C. Property

time limit per test: 0.5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Bill is a famous mathematician in BubbleLand. Thanks to his revolutionary math discoveries he was able to make enough money to build a beautiful house. Unfortunately, for not paying property tax on time, court decided to punish Bill by making him lose a part of his property.

Bill's property can be observed as a convex regular $2n$-sided polygon $A_0\ A_1 \ldots\ A_{2n-1}\ A_{2n},\ A_{2n} = A_0$, with sides of the exactly 1 meter in length.

Court rules for removing part of his property are as follows:

- Split every edge $A_k\ A_{k+1},\ k = 0 \ldots\ 2n - 1$ in n equal parts of size $1 / n$ with points $P_0, P_1, \ldots, P_{n-1}$
- On every edge $A_{2k}\ A_{2k+1},\ k = 0 \ldots\ n - 1$ court will choose one point $B_{2k} = P_i$ for some $i = 0, \ldots,\ n - 1$ such that
- On every edge $A_{2k+1} A_{2k+2},\ k = 0 \ldots n - 1$ Bill will choose one point $B_{2k+1} = P_i$ for some $i = 0, \ldots,\ n - 1$ such that
- Bill gets to keep property inside of $2n$-sided polygon $B_0\ B_1 \ldots\ B_{2n-1}$

Luckily, Bill found out which B_{2k} points the court chose. Even though he is a great mathematician, his house is very big and he has a hard time calculating. Therefore, he is asking you to help him choose points so he maximizes area of property he can keep.

Input

The first line contains one integer number $n\ (2 \le n \le 50000)$, representing number of edges of $2n$-sided polygon.

The second line contains n distinct integer numbers $B_{2k}\ (0 \le B_{2k} \le n - 1,\ k = 0 \ldots\ n - 1)$ separated by a single space, representing points the court chose. If $B_{2k} = i$, the court chose point P_i on side $A_{2k}\ A_{2k+1}$.

Output

Output contains n distinct integers separated by a single space representing points $B_1, B_3, \ldots, B_{2n-1}$ Bill should choose in order to maximize the property area. If there are multiple solutions that maximize the area, return any of them.

Example

input
3 0 1 2
output
0 2 1

Note

To maximize area Bill should choose points: $B_1 = P_0, B_3 = P_2, B_5 = P_1$