

## Problem I. Absolute Game

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

Alice and Bob are playing a game. Alice has an array  $a$  of  $n$  integers, Bob has an array  $b$  of  $n$  integers. In each turn, a player removes one element of his array. Players take turns alternately. Alice goes first.

The game ends when both arrays contain exactly one element. Let  $x$  be the last element in Alice's array and  $y$  be the last element in Bob's array. Alice wants to maximize the absolute difference between  $x$  and  $y$  while Bob wants to minimize this value. Both players are playing optimally.

Find what will be the final value of the game.

### Input

The first line contains a single integer  $n$  ( $1 \leq n \leq 1000$ ) — the number of values in each array.

The second line contains  $n$  space-separated integers  $a_1, a_2, \dots, a_n$  ( $1 \leq a_i \leq 10^9$ ) — the numbers in Alice's array.

The third line contains  $n$  space-separated integers  $b_1, b_2, \dots, b_n$  ( $1 \leq b_i \leq 10^9$ ) — the numbers in Bob's array.

### Output

Print the absolute difference between  $x$  and  $y$  if both players are playing optimally.

### Examples

standard input	standard output
4 2 14 7 14 5 10 9 22	4
1 14 42	28

### Note

In the first example, the  $x = 14$  and  $y = 10$ . Therefore, the difference between these two values is 4.

In the second example, the size of the arrays is already 1. Therefore,  $x = 14$  and  $y = 42$ .