



USACO 2019 DECEMBER CONTEST, PLATINUM PROBLEM 1. GREEDY PIE EATERS

[Return to Problem List](#)

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English (en) ▾

Farmer John has M cows, conveniently labeled $1 \dots M$, who enjoy the occasional change of pace from eating grass. As a treat for the cows, Farmer John has baked N pies ($1 \leq N \leq 300$), labeled $1 \dots N$. Cow i enjoys pies with labels in the range $[l_i, r_i]$ (from l_i to r_i inclusive), and no two cows enjoy the exact same range of pies. Cow i also has a weight, w_i , which is an integer in the range $1 \dots 10^6$.

Farmer John may choose a sequence of cows c_1, c_2, \dots, c_K , after which the selected cows will take turns eating in that order. Unfortunately, the cows don't know how to share! When it is cow c_i 's turn to eat, she will consume all of the pies that she enjoys --- that is, all remaining pies in the interval $[l_{c_i}, r_{c_i}]$. Farmer John would like to avoid the awkward situation occurring when it is a cow's turn to eat but all of the pies she enjoys have already been consumed. Therefore, he wants you to compute the largest possible total weight ($w_{c_1} + w_{c_2} + \dots + w_{c_K}$) of a sequence c_1, c_2, \dots, c_K for which each cow in the sequence eats at least one pie.

SCORING:

- Test cases 2-5 satisfy $N \leq 50$ and $M \leq 20$.
- Test cases 6-9 satisfy $N \leq 50$.

INPUT FORMAT (file `pieaters.in`):

The first line contains two integers N and M ($1 \leq M \leq \frac{N(N+1)}{2}$).

The next M lines each describe a cow in terms of the integers w_i, l_i , and r_i .

OUTPUT FORMAT (file `pieaters.out`):

Print the maximum possible total weight of a valid sequence.

SAMPLE INPUT:

```
2 2
100 1 2
100 1 1
```

SAMPLE OUTPUT:

```
200
```

In this example, if cow 1 eats first, then there will be nothing left for cow 2 to eat. However, if cow 2 eats first, then cow 1 will be satisfied by eating the second pie only.

Problem credits: Benjamin Qi

Contest has ended. No further submissions allowed.