

Problem K. Maximum Spanning Forest

Time limit: 7s

Color of balloons: brown

In graph theory, a **maximum spanning tree** is a subgraph that is a tree and connects all the vertices with maximum weight sum. And a **maximum spanning forest** is the union of maximum spanning trees of each connected component in the graph.

A big undirected graph $G = (V, E)$ is given, which $V = \{(x, y) : 1 \leq x, y \leq 2,000,000,000; x, y \in \mathbb{Z}\}$ and $E = \{\}$ initially. Your task is to write a program that support operation x_1, y_1, x_2, y_2, c :

- First, add some edges in G . You should add an edge between (a_1, b_1) and (a_2, b_2) with weight c if $x_1 \leq a_1, a_2 \leq x_2, y_1 \leq b_1, b_2 \leq y_2$ and $|a_1 - a_2| + |b_1 - b_2| = 1$.
- Second, calculate the maximum spanning forest of G after edges added.

Input

The first line of input contains an integer T indicating the total number of test cases.

The first line of each test case has an integer n , indicating the number of operations. The n lines that follow describe the operations. Each of these lines has 5 integers x_1, y_1, x_2, y_2, c , separated by a single space.

Limitations:

- $1 \leq T \leq 500$
- $1 \leq n \leq 100$
- $1 \leq x_1 \leq x_2 \leq 2,000,000,000$
- $1 \leq y_1 \leq y_2 \leq 2,000,000,000$
- $1 \leq c \leq 1,000,000,000$
- There are at most 20 testcases with $n > 50$.

Output

For each operation, output a number in a line that indicates the weight of maximum spanning forest mod $10^9 + 7$.

Sample

standard input	standard output
2	3
3	8
2 2 3 3 1	16
1 2 2 3 2	999998642
1 1 1 3 5	
1	
1 1 2000000000 2000000000 1000000000	