

Simple Sum

Mr. Puede likes to play chess. Not just ordinary chess, but this one is special. The chessboard with maximum length N^2 . Suddenly he wants to putting numbers on his chessboard and to count the sum of black squares and white squares in a certain box area. Because he doesn't really understand about mathematics, please write a program to him solve his problems.

Note : top left corner is white square

Input

First line N ($2 \leq N \leq 500$) is the number of length and width of the chessboard. The next N lines consist of numbers inside the chessboard ($1 \leq X \leq 1000$). Then followed by Q query ($1 \leq Q \leq 10000$). Each of Q lines consist of 4 number indicate the coordinate of top left corner and bottom right corner from the rectangle.

Output

Print the difference between sum of black squares and white squares in absolute (non negative number) from each query.

Example

Input:

```
3
1 3 5
2 4 6
0 10 5
2
1 1 2 2
2 2 3 3
```

Output:

```
0
7
```