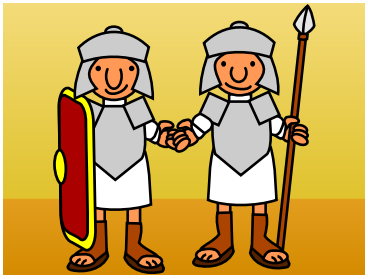
Problem J: Junior Joining

Time limit: 2 seconds



Patrol pair with shield and spear. Public Domain on publicdomainvectors (edited).

Arya, the Commander of Gil'ead, has received $2 \cdot n$ new recruits. Since the Gil'ead City Protectorate Council has mandated more patrols, she intends to pair them into n pairs to patrol the area. To maximize the effectiveness of a patrol pair in the modern era, it should consist of one shield bearer and one spear carrier.

Each recruit i has shield-defense skill d_i, and spear-attack skill a_i. While skilled usage of their respective tool is important, one should never neglect the effectiveness of strong synergy. Because of long-standing rivalries between cities, strong bonds have formed within each city. With enough discipline, Arya is sure that there will not be any bad blood within a pair, but if both are from the same city, they will synergize exceptionally well.

The total fighting strength of a pair is the sum of the shield-defense skill of one, the spear-attack skill of the other, and if both recruits are from the same city c, also a synergy bonus of c.

Determine the maximum sum of fighting strength over all pairs that Arya can achieve with optimal pairing.

Input

The input consists of:

- One line with an integer n ($1 \leq n \leq 10^5$), half the number of new recruits.
- $2 \cdot n$ lines, the ith of which contains three integers d_i, a_i, and c_i ($1 \leq d_i, a_i, c_i \leq 10^6$), the shield-defense skill, spear-attack skill, and the home city of the ith recruit.

Output

Output the maximum achievable sum of fighting strength over all pairs.

Sample Input 1	Sample Output 1
1 4 2 1 3 2 2	6

There are only two recruits so they are paired together. Recruit 1 is assigned the shield, recruit 2 the spear. As they are not from the same city, only their skill is counted $4 + 2 = 6$.

Sample Input 2	Sample Output 2
2 1 2 5 4 2 5 5 1 5 3 2 1	18

Recruit 3 (shield) is paired with recruit 1 (spear). As they are both from city 5, they have 5 bonus strength from synergy ($5 + 2 + 5 = 12$ total). Recruit 2 (shield) and recruit 4 (spear) are paired, resulting in a fighting strength of 6.

Sample Input 3	Sample Output 3
2 1 7 2 1 5 2 8 1 6 7 1 6	27

One possible pairing is the following: recruit 3 (shield) with 1 (spear), and recruit 4 (shield) with 2 (spear).