2288 - To The Max

North America - Greater New York - 2001/2002

Given a two-dimensional array of positive and negative integers, a *sub-rectangle* is any contiguous sub-array of size 1 × 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 an $N \times N$ array of integers. The input 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. N may be as large as 100. The numbers in the array will be in the range [-127,127].

Output

Output 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
```

Sample Output

```
15
```

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