire stations required in Göttham.

Sample input and output

Input	Output
5	2
7	
1 2	
2 3	
3 1	
2 1	
2 3	
3 4	
2 5	