Atoms

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Erzhan is a hard working scientist at a top-secret nuclear research facility. Recently, he and his colleagues made a groundbreaking discovery of three new elements: *Beshium*$[Bs]$, *Dastarhanium*$[Da]$, and *Kumysium*$[Km]$. They have theorized that the nuclear fusion reaction caused by combining all three of these elements results in a massive output of clean and "safe" energy.

Isolation of these elements is only possible inside the special tube. Currently, there are exactly n atoms of each element type and we know their coordinates. By manipulating magnetic fields, scientists can choose which three atoms to combine. However, the only stable reaction is $[Bs] - [Da] - [Km]$, in this exact order. Specifically, let x, y, z be coordinates of *Beshium*$[Bs]$, *Dastarhanium*$[Da]$, and *Kumysium*$[Km]$, respectively, inside the tube. Then, to form a stable combination $x \leq y \leq z$ must hold. Note, that the remaining atoms inside the tube do not interact with chosen three in any way.

The output of the reaction mainly depends on the energy level of the *Dastarhanium*$[Da]$ atom. The expected output for each *Dastarhanium*$[Da]$ in a reaction is given by the values $c_1, c_2, ..., c_n$. As a result of the reaction all three chosen atoms are destroyed. After that, we can repeat building reactions with the remaining atoms. To prepare a report on large scale production, Erzhan is tasked with choosing which combinations of *Beshium*$[Bs]$, *Dastarhanium*$[Da]$ and *Kumysium*$[Km]$ to use in reactions in such a way to maximize the total energy output.

Input

The first line of the input contains one integer n ($1 \leq n \leq 10^5$) — the number of atoms for each element type.

The second line contains n integers $b_1, b_2, \cdots, b_n$ ($1 \leq b_i \leq 10^9$) — coordinates of *Beshium*$[Bs]$ atoms.

The third line contains n integers $k_1, k_2, \cdots, k_n$ ($1 \leq k_i \leq 10^9$) — coordinates of *Kumysium*$[Km]$ atoms.

The fourth line contains n integers $d_1, d_2, \cdots, d_n$ ($1 \leq d_i \leq 10^9$) — coordinates of *Dastarhanium*$[Da]$ atoms.

The fifth line contains n integers $c_1, c_2, \cdots, c_n$ ($1 \leq c_i \leq 10^9$) — the expected energy output for each *Dastarhanium*$[Da]$ atoms.

Output

Print one number — the maximum possible total energy output that could be achieved for given atom positions.

Scoring

This task contains 7 subtasks.

Subtask	Additional restrictions	Points	Required subtasks
0	Examples	0	—
1	$n = 3$	9	—
2	$d_1 = d_2 = \cdots = d_n$	8	—
3	$k_i \geq b_j$ and $k_i \geq d_j$ for each $1 \leq i, j \leq n$	11	—
4	$c_1 = c_2 = \cdots = c_n = 1$	11	—
5	$n \leq 300$	12	0,1
6	$n \leq 2000$	12	5
7	—	37	2,3,4,6

Examples

standard input	standard output
3 1 4 10 1 2 4 1 3 4 2 3 2	4
4 2 2 1 8 4 10 10 4 2 3 10 8 6 5 3 5	19

Note

In the first example, we will combine: $b_1 - d_1 - k_1(1 - 1 - 1)$ and $b_2 - d_3 - k_3(4 - 4 - 4)$.