A double-ended queue

Cost: 10 | Solved: 36

Memory limit: 256 MBs

Time limit: 1 s

Input: input.txt

Output: output.txt

Task:

You are given an infinite thread. A girl Masha puts beads of three different colors on it: **R** – red, **G** – green, **B** – blue. Masha gradually puts beads on both sides, each time deciding the direction herself. The beads are magical: as soon as three beads of the same color collide, they disappear.

Find the final sequence of beads after Masha does **m** iterations.

Input:

The first line contains a natural **m** ($1 \le m \le 10^5$) – the quantity of iterations Masha did.

The next **m** lines contain two numbers: the side where Masha puts a bead on (**1** – on the left, **2** – on the right) and the color of a bead (**R**, **G**, **B**).

Output:

The final sequence of beads. If it's empty, write -1.

Example:

Input	Output

5 1 R 2 R 2 R 1 G 2 B	G B
3 1 B 1 B 2 B	-1