Degree Sequence 3

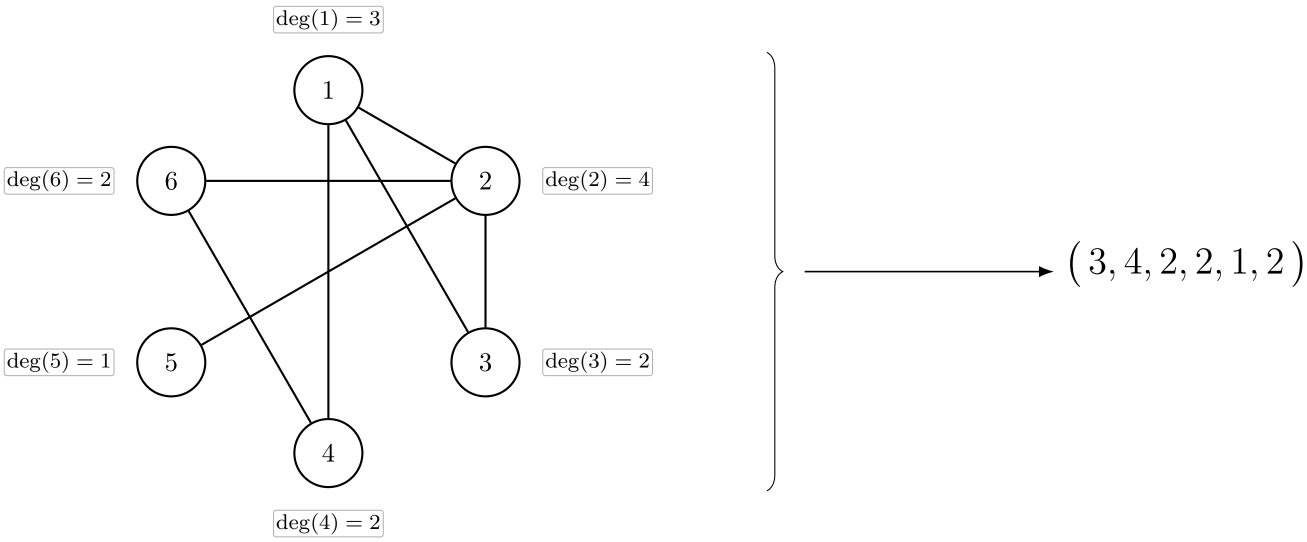
Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

In *The 2nd Universal Cup Semifinals*, you discover some records of the Mayan civilization's study of graph theory at Chichén Itzá. Among the ruins, you found some *degree sequences* of some trees recorded by the ancient Maya.

Later, at the *2024 ICPC Training Camp* in Gui'an, you may (or may not) have solved the task *Degree Sequence 2*. Little Cyan Fish is eager to share that problem with you, but since the contest might appear as a regular stage in The 4th Universal Cup, he cannot reveal it just yet.

But don't be disappointed! Who said you must solve Degree Sequence 2 before attempting Degree Sequence 3? Here it is!

Recall the definition of the degree sequence: for an **undirected**, **simple** (i.e. no multiple edges or self loops) graph of n vertices, its degree sequence is an integer sequence of length n, denoted by $d_1, d_2, \ldots, d_n$, such that d_i is equal to the degree (i.e. the number of edges that are incident to the vertex) of the vertex i.



A *sequence* a is said to be *graphic*, or a *valid degree sequence*, if there exists a simple undirected graph, such that the degree sequence of the graph is exactly a. For example, $(3, 4, 2, 2, 1, 2)$ is a valid degree sequence, as the graph described above will give it as a degree sequence.

Now, Little Cyan Fish gives you a sequence $a_1, a_2, \ldots, a_n$. Little Cyan Fish wants you to convert the sequence to a valid *degree sequence* of a simple undirected graph. To do that, Little Cyan Fish can perform the following operations as many times as he wants:

- Choose an index $1 \le i \le n$ and update $a_i \leftarrow a_i - 1$. The cost of such operation is b_i dollars.
- Choose an index $1 \le i \le n$ and update $a_i \leftarrow a_i + 1$. The cost of such operation is also b_i dollars.

Given the sequences a and b, your task is to find the minimum total cost to convert the sequence a into a valid degree sequence.

Input

There are multiple test cases in a single test file. The first line of the input contains an integer T ($T \ge 1$), indicating the number of test cases. For each test case:

The first line contains a single integer n ($1 \le n \le 10^5$).

The next line of the input contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le n$), indicating the initial sequence.

The next line of the input contains n integers $b_1, b_2, \ldots, b_n$ ($1 \le b_i \le 10^9$), indicating the cost to make a change.

It is guaranteed that the sum of n over all test cases does not exceed 10^6.

Output

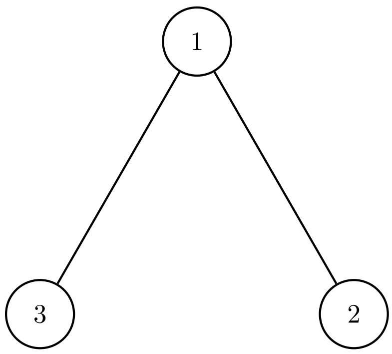
For each test case, output a single line containing a single integer, indicating the answer.

Example

standard input	standard output
3 3 2 1 1 100 1000 10000 3 2 1 0 100 10 1 5 1 2 3 4 5 1 10 100 1000 10000	0 1 10002

Note

For the first test case, we do not need to perform any operations, as $(2, 1, 1)$ is already a valid degree sequence.



For the second test case, the optimal plan is to update $a_3 \leftarrow a_3 + 1$, so that the sequence a becomes $(2, 1, 1)$. The total cost is $b_3 = 1$.

For the third test case, the optimal plan is to update $a_5 \leftarrow a_5 - 1$, and then update $a_1 \leftarrow a_1 + 1$ twice, so that the sequence a becomes $(3, 2, 3, 4, 4)$. The total cost is $2 \cdot b_1 + b_5 = 10002$.