

Problem B. TrungNotChung and the Competition Preparation

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

To provide the best experience for the contestants, not only does VNOI Cup invest in the quality of the problems, but it also pays attention to the overall competition experience. The organizers of VNOI Cup have worked tirelessly to create the best competition environment for the contestants, making them feel like they are competing at home. In particular, in the XX -th season of VNOI Cup, the organizers allow the contestants to choose their preferred type of desk and monitor to participate in the competition!

In the XX -th season of VNOI Cup, there are n contestants, numbered from 1 to n . Coincidentally, in the city of Ha Long, where VNOI Cup takes place, there are n desk brands and n monitor brands. The i -th contestant wants to use a desk from brand p_i and a monitor from brand q_i ($1 \leq p_i, q_i \leq n$).

After gathering all the contestants' requests for desks and monitors, the organizers decided that desks purchased from the same brand i must have the same positive integer height t_i . However, to ensure that there is no confusion between desks, desks purchased from **different** brands must have **different** heights. In other words, $t_i \neq t_j$ for $i \neq j$.

Similarly, monitors purchased from the same brand i must have the same positive integer height m_i , and no two monitors purchased from different brands can have the same height ($m_i \neq m_j$ for $i \neq j$).

To ensure fairness in the competition, the organizers want the height from the ground to the top of the monitor, when placed on the desk, to be the same for all contestants. Therefore, for each contestant, the sum of the height of their desk and monitor must be a constant c , i.e., $t_{p_i} + m_{q_i} = c$.

TrungNotChung has been assigned the task of purchasing desks and monitors for the contestants. Help *TrungNotChung* find the heights $t_1, t_2, \dots, t_n$ of the desks to be purchased and the heights $m_1, m_2, \dots, m_n$ of the monitors to be purchased, such that the sum of the height of the desk and monitor for each contestant is equal to each other and equal to a constant c . If there are multiple solutions, choose the heights of the desks and monitors such that the constant c is **minimized** to save on the cost of purchase and transportation. If there is still more than one answer, print any of them.

If there is no solution that satisfies the requirements, determine that.

Input

The first line contains an integer n ($1 \leq n \leq 10^5$) – the number of contestants in the final round of VNOI Cup season XX .

The second line contains n positive integers $p_1, p_2, \dots, p_n$ ($1 \leq p_i \leq n$) – the desk brands chosen by the contestants.

The third line contains n positive integers $q_1, q_2, \dots, q_n$ ($1 \leq q_i \leq n$) – the monitor brands chosen by the contestants.

Output

If there is no way to buy a table that satisfies the requirements of the organizers, print NO.

Otherwise,

- On the first line, print YES.
- The second line contains n positive integers $t_1, t_2, \dots, t_n$ ($1 \leq t_i \leq 10^9$, $t_i \neq t_j$ for $i \neq j$) — where t_i is the height of the table from the i -th brand that the organizers will buy.
- The third line contains n positive integers $m_1, m_2, \dots, m_n$ ($1 \leq m_i \leq 10^9$, $m_i \neq m_j$ for $i \neq j$) — where m_i is the height of the screen from the i -th brand that the organizers will buy.

The answer must satisfy the given height condition of the organizers, and the sum of the height of the table and the screen for each participant must be equal to the minimum possible constant c . If there are multiple answers that satisfy the condition, print any of them.

Scoring

The score for this problem is 1250 points.

Examples

standard input	standard output
3 2 1 3 2 3 1	YES 1 2 3 1 2 3
2 1 1 2 1	NO
4 1 2 1 4 2 3 2 1	YES 1 2 4 3 1 3 2 4