

7720 Super Sum

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

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

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

Explanation for the sample:

First case: This is the example given in the problem statement.

Second 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.

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

- $7^0 = 1$

and the sum is 1.

Fourth 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.

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
```

Sample Output

```
Case #1: 9072
Case #2: 40500
Case #3: 1
Case #4: 1332000
```