Problem A. 2D Array - DS

OS Linux

Given a 6×6 2D array, arr, an hourglass is a subset of values with indices falling in the following pattern:

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

There are 16 hourglasses in a 6×6 array. The $hourglass\ sum$ is the sum of the values in an hourglass. Calculate the hourglass sum for every hourglass in arr, then print the $maximum$ hourglass sum.

Example

$arr =$

```
-9 -9 -9  1 1 1
 0 -9  0  4 3 2
-9 -9 -9  1 2 3
 0  0  8  6 6 0
 0  0  0 -2 0 0
 0  0  1  2 4 0
```

The 16 hourglass sums are:

```
-63, -34, -9, 12,
-10,   0, 28, 23,
-27, -11, -2, 10,
  9,  17, 25, 18
```

The highest hourglass sum is 28 from the hourglass beginning at row 1, column 2:

```
0 4 3
  1
8 6 6
```

Note: If you have already solved the Java domain's *Java 2D Array* challenge, you may wish to skip this challenge.

Function Description

Complete the function $hourglassSum$ with the following parameter(s):

- $int\ arr[6][6]$: a 2-D array of integers

Returns

- int: the maximum hourglass sum

Input Format

Each of the 6 lines of inputs $arr[i]$ contains 6 space-separated integers $arr[i][j]$.

Constraints

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

Input	Output
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	19

Explanation

arr 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
```