Adjacent matrix

Time limit: 2 sec.
Memory limit: 64MB

Description

A *graph* is a mathematical model that represents an objects and relationship among them. A graph consists of *vertices* (plural of *vertex*) and *edges* among them, which can be formally expressed as G=(V,E). This means that a graph G is a pair of V and E, where V is the set of vertices and E is the set of edges. The size of V, ¦V¦, means the number of vertices and the size E, ¦E¦, means the number of edges. A vertex is usually represented by a circle or a point, and an edge is usually represented by a line between them.

(Above paragraph is shared with the problem "Adjacent list")

An adjacent matrix is one of the basic ways to represent a graph. Let's begin with a simple example.

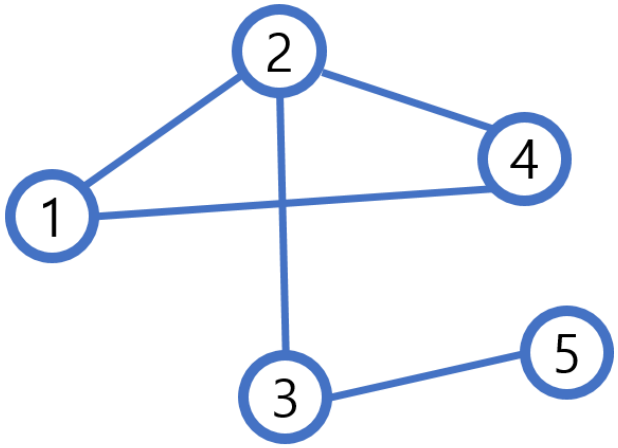

Figure 1) An undirected graph G=(V,E), where |V|=5

Figure 1 shows a graph G=(V,E) with 5 vertices (or ¦V¦=5). The corresponding adjacent matrix M is shown below.

$$M = \begin{bmatrix} 0 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 \\ 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \end{bmatrix}$$

Did you notice the relationship between G and M? The answer is:

$$M(i,j) = \begin{cases} 1, & There\ is\ an\ edge\ between\ vertex\ i\ and\ j \\ 0, & Otherwise \end{cases}$$

Note that for an undirected graph, the adjacent matrix will always be symmetric (In other words, M(i,j) = M(j,i)).

There are many variations of adjacent matrix definitions. For example, if multiple edges or self-loops are allowed, M(i,j) could stand for the number of edges between vertex i and j. Also, in case of weighted graph, M(i,j) could stand for the weight of the edge between vertex i and j.

Now it's time to construct an adjacent matrix. You will be given an undirected graph with n vertices and m edges. The vertices are numbered from 1 to n. Construct the respective adjacent matrix.

Input

The first line of the input contains integers n and m, the number of vertices and the number of edges. (1 <= n <= 1000, 1 <= m <= 10000)

The i-th line of the next m line of the input contains integers x_i and y_i, denoting that an edge exists between vertex x_i and

y_i. (1 <= x_i,y_i <= n)

It is guaranteed that there are no multiple edges or self-loops.

Output

Print the respective adjacent matrix. Refer to the "Sample I/O" section for a better understanding.

Sample I/O

Input(s)	Output(s)
5 5 1 2 1 4 2 3 2 4 3 5	0 1 0 1 0 1 0 1 1 0 0 1 0 0 1 1 1 0 0 0 0 0 1 0 0