Problem A

A formula in a conjunctive normal form is a *Horn formula* if each of the clauses contains at most one positive term. Sometimes, a non-Horn formula can be transformed into a Horn formula by negating some of the variables. For example, $(x \vee y \vee z) \wedge (\neg x \vee \neg z)$ can be transformed into a Horn formula $(\neg x \vee \neg y \vee z) \wedge (x \vee \neg z)$ by negating x and y. Given an input formula, determine which variables need to be negated to obtain a Horn formula, or decide this is not possible.

Input and output

The first line contains two integers n and m, where $n, m \leq 10^4$, giving the number of variables and the number of clauses. Each of the m following lines contains at most 10 integers z_1, z_2, $\ldots$, where $1 \leq |z_i| \leq n$, indicating that the variable number $|z_i|$ appears in the clause positively if $z_i > 0$ or negated if $z_i < 0$. You can assume that each variable appears in each clause at most once.

Output a list of at most n integers, giving in any order the numbers of variables that need to be negated in order to obtain a Horn formula. Output 0 instead if it is not possible to obtain a Horn formula in this way.

Example

Input:

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3 2
1 2 3
-1 -3
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Output:

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1 2
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