Fast Matrix Operations

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<=x<=r,1<=y<=c. Initially, all the elements are zero. You need to handle four kinds of operations:

1 x1 y1 x2 y2 v	Increment each element (x,y) in submatrix (x1,y1,x2,y2) by v (v>0)
2 x1 y1 x2 y2 v	Set each element (x,y) in submatrix (x1,y1,x2,y2) to v
3 x1 y1 x2 y2	Output the summation, min value and max value of submatrix (x1,y1,x2,y2)

In the above descriptions, submatrix (x1,y1,x2,y2) means all the elements (x,y) satisfying x1<=x<=x2 and y1<=x<=y2. It is guaranteed that 1<=x1<=x2<=r, 1<=y1<=y2<=c. After any operation, the sum of all the elements in the matrix will 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<=m<=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). The size of input file does not exceed 500KB.

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
```