You are given n closed, integer intervals $[a_i, b_i]$ and n integers $c_1, \ldots, c_n$.

Write a program that:

- reads the number of intervals, their endpoints and integers $c_1, \ldots, c_n$ from the standard input,
- computes the minimal size of a set Z of integers which has at least c_i common elements with interval $[a_i, b_i]$, for each $i = 1, 2, \ldots, n$,
- writes the answer to the standard output.

Input

The first line of the input cointains an integer indicating the number of datasets. It's followed by a blank line.

The first line of each dataset contains an integer n ($1 \leq n \leq 50000$) — the number of intervals. The following n lines describe the intervals. The line $i+1$ of the input contains three integers a_i, b_i, c_i separated by single spaces and such that $0 \leq a_i \leq b_i \leq 50000$ and $1 \leq c_i \leq b_i - a_i + 1$.

There is a blank line between datasets.

Output

The output for each dataset contains exactly one integer equal to the minimal size of a set Z sharing at least c_i elements with interval $[a_i, b_i]$, for each $i = 1, 2, \ldots, n$.

Print a blank line between datasets.

Sample Input

```
1

5
3 7 3
8 10 3
6 8 1
1 3 1
10 11 1
```

Sample Output

```
6
```