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You have an undirected graph with the following property:

For any subset A of 7 vertices of the graph, there are some two vertices $a, b \in A$ and some vertex $c \notin A$ such that all paths from a to b contain vertex c.

You need to find the number of ways to properly color this graph in $1, 2, \ldots, n$ colors modulo 998 244 353.

A graph is colored in k colors by assigning an integer color from 1 to k to every vertex. A coloring is proper if the endpoints of each edge in the graph have different colors.

Input Format:

The first line of the input contains two integers n and m: the number of vertices and the number of edges in your graph.

The next m lines contain description of the edges of the graph. Each of these lines contains two integers a_i and b_i describing an edge between vertices a_i and b_i. There are no multiple edges.

It is guaranteed that for any subset A of 7 vertices of the graph, there are some two vertices $a, b \in A$ and some vertex $c \notin A$ such that all paths from a to b contain vertex c.

Constraints:

$1 \leq n, m \leq 10^5$
$1 \leq a_i, b_i \leq n$, $a_i \neq b_i$

Output Format:

Print one line containing n space-separated integers. The i-th integer must be the number of ways to properly color this graph in i colors, taken modulo 998 244 353.

Explanations:

Input 1

3 1
1 2

Output 1

0 4 18