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Fence

In Mirko's village all fences are made of exactly N boards with different heights. Mirko doesn't have his own fence yet, so he decided to build one.
Each board is represented by a positive integer less than 10^9 - it's height. We define the niceness of the fence as a sum of height differences between adjacent boards. Mirko already bought the boards, but he doesn't know how to order them into a fence. He would like his fence to be similar to Slavko's fence, but also to be as nice as possible.
We say that two fences are similar if ordering of adjacent boards is the same in both fences, i.e. if i-th board of one fence is smaller (or larger) than (i+1)-st, than the same must hold for that boards of the other fence.
Given Slavko's fence configuration, and heights of boards that Mirko bought, put Mirko's fence together so that it is similar to Slavko's but also as nice as possible. If there is more than one solution, output any of them.

Input

The first line of input contains integer N ($2 \leq N \leq 300\,000$), number of boards in each fence.
The following line conatins N different positive integers representing Slavko's fence.
The following line contains N different positive integers representing heights of boards Mirko bought for his fence.

Output

The first line of output should contain the maximum possible niceness of Mirko's fence.
The following line should contain N integers, Mirko's boards in optimal order as described.

Sample input	Sample output
4 5 7 4 9 1 2 3 4	7 2 4 1 3
10 9 5 1 2 6 7 4 18 20 12 10 40 20 30 50 70 80 100 1000 500	3010 100 80 10 40 50 1000 20 70 500 30

Clarification of the first test case

Mirko bought boards of heights 1, 2, 3 and 4. Fences similar to Slavko's that he can build are:

{1,3,2,4} - niceness 2+1+2=5
{1,4,2,3} - niceness 3+2+1=6
{2,3,1,4} - niceness 1+2+3=6

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{2,4,1,3} - niceness 2+3+2=7
{3,4,1,2} - niceness 1+3+1=5