Problem A. Random Numbers

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	512 mebibytes

Yuuka has n integers $a_1, a_2, \ldots, a_n$ generated uniformly and independently between 1 and 10^{18}, inclusive.

Yuuka chooses an integer m. Next, an integer k is generated uniformly between 0 and $(m-1)$, inclusive. After that, Yuuka changes every a_i to $(a_i + k) \bmod m$. Finally, she randomly shuffles the integers. The resulting integers are $b_1, b_2, \ldots, b_n$.

Now, given $a_1, a_2, \ldots, a_n$ and $b_1, b_2, \ldots, b_n$, you need to figure out the values of m and k.

Input

The first line contains an integer n, the number of integers ($10^5 \le n \le 2 \cdot 10^5$).

The second line contains n integers $a_1, a_2, \ldots, a_n$: the n randomly generated integers ($1 \le a_i \le 10^{18}$).

The third line contains n integers $b_1, b_2, \ldots, b_n$: the resulting integers ($0 \le b_i < 10^{10}$).

It is guaranteed that there exists a solution such that $0 \le k < m \le 10^{10}$.

Output

Output two integers m and k on a single line. If there are several possible answers, output any one of them.

Example

standard input	standard output
10 1 15 6 4 2 4 6 18 1 20 6 9 0 9 7 9 0 1 6 3	11 5

Note

Please note that the example in the problem statement is only to show the format! The tests in the system will not include this example (test 1 will be some other test), as it violates the constraints.