Iroha and the Kingdom of Construction

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

After wandering around for quite a while, Iroha arrived at a mysterious place in the Moon Reading Space — the Kingdom of Construction.

Having heard that you had once been here, Iroha was very happy and shared with you an interesting memory from the Kingdom of Construction.

In the Kingdom of Construction, there is a magical deck of cards. It has exactly n different ranks (represented by integers from 1 to n), and each rank appears exactly twice. After a uniform shuffle, these $2n$ cards form a deck. **In other words: the input data guarantees that the deck is generated uniformly at random from all valid decks containing n ranks, with exactly two cards of each rank.**

In this space, Iroha is granted a very powerful ability: generating stacks. Since this ability is very exhausting, Iroha can generate only 260 stacks.

Now, Iroha needs to take the cards from the original deck one by one in order from top to bottom. For each card taken out, Iroha may put it onto the top of any stack.

After all $2n$ cards have been placed, Iroha's stacks must satisfy the following condition: it must be possible to perform several "elimination operations" until all cards are eliminated:

- Each operation chooses **two different stacks**. If the top cards of these two stacks have the same rank, then these two cards are popped (removed) simultaneously.

Unfortunately, Iroha could not solve this problem, so she handed it over to the smart and experienced you, hoping that you could help her.

To make it easier for you, you do not need to give the actual elimination process. You only need to output, for each card in the original deck order, which stack it is placed onto. Iroha will help you check whether your construction is correct.

Input

The first line contains a positive integer n ($1 \le n \le 5 \times 10^5$), denoting the number of card ranks.

The second line contains $2n$ positive integers $a_1, a_2, \ldots, a_{2n}$ ($1 \le a_i \le n$), representing the ranks of the cards in the original deck from top to bottom. It is guaranteed that each rank in $\{1, 2, \ldots, n\}$ appears exactly twice.

It is guaranteed that there are exactly 50 tests (including the sample), and in each test, the array a is chosen uniformly at random from all sequences of length $2n$ in which each rank in $\{1, 2, \ldots, n\}$ appears exactly twice.

Output

Output one line containing $2n$ positive integers $c_1, c_2, \ldots, c_{2n}$, where $1 \le c_i \le 260$, indicating that the i-th card taken from the original deck is put into the c_i-th stack.

If there are multiple valid solutions, output any of them.

Example

standard input	standard output
3 1 2 3 1 3 2	1 1 1 2 2 3

Note

After processing your command, the last 257 stacks are empty, and the first 3 stacks are as follows (elements are listed from bottom to top):

1. $[1, 2, 3]$,
2. $[1, 2]$, and
3. $[3]$.

It is easy to prove that there exists a way to eliminate all cards.