Problem F
John's Gift
Time Limit: 1.2 Seconds

Every morning, John, a storekeeper, receives n goods of distinct values and n price tags all of which have different prices. As John wants to sell as many goods as possible, he sets up a match between the goods and the price tags to minimize the maximum difference (max-difference in short) between the two pair, where different goods should match different price tags. For example, if John has two goods of values $10, 30$ and two price tags of prices $10, 20$, then the max-difference can be minimized to be 10 by matching $(10, 10)$ and $(30, 20)$. This smallest max-difference is called the matching score.

Today, Jane, a friend of John, has a birthday party and John decides to pick a birthday gift from his goods. When selecting a good, he does not want to lose too much profit, and therefore wants to select a good whose removal results in the smallest matching score for the remaining $n - 1$ goods against the original n price tags. By the way, when matching $n - 1$ goods, John leaves one price tag unpaired to make a proper match.

For instance, John has two goods G_1 and G_2 whose values are 10 and 30, respectively, and two price tags 10 and 20. If he picks G_1 for a gift, then a possible price for G_2 is either 10 or 20. Then the matching score is 10 when G_2 is priced at 20. On the other hand, if he picks G_2 for a gift, then the matching score is zero when G_1 is priced at 10. Therefore, in order to obtain the smallest matching score, John would select G_2 as a gift. In other words, among n goods, John can pick any single good as gift, and this defines a new matching score between the remaining $n - 1$ goods against the original n price tags. Among n possible gift choices, John wants to find a good whose removal produces the smallest matching score.

Given n good values and n price tags, write a program that prints a value of a gift good that John should pick in order to produce the smallest matching score between the remaining $n - 1$ goods and the n price tags. If there are two or more candidate goods to select, print the smallest value of the candidate goods.

Input
Your program is to read from standard input. The input starts with a line containing an integer n ($2 \le n \le 10^6$), where n is the number of goods and the number of price tags. The following line contains n positive and distinct integers that represent the values of n goods. The third line contains n positive and distinct integers that represent n price tags. The good values and the tag prices are no more than 10^9.

Output
Your program is to write to standard output. Print exactly one line. The line should contain the value of the good that John picks for Jane's birthday gift such that its removal produces the smallest matching score in the remaining $n - 1$ goods. If there are multiple candidate goods, print the smallest value among the candidate goods.

The following shows sample input and output for three test cases.

Sample Input 1	Output for the Sample Input 1
2 10 30 10 20	30

Sample Input 2	Output for the Sample Input 2
3 20 30 40 30 20 10	40

Sample Input 3	Output for the Sample Input 3
4 24 68 51 10 20 40 50 30	68