

# Valentine's Day '19 S2 - Ctudor's Cute Cacti

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**Time limit:** 1.0s    **Memory limit:** 128M

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Ctudor (silent 'C') just bought an  $N$  by  $N$  grid of cacti! He wants to monitor the happiness of each cactus. Cacti only have 2 moods - happy and sad. When Ctudor bought the cacti, all of them were happy. However,  $Q$  events happen:

- $1 \ i \ j$ . The cactus at position  $(i, j)$  suddenly switches their mood. If it was happy, it is now sad, and vice versa. It is common knowledge that a cactus's mood is easily affected by its surrounding cacti. Thus, when the cactus at position  $(i, j)$  switches their mood, all the cacti that are on column  $i$  or row  $j$  switch their mood as well.
- $2 \ i \ j$  Ctudor would like to know the mood of the cactus at position  $(i, j)$ .

$1 \leq i, j \leq N$ .

## Input Specification

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The first line will contain two integers,  $N, Q$  ( $1 \leq N, Q \leq 10^5$ ).

The next  $Q$  lines will each contain an event as defined above.

## Output Specification

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For each type 2 event, output  $1$  if the cactus at position  $(i, j)$  is sad, and  $0$  if it is happy on its own line.

## Constraints

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### Subtask 1 [10%]

$N, Q \leq 100$

### Subtask 2 [90%]

No additional constraints.

## Sample Input

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

## Sample Output

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```
0  
0  
1
```