

# Master of Linear Algebra

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There are  $m$  vectors  $v_i (i = 1, \dots, m)$  in  $\mathbb{R}^n$ , where each vector  $v_i$  has a **value**  $c_i$ . Each vector  $v_i$  consists of only a consecutive interval of standard basis vectors  $e_{l_i} \dots e_{r_i}$ . In other words, there exist  $1 \leq l_i \leq r_i \leq n$  such that  $v_i = e_{l_i} + e_{l_i+1} + e_{l_i+2} + \dots + e_{r_i}$ , i.e.

$$v_i = (0, \dots, 0, \underbrace{1, \dots, 1}_{\text{from } l_i \text{ to } r_i}, 0, \dots, 0).$$

It means that the  $l_i$ -th entry to  $r_i$ -th entry of  $v_i$  are 1, and others are 0.

Now your task is to select a linearly independent subset  $S$  of vectors  $v_i$ , maximizing the sum of the value (the  $c_i$ 's) of the selected vectors.

- Linear independence: The vectors  $v_1, v_2, \dots, v_m$  are said to be **linearly independent** if there do not exist scalars  $a_1, \dots, a_m$ , which are not all zero, such that

$$\sum_{i=1}^m a_i v_i = 0.$$

## Input format

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The first line contains two integers  $m, n$  separated by space, denoting there are  $m$  vectors ( $1 \leq m \leq 600000, 1 \leq n \leq 200000$ ).

Then follow  $m$  lines, the  $i$ -th of which contains 3 integers  $l_i, r_i, c_i$  separated by space, denoting the  $i$ -th vector is  $v_i = \sum_{j=l_i}^{r_i} e_j$  and has value  $c_i (1 \leq c_i \leq 10^9)$ .

It is guaranteed that for any  $1 \leq i, j \leq n$  and  $i \neq j$ , either  $l_i \neq l_j$  or  $r_i \neq r_j$  holds.

## Output format

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Output an integer denoting the maximum sum of values of linearly independent vectors.

## Examples

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### Input 1

```
6 4
1 1 10
2 3 15
4 4 5
3 4 30
2 4 21
2 2 31
```

## Output 1

86

## Sample 1 Explanation

The vectors are

$$\begin{aligned}v_1 &= (1, 0, 0, 0), \\v_2 &= (0, 1, 1, 0), \\v_3 &= (0, 0, 0, 1), \\v_4 &= (0, 0, 1, 1), \\v_5 &= (0, 1, 1, 1), \\v_6 &= (0, 1, 0, 0).\end{aligned}$$

Choose four vectors  $\{v_1, v_2, v_4, v_6\}$ . The answer is  $10 + 15 + 30 + 31 = 86$ .

## Input 2

```
18 12
5 7 747599713
3 4 757926887
3 6 382811701
4 6 97461676
4 9 710404753
2 9 487547197
2 6 596396727
2 2 608843003
4 4 845337000
4 7 18671691
11 11 135958130
11 12 452842130
1 12 528936929
1 5 812188014
6 8 535007878
12 12 617497619
9 12 737458124
6 12 583189872
```

## Output 2

7469683842

## Sample 2 Explanation

Choose 11 vectors  $\{v_1, v_2, v_5, v_7, v_8, v_9, v_{12}, v_{14}, v_{16}, v_{17}, v_{18}\}$ .

## 提交与评分

本题的评分由 OJ 分数（60%）和线下 check（40%）两部分构成。线下 check 会在此次作业结束时间之后进行。

注：线下 check 也带有检查学术诚信的含义，当然这不是唯一的手段。如果被认定为抄袭，OJ 的分数也会作废，并且会有惩罚。**特别强调，抄袭来自 generative AI 的代码和抄袭网上的代码是同等处理的，我们建议您在写作业时关闭一切 generative AI 工具。**