CSES: Giant Pizza

Henrique Mendes

Time limit: 1.00 s **Memory limit:** 512 MB

Uolevi's family is going to order a large pizza and eat it together. A total of n family members will join the order, and there are m possible toppings. The pizza may have any number of toppings.

Each family member gives two wishes concerning the toppings of the pizza. The wishes are of the form "topping x is good/bad". Your task is to choose the toppings so that at least one wish from everybody becomes true (a good topping is included in the pizza or a bad topping is not included).

Input

The first input line has two integers n and m: the number of family members and toppings. The toppings are numbered $1, 2, \ldots, m$.

After this, there are n lines describing the wishes. Each line has two wishes of the form "+ x" (topping x is good) or "- x" (topping x is bad).

Output

Print a line with m symbols: for each topping "+" if it is included and "-" if it is not included. You can print any valid solution.

If there are no valid solutions, print "IMPOSSIBLE".

Constraints

- $1 \le n, m \le 10^5$
- $1 \le x \le m$

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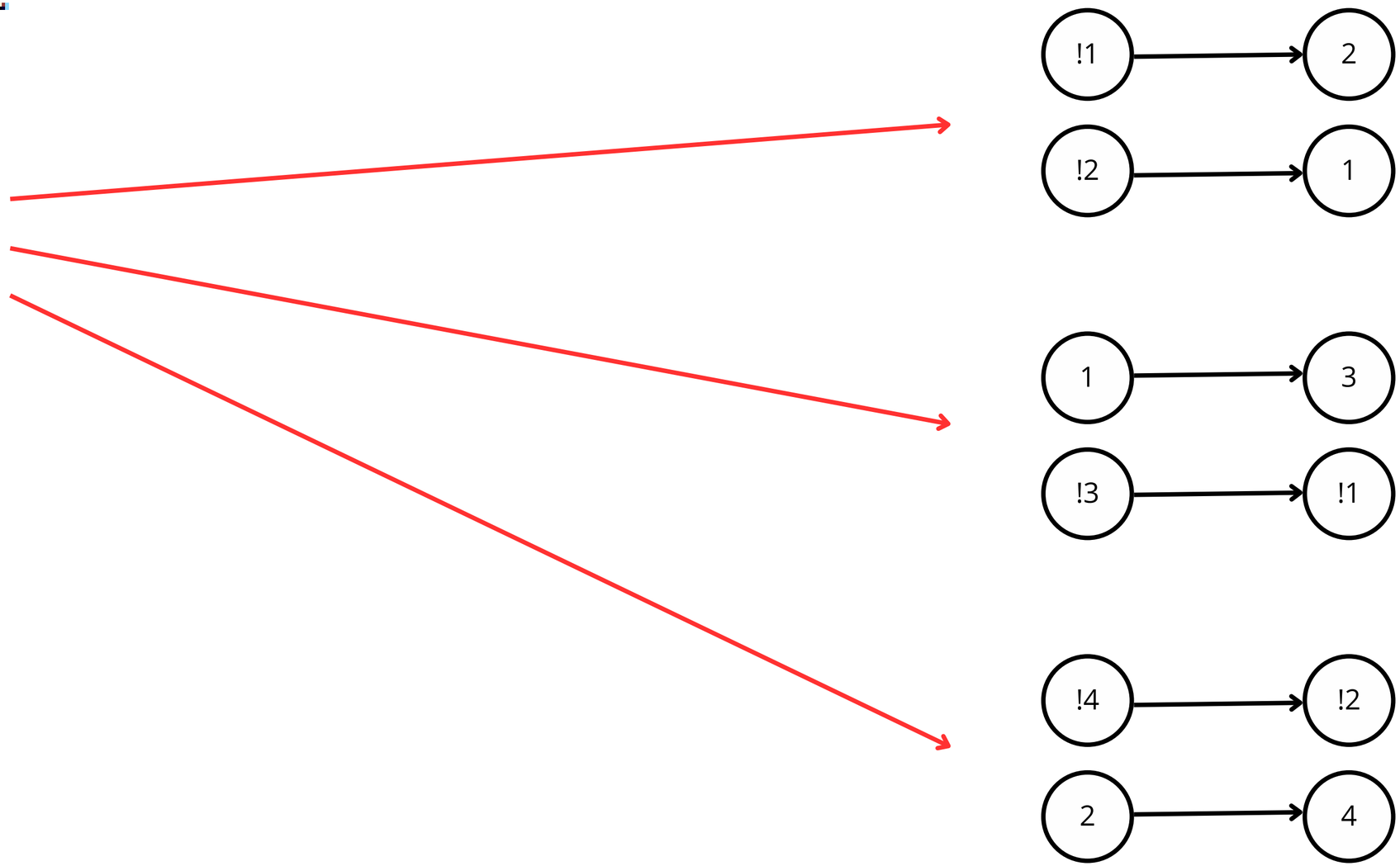
Example

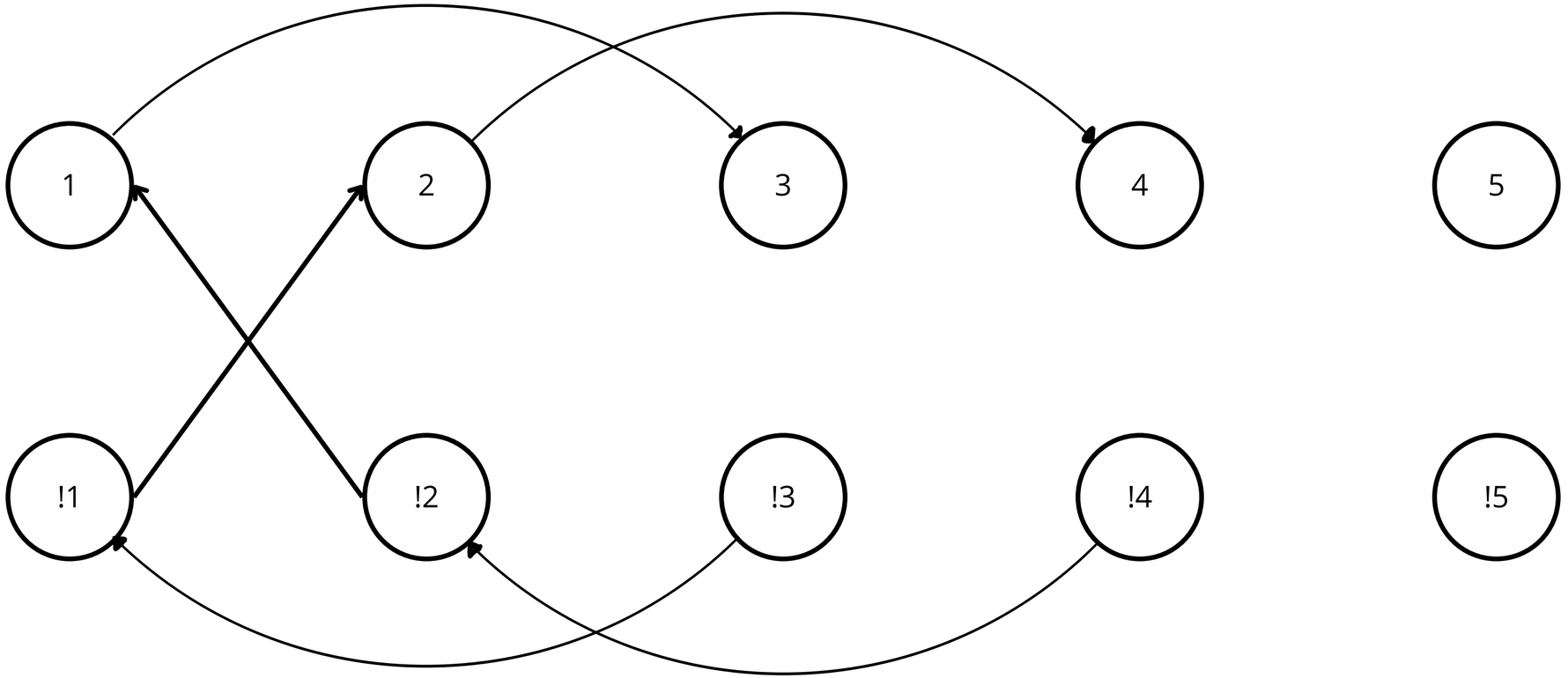
Input:

```
3 5
+ 1 + 2
- 1 + 3
+ 4 - 2
```

Output:

```
- + + + -
```

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!1
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COMPONENTES FORTEMENTE CONEXAS