



HOME TOP CONTESTS GYM PROBLEMSET GROUPS RATING API HELP KOTLIN HEROES Z DASHA Z CALENDAR

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

## G. Feeling Good

time limit per test: 3 seconds memory limit per test: 512 megabytes input: standard input output: standard output

Recently biologists came to a fascinating conclusion about how to find a chameleon mood. Consider chameleon body to be a rectangular table  $n \times m$ , each cell of which may be green or blue and may change between these two colors. We will denote as (x,y)  $(1 \le x \le n, 1 \le y \le m)$  the cell in row x and column y.

Let us define a chameleon  $good\ mood\ certificate$  to be four cells which are corners of some subrectangle of the table, such that colors in opposite cells among these four are similar, and at the same time not all of the four cell colors are similar. Formally, it is a group of four cells  $(x_1,y_1),(x_1,y_2),(x_2,y_1),(x_2,y_2)$  for some  $1\leq x_1< x_2\leq n, 1\leq y_1< y_2\leq m$ , that colors of  $(x_1,y_1)$  and  $(x_2,y_2)$  coincide and colors of  $(x_1,y_2)$  and  $(x_2,y_1)$  coincide, but not all of the four cells share the same color. It was found that whenever such four cells are present, chameleon is in good mood, and vice versa: if there are no such four cells, chameleon is in bad mood.

You are asked to help scientists write a program determining the mood of chameleon. Let us consider that initially all cells of chameleon are green. After that chameleon coloring may change several times. On one change, colors of contiguous segment of some table row are replaced with the opposite. Formally, each color change is defined by three integers a, l, r (  $1 \leq a \leq n, 1 \leq l \leq r \leq m$ ). On such change colors of all cells (a, b) such that  $l \leq b \leq r$  are replaced with the opposite.

Write a program that reports mood of the chameleon after each change. Additionally, if the chameleon mood is good, program should find out any four numbers  $x_1, y_1, x_2, y_2$  such that four cells  $(x_1, y_1)$ ,  $(x_1, y_2)$ ,  $(x_2, y_1)$ ,  $(x_2, y_2)$  are the good mood certificate.

### Input

The first line of input contains three integers n, m, q ( $1 \le n, m \le 2000$ ,  $1 \le q \le 500\,000$ ), the sizes of the table and the number of changes respectively.

Each of the following q lines contains 3 integers  $a_i$ ,  $l_i$ ,  $r_i$  ( $1 \le a_i \le n$ ,  $1 \le l_i \le r_i \le m$ ), describing i-th coloring change.

## Output

Print q lines. In the i-th line report the chameleon mood after first i color changes for all  $1 \leq i \leq q$ .

If chameleon is in bad mood, print the only integer -1.

Otherwise, print four integers  $x_1,y_1$ ,  $x_2,y_2$  ( $1 \le x_1 < x_2 \le n$ ,  $1 \le y_1 < y_2 \le m$ ) such that four cells  $(x_1,y_1)$ ,  $(x_1,y_2)$ ,  $(x_2,y_1)$ ,  $(x_2,y_2)$  are the good mood certificate. If there are several ways to choose such four integers, print any valid one.

## **Examples**



# <u>Codeforces Round #583 (Div. 1 + Div. 2, based on Olympiad of Metropolises)</u>

#### **Finished**

Practice



## → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

#### → Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

## → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest



Language: GNU G++11 5.1.0

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

### → Problem tags

(bitmasks) (data structures) (\*3100)

No tag edit access

## → Contest materials

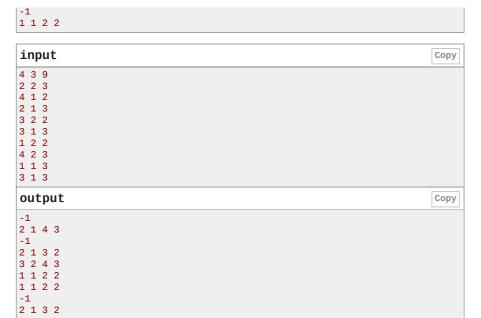
- Announcement #1 (en)
- Announcement #2 (ru)
- Tutorial (en)

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2019/9/11 Problem - G - Codeforces



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