Transitive closure P19374_en

Write a program to compute the transitive closure of a directed graph with n vertices. That is, you must compute an $n \times n$ matrix where at the j-th column of the i-th row there is a 1 if it is possible to go from i to j, and there is a 0 otherwise.

Input

Input consists of several cases. Every case begins with n followed by the number of arcs m. Follow m pairs x y to indicate an arc from x to y, with $x \neq y$. Assume $1 \leq n \leq 200$, that the vertices are numbered between 0 and $n - 1$, and that there are no repeated arcs.

Output

For every graph, print its transitive closure, followed by a line with 20 dashes.

Observation

In the "large" private test cases, we have $m = \Theta(n^2)$.

Sample input 1

```
2 1
0 1

1 0

4 5
1 0  2 3  3 1  2 1  3 0
```

Sample output 1

```
1 1
0 1
--------------------
1
--------------------
1 0 0 0
1 1 0 0
1 1 1 1
1 1 0 1
--------------------
```

Problem information

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