

E. Points and Segments

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Iahub isn't well prepared on geometry problems, but he heard that this year there will be a lot of geometry problems on the IOI selection camp. Scared, Iahub locked himself in the basement and started thinking of new problems of this kind. One of them is the following.

Iahub wants to draw n distinct segments $[l_i, r_i]$ on the OX axis. He can draw each segment with either red or blue. The drawing is good if and only if the following requirement is met: for each point x of the OX axis consider all the segments that contains point x ; suppose, that r_x red segments and b_x blue segments contain point x ; for each point x inequality $|r_x - b_x| \leq 1$ must be satisfied.

A segment $[l, r]$ contains a point x if and only if $l \leq x \leq r$.

Iahub gives you the starting and ending points of all the segments. You have to find any good drawing for him.

Input

The first line of input contains integer n ($1 \leq n \leq 10^5$) — the number of segments. The i -th of the next n lines contains two integers l_i and r_i ($0 \leq l_i \leq r_i \leq 10^9$) — the borders of the i -th segment.

It's guaranteed that all the segments are distinct.

Output

If there is no good drawing for a given test, output a single integer -1. Otherwise output n integers; each integer must be 0 or 1. The i -th number denotes the color of the i -th segment (0 is red and 1 is blue).

If there are multiple good drawings you can output any of them.

Examples

input
2 0 2 2 3
output
0 1

input
6 1 5 1 3 3 5 2 10 11 11 12 12
output
0 1 0 1 0 0