Problem J. Johan Cruijff

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

This is an interactive problem.

Who does not know Johan Cruijff? He is not only the best footballer the world has ever seen, but also a world renowned philosopher. Some of his historical quotes are "Coincidence is logical" and "If I wanted you to understand that, I would have explained it better". Some people (including himself) even regarded him as the most important export product of the Netherlands. Sadly, he died ten years ago. We shall never see his like again.

Unfortunately, this also means that the Dutch team is terrible at penalty shootouts (the last World Cup was unfortunately a perfect example). There is still hope, though, as there is another young footballer called Johan who is great at shooting penalties! Johan is obsessed with efficiency, which is why he gets bored quickly watching just a single net with a single goalkeeper. His friends decided to do something about that!

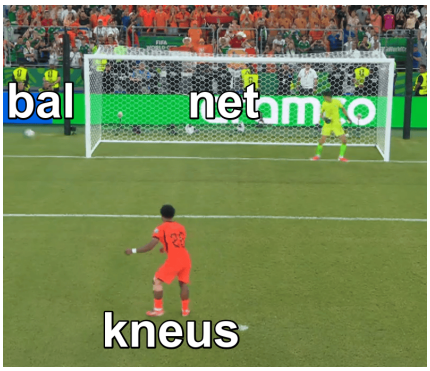


Figure 10: A missed penalty during the World Cup. Johan would also like to miss some penalties.

They play the following game. There are n nets lined up in a row for Johan to shoot penalties at, all initially unclaimed. On move i, his friends line up in front of all nets in the segment $[\ell_i, r_i]$ $(1 \le \ell_i \le r_i \le n)$, which they choose. Then, Johan shoots a penalty once at each net in the segment. Because Johan is a football prodigy, he can choose whether or not he scores as he likes. If he shoots a penalty and scores, he claims the net. If he shoots a penalty and misses, that net becomes unclaimed. The game ends whenever Johan has claimed **every net**.

Johan really likes the game, so he often misses on purpose to continue playing. However, his friends quickly grew tired of the game, so they imposed the following rule: on move i, Johan must score strictly more than $p \cdot (r_i - \ell_i + 1)$ goals, where $p = a/b$ is a rational number $(0 < p < 1)$. Despite the rule, Johan still wants the game to last at least $\lceil (1-p) \cdot n \rceil$ moves.

You will be playing as Johan against the interactor. For each move $i = 1, 2, ...$, you will receive ℓ_i and r_i, and have to decide for each net in the segment $[\ell_i, r_i]$ if you will score or not, but you have to score strictly more than $p \cdot (r_i - \ell_i + 1)$ goals on this move. You then have to choose which nets to claim and unclaim to make the game last at least $\lceil (1-p) \cdot n \rceil$ moves.

Note: An example testing tool has been provided in the attached files.

Input

The first line of the input contains three integers n, a, and b $(1 \le n \le 500,\ 1 \le a < b \le 10^6)$, the number of nets, and the numerator and denominator of the fraction $p = \frac{a}{b}$.

Interaction Protocol

Each move will proceed as follows.

On a single line, you will receive two integers ℓ_i and r_i $(1 \le \ell_i \le r_i \le n)$ representing the endpoints of the current segment.

You have to output $r_i - \ell_i + 1$ space-separated integers, each either 0 or 1, that represent whether Johan scores in the nets, from left to right, where 0 means he missed, and 1 means he scored. You must score strictly more than $p \cdot (r_i - \ell_i + 1)$ goals, or you will receive a Wrong Answer verdict. Do not forget to output the end of line and flush the output. The next segment will only be given after the previous move.

The interactor in this task is **adaptive**. In other words, the given segments may change depending on which nets are currently claimed.

The interaction only ends when all nets are claimed. If the number of moves played at that moment is less than $\lceil (1-p) \cdot n \rceil$, you will receive a Wrong Answer verdict.

It is guaranteed that at most 2000 moves will be played.

Example

standard input	*standard output*
5 2 5 1 3 2 2 4 5	 1 0 1 1 1 1