

Task 4

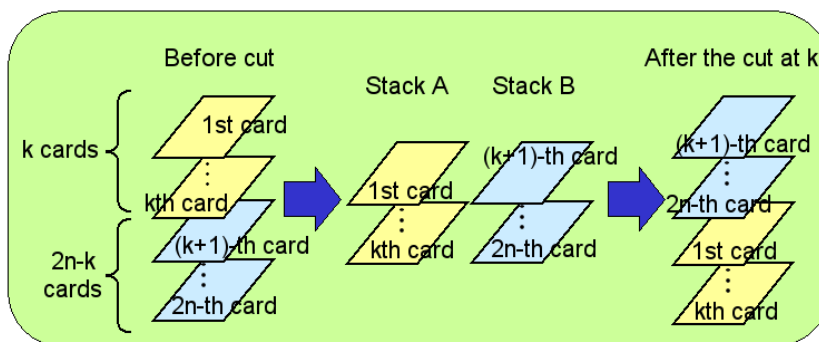
Shuffling Cards

Task

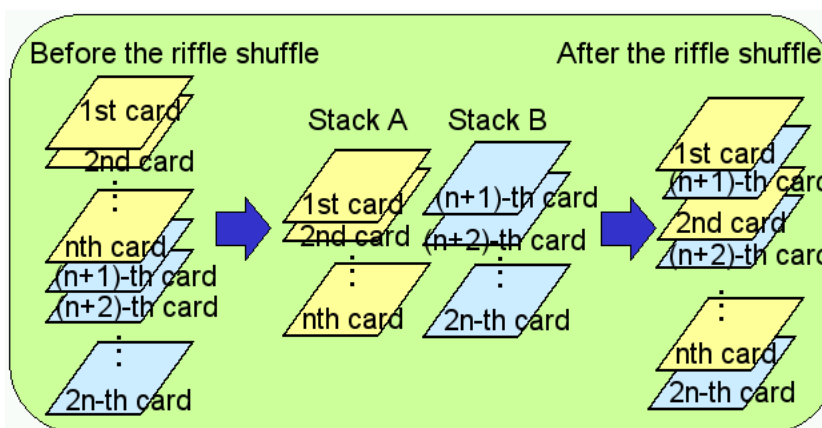
You have $2n$ cards with the integers from 1 to $2n$ written on them. They are stacked in the order $1, 2, 3, \dots, 2n$ from top to bottom.

You are to shuffle the cards by using the following operations.

Cut at an integer k You divide the stack into a stack A of the k cards from top and a stack B of the rest. Then you put the stack B on top of the stack A.



Riffle shuffle You divide the stack into a stack A of the n cards from top and a stack B of the rest. Then you construct a new stack so that the cards are stacked from top to bottom in the following order: the first card in A, the first card in B, the second card in A, the second card in B, and so on, then the last card in A, and the last card in B.



Write a program which lists the numbers written on the cards from top to bottom after you shuffle the cards as specified in the input file.

Input

Line 1 contains n ($1 \leq n \leq 100$). Note that the number of cards is $2n$.

Line 2 contains the number m of operations ($1 \leq m \leq 1000$).

Each of the m lines from line 3 to line $m + 2$ contains an integer k between 0 and $2n - 1$, inclusive, representing the operations used for shuffling the cards in the order performed.

- The integer $k = 0$ represents the riffle shuffle.
- An integer k with $1 \leq k \leq 2n - 1$ represents the cut at k .

Output

Submit an output file consisting of $2n$ lines so that line i contains the number written on the i th card from top after shuffling is done. For example, line 1 should contain the number written on the card at the top, and line 2 should contain the number written on the second card from top, and so on.

Sample inputs and outputs

Sample inputs

Sample input 1

2
2
1
0

Sample input 2

3
4
2
4
0
0

Sample outputs

Sample output 1

2
4
3
1

Sample output 2

1
5
4
3
2
6