

# Jumping Sparrow

How many jumps does a sparrow make in a hundred years?

This philosophical question keeps Prefix awake at night. For the last  $c$  centuries, he has diligently recorded the number of jumps made by each of the  $r$  sparrows. However, since the number of jumps per century varies significantly from sparrow to sparrow, and even for each sparrow during different centuries, these acquired pieces of information did not satisfy him. To delve deeper into this issue, he organized the sparrows in his notebook according to the altitude of their nests. It didn't help, but he couldn't think of anything else. He decided to gather his materials and publish them in a famous scientific journal - perhaps to interest someone wiser who could answer this question. However, so as not to appear completely incapable, he would like to add a large chunk of data to his work, which may not make much sense but might impress an inexperienced solver.

## Task

You will receive Prefix's records - one line for each of the  $r$  sparrows with  $c$  numbers, indicating the number of jumps in each century.

Prefix has decided to pretend as if he were studying the correlation between the number of jumps and the height of the sparrow's nest in different time intervals. He will roll a large die to get four numbers  $a, b, c, d$  and add to his work the number of jumps made by sparrows with nests ranging from the  $a$ -th to the  $c$ -th highest during the  $b$ -th to  $d$ -th centuries.

## Input

The first line of the input contains two numbers  $1 \leq r, c \leq 1,000$ . Followed by  $r$  lines, each containing  $c$  non-negative integers not exceeding  $10^9$  - for each sparrow, starting with the highest nest, the number of its jumps during the first, second, ...,  $c$ -th century. Then follows a number  $1 \leq q \leq 10^6$ , the number of Prefix's questions. Followed by  $q$  lines, each containing one Prefix question  $a b c d$ ,  $1 \leq a \leq c \leq r$ ,  $1 \leq b \leq d \leq c$ .

## Output

The number of jumps made by sparrow  $x$  in the  $y$ -th century is denoted as  $v_{xy}$ . Answer the question  $a b c d$  with the sum of the numbers  $v_{xy}$ , where  $a \leq x \leq c$  and  $b \leq y \leq d$ .

## Example

input

```
4 4
1 2 3 4
3 3 3 3
5 1 2 0
7 2 7 1
3
1 1 4 4
3 2 3 2
2 2 3 4
```

output

```
47
1
12
```