Problem B. Balls

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

There are N balls on the number line, each of diameter 1, numbered from 1 through N. Ball i's leftmost point is located at position p_i. Additionally, there is an immovable wall located at position P. You have to process Q queries of one of the following forms:

- "1 x": Insert a new ball with its leftmost point at x. **If this spot is already occupied, do nothing**.
- "2": Roll the leftmost ball to the right. When a rolling ball (possibly after moving distance zero) collides with a stationary ball, it stops, and the stationary ball begins rolling in the same direction. Specifically, a rolling ball stops at the position 1 less than the position of the object it collided with. A ball stops when it reaches the wall.

Calculate the final positions of the balls.

Input

The first line contains three integers N, Q, and P: the initial number of balls, the number of queries, and the position of the wall ($1 \le N, Q \le 10^5$, $N \le P \le 10^9$).

The second line contains N integers $p_1, p_2, \ldots, p_N$ ($0 \le p_i < P$). It is guaranteed the positions are distinct.

The next Q lines describe the queries and may have one of the following forms:

- "1 x" ($0 \le x < P$)
- "2"

Output

Print out the final positions of the balls in increasing order on a single line, separated by spaces.

Examples

standard input	standard output
2 1 5 1 3 2	2 4
5 3 10 1 8 3 7 2 2 1 4 2	1 3 5 6 8 9