Count Pseudo-Palindromes

Input file:	standard input
Output file:	standard output
Time limit:	3 seconds
Memory limit:	1024 megabytes

A sequence $B = (B_1, B_2, \ldots, B_M)$ of length M is called a **palindrome** if $B_i = B_{M+1-i}$ holds for all $i = 1, 2, \ldots, M$.

A sequence B is called a **pseudo-palindrome** if there exists a permutation of B that is a palindrome.

You are given a sequence $A = (A_1, A_2, \ldots, A_{2N})$ of length $2N$, where each number from 1 to N appears exactly twice.

For each of $i = 1, 2, \ldots, 2N$, count the number of pairs of integers $(l, r)\,(1 \le l \le r \le 2N)$ satisfying the following conditions:

1. $l \le i \le r$

2. The number A_i appears exactly once in $(A_l, A_{l+1}, \ldots, A_r)$.

3. $(A_l, A_{l+1}, \ldots, A_r)$ is a pseudo-palindrome.

Input

The input is given from Standard Input in the following format:

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N
A_1 A_2 ... A_2N
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- $1 \le N \le 5 \times 10^5$

- Each of $1, 2, \ldots, N$ appears exactly twice in A.

- All input values are integers.

Output

Let X_i denote the answer for i. Print $X_1, X_2, \ldots, X_{2N}$ in this order, separated by a space.

Examples

standard input	standard output
2 1 1 2 2	1 2 2 1
3 2 1 2 3 1 3	1 2 2 2 2 1
4 1 2 4 3 4 1 3 2	1 2 1 2 1 3 1 1
1 1 1	1 1

Note

In the first example, the pairs that satisfy the conditions for each i are:

- $i = 1$: $(1, 1)$

- $i = 2$: $(2, 2), (2, 4)$
- $i = 3$: $(1, 3), (3, 3)$
- $i = 4$: $(4, 4)$