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 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:

```
[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** with 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 q, the size of the array and the number of queries.

Each of the next q lines contains three space-separated integers a, b and k, the left index, right index and number to add.

Constraints

- $3 \le n \le 10^7$

- $1 \le m \le 2 * 10^5$

- $1 \le a \le b \le n$

- $0 \leq k \leq 10^9$

Sample Input

```
STDIN       Function
-----       --------
5 3         arr[] size n = 5, queries[] size q = 3
1 2 100      queries = [[1, 2, 100], [2, 5, 100], [3, 4, 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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```
16   #
17
18   def arrayManipulation(n, queries):
19       # Write your code here
20
21       arr = [0]*(n+1)
22       max_value = 0
23       total_sum = 0
24
25       # prefix sum array
26       for a,d,k in queries:
27           arr[a-1] += k
28           arr[d] -= k
29
30       # just one iteration to get the max value
31       for value in arr:
32           total_sum += value
33           max_value = max(max_value, total_sum)
34
35       return max_value
36
37
38   if __name__ == '__main__':
39       fptr = open(os.environ['OUTPUT_PATH'], 'w')
40
41       first_multiple_input = input().rstrip().split()
42
43       n = int(first_multiple_input[0])
44
45       m = int(first_multiple_input[1])
46
47       queries = []
48
```

```
    49          for _ in range(m):
```

EMACS   Line: 30 Col: 46

⬆ Upload Code as File   ☐ Test against custom input   **Run Code**   Submit Code

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76%   176/200

Problem Solving
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⊘ **Test case 0**   Compiler Message

⊘ Test case 1 🔒   Success

⊘ Test case 2 🔒   Input (stdin)   **Download**

                               1   **5 3**
⊘ Test case 3 🔒   2   **1 2 100**
                               3   **2 5 100**
⊘ Test case 4 🔒   4   **3 4 100**

⊘ Test case 5 🔒   Expected Output   **Download**

⊘ Test case 6 🔒   1   **200**