Coffee Shops

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Anton found a street full of coffee shops. The street can be thought of as a circle. On the inner side, there are n Varka coffee shops, while on the outer side are n Surf coffee shops. You know that there exist arrays a and b which represent the quality of coffee produced in the shops: a_i denotes the quality for the i-th Varka coffee shop and b_i denotes the quality for the i-th Surf coffee shop. Visitors sitting in some coffee shop do not like it when they see people having a better time on the opposing side of the street, so visitors of a coffee shop are sad if one of the following conditions holds:

- Visitors are sitting in the i-th Varka coffee shop and at least two of b_{i-1}, b_i, b_{i+1} are larger than a_i. Here b_0 stands for b_n and b_{n+1} stands for b_1.
- Visitors are sitting in the i-th Surf coffee shop and at least two of a_{i-1}, a_i, a_{i+1} are larger than b_i. Here a_0 stands for a_n and a_{n+1} stands for a_1.

We say that a coffee shop is sad if its visitors are sad. Now Anton wonders what is the maximum possible number of sad coffee shops if all values in a and b form a permutation of $1, \ldots, 2 \cdot n$ when combined. Help Anton and construct one possible pair a, b which achieves the maximum.

Input

The only line contains an integer n ($3 \leq n \leq 10^5$) — number of Varka and Surf coffee shops.

Output

In the first line, output n integers a_i representing the quality of the Varka coffee shops.

In the second line, output n integers b_i representing the quality of Surf coffee shops.

The union of a and b must form a permutation of $1, \ldots, 2 \cdot n$.

Examples

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

Note

For the first sample test, a coffee shop is sad if at least 2 values from the other array are larger than the value of that coffee shop (since there are only 3 shops on each side of the street), so Varka coffee shops with values $1, 3, 4$ are sad and the Surf coffee shop with value 2 is sad. It can be shown that it is impossible to achieve 5 sad coffee shops.

In the second test, we analyze two coffee shops as an example:

- The Varka shop with index 2 is sad because it has a value of 3 and at least 2 values of $\{4, 2, 5\}$ are larger than its value.
- The Surf shop with index 1 is not sad because it has a value of 4 and it does not hold that at least 2 values of $\{8, 1, 3\}$ are larger than its value.

If you consider all shops, you will find that there are 5 sad coffee shops, and it can be shown that larger values are not reachable.