Back to School '16: Textbooks

bobhob314 has applied some super sticky substance to his N textbooks. This mysterious substance is so sticky that it prevents textbooks from falling off ledges in a tetris-like manner. The nth textbook is placed starting at s_n and is l_n units long and w_n wide. The textbooks are given in the order in which they are placed.

The sun is shining directly above and **bobhob314** wants to protect more books from the sun. Find the total area unoccupied by a textbook in the shade (has at least one part of a textbook above). Print this modulo $1\,000\,000\,007$.

Input Specification

The first line contains a single integer N.

The next N lines contain 3 space separated integers, s_n, l_n and w_n.

Note: fast input may be required.

Constraints

Subtask 1 [10%]

$1 \leq N \leq 100$

$1 \leq s_n, l_n \leq 100\,000$

$w_n = 1$

Subtask 2 [30%]

$1 \leq N \leq 10\,000$

$1 \leq s_n, l_n \leq 10^9$

$1 \leq w_n \leq 10$

Subtask 3 [60%]

$1 \leq N \leq 500\,000$

$1 \leq s_n, l_n \leq 10^9$

$1 \leq w_n \leq 100$

Output Specification

Output a single integer, the number of empty spaces under at least one textbook modulo $1\,000\,000\,007$.

Sample Input 1

```
3
1 3 1
3 3 1
5 3 1
```

Sample Output 1

```
6
```

Sample Input 2

```
5
1 2 1
3 1 1
3 4 1
6 3 2
5 2 1
```

Sample Output 2

```
9
```

Explanation for Sample Output 2

The textbooks are represented with a digit n. A period represents a unit in the shade.

```
    55
    .444
    .444
  3333..
112.....
```

Sample Input 3

```
4
5 1 2
3 1 2
5 1 1
3 3 1
```

Sample Output 3

```
4
```

Explanation for Sample Output 3

```
444
..3
2.1
2.1
```