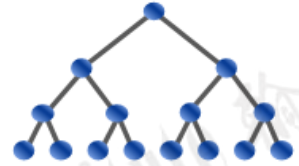


USA Computing Olympiad



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USACO 2024 DECEMBER CONTEST, SILVER PROBLEM 2. DEFORESTATION

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Contest has ended.

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English (en) ▾

Farmer John is expanding his farm! He has identified the perfect location in the Red-Black Forest, which consists of N trees ($1 \leq N \leq 10^5$) on a number line, with the i -th tree at position x_i ($-10^9 \leq x_i \leq 10^9$).

Environmental protection laws restrict which trees Farmer John can cut down to make space for his farm. There are K restrictions ($1 \leq K \leq 10^5$) specifying that there must always be at least t_i trees ($1 \leq t_i \leq N$) in the line segment $[l_i, r_i]$, including the endpoints ($-10^9 \leq l_i \leq r_i \leq 10^9$). It is guaranteed that the Red-Black Forest initially satisfies these restrictions.

Farmer John wants to make his farm as big as possible. Please help him compute the maximum number of trees he can cut down while still satisfying all the restrictions!

INPUT FORMAT (input arrives from the terminal / stdin):

Each input consists of T ($1 \leq T \leq 10$) independent test cases. It is guaranteed that the sums of all N and of all K within an input each do not exceed $3 \cdot 10^5$.

The first line of input contains T . Each test case is then formatted as follows:

- The first line contains integers N and K .
- The next line contains the N integers x_1, \dots, x_N .
- Each of the next K lines contains three space-separated integers: l_i, r_i and t_i .

OUTPUT FORMAT (print output to the terminal / stdout):

For each test case, output a single line with an integer denoting the maximum number of trees Farmer John can cut down.

SAMPLE INPUT:

```

3
7 1
8 4 10 1 2 6 7
2 9 3
7 2
8 4 10 1 2 6 7
2 9 3
1 10 1
7 2
8 4 10 1 2 6 7
2 9 3
1 10 4

```

SAMPLE OUTPUT:

```

4
4
3

```

For the first test case, Farmer John can cut down the first 4 trees, leaving trees at $x_i = 2, 6, 7$ to satisfy the restriction.

For the second test case, the additional restriction does not affect which trees Farmer John can cut down, so he can cut down the same trees and satisfy both restrictions.

For the third test case, Farmer John can only cut down at most 3 trees because there are initially 7 trees but the second restriction requires him to leave at least 4 trees uncut.

SCORING:

- Input 2: $N, K \leq 16$
- Inputs 3-5: $N, K \leq 1000$
- Inputs 6-7: $t_i = 1$ for all $i = 1, \dots, K$.
- Inputs 8-11: No additional constraints.

Problem credits: Tina Wang, Jiahe Lu, Benjamin Qi

Contest has ended. No further submissions allowed.