# Ada and Behives

Ada the Ladybug is currently doing her thesis. It is almost complete with one tiny exception - there are some graphs and statistics missing. The topic of thesis is "**Behavior of Bee Hives**". She examines population of bees and their growth in given areas.

Ada has all data she needs - but parsing it manually might take many long months. She decided to ask you for help. Basically - given population of individual bee hives you will have to answer the number of bees on give area. There are two kinds of queries:

Query of kind **1** gives you coordinates of hive and number of new-born bees.

Query of kind **2** gives you description of rectangle. You will be asked to find the number of bees living in it.

## Input

The first line contains three integer numbers $1 \leq N, M \leq 2000, 1 \leq Q \leq 10^5$, the size of examined area (number of rown and number of columns), and number of queries.

The next **N** lines contains **M** integer numbers $1 \leq A_{i,j} \leq 10^4$, the sizes of hives.

Afterward, **Q** lines (of two types) follow

First kind **1 I J P**, $1 \leq I \leq N$, $1 \leq J \leq M$, $1 \leq P \leq 10^4$, the position of hive and the number of newborn bees.

Second kind **2 $I_1$ $J_1$ $I_2$ $J_2$**, $1 \leq I_1 \leq I_2 \leq N$, $1 \leq J_1 \leq J_2 \leq M$, the boundaries of rectangular area for which you want to know the number of bees (more specifically the lower-left and upper right corners).

## Output

For each query of second kind , output the number of bees.

## Example Input

```
6 5 8
1 2 3 4 5
1 2 3 4 5
6 6 6 6 6
5 4 3 2 1
5 4 3 2 1
6 6 6 6 6
2 1 1 6 5
2 1 1 2 4
2 4 2 5 4
1 5 4 4
1 1 1 665
2 1 1 6 5
2 1 1 2 4
```

2 4 2 5 4

## Example Output

120
20
18
789
685
22