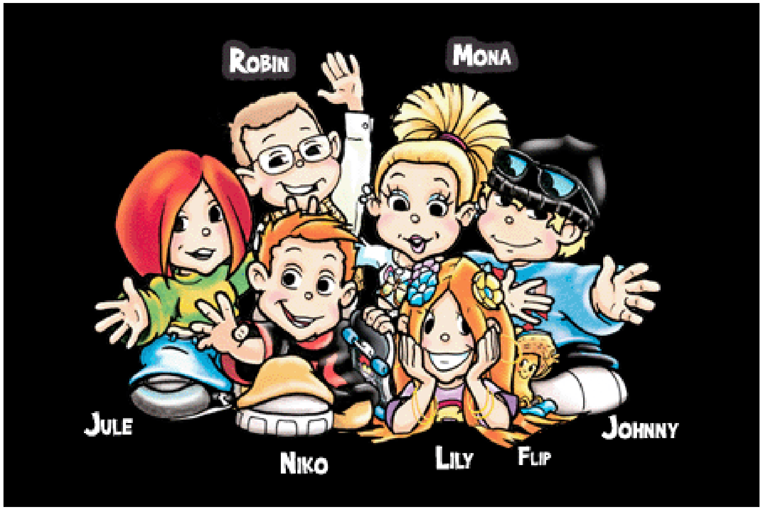
Given a directed graph G, consider the following transformation. First, create a new graph T(G) to have the same vertex set as G. Create a directed edge between two vertices u and v in T(G) if and only if there is a path between u and v in G that follows the directed edges only in the forward direction. This graph T(G) is often called the *transitive closure* of G.



We define a *clique* in a directed graph as a set of vertices U such that for any two vertices u and v in U, there is a directed edge either from u to v or from v to u (or both). The size of a clique is the number of vertices in the clique.

Input

The number of cases is given on the first line of input. Each test case describes a graph G. It begins with a line of two integers n and m, where $0 \le n \le 1000$ is the number of vertices of G and $0 \le m \le 50,000$ is the number of directed edges of G. The vertices of G are numbered from 1 to n. The following m lines contain two distinct integers u and v between 1 and n which define a directed edge from u to v in G.

Output

For each test case, output a single integer that is the size of the largest clique in T(G).

Sample Input

```
1
5 5
1 2
2 3
3 1
4 1
5 2
```

Sample Output

```
4
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