C. To the Max

Time limit: 2s Memory limit: 64 MB

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.

The input consists of an N x 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.

Example

Input

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

Output

15

Source: Greater New York 2001