Problem J

Super Sum

In this problem, you are given N tuples $\langle a, b, c\rangle$, where a, b, and c, are integers and $b \le c$, your task is to compute the **sum** of all the following terms:

$$a_1{}^{d_1} \times a_2{}^{d_2} \times \ldots \times a_N{}^{d_N}$$ for every combination of integer d_k in $b_k \le d_k \le c_k$

For example, let N be 3 and the tuples are: $\langle 2,1,3\rangle$, $\langle 3,3,4\rangle$, and $\langle 5,0,1\rangle$. Then,

- $2^1 \times 3^3 \times 5^0 = 54$
- $2^1 \times 3^3 \times 5^1 = 270$
- $2^1 \times 3^4 \times 5^0 = 162$
- $2^1 \times 3^4 \times 5^1 = 810$
- $2^2 \times 3^3 \times 5^0 = 108$
- $2^2 \times 3^3 \times 5^1 = 540$
- $2^2 \times 3^4 \times 5^0 = 324$
- $2^2 \times 3^4 \times 5^1 = 1620$
- $2^3 \times 3^3 \times 5^0 = 216$
- $2^3 \times 3^3 \times 5^1 = 1080$
- $2^3 \times 3^4 \times 5^0 = 648$
- $2^3 \times 3^4 \times 5^1 = 3240$

and the sum is: $54 + 270 + 162 + 810 + 108 + 540 + 324 + 1620 + 216 + 1080 + 648 + 3240 = 9072$.

Input

The first line of input contains an integer T ($T \le 100$) denoting the number of cases. Each case begins with an integer N ($1 \le N \le 100$) denoting the number of tuple. The next N following lines, each contains three integers: $a\ b\ c$ ($1 \le a \le 10^9$; $0 \le b \le c \le 10^9$) representing the given tuple.

Output

For each case, output "`Case #X: Y`" (without quotes) in a line where `X` is the case number (starts from 1), and `Y` is the answer for this particular case modulo 1,000,000,007.

Sample Input	Output for Sample Input
4 3 2 1 3 3 3 4 5 0 1 3 5 2 3 2 1 4 3 2 2 1 7 0 0 2 10 3 5 3 1 2	Case #1: 9072 Case #2: 40500 Case #3: 1 Case #4: 1332000

Explanation for 1st sample case

This is the example given in the problem statement.

Explanation for 2nd sample case

In this case, you should compute the sum of all the following terms:

- $5^2 \times 2^1 \times 3^2 = 450$
- $5^2 \times 2^2 \times 3^2 = 900$
- $5^2 \times 2^3 \times 3^2 = 1800$
- $5^2 \times 2^4 \times 3^2 = 3600$
- $5^3 \times 2^1 \times 3^2 = 2250$
- $5^3 \times 2^1 \times 3^2 = 2250$
- $5^3 \times 2^2 \times 3^2 = 4500$
- $5^3 \times 2^3 \times 3^2 = 9000$
- $5^3 \times 2^4 \times 3^2 = 18000$

and the sum is 40500.

Explanation for 3rd sample case

In this case, you should compute the sum of all the following terms:

- $7^0 = 1$

and the sum is 1.

Explanation for 4th sample case

In this case, you should compute the sum of all the following terms:

- $10^3 \times 3^1 = 3000$
- $10^3 \times 3^2 = 9000$
- $10^4 \times 3^1 = 30000$
- $10^4 \times 3^2 = 90000$
- $10^5 \times 3^1 = 300000$
- $10^5 \times 3^2 = 900000$

and the sum is 1332000.