You are trying to figure out a way to travel back in time, possibly to see the start of the universe. The problem is that time traveling is a series of jumps through wormholes, so you may need to do many jumps, each with a resulting difference in time from where you started. See if through these jumps it is possible to go as far back in time as necessary.

Input

The first line of input is the number of test cases (T <= 100). For each test case, the following line contain the number of possible jumps N (0 < N < 1000) and the next N lines contain integers 1 <= A, B <= 1000 representing a path from A to B and a difference of time -500 <= W <= 500, in the format A W B.

Output

For each test case, print one line with "YES" or "NO" if it is or not possible to travel back in time infinitely starting from the node 1.

Example

Input:

```
3
3
1 -1 2
2 -10 3
3 -5 4
5
1 1 2
2 -2 3
3 -4 4
4 2 5
4 7 1
4
1 2 2
2 -3 4
3 -1 2
4 2 3
```

Output:

```
YES
NO
YES
```