Problem F. Persistent Link/cut Tree

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	64 mebibytes

Teacher Mai has $m+1$ trees, $T_0, T_1, \ldots, T_m$. T_0 consists of one vertex numbered 0.

He generated the T_i in next way: get a copy of T_{a_i} and T_{b_i}. Add an edge with length l_i between vertex numbered c_i in T'_{a_i} and d_i in T'_{b_i}. Relabel the vertices in the new tree. Let k be the number of vertices in T'_{a_i}. He keeps labels of vertices in T'_{a_i} the same, and adds k to labels of vertices in T'_{b_i}.

If there is a tree T with n vertices $v_0, v_1, v_2, \ldots, v_{n-1}$, $F(T) = \sum_{i=0}^{n-1} \sum_{j=i+1}^{n-1} d(v_i, v_j)$. ($d(v_i, v_j)$ means the distance between the v_i and v_j).

For every $i (1 \le i \le m)$, he wants to know $F(T_i)$.

Input

First line of the input contains one integer T — number of test cases ($1 \le T \le 100$).

For each test case, the first line contains one integer m ($1 \le m \le 60$), then m lines follow. The i-th line contains five numbers a_i, b_i ,c_i ,d_i, l_i ($0 \le a_i, b_i < i$, $0 \le l_i \le 10^9$). It's guarenteed that there exists a vertex numbered c_i in T_{a_i} and there exists a vertex numbered d_i in T_{b_i}.

Output

For each test case, print $F(T_i)$ modulo 10^9+7 in the i-th line.

Example

standard input	standard output
1 3 0 0 0 0 2 1 1 0 0 4 2 2 1 0 3	2 28 216