

# To The Max

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Source: <http://acm.tju.edu.cn/toj/showp1564.html>

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## Problem

Given a two-dimensional array of positive and negative integers, a *sub-rectangle* is any contiguous sub-array of size 1 x 1 or greater located within the whole array. The sum of a rectangle is the sum of all the elements in that rectangle. In this problem the sub-rectangle with the largest sum is referred to as the *maximal sub-rectangle*.

As an example, the maximal sub-rectangle of the array:

```
0  -2  -7  0
9   2  -6  2
-4  1  -4  1
-1  8   0 -2
```

is in the lower left corner:

```
9   2
-4  1
-1  8
```

and has a sum of 15.

## Input

The input consists of a sequence of arrays of integers, terminated by End-of-File. Each instance begins with a single positive integer  $N$  on a line by itself, indicating the size of the square two-dimensional array. This is followed by  $N^2$  integers separated by whitespace (spaces and newlines). These are the  $N^2$  integers of the array, presented in row-major order --- that is, all numbers in the first row, left to right, then all numbers in the second row, left to right, etc. Each size  $N$  may be as large as 100. The numbers in the array are in the range  $[-127,127]$ .

## Output

For each instance, output on a separate line the sum of the maximal sub-rectangle.

## Sample Input

```
4
0 -2 -7 0 9 2 -6 2
-4 1 -4 1 -1
```

8 0 -2

2  
0 2 -3  
8

### Sample Output

15  
10