



Array Manipulation ☆

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Starting with a 1-indexed array of zeros and a list of operations, for each operation add a value to each of the array element between two given indices, inclusive. Once all operations have been performed, return the maximum value in the array.

Example

$n = 10$

$queries = [[1, 5, 3], [4, 8, 7], [6, 9, 1]]$

Queries are interpreted as follows:

```
a b k
1 5 3
4 8 7
6 9 1
```

Add the values of k between the indices a and b inclusive:

```
index->  1 2 3  4  5 6 7 8 9 10
         [0,0,0, 0, 0,0,0,0,0, 0]
         [3,3,3, 3, 3,0,0,0,0, 0]
         [3,3,3,10,10,7,7,7,0, 0]
         [3,3,3,10,10,8,8,8,1, 0]
```

The largest value is **10** after all operations are performed.

Function Description

Complete the function `arrayManipulation` in the editor below.

`arrayManipulation` has the following parameters:

- `int n` - the number of elements in the array
- `int queries[q][3]` - a two dimensional array of queries where each `queries[i]` contains three integers, a , b , and k .

Returns

- `int` - the maximum value in the resultant array

Input Format

The first line contains two space-separated integers n and m , the size of the array and the number of operations.

Each of the next m lines contains three space-separated integers a , b and k , the left index, right index and summand.

Constraints

- $3 \leq n \leq 10^7$
- $1 \leq m \leq 2 * 10^5$
- $1 \leq a \leq b \leq n$
- $0 \leq k \leq 10^9$



Sample Input

```
5 3
1 2 100
2 5 100
3 4 100
```

Sample Output

```
200
```

Explanation

After the first update the list is 100 100 0 0 0.

After the second update list is 100 200 100 100 100.

After the third update list is 100 200 200 200 100.

The maximum value is **200**.

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C++



```
8 long arrayManipulation(int n, vector<vector<int>> queries) {
9     //https://www.youtube.com/watch?v=JtJKn_c9lB4&ab_channel=alG0ds
10    //prefix-sum Algorithm
11    // /https://www.youtube.com/watch?v=hDhf04AJIRs&feature=youtu.be&
12    // ab_channel=JAVAID-CodingInterviewPreparation
13    long res= INT_MIN; long sum=0;
14    int start,end,val;
15    vector<long> vect(n+2, 0);
16    for (int i = 0; i < queries.size(); i++){
17        start=queries[i][0];
18        end=queries[i][1];
19        val =queries[i][2];
20        vect[start] += val;
21        vect[end+1] -= val;
22    }
23    for(int j=1;j<=n;j++){
24        sum+=vect[j];
25        res=max(sum,res);
26    }
27    return res;
28 }
```

Line: 24 Col: 26

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Test case 0

Test case 1

Test case 2

Test case 3

Test case 4

Test case 5

Test case 6

Compiler Message

Success

Input (stdin)

```
1 5 3
2 1 2 100
3 2 5 100
4 3 4 100
```

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Expected Output

```
1 200
```

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