

There is a matrix containing at most 10^6 elements divided into r rows and c columns. Each element has a location (x, y) where $1 \leq x \leq r$, $1 \leq y \leq c$. Initially, all the elements are zero. You need to handle four kinds of operations:

1 $x_1 y_1 x_2 y_2 v$	Increment each element (x, y) in submatrix (x_1, y_1, x_2, y_2) by v ($v > 0$)
2 $x_1 y_1 x_2 y_2 v$	Set each element (x, y) in submatrix (x_1, y_1, x_2, y_2) to v
3 $x_1 y_1 x_2 y_2$	Output the <i>summation</i> , <i>min</i> value and <i>max</i> value of submatrix (x_1, y_1, x_2, y_2)

In the above descriptions, submatrix (x_1, y_1, x_2, y_2) means all the elements (x, y) satisfying $x_1 \leq x \leq x_2$ and $y_1 \leq y \leq y_2$. It is guaranteed that $1 \leq x_1 \leq x_2 \leq r$, $1 \leq y_1 \leq y_2 \leq c$. After any operation, the sum of all the elements in the matrix does not exceed 10^9 .

Input

There are several test cases. The first line of each case contains three positive integers r, c, m , where m ($1 \leq m \leq 20,000$) is the number of operations. Each of the next m lines contains a query. There will be at most twenty rows in the matrix. The input is terminated by end-of-file (EOF).

Output

For each type-3 query, print the *summation*, *min* and *max*.

Sample Input

```
4 4 8
1 1 2 4 4 5
3 2 1 4 4
1 1 1 3 4 2
3 1 2 4 4
3 1 1 3 4
2 2 1 4 4 2
3 1 2 4 4
1 1 1 4 3 3
```

Sample Output

```
45 0 5
78 5 7
69 2 7
39 2 7
```