Day 11: 2D Arrays

by Shafaet

Objective

Today, we're building on our knowledge of *Arrays* by adding another dimension. Check out the Tutorial tab for learning materials and an instructional video!

Context

Given a 6×6 *2D Array*, A:

```
1 1 1 0 0 0
0 1 0 0 0 0
1 1 1 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0
```

We define an hourglass in A to be a subset of values with indices falling in this pattern in A's graphical representation:

```
a b c
  d
e f g
```

There are 16 hourglasses in A, and an *hourglass sum* is the sum of an hourglass' values.

Task

Calculate the hourglass sum for every hourglass in A, then print the *maximum* hourglass sum.

Input Format

There are 6 lines of input, where each line contains 6 space-separated integers describing *2D Array* A; every value in A will be in the inclusive range of -9 to 9.

Constraints

- $-9 \leq A[i][j] \leq 9$
- $0 \leq i, j \leq 5$

Output Format

Print the largest (maximum) hourglass sum found in A.

Sample Input

```
1 1 1 0 0 0
0 1 0 0 0 0
1 1 1 0 0 0
0 0 2 4 4 0
0 0 0 2 0 0
0 0 1 2 4 0
```

Sample Output

```
19
```

Explanation

A contains the following hourglasses:

```
1 1 1   1 1 0   1 0 0   0 0 0
  1       0       0       0
1 1 1   1 1 0   1 0 0   0 0 0

0 1 0   1 0 0   0 0 0   0 0 0
  1       1       0       0
0 0 2   0 2 4   2 4 4   4 4 0

1 1 1   1 1 0   1 0 0   0 0 0
  0       2       4       4
0 0 0   0 0 2   0 2 0   2 0 0

0 0 2   0 2 4   2 4 4   4 4 0
  0       0       2       0
0 0 1   0 1 2   1 2 4   2 4 0
```

The hourglass with the maximum sum (**19**) is:

```
2 4 4
  2
1 2 4
```

Submissions: 35859
Max Score: 30
Difficulty: Easy

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Current Buffer (saved locally, editable) C#

```
using System;
using System.Collections.Generic;
using System.IO;
using System.Linq;
class Solution {

    static void Main(String[] args) {
        int[][] arr = new int[6][];
        for(int arr_i = 0; arr_i < 6; arr_i++){
           string[] arr_temp = Console.ReadLine().Split(' ');
           arr[arr_i] = Array.ConvertAll(arr_temp,Int32.Parse);
        }

        int max_sum = int.MinValue;

        for (int fila = 0; fila <= 3; fila++)
        {
            for (int col = 0; col <= 3; col++)
            {
                int sum = arr[fila][col] +
                    arr[fila][col + 1] +
                    arr[fila][col + 2] +

                    arr[fila + 1][col + 1] +

                    arr[fila + 2][col] +
                    arr[fila + 2][col + 1] +
                    arr[fila + 2][col + 2];

                max_sum = Math.Max(max_sum, sum);
            }
        }

        Console.WriteLine(max_sum);


    }
}

```

Line: 23 Col: 1

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Upload Code as File Test against custom input Run Code Submit Code

Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6
- ✔ Test Case #7

Next Challenge