Optimal Connected Subset

It is well-known that we can uniquely represent any point P on the Cartesian coordinate system using an ordered pair (x, y). If both x and y are integers, then we shall call P an integer point, otherwise we shall call P a non-integer point. We shall denote all integer points on the plane using the set W.

Definition 1: For two points $P_1(x_1, y_1)$, $P_2(x_2, y_2)$, if $|x_1 - x_2| + |y_1 - y_2| = 1$, then P_1 and P_2 shall be considered **neighbors**, which is denoted as $P_1 \sim P_2$. Otherwise, P_1 and P_2 are considered non-neighboring.

Definition 2: The set S is a finite subset of W such that $S = \{P_1, P_2, \ldots, P_n\}$ $(n \geq 1)$, where P_i $(1 \leq i \leq n)$ belongs in W. We shall call S a **set of integer points**.

Definition 3: Where S is a set of integer points, if the points R and T belong to S, and there exists a finite sequence $Q_1, Q_2, \ldots, Q_k$ satisfying the following:

1. Q_i belongs to S $(1 \leq i \leq k)$;
2. $Q_1 = R$, $Q_k = T$;
3. $Q_i \sim Q_{i+1}$ $(1 \leq i \leq k-1)$ — i.e. Q_i and Q_{i+1} are neighbours; and
4. $Q_i \neq Q_j$ for any $1 \leq i < j \leq k$

then we shall say that R and T are **connected** within set S, where the sequence $Q_1, Q_2, \ldots, Q_k$ shall be called a **pathway** connecting points R and T.

Definition 4: For a set of integer points V, if for any two of V's integer points there exists exactly one pathway connecting them, then V shall be known as a **singular set of integer points**.

Definition 5: For any integer point on the plane, we can assign it an integer score. Thus, we shall call the sum of the scores of all the points in a set of integer points its **total score**.

Given a singular set of integer points V, we would like to find the optimally connected subset B, where:

1. B is a subset of V;
2. any two integer points in B is connected within B; and
3. out of the set of integer points satisfying 1. and 2., B is the set where the total score is highest.

Input

The very first line of the input contains a single integer T, the number of test cases. T blocks follow.

For each test case, the first line contains a single integer $N=|V|(N<=1000)$. Within the following N lines, the i-th line $(1 \leq i \leq N)$ contains three space-separated integers X_i, Y_i, and C_i $(-10^6 \leq X_i, Y_i \leq 10^6; -100 \leq C_i \leq 100)$, representing the coordinates of the i-th point along with its score.

Output

T lines,each line should consist of one integer, the total score of the optimally connected subset.

Example

Input:
1
5
0 0 -2
0 1 1
1 0 1
0 -1 1
-1 0 1

Output:
2