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# Day 11: 2D Arrays ☆



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#### 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  $\mathbf{6} \times \mathbf{6}$  2D Array,  $\mathbf{A}$ :

- 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 0 0

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

- a b c
- d e f g

There are 16 hourglasses in  $\emph{A}$ , and an *hourglass sum* is the sum of an hourglass' values.

#### Task

Calculate the hourglass sum for every hourglass in  $\emph{\textbf{A}}$ , then print the  $\emph{maximum}$  hourglass sum.

## **Input Format**

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

#### **Constraints**

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

## **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

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#### **Sample Output**

19

#### **Explanation**

 ${m A}$  contains the following hourglasses:

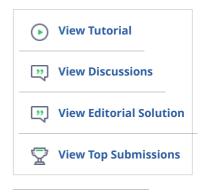
```
1 1 1 1 1 0 1 0 0
                   0 0 0
      0
1
             0
                    0
1 1 1 1 1 0 1 0 0 0 0 0
0 1 0
      1 0 0
            0 0 0
                    0 0 0
              0
0 0 2
      0 2 4
             2 4 4
                    4 4 0
1 1 1
      1 1 0
            1 0 0
     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

The hourglass with the maximum sum (19) is:

```
2 4 4
2 7
1 2 4
```



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